



**TIBCO BusinessEvents<sup>®</sup>**

## Release Notes

*Software Release 5.6.1*

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# Preface

You can use TIBCO BusinessEvents<sup>®</sup> to abstract and correlate meaningful business information from the events and data flowing through your information systems, and take appropriate actions by using business rules. By detecting patterns within the real-time flow of events, TIBCO BusinessEvents can help you detect and understand unusual activities recognizing trends, problems, and opportunities. TIBCO BusinessEvents publishes this business-critical information in real time to your critical enterprise systems or dashboards. With TIBCO BusinessEvents you can predict the needs of your customers, make faster decisions, and take faster action.

## Topics

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- [Typographical Conventions, page vi](#)
- [TIBCO Product Documentation and Support Services, page ix](#)

## Typographical Conventions

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The following typographical conventions are used in this manual.

Table 1 General Typographical Conventions

Convention	Use
<i>ENV_NAME</i> <i>TIBCO_HOME</i> <i>BE_HOME</i>	<p>TIBCO products are installed into an installation environment. A product installed into an installation environment does not access components in other installation environments. Incompatible products and multiple instances of the same product must be installed into different installation environments.</p> <p>An installation environment consists of the following properties:</p> <ul style="list-style-type: none"> <li>• <b>Name</b> Identifies the installation environment. This name is referenced in documentation as <i>ENV_NAME</i>. On Microsoft Windows, the name is appended to the name of Windows services created by the installer and is a component of the path to the product shortcut in the Windows Start &gt; All Programs menu.</li> <li>• <b>Path</b> The folder into which the product is installed. This folder is referenced in documentation as <i>TIBCO_HOME</i>.</li> </ul> <p>TIBCO BusinessEvents installs into a directory within a <i>TIBCO_HOME</i>. This directory is referenced in documentation as <i>BE_HOME</i>. The default value of <i>BE_HOME</i> depends on the operating system. For example on Windows systems, the default value is C:\tibco\be\<i>&lt;version&gt;</i>.</p>
code font	<p>Code font identifies commands, code examples, filenames, pathnames, and output displayed in a command window. For example:</p> <p>Use MyCommand to start the process.</p>
<b>bold code font</b>	<p>Bold code font is used in the following ways:</p> <ul style="list-style-type: none"> <li>• In procedures, to indicate what a user types. For example: Type <b>admin</b>.</li> <li>• In large code samples, to indicate the parts of the sample that are of particular interest.</li> <li>• In command syntax, to indicate the default parameter for a command. For example, if no parameter is specified, MyCommand is enabled: MyCommand [<b>enable</b>   disable]</li> </ul>

Table 1 General Typographical Conventions (Cont'd)

Convention	Use
<i>italic font</i>	<p>Italic font is used in the following ways:</p> <ul style="list-style-type: none"> <li>To indicate a document title. For example, see <i>TIBCO ActiveMatrix BusinessWorks Concepts</i>.</li> <li>To introduce new terms. For example: A portal page may contain several <i>portlets</i>. Portlets are mini-applications that run in a portal.</li> <li>To indicate a variable in a command or code syntax that you must replace. For example: <code>MyCommand <i>PathName</i></code></li> </ul>
Key combinations	<p>Key name separated by a plus sign indicate keys pressed simultaneously. For example: <code>Ctrl+C</code>.</p> <p>Key names separated by a comma and space indicate keys pressed one after the other. For example: <code>Esc, Ctrl+Q</code>.</p>
	The note icon indicates information that is of special interest or importance, for example, an additional action required only in certain circumstances.
	The tip icon indicates an idea that could be useful, for example, a way to apply the information provided in the current section to achieve a specific result.
	The warning icon indicates the potential for a damaging situation, for example, data loss or corruption if certain steps are taken or not taken.

Table 2 Syntax Typographical Conventions

Convention	Use
[ ]	<p>An optional item in a command or code syntax.</p> <p>For example:</p> <pre>MyCommand [optional_parameter] required_parameter</pre>
	<p>A logical OR that separates multiple items of which only one may be chosen.</p> <p>For example, you can select only one of the following parameters:</p> <pre>MyCommand param1   param2   param3</pre>

Table 2 *Syntax Typographical Conventions*

Convention	Use
{ }	<p>A logical group of items in a command. Other syntax notations may appear within each logical group.</p> <p>For example, the following command requires two parameters, which can be either the pair <code>param1</code> and <code>param2</code>, or the pair <code>param3</code> and <code>param4</code>.</p> <pre>MyCommand {param1 param2}   {param3 param4}</pre> <p>In the next example, the command requires two parameters. The first parameter can be either <code>param1</code> or <code>param2</code> and the second can be either <code>param3</code> or <code>param4</code>:</p> <pre>MyCommand {param1   param2} {param3   param4}</pre> <p>In the next example, the command can accept either two or three parameters. The first parameter must be <code>param1</code>. You can optionally include <code>param2</code> as the second parameter. And the last parameter is either <code>param3</code> or <code>param4</code>.</p> <pre>MyCommand param1 [param2] {param3   param4}</pre>

# TIBCO Product Documentation and Support Services

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For information about this product, you can read the documentation, contact TIBCO Support, and join TIBCO Community.

## How to Access TIBCO Documentation

Documentation for TIBCO products is available on the TIBCO Product Documentation website mainly in the HTML and PDF formats.

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>.

Documentation for TIBCO BusinessEvents is available on the [TIBCO BusinessEvents](#) Product Documentation page.

## How to Contact TIBCO Support

You can contact TIBCO Support in the following ways:

- For an overview of TIBCO Support, visit <https://www.tibco.com/services/support>.
- For accessing the Support Knowledge Base, viewing the latest product updates that were not available at the time of the release, 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.

## How to Join TIBCO Community

TIBCO Community is the official channel for TIBCO customers, partners, and employee subject matter experts to share and access their collective experience. TIBCO Community offers access to Q&A forums, product wikis, and best practices. It also offers access to extensions, adapters, solution accelerators, and tools that extend and enable customers to gain full value from TIBCO products. In addition, users can submit and vote on feature requests from within the [TIBCO Ideas Portal](#). For a free registration, go to <https://community.tibco.com>.



# Release Notes

The release notes list the major updates in version 5.6.1 of the product. For information about an earlier version, see the release notes provided with the corresponding version.

## Topics

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- [New Features, page 2](#)
- [Changes in Functionality, page 45](#)
- [Deprecated and Removed Features, page 60](#)
- [Migration and Compatibility, page 67](#)
- [Closed Issues, page 80](#)
- [Known Issues, page 228](#)

## New Features

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The following features have been added since the last major release of TIBCO BusinessEvents:

### Release 5.6.1

#### Integration with TIBCO Statistica

You can now augment the rule processing capabilities of TIBCO BusinessEvents by integrating it with TIBCO Statistica. You can use the machine learning models that are deployed on TIBCO Statistica Live Score Server by invoking the TIBCO Statistica Live Score web service from TIBCO BusinessEvents application.

See [TIBCO BusinessEvents Developer's Guide](#).

#### Apache Kafka Streams Channel

You can now process Kafka Streams by using the Kafka Streams channel. Kafka Streams destination can be configured to create a combination of complex processing topologies across streams to join, group, or aggregate messages before rule processing.

See [TIBCO BusinessEvents Developer's Guide](#).

#### Cloud Tools on GitHub

Tools to deploy and monitor TIBCO BusinessEvents applications on different cloud platforms by using Docker and Kubernetes are now available at the TIBCO BusinessEvents GitHub repository (v1.0).

The following new features are added in cloud-tools for this release:

- **Support for Consul Global Variable**

Your TIBCO BusinessEvents application deployed on a cloud platform can now use global variables from the key-value store in Consul.

- **RedHat OpenShift S2I Support**

You can build a Docker image for your application by using the OpenShift Source-to-Image (S2I) utility.

See [TIBCO BusinessEvents GitHub Release 1.0](#).

## TIBCO BusinessEvents WebStudio

Added support for the following languages:

- Arabic
- Korean

See [TIBCO BusinessEvents WebStudio User's Guide](#).

## Java Support

- Added support for Java 11
- (Windows, macOS, and Linux only) You can now externally configure OpenJDK and use it with TIBCO BusinessEvents in place of the bundled Oracle JDK. TIBCO BusinessEvents supports the following distributions of OpenJDK:
  - Oracle OpenJDK
  - Amazon Corretto

See [TIBCO BusinessEvents Developer's Guide](#).

## New Locale for TIBCO BusinessEvents Enterprise Administration Agent

Added support of the *Spanish* language for TIBCO BusinessEvents Enterprise Administration Agent error messages can be configured to appear in Spanish. To enable the Spanish locale, see [TIBCO BusinessEvents Administration](#).

## Catalog Functions

The following new functions have been added:

- **SOAP.signEnvelope** - To sign the SOAP envelope
- **Metaspace.MemberDef.getProcessName** and **Metaspace.MemberDef.setProcessName** - To retrieve and set the value of the MemberDef `processName` property

See [TIBCO BusinessEvents Functions Reference](#).

## New API Functions for JUnit

Added a new `Engine.invokeRuleFunctionInSession` JUnit API function to execute a rule function in the ongoing rule session.

See [TIBCO BusinessEvents Java API Reference](#).

## Release 5.6.0

### Cloud Platform Support

TIBCO BusinessEvents applications can now run on Kubernetes and are supported on the following cloud platforms:

- Amazon Elastic Kubernetes Service (Amazon EKS)
- Microsoft Azure Kubernetes Service (AKS)
- Minikube (for local testing)
- OpenShift Container Platform
- Pivotal Container Service (PKS)

You can **monitor these applications** by deploying TIBCO BusinessEvents Enterprise Administration Agent on a supported cloud platform. Also, you can manage business rules in WebStudio by deploying the rule management server (RMS) on cloud platforms.

TIBCO BusinessEvents also provides `readme.html` files with instructions to run sample application on Kubernetes by using the sample Kubernetes object specification (`.yaml`) files for these cloud platforms.

For more information, see the *TIBCO BusinessEvents Cloud Deployment Guide*.

### Docker Optimization

The process for generating a Docker image of TIBCO BusinessEvents application is now optimized and requires minimal user intervention. You can now also build Docker containers on Microsoft Windows platform.

TIBCO BusinessEvents now provide separate scripts and Dockerfiles to generate Docker images of the following components:

- TIBCO BusinessEvents application
- RMS
- TIBCO BusinessEvents Enterprise Administration Agent

For more information, see the *TIBCO BusinessEvents Cloud Deployment Guide*.

## Channel Enhancements

- Added the following new channels:
  - **MQTT** - To communicate with IoT devices. TIBCO BusinessEvents also bundles an example *MQTTChannel* to demonstrate use of the MQTT channel.
  - **Amazon Kinesis** - To process big data in real time. TIBCO BusinessEvents also bundles an example *KinesisChannel* to demonstrate use of the Amazon Kinesis channel.
  - **ActiveSpaces 3.x** - To connect to version 3.x or 4.x of TIBCO ActiveSpaces. TIBCO BusinessEvents also bundles an example *AS3xChannel* to demonstrate use of the ActiveSpaces 3.x channel.
- FTL channel:
  - You can now specify a durable subscription name by using the **Durable Name** field in the FTL channel destination.
- Kafka channel
  - Supports Azure Event Hub for Apache Kafka and Amazon Managed Streaming for Apache Kafka (Amazon MSK)
  - Supports obfuscated or encrypted passwords for SCRAM-SHA-256 and SCRAM-SHA-512 SASL mechanisms
- JMS channel:
  - Supports shared subscription name for consumers
  - Supports JSON payload
- HTTP channel:
  - *WebSocket* support for the HTTP channel. TIBCO BusinessEvents also bundles an example *WebSocket* to demonstrate use of WebSocket in the HTTP channel.
  - Configure the **SSL Server: Use Cipher Order** field to use the server cipher order for SSL handshake in the HTTP channel.

For more information, see the *TIBCO BusinessEvents Developer's Guide*.

## WebStudio Enhancements

TIBCO BusinessEvents WebStudio New UI provides an even better user experience with the following enhancements:

- The Dashboard tab has been updated to provide a better overall view of your WebStudio activities and RMS projects.

- The Management tab has been updated to make the role assignment task more intuitive.
- The new **Import Project** option enables you to import a TIBCO BusinessEvents project to RMS.
- WebStudio new UI is available in following languages:
  - German
  - French
  - Italian
  - Chinese
- You can use either an HTML TextBox or HTML TextArea type input field for the String data type in the Business Rule HTML editor.
- You can export multiple artifacts (decision tables and business rules) from WebStudio.

For more information, see the *TIBCO BusinessEvents WebStudio Users Guide*.

### **Predictive Model Markup Language (PMML) Integration**

You can now use the data mining models in TIBCO BusinessEvents to perform real-time predictive analysis. TIBCO BusinessEvents also bundles an example *AuditPMML* to demonstrate the PMML integration. TIBCO BusinessEvents also provides new catalog functions for working with PMML.

For more information, see the *TIBCO BusinessEvents Developers Guide*.

### **TIBCO BusinessEvents Studio Tester Enhancements**

In TIBCO BusinessEvents Studio, the Test Data editor now has the following features:

- Option to invoke preprocessor while asserting events
- Control the assertion rate for the test data
- Generate random test data

### **PostgreSQL Support**

TIBCO BusinessEvents now supports PostgreSQL database for backing store and database concepts.

For more information, see the *TIBCO BusinessEvents Developer's Guide*.

## TIBCO BusinessEvents Enterprise Administrator Agent

- The `checkstatus` application management command is added to get status details of an application or a machine in the TIBCO BusinessEvents Enterprise Administrator Agent.
- Existing rules can be modified with AND and OR operators.
- Support for adding TIBCO BusinessEvents Enterprise Administrator Agent as a Windows service.

## Configuration Properties

- Tools to move CDD properties up and down in the CDD editor
- The following new properties are added:
  - `be.engine.channel.<DestinationURI>.deliverydelay` - To set delayed delivery time for all messages in JMS channel destination
  - `be.engine.cluster.datagrid.db.retrycount` and `be.engine.cluster.datagrid.db.sleepinterval` - To configure retry count and retry interval for the database connection
  - `be.channel.kafka.skip.attributes` - To skip TIBCO BusinessEvents attributes from the output JSON when using the `KafkaJsonSerializer` in the Kafka channel
  - `be.engine.cluster.as.browser.join` - To enable the space join on browse calls during processing
  - `be.engine.cluster.as.extid.index` - To add index for `extId`.
  - `be.engine.channel.http.hostname.validation.enable` - To enable or disable hostname validation in the HTTP channel

## Catalog Functions

The following new functions have been added:

- `Event.validatePayload` - To validate event payload
- `Event.serializeToJson` - To convert events to JSON string
- `Event.serializeToXml` - To convert events to XML string
- `Date.parseStringWithTimeZone` - To convert input String to the `Date` data type in the specified time zone
- `Log.getLevel` - To retrieve the logging level

- New TIBCO ActiveSpaces 3.x catalog functions:
  - Store.ConnectionInfo.AS.setSecondaryStoreUrl
  - Store.ConnectionInfo.setConnectionPoolSize
  - Store.ConnectionInfo.setName
  - Store.Item.getExpiration
  - Store.Item.setTTL
  - Store.Metadata.getName
  - Store.QueryOptions.setReuse
  - Store.executeUpdate
  - Store.deleteAll
  - Store.getAll
  - Store.putAll
  - Store.closeQuery
- New PMML related functions under Analytics.PMML.

For more information on catalog functions, see *TIBCO BusinessEvents Functions Reference*.

### Miscellaneous

- The `PersistenceOptions` JMX MBean attribute is added to identify the persistence type used in a TIBCO ActiveSpaces cluster.
- The `GetInstanceByUri` JMX MBean attribute is added to retrieve concept instance for the shared nothing persistence option by using `ExtID` and `URI`.
- Support for JSON payload in event test data.

### Updates to the TIBCO Software, Platforms, and Third-Party Software

For the updated list of supported TIBCO software, platforms, and third party software, see the `readme.txt` file provided with TIBCO BusinessEvents.

## Release 5.5.0

### Kubernetes Support

TIBCO BusinessEvents and rule management server (RMS) applications can now be deployed on an Amazon Web Services (AWS) based Kubernetes cluster.

For more information about running TIBCO BusinessEvents and RMS applications in Kubernetes, see the *TIBCO BusinessEvents Administration Guide*.

### **TIBCO ActiveSpaces 3.x Catalog Functions**

New catalog functions are available for interaction with an external TIBCO ActiveSpaces 3.x cluster.

For more information on TIBCO BusinessEvents and TIBCO ActiveSpaces 3.x integration, see the *TIBCO BusinessEvents Developer's Guide*.

### **WebStudio New User Interface**

TIBCO BusinessEvents WebStudio has a new intuitive user interface (UI). The new UI retains all old functionalities such as operations for decision tables, business rules, and domain models. In addition it also provides new functionalities, such as,

- Viewing or downloading an audit report for all the actions performed on an artifact by users.
- Hot deploying the same change to different environments at different time.
- Configuring hot deployment settings for a project from the TIBCO BusinessEvents WebStudio without restarting RMS.

For information on TIBCO BusinessEvents WebStudio new UI, see the *TIBCO BusinessEvents WebStudio Users Guide*.

### **FTL Channel**

TIBCO BusinessEvents now provides a new channel to communicate with TIBCO FTL. TIBCO BusinessEvents can now send and receive events using TIBCO FTL as transport. You can continue to use existing catalog functions in TIBCO BusinessEvents to communicate with FTL. The FTL channel also supports secure communication using SSL.

For more information on FTL channel, see the *TIBCO BusinessEvents Developer's Guide*.

### **Kafka Channel**

- You can now configure SASL and SSL based secured communication with Kafka.
- You can now use **Include Event Type** field to specify when to suppress the original behavior of including *ns* and *nm* fields during serialization and deserialization.

For more information on Kafka channel, see the *TIBCO BusinessEvents Developer's Guide*.

### Rule Management Server (RMS)

- You can now add a new project to RMS and the project is available for checkout without restarting RMS.
- You can now hot deploy artifacts for in-memory projects. You can use the property `<project name>.<environment name>.ws.jmx.inMemory` to specify if the project is an in-memory project.
- You can now configure RMS to pick up projects from multiple locations.
- TIBCO BusinessEvents now ships a reference implementation code and API for custom source control repository.  
For more information on the API, see *TIBCO BusinessEvents Java API Reference*.

### Maven Integration

Additional Maven phases for Docker-related commands and hot deployment in TIBCO BusinessEvents Enterprise Administration agent have been added.

For more details on Maven phases, refer to the *TIBCO BusinessEvents Developer's Guide*.

### Docker

- You can now specify any of the TIBCO BusinessEvents engine and JVM properties as environment variables while running BusinessEvents applications in Docker.
- In Linux platform, you can now generate TIBCO BusinessEvents image of a significantly reduced size.
- TIBCO BusinessEvents now ships Dockerfiles for the following Linux flavors:
  - CentOS
  - Debian
  - OpenSuse
  - Ubuntu
  - Fedora
  - Red Hat

For more details on running TIBCO BusinessEvents on Docker, refer to the *TIBCO BusinessEvents Administration Guide*.

## MySQL Support

TIBCO BusinessEvents now supports MySQL database for backing store and database concepts.

## TIBCO BusinessEvents Enterprise Administrator Agent

- You can now auto-detect BusinessEvents installations for individual machines.
- You can now create duplicate deployment profiles that you can reuse in different environments.
- You can now use existing global variables, BusinessEvents properties, and system properties while creating a deployment profile.
- Added new operations in python CLI to:
  - Upload custom JAR file
  - Discover BusinessEvents installations
  - Delete machine
  - Download BusinessEvents and ActiveSpaces logs (from default as well as custom location)
  - Download thread-dumps
  - Export and import application deployments
  - Hot-deploy decision tables and business rules

For more details on TIBCO BusinessEvents Enterprise Administrator Agent, refer to the *TIBCO BusinessEvents Administration Guide*.

## Configuration Properties

- Added the global variable support for the following properties:
  - `be.engine.cluster.as.minSeeders`
  - `be.engine.cluster.externalClasses.path`
  - `be.cluster.ruletemplateinstances.deploy.dir`
- Added the `be.engine.cluster.as.connection.retry.count` property to configure the number of connection retries.
- Added the `be.jdbc.multibyte.support` property to specify whether multibyte characters are supported.
- Added support for creating composite indexes for concepts from the CDD file.

For more information on CDD configuration properties, refer to the *TIBCO BusinessEvents Configuration Guide*.

### Catalog Functions

- Added the `HTTP.ConnectionInfo.setHttpMethod()` function to use the specified HTTP method for HTTP connection.
- Added the `DecisionTable.getColumnCount()` function to get the decision table column count and `DecisionTable.getRuleCount()` function to get the decision table row count.

For more information on catalog functions, refer to the *TIBCO BusinessEvents Functions Reference*.

### TIBCO Software, Platforms, and Third Party Software

- Added support for Mac OSX 10.13
- TIBCO BusinessEvents HTTP channel now uses Tomcat 7.0.82 libraries.
- Added support for Microsoft Windows 10 platform.
- Added support for Microsoft Edge browser for the following components:
  - TIBCO BusinessEvents WebStudio (classic and new UI)
  - TIBCO BusinessEvents Enterprise Administration Agent console.
- TIBCO BusinessEvents Studio has now been upgraded to use Eclipse Neon 3 Release 4.6.3.

### Miscellaneous

- In TIBCO BusinessEvents Studio, the JAR files on the Java classpath are now automatically added the classpath while building EAR.
- In TIBCO BusinessEvents Studio, you can now create duplicate destinations.
- The `studio-tools` utility, has a new parameter `-jc` for the `buildEar` operation to include the specified Java classpath.
- You can now drag and drop global variable for the following metadata property of database concept:
  - `SCHEMA_NAME`
  - `OBJECT_NAME`
  - `OBJECT_TYPE`
- You can now use the SQL Server JDBC driver on Linux environment with Windows authentication mode.

## Release 5.4.1

### Kafka Channel

TIBCO BusinessEvents now provides a Kafka channel to send and receive messages from a Kafka broker. The Kafka channel converts incoming Kafka messages to BusinessEvents events and outputs BusinessEvents events as Kafka messages.

TIBCO BusinessEvents also bundles an example *KafkaChannel* to demonstrate use of the Kafka channel.

Refer to the "Kafka Channel" section in the *TIBCO BusinessEvents Developer's Guide* for more details.

### Apache Maven Integration

You can now use Apache Maven to build, deploy, and run BusinessEvents unit tests for TIBCO BusinessEvents applications. This enables you to integrate with Maven based continuous integration (CI) or continuous deployment (CD) tooling within your organization.

Refer to the "Apache Maven Integration" section in the *TIBCO BusinessEvents Developer's Guide* for more details.

### TIBCO BusinessEvents Enterprise Administration Agent

- In the Machine Management page, all the instances are now grouped by their application deployment on the machine.
- Permissions for Deployment Profile can now be configured for user roles. Refer to the "Roles and Permissions Reference" section in the *TIBCO BusinessEvents Administration* guide for available permissions.
- A new **Refresh** button is now added to the Application Deployment page to refresh the statistics of all deployed applications on the page.

### TIBCO Enterprise Runtime for R

- Added support for a pool of TIBCO Enterprise Runtime for R engines that can be shared among multiple RTC threads. Added the `Analytics.Engine.createEnginePool()` catalog function to create a pool of TIBCO Enterprise Runtime for R engines with given size and name. Now, all existing catalog functions for TIBCO Enterprise Runtime for R supports TIBCO Enterprise Runtime for R engine pool.
- Added the `Analytics.Engine.deleteVariable()` catalog function to delete variables from the TIBCO Enterprise Runtime for R engine.

Refer to *TIBCO BusinessEvents Functions Reference* for more details.

### **SSL for the StreamBase Channel**

TIBCO BusinessEvents now support secure sockets layer (SSL) protocol for the StreamBase channel for secure communication with TIBCO StreamBase.

Refer to the "StreamBase Channel" section in the *TIBCO BusinessEvents Developer's Guide* for more details.

### **TIBCO BusinessEvents LiveView Agents**

- Added the fault tolerant support for TIBCO BusinessEvents LiveView agents. Now, if an active engine stops, the passive engine becomes active. The **Max Active** field in CDD specifies the maximum number of active engines.
- Added support for trimming the LiveView table based on the user-specified trimming rules.

Refer to the *TIBCO BusinessEvents Configuration Guide* for more details.

### **WebStudio**

- Now the CDD file is also listed in the artifacts list for selection while performing the check-out operation in WebStudio.
- Now you can retry the BuildAndDeploy operation on the workitem in the worklist if it had failed in the first attempt.

## **Release 5.4.0**

### **TIBCO Live Datamart Integration**

TIBCO LiveView Web provides various visualizations, such as, charts, bars, graphs, and so on, to represent data in real time. Using TIBCO LiveView Web now you can also perform aggregations over the data from the BusinessEvents project. The visualizations are updated in real time based on the changes to the underlying entities of the BusinessEvents project (concept, event, or metrics).

A new agent class LiveView can be configured in the BusinessEvents project CDD file. For each entity that is configured in the LiveView agent, an XML configuration file is generated. The LiveView configuration file is used by Live DataMart Server to create the corresponding Live DataMart tables.

TIBCO BusinessEvents Enterprise Edition also bundles an example *FraudDetectionLiveView* with the LiveView agent class and LiveView configuration files.



The Live Datamart plug-in for TIBCO BusinessEvents is available only in the TIBCO BusinessEvents Enterprise edition.

Refer to *TIBCO BusinessEvents Developer's Guide* and *TIBCO BusinessEvents Configuration Guide* for more details.

### **Docker Support**

TIBCO BusinessEvents application can now be run in a Docker container. Docker provides a way to run applications isolated in a container, packaged with all its dependencies and libraries.

Refer *TIBCO BusinessEvents Administration* guide for more details on how to dockerize TIBCO BusinessEvents.

### **Channel API**

TIBCO BusinessEvents now bundles a Java API that lets user create a custom channel. Using this API you can build your own TIBCO BusinessEvents channel that connect to your data source.

TIBCO BusinessEvents bundles an example *Kafka Channel* to showcase the usage of the channel API.

Refer to *TIBCO BusinessEvents Developer's Guide* for more details.

### **Remote Client**

Now non-cache agents of TIBCO BusinessEvents can connect to the cluster as remote members through a cache agent, that acts as a proxy. A remote client acts as a node without actually being a member of the cluster.

Refer to *TIBCO BusinessEvents Configuration Guide* for more details.

### **Unit Testing**

You can now author unit tests for BusinessEvents application using BEUnit (a JUnit based extension). JUnit is a unit testing framework for the Java programming language. It is an instance of the xUnit architecture for unit testing frameworks.

TIBCO BusinessEvents also bundles an example *BEUnitTest* to demonstrate how the integrated BEUnit test framework can be used to test the business logic of a TIBCO BusinessEvents application.

Refer to *TIBCO BusinessEvents Developer's Guide* for more details.

### Rule Management Server (RMS)

- You can now apply styles and JavaScripts to the HTML file for the business rule (rule template view).
- In WebStudio, now you can specify the auto-fit approach for the columns of decision tables using the **Columns Auto Fit Approach** setting.
- In WebStudio, now you can set the preference for the starting filter in the business rule builder. You can configure the **Default RTI Filter** setting to have the Match ALL, Match Any, or Match None as the starting filter.
- In WebStudio, if you require to move any condition up or down the order then you can drag-and-drop the condition to move it within same or different filter.
- In WebStudio, the access control file for each project and the users roles in the password file can be configured. These configuration can be done in the **Settings** tab under the **Application Preferences > ACL** portlet.
- In WebStudio, now email notifications can be configured at the project level. The notifications can be configured in the **Settings** tab under the **Application Preferences > Notification** portlet for different project actions.

Refer to *TIBCO BusinessEvents WebStudio User's Guide* for more details.

- In TIBCO BusinessEvents Studio, now you can checkout ActiveSpaces connection and StreamBase connection shared resources from the rule management server.
- In WebStudio, the string binding now has the textarea, of customizable size, instead of the text box in the business rule.
- In WebStudio, multiple values can be selected from the domain model drop-down list for conditions in decision table. Also, new options **Select All** and **Clear All** are added in the drop-down list.
- In WebStudio, the business rule priority can be set to decide the order in which rules are executed. A new optional field is also added to provide a description to the business rule.
- Now, the updates made to a decision table from TIBCO BusinessEvents Studio are visible in TIBCO BusinessEvents WebStudio and vice-versa.

## TIBCO BusinessEvents Enterprise Administrator Agent

- TIBCO BusinessEvents Enterprise Administrator Agent now provides charts for monitoring performance of the agent itself.
- You can now upload external JAR files to the TIBCO BusinessEvents installation at the `BE_HOME\lib\ext\tpc1` folder.
- An application can now be deployed in a different environment using a different set of properties using deployment profiles. A deployment profile is a collection of global variables, system properties, and BusinessEvents properties. You can associate a deployment profile to an application. An application can have multiple deployment profiles based on user environments, such as User Acceptance Testing (UAT), System Acceptance Testing (SAT), and so on.
- TIBCO BusinessEvents Enterprise Administrator Agent can now detect multiple TIBCO BusinessEvents installations (version 5.3 or later) present on the host machines.
- The Alerts tab icon now displays the number of new alerts generated. The Alerts page also displays new alerts in bold style.
- You can now migrate TIBCO Administrator based deployment to TIBCO BusinessEvents Enterprise Administrator deployments. The migration can be performed using the TIBCO BusinessEvents Enterprise Administrator Agent user interface or by using python commands. Using the command line interface, now you can also import users and roles, that were created in TIBCO Administrator, to the TIBCO BusinessEvents Enterprise Administrator Agent.
- An application deployment can now be exported from TIBCO BusinessEvents Enterprise Administrator Agent to an archive. You can also import a BusinessEvents deployment, that was previously exported, to TIBCO BusinessEvents Enterprise Administrator Agent.
- The operating system of the host machine is now auto-detected by TIBCO BusinessEvents Enterprise Administrator Agent, when you save the host machine details.
- Logs of the instance can now be displayed in the TIBCO BusinessEvents Enterprise Administrator Agent user interface.
- You can now download ActiveSpaces logs for the instances.
- You can now provide application, instance, and machine name in international lingual characters in TIBCO BusinessEvents Enterprise Administrator Agent.

- TIBCO BusinessEvents Enterprise Administrator Agent messages can now be configured to display in local languages. You can download language packs for TIBCO BusinessEvents for the following language:
  - Arabic
  - French
  - German
  - Italian
  - Korean
  - Simplified Chinese
- You can now download logs for instances even when the custom location is defined for the logs in the project CDD file.
- In Machine Management page, now you can view instances for all the application deployments on a machine. You can now navigate from application host to the master host.
- The JMX ports are now auto-incremented for the host machine. While creating new deployment and instances on the host machine, JMX ports are auto-incremented.

Refer *TIBCO BusinessEvents Administration* guide for more details on TIBCO BusinessEvents Enterprise Administrator Agent enhancements.

### Configuration (CDD) Properties

- You can now delete multiple properties in concept metadata and in CDD.
- Added new StreamBase channel connection properties to configure number of reconnection attempts and time interval between reconnection attempts.
  - `com.tibco.sbchannel.reconnect.attempts`
  - `com.tibco.sbchannel.reconnect.interval`
- Added `com.tibco.be.http.client.retryCount` property to limit the number of reconnection attempts for the HTTP client.
- Added a new metadata property `tibco.be.schema.ref.expand` to enable the concept reference serialization in concept to JSON.
- Added the global variable support for the following properties:
  - Concept TTL
  - Cluster Name

## TIBCO Software, Platforms, and Third Party Software

- Added support for Mac OSX 10.12 Sierra
- TIBCO BusinessEvents HTTP channel now uses Tomcat 7.0.69 libraries.
- Added support for the following TIBCO products:
  - TIBCO ActiveSpaces 2.2.1
  - TIBCO FTL 5.1.x
  - TIBCO Live Datamart 2.1.x
  - TIBCO LiveView Web 1.1.x
  - TIBCO StreamBase 10.x

## Eclipse Platform Upgrade

TIBCO BusinessEvents 5.4.0 Studio has now been upgraded to use Eclipse Mars 2 Release 4.5.2.

## Release 5.3.0

### Java Runtime

Java Runtime 1.8 is the minimum version required to run BusinessEvents 5.3. The installer ships Java Runtime 1.8. For using an external Java installation, you must upgrade it to Java 1.8

### Eclipse Platform Upgrade

BusinessEvents 5.3.0 Studio has now been upgraded to use Eclipse Mars Release 4.5.1.

### Installation - The TIBCO DataGrid Component

TIBCO ActiveSpaces is now removed from TIBCO BusinessEvents installation package. By default, TIBCO BusinessEvents installation does not proceed unless TIBCO ActiveSpaces is installed in the same *TIBCO\_HOME*. TIBCO ActiveSpaces must be separately downloaded and installed.

If none of your applications use TIBCO DataGrid, you can uncheck the TIBCO DataGrid component during installation to proceed without the TIBCO ActiveSpaces installation. In case your application needs to use TIBCO DataGrid later, you can install TIBCO ActiveSpaces and edit all TRA files to specify *AS\_HOME*.

## TIBCO Enterprise Administrator

You can now use TIBCO Enterprise Administrator console for monitoring and management of TIBCO BusinessEvents applications using TIBCO BusinessEvents Enterprise Administrator Agent.

TIBCO BusinessEvents Enterprise Administrator Agent is now bundled with TIBCO BusinessEvents. However, you must download and install TIBCO Enterprise Administrator separately.

See *TIBCO BusinessEvents Administration Guide* for more details.

## WebStudio

- Added support for Arabic language, including mirroring of the WebStudio UI.
- Added a new property `<ProjectName>.<EnvironmentName>.ws.jmx.hotDeploy.enable` to the Rule Management Server to enable or disable hot-deployment (as part of the `BuildAndDeploy` operation) for the specified project in the specified environment.

## JSON Payload

TIBCO BusinessEvents can now process JSON data using HTTP channels. TIBCO BusinessEvents can now convert the JSON data to events and vice versa.

TIBCO BusinessEvents also bundles an example project *JSON* to demonstrate how to use TIBCO BusinessEvents to send and receive JSON content using the HTTP channel.

## Tester

- The `import` command of the `-tester` operation now has a new option `-a` to append test data to the existing test data with the same name.
- The heading of test data editor is now a hyperlink to the linked resource (concept or event).
- The test data field has a new drop-down to select domain values, if test data field is associated with a domain model.

## Catalog Functions

- Added functions for parsing JSON payload. These functions are available in the **Standard** category under **JSON**.

- Added the following functions to return detail of rule that is being currently executed:
  - `Engine.ruleName`
  - `Engine.currentRule`
  - `Engine.currentRuleActions`
  - `Engine.currentRuleConditions`
  - `Engine.currentRuleIdentifiers`
  - `Engine.currentRuleFunction`
- Added the following ActiveSpaces functions for retrieving and setting metaspace member timeout:
  - `Metaspace.MemberDef.getMemberTimeout()`
  - `Metaspace.MemberDef.setMemberTimeout()`
- Added the `Event.acknowledgeEvent()` function to acknowledge the specified event.
- Added the `Event.assertAdvisoryEvent()` function to assert an advisory event with user defined fields.

See *TIBCO BusinessEvents Function Reference* for more details.

### StreamBase Channel

TIBCO BusinessEvents now provides the StreamBase channel for communicating with TIBCO StreamBase. A BusinessEvents application can now read from (*dequeue*) and write to (*enqueue*) any StreamBase stream using the StreamBase channel.

TIBCO BusinessEvents also bundles an example *FraudDetectionStreamBase* to demonstrate use of the StreamBase channel.

See *TIBCO BusinessEvents Developer's Guide* for more details.

### SSL for JDBC Connection

TIBCO BusinessEvents now support secure sockets layer (SSL) protocol for JDBC connection with database servers.

See *TIBCO BusinessEvents Developer's Guide* for more details.

### Third-Party Library Upgrades

- Apache Tomcat is upgraded to Version 7.0.68 to address security vulnerabilities in Version 7.0.64.
- Apache Commons Collections are upgraded to Version 3.2.2 to address security vulnerabilities in Version 3.2.1.

### Cluster Deployment Descriptor (CDD)

- The cluster deployment descriptor (CDD) file now uses UTF-8 encoding.
- All global variables in CDD now support drag and drop functionality.
- CDD log levels now support global variable.
- Added a new field **Concept TTL** to specify time-to-live for a concept.

### Configuration Properties

- Added the following properties to enable forwarding of unsupported messages to error queue for all destinations:
  - `be.jms.error.endpoint.enable`
  - `be.jms.default.error.queue.name`
  - `be.jms.default.error.topic.name`
- Added the `com.tibco.cep.runtime.threadpool.shutdown.timeout.seconds` property to specify time, the worker thread has to wait to complete before shutdown.

See the *TIBCO BusinessEvents Configuration Guide* for more details.

### Recovery Options for SharedNothing Persistence

A new recovery policy `force_load` is added for the `be.engine.cluster.recovery.distributed.strategy` parameter for the SharedNothing persistence. It forces recovery of the space even if the old shared nothing persister files were renamed.

See *TIBCO BusinessEvents Configuration Guide* for more details.

### Miscellaneous

- The implicit statement caching is now enabled for Oracle JDBC connections.
- Added `@ruleScope` and `@ruleUri` attributes for the AdvisoryEvent event type to report events and concepts that were associated with the rule that triggered it.

## Release 5.2.2

### TIBCO Software, Platforms, and Third Party Software

- Support for Mac OSX 10.11 El Capitan.

- TIBCO BusinessEvents HTTP channel now uses Tomcat 7.0.64 libraries.
- Support for external Java 8 (not shipped with BusinessEvents) for design-time and runtime on Windows, Linux, and Mac OSX platforms.
- Support for Novell SUSE Enterprise Linux Server 12.x.
- Support for TIBCO ActiveMatrix BusinessWorks 6.3.x.
- Support for TIBCO Hawk 5.2:
  - The Hawk channel support TIBCO Hawk 5.2.
  - TIBCO BusinessEvents MM Server support Hawk 5.2 for monitoring and managing BusinessEvents applications.
  - The Hawk Microagent methods for BusinessEvents support Hawk 5.2.
- Support for TIBCO Enterprise Runtime for R 4.0.

### Cache Management

- Added a new property `be.engine.cluster.as.file.sync.interval` to configure the synchronization interval for the shared nothing file of the space. See *TIBCO BusinessEvents Configuration Guide*.
- Added a new property `be.engine.cluster.cacheNaming.isDescriptive` to configure whether to include descriptive information in the shared nothing cache as well as shared nothing file names or not. See *TIBCO BusinessEvents Configuration Guide*.
- Added a new property `be.engine.cluster.quorumCheck.setLenient` to configure the quorum state behavior. See *TIBCO BusinessEvents Configuration Guide*.

### Catalog Functions

Added the following catalog function for JSON:

- `Instance.updateInstanceFromJSON`: updates a concept instance with data obtained from JSON serialized concept data.
- `Event.createEventFromJSON`: creates an event using JSON.

### Global Variable Support

The global variable validation during run time is now available for all channel and shared resource fields.

Added the global variable support for the several fields in channel and shared resources.

## HTTP Channel

The HTTP response codes can now be retrieved by using the `statusCode` property in the response event, when BusinessEvents is acting as a client. The property `statusCode` can be an integer or a string, and is not case-sensitive.

## JMS Channel

Added a new property `be.jms.reconnect.timeout.incremental.enabled` to enable the random and incremental delays between JMS reconnect attempts. See *TIBCO BusinessEvents Configuration Guide*.

## JMX MBeans Operation

- Added a new MBeans method `GetVersionInfo` to return TIBCO BusinessEvents version, the application name and version for the running engine.
- Added a new field `Rule Fired Count` in the MBeans method `GetRules` to display the number of times a specific rule has been executed.

## Query Agent

Added a new property `be.engine.queryAgent.channel.disable` to prevent query agents from connecting to channels. See *TIBCO BusinessEvents Configuration Guide*.

## The studio-tools Utility

Added a new option `-dt exportToExcel` to the `studio-tools` utility for exporting decision tables using command line. See *TIBCO BusinessEvents Decision Manager Users Guide*.

## WebStudio

- Added support for updating the checked out project artifacts from outside of RMS while persistence is active.
- Added a new preference setting **Group Related Artifacts** in WebStudio to either group the business rules and the decision tables under their parent rule templates and virtual rule function, or list the business rules and the decision table individually under the **Group Contents** section.
- Added a new preference setting **Allow Custom Domain Values** in WebStudio and BusinessEvents Studio to toggle the ability to enter custom values for the attributes associated to domain.

- Added a search prompt in the domain drop-down list, to filter domain values, for the decision table in WebStudio and BusinessEvents Studio.
- Added a new column option **Field Settings**, to set the default value and the alias for the decision table column, in WebStudio and BusinessEvents Studio. Also a new preference setting **Show column alias if present** is added to display alias for columns in the decision table. See *TIBCO BusinessEvents WebStudio User's Guide* and *TIBCO BusinessEvents Decision Manager User's Guide*.
- Added support to store the user name who made the changes and who approved the changes in Rule Management Server (RMS).

## Release 5.2.1

### TIBCO Software, Platforms, and Third Party Software

- TIBCO BusinessEvents HTTP channel now uses Tomcat 7.0.62 libraries, which includes several security related updates.
- Added support for Oracle database 12c RAC for SharedAll persistence and DB Concepts.

### TIBCO BusinessEvents DataGrid Libraries Update

You can now successfully run TIBCO ActiveSpaces update in the same *TIBCO\_HOME* as TIBCO BusinessEvents to independently apply ActiveSpaces fixes. No corresponding BusinessEvents release is required to apply those fixes.

### XPath 1.0 to XPath 2.0 Function Migration

Added a new Mapper Function Migration wizard to fix common mapping issues in the project migrating from XPath 1.0 to XPath 2.0. Also, added a command-line option `migrateMapperFunctions` for the `studio-tools` utility to migrate mapper function calls from XPath 1.0 to XPath 2.0. See *TIBCO BusinessEvents Developer's Guide* for more details.

### HTTP Channel

- Added a new property `disableHttpMethods` to disable specific HTTP methods at the channel and destination levels.
- Added a new property `be.engine.http.client.async.responseEventOnError.enabled` to pass an additional parameter (output event) to the errorCallback rulefunction specified in the `HTTP.sendAsynchronousRequest()` function.

## JMS Channel

- Added a new property `be.channel.jms.disallow.dup.clientid` to specify whether to disallow duplicate JMS client IDs while making a JMS connection. If set to `true`, an exception is thrown and the BusinessEvents engine shuts down.
- Added support for JMS sender side sessions pooling per JMS channel in the non-transacted mode. Introduced a new property `be.channel.jms.sender.session.pool.maxsize`, which if set specifies the maximum pool size as well as activates this feature.
- Added global variable support for the **TTL** field of the channel destination.

## Hawk Channel

Added support for the TIBCO Hawk clear alerts. Clear alerts now results in BusinessEvents event notifications.

## WebStudio

- Added validation for duplicate values of domain models.
- Added support for hot deploying multiple projects in a single environment or a single project in multiple environments using the hot deployment properties. See *TIBCO BusinessEvents WebStudio User's Guide* for more details.
- Added support for removing the existing RMS sessions of a user if multiple logins are detected.

## Catalog Functions

- Added `Event.requestEvent` catalog function to make synchronous request-response calls using the JMS channel.
- Added the following catalog functions for Domain Model:
  - `DomainModel.getValues`
  - `DomainModel.getDescription`
  - `DomainModel.getModelMap`
  - `DomainModel.containsValue`
- Added the following catalog functions for retrieving column information from a TERR data frame object:
  - `Analytics.DataFrame.getColumnCount`
  - `Analytics.DataFrame.getColumn`
  - `Analytics.DataFrame.getColumnType`

- Added the following catalog functions for retrieving element information from a TERR data list object:
  - `Analytics.DataList.getElementCount`
  - `Analytics.DataList.getElement`
  - `Analytics.DataList.getElementType`

## Release 5.2.0

### TIBCO Software, Platforms, and Third Party Software

- OS X 10.9.x and OS X 10.10.x
- Java 7, now supported for the design-time components on Mac OS X
- RedHat Enterprise Linux 7
- CentOS Linux 6 and 7
- Oracle Enterprise Linux 6 and 7
- Eclipse platform 4.4.1 for design-time
- Oracle database 12c for SharedAll persistence and DB Concepts
- IBM DB2 10.5 for SharedAll persistence and DB Concepts
- TIBCO ActiveSpaces 2.1.5 for catalog functions and ActiveSpaces channel
- TIBCO ActiveMatrix BusinessWorks 6.2.1
- TIBCO Enterprise Message Service 8.2 for the JMS channel
- TIBCO Hawk 5.1.0
  - The Hawk channel supports TIBCO Hawk 5.1.
  - TIBCO BusinessEvents MM server supports Hawk 5.1 for monitoring and managing BusinessEvents applications.
  - The Hawk Microagent methods for BusinessEvents support Hawk 5.1.

### Security

- Support for Authentication (LDAP and operating system's authentication) in the TIBCO BusinessEvents DataGrid, ActiveSpaces Channel, and ActiveSpaces Metaspace catalog functions.
- Support for data encryption in the TIBCO BusinessEvents DataGrid, ActiveSpaces Channel, and ActiveSpaces Metaspace catalog functions.

- New example under `BE_HOME/examples/standard/FraudDetectionSecure` is provided to demonstrate basic security features in the DataGrid.

### Java Integration

A BusinessEvents project can now hold Java code. It is more convenient for the instance to implement your own custom functions because you no longer need a separate project to hold your Java code.

- The BusinessEvents debugger can seamlessly step into Java code and Rule code.
- Refer to the CustomFunction example under the folder `BE_HOME/examples/standard/CustomFunctionExample` for details.

For further details, you can read the chapter 'Custom Catalog Functions' in *TIBCO BusinessEvents Developer's Guide*.

### Integration with TIBCO FTL

- A new set of catalog functions are provided for subscribing and publishing messages from and to a TIBCO FTL server.
- A new example under `BE_HOME/examples/standard/FTL` is provided to demonstrate use of the FTL Catalog functions API to provide bi-directional communication with the FTL server.

### Integration with TIBCO Enterprise Runtime for R

- A new set of analytics catalog functions are provided for delegating statistical operations to one or more remote TERR engines.
- A new example under `BE_HOME/examples/standard/FraudDetectionTerr` is provided to demonstrate the use of the TIBCO Enterprise Runtime for R engine in fraud detection.

### In-order Message Processing

- The new thread affinity rule function is added to process related events in the same order in which they are received.

For further details, see *TIBCO BusinessEvents Configuration Guide*.

### Custom Logging

- Provided ability to override the default BusinessEvents logging mechanism and set up custom log4j logging.

For further details, see *TIBCO BusinessEvents Configuration Guide*.

## Catalog Functions

Added the following catalog functions in this release:

- JSON data functions:
  - `Instance.createInstanceFromJSON`: creates a new concept instance by deserializing the JSON
  - `Instance.createTransientInstanceFromJSON`: creates a new concept instance by deserializing the JSON data provided. The newly created concept instance is not added to the working memory.
  - `Instance.serializeToJSON`: serializes a concept instance into a JSON string.
- `Instance.getReverseReferences`: returns all the concepts which have concept reference properties.
- `Instance.Reflection.getPropertyArrayValue`: gets the value of a `PropertyArray` at the index, using concept instance and property name.
- `Engine.loadResourceAsByte`: returns the byte representation of the file contents using the relative path of the file.
- `Engine.loadResourceAsString`: returns the contents of the file in a string format using the relative path of the file.
- `Engine.threadName`: gets the current thread name.
- `Engine.ruleFunctionName`: returns the name of the currently executing `RuleFunction` or "" if there is none. For example, if executing `RuleFunction A.B.C`, this function returns "A.B.C".
- `Cluster.DataGrid.EvictCache`: evicts entities, based on the filter, from the cache.

- New ActiveSpaces functions to improve interaction with external metaspaces:
  - `Metaspace.create`
  - `Metaspace.resume`
  - `Metaspace.suspend`
  - `Metaspace.InvocationService.cancelRequest`
  - `Metaspace.MemberDef.getConnectTimeout`
  - `Metaspace.MemberDef.setDomainName`
  - `Metaspace.MemberDef.setIdentityPassword`
  - `Metaspace.MemberDef.setKeyFile`
  - `Metaspace.MemberDef.setPassword`
  - `Metaspace.MemberDef.setUserName`
  - `Metaspace.Subscriber.*`

### Enhancement to Post-RTC Failures

Failures occurring in the post-RTC phase can now be handled better with the following properties:

- `be.engine.txn.action.retrycount`: controls the `retryCount` in the callback function.
- `be.engine.txn.action.sleepTime`: specifies the time period between consecutive attempts.
- `be.engine.txn.database.retrycount`: controls the consecutive attempts in the database transactions.
- `be.engine.txn.database.sleepTime`: specifies the time period between the transactions.

### WebStudio

TIBCO BusinessEvents WebStudio supports the following:

- Renaming of decision table and business rules.
- APIs are provided for the complete WebStudio functionality as follows:
  - for creating artifacts (business rule, decision table, process)
  - for life cycle such as to checkout, commit, or approve

You can access API documentation, using the URL  
<http://<hostname>:<port>/WebStudio/apidoc>

- Complete life cycle of a process in RMS. You can now design the process diagram in WebStudio, add the basic details in the **General** tab, and specify the implementation details in the **Documentation** tab.

- The display model to define, augment, or restrict what gets displayed in UI. Also, you can specify how concept or events properties are displayed in the business rule editor.
- Setting the page size of decision tables from WebStudio.
- Viewing the revision history of an artifact.
- WebStudio dashboard provides a **Close** button to close the project.
- Comparison of the current version with the previous version of the artifact. The updates (addition, deletion, and modification) are highlighted using different colors. This way you to view the update before approving the commit request.
- Hot deployment of changed business rules and decision tables from the WebStudio UI.
- Reverting the updates done to any artifact and restore it to previous version.
- Agnostic locking of artifacts, where you can explicitly lock or unlock an artifact.
- Domain model life cycle in RMS using WebStudio.

### Miscellaneous

- Added support for XPath 2.0 in the mapper.
- With the new field `RemoteListenUrl` in the ActiveSpaces channel, you can configure it as a remote-discovery (or remote proxy). In that case, a remote client can connect to an ActiveSpaces metaspace via the `ASChannel` node.
- While configuring an ActiveSpaces destination or event using the Entry Browser consumption mode, you can now set the number of entries to prefetch for optimum performance using the new **Prefetch** field. The default value is -1 (prefetch all).
- Added a new button in TIBCO BusinessEvents Studio domain model editor to reload all updates from the relative database table column to the domain model in the project.
- Provided HTML support in the rule template view.
- Added the ActiveSpaces remote invocation support for aggregate queries. Aggregate queries can be invoked using the `Metaspace.InvocationService.*` catalog functions.
- The ActiveSpaces channel now supports LockBrowser with a Take operation in Post RTC, if no exception occurs. This avoids duplicate consumption of tuples coming from external ActiveSpaces metaspace.

## Release 5.1.4

### TIBCO Software, Platforms, and Third Party Software

- Support for Microsoft SQLServer 2014 was added.
- The following optional software is supported for use with TIBCO BusinessEvents:
  - TIBCO ActiveMatrix BusinessWorks 5.12
  - TIBCO Enterprise Message Service 8.1 for JMS channel
  - TIBCO ActiveSpaces 2.1.4 for AS channel and catalog functions

### HTTP

- Added the AccessLogValue feature for HTTP, which logs the monitoring details for the request and response communication.
- Added the global variable support for all HTTP channel's advanced configuration properties.
- Added the timeout support for asynchronous HTTP communication.
- Added a new property `httpstatusCode`. Defining the property `httpstatusCode` in the HTTP response event sets the response code in the HTTP response. This property is case insensitive and can be defined as the String or Integer type.
- Added a new catalog function to get the protocol version used by the request from the client.

```
HTTP.Servlet.Request.getProtocol(Object request)
```

### Cluster Membership Datagrid Properties

New options have been added to provide you with greater stability when network issues that could result in an outage, occur. These options apply to cluster members only; remote clients try to reestablish the connection to the proxy in the background.

The following new properties are added in the CDD file:

- `be.engine.cluster.as.member.timeout`  
The `timeout` parameter specifies how many milliseconds DataGrid waits for a member to reconnect, if it loses connection to the metaspace. The default value is 30000 milliseconds.
- `be.engine.cluster.as.suspend.threshold`

The `threshold` parameter specifies the number of host connections that can be lost before the cluster goes into a suspended state. When the cluster is suspended, members cannot leave or join the cluster. If connectivity is lost for a seeder member of a space, doing a read or write for that space might cause a protocol timeout. The default value is -1, which indicates that the cluster is never suspended.

## Recovery Options for Shared Nothing Persistence

The `be.engine.cluster.recovery.distributed.strategy` parameter is now also supported for the shared nothing persistence. There are four new recovery policies added as part of the recovery options. When shared nothing persistence is implemented and recovery is issued, then the policy determines when and how recovery can be made. The default value of the property is `no_data_loss`.

The policy value can be:

- `no_data` - Recover the space without any data. This is same as removing shared nothing persistence files.
- `data_loss` - Recover the space with available data from each seeder. If recovery is done with missing seeders, there is a potential for data loss, because not all members are started, to ensure that all data is recovered. This policy ensures best-effort recovery with the available data.
- `no_data_loss` - (Default) Recover the space only if there are enough members to be able to recover the data before shutdown. If enough seeders are not available to recover the previous state of the cluster, recovery throws an exception.
- `exact_cluster` - Recover the space only if all of the members that were active before the shutdown are available in the cluster. If there are more or less cluster members than before the shutdown, recovery throws an exception.

When the `exact_cluster` policy is used; it is advisable to set 'Cache Agent Quorum' to the total number of cache nodes. This increases the chances of a successful recovery. In such a case, set the `be.engine.cluster.as.minSeeders` property's value as the Cache Agent Quorum value minus the number of backup copies.

Starting with this release, the seeder information (the current seeder list) is stored in the shared nothing persistence files during shutdown. This information is then used during startup or restart to perform recovery. If the cluster is exactly the same during startup (that is, exactly the same members are available and quorum is satisfied), then fast loading of the data is performed.

## Release 5.1.3

- A new catalog function was added for Process Orchestration to set the default Exception handler function URI for a given template:  

```
void Process.Template.setExceptionHandler(Object template,
String handlerFunctionURI)
```
- Support for these two platforms was added: TIBCO Runtime Agent™ version 5.9.0 and TIBCO Administrator™ version 5.9.0
- The WSDL import wizard now generates resources for handling SOAP/JMS bindings. For the complete explanation, see [BE-5552](#) in the Closed Issues section.
- Support for SOAP/JMS in WSDL export was provided, as explained in [BE-20444](#) in the Closed Issues section.
- Property `be.engine.cluster.as.hostaware.hostname` was added.

Host names that are used in identifying members (and therefore naming shared nothing file/folders) are generated from the underlying OS. If you want to assign host names manually instead, for reasons such as hostname/machine changes or testing, you can provide host names in the CDD at each PU level using the property `be.engine.cluster.as.hostaware.hostname`.

## Release 5.1.2

### Security

- Support for Transport-level Security in the TIBCO BusinessEvents DataGrid
- Support for Transport-level security in the AS Channel
- Support for Transport-level security in the MetaSpace Catalog Functions
- Support for Host Aware Replication in the TIBCO BusinessEvents DataGrid

### TIBCO Software, Platforms, and Third Party Software

Support for the following products and product versions is added in this release:

- Tomcat server version 7.0.42 is now supported for use with HTTP channels
- The following optional software is supported for use with TIBCO BusinessEvents:
  - TIBCO Enterprise Message Service 8.0.0
  - TIBCO ActiveSpaces 2.1.2 for AS Channel and Catalog Functions

- IBM WebSphere MQ 7.5
- Microsoft SQLServer 2012 AlwaysOn Availability Groups
- OpenLDAP and Microsoft ActiveDirectory 2012 R2 for authentication to MM and TIBCO BusinessEvents WebStudio
- Internet Explorer 10 and 11 for TIBCO BusinessEvents WebStudio and MM
- Support for the following platforms has been added:
  - Microsoft Windows 8.1, Server 2012 R2
  - Mac OS X Server 10.8.x

### **Miscellaneous**

- TIBCO BusinessEvents Studio Tester now can create test data templates, populate test data files, and run tests through command line.
- Support for secure LDAP connections for TIBCO BusinessEvents WebStudio and MM.
- Aggregate queries catalog functions are now present in TIBCO BusinessEvents Studio by default.
- For Business Rule and Inference tasks, double clicking the resource allows you to open the editor.
- A new operation is added to the studio-tools utility to generate encrypted passwords for password global variables.
- TIBCO BusinessEvents DataGrid log files generated in TIBCO BusinessEvents now allow specifying the name, size and rolling parameters for the log files to rollover, so that they don't fill up the file system.
- Rule Management Server and WebStudio now support connections over SSL.
- It is now possible to integrate RMS and WebStudio with the subversion source control system.

## Release 5.1.1

### TIBCO Software, Platforms, and Third Party Software

- Support for the following platforms has been added:
  - Mac OS X Server 10.6.x and 10.7.x. Java for OS X 2012-006 is required by the design time components for Mac OS X. Java for OS X 2012-006 is NOT provided with TIBCO BusinessEvents.
  - AIX POWER 7.1
- The following optional software is supported for use with TIBCO BusinessEvents:
  - TIBCO Enterprise Message Service 7.0.0
  - TIBCO Administrator 5.8
  - TIBCO Runtime Agent 5.8

The following software is required by the ActiveSpaces channel:

- TIBCO ActiveSpaces 2.0.2
- Support for JRE 7.0 has been added.
- Support for IBM DB2 9.7.x and 10.1.x for the backing store has been added.
- Support for IBM Tivoli Directory Server V6.3.x has been added.
- Support for Oracle Directory Server Enterprise Edition 11g R1 has been added.

### Building an EAR File in Memory

EAR files are now built in memory by default. The compiler does not use the file system during code generation. Instead, the Studio JVM is used to load all the Java classes and resources into memory until the build process is completed.

However, you can choose to use the file-system based compiler to build EAR files as described:

- In TIBCO BusinessEvents Studio, select the menu **Window > Preferences** to open the Preferences dialog. Select **TIBCO BusinessEvents > Code Generation** on the left panel and then set the **Compilation Mode** to **File System**.

- When using the Studio Tools utility to build an EAR file, set the option `-lc` to use the file-system based legacy compiler.



When building an EAR file in memory for a large project, the JVM may run out of PermGenSpace and/or heap space. In such cases, edit the `BE-HOME/studio/eclipse/studio.ini` and `BE-HOME/studio/bin/studio-tools.tra` file to set appropriate values for the JVM settings. By default the heap size is set to `-XX:MaxPermSize=256m`.

### Statistics Enhancements

The property `be.stats.threading.model` now enables you to control the performance of the statistics aggregators. The values are:

- **none** - use the calling thread for doing the aggregation (not recommended, but is useful in debugging).
- **single** - run all the aggregation in a single thread (default mode).
- **multi** - run the aggregations on multiple threads. There are four aggregators: destinations, events, engine, and thread pool. Each aggregator runs on an individual thread resulting in four new threads.

See *TIBCO BusinessEvents Architect's Guide* for detailed specifications for the statistics enhancement.

### Java Collection Functions

Java Collection functions have been added. These functions allows you to work with `java.util.Map` and `java.util.collection` API.

Documentation for these functions is provided in the tooltips which you can access from the Catalog Functions view in TIBCO BusinessEvents Studio.

### ActiveSpaces Functions

ActiveSpaces functions have been added. These functions allows you to work with ActiveSpaces Java API.

Documentation for these functions is provided in the tooltips which you can access from the Catalog Functions view in TIBCO BusinessEvents Studio.

### HTTP Channel Enhancements

The following configuration settings have been added for HTTP channels. They are set in the **Advanced** tab of the HTTP channel resource editor:

- Connector Type – Connector type under Tomcat server. The values are:
  - NIO – Non blocking connector
  - BIO – Blocking connector
 Default is NIO.
- No. of Connector Instances – The property indicates the number of connector instances (of connector type) to be created. The ports will be used incrementally from the base port defined in the associated transport. For example, if the base port defined in the transport is 8080 and total number of instances defined is 3, then tomcat will start three connectors each on port 8080, 8081, and 8082. If any of the port is already occupied, connectors will incrementally move to the next available port. Default value is 1.
- Session Timeout Interval – Maximum inactive time interval post when the current user session will be timed out. Default value is 1800 secs (30 minutes).

### Option to Copy a Set of Items for CDD Collections

Copy option is added in CDD editor for Collections. The option copies complete set of items of CDD collection under new name. The option adds the prefix `copy-` to the old collection name to generate new name ("`copy_<old-name>`").

### Option to Duplicate Decision Table Rows in WebStudio

WebStudio allows you to duplicate a row in the decision table using the **Duplicate Row** button in the decision table editor. A new row is created with the same conditions and actions as the original row, but with a different ID.

### Miscellaneous

- Calendar for the DateTime Field in View based Business Rules.
- Concurrent RTC feature is now available for In Memory Object Management as well.
- Shared nothing persistence is now supported for TIBCO BusinessEvents WebStudio and TIBCO BusinessEvents Views in addition to the None and Backing Store persistence options.

## Release 5.1

### TIBCO Software, Platforms, and Third Party Software

Support for the following products and product versions is added in this release:

- Eclipse 3.7.2
- The following optional software is supported for use with TIBCO BusinessEvents:
  - TIBCO ActiveMatrix BusinessWorks 5.10.0
  - TIBCO Enterprise Message Service 6.3.0.
  - TIBCO Hawk 4.9.0
  - TIBCO Rendezvous 8.4.0
  - TIBCO Runtime Agent 5.7.4

The new channels require the following software:

- **ActiveSpaces channel** - TIBCO ActiveSpaces 2.0.1
- **Hawk channel** - TIBCO Hawk 4.9.0
- Tomcat server version 7 is now supported for use with HTTP channels.
- New platform support for AIX POWER 6.1 (64 bit) and Red Hat Enterprise Linux 6.x (x86 32 bit and 64 bit) has been added.
- Support for Google Chrome has been added. See product readme for further details.
- Support for OpenSSH to enable MM to perform remote start and deployment of TIBCO BusinessEvents engines running on Microsoft Windows.

### Action Rule Function Based Approach for HTTP Requests

Now HTTP channels also provide the option of using action rule functions on the message instead of converting messages to events using a deserializer. In the action rule function based approach, HTTP request parameters and data are retrieved using HTTP functions and processed using rule functions. The **Is Page Flow** parameter of the destination identifies the approach used by the destination for processing HTTP requests.

### Deploy J2EE Web Applications on HTTP Channels using .WAR

You can now deploy one or more web application on a single HTTP channel. The resource path for the web applications is the absolute path of \*.WAR file or a directory containing resources in the directory structure mandated by J2EE web applications standard.

## ActiveSpaces Channel

The ActiveSpaces channel connects TIBCO BusinessEvents to TIBCO ActiveSpaces metaspaces. This enables TIBCO BusinessEvents to monitor the activities on the TIBCO ActiveSpaces metaspaces and receive events from TIBCO ActiveSpaces and convert them into events in TIBCO BusinessEvents. A set of catalog functions to control the type of events in TIBCO ActiveSpaces are also provided.

## Hawk Channel

The Hawk channel connects TIBCO BusinessEvents to TIBCO Hawk domain and can be configured to use either TIBCO Rendezvous or TIBCO Enterprise Message Service transports. The Hawk channel enables TIBCO BusinessEvents to receive events from the Hawk monitor and transform them into events. A set of catalog functions are also provided which are used to control the Hawk microagents through Hawk APIs.

## Shared Resources: ActiveSpaces Connection and Hawk Connection

Shared resources, ActiveSpaces connection and Hawk Connection have been added to connect to a space in TIBCO ActiveSpaces and a TIBCO Hawk domain respectively. These shared resources are used when configuring the respective channels.

## Rule Management Server (RMS)

Earlier RMS was available with TIBCO BusinessEvents Decision Manager add-on only, but from this release RMS is available as a part of TIBCO BusinessEvents Standard Edition. RMS is a lightweight server component for managing the repository of TIBCO BusinessEvents projects. It provides an easy, secure, and scripted deployment lifecycle. RMS is supported on all platforms that support TIBCO BusinessEvents. Users can access RMS remotely from TIBCO BusinessEvents WebStudio.

It does not have to be installed on users' machines. RMS enables business users to check out projects. The necessary project resources are copied to their workspace. When users are finished working with the projects, they submit the decision tables and business rules to RMS for approval. Now RMS also supports 64-bit studio tools. See *TIBCO BusinessEvents Developer's Guide* for details.

## **TIBCO BusinessEvents WebStudio: An Online Tool for Business Users**

TIBCO BusinessEvents WebStudio, an online tool which allows business users to create or manage business rules in a web browser has been added in this release. It allows the business user to define a business rule based on the rule template and rule template view defined by the developer in TIBCO BusinessEvents Studio. Similar to TIBCO BusinessEvents Decision Manager, a decision table in TIBCO BusinessEvents WebStudio is defined using the virtual rule function. Rule templates, rule template views, and virtual function are created in TIBCO BusinessEvents Studio by developers and stored in RMS repositories. See *TIBCO BusinessEvents Developer's Guide* for details.

## **Rule Template, Rule Template View and Business Rules**

A rule template is a specialized type of rule, and a rule template view puts a user-friendly interface around the rule template for use in TIBCO BusinessEvents WebStudio. Rule templates and rule template views enable business users to define executable rules (called *business rules*) within limits defined in the rule template.

## **View Decision Tables**

Decision table provide a graphical way to build complex business rules. Decision tables can now be viewed in TIBCO BusinessEvents WebStudio even if TIBCO BusinessEvents Decision Manager add-on is not installed. Decision table is available in editable mode only if TIBCO BusinessEvents Decision Manager add-on is installed.

## **Backing Store Persistence Options**

The backing store can be configured with one of the following persistence options:

- None: When the cluster does not have a backing store.
- Shared All: Provides persistence using one of the supported DBMS products: Oracle, SQL Server, DB2, or Berkeley DB.
- Shared Nothing: Allows data to be stored at individual node level, without sharing the data across the cluster. Shared nothing persistence can be configured to use synchronous or asynchronous communication.

See *TIBCO BusinessEvents Developer's Guide* for details.

## Load Balancer

Content aware load balancing enables messages with the same routing key to be sent to a specific agent (subscriber) is available in this release. See *TIBCO BusinessEvents Developer's Guide* for details.

## Support for Multiple Cluster and Multiple CDD Deployments in MM Server

The MM Server now supports deployments for one or more clusters and with multiple deployment units pointing to different EAR or CDD files. See *TIBCO BusinessEvents Administration* for details.

## MM Server Supports Monitoring In-Memory Applications

The MM server can now be used to monitor and manage In-Memory applications. Consequently, MM server is now available in TIBCO BusinessEvents Express. See *TIBCO BusinessEvents Administration* for details.

## Ability to Generate JDBC Deployment Scripts From TIBCO BusinessEvents Studio

TIBCO BusinessEvents Studio provides an alternative approach to generate the project-schema-specific SQL scripts using the JDBC Deployment wizard. The wizard also allows you to generate SQL scripts to migrate existing backing store database. See *TIBCO BusinessEvents Developer's Guide* for details.

## Release 5.0.1

### Platform and Third-Party Software

Support for the following software is added in this release:

- JRE usage on different platforms is as follows:
  - JRE 1.6.0.30 on Windows, Linux and Solaris
  - JRE 1.6.0.09 on HP-UX
  - JRE 1.6.0 build pap6460sr9-20101125\_01(SR9) on AIX
- The following optional software is supported for use with TIBCO BusinessEvents:
  - TIBCO Runtime Agent 5.7.3
  - TIBCO ActiveMatrix BusinessWorks 5.9.3
  - TIBCO Administrator 5.7.1

## Release 5.0

### Globalization

TIBCO BusinessEvents and all its add-on products are now G11N certified.

### New Cache Provider

The default cache provider is now TIBCO BusinessEvents DataGrid. When configuring Cache OM, an option is provided to choose a cache provider: TIBCO or Oracle Coherence. The built-in cache provider, TIBCO BusinessEvents DataGrid, is the default.

### Quick Fix Feature

The Quick Fix feature enables you to create concepts, events, and rule functions without leaving the rule editor, as well as to add properties to existing concepts and events. The feature is available when an unknown reference appears in the rule or rule function code.

### Adding External Library and Custom Function Paths

TIBCO BusinessEvents Studio now provides an option to add external libraries or custom functions via the Debug Configurations > ClassPath tab, and the Run Configurations > ClassPath tab, for your convenience.

### Support for Array Types for Rule Functions

Support for array types is now available for rule functions. The form editor pop-up dialog for selecting scope variables now has a check box, isArray. You can specify a variable array in the source editor in the usual way, for example, `int[] myArr`.

### TIBCO BusinessEvents Monitoring and Management Authentication

TIBCO BusinessEvents Monitoring and Management now supports file based and LDAP based authentication. It also supports authorization using two predefined roles: USER and ADMINISTRATOR.

### LDAP Authentication has New Property

For LDAP authentication, a new property, `be.auth.ldap.useRoleDN`, enables you to use non-fully-qualified names for LDAP

### **Write-Behind Strategy Now Supported for Backing Store**

TIBCO BusinessEvents now supports write-behind strategy in JDBC Backing Store. Applications can now be configured as Cache-Aside or Write-behind.

## Changes in Functionality

---

This section lists changes in functionality since the last major release of this product.

### Release 5.6.1

- TIBCO BusinessEvents Enterprise Administrator Agent error message files for supported languages are now provided with TIBCO BusinessEvents installation. You no longer need to download separate language packs. See [TIBCO BusinessEvents Administration](#).
- Cloud platform tools for Docker and Kubernetes are no longer bundled in TIBCO BusinessEvents but are now available on the [TIBCO BusinessEvents GitHub repository \(v1.0\)](#).
- Updated the supported **SSL Server: Ciphers** list in the HTTP channel to list only strong or medium strength ciphers. See [TIBCO BusinessEvents Developer's Guide](#).
- Added the global variable support for the **Max Number** and **Max Size** fields of the Log Configuration CDD setting.

### Release 5.6.0

- JNDI properties now support global variables.
- The HTTP channel now supports for the `PATCH` HTTP method.
- In WSDL export, you can now override namespace and project name.
- In TIBCO BusinessEvents WebStudio, the new UI is now default UI instead of the classic UI.
- Support for the Extended maximum string size (32767 bytes) is added for Oracle 12c database.

### Release 5.5.0

- Removed the `methodType` parameter from the **HTTP.sendAsynchronousRequest()** catalog function. However, any existing project with the **HTTP.sendAsynchronousRequest()** catalog function still continues to work.
- In BusinessEvents Enterprise Administration Agent CLI, added `-v` parameter to the `addmachine` operation for version information.

- The inference agent now connects to all internal spaces as a *leech* by default, instead of as a *seeder*.
- In the Kafka channel, the existing serializer `KafkaStringPayloadSerializer` is now replaced with `KafkaXmlSerializer` to also include event properties for serialization and deserialization. However, any existing Kafka channel with the `KafkaStringPayloadSerializer` serializer still continues to work.
- In DataGrid, child concepts now also inherit the indexes defined in the parent concepts.
- There is a change of behavior in the API, as now you need to explicitly set the default `RuleServiceProvider`.

```
RuleServiceProviderManager.getInstance().setDefaultProvider(provider);
```

To see a sample of this change you can look at the `MissManners` and `RuleFunctionAPI` examples shipped with TIBCO BusinessEvents.

- In the content-aware load balancing, now you can select only the JMS properties and not the JMS headers for the routing key.
- The TIBCO Enterprise Runtime for R catalog functions location has been changed from **CEP Analytics > Analytics** to **CEP Analytics > Analytics > TERR**. However, any existing project with the old TIBCO Enterprise Runtime for R catalog function location still continues to work.

## Release 5.4.1

- In the content-aware load balancing, now the routing key can be formed using multiple event properties.
- Trace level (`* : trace`) logging is now added for dequeued tuples from the `StreamBase` stream.

## Release 5.4.0

There are no changes in functionality in this release.

## Release 5.3.0

### WebStudio

In WebStudio, for a non-persistent setup, you no longer have to regenerate a deployable EAR file after server restart. To achieve this, set the `ws.validateDT.ignoreDeployableStatus` property in CDD to `true`.

## Catalog Functions

- The following ActiveSpaces catalog functions are updated:
  - The `Metaspace.Space.compareAndTakeAll()` and `Metaspace.Space.compareAndPutAll()` functions now return list of tuples instead of `ActiveSpaces.SpaceResultList`.
  - The `AS.query()` function now returns set of tuples limited by the `be.engine.channel.as.querylimit` CDD property (if set).
- The `HTTP.sendRequest()` function now throws exception on timeout.
- The *property* argument in the `Cluster.DataGrid.Index()` function now supports composite indexes.
- ActiveSpaces subscriber catalog functions are now available without setting `-Dcom.tibco.cep.functions.as.metaspace.subscriber=true` in `studio.ini` or in `studio.tra` files.

See *TIBCO BusinessEvents Function Reference* for more details.

## Miscellaneous

- In TIBCO BusinessEvents, the startup functions continues to execute even if an exception is encountered in one of the start up function.

## Release 5.2.2

### Hot Deployment

Hot deployment of the new concept and new concept property is now enabled by default. You no longer need to set `com.tibco.be.hotdeploy.concept=true`.

The default value for `com.tibco.be.hotdeploy.concept` is now set to `true`. Thus now you can hot deploy new concepts and new properties added to a concept. This new behavior is only applicable for shared nothing persistence and no persistence, both modes with one field enabled per property (that is, `be.engine.cluster.as.tuple.explicit` set to `true`).

### WebStudio

- Multiple admin roles and the project specific admin roles can now be specified in RMS using `tibco.clientVar.RMS/Approval/adminRole`. See *TIBCO BusinessEvents WebStudio User's Guide*.
- The projects in the drop-down list for the checkout option in WebStudio are now sorted in the alphabetical order in all platforms.

## Release 5.2.1

### Full Installer

TIBCO BusinessEvents version 5.2.1 now has a full installer, using which you can install TIBCO BusinessEvents in a new *TIBCO\_HOME*. It does not require an existing TIBCO BusinessEvents installation. You could also use the installer to upgrade an existing TIBCO BusinessEvents 5.2.0 installation.

### Java 7 Update 85

This release includes Oracle Java 7 update 85, which disables the SSLv3 protocol and the RC4 based cipher by default for security reasons.

### SSLv3 Protocol

The SSLv3 protocol is already disabled by default for TIBCO BusinessEvents 5.2.0 to address the POODLE vulnerability (see [TIBCO BusinessEvents and POODLE Vulnerability on page 51](#)).

If required, you could still enable the SSLv3 protocol as follows:

1. Enable the SSLv3 Protocol in HTTP Channel
  - a. Open the project in TIBCO BusinessEvents Studio.
  - b. Open the HTTP channel for editing and select the **Advanced** tab.
  - c. Set the value of the **SSL Server: Protocols** field to "SSLv3".

This enables the SSLv3 protocol for the HTTP channel in TIBCO BusinessEvents Studio.
2. Enable the SSLv3 Protocol in Java
  - a. Open the Java security file (*TIBCO\_JAVA\_HOME/lib/security/java.security*) for editing.
  - b. In the Java security file, remove SSLv3 from the `jdk.tls.disabledAlgorithms` property list.

This enables the SSLv3 protocol in Java.

### RC4 Cipher

The SSL handshake from BusinessEvents to a third-party with RC4-based ciphers (such as, LDAP over SSL for WebStudio authentication) do not work now. Upgrade your infrastructures to non-RC4-based ciphers or use a custom Java installation of a prior Java version.

## Recovery Options for Shared Nothing Persistence

The implementation of the following recovery policies for the `be.engine.cluster.recovery.distributed.strategy` parameter for the SharedNothing persistence is now changed:

- `fast_load_only` - Now, the policy does not require to have the same cluster members during startup. If the `no_data_loss` conditions are met and replica entries can be distributed among cluster members in fast-batch mode, the `fast_load_only` policy is used.
- `no_data_loss` - Now, if enough members are available to recover the data but fast-batch-mode replication is not possible, the `no_data_loss` policy is used.

## Catalog Functions

- Updated the following VRF catalog functions:
  - The return types of `invokeVRFImpl` and `invokeVRFImplByName` are now changed to an integer array containing the matched rule IDs. The new signatures are:

```
int[] invokeVRFImpl (Object vrfImpl, Object[] args)
```

```
int[] invokeVRFImplByName (String vrfURI, String implName, Object[] args)
```

- The return types of `invokeVRFImpls` and `invokeAllVRFImpls` are now changed to `Object`, which is a result map containing the matched rules associated to the executed decision table. The new signatures are:

```
Object invokeVRFImpls (Object[] vrfImpls, Object[] args, Object[] returnValues)
```

```
Object invokeAllVRFImpls (String vrfURI, Object[] args)
```

- The engine name is now not required for the TERR function `debugOut()`. The following signatures are changed:
  - `Analytics.DataFrame.debugOut(String engine, Object frame)` changed to `Analytics.DataFrame.debugOut(Object frame)`
  - `Analytics.DataList.debugOut(String engine, Object list)` changed to `Analytics.DataList.debugOut(Object list)`

## Release 5.2.0

### Recovery Options for SharedNothing Persistence

Two new recovery policies are added for the `be.engine.cluster.recovery.distributed.strategy` parameter for the SharedNothing persistence:

- `robust_load_only` - Recover the space only if there are enough members to be able to recover the data before shutdown. If enough seeders are not available to recover the previous state of the cluster, recovery throws an exception. This policy forces the slow recovery of the space.
- `fast_load_only` - The earlier `exact_cluster` option is renamed to `fast_load_only`.



There is no need to update old projects. The `exact_cluster` is still understood and runs as `fast_load_only` from now on.

### Documentation

The documentation of TIBCO BusinessEvents is no longer bundled with the installer. The documentation is available on <https://docs.tibco.com>.

To access the product documentation directly from the docsite, double-click the `TIB_busessevents-standard_5.2.0_docinfo.html` file.

### Miscellaneous

- The term "id" is now a reserved word in BusinessEvents version 5.2.0.  
If the term "id" was used (for instance for a property name "id" in the event artifact) in the project created in the previous version, rename the word "id" manually to some other word in BusinessEvents Studio. Otherwise, the creation of the build EAR using studio-tools might fail or the project may fail at run time.
- The existing `Metaspace.createUserSpace()` function is extended to accept the additional fields to define key fields for distribution or affinity. By specifying that certain key fields are distribution fields, your application can ensure that tuples that have the same value for a particular field or fields, are stored on the same seeder.
- All HTTP-based client side catalog functions were changed. An `HTTPConnectionInfo` object can now be set appropriately for security or proxy, or both. When you use the BusinessEvents Studio's **Import** option, all

the HTTP functions from the existing projects are migrated, and therefore, no manual update need to be performed.

- Updating event properties in RTC is no longer allowed in version 5.2 and can throw `EventPropertyModificationException`. To revert to previous behavior, when migrating from earlier version projects, you can use the following property: `be.engine.event.modification.allowed.during.rtc=true`

You can still update events in the preprocessor.

## Release 5.1.4

### TIBCO BusinessEvents and POODLE Vulnerability

TIBCO BusinessEvents has a number of security transports that utilize secure protocols, such as, SSLv3. The POODLE vulnerability is now addressed in the TIBCO BusinessEvents 5.1.4 release.

The following components are affected in TIBCO BusinessEvents:

- **HTTP/s Channels** To mitigate the POODLE vulnerability, the SSLv3 protocol is disabled by default in the HTTP/s channel in TIBCO BusinessEvents. Import or manually update the existing projects to 5.1.4, and regenerate the EAR files to disable SSLv3.

To perform the manual update:

- Open the project in TIBCO BusinessEvents Studio.
- Open the HTTP channel for editing and select the **Advanced** tab.
- Set the value of the **SSL Server: Protocols** field to "TLSv1,TLSv1.1,TLSv1.2".

This allows all the TLS protocol versions and disables the SSLv3 protocol.

- **TIBCO BusinessEvents WebStudio** The SSLv3 protocol is now disabled for the HTTP/s connections in TIBCO BusinessEvents WebStudio.

### TIBCO BusinessEvents Statistics

Metrics collection is disabled by default, which results in the significant performance improvement.

If the TIBCO BusinessEvents Monitoring and Management component is monitoring the deployment, enable the following statistics properties:

```
<property name="be.stats.enabled" value="true"/>
<property name="com.tibco.be.metric.publish.enable" value="true"/>
```

## Release 5.1.3

- Behavior has changed for some BPMN Catalog Functions:
  - `Process.Template.newJobContext()` signature changed to  
`String newJobContext(Object template, String extId)`
  - `Process.Template.getTemplate()` signature changed to  
`Object getTemplate(String name, int revision)`
  - `Process.Activity.moveTo()` signature changed to  
`int moveTo(Object job, String activityName)`

## Release 5.1.2

- The `sessionConcept` concept is now not required to be in the scope of the callback rule function. Remove session concept from the call back rule function scope from existing projects using page flow destination.
- The default value of the `be.engine.concurrentwm.enable.newImpl` property is now `true` when the concurrent RTC is enabled for the inference agent.
- When there are conflicting schemas defined, the conflicting schemas are ignored and a message is added to the log file. Further, inside of BE Studio, a warning message is added to the conflicting resources stating that there is a conflict.

If conflicting schemas define different structures, there is a potential to see validation errors for those resources which refer to the conflicting or ignored schemas. Previous versions would have allowed the project to build but would have encountered runtime errors.

- The Generate Deployable functionality now works on HP-UX, AIX, and Solaris platforms.
- Global variables are being allowed for some CDD variables.
- Shared JDBC Connection resource has been added to the RMS.ear which can be configured to point to database for persistence if a database backing store is used for RMS Fault-Tolerance.
- The `-p1` option is now added to pass the project library path to the `buildEar` operation of the `studio-tools` utility.
- If the cache uses a database in write-behind mode, a database outage will not cause the BE cluster to cease processing.
- Custom functions can now be used in Mapper transformations.

- Support for the “History” feature, when shared nothing option is used as the persistence option for Backing Store, has been added.
- TIBCO BusinessEvents now has the capability to reference EXTERNAL trusted certificates, thereby avoiding the need to embed the certificates in the project.

## Release 5.1.1

### Startup Method for Inference Agents in a Cluster

The inference agents in a cluster start up serially, where the second one does not start up until the first one is completely started. This behavior is different from the 4.x version of the product where inference agents start concurrently.

### Folder Structure for Generated Classes

The extra artifact type `src` folder is dropped in TIBCO BusinessEvents release 5.1.1. Now, the code generated package, with `.java` and `.class` files, is present directly under base folder. In TIBCO BusinessEvents release 5.1.0 each artifact has its own `src` folder, which in turns contains code generated package with `.java` and `.class` files.

For example, there is a project `TempProject` with Concepts `C1` and Events `E1`.

The folder structure for the generated classes in TIBCO BusinessEvents release 5.1.0 is as follows:

---

```
<base folder>/conceptSrc/be/gen/Concepts/C1.class
<base folder>/conceptSrc/be/gen/Concepts/C1.java
<base folder>/eventSrc/be/gen/Events/E1.class
<base folder>/eventSrc/be/gen/Events/E1.java
```

---

Now, the new folder structure for the generated classes in TIBCO BusinessEvents release 5.1.1 is as follows:

---

```
<base folder>/be/gen/Concepts/C1.class
<base folder>/be/gen/Concepts/C1.java
<base folder>/be/gen/Events/E1.class
<base folder>/be/gen/Events/E1.java
```

---

### **Overwrite Option (-x) for generateClass and generateDTClass Commands**

The overwrite option (-x) of the generateClass and generateDTClass commands now don't provides the true|false values. When the -x option is used, the generateClass and generateDTClass commands overwrites the existing classes at the output location. When the -x option is not used, the generateClass and generateDTClass commands prompts you for overwrite confirmation, if the command finds same classes at the output location.

## **Release 5.1**

### **Deploying from TIBCO Administrator**

If TIBCO Administrator is to be used for deployments, ensure that TIBCO Runtime Agent and TIBCO BusinessEvents are installed in the same *TIBCO\_HOME*. This was not the case in earlier releases.

### **Miscellaneous**

- The performance of the Function Argument Mapper and XPath Formula Builder features has been improved.
- Concepts were stored in the TIBCO BusinessEvents DataGrid cache as BLOBs in earlier releases. Now you can choose to store the concepts as tuples or BLOBs by setting a property in the CDD Cluster tab.
- Certain routine startup actions are now logged at DEBUG level instead of INFO level, to reduce the log data generated at startup. For information on configuring logging levels, see *TIBCO BusinessEvents Developer's Guide*.

## **Release 5.0.1**

The following changed features are included in this release because they address issues in the earlier release.

## Embedded Persister with Shared-All Functionality

This release provides persister functionality. This functionality uses the included TIBCO BusinessEvents DataGrid software as the cache provider. It uses Oracle Berkeley DB Java Edition version 4.1.17 (not bundled with this service pack) as the data store. See *TIBCO BusinessEvents Configuration Guide* for configuration and usage details.



You must obtain a separate license for the Oracle Berkeley DB Java Edition software that is appropriate for your usage if you wish to use the embedded persister functionality.

## Remotely Stopping a PU using MM Tools

You can now remotely stop a PU using mm-tools, using the following operation:

```
-op stop
```

For example:

```
mm-tools --propFile mm-tools.tra -op stop -puc CS -m
100.100.100.101
```

## Using Public/Private Key Authentication with mm-tools

This functionality requires some configuration. See the *TIBCO BusinessEvents Administration* guide for details.

## Creating a single connection with one client ID

By default, TIBCO BusinessEvents creates two connections to a JMS server, with the following client IDs:

```
user client id_queue
```

```
user client id_topic
```

To create a single connection using the clientID specified in the Channel resource properties, or in the JMS Connection shared resource if used, add the following property in the CDD and set as shown for all agents:

```
be.channel.jms.unified=true
```



When the connection is configured using a JMS Connection shared resource you must also do the following. Ensure that the topic and queue connection factories on the JMS Connection shared resource Advanced tab match each other. Also, when using TIBCO Enterprise Message Service, use `GenericConnectionFactory` for both.

## Enabling Studio Tools buildEAR operation on Solaris SPARC Platforms

The `buildEar` operation in the `studio-tools` command line utility now works on Solaris SPARC platforms, with configuration.

## Encoding Parameter Added to File.readFileAsString

The catalog function `File.readFileAsString()` can now read text in languages such as Spanish. It now takes an encoding as an optional input parameter.

## Change in Defaults for Enabling Parallel Operations

In the post-RTC phase, use of parallel operations is generally safe only when locking is used. The parallel operations feature is enabled using this property:

```
Agent.agent name.enableParallelOps=true
```

Before this release, parallel operations was enabled by default when cache aside database write strategy was used. However, many projects that use cache aside do not otherwise require locking.

Now parallel operations is enabled by default only when both cache aside AND concurrent RTC features are used. (Use of concurrent RTC also generally requires locking.)

Parallel operations can also be used with cache aside when concurrent RTC is not used. However, it must be explicitly enabled, and correct locking must also be used as needed.

## Exporting to and Importing Global Variables from Project Libraries

In version 3.0 (but not in 4.0) it was possible to export global variables to a project library and then import the project library for use in another project. It was also possible to override such a global variable with another global variable with the same name, by ordering the imported libraries. Also in version 4.0, when imported variables were used in a project, after EAR file generation, the imported variables were not merged and placed in `tibco.xml` within the EAR file.

Now global variables can be exported into project libraries. In the Build Path > Project Libraries tab, up and down arrows allow you to order the libraries. In the Global Variables view, the Project Source column shows the source project and the Override column shows overrides using arrow icons.

## Release 5.0

### **Buildear Tool Replaced**

The command-line `buildear` tool has been replaced by the Studio Tools utility `buildear` option.

### **Change in Order of Precedence at Runtime**

Now properties specified in the TRA file used at runtime override the same properties specified in the CDD file.

### **Cache Provider Changes**

The Oracle Coherence software is no longer bundled with TIBCO BusinessEvents. You can still use a supported version of Oracle Coherence, for which you have a license that is appropriate for your usage.

### **Cache-based Examples Use TIBCO BusinessEvents DataGrid**

All cache-based examples now use the default cache provider, TIBCO BusinessEvents DataGrid.

### **Validating a Project or Project Resource**

TIBCO BusinessEvents Studio now supports validation for an entire project or for a selected project resource. The validation is enhanced to perform validation at the project, folder, or individual resource level.

Project Analyzer is also enhanced to include shared resources (HTTP Connection, Identity Resource, JDBC Connection, JMS Connection, JMS Application Properties, JNDI Configuration, Rendezvous Transport).

### **Externalized Store for Trusted Certificates**

TIBCO BusinessEvents now supports storing the trusted certificates for SSL in a folder external to the project. You can use a special global variable `BE_GLOBAL_TRUSTED_CA_STORE` to reference this folder.

### **Metadata Properties Now in CDD (Except TIBCO BusinessEvents Data Modeling)**

Metadata properties (also known as extended properties) are no longer supported for entities, except for use with TIBCO BusinessEvents Data Modeling. The other settings that were available using metadata properties are now available in the CDD file in the Cluster tab, in the Domain Objects settings.

### **HTTP Channel Properties Now in HTTP Channel Advanced Tab**

HTTP Channel now has an Advanced Tab to provide advanced configuration settings for the internal server used by the Channel. Those settings were formerly in the CDD file.

### **Entity Properties for Backing Store Now in CDD**

Entity-level backing store configuration was formerly done using entity metadata properties. Now it's configured in the Cluster Deployment Descriptor file.

### **Backing Store Configuration Uses CDD for Special Cases**

The Cluster Deployment Descriptor file is now also used for cases that require project configuration before running the backing store setup utility. You can specify the CDD to use as an argument to the utility.

### **Monitoring and Management JMX Port Configuration**

The JMX port configuration for monitored engines has changed such that only one JMX port is opened, to better handle firewalls.

### **Version of TIBCO Hawk Requirement for TIBCO BusinessEvents Monitoring and Management**

The version of TIBCO Hawk provided with TIBCO Runtime Agent is sufficient to provide machine-level metrics in the TIBCO BusinessEvents Monitoring and Management component. Before the fully licensed version was required.

### **JMS Connectivity**

By default, be-engine connects to all defined channels on startup, including those not mentioned in the Cluster Deployment Descriptor file. This is because such channels can be used as output channels. However this is not always desired.

TIBCO BusinessEvents now provides an option to disable queue or topic connections for specific JMS destinations. Add the following properties to prevent such connections to the queue or topic:

```
be.channel.tibjms.queue.disabled=DestinationProjectPath
```

```
be.channel.tibjms.topic.disabled=DestinationProjectPath
```

### Cache-Related Function Name Changes

The below cache related functions that were formerly preceded by C\_ are no longer preceded by C\_. Their functionality remains the same, and the functions can be used with both the Oracle and TIBCO cache providers. The following table shows the functions that have been renamed.

Coherence Category Name	TIBCO BusinessEvents DataGrid Category Name
C_CacheGetEntityById()	CacheGetEntityById()
C_CacheLoadConceptByExtId()	CacheLoadConceptByExtId()
C_CacheLoadConceptByExtIdByUri()	CacheLoadConceptByExtIdByUri()
C_CacheLoadConceptById()	CacheLoadConceptById()
C_CacheLoadConceptIndexedByExtId()	CacheLoadConceptIndexedByExtId()
C_CacheLoadConceptsByExtId()	CacheLoadConceptsByExtId()
C_CacheLoadEntity()	CacheLoadEntity()
C_CacheLoadEventByExtId()	CacheLoadEventByExtId()
C_CacheLoadEventByExtIdByUri()	CacheLoadEventByExtIdByUri()
C_CacheLoadEventById()	CacheLoadEventById()
C_CacheLoadParent()	CacheLoadParent()
C_CacheName()	CacheName()
C_CacheReevaluate()	CacheReevaluate()
C_ClassName()	ClassName()
C_EnableCacheUpdate()	EnableCacheUpdate()
C_Flush()	Flush()
C_Index()	Index()
C_Lock()	Lock()
C_TransactionProperties()	TransactionProperties()
C_UnLock()	UnLock()

## Deprecated and Removed Features

---

This section describes deprecated features (if any), and lists features, if relevant, that may be useful alternatives to the deprecated features. Any use of a deprecated feature should be discontinued as it may be removed in a future release. You should avoid becoming dependent on deprecated features and become familiar with the suggested alternative features.

This section also lists features that are removed (if any).

### Deprecated Features

#### Release 5.6.1

- TIBCO BusinessEvents Process Orchestration add-on is deprecated in this release.
- TIBCO BusinessEvents Distribution for TIBCO Silver Fabric is deprecated in this release.

#### Release 5.6.0

##### WebStudio

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.

##### TIBCO Software, Platforms, and Third Party Software

For the updated list of supported TIBCO Software, Platforms, and Third Party Software, see the `readme.txt` file provided with TIBCO BusinessEvents.

#### Release 5.5.0

Support for following products is deprecated in this release:

- TIBCO Enterprise Message Service 7.0.x
- TIBCO Hawk 5.0.0
- IBM MQ 7.0
- IBM DB2 9.7.x, 9.8.x

**Release 5.4.1**

No features are deprecated in this release.

**Release 5.4.0**

- TIBCO BusinessEvents Views add-on is deprecated in this release. New projects should make use of new TIBCO Live Datamart integration present in TIBCO BusinessEvents Enterprise Edition.
- Microsoft Windows Server 2008, 2008 R2 are deprecated in this release.
- TIBCO BusinessWorks 5.x is deprecated in this release.

**Release 5.3.0**

- TIBCO BusinessEvents Monitoring and Management is deprecated in this release.
- TIBCO Runtime Agent and TIBCO Administrator are deprecated in this release.

It is recommended to use TIBCO BusinessEvents Enterprise Administrator Agent for monitoring and management.

**Release 5.2.2**

The OS X 10.8 platform is deprecated in this release.

**Release 5.2.1**

Novel SUSE Enterprise Linux Server 10.x is deprecated in this release.

**Release 5.2.0**

- Support for the following TIBCO products have been deprecated in this release:
  - TIBCO Runtime Agent 5.7.x
  - TIBCO Administrator 5.7.x
  - TIBCO Enterprise Message Service 5.x and 6.x for JMS channel
  - TIBCO BusinessWorks 5.9.x and 5.10.x
- Berkeley DB as a SharedAll persistence option has been deprecated in this release.
- Coherence as cache mechanism has been deprecated in this release.

- Oracle Database 10g for SharedAll persistence and DB concepts have been deprecated in this release.
- Microsoft SQL Server 2005 and 2008 for SharedAll persistence and DB concepts have been deprecated in this release.

#### **Release 5.1.4**

No features are deprecated in this release.

#### **Release 5.1.3**

No features are deprecated in this release.

#### **Release 5.1.2**

Following platforms have been deprecated in this release:

- Microsoft Windows 7 32-bit on x86
- Microsoft Windows Server 2008 32-bit on x86
- Novell SUSE Linux Enterprise Server 10.x 32-bit on x86
- Novell SUSE Linux Enterprise Server 11.x 32-bit on x86
- Red Hat Enterprise Linux Server 5.x 32-bit on x86
- Red Hat Enterprise Linux Server 6.x 32-bit on x86 Sun Solaris 10 32-bit on SPARC

#### **Release 5.1.1**

No features are deprecated in this release.

#### **Release 5.1**

- The BUILT-IN server option for HTTP channels is no longer required and has been removed. Tomcat server version 7 is now supported, and it provides the functionality previously provided by the BUILT-IN server type.
- The cache plus memory object management feature (Cache+Memory) is deprecated for applications that have more than one active inference agents (max Active > 1) and use transactional data. Using this feature for multiple

active inference agents may result in inconsistent data and the rule functions may not be triggered. However Cache+Memory mode is available for:

- applications using reference data.
- applications that have one active and n passive inference agents and use transactional data.
- Embedded integration between TIBCO BusinessEvents and TIBCO ActiveMatrix BusinessWorks is deprecated in this release.
- TIBCO Enterprise Message Service version 4.x is deprecated in this release.
- Support for Red Hat Enterprise Linux 4.x is deprecated in this release.

### **Release 5.0.1**

No features are deprecated in this release.

### **Release 5.0**

No features are deprecated in this release.

## **Removed Features**

### **Release 5.6.1**

- TIBCO BusinessEvents Monitoring and Management is removed in this release.
- TIBCO BusinessEvents WebStudio classic UI is removed in this release.

### **Release 5.6.0**

- The cache plus memory object management feature (Cache+Memory) is removed in this release.

### **Release 5.5.0**

- The support for Mac OS X 10.10 platform is removed in this release.
- Support for Kafka 0.10.0.0 is removed in this release.

### **Release 5.4.1**

No features are removed in this release.

### Release 5.4.0

- TIBCO BusinessEvents Express Edition is removed in this release.
- Microsoft SQL Server 2005 and Server 2008 for ShareAll persistence and DB concepts have been removed in this release.
- Oracle Database 10g for ShareAll persistence and DB concepts have been removed in this release.
- The OS X 10.9 platform is removed in this release.
- Support for the following software is removed from this release
  - TIBCO ActiveMatrix BusinessWorks 5.9.x and 5.10.x
  - TIBCO Enterprise Message Service 5.x and 6.x for JMS channel
  - TIBCO Hawk 4.9.0

### Release 5.3.0

- The Novel SUSE Enterprise Linux Server 10.x 64-bit on x86-64 platform is removed in this release.
- The OS X 10.8 platform is removed in this release.
- Support for the following software are removed from this release:
  - TIBCO Runtime Agent 5.8
  - TIBCO Administrator 5.8

### Release 5.2.2

No features are removed in this release.

### Release 5.2.1

No features are removed in this release.

### Release 5.2.0

- TIBCO BusinessWorks Catalog Functions have been removed in this release.
- Support for the following software are removed from this release:
  - TIBCO Enterprise Message Service 4.x
  - IBM WebSphere MQ 6.0

- The following platforms have been removed in this release:
  - Microsoft Windows 7 32-bit on x86
  - Microsoft Windows Server 2008 32-bit on x86
  - Microsoft Vista 32-bit on x86
  - Novell SUSE Linux Enterprise Server 10.x 32-bit on x86
  - Novell SUSE Linux Enterprise Server 11.x 32-bit on x86
  - Red Hat Enterprise Linux Server 5.x 32-bit on x86
  - Red Hat Enterprise Linux 4.x 32-bit and 64-bit
  - Red Hat Enterprise Linux Server 6.x 32-bit on x86
  - Sun Solaris 10 32-bit on SPARC
  - Sun Solaris 11 32-bit on SPARC
  - OS X 10.6.x and OS X 10.7.x

#### **Release 5.1.4**

No features are removed in this release.

#### **Release 5.1.3**

No features are removed in this release.

#### **Release 5.1.2**

Support for following platforms has been removed:

- HP PA-RISC
- Microsoft Windows XP
- Microsoft Windows Server 2003

#### **Release 5.1.1**

No features are removed in this release.

#### **Release 5.1**

- The Berkeley DB OM (persistence) option has been removed from the product. Caching options have replaced the need for it. All mention of Berkeley DB OM has been removed from documentation.

- TIBCO Enterprise Message Service version 4.x is no longer supported.

### **Release 5.0.1**

No features are removed in this release.

### **Release 5.0**

- The legacy Oracle Types backing store implementation is removed in this release. Use the current backing store implementation. See the migration instructions in *TIBCO BusinessEvents Installation* for details.
- Cache Loader Class property is removed from the CDD Cluster tab because the value is set internally based on settings.
- The `base_types.sql` file has been removed. It is no longer needed. It was used with the Oracle Types backing store.
- Use of Solaris 8 and Solaris 9 is no longer supported.

## Migration and Compatibility

---

This section explains how to migrate from a previous release to this release.

For detailed migration advice and procedures, see the *TIBCO BusinessEvents Installation* guide.

### Release 5.6.1

The migration procedure from a previous release is the same as TIBCO BusinessEvents 5.2.0. See [Release 5.2.0](#) for more details.

For compatibility, TIBCO recommends that you recompile the existing custom channel with TIBCO BusinessEvents 5.6.1 API. However, the existing custom channel that is compiled to TIBCO BusinessEvents version 5.4.x API also continues to work.

### Release 5.6.0

The migration procedure from a previous release is the same as TIBCO BusinessEvents 5.2.0. See [Release 5.2.0](#) for more details.

For compatibility, TIBCO recommends that you recompile the existing custom channel with TIBCO BusinessEvents 5.6.0 API. However, the existing custom channel that is compiled to TIBCO BusinessEvents version 5.4.x API also continues to work.

### Release 5.5.0

The migration procedure from a previous release is the same as TIBCO BusinessEvents 5.2.0. See [Release 5.2.0](#) for more details.

For compatibility, TIBCO recommends that you recompile the existing custom channel with TIBCO BusinessEvents 5.5.0 API. However, the existing custom channel that is compiled to TIBCO BusinessEvents version 5.4.x API also continues to work.

### Release 5.4.1

The migration procedure from a previous release is the same as TIBCO BusinessEvents 5.2.0. See [Release 5.2.0](#) for more details.

For compatibility, it is recommended to recompile the existing custom channel with TIBCO BusinessEvents version 5.4.1 API. However, the existing custom channel that is compiled to TIBCO BusinessEvents version 5.4.0 API also continues to work.

## Release 5.4.0

The migration procedure from a previous release is the same as TIBCO BusinessEvents version 5.2.0. See [Release 5.2.0](#) for more details.

## Release 5.3.0

The migration procedure from a previous release is the same as TIBCO BusinessEvents version 5.2.0. See [Release 5.2.0](#) for more details.

## Release 5.2.2

The migration procedure from a previous release is the same as TIBCO BusinessEvents version 5.2.0. See [Release 5.2.0](#) for more details.

## Release 5.2.1

The migration procedure from a previous release is the same as TIBCO BusinessEvents version 5.2.0. See [Release 5.2.0](#) for more details.

## Release 5.2.0

### Migration of Shared Nothing Persistence Artifacts

The SharedNothing folder structure is different due to the Host-aware replication introduced in 5.1.2. A new Studio-tools utility is provided to avoid manual migration. It supports migration of the SharedNothing folder structure as described in [Update the Shared Nothing Folder Structure as per HostAware Naming Convention](#).

Run the following studio-tools command on each machine and for each engine deployed on those machines.

```
studio-tools -sharednothing migrate-files -p <datastore path> -c <cluster name> -n <engine name>
```

For example:

```
studio-tools -sharednothing migrate-files -p C:\data -c cluster1 -n
cache1
```

### Converting the Shared Nothing Persistence Data Files to the New Format

If you are upgrading from TIBCO BusinessEvents version 5.1.0 to version 5.2.0 and have implemented the shared nothing persistence, you must convert any shared nothing persistence data files to the new format.

See [Running the as-convert Utility](#) for information on how to perform the data conversion using the off-line conversion utility, `as-convert`.

If you are upgrading from TIBCO BusinessEvents version 5.1.1, 5.1.2, 5.1.3 or 5.1.4 to version 5.2.0, no conversion is required for any shared nothing persistence data files.

### Update the Shared Nothing Folder Structure as per HostAware Naming Convention

Deployments of TIBCO BusinessEvents version 5.1.0 or version 5.1.1 with shared nothing persistence needs to be migrated to make use of the HostAware replication feature in version 5.2.0.

See [Update the Shared Nothing Folder Structure as per HostAware Naming Convention](#) for manual migration.

However, you could also perform an automated migration, see [Automated Migration](#) for more information.



HostAware replication is the default replication behavior since 5.1.2 onwards.

Unless you turned off HostAware replication in 5.1.2, 5.1.3 or 5.1.4, and you want it on in 5.2.0, there is no need to update the folder structure if you upgrade from 5.1.2, 5.1.3 or 5.1.4 to 5.2.0.

## Project Migration

### Migration Wizard in TIBCO BusinessEvents Studio

The project migration dialog is automatically displayed upon workspace start up, if there are any old projects in the workspace.

### Migrating Projects

Migrating existing projects earlier than BusinessEvents 5.2 can be performed in two ways:

- From BusinessEvents Studio menu click **File >> Import... >> TIBCO BusinessEvents >> Existing TIBCO BusinessEvents Studio Project**
- From studio-tools utility with the `-core importExistingProject` option. See help for details.

With both ways, you have the ability to switch your project to the new XPath 2.0 mapper.

In Studio, the XPath Version drop-down box in the Import dialog is displayed. You can select "1.0" or "2.0".

In studio-tools there is an option `-xp` that can take "1.0" or "2.0" (default is 1.0).

It is recommended to move to XPath 2.0. Nevertheless, with XPath 2.0, there might be some manual mapper updates to perform in your projects.

### Common Mapper Issues

Following are the mapper related issues which are required to fix manually by re-mapping the functions or using the **Mapper Check and Repair** and **Fix Type-Casting Errors** options available in XSLT Mapper.

- [BW6 XPath] Invalid conversion from integer to string. See `Constructor Functions`.

These errors needs to be fixed for all data types.

- [BW6] Invalid comparison between boolean and string.

These errors needs to be fixed for all data types.

- [BW6] No such function.

Some functions structure has been changed in new mapper, re-mapping solves the error. See [Mapper Function Folder Structure on page 70](#) for more details.

- [BW6] XSLT is out of sync with schema component properties.
- Due to the coercion changes between the old and new mapper, it requires re-creating coercion using the **Add/Edit coercion** and **substitution** options available in mapper.

### Mapper Function Folder Structure

Some mapper functions previously present in TIBCO library are now part of the standard library. That is, functions under String, Date-Time, Node, and Boolean functions and so on.

The `tib:tokenize-allow-empty` function is removed from the library and is no longer available. A custom function can be used to accomplish this, if necessary.

The folder structure for the mapper functions is changed as follows:

1. Folder Structure : General
  - Evaluation Context -> Context
  - All Nodes, Attributes, By Index, By Condition -> newly added
  - Trace, Key, Other Axes -> Deprecated
  - root -> Moved to Node Functions,
  - Generate-id -> Moved to Node Functions
2. Folder Structure : String
  - Constant, tokenize-allow-empty, normalize-space -> Deprecated
  - concat-sequence, concat-sequence-format, index-of, last-index-of, left, pad, pad-and-limit, pad-front, render-xml, right, substring-before-last, substring-after-last, trim, -> Moved to TIBCO Functions :
3. Folder Structure : QName
  - expanded-QName -> Deprecated
4. Folder Structure : Logical
  - xor -> Moved to TIBCO Functions
  - or, And-> Moved to Operators, lang
5. Folder Structure : Filter
  - By Index, By Boolean -> Moved to General Information
6. Folder Structure : Set
  - count -> Moved to Aggregate Functions
  - current, last, position -> Moved to Context Function
  - empty, exists -> Moved to sequence functions,
  - name, namespace-uri, local-name, -> Node functions
  - Union -> Operators
7. Folder structure : Comparison -> Moved to Operators and Aggregate
8. Folder Structure : Binary -> Moved to TIBCO Functions
9. Folder Structure : DateTime -> Moved to DateTime functions
  - get-century-from-date, get-century-from-dateTime -> Moved to TIBCO Functions

## 10. Folder Structure -> Condition and Iteration

— If, For -> Moved to General Information



You can use custom functions in place of the deprecated functions.

### Migrating Custom Functions at Design-time

TIBCO BusinessEvents 5.2 uses a new scheme to create custom functions. To view the tooltip at design time in BusinessEvents Studio 5.2, replace `@FunctionJavaDoc` annotations with `@BEFunction` annotation.



No updates are needed at run time for the custom functions created in the previous versions.

## Release 5.1.4

Ensure that all related used software meets the required minimum versions. See [New Features, page 2](#) for details.

Back up projects and rebuild project EAR files after upgrading from the versions 5.1.0, 5.1.1, 5.1.2, or 5.1.3.

### Converting the Shared Nothing Persistence Data Files to the New Format

If you are upgrading from TIBCO BusinessEvents version 5.1.0 to version 5.1.4 and have implemented the shared nothing persistence, then you must convert any shared nothing persistence data files to the new format.

See [Running the as-convert Utility on page 76](#) for information on how to perform the data conversion using the off-line conversion utility `as-convert`.

If you are upgrading from TIBCO BusinessEvents version 5.1.1, 5.1.2, or 5.1.3 to version 5.1.4, then no conversion is required for any shared nothing persistence data files.

### Update the Shared Nothing Folder Structure as per HostAware Naming Convention

Deployments of TIBCO BusinessEvents version 5.1.0 or version 5.1.1 with shared nothing persistence needs to be migrated to make use of the HostAware replication feature in version 5.1.4.

See [Update the Shared Nothing Folder Structure as per HostAware Naming Convention, page 74](#) for manual migration.

However, you could also perform an automated migration, see [Automated Migration on page 73](#) for more information.



HostAware replication is the default replication behavior since 5.1.2 onwards. Unless you turned off HostAware replication in 5.1.2 or 5.1.3, and you want it on in 5.1.4, there is no need to update the folder structure if you upgrade from 5.1.2 or 5.1.3 to 5.1.4.

## Release 5.1.3

Ensure that all related used software meets the required minimum versions. See [New Features, page 2](#) for details.

Back up projects and rebuild project EAR files after upgrading from the versions 5.1.0, 5.1.1 or 5.1.2.

### Converting the Shared Nothing Persistence Data Files to the New Format

If you are upgrading from TIBCO BusinessEvents version 5.1.0 to version 5.1.3 and have implemented the shared nothing persistence, then you must convert any shared nothing persistence data files to the new format.

If you are upgrading from TIBCO BusinessEvents version 5.1.1 or 5.1.2 to version 5.1.3, then no conversion is required for any shared nothing persistence data files.

### Update the Shared Nothing Folder Structure as per HostAware Naming Convention

Deployments of TIBCO BusinessEvents version 5.1.0 or version 5.1.1 with shared nothing persistence needs to be migrated to make use of the HostAware replication feature in version 5.1.3.



HostAware replication is the default replication behavior since 5.1.2 onwards. Unless you turned off HostAware replication in 5.1.2, and you want it on in 5.1.3, there is no need to update the folder structure if you upgrade from 5.1.2 to 5.1.3.



See [Update the Shared Nothing Folder Structure as per HostAware Naming Convention, page 74](#) for manual migration.

### Automated Migration

In case you are not sure about the hostnames, or find it difficult to perform manual migration, you can also use studio-tools application to migrate the folder structure.

Run the following studio-tools command on each server/machine and for each engine deployed on those machines.

```
studio-tools -sharednothing migrate-files -p <datastore path> -c
<cluster name> -n <engine name>
```

For example:

```
studio-tools -sharednothing migrate-files -p c:\data -c
EventManager -n cache01
```

Alternatively, you can turn off HostAware replication by setting the property `be.engine.cluster.as.hostaware.enable` to `false` in the CDD file at the cluster level. In that case the manual migration is not necessary.

## Release 5.1.2

Ensure that all related software used meets required minimum versions. See [New Features on page 2](#) for details.

Backup projects and rebuild project EAR files after upgrading from 5.1.0 or 5.1.1.

### Converting the Shared Nothing Persistence Data Files to the New Format

If you are upgrading from TIBCO BusinessEvents version 5.1.0 to version 5.1.2, and have implemented the shared nothing persistence, then you must convert any shared nothing persistence data files to the new format.

If you are upgrading from TIBCO BusinessEvents version 5.1.1 to version 5.1.2, then no conversion is required for any shared nothing persistence data files.

### Update the Shared Nothing Folder Structure as per HostAware Naming Convention

Deployments of TIBCO BusinessEvents version 5.1.0 or version 5.1.1 with shared nothing persistence needs to be manually migrated to make use of the HostAware replication feature introduced in TIBCO BusinessEvents version 5.1.2.



HostAware replication is the default replication behavior in 5.1.2.

This manual migration allows the data to be recovered after upgrading to 5.1.2. Perform this step on all the machines in the cluster.

The manual step requires updating the shared nothing folder structure to reflect the new cluster member names convention for HostAware. Currently, the shared nothing folder structure consists of only member name in 5.1.0/5.1.1. The complete file path for data-store is:

```
<cluster>/<space>/<member>/<member>_store_<number>.
```

With host aware functionality in 5.1.2, all member names consists of two parts: `<host>` and `<member name>`, as `<host>.<membername>`. The complete file path for data-store should be:

```
<cluster>/<space>/<host>.<member>/<host>.<member>_store_<number>.
```

For example, the shared nothing folder structure could look similar to this:

```
/EventManagement/dist-unlimited-bs-readOnly-EventManagement--be_g  
n_Concepts_Record/cache/cache_store_1378511471
```

Update the path to reflect the HostAware naming convention:

```
/EventManagement/dist-unlimited-bs-readOnly-EventManagement--be_g  
n_Concepts_Record/<host>.cache/<host>.cache_store_1378511471
```

Where, `<host>` needs to be replaced by the hostname. This step needs to be performed for all the members participating in the cluster.



To find hostname, backup your existing files and start the cluster to look for the hostname in `as-admin`.



If hostname is fully qualified, then replace the dot '.' with underscore '\_' in the name. For example, if the hostname is `host1.acme.com`, use `host1_acme_com` as hostname.

Alternatively, you can turn off HostAware replication by setting the property `be.engine.cluster.as.hostaware.enable` to `false` in the CDD file at the cluster level. In that case this manual migration is not necessary.

## Release 5.1.1

Ensure that all related software used meets required minimum versions. See [New Features on page 2](#) for details.

Backup projects and rebuild project EAR files after upgrading from 5.1.0.

## Converting the Shared Nothing Persistence Data Files to the New Format

TIBCO BusinessEvents DataGrid version 2.0.2 provided with TIBCO BusinessEvents version 5.1.1, uses a new format for the shared nothing persistence data files. If you are upgrading from TIBCO BusinessEvents version 5.1.0 to version 5.1.1, and have implemented the shared nothing persistence, then you must convert any shared nothing persistence data files to the new format.

An off-line conversion utility, `as-convert`, is provided to perform this data conversion. The utility automatically detects the release that created the data files and converts them to the release 2.0.2 format.

## Running the as-convert Utility

The `as-convert.exe` file is located in the following directory:

`TIBCO_HOME/as/2.0/bin`



Before you run `as-convert`, stop all the DataGrid agents and seeders. The `as-convert` utility must be run off-line.

Use the following command syntax to run the utility:

```
as-convert -data_store <directory_path> -metaspace <metaspace_name>
-space <space_name> -name <membername> -file <file_name> -compact
-dry_run -verbose -log <log_file> -debug <log_level>
```

Table 3 describes the parameters for `as-convert`.

Table 3 Parameters for `as-convert`

Parameter	Usage
<code>-data_store</code>	<i>directory_path</i> specifies the path to the data store to convert.
<code>-metaspace</code>	To specify conversion of the data files for all of the spaces defined for a metaspace, specify a metaspace name.
<code>-space</code>	To specify conversion of the data files for a specific space within the metaspace, specify the space name with the <code>-space</code> parameter and the metaspace name with the <code>-metaspace</code> parameter.
<code>-name</code>	To specify conversion of the data files for a specific space member, specify the member name with the <code>-name</code> parameter, the space name with the <code>-space</code> parameter, and the metaspace name with the <code>-metaspace</code> parameter.
<code>-file</code>	To specify conversion of a specific file, specify the filename with the <code>-file</code> parameter, the data store path with the <code>-data_store</code> parameter, and the metaspace name with the <code>-metaspace</code> parameter.
<code>-compact</code>	Deletes any white spaces in converted file. White spaces can be added to the data file as a result of processing Takes, which delete data.

Table 3 Parameters for *as-convert*

Parameter	Usage
-dry_run	To run the utility without actually converting the data store and output informational messages, include the -dry_run parameter
-help	Provides a summary of the command syntax for <b>as-convert</b> .
-verbose	Print more output on the console.
-log	Specifies the name of a log file to which to write log information
-debug	Specifies the log level for messages output by the utility.

### Usage Notes

The *as-convert* utility converts shared nothing files from one format (or one version) to another (usually higher). The utility does the following:

- If a file name is provided, processes that file and prints out the result.
- If a space name is provided along with the member name and metaspace name, converts all files that belong to that space.
- If a member name is provided along with the space name, converts files for that member only.
- If a metaspace name is provided, the utility does the above for each space that is part of the metaspace.
- If no argument is provided, processes the entire data store — reads each subdirectory and converts all files.
- The *dry\_run* option will just touch the files and identify the files that are older than the current version. This option is good for estimating how many files need conversion.

### as-dump utility

Another offline utility *as-dump* is also provided with TIBCO BusinessEvents release 5.1.1. The *as-dump* utility reads the content of shared nothing files. The *as-dump.exe* file is located in the following directory:

TIBCO\_HOME/as/2.0/bin

Use the following command syntax to run the utility:

```
as-dump -v <directory_path>
```

The optional parameter `-v` is used to print verbose output on the console. The `directory_path` argument identifies the path of shared nothing files.

## Release 5.1

Ensure that all related software used meets required minimum versions. See [New Features on page 2](#) for details.

Back up projects and rebuild project EAR files after upgrading from 5.0.0

See the *TIBCO BusinessEvents Installation* guide for detailed procedures that need to be performed when migrating from older versions to 5.1.

## Release 5.0.1

Ensure that all related software used meets required minimum versions. See [New Features on page 2](#) for details.

Back up projects and rebuild project EAR files after upgrading from 5.0.0

## Release 5.0

Additional migration steps are introduced in this release due to architectural changes. See the migration chapters in the *TIBCO BusinessEvents Installation* guide. Below are general details.

In all cases, you must regenerate all EAR files after you upgrade.

### Upgrading from Version 4.0.1

You can import 4.0.1 TIBCO BusinessEvents Studio Studio-based projects in TIBCO BusinessEvents Studio 5.0.0 workspace. With a few exceptions, the projects are automatically migrated to 5.0.0 TIBCO BusinessEvents Studio-based projects. Read the migration chapters in *TIBCO BusinessEvents Installation* to understand what manual actions you may have to take.

### Upgrading from Version 4.0.0

If you are upgrading from 4.0.0, first upgrade to 4.0.1 and then migrate to 5.0.0.

### **Upgrading from Version 3.x**

You can import 3.x TIBCO Designer-based projects in TIBCO BusinessEvents Studio. With a few exceptions, the projects are automatically migrated to 5.0.0 Eclipse-based projects. Read the migration chapters in *TIBCO BusinessEvents Installation* to understand what manual actions you may have to take.

### **Upgrading From an Earlier Version**

If your existing installation is a version earlier than 3.0.0 upgrade to the latest 3.x release, and migrate your project. Then upgrade to 5.1.0 and migrate your projects. To upgrade to 3.0, read the migration chapters in *TIBCO BusinessEvents Installation* and follow all instructions carefully.

## Closed Issues

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The table in this section lists the issues that were closed in the named releases.

Closed in Release	Key	Summary
5.6.1	BE-27609	An note was required in the TIBCO BusinessEvents documentation stating that ports for AS_LISTEN_URL and AS_REMOTE_LISTEN_URL cannot be changed.
5.6.1	BE-27582	Setting the <b>Log Configurations &gt; Levels</b> field in the CDD file for generating only module-level logs did not worked.
5.6.1	BE-27555	When SOAPEvents were used and the Internet connection was slow, the TIBCO BusinessEvents inference engine stopped responding when generating XSDs.
5.6.1	BE-27458	In WebStudio, an error occurred during approval when the commit comment contained a space character and the SVN repository was used.
5.6.1	BE-27430	TIBCO BusinessEvents 5.6.x was not certified for TIBCO ActiveSpaces 2.4.1.
5.6.1	BE-27408	In WebStudio UI, errors were reported while working on users and roles on the Management tab when the LDAP authentication was used.
5.6.1	BE-27305	In WebStudio UI, errors were reported while switching from any tab to the Dashboard tab.
5.6.1	BE-27281	In documentation, a note was required stating that TIBCO BusinessWorks functions are not supported in TIBCO BusinessEvents.
5.6.1	BE-27280	The Channel.getSuspendedDestinations catalog function returned incorrect results.
5.6.1	BE-27277	In WebStudio, the <b>Select</b> option was ignored on the combo box when a valid option was selected and saved previously.

Closed in Release	Key	Summary
5.6.1	BE-27267	The attribute with Null value was removed from the Event payload in JSON format.
5.6.1	BE-27264	In WebStudio, the <b>Generate Deployable</b> option did not work when you ran RMS in a Docker container. This issue occurred when the RMS Docker image was built by using software installers.
5.6.1	BE-27263	A null pointer exception occurred when test data was used to test referenced and contained concepts.
5.6.1	BE-27194	In WebStudio, when you updated a business rule that had a condition or action of the boolean type with True or False operator, a validation error was thrown.
5.6.1	BE-27186	In WebStudio new UI, there were rendering issues with domain model values.
5.6.1	BE-27080	The dateTime format did not return the month in three characters, for example, DEC.
5.6.1	BE-26995	In Microsoft Edge and Safari web browsers, the <b>Settings</b> and <b>Management</b> tabs of WebStudio were not correctly displayed.
5.6.1	BE-24832	In <i>TIBCO BusinessEvents Configuration Guide</i> , the <code>be.channel.deactivate</code> property was written incorrectly.
5.6.1	BE-24815	In Solaris Sparc, the TIBCO BusinessEvents Standard installer had not installed add-on installation archives, present in the same folder, during installation.
5.6.1	BE-24535	In the <i>TIBCO BusinessEvents Configuration Guide</i> , a note was required stating that agent keys should be added for inference agents only.
5.6.0	BE-27108	The <code>executeInQuerySession()</code> catalog function did not time out as expected.
5.6.0	BE-27096	If you have created a decision table using your projlib, the decision table did not open in WebStudio.

Closed in Release	Key	Summary
5.6.0	BE-26929	An exception was thrown generating the Kubernetes object when the global variable group was used in the YAML file.
5.6.0	BE-26895	In WebStudio Classic UI, the following issues occurred: <ol style="list-style-type: none"> <li>1. When you update a business rule and save it, then after closing and reopening the business rule, the updated data was lost.</li> <li>2. When you open a business rule from the worklist, the fields in the business rule are editable.</li> </ol>
5.6.0	BE-26874	An exception occurred when you create a new instance with extId of a deleted instance within the same RTC.
5.6.0	BE-26869	An exception occurred when the <code>Cluster.DataGrid.EvictCache</code> function was used in startup rule function and Backing Store Persistence was set to None.
5.6.0	BE-26775	The <code>Log.log</code> and <code>Log.logException</code> catalog functions were not logging messages when the message string contains the percent sign (%).
5.6.0	BE-26774	The server detail was displayed on the Tomcat default error page. This was a security risk.
5.6.0	BE-26746	For TIBCO ActiveSpaces 3.x, the <code>Store.get</code> catalog function was not working when the primary key of TIBCO ActiveSpaces 3.x table had more than one property.
5.6.0	BE-26741	For TIBCO ActiveSpaces 3.x, the <code>Store.get</code> catalog function threw an exception instead of NULL, when there was no data to be returned.
5.6.0	BE-26705	When you update a threading model for a JMS destination from <code>Destination Queue</code> to <code>Caller's Thread</code> , the CDD file still includes the thread count tag, which created multiple JMS connections instead of a single connection.

Closed in Release	Key	Summary
5.6.0	BE-26700	In TIBCO BusinessEvents WebStudio, in some cases, the class files were not generated but the hot deployment was successful by using old class files.
5.6.0	BE-26686	In TIBCO BusinessEvents WebStudio (old UI), the business rule was eligible for commit operation even without any update to it.
5.6.0	BE-26682	TIBCO BusinessEvents WebStudio (new UI) was displaying an <code>ExpressionChangedAfterItHasBeenCheckedError</code> error when you click business rule multiple times.
5.6.0	BE-26677	ECDHE cipher suites were not part of the JRE installed with TIBCO BusinessEvents.
5.6.0	BE-26673	Apache Tomcat libraries in TIBCO BusinessEvents were not updated to the latest version.  Now, Apache Tomcat libraries are upgraded to version 7.0.91.
5.6.0	BE-26671	In TIBCO BusinessEvents Studio, the EAR generation utility was not validating the containment relationship rule. The EAR was generated successfully even if the concept was contained by multiple concepts.
5.6.0	BE-26666	You could not set the timeout for the query execution.  Now, an optional timeout parameter has been added to <code>executeInQuerySession</code> and <code>executeInDynamicQuerySession</code> catalog functions.
5.6.0	BE-26665	The bytes to text payload adaptation did not work even on the same event instance.
5.6.0	BE-26660	In ActiveSpaces 3.x catalog functions, when resource and configuration level errors occurred (such as missing <code>Store.connect</code> call), no meaningful error message was displayed.
5.6.0	BE-26658	TIBCO BusinessEvents was not supported on Microsoft Windows Server 2016.

Closed in Release	Key	Summary
5.6.0	BE-26652	In TIBCO BusinessEvents WebStudio, the BuildAndDeploy option was not compiling the classes when the <code>&lt;ProjectName&gt;.&lt;EnvironmentName&gt;.ws.jmx.hotDeploy.enable</code> property was set to false in the RMS.cdd file.
5.6.0	BE-26640	The numbers in the event JSON payload were written in double quotes, which caused issue during conversion of JSON object from the JSON string.
5.6.0	BE-26638	Engine logs for object table purge could not be suppressed, if required.
5.6.0	BE-26631	The CDD option to disable reverse reference was not working for the shared nothing persistence.
5.6.0	BE-26626	There was no docker support for TIBCO BusinessEvents on the Windows Server 2016 platform.
5.6.0	BE-26607	Memory was not cleaned up after internal TIBCO BusinessEvents DataGrid objects were destroyed.
5.6.0	BE-26604	In WebStudio, an exception was encountered when you checkout a project second time for some added artifacts or for artifacts which were not checked out in the first checkout operation. The error was encountered only if the artifacts to be checked out were other than rule function, decision table, domain model, or rule template.
5.6.0	BE-26603	(mac OS platform only) The scripts in the <code>BE_HOME/docker/frominstall/</code> path did not create a Docker image.  Docker folders are restructured and scripts are optimized now. You can create only Linux container based images on macOS. See <i>TIBCO BusinessEvents Cloud Deployment Guide</i> .
5.6.0	BE-26601	In WebStudio, an exception was encountered while importing the decision table if decision table had the condition <code>"String.contains(template.origin, {0})"</code> .

Closed in Release	Key	Summary
5.6.0	BE-26590	While checking out a project, clicking <b>Confirm</b> did not disable the button. Clicking Confirm multiple times to check out the project resulted in duplicateExtId errors.
5.6.0	BE-26587	For the Destination Queue threading model, TIBCO BusinessEvents was receiving all the messages from the JMS queue when the queue size was not specified.
5.6.0	BE-26584	There was no pooling support for TIBCO ActiveSpaces 3.x connections.  Now, a new API <code>Store.ConnectionInfo.setConnectionPoolSize</code> is added to set the pool size.
5.6.0	BE-26582	In TIBCO BusinessEvents Studio, the "Include Event Type" property was not working properly when set to "Never".
5.6.0	BE-26575	The <code>CacheLoadConceptByExtIdByUri</code> and <code>getByExtIdByUri</code> functions returned the child concept even when the parent concept URI was given.
5.6.0	BE-26567	When processing concurrent HTTP response threads, the value of <code>HttpStatusCode</code> was not set correctly.
5.6.0	BE-26562	Validation on a rule function ( <code>RuleFunctionValidation</code> ) was not successful when a '!' operator was used in front of the call to another rule function.  With this fix, an error is logged for such scenarios (on the <b>Problems</b> tab).
5.6.0	BE-26556	In a decision table, a <code>DateTime</code> value was added to the condition area. The condition did not work when the <code>DateTime</code> Event property was created in XSLT mapper with the <code>tib:parse-dateTime</code> XPath function. However, it did work when the input value was created using the <code>DateTime.parseString()</code> catalog function.

Closed in Release	Key	Summary
5.6.0	BE-26546	More details about JDBC SSL configuration setup were needed in the documentation. See the "Storing Trusted Certificates" sections in the <i>TIBCO BusinessEvents Developer's Guide</i> .
5.6.0	BE-26541	The <code>com.tibco.be.http.root</code> property of <code>RMS.cdd</code> was not documented in the <i>TIBCO BusinessEvents WebStudio User's Guide</i> .
5.6.0	BE-26537	When a project was migrated from TIBCO BusinessEvents version 4.x to 5.4 or from version 4.x to 5.5, opening the decision table displayed some errors.
5.6.0	BE-26532	When TIBCO ActiveSpaces 3.x data grid had multilevel concepts and you queried on individual concept type from the store and tried to build the complete concept, the serialization failed after 2 levels.
5.6.0	BE-26527	When an existing decision table was exported as an Excel file, updated with a few changes, and then re-imported back into TIBCO BusinessEvents Studio, the new changes were lost.
5.6.0	BE-26499	<p>In TIBCO BusinessEvents Enterprise Administration Agent, the timeout value could not be configured.</p> <p>Now, you can configure the timeout value using the new optional parameter <code>-gt</code> while executing any of the python script files.</p> <p>The default value is 30 seconds. The maximum timeout you can set is 120 secs.</p> <p>If you want to set timeout more than 120 secs, you must change the default value of <code>tea.agents.request-timeout</code> property in TIBCO Enterprise Administrator server configuration file (<code>tea.conf</code>).</p>
5.6.0	BE-26471	KafkaJsonSerializer was not inline with the generated xsd schema. It did not accept "payload" as a key in the place of "_payload_".

Closed in Release	Key	Summary
5.6.0	BE-26440	<p>The rule declaration information in the documentation needed an update.</p> <p>The Term property description has been updated under the "Declaration" Section in the "Rule Editor Reference" topic of <i>TIBCO BusinessEvents Developer's Guide</i>.</p>
5.6.0	BE-26431	(Applicable for WebStudio and HTTP server only) Tomcat displayed unnecessary server details such as name and version in the default error message.
5.6.0	BE-26386	on the <b>BusinessEvents Studio &gt; Decision Table &gt; General</b> tab, the values for the Expiration Date, Effective Date, and Priority properties could not be saved.
5.6.0	BE-26360	<p>There was no TIBCO ActiveSpaces 3.x catalog function to exit a query instance.</p> <p>Now, a new catalog function <code>Store.closeQuery</code> is added to exit a query instance.</p>
5.6.0	BE-26358	When the same global variable was defined in a project library and the project imported from <code>projlib</code> , the EAR file creation failed.
5.6.0	BE-26337	The maven build was failing when the <code>.beproject</code> file is not present in the project source.
5.6.0	BE-26332	Database operations were failing for DBConcepts without proper database exception messages.
5.6.0	BE-26331	The references to the contained child concepts were saved incorrectly in the parent concept testdata.
5.6.0	BE-26330	Events were not received from TIBCO Hawk for the Cache object management.
5.6.0	BE-26329	The projects were failing after connecting to the TIBCO Live DataMart Server when history was enabled for the project entities.
5.6.0	BE-26327	The scheduler was unable to schedule events in some cases.

Closed in Release	Key	Summary
5.6.0	BE-26323	<p>In the Python-based CLI for TIBCO BusinessEvents Enterprise Administration Agent, there was no option to bulk-update the global variables based on a configuration file.</p> <p>You can now use the <code>savedeploymentvariables</code> command to update the deployment variables based on the supplied configuration file. The <code>savedeploymentvariables</code> command is provided in the <code>configurationMgmt.py</code> python script file. You can use the newly added <code>UPDATE_DEP_VAR_PERMISSION</code> permission for the <code>savedeploymentvariables</code> command. The syntax of the command is:</p> <pre>savedeploymentvariables -d APPLICATIONNAME [-i [INSTANCES [INSTANCES ...]]] -tp TYPE -p PROPERTYFILE</pre> <p>where,</p> <ul style="list-style-type: none"> <li>-d APPLICATIONNAME: The application name.</li> <li>[-i [INSTANCES [INSTANCES ...]]]: Identifies multiple instance names. For example, <code>-i instance1 ins2 ins3</code>. If no instances are mentioned, the variables are updated for all instances.</li> <li>-tp TYPE: Type of the deployment variable. The values are: GV(global variable), SYS(system), BE(BusinessEvents), and JVM(JVM property).</li> <li>-p PROPERTYFILE: File path of the property file containing deployment variable. One property file can have only one type of deployment variable.</li> </ul>
5.6.0	BE-26296	<p>There was no function to return the scheduled time of an object in the scheduler.</p> <p>Now, you can use the <code>Cluster.getScheduleTime</code> catalog function to retrieve the scheduled time of the scheduled entity using its unique key.</p>
5.6.0	BE-26294	<p>In WebStudio, for the SVN repository, an exception was thrown on approval of the decision table if there were no changes to it.</p>

Closed in Release	Key	Summary
5.6.0	BE-26292	In WebStudio, an exception was thrown when you had open a decision table defined using the concept which inherits another concept from the project library.
5.6.0	BE-26270	When a concept was contained by two or multiple parents, no error was displayed.  With his fix, an error message is displayed on the <b>Problems</b> tab when building an EAR file.
5.6.0	BE-26261	The properties of the concept, that were inherited from the parent concept from the project library, were not displayed after creating the instance using the Instance.createInstance catalog function.
5.6.0	BE-26258	In the Python-based CLI for TIBCO BusinessEvents Enterprise Administration Agent, the timeout value could not be configured.  You can configure the timeout value using the new optional parameter <code>-gt</code> while executing any of the python script files. The default value is 30 seconds. The maximum timeout you can set is 120 secs. If you want to set timeout more than 120 secs, you must change the default value of <code>tea.agents.request-timeout</code> property in TIBCO Enterprise Administrator server configuration file ( <code>tea.conf</code> ).
5.6.0	BE-26246	When inference agents were restarted frequently, the heap usage on cache agents grew unexpectedly over a period of time.
5.6.0	BE-26242	In WebStudio, in the RMS project, the <code>getById</code> method was returning wrong results  when the Id value was more than the maximum integer value ( <code>MAX_VALUE</code> ), that is, 2147483647.
5.6.0	BE-26221	For TIBCO ActiveSpaces 3.x, an exception was encountered on the repetitive calling of the <code>Store.open</code> catalog function.

Closed in Release	Key	Summary
5.6.0	BE-26212	The <code>Event.createEventFromJSON</code> function was failing when the JSON string had array elements.
5.6.0	BE-26208	The connection to custom TIBCO ActiveSpaces 3.x datagrid was not supported.  Now, you can use the <code>Store.ConnectionInfo.setName</code> catalog function to set the custom TIBCO ActiveSpaces 3.x datagrid name for connection. Also, you can use the <code>Store.Metadata.getName</code> catalog function to retrieve the name of the connected TIBCO ActiveSpaces 3.x datagrid.
5.6.0	BE-26207	After migrating projects from TIBCO BusinessEvents version 3.x to version 5.6.0, the ontology functions were not resolved.
5.6.0	BE-26171	In WebStudio, an incorrect error was displayed when <code>stdout</code> was empty and project was loaded from SVN.  Now, the correct error is printed to the log file through <code>stderr</code> .
5.6.0	BE-26170	The inherited event properties were not present in the <code>createEvent</code> mapper when the event was imported from the project library.
5.6.0	BE-26144	When <code>be-engine.tra</code> did not include the path of external JARs and the base image was built using an existing TIBCO BusinessEvents installation, applications such as JMS Channel failed to start.
5.6.0	BE-26139	You could not set the timeout for the query execution.  Now, added the timeout parameter for query execution functions.
5.6.0	BE-26136	Database operations were failing for DBConcepts without proper database exception messages.
5.6.0	BE-26128	The debug feature did not work for breakpoints that were set in the Thread Affinity Rule function.
5.6.0	BE-26127	Events were not received from TIBCO Hawk for the Cache object management.

Closed in Release	Key	Summary
5.6.0	BE-26123	Even after selecting the <b>Evict from Cache on update</b> option in the cluster deployment descriptor (CDD) editor and setting the <code>Agent.&lt;AgentClassName&gt;.cacheTxn.updateCache</code> property to <code>false</code> , the concepts were not evicted after the update.
5.6.0	BE-26112	In the <b>BusinessEvents Studio &gt; Cluster Deployment Descriptor (CDD)</b> editor, the affinity rule functions that were defined as the input for the base event did not appear for the selection.
5.6.0	BE-26110	The <code>tiibpgm</code> (multicast) discovery protocol was used instead of the <code>tcp</code> (unicast) discovery protocol for TIBCO ActiveSpaces cluster.
5.6.0	BE-26098	Maven <code>docker-deploy</code> phase failed when properties in the <code>dockerRegistryConfig</code> file had <code>&lt;key&gt;</code> tags in <code>pom.xml</code> .
5.6.0	BE-26090	The complex queries with OR condition were taking an unusually long time to execute. This issue occurred because, in some cases when OR condition was used, the queries used table scan instead of index scan.
5.6.0	BE-26084	The references to the contained child concepts were saved incorrectly in the parent concept <code>testdata</code> .
5.6.0	BE-26068	In the WebStudio new UI, when the action section of a business rule contained multiple objects, an error occurred while setting fields for second object without setting field of first object. For example, an error occurred when the second field was set first instead of the first field.
5.6.0	BE-26067	On macOS X and Linux platforms, the scripts from the AS3x bundled example did not work for TIBCO ActiveSpaces 3.3.0.
5.6.0	BE-26066	The scheduler was unable to schedule events in some cases.

Closed in Release	Key	Summary
5.6.0	BE-26034	The projects were failing after connecting to the TIBCO Live DataMart Server when history was enabled for the project entities.
5.6.0	BE-25971	Defining custom JARs in the class path of <code>studio-tools.tra</code> did not work in the same way as it did in TIBCO BusinessEvents 5.2.2.
5.6.0	BE-25919	TIBCO BusinessEvents could not handle compressed response from HTTP server.
5.6.0	BE-25766	Apache Tomcat libraries in TIBCO BusinessEvents were outdated.  Now, Apache Tomcat libraries are upgraded to version 7.0.91.
5.6.0	BE-25658	When the option for the BusinessEvents DataGrid component was cleared during the installation, the BusinessEvents Studio could not run any project.
5.6.0	BE-25458	AgentTXN spaces and entries within them were increasing the engine startup time.
5.6.0	BE-25432	The properties of an inherited event were not present in the <code>createEvent</code> mapper when the event was taken from the project library.
5.6.0	BE-25404	The event types for any of the advisory events were not documented.  The "Advisory Event Attributes Reference" section has been updated with these details in the <i>TIBCO BusinessEvents® Developer's Guide</i> .
5.6.0	BE-25263	In TIBCO BusinessEvents studio, importing a project to a new workspace with the " <b>Existing TIBCO BusinessEvents Studio project</b> " option changed the condition column name in the decision table unexpectedly.

Closed in Release	Key	Summary
5.6.0	BE-25199	When <b>Preload Handles</b> was disabled and <b>Preload Entities</b> was enabled, the Inference agent was unable to load an existing concept in a Rule/PreProcessor Rulefunction or in a startup Rulefunction.
5.6.0	BE-25166	You could not load the newly added projects dynamically, without restarting the RMS server.
5.6.0	BE-25102	In BusinessEvents Studio, when you closed and reopened a project that contained a project library, the entries in the project library were duplicated. .
5.6.0	BE-25076	The information for transaction error handler rule function was not accurate in the <i>TIBCO BusinessEvents Developer's Guide</i> .
5.6.0	BE-24823	Sometimes, when you checked out a specific artifact, all artifacts in the system were checked out (instead of only one).  This issue occurred only when you had previously checked out a project and then deleted it.
5.6.0	BE-24732	Creating an EAR file from the command line did not work when all the JAR files were provided with the <code>-cp</code> parameter.
5.6.0	BE-24528	Concepts, with a huge number of properties, were not loaded when the Persistence Option was set to Shared Nothing.
5.6.0	BE-23854	When a TIBCO BusinessEvents entity was created with the name greater than 30 characters, the generated migration scripts were incorrect. It altered the existing table and made backing store lose data.
5.6.0	BE-23401	The decision table could not handle multiple inequality operators ( <code>!=</code> ) with logical ANDs.
5.6.0	BE-23131	In the decision table, adding an equality operator ( <code>=</code> ) sign within the string column incorrectly threw the 'Boolean required' error.

Closed in Release	Key	Summary
5.6.0	BE-22680	When a project or query was run, the long running transactions were observed on the database side.
5.6.0	BE-22264	When one of the inference engine was outside the cluster and caused an <code>INVALID_OBJECT</code> error, the system did not stop processing the messages from queues.
5.6.0	BE-20570	Deleting concepts by using <code>Instance.deleteInstance</code> was not working as expected, and the concept instance could not be retrieved by using <code>getByExtid</code> .
5.5.0	BE-25866	An error was encountered while building EAR when the Java custom function with <code>vararg</code> argument was called.
5.5.0	BE-25856	<code>StackOverflow</code> error was encountered during the BusinessEvents engine startup when the number of JAR files was large.
5.5.0	BE-25821	The <code>SerializerException</code> error was encountered when using <code>KafkaStringPayloadSerializer</code> .
5.5.0	BE-25818	The information to enable the <b>Service Settable</b> option for application deployment in BusinessEvents Enterprise Administration Agent was missing in the <i>TIBCO BusinessEvents Developer's Guide</i> .
5.5.0	BE-25654	An error was encountered while importing an Excel file to a decision table in BusinessEvents Studio.
5.5.0	BE-25626	The Kafka channel did not have a Kafka JSON message serializer.  A new serializer <code>KafkaJsonSerializer</code> was added for the Kafka channel.
5.5.0	BE-25489	TIBCO BusinessEvents was unable to use JSON payloads for some cases.
5.5.0	BE-25480	When an HTTP service was called using <code>HTTP.sendRequest()</code> , although the status code returned was 204, instead of returning a response event, null was returned.

Closed in Release	Key	Summary
5.5.0	BE-25447	An Event parsing error occurred when the <code>XPath.evalAsString()</code> function was invoked from the Thread Affinity rule function.
5.5.0	BE-25411	Breakpoints could not be set when an application was started in BusinessEvents Studio debugger.
5.5.0	BE-25319	On message expiration, the server autorecovery was performed.  Now, on message expiration, only a log statement is printed. Also, the <code>be.channel.jms.session.recover.onAckFailure</code> property has been added to specify if session autorecovery is required in case of the acknowledgment failure of unexpired messages. Set <code>be.channel.jms.session.recover.onAckFailure</code> to <code>false</code> of stop the session recovery. The default value is <code>true</code> .
5.5.0	BE-25286	Concepts were not deleted from both the database tables (object table and base table) when time-to-live (TTL) for the concepts was reached.
5.5.0	BE-25277	The <code>XPath.evalAsString</code> function was not returning the correct value when multiple threads were executing the same XPath expression.
5.5.0	BE-25251	The concept properties of the boolean data type were not returned correctly if they were set to the default value ( <code>false</code> ) in the action column at the time of creating a new record.
5.5.0	BE-25249	An exception was encountered when the <code>generateClass</code> command of the <code>studio-tools</code> utility was used to generate the decision table class files, and the project contained a custom function inside a custom function.
5.5.0	BE-25248	A specific boolean value in an array was not being set using <code>[&lt;index&gt;] &lt;value&gt;</code> .

Closed in Release	Key	Summary
5.5.0	BE-25223	In TIBCO BusinessEvents Studio, for SOAP events if two different schemas have the same namespace, the second schema was not accessible.
5.5.0	BE-25220	In TIBCO BusinessEvents WebStudio on the decision table editor, if you selected the <b>Take Action of one row at most</b> check box for a decision table, the check box was cleared after saving the changes.
5.5.0	BE-25212	In WebStudio, if you added comments to a single property of a decision table, the comments were not visible to the approver.
5.5.0	BE-25207	JMS header parameters from an event were not set in the JMS message that was sent. The affected headers were: <ul style="list-style-type: none"> <li>— JMSDeliveryMode</li> <li>— JMSExpiration</li> <li>— JMSPriority</li> </ul>
5.5.0	BE-25178	In WebStudio, you could not add actions to a business rule if it was saved and committed after adding only the conditions.
5.5.0	BE-25158	In WebStudio, when you perform drag-and-drop operation on a concept property, the concept name was converted to lowercase.
5.5.0	BE-25149	While exporting a decision table using the studio-tools utility, the domain models were not exported along with the decision table.
5.5.0	BE-25123	In BusinessEvents Studio, the New BusinessEvents Unit Test wizard generated an exception when the folder specified in the <b>Parent Folder</b> field did not exist.
5.5.0	BE-25068	In <i>TIBCO BusinessEvents Data Modeling Developer's guide</i> , information for global variables support of the metadata properties was not present.
5.5.0	BE-24856	A memory leak occurred in JMX metric collector when in-memory OM was used.

Closed in Release	Key	Summary
5.5.0	BE-24734	An error occurred during Event creation for XPath 2.0 when the Event was inherited from a SOAPEvent and the referenced envelope.xsd file could not be loaded because of Internet connectivity issues.
5.5.0	BE-24403	When Microsoft SQL Server was used as the Backing Store, characters outside the character set of the installed MS SQL Server were garbled.
5.5.0	BE-24234	When cache was enabled, a warning was issued on starting the application for each enabled input destination.
5.5.0	BE-24231	In BusinessEvents Studio, you could not override specific MQ properties such as JMS_IBM_CHARACTER_Set, JMS_IBM_Encoding, and JMS_IBM_MsgType, while sending out a message.
5.5.0	BE-24149	The rule processing was started before the startup rule functions were finished when the ActiveSpaces® channel consumption mode was set to EventListener.
5.5.0	BE-23911	Composite indexes could not be created from BusinessEvents CDD file.
5.5.0	BE-23796	TIBCO BusinessEvents documentation did not contain information regarding errors occurred while using <code>Event.createEventFromXML</code> .  The information is now available in <i>TIBCO BusinessEvents Java Reference</i> .
5.5.0	BE-22742	Multiple copies of backing store files for "shared nothing" mode were created when one BusinessEvents engine was stopped and was restarted.
5.5.0	BE-22214	Shared resources, events, and mapper wizard were blank when you created them and you had to reopen the editors to rectify the issue.
5.5.0	BE-18341	In BusinessEvents Studio, the key, router, and receiver properties of existing pair configuration were disabled after adding a new pair configuration in CDD.

Closed in Release	Key	Summary
5.4.1	BE-25081	In WebStudio, the <b>Diff with Previous Version</b> option was not working properly when a decision table was updated and approved for two different projects.
5.4.1	BE-25056	The <code>expecter.expectEventSent()</code> method was not working properly as the <code>expecter</code> object was not able to find sent events.
5.4.1	BE-25050	Router failed to re-establish connectivity to the receiver inference agent after a network disruption.
5.4.1	BE-25018	An issue was encountered in hot-deployment when <b>Key</b> was defined in the <b>Processing Unit</b> tab of the project CDD.
5.4.1	BE-24985	An exception was encountered while printing the payload for an Event created with the catalog function <code>Event.createEventfromJSON()</code> .
5.4.1	BE-24965	The catalog function <code>Cluster.DataGrid.EvictCache()</code> was deleting instances from the object table in the database even when the property <code>deleteFromPersistence</code> was set to <code>false</code> .
5.4.1	BE-24941	An exception was encountered while executing the <code>Instance.updateInstanceFromXML()</code> function.
5.4.1	BE-24925	In JMX Mbean, for shared resources. the attribute value of <b>PoolState</b> was not updated correctly when Oracle was used.
5.4.1	BE-24923	In BusinessEvents Studio tester, an error was reported when the inference agent has started in Studio debugger.
5.4.1	BE-24887	The JSON payload that included event properties along with contained concepts, was corrupted.
5.4.1	BE-24868	The JMSReplyTo property mapping was not available in the function <code>Event.routeTo()</code> .
5.4.1	BE-24858	The BusinessEvents backing store tables were locked after starting cache server when the <b>Preload Fetch Size</b> property was set.

Closed in Release	Key	Summary
5.4.1	BE-24852	<p>The JMS channel connection errors at BusinessEvents engine startup were needed to be ignored and the connection to the TIBCO Enterprise Message Service servers should be retried in the background.</p> <p>This was fixed. Now, a new CDD property is added to ignore startup errors for the JMS channels:  <code>be.jms.ignore.startup.error.channels=&lt;comma separated list of JMS channel URIs&gt;</code>. The default value is an empty string to retain existing behavior. Set the value to an asterisk (*) to ignore startup errors for all JMS channels. Also, set the property <code>be.jms.reconnect.timeout=&lt;value in seconds&gt;</code> to retry the connection to Enterprise Message Service servers.</p>
5.4.1	BE-24851	<p>The BusinessEvents application stopped responding when the JMX operation <code>LoadAndDeploy</code> is executed in the startup rule function.</p>
5.4.1	BE-24848	<p>When the Cache is enabled, the Reply Event for a PageFlow request was not sent when RTC has not been processed and, a concept was created and deleted (end of the rule function) in the PageFlow RuleFunction.</p>
5.4.1	BE-24841	<p>An exception was encountered while referring the ExtIDs of database concepts, when two or more primary key combinations in the child table are evaluated to be same. For example, the primary key combination of <code>1000002087:50:38</code> and <code>1000002087:503:8</code> were processed as same extID <code>10000020875038</code>.</p>
5.4.1	BE-24831 BE-24830	<p>The changes committed to the SVN repository were not appearing in the rule management server (RMS).</p>
5.4.1	BE-24827	<p>The database connections settings from the shared database connection resource took precedence over the Min, Initial, and Max settings in CDD, to initialize the connection pool.</p>
5.4.1	BE-24825	<p>In WebStudio, issues were encountered when artifacts, from different projects and with same name and path, were opened.</p>

Closed in Release	Key	Summary
5.4.1	BE-24818	An exception was encountered when an event points to schema definitions in a WSDL file.
5.4.1	BE-24816	In the Unix platform, the <code>InterruptedException</code> was thrown if <code>CNTRL+C</code> was used to stop <code>be-teagent</code> .
5.4.1	BE-24735	<p>Server details were displayed in the response HTTP header in the native HTTP channel.</p> <p>This was fixed. Now, in the TIBCO BusinessEvents Studio, you can override the server details, displayed in the response header, using the new channel property: <b>Server Header</b>, under <b>Channel &gt; Advanced Tab</b>. The default value is "Apache-Coyote/1.1".</p> <p>In the case of existing BusinessEvents projects, import them as existing BusinessEvents project, and the migration process automatically adds this new property to the existing HTTP channel with the default value. If required, you can update the property value after import and build a new EAR.</p>
5.4.1	BE-24695	The response <code>.xsd</code> in the WebStudio API documentation page could not be used for parsing the API call response.
5.4.1	BE-24614	The persistence policy of the worklist space was not updated as per the application CDD.
5.4.1	BE-24583	Repeated elements of the JSON payload were not converted properly.
5.4.1	BE-24467	In WebStudio, the business rule failed to open after the "Sync to Repo" operation.
5.4.1	BE-24147	In WebStudio, after delegation, a user without the approval permission was able to approve the changes.
5.4.1	BE-24058	In WebStudio, no error notification was displayed when two users were updating the same row in a decision table.
5.4.1	BE-23807	In Solaris, the startup time for the deployed BusinessEvents engines in TIBCO Admin was very high.

Closed in Release	Key	Summary
5.4.1	BE-23070	In WebStudio, hot deployment of EAR failed for deployment or undeployment of business rules.
5.4.1	BE-18574	In state transitions, selecting the transition was difficult.
5.4.0	BE-24777	The JSON array of objects was not deserialized into an event.
5.4.0	BE-24737	The <code>JMSReplyTo</code> property mapping was not available in the function <code>Event.routeTo()</code> .
5.4.0	BE-24576	Repeated elements of Event payload were not converted properly.
5.4.0	BE-24571	TIBCO BusinessEvents WebStudio became unresponsive after the importing decision table from the Microsoft Excel file.
5.4.0	BE-24509	<p>For Oracle 12, database connections were not closed properly when the query included a link to a remote database.</p> <p>This was fixed. Now, set the CDD property <code>be.dbconcepts.oracle.pool.v12</code> to <code>true</code>. TIBCO BusinessEvents then uses the new pool for the Oracle 12 driver.</p> <p><b>Note:</b> For JDBC, copy <code>ojdbc7.jar</code> and <code>ucp.jar</code> to the <code>{BE_HOME}/lib/ext/tpcl</code> folder.</p>
5.4.0	BE-24486	When using TIBCO BusinessEvents Enterprise Administrator Agent in Internet Explorer 10 browser, you could not download a usable log file for the application deployment.
5.4.0	BE-24474	<p>The state machine timeouts were not working for large entries and as a result the cache size was growing.</p> <p>This was fixed. Now, set the CDD property <code>be.engine.cluster.as.remote.tuple.limit</code> to control the tuple data, sent from seeders to client, to prevent reaching the ActiveSpaces threshold.</p>

Closed in Release	Key	Summary
5.4.0	BE-24448	An error was encountered when global variable was used for the CDD property <code>be.engine.jmx.connector.port</code> .
5.4.0	BE-24364	In TIBCO BusinessEvents Enterprise Administrator Agent, the <b>Kill</b> button for an instance did not work in certain conditions.
5.4.0	BE-24333	An exception was encountered when an event was loaded at the same time the event TTL was achieved.  This was fixed by adding a new CDD property <code>be.engine.cluster.event.expiry.lock</code> . Set this property to "true" to enable the cluster-level lock on event extID for the event expiry thread.
5.4.0	BE-24329	In TIBCO BusinessEvents Enterprise Administrator Agent, incorrect status was displayed for instances in certain condition.
5.4.0	BE-24312	In TIBCO BusinessEvents Enterprise Administrator Agent, all the permissions, set for a custom user role, were removed after restarting the TIBCO BusinessEvents Enterprise Administrator Agent.
5.4.0	BE-24272	In WebStudio, the connection time out could not be set by using global variables in a secured channel.
5.4.0	BE-24243	Automatic retry count for the HTTP channel could not be configured.  This was fixed. Now, set the retry count in the CDD file using the <code>com.tibco.be.http.client.retryCount</code> property.
5.4.0	BE-24237	In TIBCO BusinessEvents Enterprise Administrator Agent, the <code>UPDATE_DEPLOYMENT_PERMISSION</code> permission for the user role was not working for certain conditions.
5.4.0	BE-24215	The log level was changed from TRACE to ERROR for the JMS Channel.

Closed in Release	Key	Summary
5.4.0	BE-24196	In TIBCO BusinessEvents Enterprise Administrator Agent, hot deployment was not working at the application level.
5.4.0	BE-24183	In WebStudio, the drop-downs in rule template views disappeared after closing and reopening the rule template view.
5.4.0	BE-24182	In WebStudio, the browser stopped responding when a new business rule was open after deployment.
5.4.0	BE-24168	In WebStudio, the business rule failed to open after the "Sync to Repo" operation.
5.4.0	BE-24163	In WebStudio, the validation error was encountered for dateTime fields for the following operators in the When clause: <ul style="list-style-type: none"> <li>greater than</li> <li>smaller than</li> <li>greater than or equal to</li> <li>smaller than or equal to</li> </ul>
5.4.0	BE-24112	The buildEar operation of the studio-tools utility failed when there is space in the project libraries file path and the project libraries contain Java source.
5.4.0	BE-24096	In TIBCO BusinessEvents WebStudio, the domain model list, in the business rule, displayed the value which was removed earlier.
5.4.0	BE-24084	In TIBCO BusinessEvents WebStudio, checking a null value for the DateTime fields, in rule templates, was giving a validation error.

Closed in Release	Key	Summary
5.4.0	BE-24078	<p>There was no option to increase the default allocated TERR engine memory when it is started with TIBCO BusinessEvents engine.</p> <p>Now a new catalog function setJavaOptions is added to update the JVM settings for the TERR engine:</p> <pre>public void setJavaOptions(java.lang.String javaOptions)</pre>
5.4.0	BE-24029	<p>In the TIBCO BusinessEvents Enterprise Administrator Agent, new deployment were not created using the Internet Explorer 10 and 11 browsers.</p>
5.4.0	BE-24027	<p>In certain situations, the Cluster Scheduler stopped responding when a Cache Server crashed.</p> <p>Now a timeout has been introduced so that the Scheduler will not wait forever in this situation and will subsequently fire at the configured scheduled interval. The property to enable this timeout is:</p> <pre>be.engine.cluster.as.invocation.timeout=&lt;timeout in millis&gt;</pre> <p>You can set this property in CDD.</p>
5.4.0	BE-24026	<p>In the TIBCO BusinessEvents Enterprise Administrator Agent, the password type global variables were not properly masked and encrypted.</p>
5.4.0	BE-24024	<p>The state timeout records were not removed from space after the concept deletion when timeouts were configured for the composite state.</p>
5.4.0	BE-24018	<p>In the TIBCO BusinessEvents Enterprise Administrator Agent, when only few global variables were updated, other global variables that were not updated returned to their default values after the server restart.</p>
5.4.0	BE-24014	<p>Custom functions were not loading in TIBCO BusinessEvents Studio for the imported projects.</p>

Closed in Release	Key	Summary
5.4.0	BE-23978	<p>In TIBCO BusinessEvents WebStudio, client-side logging was not working.</p> <p>This was fixed. Now, the client side logging is disabled by default. If needed you can enable the client side logging by changing the following properties to true in the <code>WebStudio.html</code> (<code>WebStudio.war</code>):</p> <ul style="list-style-type: none"> <li><code>webstudio_logging_enabled</code></li> <li><code>webstudio_process_logging_enabled</code></li> </ul>
5.4.0	BE-23977	There was a reference to the removed <code>be-bw.jar</code> present in the <code>be-engine.tra</code> for the <code>tibco.env.STD_EXT_CP</code> property.
5.4.0	BE-23962	The database connections in the pool were closed instead of freeing the connection back to the pool.
5.4.0	BE-23942	The <code>be-jdbcdeploy</code> utility was generating wrong migration scripts.
5.4.0	BE-23935	In the TIBCO BusinessEvents Enterprise Administrator Agent, the SSL authentication was not supported for Python-based command-line interface.
5.4.0	BE-23931	In TIBCO BusinessEvents WebStudio, the build and deploy operation on decision table was not taking the project library location configured in the <code>RMS.cdd</code> file.
5.4.0	BE-23930	In TIBCO BusinessEvents Studio, if you have renamed the concept folder by using the refactor tool, the property paths were incorrectly updated. This invalidated the menus in the decision table.
5.4.0	BE-23913	If you sent RAW payload from TIBCO BusinessEvents to an external server such as TIBCO BusinessWorks, extra bytes were added to the data.
5.4.0	BE-23878	Global variables could not be used in place of key name for the inference agent class in CDD.
5.4.0	BE-23855	Issues were encountered when the <code>@parent</code> function is used in the shared-nothing persistence.

Closed in Release	Key	Summary
5.4.0	BE-23852	The TIBCO BusinessEvents Administration guide did not mention the recommendation to use TIBCO Enterprise Administrator Agent for application deployment.
5.4.0	BE-23843	In the HTTP channel, there was no support for serialization and deserialization of the JSON payload without a wrapper, and internal attribute elements.  If needed you can exclude the wrapper and the internal attribute elements by setting the <code>be.http.json.rootElement.ignore</code> property to true in the CDD.
5.4.0	BE-23836	In WebStudio, the domain value selection did not work properly in the Internet Explorer browser.
5.4.0	BE-23826	In WebStudio, string type values in the Domain Model were incorrectly updated in the decision table.
5.4.0	BE-23822	The <code>XPath.evalAsDouble()</code> function returned not-a-number (NaN) for the elements missing in the payload.
5.4.0	BE-23810	The exported schema files included the <code>schemaLocation</code> tag with the suffix <code>.concept</code> instead of <code>.xsd</code> .
5.4.0	BE-23799	In WebStudio, the worklist items were not displayed when LDAP user's distinguished name (DN) had commas.
5.4.0	BE-23798	The changes committed to the SVN repository were not appearing in the rule management server (RMS).
5.4.0	BE-23797	The value of the <code>Content_Type</code> in the HTTP request was truncated when the default destination was set to <code>SOAPMessageSerializer</code> .
5.4.0	BE-23792	During runtime, the <b>Concept TTL</b> value was taken as -1 even if it was changed in the Domain Objects default section from -1 to a different value.

Closed in Release	Key	Summary
5.4.0	BE-23787	<p>Non-HTTP headers with properties containing hyphen were not supported.</p> <p>This was fixed. Now you must add a prefix "CUSTOM_HEADER_" to non-HTTP headers. Thus, the new header name would be CUSTOM_HEADER_&lt;header_name&gt;.</p>
5.4.0	BE-23784	An exception was thrown when TIBCO BusinessEvents was acting as a client in JMS request/reply and Cache was used.
5.4.0	BE-23776	The updates made to a decision table from TIBCO BusinessEvents Studio were not visible in TIBCO BusinessEvents WebStudio, and vice-versa.
5.4.0	BE-23767	In WebStudio, issues were encountered while changing a boolean field value in business rules.
5.4.0	BE-23766	The TIBCO BusinessEvents Studio stopped responding when clicked on a line with string containing multiple plus '+' characters.
5.4.0	BE-23759	The studio-tools utility had incorrect global variables in comparison to TIBCO BusinessEvents Studio.
5.4.0	BE-23757	In WebStudio, the status of work changed to "Approved" even when there was an authentication problem in SVN.
5.4.0	BE-23752	In WebStudio, some domain model properties for concepts were not displayed in the drop-down in business rules.
5.4.0	BE-23751	The project built through studio-tools utility was successful even when the location of the external JAR used is commented out in the studio-tools.tra file.
5.4.0	BE-23727	In WebStudio, some reference concept properties were missing while creating a business rule, when multiple concept references are of the same type in the rule template.

Closed in Release	Key	Summary
5.4.0	BE-23724	Documentation could not be added for each activity in process with the Arabic language pack.
5.4.0	BE-23718	Author and Documentation could not be saved after clicking the <b>Save</b> button in the process artifact.
5.4.0	BE-23716	Resource leaks were causing issues in BusinessEvents.
5.4.0	BE-23677	In WebStudio, an error was encountered while performing the BuildAndDeploy operation when bindings were empty in the rule template.
5.4.0	BE-23663	There was no option to set a timeout for the database query. This was fixed by adding a new CDD property <code>be.dbconcepts.query.sqltimeout</code> .
5.4.0	BE-23650	The start instance failed when the instance name included Japanese characters.
5.4.0	BE-23616	The TIBCO BusinessEvents Enterprise Administrator Agent failed to restart when an instance was created on Japanese Windows machine.
5.4.0	BE-23572	In TIBCO Enterprise Administrator, new deployment failed when the deployment name includes multi-byte characters.
5.4.0	BE-23571	Garbled characters were present in TIBCO Enterprise Administrator log file for multilingual data.
5.4.0	BE-23570	In TIBCO BusinessEvents Enterprise Administrator Agent, import of deployment failed when the deployment name included multi-byte characters.
5.4.0	BE-23481	The detailed information was not returned when there was error with parameters in the studio-tools command <code>-dt exportToExcel</code> .
5.4.0	BE-23434	There was no documentation regarding the <code>sendEvent()</code> function behavior for an ActiveSpaces destination.

Closed in Release	Key	Summary
5.4.0	BE-23349	In TIBCO BusinessEvents studio, an error was encountered while importing a project library.
5.4.0	BE-23003	An exception was thrown when the property <code>tibco.be.schema.ref.expand</code> was enabled and the referenced concept pointed to itself.
5.4.0	BE-22480	In TIBCO BusinessEvents Studio, a null pointer exception was thrown when the database was disconnected before calling <code>Cluster.scheduleEvent()</code> .
5.4.0	BE-22208	In WebStudio, if you have closed the browser, you could not login again till the session time out.
5.4.0	BE-21537	In TIBCO BusinessEvents Function Reference documentation, the detailed usage was not present for few catalog functions.
5.4.0	BE-21502	The catalog function was not available to send synchronized SOAP messages for JMS requests.
5.4.0	BE-21447	In TIBCO BusinessEvents Function Reference documentation, the catalog function <code>Instance.Reflection.getProperty()</code> had the wrong return type.
5.4.0	BE-21301	The <code>Log.getLogger()</code> function could not be used in the rule function when validity is <code>CONDITION</code> or <code>QUERY</code> .
5.4.0	BE-21270	In TIBCO BusinessEvents Studio tester, the <code>RuleInput</code> is not working properly.
5.4.0	BE-21051	Documentation for TIBCO BusinessEvents 5.1.2 and 5.1.3 contained incorrect references to 5.2 release.
5.4.0	BE-20973	In TIBCO BusinessEvents Function Reference documentation, description of the following catalog functions was not updated: <ul style="list-style-type: none"> <li><code>Instance.PropertyArray.clear()</code></li> <li><code>Instance.PropertyArray.removeContainedConcept()</code></li> <li><code>Instance.PropertyArray.removeConceptReference()</code></li> </ul>

Closed in Release	Key	Summary
5.4.0	BE-20825	In WebStudio, the <b>Show Coverage</b> option did not work as expected for non-range (single) values.
5.4.0	BE-20314	In WebStudio, you could not set path for external JAR files required for building the project.
5.4.0	BE-19964	The documentation and tooltip related to Instance.newTransientInstance() catalog function was incorrect.
5.4.0	BE-18713	In studio-tools utility, a project EAR could not be built using the external JAR file.
5.4.0	BE-18222	The install_studio_repo.sh file for Linux had spelling mistakes in the script.
5.4.0	BE-18217	In WebStudio, the <b>Generate Deployable</b> option was not working if the project had custom functions.
5.4.0	BE-18212	Support was required for usage of Alter Space to handle ontology object change in the shared nothing persistence mode.
5.4.0	BE-17941	In WebStudio, the drop-down list showed incorrect values when more than one value was selected for a cell in the decision table.
5.4.0	BE-17939	In WebStudio, the values in the ID column were sorted as strings instead of numbers.
5.4.0	BE-17498	A validation error occurs if the expression field have the string value in the bindings tab of rule template and the string value was not enclosed in quotes ("").
5.4.0	BE-17486	TIBCO BusinessEvents Process Orchestration installation had caused TIBCO BusinessEvents Studio to hide errors which otherwise would have been reported.
5.4.0	BE-17452	In TIBCO BusinessEvents Studio, you could not drag a global variable from the Global Variable View to a text field in certain resources.

Closed in Release	Key	Summary
5.4.0	BE-16754	The not equal to (!=) operator, when used with domain model in the decision table, threw a validation error.
5.3.0	BE-23765	Using the abortRtc() function was causing an infinite loop of message redelivery.  This was fixed by adding a new function Event.acknowledgeEvent(). The Event.acknowledgeEvent() function can be called before abortRtc() to acknowledge the specified event.
5.3.0	BE-23709	In WebStudio, the domain model properties for the concept properties were not displayed in the drop-down in business rules.
5.3.0	BE-23708	In WebStudio, some reference concept properties were missing while creating business rule, when multiple concept references are of the same type in rule template.
5.3.0	BE-23577	In TIBCO BusinessEvents WebStudio, NullPointerException was encountered on validation of rule template instance when rule template view has only part bindings of rule template.
5.3.0	BE-23568	ExtID of the first object of a contained concept was not generated for the createInstanceFromXML method.
5.3.0	BE-23547	A breakpoint could not be set at certain places in the rule editor in TIBCO BusinessEvents Studio.
5.3.0	BE-23524	Extra quotes were appearing in the rule template instance for the String type domain model (with numeric values and text with spaces).
5.3.0	BE-23522	UNIX-style line feeds were not supported for the createEventFromXML method.
5.3.0	BE-23521	TIBCO BusinessEvents Studio stopped working when the editor was closed and reopened multiple times.
5.3.0	BE-23508	The MessageNotWritableException exception was encountered while using the routeTo() method to route an inbound JMS message with override properties.

Closed in Release	Key	Summary
5.3.0	BE-23502	Namespaces were not copied to the payload nodes during the XSLT mapper calls.
5.3.0	BE-23499	An exception was encountered for schedulers of inherited events when their base event was changed.
5.3.0	BE-23494	Documentation, for defining unique key for each agent when Cache OM is used, was not present in the <i>TIBCO BusinessEvents Architect's Guide</i> .  This is now documented under the topic <b>Multi-Agent Features and Constraints</b> in the <i>TIBCO BusinessEvents Architect's Guide</i> .
5.3.0	BE-23471	User IDs with period (.) did not work for login in TIBCO BusinessEvents a WebStudio.
5.3.0	BE-23443	A usability issue was encountered with the mapper utility when the mapper contained very large trees.
5.3.0	BE-23420	An exception was displayed on hovering the mouse pointer over an XSLT string in a rule when the substitution element was used within the project libraries.
5.3.0	BE-23416	In TIBCO BusinessEvents Studio tester, an exception was encountered while substituting an element in Rule Input.
5.3.0	BE-23395	No mapping rules were executed and no exceptions were thrown after an XSLT mapping exception was encountered using the mapper migration utility.
5.3.0	BE-23394	An XPath parsing error was thrown when the <code>XPath.evalAsBoolean()</code> function was used with XPath 2.0.
5.3.0	BE-23385	Documentation for specifying an external library location using the build path variable was not present.  This is now documented in a new topic <b>Specifying an External Library Location Using Build Path Variable</b> in the <i>TIBCO BusinessEvents Developer's Guide</i> .

Closed in Release	Key	Summary
5.3.0	BE-23381	A <code>NullPointerException</code> was encountered while serializing concept to JSON.
5.3.0	BE-23380	The catalog function <code>Instance.PropertyAtom.getContainedConcept()</code> returned a null value for the transient concepts.
5.3.0	BE-23360	Extra entries for the <code>SpaceMap.sizeFromStats()</code> function were printed in logs, during JMX monitoring.
5.3.0	BE-23353	<code>NullPointerException</code> was encountered while invoking REST API using the JSON format in TIBCO BusinessEvents WebStudio.
5.3.0	BE-23352	<code>NullPointerException</code> was encountered while calling the <code>Instance.updateInstance()</code> function, when two agent instances were added to a single processing unit.
5.3.0	BE-23343	The EAR file could not be generated from TIBCO BusinessEvents Studio when a shared location is used as the file location.
5.3.0	BE-23330	In BusinessEvents Studio, the code generation dialog did not have an entry for Java 1.8.
5.3.0	BE-23325	An exception was thrown at runtime when the JDBC shared resource was used from the project libraries.
5.3.0	BE-23319	There was no option to disable deployment as a part of the Build&Deploy operation in BusinessEvents WebStudio.
5.3.0	BE-23290	An exception was encountered when a project has a certain complex concept structure with multiple levels.
5.3.0	BE-23289	A <code>RuntimeException</code> was encountered when a concept with large string value was loaded from backing store with the <code>explicit-tuple</code> field set to <code>false</code> .
5.3.0	BE-23237	An error was encountered when using project libraries containing XSLT mapper.

Closed in Release	Key	Summary
5.3.0	BE-23236	Certain query code resulted in errors in BusinessEvents Studio, while no errors were returned from the command line.
5.3.0	BE-23235	An error was encountered while building an EAR in WebStudio due to incorrect storage of date field in the decision table.
5.3.0	BE-23217	Event payload was null when it was asserted through the Rule Input in BusinessEvents Studio.
5.3.0	BE-23200	While sending raw payload from BusinessEvents to the external server, BusinessEvents was performing object serialization and also added extra bytes to the data.
5.3.0	BE-23199	When defining coercion for a specific field, after closing and reopening the XPath window, the coercion was lost and an error was reported for the XPath.evalAsString() function.
5.3.0	BE-23198	Some change in behavior was encountered for the evalAsDateTime() and evalAsString() functions with XPath 2.0, for the non-existent DateTime object and empty string respectively.
5.3.0	BE-23197	<p>All active worker threads were incomplete when the inference agent was shutdown.</p> <p>This was fixed by adding two new properties:</p> <ul style="list-style-type: none"> <li><code>com.tibco.cep.runtime.threadpool.shutdown.time out.seconds</code> - Specifies time (in seconds) to wait for the worker thread to complete before shutdown.</li> <li><code>be.engine.cluster.as.shutdown.wait.millis</code> - Specifies time (in milliseconds) to wait for the ActiveSpaces for the worker thread to complete before shutdown.</li> </ul>

Closed in Release	Key	Summary
5.3.0	BE-23193	An exception was encountered when the <code>CreateInstanceFromXML</code> and <code>CreateTransientInstanceFromXML</code> catalog functions were used to create a concept instance using the serialized XML string which contained inheritance relationship.
5.3.0	BE-23191	The deployment failed in TIBCO Administrator when the project contained the global variable of the password type.
5.3.0	BE-23188	An exception was encountered while exporting project libraries.
5.3.0	BE-23164	Documentation for the <b>Sync to Repository</b> option was not present in the <i>TIBCO BusinessEvents WebStudio User's Guide</i> .  This is now documented in a new topic <b>Synchronizing Artifacts Changes into RMS</b> in the <i>TIBCO BusinessEvents WebStudio User's Guide</i> .
5.3.0	BE-23163	The folder permissions were not working for decision tables in WebStudio.
5.3.0	BE-23155	An error was encountered while using the HTTP connection object from a project library.
5.3.0	BE-23148	The SOAP event was sent as a byte message over JMS.
5.3.0	BE-23147	Issues were encountered for the mapper migration utility when coercions referred the schemas within the project libraries.
5.3.0	BE-23141	The <code>AS.query()</code> function was returning the set of tuples limited by the limit set as the default space instead of the limit set in the <code>be.engine.channel.as.querylimit</code> property.
5.3.0	BE-23132	BusinessEvents sometimes did not reconnect to the database when no processing was done for a long time period.
5.3.0	BE-23105	The <code>XPath.evalAsBoolean()</code> function always returned the value <code>true</code> with XPath 2.0.

Closed in Release	Key	Summary
5.3.0	BE-23104	Issues were encountered due to the duplicate resources creation for the project, after the shared project library was updated.
5.3.0	BE-23102	When payload was greater than 2MB and Header included Transfer-Encoding: chunked, the HTTP channel threw an error.
5.3.0	BE-22912	The password fields for ActiveSpaces connection were not saved as encrypted values in the file system.
5.3.0	BE-22770	Errors were encountered when exporting project libraries with serial references.
5.3.0	BE-22683	When downgrading ActiveSpaces using a prior release ActiveSpaces installer in the same <i>TIBCO_HOME</i> as BusinessEvents 5.2.1 installation, the process failed with a UI error. The subsequent uses of installer then incorrectly displayed prior release version of ActiveSpaces that incorrect.
5.3.0	BE-22511	Documentation under the <b>Using Priority and Rank to Control Order of Rule Execution</b> section in <i>TIBCO BusinessEvents Developer's Guide</i> was not correct.
5.3.0	BE-22500	Documentation under the <b>Using Multiple TIBCO Homes</b> topic in <i>TIBCO BusinessEvents Installation</i> guide was not clear.
5.3.0	BE-22482	Documentation for the <b>Include Event Type</b> field of the destination resource was not present in the <i>TIBCO BusinessEvents Developer's Guide</i> .
5.3.0	BE-22135	Documentation for agent priority was not correct in <i>TIBCO BusinessEvents Developer's Guide</i> .
5.3.0	BE-21855	The "org.eclipse.swt.SWTException: Widget is disposed" error was thrown, if you restart TIBCO BusinessEvents Studio after importing some projects.
5.3.0	BE-21842	A NullPointerException was thrown while opening the XSD file in TIBCO BusinessEvents Studio.

Closed in Release	Key	Summary
5.3.0	BE-21607	The following error was thrown while closing or reopening the concept, event, project view, dependency diagram, sequence diagram, or state machine editor:  "Could not retrieve EHandlerService or ICommandService from context evaluation context .....".
5.3.0	BE-18149	The hyphen (-) character in the project name was not supported for the renaming or refactoring operation in BusinessEvents Studio.
5.3.0	BE-17957	Signature of <code>Log.log()</code> function was not correct.
5.2.2	BE-23010	Using JConsole or JMX to view the size of large caches was degrading the performance of other ActiveSpaces cache operations.
5.2.2	BE-22982	On migration of a project from BusinessEvents version 5.1.3 to version 5.2 and on switching to XPath 2.0, some mapper issues were encountered with mapper while defining coercions.
5.2.2	BE-22955	The <code>routeTo</code> function was broken in version in 5.2.1 where the route destination was a temporary queue.
5.2.2	BE-22952	The state machine was not started, when the flag <b>Auto Start State Model</b> was available for the child concept, but not for the parent concept.
5.2.2	BE-22932	The <code>replication_count</code> (backup copies) was not changed for some BusinessEvents spaces even after updating the value of <b>Number of Backup Copies</b> in CDD.
5.2.2	BE-22855	The studio-tools utility did not have the option to export decision tables.
5.2.2	BE-22846	Sometimes the XPath parsing error was encountered when using XPath 2.0.
5.2.2	BE-22843	Some messages were processed twice on fail back from the secondary engine to the primary engine.

Closed in Release	Key	Summary
5.2.2	BE-22841	The XSTL Mapper Editor lost the previous concept reference and was showing 'null', after modifying the concept definition in the <code>Instance.createInstance</code> method for XPath 1.0.
5.2.2	BE-22826	The catalog history function <code>Temporal.History.howManySince()</code> encountered an exception when a string property was set to null value.
5.2.2	BE-22825	BusinessEvents rule editor does not have shortcuts similar to the Java editor.
5.2.2	BE-22817	The ActiveSpaces channel <code>LockAndTake</code> <code>BrowserType</code> did not release the lock after aborting RTC.
5.2.2	BE-22815	Events from the imported WSDL, that declare inline xmlns prefix at the element level showed the "invalid XML reference in payload" error in Studio.
5.2.2	BE-22808	The BusinessEvents ActiveSpaces channel consumed excessive resources, and did not worked properly when the external ActiveSpaces instance had lot of data.
5.2.2	BE-22779	On Windows 7 platform, the cache node failed to start.
5.2.2	BE-22775	The mapper migration wizard failed when the "if" block has no braces around it.
5.2.2	BE-22769	RMS failed to start in Windows Server 2008 SP2.
5.2.2	BE-22768	The listed Hawk parameters under the <b>Enabling the TIBCO Hawk Microagent</b> topic in <i>TIBCO BusinessEvents Administration Guide</i> were not correct.
5.2.2	BE-22766	Mapping with custom function did not work in XPath 1.0.
5.2.2	BE-22764	Hot deployment in TIBCO Administrator was not working.
5.2.2	BE-22754	Events were lost after restarting the cache node with shared nothing persistence.

Closed in Release	Key	Summary
5.2.2	BE-22753	The SQL export tool created indexes with the same names for different tables.
5.2.2	BE-22752	The information to ensure that cells are not protected in the Microsoft Excel file before importing in WebStudio was not present in the <i>TIBCO BusinessEvents WebStudio User's Guide</i> .
5.2.2	BE-22750	The SQL export tool did not create the alias files with unique name by default.
5.2.2	BE-22749	The backing store schema contained memory only entities when the default was set to memory only in CDD.
5.2.2	BE-22729	In the Windows platform, when a BusinessEvents 5.2.0 installation was upgraded to BusinessEvents 5.2.1, subsequent uninstallation of BusinessEvents 5.2.1 caused the Windows Start menu shortcuts to disappear.
5.2.2	BE-22728	The user name of the approver was not being maintained in the RMS.
5.2.2	BE-22717	Encoding of message payload was changing after message was converted to events.
5.2.2	BE-22716	The <code>buildEar</code> command failed because of the <code>.svn</code> files present in the <code>JavaSrc</code> directory.
5.2.2	BE-22703	Assigning default values to the decision table columns was not supported.
5.2.2	BE-22701	Cache nodes were needed to be renamed separately for migration from limited to unlimited, or unlimited to limited.
5.2.2	BE-22678	No option was present to disable ActiveSpaces channel for the query agent.
5.2.2	BE-22656	The information that existing concept cannot be added to the newly created concept in preprocessor was not present in the <i>TIBCO BusinessEvents Architect's Guide</i> .

Closed in Release	Key	Summary
5.2.2	BE-22654	Increasing reconnect wait time for JMS channel was not supported.
5.2.2	BE-22636	If the same decision table was present in project as well as project library, the decision table from the project library was used while generating EAR.
5.2.2	BE-22635	No warning was logged during project validation when a duplicate decision table exists in the project and project library.
5.2.2	BE-22611	In WebStudio, the search option was not available in the domain drop-down list.
5.2.2	BE-22609	In WebStudio, if the attribute in the decision table is associated with a domain, the support to select only from the domain values was not present.
5.2.2	BE-22598	MBeans was not returning adequate information for better monitoring of the BusinessEvents engines.
5.2.2	BE-22597	The <b>OK</b> and <b>Cancel</b> button in the domain drop-down were cutoff at the bottom, when inserting lots of rules.
5.2.2	BE-22579	InferenceAgent could not be initialized when a number of CacheServers were smaller than the configured quorum count but greater than the configured minCache servers ( <code>be.engine.cluster.as.minSeeders</code> ).
5.2.2	BE-22570	The domain values were not displayed properly in the domain drop-down for decision table in WebStudio.
5.2.2	BE-22554	The table analyzer option <b>Show Coverage</b> did not work correctly in WebStudio.
5.2.2	BE-22532	Support for HTTP message returning the HTTP status codes, when BusinessEvents was client, was not provided.
5.2.2	BE-22528	The catalog function <code>Instance.createInstanceFromJSON()</code> did not work for some <code>dateTime</code> values.

Closed in Release	Key	Summary
5.2.2	BE-22516	The option to define alias for decision table column was not available in WebStudio.
5.2.2	BE-22513	Update to the project artifacts from outside of RMS, while persistence was enabled for RMS, was lost after RMS restart.
5.2.2	BE-22508	In WebStudio, the projects in the drop-down of the checkout window were not sorted in alphabetical order in the RedHat Linux platform.
5.2.2	BE-22398	In WebStudio, the option to list the decision table individually and not grouped under the virtual rule function in the <b>Group Contents</b> section was not present.
5.2.2	BE-22293	The option to set the file sync interval was not present in CDD.
5.2.2	BE-22232	The <b>Validate</b> option did not work if decision table had certain special characters.
5.2.2	BE-22099	Connection from JConsole or Java VisualVM to the BusinessEvents engine waits for the startup function execution to complete as JMX was not initialized.
5.2.2	BE-21892	The documentation for the client-side logging in WebStudio was not present in the TIBCO BusinessEvents documentation.
5.2.2	BE-20797	BusinessEvents was not able to catch some exceptions using try-catch block.
5.2.2	BE-20033	On restarting the engine, the CPU utilization was increased and threads were blocked at <code>java.util.TimeZone.getTimeZone</code> .
5.2.2	BE-19366	Multiple admin roles was not supported in RMS.
5.2.2	BE-16273	Email notifications for RMS with the SSL enabled email servers was not supported.
5.2.2	BE-15609	BusinessEvents rule editor and Java editor had different behaviors.

Closed in Release	Key	Summary
5.2.2	BE-11995	Global variable support was not provided for several shared resources fields.
5.2.1	BE-22732	An exception was encountered in the JMS channel, when the incoming message did not carry the <code>JMSXDeliveryCount</code> and <code>JMSXGroupSeq</code> properties (set as the event properties).
5.2.1	BE-22723	The property <code>be.engine.cluster.scheduler</code> was not documented in the TIBCO BusinessEvents documentation.
5.2.1	BE-22711	JMS connection to IBM MQ failed after upgrading to TIBCO BusinessEvents 5.2.
5.2.1	BE-22644	A HTTP 500 response received during a SOAP Fault cannot be processed by the error rule function.
5.2.1	BE-22620	Compilation errors or warning messages were not displayed when brackets were mismatched or missing in the rule function.
5.2.1	BE-22603	A string array could not be added to a data frame using the catalog function <code>Analytics.DataFrame.createFrame()</code> .
5.2.1	BE-22589	While selecting the virtual rulefunction from the project library, <code>NullPointerException</code> was encountered.
5.2.1	BE-22566	An exception was encountered when XPath 2.0 was used for the SOAP requests.
5.2.1	BE-22565	Compilation errors or warning messages were not displayed when brackets were mismatched or missing in the rulefunction.
5.2.1	BE-22558	In XPath version 2.0, the conflicting schema warnings were not displayed in <b>Problems View</b> tab of BusinessEvents Studio.
5.2.1	BE-22542	While defining a MicroAgent Method subscription, when any of the key-value pairs had no value, an <code>ArrayIndexOutOfBoundsException</code> was encountered.

Closed in Release	Key	Summary
5.2.1	BE-22537	When Ampersand (&) was used in a display model field, an exception was encountered.
5.2.1	BE-22531	Triggering of rules for Hawk clearAlertEvent was not supported.
5.2.1	BE-22530	In the Display Model editor, the text field to put custom values was not displayed properly.
5.2.1	BE-22529	Reopening the display model editor threw a <code>NullPointerException</code> .
5.2.1	BE-22526	With shared nothing persistence upon recovery, engine became unresponsive waiting for space to be ready.
5.2.1	BE-22525	<code>NullPointerException</code> was encountered while building a project that contained functions, returning mismatched data types.
5.2.1	BE-22522	The XSLT mapper in <code>Event.createEvent</code> did not work if payload was defined.
5.2.1	BE-22521	The following issues were encountered in the rule editor: <ul style="list-style-type: none"> <li>• The Delete and Backspace keys were not working properly.</li> <li>• Changed tabs were not marked as modified.</li> <li>• XML mappers did not open.</li> </ul>
5.2.1	BE-22520	The catalog function <code>HTTP.sendSecureAsynchronousRequest</code> was not able to process the SOAP fault message.
5.2.1	BE-22512	Global Variable for the TTL field of channel destinations was not supported.
5.2.1	BE-22510	TIBCO BusinessEvents Datagrid component (TIBCO ActiveSpaces libraries) could not be independently updated using ActiveSpaces hotfix and service pack installers.

Closed in Release	Key	Summary
5.2.1	BE-22507	Oracle database 12c RAC was not supported for SharedAll and DB concepts.
5.2.1	BE-22503	An exception was encountered while creating a project library, if the new library was depended on an existing project library.
5.2.1	BE-22498	When a router was started before the receiver, routing of some messages failed.
5.2.1	BE-22487	Exporting a Decision Table failed when the same domain model was used in the condition and action fields.
5.2.1	BE-22485	WebStudio had no option to remove an existing RMS session of a user.
5.2.1	BE-22481	Setting the property <b>Include Event Type</b> to the value <i>Never</i> in the channel destination properties cleared the event properties for an outgoing event.
5.2.1	BE-22471	The table analyzer did not display the double and datetime fields in the selection, when the comparative operators were present.
5.2.1	BE-22469	TIBCO BusinessEvents Datagrid component (TIBCO ActiveSpaces libraries) could not be independently updated using ActiveSpaces hotfix and service pack installers.
5.2.1	BE-22463	The security-constraints element properties of the native HTTP Channel were not supported.
5.2.1	BE-22462	Functions to access domain model contents at run time for all data types were required.
5.2.1	BE-22440	TIBCO BusinessEvents Monitoring and Management did not identify the existing global variable components and created duplicate entries while deploying.
5.2.1	BE-22435	Issues in migrating mapper structures were encountered while importing projects from version 5.1. to version 5.2.

Closed in Release	Key	Summary
5.2.1	BE-22430	In Mac OS X 10.9.x, BusinessEvents Studio became unresponsive when a project was imported using the <b>General &gt; Existing Projects into Workspace</b> option and used the XPath mapper.
5.2.1	BE-22426	TIBCO BusinessEvents used an older version of Tomcat libraries (version 7.0.42) that had security vulnerabilities.
5.2.1	BE-22421	An exception was encountered while passing a string from BusinessEvents to TERR.
5.2.1	BE-22412	Virtual rule functions did not return matching rule ID when a decision table was invoked.
5.2.1	BE-22406	Ability to make JMS based synchronous request-response calls by the application using temporary JMS queues was not supported.
5.2.1	BE-22400	Functions to get columns and the data in each column for a dataframe retrieved from TERR were required.
5.2.1	BE-22316	If the validity was set to the value QUERY, validation errors were encountered while invoking one rule function (RF1) from another rule function (RF2.)
5.2.1	BE-22306	Comments and descriptions for rules could not be viewed in WebStudio.
5.2.1	BE-22202	In the OS X 10.9 platform, sometimes TIBCO BusinessEvents throws error on importing existing projects.
5.2.1	BE-22192	In the OS X 10.9 platform, sometimes some of the instance and event catalog functions are not present.
5.2.1	BE-22187	If a project library had an HTTP channel associated with an HTTP shared resource from the project library, the exported WSDL had incorrect host and port entries.
5.2.1	BE-22176	BusinessEvents engine did not have a configuration to shutdown if duplicate JMS client IDs were detected or used while making JMS connections.

Closed in Release	Key	Summary
5.2.1	BE-22059	The BusinessEvents engine was throwing continuous error messages when lost connection to the EMS server, when using multiple JMS channel in the single agent.
5.2.1	BE-21985	An error was encountered while importing a decision table using the studio-tools utility.
5.2.1	BE-21984	In the OS X 10.8 and 10.9 platforms, sometimes TIBCO BusinessEvents throws exception on creation of new events.
5.2.1	BE-21837	The documentation about the Global variables tab in the TIBCO BusinessEvents Administration Guide was incorrect.
5.2.1	BE-19321	If the test data editor had multiple rows, the values added to the test data input shifted to the previous row.
5.2.1	BE-18926	The Channel.suspendDestination function froze when the thread pool was overloaded for certain destinations.
5.2.1	BE-18829	<i>TIBCO BusinessEvents Developer's Guide</i> specified that the conditional and non-conditional statements could be defined in the precondition block in the rule template.
5.2.1	BE-18202	If a rule function named <code>getStatus</code> was called without the fully qualified name, an error in code generation was encountered.
5.2.1	BE-18102	JMS sender side session pooling was not supported.
5.2.1	BE-15579	On performing the <code>Date</code> Time subtraction operation using the minus symbol (-), the compiler did not give any error.
5.2.1	BE-10769	The Service Import wizard for importing WSDL using right-click on the project was not working.
5.2.0	BE-21989	Importing from Excel in WebStudio corrupted the decision table when the first column was set to a custom condition.
5.2.0	BE-21953	The drag and drop behavior of the concept property in the decision table was different in BusinessEvents Studio and WebStudio.

Closed in Release	Key	Summary
5.2.0	BE-21951	Contained Concept or Concept Reference arguments were not expanding in TIBCO WebStudio and threw exceptions.
5.2.0	BE-21936	The drag and drop behavior of the decision table arguments of the same entity type in TIBCO BusinessEvents WebStudio was not consistent with TIBCO BusinessEvents Studio.
5.2.0	BE-21921	The documentation was incorrect about the studio-tools -p1 option for project libraries.
5.2.0	BE-21886	The <code>Cluster.Sequence.createSequence</code> method incorrectly generated duplicate values when used with the SQL server.
5.2.0	BE-21874	A few enhancements were made for log configuration, such as <ul style="list-style-type: none"> <li>— separating console logs and application logs to different files</li> <li>— providing an option to rotate the log files by time (not only by size)</li> <li>— enabling real-time streaming for console logs</li> <li>— extending default logging</li> </ul>
5.2.0	BE-21812	TIBCO BusinessEvents Studio became unresponsive and threw a core dump when quit forcefully.
5.2.0	BE-21810	Overriding content-type HTTP headers using event properties was not possible.
5.2.0	BE-21726	The JMS destination names were placed in caches of unlimited size, potentially causing memory leaks.
5.2.0	BE-21720	The documentation did not include a few properties related to the ability of TIBCO ActiveSpaces logs to roll over. These properties are set in the TIBCO ActiveSpaces log file.
5.2.0	BE-21719	A new recovery option was needed for slow recovery.

Closed in Release	Key	Summary
5.2.0	BE-21634	The chunked requests for the REST serializer were not being handled properly.
5.2.0	BE-21632	In WebStudio, importing an excel sheet did not work correctly if the first column in the excel sheet was a custom condition.
5.2.0	BE-21579	<code>Instance.updateInstanceFromXML</code> failed to assign null values to the XML concept properties of the form: <code>&lt;Test_property_1/&gt;</code> , or <code>&lt;Test_property_1&gt;&lt;/Test_property_1&gt;</code>
5.2.0	BE-21575	The recovery from shared-nothing persistence files was slow under certain situations, for instance when there were hundreds of spaces to recover from.
5.2.0	BE-21536	The global variable substitution was not working for the 'Number of Backup Copies' property in CDD.
5.2.0	BE-21487	TIBCO BusinessEvents did not always destroy the EMS consumers cleanly while shutting down.
5.2.0	BE-21473	The 'Standard Upgrade Procedures' section in the <i>TIBCO BusinessEvents Installation</i> guide needed a correction.
5.2.0	BE-21469	<i>TIBCO BusinessEvents Installation Guide</i> incorrectly mentioned that the earlier version must be uninstalled for installing the new version. Refer to the 'Standard Upgrade Procedures' section for correct information.
5.2.0	BE-21436	The usage of bindings in the rule template caused the "Invalid Rank" error.
5.2.0	BE-21427	The <code>substitutionGroup</code> element was not available for mapping in mapper used in the preprocessor.  The new mapper in BusinessEvents 5.2.0 provides the <code>substitutionGroup</code> element for mapping. Change the XPath version to 2.0 in the project's build path page to get the substitution group contents.

Closed in Release	Key	Summary
5.2.0	BE-21296	The tooltip of the catalog function <code>Engine.sleep()</code> was misleading.
5.2.0	BE-21284 BE-21475	TIBCO BusinessEvents blocked processing the transactions after an exception from Oracle was encountered.
5.2.0	BE-21277	<p>While editing the decision table from WebStudio, if you try to use the attribute of a concept or event from the group contents in an existing row or column, it is not possible to drag the concepts or event attributes into the decision table.</p> <p>To eliminate the need for manual typing, add a context menu on the properties to do a "copy name" so that it can be pasted in the decision table cell.</p>
5.2.0	BE-21230	On some UNIX platforms like zLinux, HP, AIX or Solaris, the studio-tools utility could not launch properly due to corruption of the configuration area.
5.2.0	BE-21209	When custom functions were used in <code>XPath.evalAsString()</code> , the "IllegalStateException: Function Linkage Error" exception was thrown. The custom functions can now be used in the XPath expressions with the new mapper.
5.2.0	BE-21179	The user authentication for Active Spaces channel security is now supported through LDAP authentication.
5.2.0	BE-21162	<p>The JMS message was not getting redelivered if the <code>abortRtc()</code> function was used, or if an error occurred in preprocessor.</p> <p>To support the JMS message redelivery:</p> <ul style="list-style-type: none"> <li>• The <code>rollback()</code> function is added in the event context.</li> <li>• <code>Engine.abortRtc()</code> calls <code>rollback()</code>.</li> <li>• All "real" acknowledge modes use a session per unacknowledged message to support rollback with all the threading models.</li> <li>• Pooling is introduced to allow reuse of sessions.</li> </ul>

Closed in Release	Key	Summary
5.2.0	BE-21126	During WSDL export, message namespace inconsistency was observed in the exported WSDL file.
5.2.0	BE-21056	<p>The <i>TIBCO BusinessEvents Installation</i> guide mentioned that all TIBCO BusinessEvents users must have read, write, and execute (that is, 777) permissions for the <code>bin</code> directory.</p> <p>As this permission level grants read, write, and execute permissions to all non-binary owners, it could not meet the corporate security standard. So it has been updated to use the 555 permission, by which only the file owner has the write permission.</p>
5.2.0	BE-20960	The documentation did not include information on the <code>Cluster.scheduleRepeatingEvent</code> function.
5.2.0	BE-20872	It was not possible to send RMS notifications for commit, approve, and reject actions to multiple email IDs at once.
5.2.0	BE-20847	Building the EAR failed when the <code>project.library.resources/custom</code> function was defined as variable instead of an absolute path.
5.2.0	BE-20801	The documentation did not have details on how to use Load Balancer.
5.2.0	BE-20784	TIBCO BusinessEvents engine is now able to read and write null fields in ActiveSpaces tuples through ActiveSpaces channels for all data types.
5.2.0	BE-20758	The operation timeout errors occurred in the TIBCO ActiveSpaces logs when TIBCO BusinessEvents was trying to lock a membership space during the startup.
5.2.0	BE-20756	<p>Executing the following query resulted in a transaction that remained active forever:</p> <pre>select 1 from BEALIASES where 1=2</pre>
5.2.0	BE-20681	A few reserved words and keywords by Oracle were not listed in the documentation.

Closed in Release	Key	Summary
5.2.0	BE-20678	After enabling TIBCO Hawk 5.1.0, the PU was not shown as started in the MM UI.
5.2.0	BE-20651	In TIBCO BusinessEvents, it was not possible to define a particular key in a message as the sequencing key.
5.2.0	BE-20645	Alter script was not generated if the maximum length for a field is set to more than 4000 (CLOB) in CDD.
5.2.0	BE-20607	The function <code>Engine.Rtc.abortRTC()</code> was not working as expected. Deleted concepts were still stored in cache, even after calling <code>abortRTC()</code> .
5.2.0	BE-20599	Running the existing project in BusinessEvents 5.1.2 threw the error "Unable to register custom function to mapper" in logs.
5.2.0	BE-20597	WebStudio login credentials did not support multi-byte characters for file-based authentication.
5.2.0	BE-20580	It was not possible to reuse the workKey in the scheduler.
5.2.0	BE-20574	TIBCO Business Events Engine did not support database connections using OCI drivers to connect to ORACLE database.
5.2.0	BE-20564	It was not possible to get updates over HTTP by setting polling interval to fetch data instead of streaming port updates.
5.2.0	BE-20561	The documentation related to the HTTP header/JMS property for extId was added in <i>TIBCO BusinessEvents Architects guide</i> in the Channels Destinations and Events > Default Destinations and Default Events > Incoming Messages and Non-Default Events section.
5.2.0	BE-20557	The documentation related to business rules hot deployment is added to <i>TIBCO BusinessEvents WebStudio User's Guide</i> in the "Hot-deploying the Business Rule" section.
5.2.0	BE-20505	Updated the "Referenced Concepts" section in <i>TIBCO BusinessEvents Architect's Guide</i> .

Closed in Release	Key	Summary
5.2.0	BE-20504	Updated documentation to state details on the cache in <i>TIBCO BusinessEvents Configuration Guide</i> > CDD Configuration > Configuring Limited Cache and Object Table Cache Options.
5.20	BE-20491	Documented reserved words for Shared Nothing in the "Setting up Shared Nothing Persistence" section in <i>TIBCO BusinessEvents Configuration Guide</i>
5.2.0	BE-20484	Added documentation for the <code>be.engine.cluster.recovery.distributed.batchsize</code> property in <i>TIBCO BusinessEvents CDD Configuration Guide</i> > CDD Backing Store > Configuring Backing Store Settings and Properties > "CDD Cluster Tab Backing Store Properties Reference" section.
5.2.0	BE-20482	The description for the <code>be.stats.enabled</code> property is added in <i>TIBCO BusinessEvents Architects guide</i> > Object Management (OM) > "In Memory Object Management" section.
5.2.0	BE-20481	The description of Type ID property has been updated in <i>TIBCO BusinessEvents Architects guide</i> > Understanding Entity Caches > Caches for Internal Entities. Variable: TypeIDs.
5.2.0	BE-20466	Updated the "CDD Cluster Tab Domain Object Override Settings Reference" section in <i>TIBCO BusinessEvents CDD Configuration Guide</i> .
5.2.0	BE-20465	Updated the "Overview of SOAP Related Resources" section in <i>TIBCO BusinessEvents Architect's Guide</i> .
5.2.0	BE-20446	<i>TIBCO BusinessEvents Developer's Guide</i> incorrectly mentioned that semicolon (;) can be used as the column separator while generating a test data template. The documentation has been updated accordingly.
5.2.0	BE-20418	When backing store was enabled, the cache server threw the <code>ClassNotFoundException</code> error.

Closed in Release	Key	Summary
5.2.0	BE-20407	BusinessEvents did not coexistence of multiple versions in the same <i>TIBCO_HOME</i> like other TIBCO products.
5.2.0	BE-20405	The test data was not asserted properly in Tester with contained as well as referenced concepts.
5.2.0	BE-20371	In the shared nothing mode, the parallel recovery was not available for TIBCO BusinessEvents.  You can configure the <code>be.engine.cluster.recovery.threads</code> property to set the number of recovery threads. The default value is 5.
5.2.0	BE-20352	The <b>Test Connection</b> in JMS Shared Resource failed with TIBCO Enterprise Message Service 8.0.0.
5.2.0	BE-20348	Enabling coherence to compile an emonitor project was necessary.
5.2.0	BE-20329	The parallel recovery check box was not needed and has been removed from CDD.
5.2.0	BE-20315	The documentation mentioned incorrect file path for <i>BE_HOME</i> .
5.2.0	BE-20304	BusinessEvents provides support for ActiveSpaces Security (Authentication) in the data grid.
5.2.0	BE-20303	For performing basic authorization in BusinessEvents, users had to manually modify the field of the incoming event named <code>Authorization</code> . In products like ActiveMatrix BusinessWorks, it was supported using a resource like Identity.
5.2.0	BE-20294	The tooltip mentioned an incorrect return value for the <code>AS.putEvent()</code> catalog function.
5.2.0	BE-20279	Calling <code>c_Lock</code> more than once in the same thread caused a deadlock.
5.2.0	BE-20224	The ActiveSpaces channel spacename could not be defined using the global variables.

Closed in Release	Key	Summary
5.2.0	BE-20213	The inference engine threw an out of memory error before logging the duplicate <code>extid</code> exception.
5.2.0	BE-20211	BusinessEvents did not support custom functions in mapper transformations.
5.2.0	BE-20209	There was a dependency on coherence when building an ear file.
5.2.0	BE-20175	The global variables could not be used for all CDD parameters (that is, Entity Cache Size).
5.2.0	BE-20167	Database outage caused the BusinessEvents cluster to cease processing.
5.2.0	BE-20165	The native memory usage was very high in the BusinessEvents cluster.
5.2.0	BE-20146	TIBCO BusinessEvents did not supported the unicast, multicast, and broadcast communications in secure mode between cluster members.
5.2.0	BE-20141	<p>TIBCO BusinessEvents did not supported the History feature when the <b>Shared Nothing</b> option is used as the <b>Persistence</b> option for the backing store.</p> <p>The support is now added. All types of history fields, including array and history can be stored as individual blob fields in ActiveSpaces.</p> <p>To enable or disable it, use the following CDD property:</p> <pre>&lt;property name="be.engine.cluster.as.tuple.explicit.store_history" value="true"/&gt;</pre> <p>By default, this property is <code>true</code> (enabled). Restriction on Shared-nothing with History support are now removed.</p>
5.2.0	BE-20140	The <code>TIME_CREATED\$</code> column in the backing store always keeps the content creation time, but it incorrectly changed whenever an update was made.

Closed in Release	Key	Summary
5.2.0	BE-20136	A new id generator that gets activated with <code>be.engine.concurrentwm.enable.newImpl=true</code> is now available.
5.2.0	BE-20134	The log settings in CDD file could not be used when a project was deployed in Administrator without modifying the TRA file.  During deployment, the log settings are added to the deployed TRA. You can use the log configuration page in Administrator. The settings in the TRA override whatever the CDD defines as log configuration.
5.2.0	BE-20132	The SQL scripts for an array property in a concept could not be generated correctly.
5.2.0	BE-20131	In the ActiveSpaces channels, you can configure <code>DistributionScope</code> or <code>TimeScope</code> for either <code>EventListener</code> and <code>EntryBrowser</code> .
5.2.0	BE-20129	The <code>Password</code> type global variable defined in <code>BusinessEvents</code> incorrectly displayed the actual password when the type was changed to <code>String</code> .
5.2.0	BE-20128	The 64-bit installation did not enable the 64-bit settings in TRA, and therefore users had to manually change <code>be-engine.tra</code> after the setup.
5.2.0	BE-20126	ActiveSpaces Monitoring and Management (ASMM) is included in <code>BusinessEvents</code> installation as a part of <code>ActiveSpaces</code> .
5.2.0	BE-20125	Edit CDD properties in the <code>BusinessEvents</code> MM or TIBCO Administrator was not possible.
5.2.0	BE-20107	The <code>HTTP.Servlet.Request.getRequestParameter()</code> function threw a <code>NullPointerException</code> .
5.2.0	BE-20097	You cannot specify the name, size, and rolling parameters for the TIBCO ActiveSpaces log generated in <code>BusinessEvents</code> .

Closed in Release	Key	Summary
5.2.0	BE-20045	TIBCO BusinessEvents Studio did not throw an error on defining <code>id</code> as a property name for an entity.
5.2.0	BE-20043	The documentation did not clearly specify that <code>id</code> is a reserved keyword that cannot be used as a property name.
5.2.0	BE-19918	It was necessary to upgrade the eclipse version.
5.2.0	BE-19895	TIBCO BusinessEvents Studio did not show a validation error in the Problems view if the folder name in a project had a typographical error.
5.2.0	BE-19820	The documentation did not contain a list of CDD fields, which can be set with global variables.
5.2.0	BE-19780	Building an EAR file failed if a try-catch block was nested in a catch block.

Closed in Release	Key	Summary
5.2.0	BE-19746	<p>When checking out a project in WebStudio, an operation timeout error was thrown if the operation took more than four minutes. This has been fixed and all the artifacts are listed in the checkout dialog. The fix requires the browser cache to be cleared before retrying the operation.</p> <p>When you click "Checkout", the time taken by the script depends on the volume of data being loaded. In case of a long running script, a browser warning is presented with the message "Long running script, do you want to stop it? [Yes/No]". Select "Yes" to proceed.</p> <p>The in-built security checks by browsers present this warning to ensure that there are no underlying malware scripts or webroot sweepers running, and the script in question is known and safe.</p> <p>To avoid the warning message, you can update the browser configuration and increase the maximum time to run scripts. For example, if using Firefox:</p> <ol style="list-style-type: none"> <li>1. Go to the configuration page by opening a new tab and entering "about:config" in the address bar.</li> <li>2. Search for the Preference Name "dom.max_script_run_time". Double-click the preference name and enter a new value.</li> </ol> <p><b>NOTE:</b> After updating the configuration, there may still be a slight delay on the browser.</p>
5.2.0	BE-19744	<p>The deprecated catalog function <code>Cluster.DataGrid.TransactionProperties()</code> was listed in the available catalog functions.</p>
5.2.0	BE-19698	<p>TIBCO BusinessEvents supports ActiveSpaces security API and the configuration at the datagrid layer.</p>
5.2.0	BE-19686	<p>During hundreds of inserts into the MySQL database, the <code>com.mysql.jdbc.exceptions.jdbc4.MySQLNonTransientConnectionException</code> was thrown in the middle of a transaction.</p>

Closed in Release	Key	Summary
5.2.0	BE-19616	The documentation for JDBC Backing Store did not include details on Oracle RAC.
5.2.0	BE-19611	It was not possible to start the cache agent or inference agent if the concept name and concept property name included double-byte characters and the "Shared Nothing" persistence option was selected.
5.2.0	BE-19604	The rule template instance builder now supports the use of APIs "startsWith" and "endsWith" to check strings. These functions can be used in conditions as part of the rule template instance "When" section.
5.2.0	BE-19590	<p>TIBCO BusinessEvents Spotfire Add-on Bundle was unable to connect to the TIBCO BusinessEvents DataGrid and expose the cache data on Windows platform due to a missing DLL. This hotfix provides the missing DLL file to fix the issue.</p> <p>To enable the fix:</p> <ol style="list-style-type: none"> <li>1. Run Setup.exe available at            %TIBCO_HOME%\as\2.0\containers\2.0.2\dotNet\bin\win_x86_64 to register the DLL in the GAC.</li> <li>2. Update the path to append            %TIBCO_HOME%\as\2.0\lib to include the native libraries.</li> </ol> <p>TIBCO BusinessEvents Spotfire Add-on Bundle was unable to connect to the TIBCO BusinessEvents DataGrid and expose the cache data on the Windows platform.</p>
5.2.0	BE-19548	TIBCO BusinessEvents Studio became unresponsive when a custom condition or a custom action was used in TIBCO Business Studio ActiveMatrix Decisions Add-in.
5.2.0	BE-19503	The suspendDestination and resumeDestination functions of ActiveSpaces Channel did not work.

Closed in Release	Key	Summary
5.2.0	BE-19501	<p>TIBCO BusinessEvents scheduler failed to expire more than 1000 items at once when it was configured with Oracle backing-store and the property 'be.engine.scheduler.workitems.batchsize' was set to a value greater than 1000.</p> <p>(Default value for this property is 500.) This has been resolved and the property can now be set to a value greater than 1000.</p>
5.2.0	BE-19497	<p>Catalog function Metaspace.Tuple.containsValue() always returned false for String and Character type fields. This has been fixed.</p>
5.2.0	BE-19473	<p>TIBCO BusinessEvents WebStudio did not work as expected behind a load balancer because WebStudio used the absolute paths instead of relative paths, particularly the "/ws" in the context path.</p>
5.2.0	BE-19396	<p>When the database server closed JDBC connections after a period of inactivity, TIBCO BusinessEvents did not recreate them and threw exceptions. Now all connections are monitored to ensure the pool can be recovered in a timely manner. In some cases satisfactory results require use of the following property, set as shown:</p> <pre data-bbox="485 1032 1028 1058">be.jdbc.test.connections.checkall=true</pre> <p>The following property works with debugRole logging role. It causes additional debug messages to be logged showing the connections that are being monitored.</p> <pre data-bbox="485 1189 999 1215">be.jdbc.test.connections.logall=true</pre>

Closed in Release	Key	Summary
5.2.0	BE-19332	<p>The JDBC backing store updates for certain changes to contained concepts (especially arrays) were slow. The performance for the following changes has been improved:</p> <ul style="list-style-type: none"> <li>• The parent concept is modified.</li> <li>• The child concept is modified.</li> <li>• The child concept is added or removed.</li> </ul> <p>To enable the fix, add the <code>be.backingstore.containedconceptarray.addremoveonly</code> property in the CDD file at the cluster level and set it to <code>true</code>. The property is <code>false</code> by default.</p> <p>This property can be used together with the property <code>'be.backingstore.unmodified.skip'</code> to further optimize database operations.</p> <p>NOTE: Do not use this property if there are changes to contained concepts where the position of the child concepts is modified or if a child concept is nullified. If you choose to do so, note that the modifications are not written to the database.</p>
5.2.0	BE-19315	TIBCO BusinessEvents nodes were taking a long time to join metaspace.
5.2.0	BE-19313	Validation exceptions were observed when new rules with custom conditions with more than one parameter separated by a comma(,) were added through WebStudio.
5.2.0	BE-19312	<p>The backing store has been fixed to recognize the type "SQL Server" and apply special settings such as the following properties properly:</p> <pre>&lt;property name="be.backingstore.optimize.reads" value="true"/&gt; &lt;property name="be.backingstore.optimize.writes" value="true"/&gt;</pre>
5.2.0	BE-19307	The <b>Add</b> and <b>Delete</b> buttons on the Rule Template Bindings form in TIBCO BusinessEvents Studio were missing. This issue was observed only on Linux platform.

Closed in Release	Key	Summary
5.2.0	BE-19303	The steps to initialize the database script for DB2 have been updated in the JDBC Backing Store section of <i>TIBCO BusinessEvents Configuration Guide</i> .
5.2.0	BE-19268	No error was displayed if an invalid SOAP request was sent to the TIBCO BusinessEvents engine.
5.2.0	BE-19268	The documentation did not include a few properties related to the ability of TIBCO ActiveSpaces logs to roll over. These properties are set in the TIBCO ActiveSpaces log file.
5.2.0	BE-19256	The properties related to ActiveSpaces logs are documented in <i>TIBCO BusinessEvents Configuration Guide</i> > Logging for TIBCO Business Events DataGrid > Table "Properties in CDD File".
5.2.0	BE-19248	The TCP server pool can now grow and shrink when needed to support upto 512 simultaneous clients.
5.2.0	BE-19226	SOAP over JMS was not supported.
5.2.0	BE-19221	The accented characters did not appear correctly when ISO-8859-1 encoding was used in an XML input file with a BusinessEvents project that used UTF-8 encoding.
5.2.0	BE-19231	When using JMS connection with SSL, if the JNDI Context URL was set to "ssl://localhost:7243", clicking the <b>Test Connection</b> button threw errors.
5.2.0	BE-19175	In WebStudio, when you import an excel file that was exported from the decision table, the action part data was lost.
5.2.0	BE-19167	In WebStudio, creating a rule, based on an SOAP InputEvent, threw exception.
5.2.0	BE-19129	Some concurrency issues would occur when TIBCO BusinessEvents sent multiple JMS messages in parallel.  This was fixed.

Closed in Release	Key	Summary
5.2.0	BE-19092	In the WebStudio, if a rule template contained two or more bindings and those bindings referred to the same domain model, clicking the rule template and typing the business rule name threw exceptions.
5.2.0	BE-19056	Scheduler related queries executed on WorkItems table would, in some cases, result in sub-optimal SQL plans and full table-scans. These scheduler related queries have been fixed to eliminate these inefficiencies.
5.2.0	BE-19046	There was no documentation on the ability to delete older worklist items.
5.2.0	BE-19006	The product did not include ActiveSpaces Monitoring and Management as a part of ActiveSpaces utilities.
5.2.0	BE-18952	Building an Enterprise Archive file with the Studio Tools Utility section of the Developer's guide did not include the <code>-cp</code> option.
5.2.0	BE-18846	With backingstore enabled, assigning null to a contained concept array property threw exceptions.
5.2.0	BE-18740	When an excel file was imported from WebStudio, one of the column data was imported to another column incorrectly.
5.2.0	BE-18706	The limitation that the field name cannot start with an underscore ( <code>_</code> ) character was not documented. It is now added in the "Simple Event Reference properties table and Concept Resource Reference" section, in the <i>TIBCO BusinessEvents Developer's Guide</i> .
5.2.0	BE-18548	When the owner path of some concept properties ( <code>/Concepts/OdN/ODN</code> that was declared in the rule function <code>/RuleFunctions/ConsultaODNsFiltradas</code> ) was set as <code>""</code> , the build EAR command failed with an NPE.  For example, <code>&lt;properties name="nombreOdN" ownerProjectName="ODN" ownerPath="" /&gt;</code>
5.2.0	BE-18539	Single Client Access Name (SCAN) was not supported.

Closed in Release	Key	Summary
5.2.0	BE-18530	For the non-inference agents in the CDD file, the <b>Enable database concept</b> check box was not cleared.
5.2.0	BE-18493	Updated description of catalog function "Instance.PropertyArray.appendContainedConcept".
5.2.0	BE-18458	Updated the "Content-Aware Load Balancing" section in <i>TIBCO BusinessEvents Configuration Guide</i> .
5.2.0	BE-18384	It was not possible to enable hot deployment of changed business rules directly from WebStudio.
5.2.0	BE-18377	<p>TIBCO BusinessEvents did not load the null values from backing store after a restart. As a result, concepts with null values stored in a string array were lost when the engine was restarted.</p> <p>A new property, <code>be.backingstore.nullarrayorhistoryvalue.skip</code>, can be used to control this behavior. Set the property to <code>false</code> in the CDD file to enable the null arrays or history values to be loaded from the backing store.</p>
5.2.0	BE-18314	An exception occurred when you showed arguments for contained or reference concepts.
5.2.0	BE-18285	Using the <code>be.auth.ldap.uidattr</code> property as mentioned in the Administrator's guide did not work because the property was wrongly capitalized. It was referred to as <code>be.auth.ldap.uidAttr</code> .
5.2.0	BE-18274	Added new catalog function <code>replyEventImmediate</code> to send the event and return the JMS header property especially <code>JMSMessageID</code> property as the return value.
5.2.0	BE-18237	It was not possible to view changes or history of artifacts from WebStudio.
5.2.0	BE-18221	The <code>install_studio_repo</code> script contained typographical errors in echo strings.

Closed in Release	Key	Summary
5.2.0	BE-18206	<p>A new property, <code>tibco.be.datetime.parse.lenient</code>, is introduced to control the validation of <code>DateTime</code> field ranges when using the <code>DateTime.parseString</code> function.</p> <p>By default, the property is set to <code>true</code> and the values of the <code>DateTime</code> field ranges are normalized to fit the expected ranges.</p> <p>Set the property to <code>false</code> to ensure that the values of the <code>DateTime</code> field ranges are not normalized. An error will be thrown if the <code>DateTime</code> field ranges are out of the expected range.</p>
5.2.0	BE-18203	Unable to add custom functions to a project to generate deployable using WebStudio.
5.2.0	BE-18192	The description for Transaction Error Handler Rule Function was not clear in <i>TIBCO BusinessEvents Developer's Guide</i> .
5.2.0	BE-18191	There was no documentation for the Collections Catalog functions.
5.2.0	BE-18150	In the Installation guide, the path pointing to the <code>plugins</code> directory was incorrect.
5.2.0	BE-18123	The <code>be.codegen.useLegacyCompilation</code> property was not documented in <i>TIBCO BusinessEvents WebStudio User's Guide</i> .
5.2.0	BE-18100	TIBCO BusinessEvents Hawk Channel did not work with TIBCO Hawk 5.0 or 5.1.
5.2.0	BE-18058	BusinessEvents did not support <code>Channel.resumeDestination()</code> in ActiveSpaces Destinations.
5.2.0	BE-18057	The <code>Channel.resumeDestination()</code> function did not work for ActiveSpaces channels and threw the following warning in the logfile: "Resume is not yet implemented for <code>ASDestination</code> ".

Closed in Release	Key	Summary
5.2.0	BE-17998	Added a note about rule evaluation in the "Order of Evaluation of Rule Conditions" section of <i>TIBCO BusinessEvents Architect's Guide</i> .
5.2.0	BE-17979	The IST timezone in the log file showed GMT +5 instead of GMT +5:30.
5.2.0	BE-17951	Events were persisting in the Thread Local of BEManagedThread as the heap dump files in the Eclipse MAT analyzer.
5.2.0	BE-17881	The fact that the same collection name cannot be used across different collections in CDD was not documented.
5.2.0	BE-17879	<p>When viewing the <code>readme.html</code> file for the Fraud Detection example, the "<b>Send -&gt; http...</b>" buttons for sending test data to the example were not visible when using Internet Explorer.</p> <p>The readme now mentions that you must use Firefox or Chrome as the browser.</p>
5.2.0	BE-17864	Memory growth was observed when objects were created and deleted continuously in a Shared Nothing configuration.
5.2.0	BE-17812	The Create JDBC deployment scripts wizard failed to browse and find the CDD files if the CDD files for the project were nested in a folder under the Deployments folder. For example, if the CDD file was under <code>/Deployments/runtime/mycdd.cdd</code> rather than <code>/Deployments/mycdd.cdd</code> , the wizard failed to find <code>mycdd.cdd</code> .
5.2.0	BE-17600	The <code>studio-tools</code> utility could not be installed on Solaris x86, Solaris SPARC, HP, AIX.
5.2.0	BE-17586	The <i>TIBCO BusinessEvents Administrator's Guide</i> did not point out that before executing the application in the Administrator, you must set the other settings, such as <code>RV_HOME</code> , and <code>EMS_HOME</code> in the <code>be-engine.tra</code> file.

Closed in Release	Key	Summary
5.2.0	BE-17582	<p>BusinessEvents did not allow deletion of all instances of a BusinessEvents concept from the cache or backing store.</p> <p>A new catalog function <code>Cluster.DataGrid.EvictCache(cache-name, filter)</code> is added.</p> <ul style="list-style-type: none"> <li>For coherence, the filter is a <code>Coherence Filter</code> and is the same as <code>C_CacheOnlyMode_DeleteConcepts</code>.</li> <li>For ActiveSpaces, the filter is a AS-query API clause such as <code>"extId = 'xyz'"</code> and so on.</li> </ul> <p><b>Note:</b> It works only if "Store Properties As Individual Fields" is enabled in the CDD cluster setting. It does not work with history based properties.</p>
5.2.0	BE-17581	<p>RMS checkout did not work when users with multiple roles (associated by the <code>memberOf</code> attribute) had only one of the roles defined in the access control file and the artifact type config file. This issue was observed when using ActiveDirectory.</p>
5.2.0	BE-17565	<p>The following information was missing in <i>TIBCO BusinessEvents Developer's Guide</i>.</p> <p>Default Encoding:</p> <p>The default encoding of EAR files generated by BusinessEvents Studio is ISO8859-1. This is also the default encoding of TIBCO Administrator. To upload an EAR file to TIBCO Administrator, the EAR file encoding must match the TIBCO Administrator encoding.</p> <p>To Change the Default EAR File Encoding:</p> <p>To change the default EAR file encoding, define a global variable named <code>MessageEncoding</code> and set its value to the desired encoding, for example, UTF-8.</p>

Closed in Release	Key	Summary
5.2.0	BE-17556	<p>The following constraint was not explicitly included in the documentation:</p> <p>When you create a property of type ContainedConcept, you are creating a containment relationship. The concept that you are currently configuring is the container; the concept you specify as a property is the contained concept.</p> <p><b>Note:</b> A concept cannot contain itself. For instance, for concept A, a contained concept property of type A cannot be added.</p> <p>This information is now included in <i>TIBCO BusinessEvents Developer's Guide</i>.</p>
5.2.0	BE-17542	<p>The documentation provided incomplete information about the syntax for the call statement as call RuleFunctions.myFunction something;</p> <p><i>TIBCO BusinessEvents Architect's Guide</i> &gt; Rule &gt; The Rule Template Editor &gt; Action Context Section (Call Statements) section has been updated.</p>
5.2.0	BE-17477	<p>In WebStudio and Studio, when a decision table was associated with a Domain Model, quotation marks around the strings in a decision table were removed.</p>
5.2.0	BE-17462	<p>If there is a space in the path to a custom Java function JAR, the be-engine did not run and exited with an error in the Studio.</p>
5.2.0	BE-17448 BE-17289	<p>The WebStudio did not support SSL.</p>
5.2.0	BE-17293	<p>In Load Balancer, a runtime exception was thrown when the TTL for an event elapses and the event was not consumed.</p>
5.2.0	BE-17286	<p>In the TIBCO BusinessEvents MM Console, the <b>Inference Agent Overview</b> tab did not show any data.</p>

Closed in Release	Key	Summary
5.2.0	BE-17285	<p>For some properties, if the value of a property was set to null in <code>Instance.Reflection.setPropertyAtomValue()</code>, a <code>Class cast exception</code> or <code>NullPointerException</code> was thrown. For example, an exception was thrown for the following statements:</p> <pre>Instance.Reflection.setPropertyAtomValue(ac, "Balance" , null); Instance.Reflection.setPropertyAtomValue(ac, "Debits" , null); Instance.Reflection.setPropertyAtomValue(ac, "Status" , null); Instance.Reflection.setPropertyAtomValue(ac, "AvgMonthlyBalance" , null);</pre>
5.2.0	BE-17092	<p>After the Enterprise Message Service server failover, when BusinessEvents reconnected to the Enterprise Message Service server, the Enterprise Message Service server did not redeliver the messages unacknowledged by BusinessEvents before the failover.</p>
5.2.0	BE-17084	<p>The <b>Queue</b> check box in the EMS destination configuration could not be defined using a global variable. The <b>Queue</b> check box now supports global variable.</p>
5.2.0	BE-16982	<p>When importing WSDL in BE Studio, there is an <code>@soapAction</code> attribute generated for the SOAPEvent. You can set any value in the attribute itself. The override priorities are as follows:</p> <ol style="list-style-type: none"> <li>1. If an event property namely SOAPAction is set and the attribute is not, the event property is considered.</li> <li>2. If the attribute is set and no event property introduced, the attribute value is considered.</li> <li>3. If both (event property as well as attribute is set), the attribute value overrides the event property.</li> </ol>

Closed in Release	Key	Summary
5.2.0	BE-16668	<p>Catalog functions <code>replyEvent</code> and <code>replyEventImmediate</code> that send the event and return the JMS header property, especially <code>JMSMessageID</code>, as the return values have been added.</p> <p>To enable the new functions, set the following property in <code>studio.tra</code>:</p> <pre>TIBCO.BE.function.catalog.Event.ext=true</pre>
5.2.0	BE-16459	A function like <code>Coherence.C_CacheLoadConceptsByExtId</code> was not available for loading multiple instances of a concept when an object table was not used.
5.2.0	BE-16328	In BusinessStudio, the user had to click twice to switch between the Java and Studio perspective. For this to work properly, clear the preference <code>TIBCO BusinessEvents</code> -> Switch to the default perspective on editor activation.
5.2.0	BE-16215	The catalog function did not stop processing the current RTC and did not rollback the <code>CacheUpdates</code> .
5.2.0	BE-16206	Using the WebStudio client from Internet Explorer, users could incorrectly open any previous revision of artifact, make changes to it, and save it.
5.2.0	BE-16137	After upgrading <code>BusinessEvents</code> from 5.0.0 to 5.0.1, TIBCO Administrator did not correctly list the version for the plugins under <b>Application Management &gt; All Service Instances &gt; TIBCO Administrator service</b> .
5.2.0	BE-15653	A call to <code>abortRTC()</code> dropped all the current RTC changes to the cache objects, but the scheduled events were not removed.

Closed in Release	Key	Summary
5.2.0	BE-15210	<p>When cache was preloaded with the following set of properties, the error message "critical error: preloadmanager is null" was seen in the log files.</p> <ul style="list-style-type: none"> <li>• <code>be.engine.cluster.recovery.threads=4</code></li> <li>• <code>be.engine.cluster.recovery.distributed=true</code></li> <li>• <code>be.engine.cluster.recovery.distributed.strategy=batch</code></li> <li>• <code>be.engine.cluster.recovery.distributed.batchsize=3000000</code></li> </ul>
5.2.0	BE-15114	<p>A <code>NullPointerException</code> was thrown on the low priority inference agent when performing a failover using <code>maxActive</code> property. This was observed when using the TIBCO Cache Provider with backing store.</p>
5.2.0	BE-14951	<p>The XPath builder did not listed the attributes of a complex type defined in a WSDL file.</p>
5.2.0	BE-14840	<p>The <code>java.lang.NoClassDefFoundError</code> error was thrown when building an EAR file using the studio-tools utility. This was fixed.</p>
5.2.0	BE-14789	<p>In BusinessEvents Studio, the declaration portion of the <b>Advanced</b> tab was obscured by a scroll bar. As a result, you could not see the alias used in the expiry action.</p>
5.2.0	BE-14772	<p>The direct XSLT mapping between Event Payload and concept to update a concept was not available.</p>
5.2.0	BE-14604	<p>BusinessEvents did not support custom functions in mapper transformations.</p>
5.2.0	BE-14340	<p>The <code>BulkEntityDelete</code> function did not check the size of the key collection in the <code>deleteItems</code> method before calling the <code>performDelete</code> function.</p>

Closed in Release	Key	Summary
5.2.0	BE-14289	When BusinessEvents 5.0 was installed in the same TIBCO_HOME as TIBCO Runtime Agent and TIBCO Administrator 5.7, it modified the contents of tibcojre directory and caused the domainutility to fail. As BusinessEvents 5.2.0 contains JRE 1.7, there is no issue installing BusinessEvents 5.2.0 in the same home.
5.2.0	BE-13753	The documentation did not provide information on uninstallation in the silent mode. A new topic "Uninstalling in Silent Mode" has been added in the Installation guides.
5.2.0	BE-13606	[Linux 32] During the launch configuration, the studio crashed after selecting or editing the LD_LIBRARY_PATH variable.
5.2.0	BE-13596	Occasionally, the Global Variables group folder did not get deleted from the system in the same studio session.
5.2.0	BE-13549	The EAR file generated from BusinessEvents Studio was different from the one generated from the command line directly. The ".smap" file for the project library did not generate correctly when EAR was generated from the command line.
5.2.0	BE-13529	PutAll resulted in a <code>java.lang.RuntimeException</code> .
5.2.0	BE-13515	A new catalog function <code>Cluster.DataGrid.EvictCache(String cacheName, Object filter, boolean deleteFromPersistence)</code> bulk deleted concepts or events in cache and backing store. Constraints on Filter: <ul style="list-style-type: none"> <li>• It works only if "Store Properties As Individual Fields" is enabled in the CDD cluster setting.</li> <li>• It does not work with history based properties.</li> </ul>
5.2.0	BE-13259	Starting a node on a SUSE Linux machine threw the exception "Making connection failed: No more data to read from socket Issue" and did not start the node.

Closed in Release	Key	Summary
5.2.0	BE-13216	As the domain values are stored in an encrypted form, there was no way for users to add the values manually.
5.2.0	BE-13137	When BusinessEvents engine tried to load classes, some redundant warnings were displayed.
5.2.0	BE-13002	BusinessEvents did not support IP V6.
5.2.0	BE-12863	When <code>isTransacted</code> property was true in the JMS channel property, BusinessEvents did not consume the message from the queue at the end of RTC as it did with <code>isTransacted</code> as false.
5.2.0	BE-12862	Suppressing the <code>_nm</code> and <code>_ns</code> fields was not possible in the outbound events.
5.2.0	BE-12698	TIBCO BusinessEvents Studio could not use XML Schema as a shared resource.
5.2.0	BE-12598	The studio-tools utility <code>importExcel</code> and <code>validateTable</code> could not be used without specifying a workspace directory.
5.2.0	BE-12543	Modifying the event properties after they were asserted did not throw any exception in the RTC. An exception is now thrown if the event is updated in RTC but not in Preprocessor.
5.2.0	BE-12057	Even if the classes failed to build in RMS, BusinessEvents Studio displayed the success message and the log file showed an error. Proper error messages are now displayed in the studio.
5.2.0	BE-12056	In some situations the TIBCO BusinessEvents Monitoring and Management server became unresponsive when a console user switched from viewing one processing unit to viewing another.

Closed in Release	Key	Summary
5.2.0	BE-11963	<p>Could not configure the number of retries for database error and set the interval of retry. TIBCO BusinessEvents 5.2.0 provides the following properties to set the count and interval for retries:</p> <ul style="list-style-type: none"> <li>• <code>be.engine.txn.database.retrycount</code> (default max-integer)</li> <li>• <code>be.engine.txn.database.sleepime</code> (default 5000 milliseconds)</li> </ul>
5.2.0	BE-11616	Profiler did not generate any output when running the engines in cache mode.
5.2.0	BE-11587	When the TIBCO BusinessEvents DataGrid cache provider was used, cache-related statistics did not appear in the Monitoring and Management console.
5.2.0	BE-11502	When no output message was defined for a web service, BusinessEvents threw errors.
5.2.0	BE-11297	The product did not support LDAP authentication for OpenLDAP for RMS.
5.2.0	BE-10154	The backing store did not disable the use of the objecttable ( <code>be.backingstore.useobjecttable=false</code> , <code>TIBCO.BE.function.catalog.getbyuri=true</code> ).
5.2.0	BE-10005	The BusinessEvents engine threw NPE when using the concurrent working memory for the cache-only object management configuration, but using the concept references between the in-memory objects.
5.2.0	BE-9992	TIBCO BusinessEvents Studio did not display an error on using reserved words as property names for concepts.
5.2.0	BE-9973	In TIBCO BusinessEvents WebStudio, it was not possible to delete worklist records/revisions from the worklist without manually clearing the <code>.BDB</code> file.

Closed in Release	Key	Summary
5.2.0	BE-9838, BE-9837	This issue occurred when using the XSLT mapper, if "Surround with Choice" was used on an attribute, and you clicked "OK" without populating the final [When] condition. When the mapper was later reopened, the final When statement no longer surrounded the attribute and the mapper showed an empty 'When' attribute.
5.2.0	BE-9836	This issue occurred when using the XSLT mapper, if "Surround with If" is used on an attribute and you clicked "OK" without populating the condition. When the mapper was later reopened, the if no longer surrounded the attribute and the mapper showed an empty 'If' attribute.
5.2.0	BE-9642	The <code>Cluster.scheduleEvent()</code> function was not functioning as documented.
5.2.0	BE-9335	There was no way to access header information from the http requests (https).
5.2.0	BE-9298	Could not reference EXTERNAL trusted certificates.
5.2.0	BE-9146	The JMS map message only mapped to the properties of the event rather than the payload, making it difficult to parse the XML message and its attributes.
5.2.0	BE-9079	The reflection API could not get a value from a property array. It was required for cloning a concept. Now you can use <code>Instance.PropertyArray.toArrayInt</code> or <code>Instance.PropertyArray.toArrayString</code> .
5.2.0	BE-8326	When using the command-line <code>buildear</code> tool to generate an enterprise archive for TIBCO BusinessEvents Studio project that was imported from a 3.x TIBCO Designer project, sometimes this harmless exception was being thrown even when the EAR file generates successfully:  <code>org.eclipse.core.internal.resources.ResourceException</code>
5.2.0	BE-7476	Collections in BusinessEvents was not supported.

Closed in Release	Key	Summary
5.2.0	BE-7034	In the XPath formula builder, under the Logical functions category, if the <code>xor</code> function was used, a false warning "Always true" was shown.
5.2.0	BE-5581	When the Business Events engine crashes, the <code>CLIENT_ACKNOWLEDGE AckMode</code> did not roll back the prefetched and unacknowledged JMS messages to the queue.
5.2.0	BE-3853	The maximum History size of concepts was 1027. Now it is increased to 32767.
5.2.0	BE-3186	There was no API for retrieving objects in BusinessEvents Distributed Cache.
5.2.0	BE-2670	The error thrown on incorrect mapping of a JMS property was not helpful.
5.1.4	BE-21514	When concept or event are created and deleted in the same RTC, the TIBCO BusinessEvents engine slows down heavily. The concept or event (on deletion) are deleted from TIBCO BusinessEvents but not from the heap.  This was fixed.
5.1.4	BE-21507	In the Linux platform, when a rule or rule function was accessed from the project library in the BusinessEvents Studio, the "assertion failed" error was thrown.  This was fixed.
5.1.4	BE-21470	When cache size and result set was very large for the Browser Query Language (BQL), the query performance was very poor.  This was fixed.
5.1.4	BE-21442	When multiple inference agents are used with the shared nothing persistence in the SYNC mode, and very frequent updates are made to the concept, then the latest version of concept was not returned every time.  This was fixed.

Closed in Release	Key	Summary
5.1.4	BE-21228	In the Linux platform, where TIBCO BusinessEvents 5.1.x and TIBCO Runtime Agent 5.9.0 were installed in the same <i>TIBCO_HOME</i> , the cache node start was generating the core dump file.  This was fixed.
5.1.4	BE-21205	When several engines, using TIBCO BusinessEvents DataGrid, are started at the same time, then some engines might get stuck and never fully come up.  This was fixed.
5.1.4	BE-21136	In TIBCO BusinessEvents WebStudio, the notifications <code>onOverdraft_Gold.ruletemplateinstance</code> and <code>setAccountTypeAsGold.ruletemplateinstance</code> were to be removed from the overdraft notifications.  This was fixed.
5.1.4	BE-21135	TIBCO BusinessEvents did not properly handle the value escaping in its call to <code>String.replaceAll()</code>
5.1.4	BE-21112	In the TIBCO BusinessEvents Studio debugger, the RuleInput view was not working correctly.
5.1.4	BE-21054	With the load balancer configuration, pending messages were not confirmed from the TIBCO BusinessEvents router/receiver inference engines to EMS.  This was fixed.
5.1.4	BE-21044	Added capability to call specialized preprocessor rulefunctions for SOAP over the JMS operation-specific events.  This was added.
5.1.4	BE-21039	<code>HTTP.sendSecureAsynchronousRequest()</code> did not allow for timeout or error handling.  This was fixed.

Closed in Release	Key	Summary
5.1.4	BE-21025	The catalog function <code>File.readLine()</code> did not work as expected. This was fixed.
5.1.4	BE-21018	Ability to disable the 'Expect' header in request from TIBCO BusinessEvents to external Web Service was requested. This was provided.
5.1.4	BE-20989	Alter script was not generated if the max-size in CDD was set to beyond 4000 (CLOB). This was fixed.
5.1.4	BE-20987	When the XSLT transformation is used in the TIBCO BusinessEvents custom function, the <code>java.lang.AbstractMethodError</code> exception was thrown. This was fixed.
5.1.4	BE-20985	Removing an entry from the Test Data column in BusinessEvents Studio caused the column data to slide over. This was fixed.
5.1.4	BE-20980	An NPE was thrown when a project with call activity task was deployed through Tibco Administrator. This was fixed.
5.1.4	BE-20979	TIBCO BusinessEvents MM had a Generic Web Server directory traversal vulnerability. This was fixed.
5.1.4	BE-20975	<code>RuleSessionStopWatchKeeper</code> metrics could not be disabled. This was fixed.

Closed in Release	Key	Summary
5.1.4	BE-20966	<p>The following exception was occurring:</p> <pre>Get "java.lang.RuntimeException: com.tibco.cep.query.api.QueryException: java.util.NoSuchElementException"</pre> <p>This was fixed</p>
5.1.4	BE-20884	<p>When query contains (boolean or/and boolean), a</p> <pre>java.lang.RuntimeException: com.tibco.cep.query.api.QueryException: java.lang.NullPointerException</pre> <p>is thrown when the debug log level(*:debug) was enabled.</p> <p>This was fixed.</p>
5.1.4	BE-20881	<p>More information was needed to link the exception in the advisory event directly to the event/data for which it was raised.</p> <p>This was provided.</p>
5.1.4	BE-20862	<p>There were issues with cluster management in an unstable network environment.</p> <p>New properties are added to provide greater stability, see <a href="#">Cluster Membership Datagrid Properties on page 32</a> for more details on the properties.</p>
5.1.4	BE-20854	<p>The Global Variables modified by TIBCO BusinessEvents Monitoring and Management were not working.</p> <p>This was fixed.</p>
5.1.4	BE-20853	<p>While trying to build an EAR file in TIBCO BusinessEvents studio, the following error was thrown:</p> <pre>java.lang.Exception: java.lang.IllegalArgumentException: -1'</pre> <p>This was fixed.</p>
5.1.4	BE-20748	<p>With the shared nothing persistence, when one cache engine was gracefully shutdown, it took a long time to stop.</p> <p>This was fixed.</p>

Closed in Release	Key	Summary
5.1.4	BE-20737	Both the Receiver and Router Destination MBean code needed to check if a bean had registered before attempting to register again.  This was fixed.
5.1.4	BE-20718	Generated Decision Table Classes were NOT deleted, even though the Decision Table was deleted in WebStudio.  This was fixed.
5.1.4	BE-20716	Request to completely disable the metrics/statistics in TIBCO BusinessEvents.  This was provided.
5.1.4	BE-20102	Updating a concept would not occur, and the required rules were not triggered.  This was fixed.
5.1.4	BE-19057	At design time, dragging and dropping a concept to move it failed to fix up <code>ownerPath</code> of any properties.  Now the quickFix utility is enabled to fix the concept.
5.1.4	BE-18611	The activities of the TIBCO BusinessEvents cache server suspended on issuing disconnect.  This was fixed.
5.1.4	BE-17981	If multiple references to the same element were present in the project, the <code>NullPointerException</code> was thrown during the cache startup.  TIBCO BusinessEvents Studio now gives the validation error, if duplicate references are present in the project.
5.1.4	BE-17641	In TIBCO BusinessEvents 5.0.0, when you try to cache the load concept using the external ID which was found in local cache, then the log debug line contains the text, "Found in local cache". The text was not appearing in the TIBCO BusinessEvents 5.1.x release.  This was fixed.

Closed in Release	Key	Summary
5.1.4	BE-17445	<p>When an artifact was moved to a project from another project without using the <b>Refactor &gt; Move</b> command, the error was thrown while building EAR.</p> <p>TIBCO BusinessEvents Studio now gives the validation error, if the artifact is moved without using the <b>Refactor &gt; Move</b> command.</p>
5.1.4	BE-16019	<p>Connecting to EMS using SSL in TIBCO BusinessEvents Studio threw the error</p> <pre>no trusted certificates are set.</pre> <p>This was fixed.</p>

Closed in Release	Key	Summary
5.1.3	BE-5552	<p>The WSDL import wizard now generates resources for handling SOAP/JMS bindings in the following way:</p> <p><b>Events</b></p> <ul style="list-style-type: none"><li>• One Event type named /Events/SoapJms: this event type inherits from SOAPEvent and provides a set of properties that may be useful for SOAP/JMS (see also the RegisterSoapEventUris function below).</li><li>• Operation-specific events are imported similarly to SOAP/HTTP WSDL import.</li></ul> <p><b>Channels</b></p> <ul style="list-style-type: none"><li>• A JMS channel (by default located at /Channels/SoapJms) for each different set of parameters, with the following:</li><li>• One shared JMS connection resource (by default located in the Transport folder of the imported service folder).</li><li>• One destination for each different set of destination parameters (by default named destinationName), using the serializer SoapMessageSerializer and the default event type /Events/SoapJms (see the RegisterSoapEventUris function).</li></ul> <p><b>Rules</b></p> <ul style="list-style-type: none"><li>• One rule for each operation, imported similarly as for the SOAP/HTTP WSDL import. By default the rule replies with a SOAP fault saying that the operation is not implemented.</li></ul> <hr/>

Closed in Release	Key	Summary
	BE-5552 (continue.)	<p><b>RuleFunctions</b></p> <ul style="list-style-type: none"> <li>• One RuleFunction for each operation, imported similarly as the SOAP/HTTP WSDL import. If desired this can be used as a preprocessor function.</li> <li>• One RuleFunction named RegisterSoapEventUris (by default located in the Transport folder of the imported service folder). This function instructs the deserializer how to deserialize messages into operation-specific events instead of using the destination's default.</li> <li>• RegisterSoapEventUris registers, in the JMS SoapMessageSerializer, an event type for each operation that is reachable by a SOAP/JMS binding. It should be invoked as a startup function.</li> </ul>
5.1.3	BE-5074	Now it is possible to re-use the workKey in the scheduler.
5.1.3	BE-3819	Deleted entities are now removed from the write-behind SharedAll store instead of being marked for deletion.
5.1.3	BE-20740	<p>Enhancement request to re-use the work key in the scheduler.</p> <p>This was provided</p>
5.1.3	BE-20721	<p>When <code>explicit.tuple</code> is set to <code>TRUE</code>, a NPE is thrown when writing to cache if the concept array property is assigned with a null value.</p> <p>This was fixed and no <code>NullPointerException</code> is thrown any more.</p>
5.1.3	BE-20720	<p>Resolution issue were reported when the XSDs were in project libraries.</p> <p>The imported project library payload properties from XPATH are now showing up correctly.</p>
5.1.3	BE-20715	<p>SN+Eviction - update sequence on the same key sometimes returns null values for an old tuple.</p> <p>This was fixed.</p>

Closed in Release	Key	Summary
5.1.3	BE-20711	It was requested that the conflicting schema check be refined to the element level instead of the targetNamespace level. This was fixed.
5.1.3	BE-20694	Deployed class logging statements for decision tablehot deployment did not depict the class name. This was fixed.
5.1.3	BE-20656	Different instances of the dashboard were showing different results in the chart, and logs were showing <code>java.lang.NullPointerException</code> .
5.1.3	BE-20653	Different instances of the dashboard were showing different results in the chart, and logs were showing <code>java.lang.ClassCastException</code> . This was fixed.
5.1.3	BE-20577	XPath builder did not support the calendar return type from any custom functions JAR. This was fixed.
5.1.3	BE-20445	Support for merging SOAP/JMS resources during WSDL import was added.
5.1.3	BE-20444	Support for SOAP/JMS in WSDL export was requested. This was provided.
5.1.3	BE-20437	SQL alter scripts were improperly altering concepts that have not been changed when they had a DateTime field with history enabled. This was fixed.
5.1.3	BE-20322	If the first login fails because of an incorrect credential, all subsequent logins will fail even if correct credentials are specified. This was fixed.

Closed in Release	Key	Summary
5.1.3	BE-20321	While running RMS as a Windows service, the option "Generate Deployable" would hung and time out. This was fixed and deployables are generated properly.
5.1.3	BE-20320	Basic validation for Domain Model usage is now supported.
5.1.3	BE-20115	Double quote around "SOAPAction" were missing in the release 5.1.2. This was fixed.
5.1.3	BE-20105	The recovery time for shared nothing is longer when using TIBCO ActiveSpaces 2.0.2 HF9 compared with TIBCO ActiveSpaces 2.0.2 HF6. This was fixed.
5.1.3	BE-20104	The function Engine.Rtc.abortRTC() was not working as expected. Deleted concepts were still stored in cache, even after calling abortRTC(). This was fixed.
5.1.3	BE-20057	100% CPU usage in the secondary (passive) agent was occurring when it was started before the primary (active) agent. This was fixed.
5.1.3	BE-20056	WebStudio login username/password didn't support multibyte characters for file-based authentication. This was fixed.
5.1.3	BE-20054	Managing the life cycle of Domain models in WebStudio/RMS and BE Studio is expected to proceed without restarting RMS. This was fixed.

Closed in Release	Key	Summary
5.1.3	BE-20050	The BQL Query (delete from ...) was giving a <code>NullPointerException</code> after enabling the option "Shared Nothing".  This was fixed.
5.1.3	BE-20049	Support for Proxy configuration in HTTP-based catalog functions was added.
5.1.3	BE-20036	A TIBCO BusinessEvents Engine working as a Windows Service required that TIBCO Hawk and TIBCO Rendezvous be installed first.  This was fixed.
5.1.3	BE-20018	An error appeared in the log while executing <code>Query.Util.executeInDynamicQuerySession:</code> <code>java.lang.RuntimeException:</code> <code>com.tibco.cep.query.api.QueryException:</code> <code>java.lang.IllegalStateException: The maximum number of identifiers has been reached</code>  This was fixed.
5.1.3	BE-19966	When using the <code>AS.lockEvent()</code> channel function, there was no option to specify timeout.  This was fixed.
5.1.3	BE-19962	Transaction error handler rule function did not work when the persistence was shared nothing with Sync.  Add property <code>be.engine.txn.error.function.recursive.rtc=true</code> in CDD along with the existing property <code>be.engine.txn.error.function.</code>  This was fixed.
5.1.3	BE-19961	Enhancement was requested for <code>ScheduledEvent</code> to support CRON syntax as 4th parameter.  This was provided.

Closed in Release	Key	Summary
5.1.3	BE-19300	When shared nothing persistence is used, the getInstance Hawk method in TIBCO Administrator doesn't return data for an external ID search.  This was fixed.

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Closed in Release	Key	Summary
5.1.3	BE-18004	<p>Provide a SOAP message serializer for the JMS channel.</p> <p>A serializer/deserializer for SOAP/JMS has been added to the JMS destinations. This serializer handles the conversion between JMS messages and SOAPEvent events. Two helper catalog functions are provided as well:</p> <ul style="list-style-type: none"> <li>• SOAP.registerEventUri()           <pre>void registerEventUri(String eventUri, String destinationUri, String serviceName, String soapAction)</pre> <p>It associates an event type to a given input destination, target service, and SOAP action. This is used by the SOAP/JMS deserializer to generate events of specific types (eventUri), instead of using the default event type resolution mechanism.</p> <ul style="list-style-type: none"> <li>— eventUri: String path of an event type in the project.</li> <li>— destinationUri: String path of the BusinessEvents destination receiving the message. If empty, matches all destinations.</li> <li>— serviceName: String name of the target service declared in the message received. If empty, matches all service names.</li> <li>— soapAction: String value of the soapAction parameter in the message received.</li> </ul> </li> <li>• SOAP.newCorrelationId()           <pre>String newCorrelationId(String responseEventUri)</pre> <p>Creates a new correlation ID for use when sending a message in a request/response case. This is used by the SOAP/JMS deserializer to generate a response event of a specific type, instead of using the default event type resolution mechanism.</p> <ul style="list-style-type: none"> <li>— responseEventUri: String path of an event type in the project.</li> <li>— returns: String correlation ID.</li> </ul> </li> </ul>

Closed in Release	Key	Summary
5.1.2	BE-20078	Sometimes when shutting down MM, an INVALID_OBJECT exception was thrown.
5.1.2	BE-20017	<p>You can configure Delivery mode and Acknowledgement mode in JMS channel at design time and runtime using global variables.</p> <p>Global variables must have the following values to work at runtime:</p> <p><b>For Delivery Mode</b></p> <ul style="list-style-type: none"> <li>PERSISTENT : value="2"</li> <li>NON-PERSISTENT : value="1"</li> <li>RELIABLE(TIBCO Proprietary) : value="22"</li> </ul> <p><b>For Acknowledgement Mode</b></p> <ul style="list-style-type: none"> <li>AUTO_ACKNOWLEDGE : value="1"</li> <li>CLIENT_ACKNOWLEDGE : value="2"</li> <li>DUPS_OK_ACKNOWLEDGE : value="3"</li> <li>EXPLICIT_CLIENT_ACKNOWLEDGE(TIBCO Proprietary) : value="23"</li> <li>EXPLICIT_CLIENT_DUPS_OK_ACKNOWLEDGE(TIBCO Proprietary) : value="24"</li> <li>NO_ACKNOWLEDGE(TIBCO Proprietary) value="22"</li> </ul>
5.1.2	BE-19997	When you try to create a rule based on the rule template with a SOAP event, WebStudio throws an exception.
5.1.2	BE-19955	The default value of the <code>be.engine.concurrentwm.enable.newImpl</code> property is now true when the concurrent RTC is enabled for the inference agent.
5.1.2	BE-19948	In TIBCO BusinessEvents Studio, the tooltip documentation for the <code>Event.routeTo</code> catalog function contains many dollar characters (\$) within the properties argument.

Closed in Release	Key	Summary
5.1.2	BE-19927	The sessionConcept concept is now not required to be in the scope of the callback rule function. Remove session concept from the call back rule function scope from existing projects using page flow destination.
5.1.2	BE-19920	The ActiveSpaces catalog function AS.query() returns entire matched objects, which could results in OOM error in JVM heap. To avoid this, the catalog function should return a iterator, which could be used to see next results (iterator.next()).
5.1.2	BE-19906	<p>A new property, tibco.be.datetime.parse.lenient, is introduced to control the validation of DateTime field ranges when using the DateTime.parseString function.</p> <p>By default, the property is set to true and the values of the DateTime field ranges are normalized to fit the expected ranges.</p> <p>Set the property to false to ensure that the values of the DateTime field ranges are not normalized. An error will be thrown if the DateTime field ranges are out of the expected range.</p>
5.1.2	BE-19902	An exception was thrown when an inference agent listening on an HTTP channel received an HTTP Put request along with an empty content-type header and Transfer Encoding as chunked.
5.1.2	BE-19898	Fixed the error, java.lang.NoClassDefFoundError, thrown when building an EAR file using the studio-tools utility.
5.1.2	BE-19824	The function Metaspacespace.Tuple.getDateTime method threw NullPointerException when the retrieved datetime value in the tuple was null.

Closed in Release	Key	Summary
5.1.2	BE-19807	<p>When checking out a project in WebStudio, an operation timeout error was thrown if the operation took more than four minutes. This has been fixed and all the artifacts are listed in the checkout dialog. The fix requires the browser cache to be cleared before retrying the operation.</p> <p>When you click “Checkout”, the time taken by the script depends on the volume of data being loaded. In case of a long running script, a browser warning is presented with the message “Long running script, do you want to stop it?”</p> <p>[Yes/No]”. Select “Yes” to proceed.</p> <p>The in-built security checks by browsers present this warning to ensure that there are no underlying malware scripts or webroot sweepers running, and the script in question is known and safe.</p> <p>To avoid the warning message, you can update the browser configuration and increase the maximum time to run scripts. For example, if using Firefox:</p> <ol style="list-style-type: none"> <li>1. Go to the configuration page by opening a new tab and entering “about:config” in the address bar.</li> <li>2. Search for the Preference Name “dom.max_script_run_time”. Double-click the preference name and enter a new value.</li> </ol> <p>NOTE: After updating the configuration, there may still be a slight delay on the browser.</p>
5.1.2	BE-19781	<p>The EAR file generation failed when a second try catch block was added in the first try catch block.</p>
5.1.2	BE-19761	<p>When multiple hotfixes of version 5.1.1 were applied on a machine, TIBCO Administrator displayed different versions of TIBCO BusinessEvents engines.</p>
5.1.2	BE-19756	<p>When DB Concepts are used with the Cache Only mode, there is inconsistency between the entity cache and object table, if the DB Concept instances are evicted from the entity cache. This happens since the object handles for the evicted DB Concepts still remain in the object table.</p>

Closed in Release	Key	Summary
5.1.2	BE-19701	Only the concept property which has history enabled should be stored as BLOB in TIBCO ActiveSpaces cache instead of the whole concept.
5.1.2	BE-19693	TIBCO BusinessEvents returned invalid time when the DateTime concept was retrieved from cache while using shared nothing.
5.1.2	BE-19691	<p>When using shared nothing persistence, TIBCO BusinessEvents ignored the time zone stored in the cache. This has been fixed.</p> <p><b>Note</b> The property <code>be.engine.cluster.as.tuple.explicit.store_timezones</code> must be set to true in the CDD file to ensure that the time zone is retrieved correctly from the cache.</p>
5.1.2	BE-19684	<p>Scheduled events were not always created when the expiration time was reached.</p> <p>This issue was seen when a large number of events were scheduled within a short time period. The incorrect behavior resulted in a failure to execute instructions that depended on the scheduled event.</p>
5.1.2	BE-19634	When a project was checked-out in WebStudio, all the double-byte concept names, concept property names, event names, and event property names were garbled. Creating a rule on such garbled attribute names was supported incorrectly.
5.1.2	BE-19631	<p>TIBCO BusinessEvents was automatically creating AS connection with a randomly generated member name, such as, a9fe85cc-c352. The automatically generated name could not be changed to a more user-identifiable name.</p> <p>This was fixed.</p>
5.1.2	BE-19618	TIBCO BusinessEvents do not support the SSLv3 protocol.
5.1.2	BE-19610	The User Name on JMS Connection supported global variable but the icon did not appear in 5.1.0 and 5.1.1 versions.

Closed in Release	Key	Summary
5.1.2	BE-19603	The rule template instance builder now supports the use of APIs “startsWith” and “endsWith” to check strings. These functions can be used in conditions as part of the rule template instance “When” section.
5.1.2	BE-19600	TIBCO BusinessEvents scheduler failed to expire more than 1000 items at once when it was configured with Oracle backing-store and the property 'be.engine.scheduler.workitems.batchsize' was set to a value greater than 1000.  (Default value for this property is 500.) This has been resolved and the property can now be set to a value greater than 1000.
5.1.2	BE-19598	Catalog function Metaspace.Tuple.containsValue() always returned false for String and Character type fields. This has been fixed.
5.1.2	BE-19593	TIBCO BusinessEvents WebStudio did not work as expected behind a load balancer because WebStudio used the absolute paths instead of relative paths, particularly the “/ws” in the context path.
5.1.2	BE-19591	TIBCO BusinessEvents DataGrid behaved in non-deterministic ways in the presence of significant network outages. In some cases, it would crash or become unusable.  This fix makes it behave predictably in the presence of any type of network outage. In case of long network outages, processes thrown out of the cluster will rejoin gracefully after the network connectivity has been re-established and the affected members are restarted.

Closed in Release	Key	Summary
5.1.2	BE-19589	<p>TIBCO BusinessEvents Spotfire Add-on Bundle was unable to connect to the TIBCO BusinessEvents DataGrid and expose the cache data on Windows platform due to a missing DLL. This hotfix provides the missing DLL file to fix the issue.</p> <p>To enable the fix:</p> <ol style="list-style-type: none"> <li>3. Run Setup.exe available at  <code>%TIBCO_HOME%\as\2.0\containers\2.0.2\dotNet\bin\win_x86_64</code> to register the DLL in the GAC.</li> <li>4. Update the path to append  <code>%TIBCO_HOME%\as\2.0\lib</code> to include the native libraries.</li> </ol> <p>TIBCO BusinessEvents Spotfire Add-on Bundle was unable to connect to the TIBCO BusinessEvents DataGrid and expose the cache data on Windows platform. This has been fixed.</p>
5.1.2	BE-19581	<p>When the database server closed JDBC connections after a period of inactivity, TIBCO BusinessEvents did not recreate them and threw exceptions. Now all connections are monitored to ensure the pool can be recovered in a timely manner. In some cases satisfactory results require use of the following property, set as shown:</p> <pre>be.jdbc.test.connections.checkall=true</pre> <p>The following property works with <code>debugRole</code> logging role. It causes additional debug messages to be logged showing the connections that are being monitored.</p> <pre>be.jdbc.test.connections.logall=true</pre>

Closed in Release	Key	Summary
5.1.2	BE-19573	<p>The JDBC backing store updates for certain changes to contained concepts (especially arrays) were slow. The performance for the following changes has been improved:</p> <ul style="list-style-type: none"> <li>parent concept is modified</li> <li>child concept is modified</li> <li>child concept is added or removed.</li> </ul> <p>To enable the fix, add the property <code>be.backingstore.containedconceptarray.addremoveonly</code> in the CDD file at the cluster level and set it to true. The property is false by default.</p> <p>This property can be used together with the property <code>be.backingstore.unmodified.skip</code> to further optimize database operations.</p> <p><b>NOTE</b> Do not use this property if there are changes to contained concepts where the position of the child concepts is modified or if a child concept is nullified. If you choose to do so, note that the modifications will not be written to the database.</p>
5.1.2	BE-19571	<p>Validation exceptions were observed when new rules with custom conditions with more than one parameter separated by a comma(,) were added through WebStudio.</p>
5.1.2	BE-19569	<p>The backing store has been fixed to recognize the type "SQL Server" and apply special settings such as the following properties properly:</p> <pre>&lt;property name="be.backingstore.optimize.reads" value="true"/&gt; &lt;property name="be.backingstore.optimize.writes" value="true"/&gt;</pre>
5.1.2	BE-19563	<p>The Add and Delete buttons on the Rule Template Bindings form in TIBCO BusinessEvents Studio were missing. This issue was observed only on Linux platform.</p>

Closed in Release	Key	Summary
5.1.2	BE-19559	On Solaris platform, the studio-tools utility failed to build an EAR file and threw an exception if the TIBCO BusinessEvents project contained database concepts.
5.1.2	BE-19556	The TCP server pool can now grow and shrink when needed to support up to 512 simultaneous clients.
5.1.2	BE-19552	Scheduler related queries executed on <code>WorkItems</code> table would, in some cases, result in sub-optimal SQL plans and full table-scans. These scheduler related queries have been fixed to eliminate these inefficiencies.
5.1.2	BE-19547	TIBCO BusinessEvents WebStudio did not handle double-byte or unicode characters for languages such as Chinese, Korean, and Japanese correctly. These characters were garbled and displayed as question marks ("????") in WebStudio.
5.1.2	BE-19436	Studio-tools were not installed on Solaris x86.
5.1.2	BE-19435	When working with multiple projects on WebStudio, there was no way to keep only the active project open and close all of the other projects. This functionality was not easily visible in WebStudio and has been provided.
5.1.2	BE-19433	When using in-memory mode, it was possible to create a concept and an event with the same <code>extId</code> . If you set the property <code>java.property.be.engine.kernel.unifiedExtIdMap</code> to true in the <code>tra</code> file, then it gives an exception for duplicate <code>extId</code> for events and concepts.
5.1.2	BE-19431	When trying to load classes, TIBCO BusinessEvents engine showed redundant warnings in the log for unnecessary classes, which were not required to be loaded in the cache.
5.1.2	BE-19430	Silent uninstallation was not supported on different platforms, such as 32-bit Windows, and 32 and 64-bit Linux.

Closed in Release	Key	Summary
5.1.2	BE-19427	<p>It was not possible to get header information from HTTPS requests.</p> <p>Now you can get header information using event properties with the same name as the header properties. You need to replace "-" with "_".</p> <p>To access URI, use the API, <code>HTTP.getRequestURI</code>, passing the event.</p>
5.1.2	BE-19419	<p>WebStudio now supports SSL configuration. For more information, see <i>Enabling SSL Authentication in RMS</i> section in the "Configuring RMS and RMS Projects" chapter of <i>TIBCO BusinessEvents Developer's Guide</i>.</p>
5.1.2	BE-19410	<p>The time zone value recorded in the log files was incorrect if the specified time zone included minutes. For example, if the time zone was set to GMT +5:30, the log file recorded this value as GMT +5.</p> <p>To fix the issue, set the system property <code>be.trace.print_tz_minutes</code> to <code>true</code>. Note that the fix is disabled by default.</p>

Closed in Release	Key	Summary
5.1.2	BE-19407	<p>The following catalog functions are included for creating a space to store data outside of the TIBCO BusinessEvents defined spaces in TIBCO ActiveSpaces:</p> <ul style="list-style-type: none"> <li>• <code>createUserSpace()</code></li> <li>• <code>recoverUserSpace()</code></li> <li>• <code>setCachePolicy()</code></li> <li>• <code>getCachePolicy()</code></li> <li>• <code>setCapacity()</code></li> <li>• <code>getCapacity()</code></li> <li>• <code>setPersistencePolicy()</code></li> <li>• <code>getPersistencePolicy()</code></li> <li>• <code>setPersistenceType()</code></li> <li>• <code>getPersistenceType()</code></li> <li>• <code>setReplicationCount()</code></li> <li>• <code>getReplicationCount()</code></li> <li>• <code>setReplicationPolicy()</code></li> <li>• <code>getReplicationPolicy()</code></li> </ul>
5.1.2	BE-19406	<p>The Host Aware Replication feature is now enabled by default and the replicas are within hosts only. To disable it, add the following property to cdd:</p> <pre>be.engine.cluster.as.hostaware.enable=false</pre> <p>It enables the replica on a single machine.</p>
5.1.2	BE-19368	<p>The icon indicating global variable support for the User Name field on JMS Connection was missing. This has been fixed.</p>
5.1.2	BE-19291	<p>Hot deployment of a rule template instance failed and threw an exception (<code>NullPointerException</code>) if the pre-conditions area contained a function that used the entity declared in scope as is. For example, "Instance.isNew (field)".</p>

Closed in Release	Key	Summary
5.1.2	BE-19234	<p>After starting two inference agents without specifying the engine name, shutting down the first inference agent caused the other inference agent to shut down too.</p> <p>Additionally, Microsoft Windows threw an APPCRASH error.</p>
5.1.2	BE-19217	<p>TIBCO BusinessEvents engine failed with an error "Identity type: url is not supported" when using a secure JMS channel that used an identity file in the SSL configuration. This has been fixed.</p>
5.1.2	BE-19183	<p>The inference agent did not stop processing messages when the number of cache agents dropped below the quorum count. This has been fixed by changing the default value of minimum seeders.</p> <p>TIBCO BusinessEvents now sets the value of minimum seeders for user defined spaces to the same value as the quorum size, by default. Previously, the default value of minimum seeders was always '1' and the inference agent continued processing as long as there was at least one cache agent.</p> <p>To override the default value of minimum seeders, you can specify the new value using the following property:</p> <pre>&lt;property name="be.engine.cluster.as.minSeeders" value="3"&gt;</pre>
5.1.2	BE-19177	<p>TIBCO BusinessEvents allows you to disable cookies when accepting or sending HTTP requests, if needed. Cookies are enabled by default.</p>
5.1.2	BE-19176	<p>The <code>SpaceName</code> field in the AS channel file under the destinations section is not picking up the values from global variables.</p>
5.1.2	BE-19173	<p>Reverse references were not updated properly and caused an exception, <code>ArrayIndexOutOfBoundsException</code>. This has been fixed.</p>

Closed in Release	Key	Summary
5.1.2	BE-19159	Upon deployment, TIBCO BusinessEvents did not honor the global variable settings for a folder of the project if the same folder existed in an imported project library.
5.1.2	BE-19157	The QName functions are now available in the XPath Formula Builder.
5.1.2	BE-19155	When a rule triggered by a timer event tried to access a scorecard before the startup rule function initialized and asserted the scorecard, a <code>DuplicateExtIdException</code> , was thrown. This was observed when concurrent RTC was true and the timer event and the startup rule function were executing in parallel.
5.1.2	BE-19135	In business rules, expressions built by end-users containing more than one level of drill-down (for example, <code>person.address.zip</code> ) were not always evaluated correctly at runtime.
5.1.2	BE-19126	The User Name field in JMS connection did not accept global variables.
5.1.2	BE-19103	Fixed issues with the TIBCO Rendezvous transport with SSL. To use the secure transport: <ul style="list-style-type: none"> <li>ensure that the certificates given to <code>tibrvsd</code> are in PEM format.</li> <li>edit the file <code>be-engine.tra</code> and add <code>%RV_HOME%/lib/tibrvjsd.jar</code> to <code>tibco.env.STD_EXT_CP</code>.</li> </ul>
5.1.2	BE-19101	SSL configuration parameters for TIBCO Rendezvous, HTTP, and JMS shared resources can now be specified using global variables.
5.1.2	BE-19095	When running quick updates on filters, entry processors, and entry aggregators, an <code>IllegalMonitorStateException</code> was thrown by Oracle Coherence. This is a known issue with Oracle Coherence version 3.7.1.2 and has been fixed in version 3.7.1.3. This hotfix bundles Oracle Coherence version 3.7.1.3 which fixes the issue.

Closed in Release	Key	Summary
5.1.2	BE-19078	SSL configuration parameters for TIBCO Rendezvous, HTTP, and JMS shared resources can now be specified using global variables.
5.1.2	BE-19067	RMS now supports the use of OpenLDAP for LDAP authentication. To enable the use of OpenLDAP, edit the RMS.cdd to: <ul style="list-style-type: none"> <li>- add the property "be.auth.ldap.type = openldap".</li> <li>- set the property "be.auth.ldap.roleAttr = member".</li> </ul> <p>NOTE: Ensure that the property 'be.auth.ldap.type' is not defined when using Microsoft Windows Active Directory, IBM Tivoli Directory Server, or Oracle Directory Server.</p>
5.1.2	BE-19052	Upon deployment, TIBCO BusinessEvents did not honor the global variable settings for a folder of the project if the same folder existed in an imported project library.
5.1.2	BE-19048	The name, size, and rolling parameters could not be specified for the ActiveSpaces log generated in BusinessEvents and thus it was filling up the file system.
5.1.2	BE-19047	When multiple TIBCO BusinessEvents engines were started at the same time, one of the engines acquired the cluster lock and never released it. This caused the other engines to wait indefinitely for the lock to be released. This has been fixed in TIBCO BusinessEvents DataGrid.
5.1.2	BE-19045	TIBCO BusinessEvents did not honor the value of the local cache size and the expiry time specified in the CDD file.
5.1.2	BE-19044	The inference engine's local cache (L1 cache) was disabled for persistence modes "Shared All" and "None". It is now enabled for these two modes. <p><b>NOTE</b> The local cache is kept disabled for the shared nothing persistence mode by design.</p>

Closed in Release	Key	Summary
5.1.2	BE-19021	<p>Performing a partial recovery using preload fetch size for an entity caused the TIBCO BusinessEvents engine to hang during startup. This has been fixed.</p> <p>For Entry Browsers, select one of the following values from the drop-down:</p> <ul style="list-style-type: none"> <li>• <b>ALL</b> The browser iterates through all the entries stored in the space at creation time and continues to iterate as changes occur in the space.</li> <li>• <b>NEW</b> The browser skips iterating through the entries stored in the space at creation time and only iterates through new changes that occur in the space.</li> <li>• <b>SNAPSHOT</b> The browser only iterates through the entries stored in the space at creation time.</li> </ul>
5.1.2	BE-19020	<p>Fixed issues with the TIBCO Rendezvous transport with SSL. To use the secure transport:</p> <ul style="list-style-type: none"> <li>• ensure that the certificates given to tibrvsd are in PEM format.</li> <li>• edit the file <code>be-engine.tra</code> and add <code>%RV_HOME%/lib/tibrvjsd.jar</code> to <code>tibco.env.STD_EXT_CP</code>.</li> </ul>
5.1.2	BE-19005	<p>The distribution scope for ActiveSpaces channel destinations is configurable now.</p>
5.1.2	BE-18991	<p>Support for ActiveSpaces subscriber functionality using subscriber catalog functions has been added. To enable the fix, add the property <code>-Dcom.tibco.cep.functions.as.metaspacesubscriber=true</code> in <code>studio.ini</code> or in <code>studio.tra</code> and restart TIBCO BusinessEvents Studio.</p>
5.1.2	BE-18966	<p>SSL configuration parameters for TIBCO Rendezvous, HTTP, and JMS shared resources can now be specified using global variables.</p>

Closed in Release	Key	Summary
5.1.2	BE-18927	<p>When using the studio-tools utility, catalogs were not loaded if the library path was specified only with the <code>-cp</code> option and not in the <code>.beproject</code> file.</p> <p>This has been fixed and you can now specify the library path in either or both of <code>.beproject</code> file and <code>-cp</code> option.</p> <p>If the path in the <code>.beproject</code> file contains a classpath variable, ensure that the variable is defined as a Java property. And when using the <code>-cp</code> option, specify the absolute path.</p>
5.1.2	BE-18839	<p>In case of integration with TIBCO ActiveSpaces, there was no way to specify the timeout to try discovery URL when a cluster has network issues and all the members try reconnecting.</p> <p>A new MetaSpace catalog function, <code>setConnectTimeout()</code>, is now added to ActiveSpaces catalog functions.</p>
5.1.2	BE-18824	<p>The properties <code>be.mm.auth.ldap.adminPassword</code> and <code>javax.net.ssl.trustStorePassword</code> now support obfuscated passwords.</p>
5.1.2	BE-18775	<p>The ActiveSpaces channel can now be configured with multiple listen URL, using a semicolon as the delimiter. The ActiveSpaces channel also supports the use of a range of ports when specifying the listen URL.</p> <p>For example, you can specify the listen URL in one of the following ways:</p> <pre>- tcp://MACHINE1:PORT;MACHINE2:PORT</pre> <pre>-</pre> <pre>tcp://MACHINE1:PORTn1-PORTn2;MACHINE2:PORTn3-POR Tn4</pre> <p><b>NOTE</b> If the same hostname or IP address is specified multiple times in the listen URL, only the first occurrence is taken into consideration.</p>
5.1.2	BE-18774	<p>The QName functions are now available in the XPath Formula Builder.</p>

Closed in Release	Key	Summary
5.1.2	BE-18733	<p>TIBCO BusinessEvents engine tried to initialize a local channel twice, once for each agent during its startup sequence and consequently threw an <code>IllegalStateException</code>.</p> <p>This was observed when two agents used a local channel to share data with each other and were configured to run in the same processing unit.</p>
5.1.2	BE-18715	<p>An invalid EAR file was generated if the Time to Live (TTL) setting for an event was greater than 24 days (or 2147483647 ms). This has been fixed.</p> <p>Also, TIBCO BusinessEvents Studio now accepts a Time to Live value greater than 24 days.</p>
5.1.2	BE-18714	<p>On UNIX, semi-colon (;) was hard-coded in RMS logs instead of colon (:).</p>
5.1.2	BE-18704	<p>When selecting an event for a rule, rule function, or a transition declaration, events containing a payload element did not show up in the 'Select Resource' wizard.</p>
5.1.2	BE-18694	<p>When an event property value was modified in the preprocessor and then sent out with the event through either <code>sendEvent</code> or <code>routeTo</code>, the sent event did not reflect the modified value. This has been fixed.</p>
5.1.2	BE-18668	<p>Hot deployment for a business rule that did not use Views or Bindings failed if the business rule was modified from WebStudio.</p>
5.1.2	BE-18667	<p>Hot deployment for a business rule that uses Views or Bindings failed if the business rule was modified from WebStudio.</p>

Closed in Release	Key	Summary
5.1.2	BE-18620	<p>A memory leak was observed when using the HTTP Channel. To enable the fix, update the garbage collection parameter in be-engine.tra as follows:</p> <pre>java.extended.properties=-server -Xms2048m -Xmx2048m -XX:NewSize=1228M -javaagent:%BE_HOME%/lib/cep-base.jar -XX:MaxPermSize=512m -XX:+UseParNewGC -XX:+UseConcMarkSweepGC</pre> <p><b>Note</b> The new parameter for garbage collection must be set to 60% of the available heap. For example, if the available heap size is 2048M, the garbage collection parameter 'NewSize' is set to 1228M.</p>
5.1.2	BE-18603	<p>The size of the shared nothing persistence files continued to grow even though the number of concepts was relatively constant. Over a long period of time, the file size could grow unbounded. This has been fixed.</p> <p>Note that the file size will still grow to the size of its peak usage. If a new peak is reached, the file size changes to the new peak usage. The file size will remain at its highest peak usage even when concepts are removed. This is the expected behavior. If the file usage is below its peak, any free file space will be reused when more concepts are created.</p>
5.1.2	BE-18575	<p>The size of the shared nothing persistence files continued to grow even though the number of concepts was relatively constant. Over a long period of time, the file size could grow unbounded. This has been fixed.</p> <p>Note that the file size will still grow to the size of its peak usage. If a new peak is reached, the file size changes to the new peak usage. The file size will remain at its highest peak usage even when concepts are removed. This is the expected behavior. If the file usage is below its peak, any free file space will be reused when more concepts are created.</p>
5.1.2	BE-18561	<p>Hot deployment failed with a ConcurrentModificationException if the project EAR file contained JAR files that were created by the user.</p>

Closed in Release	Key	Summary
5.1.2	BE-18554	<p>In order to achieve fault tolerance in the RMS server, one had to manually add a JDBC connection to the <code>RMS.ear</code> file.</p> <p>To provide fault tolerance to all HTTP based BusinessEvents projects, refer to “HTTP and SOAP Channels” section in chapter 6 of TIBCO BusinessEvents Developer's Guide.</p>
5.1.2	BE-18552	<p>Looking up a concept in the cache by <code>extId</code> failed even though the concept existed in the TIBCO BusinessEvents DataGrid cache. This was observed only for cache entries that were evicted when the size of the cache exceeded the limit.</p>
5.1.2	BE-18533	<p>TIBCO BusinessEvents was unable to load the file <code>be-engine.xml</code> that is used to specify properties modifiable when deploying with TIBCO Administrator. This has been fixed.</p>
5.1.2	BE-18360	<p>An exception, <code>SAXParseException</code>, was thrown when logging in from WebStudio if a role DN for the user contained the XML special characters in its name. When adding role names containing the XML special characters to the access control file, replace the characters in the role names as listed below:</p> <ul style="list-style-type: none"> <li>• “&amp;” by “&amp;amp;”</li> <li>• “'” by “&amp;apos;”</li> </ul> <p>If role names containing special characters are defined as <code>adminRole</code> in the <code>RMS.cdd</code> file, then the characters in the CDD file should also be replaced.</p>
5.1.2	BE-18328	<p>Performing a partial recovery using <code>preload fetch size</code> for an entity caused the TIBCO BusinessEvents engine to slow down.</p>
5.1.2	BE-18320	<p>TIBCO BusinessEvents can now handle Korean characters.</p>

Closed in Release	Key	Summary
5.1.2	BE-18310	<p>A new property, <code>tibco.be.datetime.parse.lenient</code>, is introduced to control the validation of <code>DateTime</code> field ranges when using the <code>DateTime.parseString</code> function.</p> <p>By default, the property is set to <code>true</code> and the values of the <code>DateTime</code> field ranges are normalized to fit the expected ranges.</p> <p>Set the property to <code>false</code> to ensure that the values of the <code>DateTime</code> field ranges are not normalized. An error will be thrown if the <code>DateTime</code> field ranges are out of the expected range.</p>
5.1.2	BE-18265	<p>TIBCO BusinessEvents version 4.x was unable to load the file <code>be-engine.xml</code> that is used to specify properties modifiable when deploying with TIBCO Administrator. This has been fixed.</p>
5.1.2	BE-18250	<p>Multiple cache node failure was observed when using TIBCO BusinessEvents DataGrid.</p>
5.1.2	BE-18226	<p>The catalog function <code>StudioUtil.buildEar</code> returned <code>true</code> even if it failed to generate the EAR file.</p>
5.1.2	BE-18209	<p>When some Active Directory users tried to log in, an exception (<code>HeadersTooLargeException</code>) was thrown if the total size of the CNs or DNs of the associated groups was large.</p>
5.1.2	BE-18205	<p>TIBCO BusinessEvents did not catch the incorrect assignment between a contained concept property array and a contained concept array during project validation, or when building an EAR file. However, an exception was thrown at runtime.</p>
5.1.2	BE-18204	<p>A <code>NullPointerException</code> was thrown when building an EAR file in Studio if the project contained variables that were incorrectly declared as <code>"Date"</code> instead of <code>"DateTime"</code>.</p>
5.1.2	BE-18201	<p>The option to build an EAR file using the legacy compiler (parameter <code>'-lc'</code>) was missing from the <code>StudioUtil.buildEar</code> catalog function.</p>

Closed in Release	Key	Summary
5.1.2	BE-18197	When mapping a DateTime value to a concept's DateTime property, the milliseconds value was missing from the concept's DateTime property.
5.1.2	BE-18195	TIBCO BusinessEvents failed to build an EAR file when an incorrect declaration type was used in the project, and no validation errors were thrown.
5.1.2	BE-18194	With the property 'be.engine.cluster.as.tuple.explicit' set to true concepts that were loaded would fire rules as though all their properties had been modified.
5.1.2	BE-18188	When defining a coercion in the XSLT mapper, the cardinality of the coercion was not saved after applying the mapping.
5.1.2	BE-18168	The build version displayed in TIBCO Administrator was different from the actual build version.
5.1.2	BE-18166	<p>When using shared nothing persistence or when the property 'be.engine.cluster.as.tuple.explicit' was set to true, and a non-array concept property of type DateTime was stored in the TIBCO BusinessEvents DataGrid, the time zone was not stored. To ensure that the time zone value is stored, set the property 'be.engine.cluster.as.tuple.explicit.store_timezones' to true in the</p> <p>CDD file and restart the cluster.</p> <p>For applications using shared nothing persistence, the persistence files must be deleted before restarting the cluster with the property set to true.</p>
5.1.2	BE-18159	An error was thrown when trying to insert or update a record into a table with the primary key column managed by IDENTITY in SQL Server.
5.1.2	BE-18147	When using Shared-all persistence, providing null values to one or more field names caused the operation to hang.

Closed in Release	Key	Summary
5.1.2	BE-18128	TIBCO BusinessEvents Views and RMS can now be configured to support secure LDAP connections using the property <code>be.auth.ldap.ssl</code> . Set the property to true in the CDD file to enable secure LDAP connections.
5.1.2	BE-18121	TIBCO BusinessEvents MM can now be configured to support secure LDAP connections using the property <code>be.mm.auth.ldap.ssl</code> . Set the property to true in the CDD file to enable secure LDAP connections.
5.1.2	BE-18115	Performance degradation was observed when inference agents were added and shared nothing persistence was used. The degradation was visible even when the additional inference engines were idle.
5.1.2	BE-18114	When upgrading from version 5.1 to 5.1.1, the <code>be/5.1/bin/be-engine.tra</code> file used to get overwritten with a new template <code>be-eninge.tra</code> file, and all the previous custom parameter value entries would get lost.
5.1.2	BE-18104	TIBCO BusinessEvents threw an 'Invalid username and password' error when connecting to an authorization enabled Hawk domain using EMS.
5.1.2	BE-18096	When multiple engines configured to listen on the same HTTP or HTTPS port were started, the engines start without throwing a port binding error.  However, it was observed that only the engine that was started first processes the HTTP requests on the configured port. This is because the channel is started only on the engine that was started first.
5.1.2	BE-18064	A memory leak was observed in TIBCO BusinessEvents DataGrid when repetitive calls to <code>getSpaceDef()</code> were made and the space definition existed.

Closed in Release	Key	Summary
5.1.2	BE-18050	<p>The timescope attribute for Entry Browsers and Event Listeners can now be configured for an ActiveSpaces channel destination from TIBCO BusinessEvents Studio.</p> <p>For Event Listeners, select one of the following values from the drop-down:</p> <ul style="list-style-type: none"> <li>• <b>ALL</b> The listener starts with all the tuples currently in the space at creation time (which will be presented as an initial set of PUT events) and then is continuously updated according to changes in the space.</li> <li>• <b>NEW</b> The listener starts empty and is updated only with events related to new or updated tuples in the space.</li> <li>• <b>SNAPSHOT</b> The listener contains only PUT events corresponding to the tuples stored in the space at creation time.</li> <li>• <b>NEW_EVENTS</b> The listener starts empty and is updated with all events that occur in the space after creation time.</li> </ul>
5.1.2	BE-18025	<p>A high CPU usage was observed when running a project with Object Management set to 'In Memory'. The CPU usage remained high even when the engine was idle.</p>
5.1.2	BE-17985	<p>When using cache-aside strategy, CacheLoadConceptByExtId or Instance.GetbyExtId were not retrieving the data from the backing store if the data was not in the cache.</p>
5.1.2	BE-17982	<p>Existing concepts were not loaded into the cache by the functions,</p> <p>getByExtIdByUri or cacheLoadExtIdByUri, after the application was restarted if the property 'useObjectTable' was set to false and the concept was added in the Domain Objects override section. This was observed when using a backing store with Shared All persistence.</p>

Closed in Release	Key	Summary
5.1.2	BE-17971	<p>This hot fix enables the hot deployment of new properties into existing TIBCO BusinessEvents concepts. This functionality is only available when:</p> <ul style="list-style-type: none"> <li>• Cache Object Management is enabled with no persistence or shared nothing persistence.</li> <li>• The concepts with new properties are cache-only.</li> </ul> <p>To enable this functionality:</p> <p>Before starting TIBCO BusinessEvents Studio to build the EAR file:</p> <ol style="list-style-type: none"> <li>1. Add the following line to the vmargs in the studio.ini file: <pre data-bbox="482 701 1011 727">-Dcom.tibco.be.hotdeploy.concept=true</pre> </li> <li>2. Set the property <code>com.tibco.be.hotdeploy.concept=true</code> in the CDD file.</li> </ol> <p>Note the following restrictions:</p> <ul style="list-style-type: none"> <li>• When enabling this functionality with no backing store, ensure that the property <code>be.engine.cluster.as.tuple.explicit=true</code> is set in the CDD file.</li> </ul> <p>This property is set to true by default when using shared nothing persistence.</p> <ul style="list-style-type: none"> <li>• Adding a concept property of type contained concept with the contained concept type set to an existing concept is not supported.</li> </ul>
5.1.2	BE-17969	<p>When exporting a decision table to Excel, the column values were not exported to the correct column.</p>
5.1.2	BE-17968	<p>Following a failure to build a project, the worklist status for the RMS project was not reverted to its earlier status.</p>

Closed in Release	Key	Summary
5.1.2	BE-17964	<p>You can configure the TIBCO BusinessEvents DataGrid protocol timeouts by setting the following properties in the CDD file.</p> <p>For read timeout, set <code>be.engine.cluster.as.read.timeout = &lt;timeout_value_in_milliseconds&gt;</code></p> <p>For write timeout, set <code>be.engine.cluster.as.write.timeout = &lt;timeout_value_in_milliseconds&gt;</code></p>
5.1.2	BE-17946	<p>When running the TIBCO BusinessEvents engine in the write-behind mode, with DataGrid for object management caching and backing store enabled, <code>getById</code> or <code>getByExtId</code> returned a null value when the object existed in database but not in the cache.</p>
5.1.2	BE-17942	<p>When using shared nothing persistence, the shared nothing file contained corrupted data for a specific concept. This caused data loss and failure during recovery.</p>
5.1.2	BE-17938	<p>If too many domain name values are associated with a decision table, an exception is thrown when it is exported to Excel:</p> <p>“Export to Excel Failed due to:  <code>java.lang.IllegalArgumentException: String literals in formulas can't be bigger than 255 characters ASCII”</code></p>
5.1.2	BE-17909	<p>In WebStudio while working with decision tables, sometimes the <b>select all</b> option did not work well for the domain model drop-down.</p>
5.1.2	BE-17882	<p>TIBCO BusinessEvents did not provided a tool to generate encrypted password.</p>

Closed in Release	Key	Summary
5.1.2	BE-17807	<p>The be-jdbcdeploy utility supports the use of encrypted passwords to generate alter scripts. Perform the following tasks to generate and use the encrypted passwords:</p> <ol style="list-style-type: none"> <li>1. Generate the encrypted text using the studio_tools utility</li> </ol> <p>Run the following command:</p> <pre>studio_tools.exe -crypto encrypt -i input text</pre> <p>The encrypted text is written to STDOUT. The exit status 0 indicates success and -1 indicates error.</p> <p>Ensure that the exit status is 0 before using the encrypted text.</p> <ol style="list-style-type: none"> <li>2. Set the password property in be-jdbcdeploy.tra.</li> </ol> <p>Before running the be-jdbcdeploy utility, edit the be-jdbcdeploy.tra file and set the password property, be.jdbc.schemamigration.pwd, to the generated encrypted text. (To use plain text, set the value of this property to the plain text password.)</p>
5.1.2	BE-17767	<p>Catalog functions replyEvent and replyEventImmediate that send the event and return the JMS header property, especially JMSMessageID, as the return values have been added.</p> <p>To enable the new functions, set the following property in studio.tra:</p> <pre>TIBCO.BE.function.catalog.Event.ext=true</pre>
5.1.2	BE-17724	<p>The <i>TIBCO BusinessEvents Developer's Guide</i> incorrectly lists the option to specify the Studio project directory in the command to migrate Coherence functions as <code>-projectDir</code>. The correct option is <code>'-p'</code>.</p>

Closed in Release	Key	Summary
5.1.2	BE-17716	<p>Following a quorum recovery (engines resume automatically once the minimum cache servers count is reached again), you can now choose to manually restart the engines to prevent data corruption that may occur after quorum recovery.</p> <p>The property, <code>be.engine.cluster.minCacheServers.strict.selfRepair</code>, has been added to control this behavior. This property can only be applied when the property <code>'be.engine.cluster.minCacheServers.strict'</code> is set to true.</p> <p>By default, the property <code>'be.engine.cluster.minCacheServers.strict.selfRepair'</code> is set to true. Set this property to false if you want to manually restart the engines after quorum recovery.</p>
5.1.2	BE-17601	<p>The inference agents in a cluster started up serially, where the second one did not start up until the first one completely started. This behavior was different from the 4.x version of the product where inference agents started concurrently.</p> <p>Set the <code>be.engine.startup.parallel</code> property value to true to enable the concurrent start of inference agents.</p>
5.1.2	BE-17585	<p>Support for Global Variables for optional JNDI properties used to work only at runtime, but a connection test in TIBCO Business Studio used to fail.</p>
5.1.2	BE-17581	<p>RMS checkout did not work when users with multiple roles (associated by the <code>memberOf</code> attribute) had only one of the roles defined in the access control file and the artifact type config file. This issue was observed when using Active Directory.</p>
5.1.2	BE-17580	<p>Exceptions were thrown when using the function <code>Cluster.DataGrid.CacheLoadConceptsByExtId(extIds)</code> and the persistence was set to none. This has been fixed.</p>
5.1.2	BE-17544	<p>Following a restart, the null values in a string array were not loaded from the backing store although the record existed in the database.</p>

Closed in Release	Key	Summary
5.1.2	BE-17544	<p>TIBCO BusinessEvents did not load the null values from backing store after a restart. As a result, concepts with null values stored in a string array were lost when the engine was restarted.</p> <p>A new property, <code>be.backingstore.nullarrayorhistoryvalue.skip</code>, can be used to control this behavior. Set the property to false in the CDD file to enable the null arrays or history values to be loaded from the backing store.</p>
5.1.2	BE-17501	In a rule template, one could not nest a <code>call</code> , <code>create</code> , or <code>modify</code> statement into a block created with an <code>if</code> , <code>for</code> , or <code>while</code> clause.
5.1.2	BE-17499	To select a domain model in the Bindings tab of the rule template, earlier a text field was provided instead of a <b>Browse</b> button.
5.1.2	BE-17331	In the FraudDetectionCache example, the cache mode of the FraudCriteria scorecard is incorrect.
5.1.2	BE-17214	After renaming a folder, the SymbolList type of an Event's ExpiryAction was not updated. This caused an error when building the EAR file for the project.
5.1.2	BE-17211	The try-catch exception handler could not be used with <code>call</code> , <code>create</code> , or <code>modify</code> statements of a rule template.
5.1.2	BE-17120	In a multiple cache servers and inference agent environment, the scheduler assignment seemed to be random if the current scheduler was killed. The fix provided in Hotfix 1 ensured that control is assigned to only those nodes which have the scheduler property, <code>be.engine.cluster.scheduler</code> , set to true. However, the scheduler property was not being honored during startup and this has been fixed.

Closed in Release	Key	Summary
5.1.2	BE-16980	<p>When TIBCO BusinessEvents engine was used as a SOAP client, to send a SOAP request successfully to an external service, one had to:</p> <ul style="list-style-type: none"> <li>— manually add a soapAction property to the SOAP request event</li> <li>— assign the correct value (soapaction value in the WSDL) to the property</li> </ul>
5.1.2	BE-16001	With Write Behind backing store strategy, if the inference engine is restarted RuntimeExceptions are observed while processing events.
5.1.2	BE-15681	When a cache server with write-behind is restarted, it does not join the inference agent. The inference agent keeps throwing exceptions in the debug log.
5.1.2	BE-15268	A runtime exception was thrown by the mapper when one or more of the incoming data nodes in the mapping was NULL.
5.1.2	BE-15152	A java.lang.NumberFormatException was returned when a SOAP request did not contain a content-length header.
5.1.2	BE-14878	TIBCO BusinessEvents engine acting as a SOAP client did not support the TOMCAT server type. When requests were sent using <code>HTTP.sendRequest()</code> or <code>HTTP.sendAsynchronousRequest()</code> , the <code>SoapEventOut</code> and the callback rule function were not created and a <code>NullPointerException</code> was thrown.
5.1.2	BE-14837	Even after successful installation of TIBCO BusinessEvents version 5.0.1, TIBCO Administrator did not show the service pack version. It only showed the base version, that is, 5.0.0.
5.1.2	BE-14109	Deployment from TIBCO Administrator fails if the EAR file contains .metadata folders.
5.1.2	BE-13203	The JMS Connection fields under the Advanced tab, Topic Connection Factory and Queue Connection Factory, can now be specified using global variables.

Closed in Release	Key	Summary
5.1.2	BE-11762	When exporting or importing decision tables, the metadata for the <b>Take Actions of One Row At Most</b> checkbox was not being preserved.
5.1.2	BE-10219	It was not possible to use RMS server in fault tolerance mode.  To provide fault tolerance to all HTTP based TIBCO BusinessEvents projects, refer to "HTTP and SOAP Channels" section in chapter 6 of <i>TIBCO BusinessEvents Developer's Guide</i> .
5.1.2	BE-9646	The WSDL export utility generated a non-working WSDL when the input destination was defined using a collection in the CDD file.
5.1.2	BE-4884	In version 3.0, the instructions for configuring the product on a 64-bit Linux machine were incorrect in <i>TIBCO BusinessEvents Installation</i> .
5.1.1	BE-11406	Application properties like <code>--propFile</code> can now be passed through the debug configuration from Studio. For <code>--propVar</code> , property needs to be added in CDD along with its value.
5.1.1	BE-11481	The current values for global variables were lost when BE-MM server was restarted. Only the default values set in Studio Global Variables editor were shown.
5.1.1	BE-11532	The performance profiler file remained empty when the project used Cache object management.
5.1.1	BE-11957	TIBCO BusinessEvents Studio throws an error if a WSDL file inside a project or inside a project library refers to an XSD in a project library.
5.1.1	BE-13291	When the project library and the project have the same event (or concept), deleting the event (or concept) from the local project causes XSLT mapper errors to be thrown in the project library rules or rule functions. This is observed if the project library contains a rule or a rulefunction that uses the XSLT mapper to define that event (or concept).

Closed in Release	Key	Summary
5.1.1	BE-14382	The global variable <code>deployment</code> was not set by default in the EAR file.
5.1.1	BE-15098	TIBCO BusinessEvents could not retrieve the <code>JMSXDeliveryCount</code> property within a JMS message.
5.1.1	BE-15207	Objects written to the cache expired instantly, when the engine was running on Windows 32-bit platform.
5.1.1	BE-15268	A runtime exception was thrown by the mapper when one or more of the incoming data nodes in the mapping was NULL.
5.1.1	BE-15462	BE console throws <code>NumberFormatException</code> when the SOAP request do not have content length header.
5.1.1	BE-15508	The <code>mmtools</code> utility could not be used to stop the engine, if BE-MM security was enabled in <code>be-engine.tra</code> and the credentials of the remote machine was used.  Instead, provide the credentials used to log in to the BE-MM UI and then stop the engine using the <code>mmtools</code> utility.
5.1.1	BE-16035	The <code>StopEngine</code> method did not close the TIBCO Enterprise Message Service (EMS) connection before exiting.
5.1.1	BE-16144	<code>abortRTC()</code> did not stop the RTC immediately, and events were not consumed from memory when <code>abortRTC</code> was called.
5.1.1	BE-16226	When writing large data to the database using <code>DataGrid</code> as the backing store, a runtime exception was thrown.
5.1.1	BE-16609	RMS server throws an error, if length of <code>studio-tools</code> command is more than the OS permissible limit of 32767 characters.
5.1.1	BE-16719	An <code>ArrayIndexOutOfBoundsException</code> error was thrown when a query was executed after starting or stopping the only cache server.

Closed in Release	Key	Summary
5.1.1	BE-16720	While the inference agent was running, if the cache server was restarted, the recovery process to reload the data from the backing store did not start.
5.1.1	BE-17079	After committing, resources were not listed in the worklist and the RMS server displayed <code>DuplicateExtIDException</code> .
5.1.1	BE-17239	In WebStudio, for rule template instance serialization, nodes did not appear in the same order that they were defined in the rule template.
5.1.1	BE-17250	When starting the RMS server and logging in to the client, the system displayed a Post RTC error and threw, <code>UnsupportedOperationException</code> , if Coherence was used.
5.1.1	BE-17251	In BRMS project for JDBC SQL Server scripts, when the primary key constraints in a generated SQL script had the same names for two tables, execution threw an error while setting up WebStudio for the SQL Server.
5.1.1	BE-17322	The Hawk Channel example <code>readme.html</code> has been updated with the correct commands to run the example:  <pre>cd c:/tibco/BE5.1/be/5.1/examples/standard/HawkChannel c:/tibco/BE5.1/be/5.1/bin/be-engine --propFile c:/tibco/BE5.1/be/5.1/bin/be-engine.tra -u default -c HawkChannel/hawk.cdd HawkChannel.ear</pre>
5.1.1	BE-17323	When using the TIBCO BusinessEvents DataGrid, an invalid argument error was thrown if the discovery URL was specified as <code>"tcp://"</code> or if the hostname in the discovery URL contained the characters <code>'t'</code> , <code>'c'</code> , or <code>'p'</code> .
5.1.1	BE-17327	Exceptions are thrown when opening a decision table from WebStudio on AIX, Solaris, and HP-Itanium only. This is observed even when TIBCO BusinessEvents Decision Manager add-on is installed.
5.1.1	BE-17364	High CPU utilization was observed when the TIBCO BusinessEvents engine was running in cache mode.

Closed in Release	Key	Summary
5.1.1	BE-17418	On Windows 32-bit and Linux 32-bit installations, some jar files and libraries are incorrectly present in <code>TIBCO_HOME/be/5.1/lib/ext</code> . The installer removes these jars and libraries at the end of the installation.
5.1.1	BE-17435	Rules were not triggered, if the concepts in the rule's scope were in the Rete network. This was observed when using shared nothing persistence without any Overrides.
5.1.1	BE-17457	Attributes such as <code>AvgTimeInRTC</code> and <code>AvgTimePreRTC</code> were not updated for Event MBeans.
5.1.1	BE-17482	When using shared nothing persistence in Cache only mode, the rule to update the child in a contained concept was executed multiple times in one RTC erroneously.
5.1.1	BE-17510	Building an EAR file failed, if a variable of a primitive type was defined in the Action Context section of a rule template before any template statement.
5.1.1	BE-17511	The IN clause in a query now supports a dynamic list of one or more binding variables. If the binding variable is an array, all the array elements will be appended to the final IN clause in the query.
5.1.1	BE-17589	Running a query of the form <code>select * from</code> threw exceptions if the concept had null values in its properties.
5.1.1	BE-17616	Upon a full cluster restart, the ID generator was incorrectly reset to zero instead of starting from one greater than the last generated ID. This caused duplicate IDs and related data inconsistencies. Note that this issue occurred for deployments with <code>useObjectTable</code> set to false.
5.1.1	BE-17726	Shared nothing persistence now supports memory-only mode.
5.1.1	BE-17750	<code>be-jdbcdeploy</code> utility ignored the metadata property <code>maxLength</code> for history enabled string properties.

Closed in Release	Key	Summary
5.1.1	BE-17765	In Memory objects such as concepts, score cards, or events, were not getting initialized properly when using shared nothing persistence.
5.1.1	BE-17862	When using shared nothing persistence, the creation of Parent and Child concepts failed sometimes.
5.1.1	BE-17863	<p>When servicing continuous queries, the inference agents published changes to their agentTxn caches. A memory growth was observed because the agentTxn cache was incorrectly configured as an unlimited cache.</p> <p>A new property, <code>be.agent.query.continuous.allow</code>, is added to configure the query agent and is set to false by default. Set this property to true for the query agent to request for changes to be published when servicing continuous queries.</p>
5.1.1	BE-17867	When the Entity Cache Size property in CDD have value less than 10000, the capacity in ActiveSpaces is displayed as INVALID.
5.1.1	BE-17868	When you upgrade from TIBCO BusinessEvents version 5.1.0 to version 5.1.1 and start cache agent, TIBCO BusinessEvents fails during the recovery, which uses persistence files created by the TIBCO BusinessEvents DataGrid. The <code>as-convert</code> utility is now provided to migrate the persistence files. See <a href="#">Converting the Shared Nothing Persistence Data Files to the New Format on page 75</a> for more details on the <code>as-convert</code> utility.
5.1.1	BE-17872	The HTTP response processing stopped, when there was no data to process in the RTC.
5.1.1	BE-17890	<p>The cache agents failed to start completely and the status did not change from Starting to Running with the following message repeated in the logs:</p> <pre>[as.kit] Waiting for space [objectTableCache-bs-readOnly-OrderCDD--ObjectT ableIds] to be ready</pre>

Closed in Release	Key	Summary
5.1.1	BE-17899	A <code>java.lang.reflect.InvocationTargetException</code> error is thrown while exporting TIBCO BusinessEvents artifacts as WSDL from a project.
5.1.1	BE-17908	Import and export operations for decision tables are failing in WebStudio on AIX, Solaris, and HP-Itanium only.
5.1.1	BE-17912	The javadocs were not updated for the <code>System.ID.nextId()</code> function for cache-based object management (OM), which was deprecated in TIBCO BusinessEvents version 5.0.x.
5.1.1	BE-17928	A rule function configured in the shutdown function of the CDD file was not called when the engine was stopped or killed from TIBCO Administrator.
5.1.1	BE-19550	The try-catch exception handler could not be used in call, create, or modify statements of a rule template.
5.1.1	BE-19899	In a multiple cache servers and inference agent environment, the scheduler assignment seemed to be random if the current scheduler was terminated.  Set the property <code>be.engine.cluster.scheduler</code> to <code>true</code> for the nodes that can be considered for scheduler ownership. The fix ensures that control is assigned to only those nodes which have the scheduler property set to <code>true</code> .
5.1.1	BE-14740	Rule-based timer events were not recovered in cache only mode.
5.1.1	BE-3964	In TIBCO Administrator, clicking on any service instance under All Service Instance caused an <code>IllegalArgumentException</code> , if the service instance was not running on TIBCO BusinessEvents.
5.1.0	BE-17132	When the property <code>be.backingstore.unmodified.skip</code> was set to <code>true</code> , updates made to a contained concept resulted in missing or extra entries in the relationship table.

Closed in Release	Key	Summary
5.1.0	BE-16878	CreateInstanceFromXML did not throw an exception object when the payload contained a validation error such as an incorrect type value for an element based on the concept definition.
5.1.0	BE-16811	When the cache servers in a cluster were restarted alternately, a protocol_timeout error was thrown by the cache nodes.
5.1.0	BE-16810	When cache servers were killed and restarted, the inference engine sometimes threw a segmentation fault error and stopped running.
5.1.0	BE-16690	On UNIX platforms, the Processing Units (PU) failed to start even when the BE-MM server started and the deployment went through successfully.
5.1.0	BE-16683	The cache server failed to start and hung while initializing the BDB provider if BDB database types were used.
5.1.0	BE-16671	Data loss from the cluster was observed if any of the agents were killed (gracefully) during processing.
5.1.0	BE-16584	Shutting down an inference engine using <Ctrl+C> resulted in multiple exceptions and the inference engine was not killed.
5.1.0	BE-16506	Performance degradation was observed when loading a space with a large data.
5.1.0	BE-16486	Engines crashed soon after forming a cluster, where the engines were on Windows and Linux platforms.
5.1.0	BE-16475	Calls to the database using QueryUsingSQL() failed with the exception java.lang.ClassCastException: com.tibco.cep.studio.core.adapters.ConceptAdapter cannot be cast to com.tibco.cep.designtime.model.event.Event after a call to BusinessWorks.init().

Closed in Release	Key	Summary
5.1.0	BE-16467	When inference agents join the PersisterSpace as seeder, a (restarted) cache agent did not become the OWNER of the Berkeley DB. This lead to a <code>not_enough_persisters</code> exception.
5.1.0	BE-16446	<code>CreateInstanceFromXML</code> did not throw an exception when a mismatch between the value in the XML and the type of the property to be created was encountered.
5.1.0	BE-16436	When trying to create a sequence diagram on the event, the sequence diagram of the rule (or the rulefunction) was created instead if the event and the rule (or the rulefunction) existed with the same name in the project.
5.1.0	BE-16260	TIBCO BusinessEvents Studio failed to build a project and threw a <code>CompilationFailedException</code> , if a concept with property of type <code>ContainedConcept</code> was refactored.
5.1.0	BE-16236	When using the shared nothing persistence option on AIX platform, the engine hung when creating <code>ObjectTable</code> space.
5.1.0	BE-16235	Shutting down an inference agent on AIX platform resulted in a core dump.
5.1.0	BE-16220	When restarting a cache server, an exception was thrown during recovery if the backing store had large data.
5.1.0	BE-16180	Shutting down an engine using <code>&lt;Ctrl+C&gt;</code> key killed the other engine type as well and exceptions were thrown on both (cache and inference) engines.
5.1.0	BE-16051	On AIX platform, the load balancer did not work as expected and threw a runtime exception.
5.1.0	BE-16002	An exception <code>org.eclipse.emf.common.util.BasicEList\$BasicIndexOutOfBoundsException</code> was thrown by the inference agent during start up. This was caused by a serialization error in the cluster configuration.

Closed in Release	Key	Summary
5.1.0	BE-15910	Data consistency issues were seen when using the DataGrid as some rules were not triggered or some updates were not reflected.
5.1.0	BE-15908	When a cache server with discoverable nodes on Linux and another on Windows is started, and then all the remaining nodes are started at the same time, the engine crashed.
5.1.0	BE-15906	When starting the cache server, the engine pre-loaded records from a database although the property <code>pre-load-enabled</code> was disabled in the CDD file.
5.1.0	BE-15886	Exceptions were thrown when engines in a heterogeneous cluster were shutdown using <code>&lt;Ctrl+C&gt;</code> on Windows and <code>pkill be-engine</code> on Linux and the engines suspended.
5.1.0	BE-15865	Studio-tools is now supported on Solaris x86. See <i>TIBCO BusinessEvents Installation</i> for the steps to enable Studio-tools on Solaris x86.
5.1.0	BE-15710	When a cache server configured to use Shared-All persistence with Berkeley DB backing store was killed when writing to the database, another cache server takes over. However, the inference engines threw exceptions when trying to create new concepts.
5.1.0	BE-15638	The inference agent threw a "space_not_found" exception when the cache server was restarted.
5.1.0	BE-15481	Exceptions were thrown when a cache server without a backing store was restarted.
5.1.0	BE-15460	An exception was thrown when starting a cache server after deploying the application with a DataGrid Unicast address to BE-MM.
5.1.0	BE-15304	In a multiple cache servers and multiple inference engines scenario where all the inference agents were processing events, if one of the inference agent was killed, all other inference agents also stopped processing events.

Closed in Release	Key	Summary
5.1.0	BE-15290	On Linux 64-bit platform, an UnsupportedOperationException was thrown when creating objects with backing store enabled.
5.1.0	BE-15186	Inference engines hanged after engines were killed and restarted in a random manner.
5.1.0	BE-15167	When an Event was copied from another Event, the Declaration section on the Advanced Tab showed the old values for the Term and Alias fields instead of new values.
5.1.0	BE-14955	The XSLT and XPath mappers showed the internal @Id attribute of a concept or event and the internal @ref attribute of concept references as a String (with icon "ABC"). However, these internal attributes should be long (have icon "321").
5.1.0	BE-14873	Duplicate ext id exceptions were thrown when duplicate concepts were inserted into the Berkeley database.
5.1.0	BE-14705	Checking out a RMS project failed with an exception if the baselocation was configured with a lower case driver letter. For example, c:/tibco4/be/5.0/rms/examples.
5.1.0	BE-14527	When diagrams such as Project view, Concept view, or Event view were opened or closed for more than 30minutes, TIBCO BusinessEvents Studio crashed with the following exception: "org.eclipses.swt.SWTError: No more handles"
5.1.0	BE-14357	When a BE-MM server is restarted, the machine deployment status on the UI is lost. For example, the status "Machine not deployed" was shown although the machine was deployed successfully.
5.1.0	BE-14150	On Red Hat Linux, an exception was thrown when trying to expand the items in Catalog Functions view in TIBCO BusinessEvents Studio.
5.1.0	BE-13941	Changes made to the global variables from TIBCO Administrator were not reflected at runtime.

Closed in Release	Key	Summary
5.1.0	BE-13804	In TIBCO BusinessEvents Studio, the Test Connection button for JMS Connection shared resources failed if the connection was set up to use JNDI.
5.1.0	BE-13716	TIBCO ActiveMatrix BusinessWorks project libraries containing resources such as global variables, XSD files and shared resources like RV, JMS, JMS properties, and HTTP connections, can be used in TIBCO BusinessEvents now. These resources are independent of TIBCO BusinessEvents and TIBCO ActiveMatrix BusinessWorks.
5.1.0	BE-13578	The default Java version for code generation in Studio was 1.5 instead of 1.6. The menu option Windows > Preferences > Tibco BusinessEvents > Code Generation Java version displays the default version.
5.1.0	BE-13575	An error was reported when loading a concept with a String property longer than 64KB.
5.1.0	BE-13528	The QName group of XPath functions was missing from the Function Argument Mapper in release 5.0.
5.1.0	BE-13482	<p>By default, TIBCO BusinessEvents creates two connections to a JMS server, with the following client IDs:</p> <pre>&lt;user client id&gt;_queue &lt;user client id&gt;_topic</pre> <p>To create a single connection with the client ID the same as configured, add the following property and set as shown in all agents:</p> <pre>be.channel.jms.unified=true</pre> <p>With this setting, and when a connection is configured via a JMS shared resource, the topic and queue connection factories on the Advanced tab must be the same. When using TIBCO Enterprise Message Service, use GenericConnectionFactory for both.</p>
5.1.0	BE-13450	The XSLT mapper showed all variable defined in the project. When local variables were declared with same name in if-else clause, the XSLT mapper showed both variables in the list.

Closed in Release	Key	Summary
5.1.0	BE-13393	Testing the JMS Connection caused exceptions to be thrown if the path to <code>EMS_HOME\lib</code> was specified in <code>studio.tra</code> .
5.1.0	BE-13346	With TIBCO BusinessEvents DataGrid as the cache provider, bulk deletes of hundreds of entities in a single RTC were slow.
5.1.0	BE-13270	Log level for selected engines can be changed at runtime using the <code>setLogLevel()</code> function.
5.1.0	BE-13221	With TIBCO BusinessEvents DataGrid clusters, process memory kept on growing.
5.1.0	BE-13211	Tooltip for <code>XPath.executeWithEvent()</code> is updated with an example.
5.1.0	BE-13129	Changes to the values of global variables made with TIBCO Administrator at the application level were overwritten with the values from the project.
5.1.0	BE-13121	When a backing store was disabled, <code>PendingDBWrites</code> JMX metrics were still updated.
5.1.0	BE-13114	With multicast TIBCO DataGrid clusters, nodes fail to start up when multiple nodes attempt to start up and join the cluster in rapid succession. This issue occurs sporadically, mostly on UNIX platforms, especially Linux.
5.1.0	BE-13086	With JMS channels, event acknowledgement was not sent until after the event's time to live period expired, even when using the explicit client acknowledgement option.
5.1.0	BE-13056	Log files showed redundant warnings when the engine was loading external classes: <code>Pre-existing class not found, ignoring external class</code> .
5.1.0	BE-13053	Remote JMX Port was not enabled when the OM type was set to in-memory.
5.1.0	BE-12989	In TIBCO BusinessEvents DataGrid clusters, cache only events with a TTL greater than zero were not expiring fast enough.

Closed in Release	Key	Summary
5.1.0	BE-12984	<p>JMS channels were not able to receive messages synchronously. Now you can set the following property at the appropriate level to enable the channel to receive messages synchronously:</p> <pre>com.tibco.cep.driver.jms.receiver = true</pre> <p>The following supporting properties are also provided:</p> <pre>com.tibco.cep.driver.jms.receiver.wait = maximum blocking time, in milliseconds, for each call to receive(). The default is 500.</pre> <pre>com.tibco.cep.driver.jms.receiver.shutdown.wait = maximum wait time, in seconds, after attempting to stop the receiver, before a forceful stop is attempted. The default is 60.</pre>
5.1.0	BE-12939	The memory consumption of some XSLT functions has been reduced.
5.1.0	BE-12882	TIBCO BusinessEvents DataGrid clusters sometimes did not discover nodes.
5.1.0	BE-12872	It was not possible to add a custom serializer in TIBCO BusinessEvents Studio. Now the drop-down list allows text entry as well as selection from a list.
5.1.0	BE-12864	After a network disconnect and recovery, nodes in a TIBCO BusinessEvents DataGrid cluster stopped responding during the cluster discovery process.
5.1.0	BE-12833	Validating a project did not report the conflicts arising from using an alias of 'e' and using 'e' in an exception catch block. However, an exception was thrown when generating an EAR file for the project.
5.1.0	BE-12828	The Function Argument Mapper UI displayed the type of all time event properties as String.
5.1.0	BE-12812	Building an enterprise archive file for a DBConcept project failed if one of the property was XML type in the database.

Closed in Release	Key	Summary
5.1.0	BE-12738	Domain model entries were not case sensitive. Now m and M (for example) are recognized as different entries.
5.1.0	BE-12699	The MM server was not discovering the cluster topology when the host name was specified in the site topology editor using the fully qualified name. Now the host name is always resolved to its fully qualified domain name (even if the simple name is entered) and the host name is also validated against the IP address. If they don't resolve to the same host then an <code>UnknownHostException</code> is thrown.
5.1.0	BE-12677	The function <code>Instance.PropertyArray.indexOfConceptReference()</code> now compares IDs and returns the index for the location in the array without loading all referenced concepts.
5.1.0	BE-12657	Rule functions used for the rule ranking feature must have a Validity setting that includes Condition (Action Only is not sufficient). When an Action Only rule function was used, however, no validation error was thrown.
5.1.0	BE-12614	Incorrect debug log entry, with the channel and destination information inverted, was observed when the cache server was running as a cluster scheduler. For example:  <pre>[14 giu 2011 13:05:51][DEBUG][main] - inference-A2AController connected input channel /Channels/Utility/Validator/MonitorJms to destination /Channels/Utility/Validator</pre> where the actual channel is <pre>/Channels/Utility/Validator</pre> and actual destination is <pre>/Channels/Utility/Validator/MonitorJms.</pre>
5.1.0	BE-12572	When using the TIBCO BusinessEvents Studio RMS menu option Generate Deployable, with large projects, the success message did not display, even though the deployable files were generated.
5.1.0	BE-12550	There was a memory leak in the cache server when TIBCO BusinessEvents DataGrid was the cache provider and a backing store was enabled.

Closed in Release	Key	Summary
5.1.0	BE-12549	With TIBCO DataGrid as the cache provider, the engine threw the exception:  Found in ObjectTable but not in base table. Possible race condition
5.1.0	BE-12541	The abs function was missing from the Function Argument Mapper in version 5.0.0.
5.1.0	BE-12537	TIBCO Administrator could not deploy a TIBCO BusinessEvents EAR file that contained Rational Clearcase files. (Such files would be present in a project that had been checked out of Rational Clearcase before the EAR file was built.)
5.1.0	BE-12525	The <code>be-jdbcdeploy</code> utility did not create tables for objects located in a subfolder called <code>core</code> .
5.1.0	BE-12520	The LDAP admin password is now encrypted.
5.1.0	BE-12519	A memory leak occurred during bulk deletes of concepts in a single RTC.
5.1.0	BE-12502	Functions, <code>sendEventExt</code> , <code>replyEventExt</code> , and <code>routeToExt</code> , are added. The functions take a <code>forceImmediate</code> argument, which when set to true, send or reply to an event immediately. The functions <code>sendEventExt</code> and <code>replyEventExt</code> also throw an exception if the send operation threw an exception instead of logging it and returning null.
5.1.0	BE-12498	In queries, functions with one or more <code>PropertyAtom</code> arguments failed with an exception.

Closed in Release	Key	Summary
5.1.0	BE-12430	<p>In the post-RTC phase, use of parallel operations is generally safe only when locking is used. The parallel operations feature is enabled using this property:</p> <pre>Agent .agent name .enableParallelOps</pre> <p>Before this hotfix, parallel operations was enabled by default when cache aside (the default database write strategy) was used. However, many projects that use cache aside do not otherwise require locking.</p> <p>Now parallel operations is enabled by default only when both cache aside <i>and</i> concurrent RTC features are used. (Use of concurrent RTC also generally requires locking.) Parallel operations can also be used with cache aside when concurrent RTC is not used. However, it must be explicitly enabled, and correct locking must also be used as needed.</p>
5.1.0	BE-12414	<p>Documentation did not point to guidelines customers needed for using Coherence as the cache provider. Now links are provided in Chapter 22, Cache OM and Cluster Configuration, in <i>TIBCO BusinessEvents Developer's Guide</i>.</p>
5.1.0	BE-12301	<p>Selecting &lt;Ctrl+Click&gt; or &lt;highlight+F3&gt; did not take the user to the source code from the project library.</p>
5.1.0	BE-12299	<p>The Quick Fix feature was creating incomplete concept property entries. Errors occurred as a result, when using the concept properties in the rule editor and when building an EAR file.</p>
5.1.0	BE-12244	<p>The catalog function <code>C_CacheLoadConceptByExtId (String extId, boolean includeContained)</code> can be used to load the root concept only by setting the parameter <code>includeContained</code> to <code>false</code>.</p>
5.1.0	BE-12231	<p>The CDD did not support properties with data types other than String. Additional data type support has been added along with validation for boolean and integer data types.</p>
5.1.0	BE-12227	<p>The <code>.bepproject</code> descriptor contained absolute paths to the project library and did not support the use of variables to define the path.</p>

Closed in Release	Key	Summary
5.1.0	BE-12185	Rule conditions of the form <code>Instance.isModified(&lt;concept&gt;)</code> were not always re-evaluated when <code>&lt;concept&gt;</code> was modified.
5.1.0	BE-12159	Restarting the cache servers caused the inference engine to freeze and throw an <code>entry_not_found</code> exception.
5.1.0	BE-12146	TIBCO BusinessEvents engines acting as SOAP clients did not support the TOMCAT server type. When requests were sent using <code>HTTP.sendRequest()</code> or <code>HTTP.sendAsynchronousRequest()</code> , the <code>SoapEventOut</code> and the callback rule function were not created and an NPE was thrown.
5.1.0	BE-12130	Support for HTTP 1.1 method types has been added.
5.1.0	BE-12097	On certain projects, where TIBCO ActiveMatrix BusinessWorks was contained in TIBCO BusinessEvents, and TIBCO ActiveMatrix BusinessWorks used XML features, the following exception appeared during TIBCO ActiveMatrix BusinessWorks initialization:  <pre>java.lang.NoSuchMethodError: com.tibco.sdk.a.a.a</pre> <p>Ensure that <code>BEBWUtils.getProject()</code> is able to load TIBCO BusinessEvents resources into the <code>TnsCache</code>.</p>
5.1.0	BE-12083	An exception in <code>RTCTransactionManager.TxnTask_Actions.run()</code> prevented the Post RTC from completing.
5.1.0	BE-12071	The Generate Deployable menu option did not work when RMS was running on HPUX, AIX, and Solaris platforms, except the Solaris SPARC 32-bit platform.
5.1.0	BE-12047	The value of the Message Encoding setting from the CDD file could not be overridden by TIBCO Administrator at deploy time.

Closed in Release	Key	Summary
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5.1.0      BE-11612      With the TIBCO BusinessEvents Monitoring and Management mm-tools component, it was not possible to authenticate a user using certificates when performing deploy and remote start and stop operations.

Now you can use this functionality as follows.

1. On the computer hosting the MM server, use a utility to create a public/private key pair. The `ssh-keygen` utility is widely available. Two files are generated. They are referred to as follows:

- `PK_FILE_NAME` (The file containing the private key)
- `PK_FILE_NAME.pub` (The file containing the public key)

Place both generated files in the same directory on the computer hosting the MM server. For example, put them in `BE_HOME/mm/certificates`.

2. On computers hosting the to-be-monitored cluster PUs that you want to remotely deploy, start, or stop, copy the contents of the `PK_FILE_NAME.pub` file to the file containing the list of authorized keys for the user who will be logging in remotely. For example, for SSH using certificates for authentication, the authorized keys file is called 'authorized\_keys' and it is stored in the `.ssh` directory of the user who will be logging in remotely, that is, in `~/ .ssh/authorized_keys`.
3. When executing a command with `mm-tools`, use the new option `-pkf` to specify the fully qualified path to the `<PK_FILE_NAME>` file, that is, the file with the private key. For example:

Remote Deploy:

```
mm-tools --propFile mm-tools.tra -op deploy
-m 100.100.100.101 -pkf
BE_HOME/mm/certificates/PK_FILE_NAME
```

Remote Start:

```
mm-tools --propFile mm-tools.tra -op start
-puc CS -m 100.100.100.101 -pkf
BE_HOME/mm/certificates/PK_FILE_NAME
```

Remote Stop:

```
mm-tools --propFile mm-tools.tra -op stop
-puc CS -m 100.100.100.101 -pkf
BE_HOME/mm/certificates/PK_FILE_NAME
```

Closed in Release	Key	Summary
5.1.0	BE-11768	The runtime value of global variables of type Boolean was always false.
5.1.0	BE-11763	An error message was logged when starting the application instead of a warning or INFO message:  <pre>Error [main] - [root] Mar 14, 2011 12:34:45 PM com.tibco.security.providers.SecurityVendor_j2se &lt;clinit&gt; INFO: Initializing JSSE's crypto provider class com.sun.net.ssl.internal.ssl.Provider in default mode</pre>
5.1.0	BE-11713	The RMS server now starts without errors on UNIX platforms.
5.1.0	BE-11457	An option to disable the "generate deployable" menu option has been added to the RMS menu.
5.1.0	BE-11456	In RMS, the Approve or Reject action was available to every user regardless of their role. As part of this fix, you can now use the following global variable to choose the name of the administration role: RMS/Approval/adminRole.  The default value is "Administrator".
5.1.0	BE-11462	Function calls <code>Instance.getById</code> , <code>Event.getById</code> , <code>Instance.getByExtId</code> , and <code>Event.getByExtId</code> look for objects in cache when the OM type is set to Cache OM, even for objects whose cache mode is set to Memory Only. Instead use <code>Instance.getByIdByUri</code> , <code>Event.getByIdByUri</code> , <code>Instance.getByExtIdByUri</code> , and <code>Event.getByExtIdByUri</code> . These functions do not look in the cache if the concept with the given URI is configured as memory-only.
5.1.0	BE-11411	When using Cache object management, preprocessors were not executed when data was asserted using the Studio tester in TIBCO BusinessEvents Studio.

Closed in Release	Key	Summary
5.1.0	BE-11342	In RMS, checking the details of the code that need approval has been simplified. Now every workitem detail has a right-click "Open" menu option which allows a reviewer to view the checked-in file in read-only form before approving it. A limitation in this release is that shared resources cannot be viewed in this way.
5.1.0	BE-11134	In the JMS Connection shared resource dialog, the JNDI Context URL field did not support use of global variables. If a value was specified using a global variable, the Test Connection button displayed a failure message.
5.1.0	BE-11133	In the JMS Connection shared resource dialog, clicking the Test Connection button always caused a success message to display when the Use JNDI for Connection Factory check box and Use Shared JNDI Configuration check box were checked, even when the JNDI Configuration field was blank or did not specify a valid URL.
5.1.0	BE-11074	LDAP authentication did not work for Windows ActiveDirectory.
5.1.0	BE-10963	Name of resource type for decision tables should be specified correctly in documents.
5.1.0	BE-10403	In TIBCO BusinessEvents Studio, the Test Connection button for JMS Connection shared resources failed if the connection was set up to use JNDI.
5.1.0	BE-9985	Error when starting RMS on AIX due to incorrect values for the properties LIB_PATH and PSP in <code>be-rms.t.ra</code> .

Closed in Release	Key	Summary
5.1.0	BE-8483	<p>When using a JMS channel configured for SSL, with Client Authentication enabled and a Certificate/Private Key combination used for the Identity Resource on the client side, the engine would throw a <code>javax.jms.JMSSecurityException</code> error. This is due to a limitation in the default security libraries. For this feature to work in TIBCO BusinessEvents, you can use Entrust security libraries, which are part of the TIBCO Runtime Agent installation. To use Entrust, do the following:</p> <ol style="list-style-type: none"> <li>1. Add the entrust libraries to the classpath. For example: <code>C:/tibco/tpcl/5.6/lib/entrust</code></li> <li>2. In the <code>be-engine.tra</code> file, add this line: <code>TIBCO_SECURITY_VENDOR=entrust61</code></li> </ol>
5.1.0	BE-8207	<p>In version 3.0 (but not in 4.0 or 5.0) it was possible to export global variables to a project library and then import the project library for use in another project. It was also possible to override such a global variable with another global variable with the same name, by ordering the imported libraries.</p> <p>Also in version 4.0 and 5.0, when imported variables were used in a project, after EAR file generation, the imported variables were not merged and placed in <code>tibco.xml</code> within the EAR file.</p> <p>Now global variables can be exported into project libraries. In the Build Path &gt; Project Libraries tab, up and down arrows allow you to order the libraries. In the Global Variables view, the Project Source column shows the source project, and the Override column shows overrides using arrow icons.</p>
5.1.0	BE-3976	<p>Incorrect validation warning "The variable &lt;Global Var name&gt; is unused." observed although the global variable was used in a rule.</p>

Closed in Release	Key	Summary
5.1.0	BE-3872	<p>Queries with bind variables in the Where clause resulted in exceptions. Example of such a query:</p> <pre>select parent.value from /Concepts/ChildConcept child, /Concepts/ParentConcept parent where child.value = and child.parent = parent@id</pre>
5.1.0	BE-3523	The inference engine threw an exception on startup if the project included a global TimerEvent in the declaration section of a rule.
5.1.0	BE-3259	Schemas generated from TIBCO BusinessEvents entities using the schema generator were not fully compatible with the XMLInstance resources of TIBCO Designer.
5.1.0	BE-2961	<p>The maximum number of events to be processed can now be configured in the project CDD file.</p> <p>In the project CDD file, select the Threading Model for a particular destination and choose the option 'Destination Queue'. Provide the inputs to the destination queue:</p> <ul style="list-style-type: none"> <li>• <b>Queue Size</b> - Specify the number of events per queue.</li> <li>• <b>Thread Count</b> - Specify the number of threads.</li> </ul>
5.1.0	BE-2606	TIBCO BusinessEvents can import XPDL files created by Business Studio Modeler using the project library.
5.1.0	BE-1670	The Hawk method GetExecInfo displayed the value of the version as null in TIBCO Administrator. This has been fixed to display the version of the TIBCO BusinessEvents engine.
5.1.0	BE-1580	It was not possible to export a state diagram to SVG format, if the network connection was not available or was made through proxy
5.1.0	BE-1449	The JMS header properties JMSType and JMSReplyTo were not serialized or deserialized correctly in an event.
5.1.0	BE-1202	Reverse reference to the sub-concepts in the base concept when adding sub-concepts inherited from the base concept is removed.

Closed in Release	Key	Summary
5.0.1	BE-14360	In the JMS Connection shared resource, the User Name field did not support use of global variables and was not decorated with the globe icon that indicates support for global variables.
5.0.1	BE-14305	When a TIBCO BusinessEvents application was restarted, events that were set to cache plus memory mode and whose time to live (TTL) setting was greater than zero were not loaded from the backingstore into memory. Therefore they did not trigger rules that they should have triggered.
5.0.1	BE-10216	TIBCO BusinessEvents Monitoring and Management (MM) deployment time information was lost after restarting MM. Now the deployment time information is saved to a file located under BE_HOME/mm/deployed, and the last deployment time is correctly displayed in the UI.
5.0.1	BE-14272	The rule editor displayed an error if the @id attribute access was used on a simple event.
5.0.1	BE-14247	The TIBCO BusinessEvents Studio Ignored Files preference (Preferences > TIBCO BusinessEvents > Code Generation > Shared Resources > Ignored Files) was not working. The Ignored Files options enable you to exclude files that match user-configurable patterns from the Shared Resources.sar part of an EAR file.
5.0.1	BE-14173	The catalog function Instance.updateInstanceFromXML threw exceptions when adding a new contained concept to a PropertyAtom.
5.0.1	BE-14108	Building the EAR file was failing for certain projects.

Closed in Release	Key	Summary
5.0.1	BE-14071	<p>When an event payload referenced an element in a project library schema, the schema file failed to open when the user clicked the Go to referenced resource button (next to the Schema field in the Simple Event editor).</p> <p>Now when you click the button, the schema (XSD) file opens in a text editor (not the form-based editor used for schemas stored directly in the project).</p>
5.0.1	BE-13975	<p>The Help content for Studio Run Configuration was incorrect and has been updated.</p>
5.0.1	BE-13970	<p>In certain cases, when a channel lost the connection to a TIBCO Enterprise Message Service server, the engine did not attempt to reconnect.</p>
5.0.1	BE-13955	<p>The JNDI User Name field in the JNDI Configuration, JMS Connection, and JDBC shared resources did not take a global variable. Now it does. Global variables are supported for all JNDI configuration fields in all three editors, that is, the JNDI Connection Factory, JNDI Context Url, JNDI User Name, and JNDI Password fields.</p>
5.0.1	BE-13911	<p>Using the unary minus operator with a concept property would cause an error when building the EAR.</p>
5.0.1	BE-13859	<p>If a project library had contained concepts, the project would throw an error at runtime.</p>
5.0.1	BE-13649	<p>The build EAR process was taking several hours for complex projects.</p>
5.0.1	BE-13356	<p>TIBCO BusinessEvents Studio did not start on SUSE Linux.</p>
5.0.1	BE-13086	<p>With JMS channels, event acknowledgement was not sent until after the event's time to live period expired, even when using the explicit client acknowledgement option.</p>
5.0.1	BE-13575	<p>An error was reported when loading a concept with a String property longer than 64KB.</p>

Closed in Release	Key	Summary
5.0.1	BE-13528	The QName group of XPath functions was missing from the Function Argument Mapper in release 5.0.
5.0.1	BE-13346	With TIBCO BusinessEvents DataGrid as the cache provider, bulk deletes of hundreds of entities in a single RTC were slow.
5.0.1	BE-13221	With TIBCO BusinessEvents DataGrid clusters, process memory kept on growing.
5.0.1	BE-13121	When a backing store was disabled, PendingDBWrites JMX metrics were still updated.
5.0.1	BE-12989	In TIBCO BusinessEvents DataGrid clusters, cache only events with a TTL greater than zero were not expiring fast enough.
5.0.1	BE-12939	The memory consumption of some XSLT functions has been reduced.
5.0.1	BE-12882	TIBCO BusinessEvents DataGrid clusters sometimes did not discover nodes.
5.0.1	BE-12828	The Function Argument Mapper UI displayed the type of all time event properties as String.
5.0.1	BE-12872	It was not possible to add a custom serializer in TIBCO BusinessEvents Studio. Now the drop-down list allows text entry as well as selection from a list.
5.0.1	BE-12864	After a network disconnect and recovery, nodes in a TIBCO BusinessEvents DataGrid cluster stopped responding during the cluster discovery process.
5.0.1	BE-12738	Domain model entries were not case sensitive. Now m and M (for example) are recognized as different entries.

Closed in Release	Key	Summary
5.0.1	BE-12699	The MM server was not discovering the cluster topology when the host name was specified in the site topology editor using the fully qualified name. Now the host name is always resolved to its fully qualified domain name (even if the simple name is entered) and the host name is also validated against the IP address. If they don't resolve to the same host then an <code>UnknownHostException</code> is thrown.
5.0.1	BE-12657	Rule functions used for the rule ranking feature must have a Validity setting that includes Condition (Action Only is not sufficient). When an Action Only rule function was used, however, no validation error was thrown.
5.0.1	BE-12550	There was a memory leak in the cache server when TIBCO BusinessEvents DataGrid was the cache provider and a backing store was enabled.
5.0.1	BE-12541	The abs function was missing from the Function Argument Mapper in version 5.0.0.
5.0.1	BE-12537	TIBCO Administrator could not deploy a TIBCO BusinessEvents EAR file that contained Rational Clearcase files. (Such files would be present in a project that had been checked out of Rational Clearcase before the EAR file was built.)
5.0.1	BE-12525	The be-jdbc deploy utility did not create tables for objects located in a subfolder called "core."
5.0.1	BE-12520	The LDAP admin password is now encrypted.
5.0.1	BE-12519	A memory leak occurred during bulk deletes of concepts in a single RTC.
5.0.1	BE-12299	The Quick Fix feature was creating incomplete concept property entries. Errors occurred as a result, when using the concept properties in the rule editor and when building an EAR file.

Closed in Release	Key	Summary
5.0.1	BE-12146	TIBCO BusinessEvents engines acting as SOAP clients did not support the TOMCAT server type. When requests were sent using <code>HTTP.sendRequest()</code> or <code>HTTP.sendAsynchronousRequest()</code> , the <code>SoapEventOut</code> and the callback rule function were not created and an NPE was thrown.
5.0.1	BE-12549	With TIBCO BusinessEvents DataGrid as the cache provider, the engine threw the exception:  <code>Found in ObjectTable but not in base table.</code> <code>Possible race condition</code>
5.0.1	BE-12083	An exception in <code>RTCTransactionManager.TxnTask_Actions.run()</code> prevented the Post RTC from completing.
5.0.1	BE-11768	The runtime value of global variables of type Boolean was always false.
5.0.1	BE-8483	When using a JMS channel configured for SSL, with Client Authentication enabled and a Certificate/Private Key combination used for the Identity Resource on the client side, the engine would throw a <code>javax.jms.JMSSecurityException</code> error.  This is due to a limitation in the default security libraries. For this feature to work in TIBCO BusinessEvents, you can use Entrust security libraries, which are part of the TIBCO Runtime Agent installation. To use entrust, do the following: <ul style="list-style-type: none"> <li>• Add the entrust libraries to the classpath. For example: <code>C:/tibco/tpcl/5.6/lib/entrust</code></li> <li>• In the <code>be-engine.tra</code> file, add this line: <code>TIBCO_SECURITY_VENDOR=entrust61</code></li> </ul>
5.0.1	1-ANUYMG	Refactoring did not work well in the Domain Objects section of the Cluster tab in the CDD Editor. Changes made to TIBCO BusinessEvents entities such as events, concepts and so on were not reflected in this section of the editor.

Closed in Release	Key	Summary
5.0.1	1-9CDYRL	Starting with the 3.0 release, the TIBCO BusinessEvents API worked only with In Memory object management. (It did not work with Persistence or Cache object management).
5.0.1	1-86QOZR	Using <code>sendEvent()</code> to send an event to an IBM MQ JMS server failed.
5.0.1	1-ASPLV7	If a TIBCO BusinessEvents 3.x project refers to a project library that has global variables, and the project is imported into TIBCO BusinessEvents Studio, the project did not have the global variables.
5.0.0	BE-9888	In TIBCO BusinessEvents Studio, the UI showed errors if Ontology functions were not called properly in the rule editor.
5.0.0	BE-2899	If the <code>be-jdbcdeploy</code> utility created lines longer than 2499 characters, SQL scripts failed to execute.
5.0.0	BE-2651	The <code>engine.primary.activated</code> advisory event was sent twice during startup.
5.0.0	BE-1621	The ontology function template for the timer event closure attribute indicated that it could accept objects, but it can accept only Strings (as documented).
5.0.0	BE-1264	Engines did not automatically try to reconnect to TIBCO Enterprise Message Service server when the connection was lost.
5.0.0	BE-11932	TIBCO BusinessEvents now validates whether a channel's queue destination subject is populated.
5.0.0	BE-11931	Fault tolerance did not work correctly with RVC transport.
5.0.0	BE-11929	Use of <code>sendEvent()</code> to send an event to an MQ Series destination failed when called from a rule that had a <code>TimeEvent</code> in the declaration.
5.0.0	BE-10980	Building an EAR file for a project that contained a project library caused an exception.

Closed in Release	Key	Summary
5.0.0	BE-10498	When JDBC backing store was used, the TIBCO BusinessEvents engine threw an error when attempting to store and retrieve a concept that had a contained concept array, with history.
5.0.0	BE-10494	In the MM component, it was not possible to edit global variables when the global variables' total character length exceeded 8192.
5.0.0	BE-10394	Import WSDL was not working for abstract WSDLs.
5.0.0	BE-10332	Returning a concept array in a rule function was causing an error at engine start-up.
5.0.0	BE-10322	When a field name exceeded 30 characters, sometimes the <code>be-jdbcdeploy</code> utility did not generate SQL scripts correctly.
5.0.0	BE-10321	Global variables with an empty value and defined with type Password did display an encrypted value.
5.0.0	BE-10299	The <code>studio-tools</code> command-line utility for building EAR files was throwing an exception when a project includes any custom function that took a concept array as a parameter.
5.0.0	BE-10295	In the Function Argument Mapper, when the <code>@id</code> attribute of an input was mapped to a concept reference property in the Function panel, the value of the concept reference property was set to null. This problem did not occur in the context of a rule function used as a start up function.
5.0.0	BE-10237	After setting the following property to true in <code>studio.ini</code> :  <code>TIBCO.BE.function.catalog.Instance.serialize.instance</code>  The <code>Instance.serializeInstance()</code> function showed only nulls at runtime.

Closed in Release	Key	Summary
5.0.0	BE-10172	<p>It was not possible to externalize SSL certificates. They could only be stored in the project. Now you can store trusted certificates outside of the project and use the following global variable to point to the certificate storage location:</p> <p><code>BE_GLOBAL_TRUSTED_CA_STORE</code></p> <p>This variable is documented in <i>TIBCO BusinessEvents Developer's Guide</i>.</p>
5.0.0	BE-10056	<p>With JDBC backing store, database cursors were not properly closed when <code>Coherence.C.CacheLoadEventById()</code> method was called with a 'non-existent' id. Under some circumstances this could cause database cursors to expire.</p>
5.0.0	BE-10031	<p>There was no way to identify which post RTC transactions failed or which events were not sent out during the post RTC phase. Now you can register a callback function with TIBCO BusinessEvents. The transaction error handler rule function is invoked each time a database transaction exception occurs, and each time a send event exception occurs.</p> <p>See section on Transaction Error Handler Rule Function in <i>TIBCO BusinessEvents Developer's Guide</i> for details.</p>
5.0.0	BE-9908	<p>In TIBCO BusinessEvents Studio, the UI showed errors if Ontology functions were not called properly in the rule editor.</p>

Closed in Release	Key	Summary
5.0.0	BE-9898	<p>After importing a TIBCO BusinessEvents project from a different workspace and giving it a different name from the original name of the project, some project resources are not available, due to the project naming structure.</p> <p>Before, you had to open the affected files in a text editor and manually fix the naming.</p> <p>Now, a resource validation check detects when an entity's name, folder, namespace, or owner project name (<code>ownerProjectName</code> attribute) does not match the underlying file in the project.</p> <p>In addition, a "Quick Fix" feature has been added. To invoke the Quick Fix, right -click on the validation problem in the Problems View and select "Quick Fix."</p> <p>This is documented in <i>TIBCO BusinessEvents Developer's Guide</i></p>
5.0.0	BE-9870	<p>Upgrading to latest Coherence libraries was throwing "Storage Not Configured" errors.</p>
5.0.0	BE-9645	<p>When you right-clicked a project name in Studio Explorer, the Refactor &gt; Rename option was not available.</p>
5.0.0	BE-9644	<p>With Cache object management, and when cache-aside was not used, "Storage Not Configured" errors were sometimes seen while starting up inference engines, even when the cluster was configured properly and the cache server or servers were up and running.</p>
5.0.0	BE-9603	<p>No TIBCO BusinessEvents agents started when the input destinations for any one agent in the CDD were configured such that the directly configured destinations and referenced collections of destinations were listed in mixed order.</p>

Closed in Release	Key	Summary
5.0.0	BE-9429	In TIBCO BusinessEvents Studio, the CDD was correctly updated for refactoring changes, but if the CDD file was open for editing in TIBCO BusinessEvents Studio when the changes were made, the open file did not reflect the changes. Additionally, the Save button became enabled. If you then saved the CDD file, the old paths were retained and overwrote the correct ones.
5.0.0	BE-9425	TIBCO BusinessEvents did not create an EAR file when any event had a high value for the time-to-live (TTL) setting, for example, 35 days.
5.0.0	BE-8487	On the AIX platform, when a backing store was used, a <code>NoClassDefFoundError</code> was thrown when trying to start engines.
5.0.0	BE-7354	Refactoring did not work well in the Domain Objects section of the Cluster tab in the CDD Editor. Changes made to TIBCO BusinessEvents entities such as events, concepts and so on were not reflected.
5.0.0	BE-5802	Shortcut keys "Shift+Home", "Shift+End", "Home", "End" did not work in the Form editor for Rules and Rule Functions. For the TIBCO BusinessEvents Decision Manager state modeler feature, the shortcut keys also did not work in the rule and expression editors.
5.0.0	BE-5264	If the payload of a <code>SOAPEvent</code> was invalid or had been deleted, and another event inherited from this event, project validation did not report that the payload of the inheriting event was invalid
5.0.0	BE-5173	Even after successful generation of the EAR file, TIBCO BusinessEvents Studio did not always show the message "EAR File was successfully generated."

## Known Issues

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The table in this section list the known issues in this release.

Key	Summary/Workaround
BE-27605	<p><b>Summary</b> The TIBCO BusinessEvents engine fails to start when MySQL database is used for backing store and the <b>Oracle Elliptic Curve Cryptography (ECC) Library</b> component is not installed.</p> <p><b>Workaround</b> You can use either of the following workarounds:</p> <ul style="list-style-type: none"> <li>Manually install the Oracle ECC library to your existing TIBCO BusinessEvents installation, see <a href="#">TIBCO BusinessEvents Installation</a>.</li> <li>Use the JDBC driver of <code>tibcosoftwareinc.jdbc.sqlserver.SQLServerDriver</code> which uses the <code>TIsqLserver.jar</code>. The <code>TIsqLserver.jar</code> file is bundled with TIBCO BusinessEvents installation.</li> </ul>
BE-27591	<p><b>Summary</b> Display Model is not supported in TIBCO BusinessEvents WebStudio.</p> <p><b>Workaround</b> None</p>
BE-27321	<p><b>Summary</b> TIBCO BusinessEvents engine log contains the following warnings from the Javassist library:</p> <pre>WARNING: An illegal reflective access operation has occurred WARNING: Illegal reflective access by javassist.ClassPool (file:&lt;BE_HOME&gt;/lib/ext/tpcl/javassist.jar) to method java.lang.ClassLoader.defineClass(java.lang.String,byte[],int,int, java.security.ProtectionDomain) WARNING: Please consider reporting this to the maintainers of javassist.ClassPool WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access operations WARNING: All illegal access operations will be denied in a future release</pre> <p>This is a known issue of the Javassist library.</p> <p><b>Workaround</b> None</p>
BE-27270	<p><b>Summary</b> (AIX platform only) The <code>studio-tools</code> utility commands are not working.</p> <p><b>Workaround</b> None</p>
BE-25784	<p><b>Summary</b> The default or custom pre-fetch size is not displayed in the logger line.</p> <p><b>Workaround</b> None</p>

Key	Summary/Workaround
BE-25783	<p><b>Summary</b> The Delete operation does not throw an exception when you try to delete a deleted item.</p> <p><b>Workaround</b> None</p>
BE-25121	<p><b>Summary</b> Multiple TIBCO BusinessEvents engines cannot be started when the TIBCO BusinessEvents unit test runs in the non-API mode.</p> <p><b>Workaround</b> None</p>
BE-24814	<p><b>Summary</b> The rule management server (RMS) does not start in HP-UX on Itanium servers.</p> <p><b>Workaround</b> None</p>
BE-24697	<p><b>Summary</b> Multilingual characters are garbled in exported WSDL files.</p> <p><b>Workaround</b> Replace garbled characters with multilingual characters encoded in UTF-8.</p>
BE-24556	<p><b>Summary</b> In Oracle database, multibyte characters are not allowed in the table name.</p> <p><b>Workaround</b> Use ASCII characters for the table name.</p>
BE-24538	<p><b>Summary</b> In TIBCO BusinessEvents Enterprise Administration agent, application instances do not start when they have multibyte characters in their name.</p> <p><b>Workaround</b> Use ASCII characters for instance names.</p>
BE-24349	<p><b>Summary</b> The BusinessEvents cache engine does not start when the name of concept or name of concept properties contains non-ASCII characters.</p> <p><b>Workaround</b> Use ASCII characters for concept property names.</p>
BE-23635	<p><b>Summary</b> Arabic characters are displayed in incorrect order in BusinessEvents rule file.</p> <p><b>Workaround</b> None</p>
BE-23632	<p><b>Summary</b> The concept properties with Arabic characters are displayed in the wrong format in a decision table.</p> <p><b>Workaround</b> None</p>
BE-23490	<p><b>Summary</b> In the Firefox browser, the status column drop-down list in the Worklist dialog box of WebStudio does not work.</p> <p><b>Workaround</b> Start WebStudio in another web browser.</p>

Key	Summary/Workaround
BE-23478	<p><b>Summary</b> The AppManage utility from TIBCO Runtime Administrator 5.8 and earlier throws segmentation fault after installing TIBCO BusinessEvents 5.2.2 on the AIX platform.</p> <p><b>Workaround</b> Upgrade to TIBCO Runtime Administrator 5.9 or 5.10.</p>
BE-22239	<p><b>Summary</b> In the CentOS 7, Red Hat 7, and Oracle Linux 7 platforms, the display model takes time to load the wizard after the <b>Next</b> button is clicked.</p> <p><b>Workaround</b> None</p>
BE-22181	<p><b>Summary</b> The data source does not populate appropriate fields from WSDL schema in the XPATH 2.0 formula builder.</p> <p><b>Workaround</b> Name the payload node to match the xsd type name.</p>
BE-22106	<p><b>Summary</b> Studio and studio-tools throw a Framework Error at startup: <code>org.osgi.framework.BundleException: Could not resolve module: org.eclipse.jpt.dbws.eclipselink.ui</code></p> <p><b>Workaround</b> This is a harmless error. To suppress the error, use the <code>-clean</code> option when launching Studio or studio-tools.</p>
BE-21626	<p><b>Summary</b> While uninstalling BusinessEvents 5.2.0 or later that is installed on top of 5.1.x version, a DependencyCheck Error might occur and the uninstallation process fails.</p> <p><b>Workaround</b> Pass the following argument when performing uninstallation:  <code>-V skipDependencyChecks="true"</code></p>
BE-21471	<p><b>Summary</b> The <code>as-convert</code> utility might give errors when converting shared nothing files from one format to another.</p> <p><b>Workaround</b> The <code>as-convert</code> utility gives errors when converting a shared nothing file that has the view count as zero.</p> <p>When the error occurs, run the <code>as-dump</code> utility on the file to check if the view count is zero. When the view count is zero, the <code>as-dump</code> utility output is similar to the following output:</p> <pre>&lt;Exception&gt; FileProcessor.cpp: 69: initFile: file_header_invalid - file_name=/Users/Work/tibco/data/ms/dist-unlimited-bs-readOnly-met a1--be_gen_Events_GetInfo/cache-6/cache-6_store_1412048660, load view number is zero &lt;/Exception&gt;.</pre> <p>When the view count is zero, you can ignore the error (which should be a warning instead).</p>

Key	Summary/Workaround
BE-21325	<p><b>Summary</b> During hot deployment, the <code>loadAndDeploy</code> command incorrectly loads the engine with multiple decision tables instead of a single decision table.</p> <p><b>Workaround</b> None</p>
BE-21042	<p><b>Summary</b> While running the <code>be-jdbcdeploy</code> utility, <code>slf4j</code> errors are thrown in the output.</p> <p><b>Workaround</b> These are harmless errors and can be ignored.</p>
BE-20818	<p><b>Summary</b> When a cache server is started with CSH shell in AIX, the engine crashes with core dump.</p> <p><b>Workaround</b> Use BASH shell instead.</p>
BE-20081	<p><b>Summary</b> Win 32-bit Installation: TIBCO BusinessEvents engine does not start from the console and throws the error "Error occurred during initialization of VM java/lang/NoClassDefFoundError: java/lang/invoke/AdapterMethodHandle".</p> <p><b>Workaround</b> When TIBCO BusinessEvents is installed over an existing 5.1.1 installation, the environment variable <code>tibco.env.JVM_LIB_PATH</code> in <code>*.tra</code> files must be corrected to point to <code>TIBCO_HOME/tibcojre/1.7.0/bin/client/jvm.dll</code>.</p>
BE-19937	<p><b>Summary</b> When the ODBC driver (<code>ojdbc.jar</code>) is present at <code>lib\ext\tpcl</code>, the <code>stopChannel</code> catalog function throws an exception during runtime.</p> <p><b>Workaround</b> Use patched version of the ODBC driver (<code>ojdbc.jar</code>).</p>
BE-18747	<p><b>Summary</b> TIBCO BusinessEvents does not support events scheduled across different versions. The scheduled events stored by the previous version of BusinessEvents cannot be scheduled by the current version.</p> <p><b>Workaround</b> None</p>
BE-18069	<p><b>Summary</b> During hot deployment with the <code>loadAndDeploy(void)</code> command, TIBCO BusinessEvents loads decision tables that were loaded previously, even if they are not present in the current external class folder.</p> <p><b>Workaround</b> None</p>
BE-17943	<p><b>Summary</b> In TIBCO BusinessEvents Studio, the values of environment variables are overwritten if the variable have same name, irrespective of whether variables are written in different cases. For example, <code>Path</code> and <code>PATH</code> are both processed as the same variable.</p> <p><b>Workaround</b> None</p>

Key	Summary/Workaround
BE-17935	<p><b>Summary</b> In WebStudio, the <b>Sort</b> option for column is not displayed for a decision table with a large number of rows.</p> <p><b>Workaround</b> Scroll down the decision table to view all the rows. The <b>Sort</b> option for column is now displayed.</p>
BE-17886	<p><b>Summary</b> While TIBCO BusinessEvents DataGrid can run on virtual machines (VMs) in most environments, the following issues have been observed under some circumstances:</p> <ul style="list-style-type: none"> <li>• IP multicast on VMs has unpredictable latency times, and sometimes drops data, which causes GMP multicast to fail or cause various issues.</li> <li>• VMware snapshots might cause members to disconnect from each other.</li> <li>• When running on VMs in Linux 32-bit and 64-bit environments, or on Solaris x86 32-bit or 64-bit environments, multicast discovery sometimes fails or suspends. This occurs more often with TIBCO RV discovery than with PGM discovery.</li> </ul> <p><b>Workaround</b> None</p>
BE-17708	<p><b>Summary</b> When installing a 32-bit version of TIBCO BusinessEvents on a 64-bit system, an error "Failure to create the Java Virtual Machine" might occur. Consequently, the TIBCO BusinessEvents applications such as Studio, be-engine.exe, be-rms.exe, and be-mm.exe fail to start.</p> <p><b>Workaround</b> Edit the configuration file for the TIBCO BusinessEvents applications and reduce the heap size to <code>-Xms512m</code> and <code>-Xmx512m</code>.</p>
BE-17564	<p><b>Summary</b> An error might occur when starting TIBCO BusinessEvents Studio after successfully installing TIBCO BusinessEvents 5.1.1.</p> <p><b>Workaround</b> Run the command <code>studio.exe -clean -noSplash</code> to start Studio.</p>
BE-17310	<p><b>Summary</b> When using shared nothing persistence option, the field names in TIBCO BusinessEvents cannot start with an underscore character (<code>_</code>).</p> <p><b>Workaround</b> Ensure that field name does not start with an underscore (<code>_</code>) character.</p>
BE-17291	<p><b>Summary</b> Under ActiveSpaces and Berkeley DB mechanism, with only one cache and inference running, if only the cache agent is restarted, then data discrepancy occurs.</p> <p><b>Workaround</b> Restart the whole cluster if only one cache agent is available in the cluster or keep more than one cache agents in the cluster.</p>

Key	Summary/Workaround
BE-17212	<p><b>Summary</b> When binding variables are used within the XPath mapper, their values are shown as null.</p> <p><b>Workaround</b> None</p>
BE-17097	<p><b>Summary</b> The value for &lt;type&gt; element in the deployment configuration file is incorrect when the file is generated using the export option of the AppManage utility.</p> <p><b>Workaround</b> Edit the generated deployment configuration file and set the value of the &lt;type&gt; element to "be".</p>
BE-17063	<p><b>Summary</b> The editor gives an error when scorecard is used as argument for the modify statement in the rule template.</p> <p><b>Workaround</b> In the rule template, scorecard can be the argument of a modify statement only if it is declared in the rule scope.</p>
BE-16990	<p><b>Summary</b> After logging in, if RMS server is restarted, then re-login of same user gives the UniqueConstraintException. The issue happens if RMS server is started with Berkley DB configuration.</p> <p><b>Workaround</b> None</p>
BE-16650	<p><b>Summary</b> Starting any PU after deployment results in an exception if TIBCO Runtime Agent 5.7.0 is installed after installing TIBCO BusinessEvents. However, there is no problem when using TIBCO Runtime Agent 5.7.4.</p> <p><b>Workaround</b> It is recommended that you use TIBCO Runtime Agent 5.7.4 independently, without any prior installation of TIBCO Runtime Agent 5.7.0.</p>
BE-16615	<p><b>Summary</b> When WebStudio runs in the Microsoft Internet Explorer 9.0 browser, you cannot edit cells on a decision table by double-clicking the cell.</p> <p><b>Workaround</b> None</p>
BE-16409	<p><b>Summary</b> Dragging artifacts to decision table is unavailable on Red Hat Linux 6 platform.</p> <p><b>Workaround</b> None</p>
BE-15873	<p><b>Summary</b> Stopping all the discovery nodes (using Ctrl+C) causes exceptions.</p> <p><b>Workaround</b> Run multiple discovery nodes instead of a single discovery node.</p>

Key	Summary/Workaround
BE-15728	<p><b>Summary</b> When TIBCO BusinessEvents is using TIBCO BusinessEvents DataGrid cache and a database that is on a WAN (at a large physical distance), event processing becomes slow and can lead to DataGrid timeouts.</p> <p><b>Workaround</b> None</p>
BE-15720	<p><b>Summary</b> Fully qualified name of the concept should be used for the create command in rule template, for example, <code>create Concept.&lt;conceptname&gt;</code>.</p> <p><b>Workaround</b> None</p>
BE-14585	<p><b>Summary</b> In a multi-agent environment, transitions are not processed when events with Cache+Memory Object Management are not sent in the order as defined in the state machine.</p> <p><b>Workaround</b> None</p>
BE-13547	<p><b>Summary</b> With the cache aside backing store configuration, if the inference engine is killed after the transactions are published to cache but before they are committed to the database, data inconsistency between the cache and database is observed.</p> <p><b>Workaround</b> Restart the cluster to fetch the correct records and republish the EMS messages.</p>
BE-12055	<p><b>Summary</b> New members cannot join the cluster if one of the existing nodes in the cluster is unresponsive.</p> <p><b>Workaround</b> None</p>
BE-11709	<p><b>Summary</b> Shared resources cannot be opened on the RMS History tab.</p> <p><b>Workaround</b> None</p>
BE-11687	<p><b>Summary</b> The TIBCO BusinessEvents Monitoring and Management server does not support double byte characters in the project name.</p> <p><b>Workaround</b> Do not use double byte characters in the project name.</p>
BE-11540	<p><b>Summary</b> The TIBCO BusinessEvents Monitoring and Management server does not support double byte characters in the site topology file name.</p> <p><b>Workaround</b> Do not use double byte characters in the site topology file name.</p>

Key	Summary/Workaround
BE-11535	<p><b>Summary</b> The TIBCO BusinessEvents Monitoring and Management server does not support double byte characters in site topology processing unit configuration names.</p> <p><b>Workaround</b> Do not use double byte characters in site topology processing unit configuration names.</p>
BE-10835	<p><b>Summary</b> Renaming, moving, or deleting Identity Shared Resources is not reflected in the HTTP SSL Configuration for HTTPS Connection dialog box.</p> <p><b>Workaround</b> None</p>
BE-9174	<p><b>Summary</b> In projects that involve integration with TIBCO ActiveMatrix BusinessWorks, changes made to the TIBCO BusinessEvents EAR file while TIBCO Designer is open are not reflected in the ActiveMatrix BusinessWorks plug-in activities, such as SendEvent. (The EAR file is referenced in the RuleServiceProvider Configuration Resource in TIBCO Designer.)</p> <p><b>Workaround</b> Restart TIBCO Designer to load the changes in the EAR file.</p>
BE-8445	<p><b>Summary</b> If the TIBCO Designer™ Add-in for TIBCO Business Studio™ product required by TIBCO ActiveMatrix BusinessWorks is installed in the same Eclipse environment as TIBCO BusinessEvents Studio, enterprise archive generation fails for TIBCO BusinessEvents Studio projects.</p> <p><b>Workaround</b> None</p>
1-APZLY5	<p><b>Summary</b> The TIBCO BusinessEvents Monitoring and Management server occasionally throws a NullPointerException when the server is shutting down.</p> <p><b>Workaround</b> None</p>
1-AP0B0E	<p><b>Summary</b> If a project refers to a project library, rule functions defined in the project library are not available for selection when defining event preprocessors in the CDD Editor.</p> <p><b>Workaround</b> None</p>
1-AMQMGB	<p><b>Summary</b> Project Validation does not throw any errors if a non-existent global variable name is used in some TIBCO BusinessEvents entities such as Shared Resources and channels.</p> <p><b>Workaround</b> None</p>
1-ALY1P5	<p><b>Summary</b> In the XPath formula builder, under the Logical functions category, if the xor function is used, a false warning "Always true" is shown.</p> <p><b>Workaround</b> None</p>

Key	Summary/Workaround
1-AJ7M0T	<p><b>Summary</b> If you are using payloads in events that refer to an element inside an XSD and there are multiple XSDs present in the project with the same element, the TIBCO BusinessEvents engine throws a <code>NullPointerException</code> when deserializing an event with payload.</p> <p><b>Workaround</b> Keep only the XSD that you need in your TIBCO BusinessEvents Studio project and remove the ones that are not needed.</p>
1-AGWRLS	<p><b>Summary</b> In a JMS Connection Shared Resource, if the JNDI Configuration resource is renamed, the new name of the JNDI Configuration resource is not reflected in the JMS Connection Shared Resource.</p> <p><b>Workaround</b> Manually update to the new name.</p>
1-AF5OHI	<p><b>Summary</b> Unlike in TIBCO Designer, when a new project is created in Business Events Studio, some global variables such as Domain and Deployment are not created by default.</p> <p><b>Workaround</b> Create these global variables manually.</p>
1-AEQ6AE	<p><b>Summary</b> In the XSLT Mapper opened up by <code>Event.createEvent</code> or <code>Instance.createInstance</code> functions, no validation error is shown if a nonscalar value such as a node is dragged to the input of a field that can only accept a scalar value.</p> <p><b>Workaround</b> None</p>
1-AE3GXX	<p><b>Summary</b> In JMS channels, <code>CLIENT_ACKNOWLEDGE</code> acknowledgment mode does not roll back pre-fetched and unacknowledged JMS messages to the queue when the TIBCO BusinessEvents engine stops responding.</p> <p><b>Workaround</b> None</p>
1-ABTGG7	<p><b>Summary</b> TIBCO BusinessEvents Studio cannot Reset to the original schema after making changes to the schema in a mapper.</p> <p><b>Workaround</b> Undo the changes manually.</p>
1-919P9B	<p><b>Summary</b> You cannot assign a <code>DateTime</code> to a bind variable in queries.</p> <p><b>Workaround</b> In the query, use <code>/#Datetime/parseLong(\$milliseconds)</code> and pass a long integer in <code>\$milliseconds</code>.</p>

Key	Summary/Workaround
1-9146V5	<p><b>Summary</b> In queries, the type of a bind variable is enforced by its surrounding expression.</p> <p><b>Workaround</b> In the query, use the following expressions to assign the desired type to the bind variable \$x:</p> <ul style="list-style-type: none"> <li>• For int and long use: (<math>\\$x + 0</math>)</li> <li>• For double use: (<math>\\$x + .0</math>)</li> <li>• For String use: (<math>\\$x    ''</math>)</li> <li>• For Boolean use: (<math>\\$x</math> or <code>false</code>)</li> <li>• For DateTime, pass a long instead of a DateTime and use: <code>/#Datetime/parseLong(\$x)</code></li> </ul>
1-8YHHBD	<p><b>Summary</b> When ActiveMatrix BusinessWorks is contained within TIBCO BusinessEvents, JAR files that are part of an alias library should be extracted from the EAR during the deployment process, but are not.</p> <p><b>Workaround</b> Manually place the JAR files in the class path.</p>
1-8KLNE4	<p><b>Summary</b> If the location of the persistence database directory is specified using the Database Environment Directory field on the Object Management tab, persistence files are created in the root directory.</p> <p><b>Workaround</b> Specify the location using the property <code>be.engine.om.berkeleydb.dbenv</code>. The files are then placed in a directory whose name matches the BAR name.</p>
1-8A9FA9	<p><b>Summary</b> When you use the XPath mapper to assign a concept to a field of type any in the payload of an event, and that concept has a contained concept property with an <code>extId</code> that is not null, the following exception occurs:</p> <p><code>ExtIdAlreadyBoundException: Event is already bound to extId</code></p> <p>Where <code>extID</code> is the instance <code>extId</code> of the concept or its contained concept.</p> <p><b>Workaround</b> None</p>
1-7UGVMG	<p><b>Summary</b> Async checkpoint is not working.</p> <p><b>Workaround</b> Use sync checkpoint. It is enabled by default.</p>

Key	Summary/Workaround
1-7M7QOT	<p><b>Summary</b> The hot deployment feature does not handle changes made to non-TIBCO BusinessEvents resources, specifically JMS or Rendezvous connection resources.</p> <p><b>Workaround</b> If you need to change these resources, you must restart the TIBCO BusinessEvents engine.</p>
1-6MMNZW	<p><b>Summary</b> When a primary state machine's concept is moved to a folder, then secondary state machine's path to the called primary state machine is not updated.</p> <p><b>Workaround</b> Update it manually.</p>
1-630PGL	<p><b>Summary</b> Assigning an empty string ("") to a field in a mapper function results in a null string.</p> <p><b>Workaround</b> Set <code>TIBCO.BE.xsltVersion</code> to 2.0 in the <code>designer.tra</code> file and regenerate the mapper XSLT template by opening the mapper function and clicking <b>OK</b>. (This is a non-supported feature because it is part of the XSLT 2.0 specification, which W3C has not yet released.)</p>