

TIBCO BusinessEvents[®]

Release Notes

Software Release 5.1.1

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Contents

Preface	v
TIBCO BusinessEvents Express	vi
Typographical Conventions	vii
Connecting with TIBCO Resources	x
How to Join TIBCOCommunity	x
How to Access TIBCO Documentation	x
How to Contact TIBCO Support	x
Release Notes	1
New Features	2
Release 5.1.1	2
Release 5.1	5
Release 5.0.1	8
Release 5.0	9
Changes in Functionality	11
Release 5.1.1	11
Release 5.1	12
Release 5.0.1	12
Release 5.0	15
Deprecated and Removed Features	18
Deprecated Features	18
Removed Features	19
Migration and Compatibility	20
Release 5.1.1	20
Release 5.1	22
Release 5.0.1	23
Release 5.0	23
Closed Issues	24
Known Issues	52
Appendix A Documentation for New Functionality for Release 5.1.1	63
In-Memory Performance Statistics Specifications	64
Appendix B Documentation for Changed Functionality for Release 5.0.1	69
Enabling Studio Tools buildEar operation on Solaris SPARC	70

Using Public/Private Key Authentication with mm-tools	72
Embedded Persister with Shared-all Functionality	74
Configuring the Embedded Persister	75
Reference to CDD Properties	76
Reference To Berkeley DB (JE) Properties	78
Guidelines for Using Coherence Cache Provider	79

Preface

TIBCO BusinessEvents® allows you to abstract and correlate meaningful business information from the events and data flowing through your information systems, and take appropriate actions using business rules. By detecting patterns within the real-time flow of events, TIBCO BusinessEvents can help you to detect and understand unusual activities as well as recognize 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.

TIBCO BusinessEvents
The Power to Predict®

Topics

- [TIBCO BusinessEvents Express, page vi](#)
- [Typographical Conventions, page vii](#)
- [Connecting with TIBCO Resources, page x](#)

TIBCO BusinessEvents Express

The TIBCO BusinessEvents Express edition provides more limited functionality than the TIBCO BusinessEvents Standard Edition. Some content in this documentation is not relevant to users of TIBCO BusinessEvents Express. Such content includes but is not limited to any chapters and major sections that contain a note indicating that the content does not apply to TIBCO BusinessEvents Express.

Minor references to unsupported features may not be called out in the text. Use the following general guidelines to understand what is and is not supported in these cases:

- Only In Memory object management (OM) is supported. Therefore all functionality that requires Cache OM, such as use of a backing store, is not available. Berkeley DB OM is also not supported with the TIBCO BusinessEvents Express edition.
- Only the TIBCO BusinessEvents Decision Manager add-on is supported with the TIBCO BusinessEvents Express edition in this release. Other add-on products are not supported.

Typographical Conventions

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"> • Name 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 > All Programs menu. • Path The folder into which the product is installed. This folder is referenced in documentation as <i>TIBCO_HOME</i>. <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\5.1.</p>
code font	<p>Code font identifies commands, code examples, filenames, pathnames, and output displayed in a command window. For example:</p> <p>Use <code>MyCommand</code> to start the foo process.</p>
bold code font	<p>Bold code font is used in the following ways:</p> <ul style="list-style-type: none"> • In procedures, to indicate what a user types. For example: Type admin. • In large code samples, to indicate the parts of the sample that are of particular interest. • In command syntax, to indicate the default parameter for a command. For example, if no parameter is specified, <code>MyCommand</code> is enabled: <code>MyCommand [enable disable]</code>

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"> To indicate a document title. For example: See <i>TIBCO ActiveMatrixBusinessWorks Concepts</i>. To introduce new terms. For example: A portal page may contain several <i>portlets</i>. Portlets are mini-applications that run in a portal. To indicate a variable in a command or code syntax that you must replace. For example: <code>MyCommand <i>PathName</i></code>
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>

Connecting with TIBCO Resources

This section provides links to helpful TIBCO resources.

How to Join TIBCOCommunity

TIBCOCommunity is an online destination for TIBCO customers, partners, and resident experts, a place to share and access the collective experience of the TIBCO community. TIBCOCommunity offers forums, blogs, and access to a variety of resources. To register, go to <http://www.tibcommunity.com>.

How to Access TIBCO Documentation

You can access TIBCO documentation here:

<http://docs.tibco.com>

How to Contact TIBCO Support

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

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

<http://www.tibco.com/services/support>

- If you already have a valid maintenance or support contract, visit this site:

<https://support.tibco.com>

Entry to this site requires a user name and password. If you do not have a user name, you can request one.

Release Notes

Check the TIBCO Product Support web site at <https://support.tibco.com> for product information that was not available at release time. Entry to this site requires a username and password. If you do not have a username, you can request one. You must have a valid maintenance or support contract to use this site.

As is standard in a major release, this edition of the release notes has been purged of all content pertaining to prior releases. To see information pertaining to a prior release, see the release notes provided with that release.

Topics

- [New Features, page 2](#)
- [Changes in Functionality, page 11](#)
- [Deprecated and Removed Features, page 18](#)
- [Migration and Compatibility, page 20](#)
- [Closed Issues, page 24](#)
- [Known Issues, page 52](#)

New Features

This section lists features added since the last major release of this product.



TIBCO BusinessEvents Express Content relating to Berkeley DB OM, Cache OM, and backing store is not relevant to TIBCO BusinessEvents Express edition.

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 [In-Memory Performance Statistics Specifications on page 64](#) 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 connectorDefault 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 metaspace. This enables TIBCO BusinessEvents to monitor the activities on the TIBCO ActiveSpaces metaspace 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 support for 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 choice.

Quick Fix Feature

The Quick Fix feature enables you to create concepts, events, and rule functions without leaving the rule editor. It also enables you 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.



TIBCO BusinessEvents Express Content relating to Berkeley DB OM, Cache OM, and backing store is not relevant to TIBCO BusinessEvents Express edition.

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 [Embedded Persister with Shared-all Functionality on page 74](#) 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 [Using Public/Private Key Authentication with mm-tools on page 67](#) 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. See [Enabling Studio Tools buildEar operation on Solaris SPARC on page 70](#) for details.

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).



For a list of all unused and deprecated properties from this or prior releases, see the appendix *Deprecated and Unused Properties* in *TIBCO BusinessEvents Installation*

TIBCO BusinessEvents Express Content relating to Berkeley DB OM, Cache OM, and backing store is not relevant to TIBCO BusinessEvents Express edition.

Deprecated Features

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 5.1.1**

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.

TIBCO BusinessEvents Express Content relating to Berkeley DB OM, Cache OM, and backing store is not relevant to TIBCO BusinessEvents Express edition.

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

Table 3 Parameters for *as-convert*

Parameter	Usage
-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

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



TIBCO BusinessEvents Express Content relating to Berkeley DB OM, Cache OM, and backing store is not relevant to TIBCO BusinessEvents Express edition.

Closed in Release	Key	Summary
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-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-17908	Import and export operations for decision tables are failing in WebStudio on AIX, Solaris, and HP-Itanium only.
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-17890	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: <pre>[as.kit] Waiting for space [objectTableCache-bs-readOnly-OrderCDD--ObjectTableIds] to be ready</pre>
5.1.1	BE-17872	The HTTP response processing stopped, when there was no data to process in the RTC.

Closed in Release	Key	Summary
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 Converting the Shared Nothing Persistence Data Files to the New Format on page 20 for more details on the <code>as-convert</code> utility.
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-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-17862	When using Shared Nothing persistence, the creation of Parent and Child concepts failed sometimes.
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-17750	<code>be-jdbcdeploy</code> utility ignored the metadata property <code>max.Length</code> for history enabled string properties.
5.1.1	BE-17726	Shared Nothing persistence now supports memory-only mode.
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-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-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.

Closed in Release	Key	Summary
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-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-17457	Attributes such as AvgTimeInRTC and AvgTimePreRTC were not updated for Event MBeans.
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-17418	On Windows 32-bit and Linux 32-bit installations, some jar files and libraries are incorrectly present in <i>TIBCO_HOME/be/5.1/lib/ext</i> . The installer removes these jars and libraries at the end of the installation.
5.1.1	BE-17364	High CPU utilization was observed when the TIBCO BusinessEvents engine was running in cache mode.
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-17323	When using the TIBCO BusinessEvents DataGrid, an invalid argument error was thrown if the discovery URL was specified as "tcp://" or if the hostname in the discovery URL contained the characters 't', 'c', or 'p'.
5.1.1	BE-17322	The Hawk Channel example <i>readme.html</i> 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>

Closed in Release	Key	Summary
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-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-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-17211	The try-catch exception handler could not be used in call, create, or modify statements of a rule template.
5.1.1	BE-17120	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-17079	After committing, resources were not listed in the worklist and the RMS server displayed <code>DuplicateExtIDException</code> .
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-16719	An <code>ArrayIndexOutOfBoundsException</code> error was thrown when a query was executed after starting or stopping the only cache server.
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-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-16144	<code>abortRTC()</code> did not stop the RTC immediately, and events were not consumed from memory when <code>abortRTC</code> was called.

Closed in Release	Key	Summary
5.1.1	BE-16035	The StopEngine method did not close the TIBCO Enterprise Message Service (EMS) connection before exiting.
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-15462	BE console throws NumberFormatException when the SOAP request do not have content length header.
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-15207	Objects written to the cache expired instantly, when the engine was running on Windows 32-bit platform.
5.1.1	BE-15098	TIBCO BusinessEvents could not retrieve the JMSXDeliveryCount property within a JMS message.
5.1.1	BE-14382	The global variable <code>deployment</code> was not set by default in the EAR file.
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).
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-11532	The performance profiler file remained empty when the project used Cache object management.
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-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.

Closed in Release	Key	Summary
5.1.1	BE-11129	Collocated query agent functions provide functionality equivalent to Coherence.Query functions.
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 true, updates made to a contained concept resulted in missing or extra entries in the relationship table.
5.1.0	BE-16878	<code>CreateInstanceFromXML</code> 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 <code>protocol_timeout</code> 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 <code><Ctrl+C></code> 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.

Closed in Release	Key	Summary
5.1.0	BE-16475	Calls to the database using <code>QueryUsingSQL()</code> failed with the exception <code>java.lang.ClassCastException: com.tibco.cep.studio.core.adapters.ConceptAdapter cannot be cast to com.tibco.cep.designtime.model.event.Event</code> after a call to <code>BusinessWorks.init()</code> .
5.1.0	BE-16467	When inference agents join the <code>PersisterSpace</code> as seeder, a (restarted) cache agent did not become the OWNER of the Berkeley DB. This led 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><Ctrl+C></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><Ctrl+C></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.
5.1.0	BE-15290	On Linux 64-bit platform, an <code>UnsupportedOperationException</code> was thrown when creating objects with backing store enabled.

Closed in Release	Key	Summary
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, <code>c:/tibco4/be/5.0/rms/examples</code> .
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.eclipse.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.
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.

Closed in Release	Key	Summary
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><user client id>_queue <user client id>_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.
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.

Closed in Release	Key	Summary
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, PendingDBWrites 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.
5.1.0	BE-12984	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: <code>com.tibco.cep.driver.jms.receiver = true</code> The following supporting properties are also provided: <code>com.tibco.cep.driver.jms.receiver.wait = maximum blocking time,</code> in milliseconds, for each call to receive(). The default is 500. <code>com.tibco.cep.driver.jms.receiver.shutdown.wait = maximum wait time,</code> in seconds, after attempting to stop the receiver, before a forceful stop is attempted. The default is 60.
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.

Closed in Release	Key	Summary
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.
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.

Closed in Release	Key	Summary
5.1.0	BE-12614	<p>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:</p> <pre>[14 giu 2011 13:05:51][DEBUG][main] - inference-A2AController connected input channel /Channels/Utility/Validator/MonitorJms to destination /Channels/Utility/Validator</pre> <p>where the actual channel is /Channels/Utility/Validator and actual destination is /Channels/Utility/Validator/MonitorJms.</p>
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.
5.1.0	BE-12549	<p>With TIBCO DataGrid as the cache provider, the engine threw the exception:</p> <p>Found in ObjectTable but not in base table. Possible race condition</p>
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.

Closed in Release	Key	Summary
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.
5.1.0	BE-12430	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: <code>Agent.agent name.enableParallelOps</code> 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. 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.
5.1.0	BE-12414	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> .
5.1.0	BE-12301	Selecting <Ctrl+Click> or <highlight+F3> did not take the user to the source code from the project library.
5.1.0	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.
5.1.0	BE-12244	The catalog function <code>C_CacheLoadConceptByExtId</code> (<code>String extId</code> , <code>boolean includeContained</code>) can be used to load the root concept only by setting the parameter <code>includeContained</code> to false.

Closed in Release	Key	Summary
5.1.0	BE-12231	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.
5.1.0	BE-12227	The <code>.bepproject</code> descriptor contained absolute paths to the project library and did not support the use of variables to define the path.
5.1.0	BE-12185	Rule conditions of the form <code>Instance.isModified(<concept>)</code> were not always re-evaluated when <code><concept></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> Ensure that <code>BEBWUtils.getProject()</code> is able to load TIBCO BusinessEvents resources into the <code>TnsCache</code> .
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
5.1.0	BE-11612	<p>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.</p> <p>Now you can use this functionality as follows.</p> <ol style="list-style-type: none"> 1. On the computer hosting the MM server, use a utility to create a public/private key pair. The <code>ssh-keygen</code> utility is widely available. Two files are generated. They are referred to as follows: <ul style="list-style-type: none"> — <code>PK_FILE_NAME</code> (The file containing the private key) — <code>PK_FILE_NAME.pub</code> (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 <code>BE_HOME/mm/certificates</code>. 2. On computers hosting the to-be-monitored cluster PUs that you want to remotely deploy, start, or stop, copy the contents of the <code>PK_FILE_NAME.pub</code> 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 <code>.ssh</code> directory of the user who will be logging in remotely, that is, in <code>~/.ssh/authorized_keys</code>. 3. When executing a command with mm-tools, use the new option <code>-pkf</code> to specify the fully qualified path to the <code><PK_FILE_NAME></code> file, that is, the file with the private key. For example: <p>Remote Deploy:</p> <pre>mm-tools --propFile mm-tools.tra -op deploy -m 100.100.100.101 -pkf BE_HOME/mm/certificates/PK_FILE_NAME</pre> <p>Remote Start:</p> <pre>mm-tools --propFile mm-tools.tra -op start -puc CS -m 100.100.100.101 -pkf BE_HOME/mm/certificates/PK_FILE_NAME</pre> <p>Remote Stop:</p> <pre>mm-tools --propFile mm-tools.tra -op stop -puc CS -m 100.100.100.101 -pkf BE_HOME/mm/certificates/PK_FILE_NAME</pre>

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 <clinit> 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.getIdByUri</code> , <code>Event.getIdByUri</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.
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.

Closed in Release	Key	Summary
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.tra</code> .
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.JMSecurityException</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"> 1. Add the entrust libraries to the classpath. For example: <code>C:/tibco/tpcl/5.6/lib/entrust</code> 2. In the <code>be-engine.tra</code> file, add this line: <code>TIBCO_SECURITY_VENDOR=entrust61</code>

Closed in Release	Key	Summary
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 > 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 <Global Var name> is unused." observed although the global variable was used in a rule.</p>
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	<p>The inference engine threw an exception on startup if the project included a global TimerEvent in the declaration section of a rule.</p>
5.1.0	BE-3259	<p>Schemas generated from TIBCO BusinessEvents entities using the schema generator were not fully compatible with the XMLInstance resources of TIBCO Designer.</p>
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"> • Queue Size - Specify the number of events per queue. • Thread Count - Specify the number of threads.
5.1.0	BE-2606	<p>TIBCO BusinessEvents can import XPDL files created by Business Studio Modeler using the project library.</p>

Closed in Release	Key	Summary
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.
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/depoyed, 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	The Help content for Studio Run Configuration was incorrect and has been updated.
5.0.1	BE-13970	In certain cases, when a channel lost the connection to a TIBCO Enterprise Message Service server, the engine did not attempt to reconnect.
5.0.1	BE-13955	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.
5.0.1	BE-13911	Using the unary minus operator with a concept property would cause an error when building the EAR.
5.0.1	BE-13859	If a project library had contained concepts, the project would throw an error at runtime.
5.0.1	BE-13649	The build EAR process was taking several hours for complex projects.
5.0.1	BE-13356	TIBCO BusinessEvents Studio did not start on SUSE Linux.
5.0.1	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.
5.0.1	BE-13575	An error was reported when loading a concept with a String property longer than 64KB.
5.0.1	BE-13528	The QName group of XPath functions was missing from the Function Argument Mapper in release 5.0.

Closed in Release	Key	Summary
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.
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.

Closed in Release	Key	Summary
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.
5.0.1	BE-12146	TIBCO BusinessEvents engines acting as SOAP clients did not support the TOMCAT server type. When requests were sent using HTTP.sendRequest() or HTTP.sendAsynchronousRequest(), the SoapEventOut 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: Found in ObjectTable but not in base table. Possible race condition
5.0.1	BE-12083	An exception in RTCTransactionManager.TxnTask_Actions.run() prevented the Post RTC from completing.
5.0.1	BE-11768	The runtime value of global variables of type Boolean was always false.

Closed in Release	Key	Summary
5.0.1	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.</p> <p>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> <ul style="list-style-type: none"> • Add the entrust libraries to the classpath. For example: <code>C:/tibco/tpcl/5.6/lib/entrust</code> • In the <code>be-engine.tra</code> file, add this line: <code>TIBCO_SECURITY_VENDOR=entrust61</code>
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.
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).

Closed in Release	Key	Summary
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 RVCM 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.
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 <code>Password</code> 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.

Closed in Release	Key	Summary
5.0.0	BE-10237	<p>After setting the following property to true in <code>studio.ini</code>:</p> <pre>TIBCO.BE.function.catalog.Instance.serialize.instance</pre> <p>The <code>Instance.serializeInstance()</code> function showed only nulls at runtime.</p>
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> <pre>BE_GLOBAL_TRUSTED_CA_STORE</pre> <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	Upgrading to latest Coherence libraries was throwing "Storage Not Configured" errors.
5.0.0	BE-9645	When you right-clicked a project name in Studio Explorer, the Refactor > Rename option was not available.
5.0.0	BE-9644	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.
5.0.0	BE-9603	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.
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.

Closed in Release	Key	Summary
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

The table in this section lists known issues in this release.



TIBCO BusinessEvents Express Content relating to Berkeley DB OM, Cache OM, and backing store is not relevant to TIBCO BusinessEvents Express edition.

Key	Summary/Workaround
BE-17946	<p>Summary When TIBCO BusinessEvents engine runs in write-behind mode with backing store enabled and uses Datagrid for object management caching, <code>getById</code> or <code>getByExtId</code> returns null value when object exists in database but not in cache.</p> <p>Workaround Use cache-aside.</p>
BE-17943	<p>Summary 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 same variable.</p> <p>Workaround None.</p>
BE-17886	<p>Summary 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"> • IP multicast on VMs has unpredictable latency times, and sometimes drops data, which causes GMP multicast to fail or cause various issues. • VMWare snapshots might cause members to disconnect from each other. • 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. <p>Workaround None.</p>
BE-17812	<p>Summary The Create JDBC deployment scripts wizard fails to browse and find the CDD file if the CDD files for the project are nested in a folder under the Deployments folder. For example, if the CDD file is under <code>/Deployments/runtime/mycdd.cdd</code> rather than <code>/Deployments/mycdd.cdd</code>, the wizard fails to find <code>mycdd.cdd</code>.</p> <p>Workaround Enter the path to the CDD file manually to proceed.</p>

Key	Summary/Workaround
BE-17793	<p>Summary Opening the Table Analyzer for decision tables with large number of rows sometimes throws an exception at the client side. Also, the analyzer fails when the decision table has more than 10000 rows.</p> <p>Workaround None.</p>
BE-17724	<p>Summary 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> <p>Workaround Use the option <code>'-p'</code> to specify the Studio project directory. See <i>TIBCO BusinessEvents Developer's Guide: Chapter 2 TIBCO BusinessEvents Studio Tools Utility : Migrating Core Coherence Functions at the Command Line</i> for details.</p>
BE-17708	<p>Summary When installing a 32-bit version of TIBCO BusinessEvents on a 64-bit system, an error "Failure to create the Java Virtual Machine" may sometimes be thrown. Consequently, the TIBCO BusinessEvents applications such as Studio, <code>be-engine.exe</code>, <code>be-rms.exe</code>, and <code>be-mm.exe</code> fail to start.</p> <p>Workaround Edit the configuration file for the TIBCO BusinessEvents applications and reduce the heap size to <code>-Xms512m</code> and <code>-Xmx512m</code>.</p>
BE-17600	<p>Summary Studio-tools are not installed on Solaris x86.</p> <p>Workaround Enable Studio-tools on Solaris x86 by following the procedure described in <i>TIBCO BusinessEvents Installation</i> guide.</p>
BE-17564	<p>Summary An error may sometimes be thrown when starting TIBCO BusinessEvents Studio after successfully installing TIBCO BusinessEvents 5.1.1.</p> <p>Workaround Run the command <code>studio.exe -clean -noSplash</code> to start Studio.</p>
BE-17331	<p>Summary In the FraudDetectionCache example, the cache mode of the FraudCriteria scorecard is incorrect.</p> <p>Workaround In the FraudDetectionCache example, change the cache mode of the FraudCriteria scorecard Cache Only to Memory Only. This setting is located in <code>fdcache.cdd</code>, under cluster > Object Management > Domain Objects > Overrides > /FraudCriteria.</p>
BE-17310	<p>Summary When using Shared Nothing persistence option, the field names in TIBCO BusinessEvents cannot start with an underscore character ("_").</p> <p>Workaround Ensure that field name does not start with an underscore ("_") character.</p>

Key	Summary/Workaround
BE-17293	<p>Summary In Load Balancer a runtime exception is thrown when the TTL for an event elapses and the event is not consumed.</p> <p>Workaround None.</p>
BE-17291	<p>Summary Under ActiveSpaces and Berkeley DB mechanism, with only one cache and inference running, if only the cache agent is restarted the data discrepancy occurs.</p> <p>Workaround 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>
BE-17212	<p>Summary When binding variables are used within the XPath mapper, their values are shown as null.</p> <p>Workaround None.</p>
BE-17097	<p>Summary The value for <type> element in the deployment configuration file is incorrect when the file is generated using the export option of the AppManage utility.</p> <p>Workaround Edit the generated deployment configuration file and set the value of the <type> element to "be".</p>
BE-17063	<p>Summary The editor gives error when scorecard is used as argument for the modify statement in the rule template.</p> <p>Workaround 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>Summary After logging, 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>Workaround None.</p>
BE-16650	<p>Summary 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>Workaround It is recommended to use TIBCO Runtime Agent 5.7.4 independently, without any prior installation of TIBCO Runtime Agent 5.7.0.</p>
BE-16615	<p>Summary When WebStudio runs in Microsoft Internet Explorer 9.0 browser, double click on any decision table cell do not make it editable.</p> <p>Workaround None.</p>

Key	Summary/Workaround
BE-16409	<p>Summary Dragging and dropping artifacts on DT is unavailable on Red Hat Linux 6 platform.</p> <p>Workaround None.</p>
BE-16001	<p>Summary With Write Behind backing store strategy, if the inference engine is restarted RuntimeExceptions are observed while processing events.</p> <p>Workaround None.</p>
BE-15873	<p>Summary Stopping all the discovery nodes (using Ctrl+C) causes exceptions to be thrown.</p> <p>Workaround Run multiple discovery nodes instead of a single discovery node.</p>
BE-15728	<p>Summary 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>Workaround None.</p>
BE-15720	<p>Summary Fully qualified name of concept should be used for the create command in rule template, for example, <code>create Concept.<conceptname></code>.</p> <p>Workaround None.</p>
BE-15681	<p>Summary 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.</p> <p>Workaround Restart both the cache server and inference agent.</p>
BE-15114	<p>Summary A <code>NullPointerException</code> was thrown on the low priority inference agent when performing a fail over using <code>maxActive</code> property. This was observed when using the TIBCO Cache Provider with backing store.</p> <p>Workaround Configure the EMS queues to be exclusive when <code>maxActive = 1</code>. Set the priority on inference engines to be the same.</p>
BE-14951	<p>Summary The XPath builder does not list the attributes of a complex type defined in a WSDL file.</p> <p>Workaround None.</p>
BE-14740	<p>Summary Rule-based timer events are not recovered in cache only mode.</p> <p>Workaround Use a scheduler instead of the timer events.</p>

Key	Summary/Workaround
BE-14585	<p>Summary 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>Workaround None.</p>
BE-14109	<p>Summary Deployment from TIBCO Administrator fails if the EAR file contains .metadata folders.</p> <p>Workaround None.</p>
BE-13547	<p>Summary With the cache aside backing store configuration, if the inference engine is killed after the transactions are published to cache, but before being committed to the database, data inconsistency between the cache and database is observed.</p> <p>Workaround Restart the cluster to fetch the correct records and republish the EMS messages.</p>
BE-12056	<p>Summary In some situations the TIBCO BusinessEvents Monitoring and Management server hangs while a console user switches from viewing one processing unit to viewing another.</p> <p>Workaround Restart the TIBCO BusinessEvents Monitoring and Management server.</p>
BE-12055	<p>Summary New members are unable to join the cluster if one of the existing nodes in the cluster is unresponsive.</p> <p>Workaround None.</p>
BE-11709	<p>Summary Shared resources cannot be opened in the RMS History tab.</p> <p>Workaround None.</p>
BE-11687	<p>Summary TIBCO BusinessEvents Monitoring and Management server does not support double byte characters in the project name.</p> <p>Workaround Do not use double byte characters in the project name.</p>
BE-11616	<p>Summary Profiler does not generate any output when running the engines in cache mode.</p> <p>Workaround None</p>
BE-11587	<p>Summary When the TIBCO BusinessEvents DataGrid cache provider is used, cache related statistics do not appear in the Monitoring and Management console.</p> <p>Workaround None</p>

Key	Summary/Workaround
BE-11540	<p>Summary TIBCO BusinessEvents Monitoring and Management server does not support double byte characters in the site topology file name.</p> <p>Workaround Do not use double byte characters in the site topology file name.</p>
BE-11535	<p>Summary TIBCO BusinessEvents Monitoring and Management server does not support double byte characters in site topology processing unit configuration names.</p> <p>Workaround Do not use double byte characters in site topology processing unit configuration names.</p>
BE-10835	<p>Summary Renaming or moving or deleting Identity Shared Resources is not reflected in the HTTP SSL Configuration for HTTPS Connection dialog box.</p> <p>Workaround None</p>
BE-9838	<p>Summary This issue occurs when using the XSLT mapper, if "Surround with Choice" is used on an attribute, and you click "OK" without populating the final [When] condition. When the mapper is later reopened, the final when statement no longer surrounds the attribute and the mapper shows an empty 'when' attribute.</p> <p>Workaround Complete all [When] conditions when "Surround with Choice" is used.</p>
BE-9837	<p>Summary This issue occurs when using the XSLT mapper, if "Surround with Choice" is used on an attribute and you click "OK" without populating the [When] conditions. When the mapper is later reopened, the when statement no longer surrounds the attribute and the mapper shows an empty 'Choose/When' attribute.</p> <p>Workaround Complete the condition before clicking "OK."</p>
BE-9836	<p>Summary This issue occurs when using the XSLT mapper, if "Surround with If" is used on an attribute and you click "OK" without populating the condition. When the mapper is later reopened, the if no longer surrounds the attribute and the mapper shows an empty 'If' attribute.</p> <p>Workaround Complete the condition before clicking "OK."</p>
BE-9646	<p>Summary The WSDL export utility generates a non-working WSDL when the input destination is defined using a collection in the CDD file.</p> <p>Workaround Define the input destination directly in the Agent Classes tab.</p>

Key	Summary/Workaround
BE-9174	<p>Summary 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>Workaround Restart TIBCO Designer to load the changes in the EAR file.</p>
BE-8445	<p>Summary 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>Workaround None.</p>
1-AUKJNT	<p>Summary The ActiveMatrix BusinessWorks InvokeRuleFunction activity sometimes throws a <code>java.lang.StackOverflowException</code>.</p> <p>Workaround None.</p>
1-ATETI4	<p>Summary 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 may be thrown even when the EAR file generates successfully:</p> <pre data-bbox="304 921 1071 947">org.eclipse.core.internal.resources.ResourceException</pre>
1-APZLY5	<p>Summary The TIBCO BusinessEvents Monitoring and Management server occasionally throws a <code>NullPointerException</code> when the server is shutting down</p> <p>Workaround None.</p>
1-AP0B0E	<p>Summary 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>Workaround None.</p>
1-AMQMGB	<p>Summary 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>Workaround None.</p>
1-ALY1P5	<p>Summary In the XPath formula builder, under the Logical functions category, if the <code>xor</code> function is used, a false warning "Always true" is shown.</p> <p>Workaround None.</p>

Key	Summary/Workaround
1-AJ7M0T	<p>Summary 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 NullPointerException when deserializing an event with payload.</p> <p>Workaround 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>Summary 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>Workaround Manually update to the new name.</p>
1-AF5OHI	<p>Summary 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>Workaround Create these global variables manually.</p>
1-AEQ6AE	<p>Summary In the XSLT Mapper opened up by <code>Event.createEvent</code> or <code>Instance.createInstance</code> functions, no validation error is thrown if a non scalar value such as a node is dragged and dropped onto the input of a field that can only accept a scalar value.</p> <p>Workaround None.</p>
1-AE3GXX	<p>Summary In JMS channels, <code>CLIENT_ACKNOWLEDGE</code> acknowledgement mode does not roll back pre-fetched and unacknowledged JMS messages to the queue when the TIBCO BusinessEvents engine stops responding.</p> <p>Workaround None.</p>
1-ABTGG7	<p>Summary TIBCO BusinessEvents Studio cannot Reset to the original schema after having made changes to the schema in a mapper.</p> <p>Workaround Undo the changes manually.</p>
1-ABDH3C	<p>Summary Even after successful generation of the EAR file, TIBCO BusinessEvents Studio may not always show the message "Ear File was successfully generated."</p> <p>Workaround Check whether the EAR file generated or not.</p>
1-919P9B	<p>Summary You cannot assign a <code>DateTime</code> to a bind variable in queries.</p> <p>Workaround 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>Summary In queries, the type of a bind variable is enforced by its surrounding expression.</p> <p>Workaround In the query, use the following expressions to assign the desired type to the bind variable \$x:</p> <ul style="list-style-type: none"> • For int and long use: (<code>\$x + 0</code>) • For double use: (<code>\$x + .0</code>) • For String use: (<code>\$x ""</code>) • For Boolean use: (<code>\$x or false</code>) • For DateTime, pass a long instead of a DateTime and use: <code>/#Datetime/parseLong(\$x)</code>
1-8YHHBD	<p>Summary 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>Workaround Manually place the JAR files in the classpath.</p>
1-8KLNE4	<p>Summary If the location of the persistence database directory is specified using the Database Environment Directory field in the Object Management tab, persistence files are created in the root directory.</p> <p>Workaround 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>Summary When you use the XPath mapper to assign a concept to a field of type <code>any</code> in the payload of an event, and that concept has a contained concept property with an <code>extId</code> that is not <code>null</code>, 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>Workaround None.</p>
1-7UGVMG	<p>Summary Async checkpoint is not working.</p> <p>Workaround Use sync checkpoint. It is enabled by default.</p>

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

Appendix A **Documentation for New Functionality for Release 5.1.1**

This appendix provides additional details for some items listed in the section [New Features on page 2](#) for [Release 5.1.1](#).

Topics

- [In-Memory Performance Statistics Specifications, page 64](#)

In-Memory Performance Statistics Specifications

All Destinations Stat MBean [`com.tibco.be.Agent.<AgentID>.Stats.Destinations.All`]

Operation Name	Return Type	Notes
<code>getStats(nameOrExpression)</code>	<ul style="list-style-type: none"> String name long eventsReceivedPerSecond String lastEventReceived long totalEventsReceived long totalEventsSent 	<p>Search for stats using a full name or a regular expression.</p> <p>Use <i><blank></i> as argument to get all known destinations.</p>
<code>getStatsByEventsReceived(nameOrExpression, boolean ascending)</code>	<ul style="list-style-type: none"> String name long eventsReceivedPerSecond String lastEventReceived long totalEventsReceived long totalEventsSent 	<p>Search for stats using a full name or a regular expression sorted by events received (ascending or descending).</p> <p>Use <i><blank></i> as argument to get all known destinations.</p>
<code>getStatsByEventsSent(nameOrExpression, boolean ascending)</code>	<ul style="list-style-type: none"> String name long eventsReceivedPerSecond String lastEventReceived long totalEventsReceived long totalEventsSent 	<p>Search for stats using a full name or a regular expression sorted by events sent (ascending or descending).</p> <p>Use <i><blank></i> as argument to get all known destinations.</p>

<Destination Name> Stat MBean [com.tibco.be.Agent.<AgentID>.Stats.Destinations.<Destination Name>]

Operation Name	Return Type	Notes
getEventsReceivedPerSecond	long	The running events received per second (will be revised every time an event is received). If no event is received, then it shows the last computed value.
getLastEventReceived	long	Shows the time when the last "events received per second" was calculated. Effectively, it shows when the last event was received on a destination.
getTotalEventsReceived	long	The total number of events received after the destination became active.
getTotalEventsSent	long	The total number of events sent after the destination became active.

Engine Stat MBean [com.tibco.be.Agent.<AgentID>.Stats. Engine]

Operation Name	Return Type	Notes
getTotalRTCs	long	Total number of RTCs.
getAverageRTCTime	double	The average RTC time (in msec).
getRulePerformanceStats(nameOrExpression)	<ul style="list-style-type: none"> String uriOrSignature long invocationCount double averageProcessingTime double averageConditionProcessingTime 	<p>Search for rule stats using a full name or a regular expression.</p> <p>Use <i><blank></i> as argument to get all known rules/rule functions.</p>

Operation Name	Return Type	Notes
getRulePerformanceStatsByProcessingTime(nameOrExpression, ascending)	<ul style="list-style-type: none"> String uriOrSignature long invocationCount double averageProcessingTime double averageConditionProcessingTime 	<p>Search for stats using a full name or a regular expression sorted by processing time (ascending or descending).</p> <p>Use <i><blank></i> as argument to get all known rules/rule functions.</p>
getRulePerformanceStatsByConditionProcessingTime(nameOrExpression, ascending)	<ul style="list-style-type: none"> String uriOrSignature long invocationCount double averageProcessingTime double averageConditionProcessingTime 	<p>Search for stats using a full name or a regular expression sorted by condition processing time (ascending or descending).</p> <p>Use <i><blank></i> as argument to get all known rules/rule functions.</p>

Event Stats MBean [com.tibco.be.Agent.<AgentID>.Stats.Event]

Operation Name	Return Type	Notes
getAverageEventProcessingTime	double	The average processing time per event.
getEventsPerSecond	long	The running events received per second (will be revised every time an event is processed). If no event is processed, then shows the last computed value.
getLastEventProcessedTime	long	Shows the time when the last "events per second" was calculated. Effectively, it shows when the last event was processed
getTimerEventsFired	double	The number of timer events fired.
getTotalEventsReceived	long	The total number of events processed (includes timer events).

Scorecard Based Stat Deployer MBean [com.tibco.be.Agent.<AgentID>.Stats. UserDefinedStats]

Operation Name	Return Type	Notes
register (namepattern)	Integer (count of registered ScoreCards)	The MBean finds all the scorecards matching the name pattern and wraps them with a dynamic MBean. Each score card MBean is registered as [com.tibco.be.Agent.<AgentID>.Stats.scorecard.<ScoreCardName>].
unregister (namepattern)	Integer (count of unregistered ScoreCards)	

All Thread Pool/ Job Queue Stat MBean [com.tibco.be.Agent.<AgentID>.Stats. tpool.All]

Operation Name	Return Type	Notes
getStats(nameOrExpression)	<ul style="list-style-type: none"> String name long activeThreads long maximumThreads long queueCapacity long queueSize 	<p>Search for stats using a full name or a regular expression.</p> <p>Use <i><blank></i> as argument to get all known thread pools.</p>
getStatsByActiveThread(nameOrExpression, boolean ascending)	<ul style="list-style-type: none"> String name long activeThreads long maximumThreads long queueCapacity long queueSize 	<p>Search for stats using a full name or a regular expression sorted by active thread count(ascending or descending).</p> <p>Use <i><blank></i> as argument to get all known thread pools.</p>
getStatsByQueueSize(nameOrExpression, boolean ascending)	<ul style="list-style-type: none"> String name long activeThreads long maximumThreads long queueCapacity long queueSize 	<p>Search for stats using a full name or a regular expression sorted by queue size(ascending or descending).</p> <p>Use <i><blank></i> as argument to get all known thread pools.</p>

**<Thread Pool Name> Stat MBean [com.tibco.be.Agent.<AgentID>.Stats.
tpool_jqueue.<Thread Pool Name>]**

Operation Name	Return Type	Notes
getActiveThreads	long	The total number of active threads.
getMaximumThreads	long	The maximum number of threads in the thread pool.
getQueueCapacity	long	The capacity of the job queue associated with the thread pool.
getQueueSize	long	The number of jobs in the queue associated with the thread pool.

Appendix B **Documentation for Changed Functionality for Release 5.0.1**

This appendix provides additional details for some items listed in the section [Changes in Functionality on page 11](#) for Release 5.0.1.

Topics

- [Enabling Studio Tools buildEar operation on Solaris SPARC, page 70](#)
- [Using Public/Private Key Authentication with mm-tools, page 72](#)
- [Embedded Persister with Shared-all Functionality, page 74](#)
- [Guidelines for Using Coherence Cache Provider, page 79](#)

Enabling Studio Tools buildEar operation on Solaris SPARC

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

To enable Solaris installations to execute the studio-tools command line utility buildEar operation, follow the steps below.

1. Install TIBCO BusinessEvents 32-bit 5.0.1 on a Solaris SPARC 64-bit machine.
2. Install TIBCO BusinessEvents 32-bit 5.0.1 on a Linux machine.
3. Download and install Eclipse 3.4.2 for Solaris SPARC. You can download the software from this location:

<http://archive.eclipse.org/eclipse/downloads/drops/R-3.4.2-200902111700/index.php>

Select the following option: Solaris 10 (SPARC/GTK 2). The filename is eclipse-SDK-3.4.2-solaris-gtk.zip.

4. Copy the following files from a Linux installation to the corresponding file location in the Solaris installation:

BE_HOME/studio/eclipse/plugins

BE_HOME/studio/bin/studio-tools.tra

BE_HOME/eclipse-platform/eclipse/links/TIBCOBusinessEvents-Studio-plugins.link

BE_HOME/eclipse-platform/eclipse/plugins/*emf*

BE_HOME/eclipse-platform/eclipse/plugins/*uml*

BE_HOME/eclipse-platform/eclipse/plugins/javax.xml_1.3.4.*.jar

BE_HOME/eclipse-platform/eclipse/plugins/org.apache.commons.codec_1.3.0.*.jar

BE_HOME/eclipse-platform/eclipse/plugins/org.apache.commons.httpclient_3.1.0.*.jar

BE_HOME/eclipse-platform/eclipse/plugins/org.apache.commons.lang_2.3.0.*.jar

BE_HOME/eclipse-platform/eclipse/plugins/org.apache.xerces_2.9.0.*.jar

BE_HOME/eclipse-platform/eclipse/plugins/org.apache.xml.resolver_1.2.0.*.jar

BE_HOME/eclipse-platform/eclipse/plugins/org.apache.xml.serializer_2.7.1.*.jar

5. On the Solaris machine, edit the following file:

BE_HOME/studio/bin/studio-tools.tra

Specify the appropriate environment paths for all path variables such as TIB_HOME, BE_HOME, TIB_JAVA_HOME, JVM_LIB_PATH and so on.

6. On the Solaris machine, edit the following file:

`BE_HOME/eclipse-platform/eclipse/links/TIBCOBusinessEvents-Studio-plugins.link`

Specify the path to the TIBCO BusinessEvents Studio plugins, as appropriate for the Solaris installation.

7. Copy the wrapper executable from `TIBCO_HOME/tools/wrapper/wrap` (or `wrap64`) to `BE_HOME/studio/bin/studio-tools`.
8. Change directory to `BE_HOME/eclipse-platform/eclipse` and run the command:

```
eclipse -clean -initialize
```

You can now execute the `studio-tools buildEar` operation. See *TIBCO BusinessEvents Developer's Guide* for details.

Using Public/Private Key Authentication with mm-tools

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. (See [Changes in Functionality on page 11](#) for details about the `stop` operation.)

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.

Optionally, you can specify a passphrase.

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 these new options:
 - pkf** The fully qualified path to the *PK_FILE_NAME* file, that is, the file with the private key.
 - pph** The passphrase, if you specified one when creating the public/private key pair. (The following example shows the `-pph` option.)

Example Commands

Remote Deploy:

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

Remote Deploy, with passphrase:

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

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
```

Embedded Persister with Shared-all Functionality

This form of data persistence uses TIBCO BusinessEvents DataGrid as the cache provider and Oracle Berkeley DB Java Edition software as the data store (not bundled with the TIBCO BusinessEvents software).

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

With this shared-all persistence implementation, cache servers act as persisters, and provide the service of interacting with the persistence layer.

All cache nodes must have access to a reliable shared file system. The Berkeley DB database is created within this shared file system.

This feature provides following operations:

Reading from the Data Store

Persisters load data in bulk from the data store at startup.

The following functions are used to load individual concepts into cache:

```
CacheLoadConceptByExtIdByURI()
```

```
CacheLoadConceptById()
```

Writing to the Data Store

Data is flushed to the operating system buffers for every write operation. TIBCO BusinessEvents uses `WRITE_NO_SYNC` durability by default, which means that the Berkeley DB will flush every write to the operating system's buffers immediately but not call `fsync`. In case of an application crash, there will be no data loss as long as the underlying operating system synchronizes its buffers to disk.



Notes

- TIBCO BusinessEvents internally sets durability to `WRITE_NO_SYNC` durability. This behavior can be overridden by setting the `je.txn.durability` property in the `je.properties` file. See [Configuring the Embedded Persister on page 75](#).
- The `CacheLoadConceptByExtId()` function is not supported when used with this feature.
- Scorecards are not persisted (and so cannot be recovered).
- Scheduler events are not persisted (and so cannot be recovered)

Configuring the Embedded Persister

This section explains how to configure the embedded persister.

1. Download the supported version of the Oracle Berkeley DB Java Edition software from the Oracle web site. Place the `je-4.1.17` JAR file in the following directory, as shown:

```
BE_HOME/hotfix/lib/ext/tpcl/je-4.1.17.jar
```



No Impact on TIBCO BusinessEvents Decision Manager An earlier version of Berkeley DB software is used for the TIBCO BusinessEvents Decision Manager RMS feature (`lib/ext/tpcl/je.jar`). The Berkeley DB software you install for the embedded persister feature also works with RMS without any modifications. The location specified for the newer version is ahead of the existing software location in the classpath. Therefore conflicts are avoided.

2. Open the project CDD and in the Cluster tab, set the following:
 - Set object management type to Cache: right click Object Management in the navigation tree and select Cache.
 - Select Object Management in the navigation tree and in the Configuration panel, set the Provider to TIBCO.
 - Select Backing Store in the navigation tree and in the Configuration panel Enabled field, clear the check box, to ensure that backing store functionality is disabled.
3. To configure the cache agent, do the following (see [Table 4, CDD Configuration Properties, on page 76](#) for details).
 - a. Add and configure the following required properties in the CDD file:


```
be.engine.cluster.persistenceProvider
be.backingstore.useobjecttable
be.engine.cluster.as.lock.ttl
```
 - b. If you want to specify a non-default name and location for the datastore directory, add and configure the following property.


```
be.persistenceprovider.bdb.directory
```
4. Save the CDD file and build project EAR files for deployment.
5. You can optionally override the datastore default configuration. In the directory where the datastore will be created, add a properties file and name it `je.properties`. Add and configure properties as explained in [Table 5, Berkeley DB JE Properties, on page 78](#).

Reference to CDD Properties

This section provide a reference to the CDD properties

Table 4 CDD Configuration Properties

Property	Notes
Cache Agent Properties	
<code>be.engine.cluster.persistenceProvider</code>	<p>Required. Specifies the implementation. Required value is as follows: <code>"com.tibco.cep.persistenter.ASBDBPersistenceProviderImpl"</code></p> <p>Set at the cluster level.</p> <p>Do not change this value.</p>
<code>be.backingstore.useobjecttable</code>	<p>Required.</p> <p>Required value is <code>false</code>.</p>
<code>be.engine.cluster.as.lock.ttl</code>	<p>Required. Value is specified in milliseconds. Controls the time after which TIBCO BusinessEvents DataGrid will forcibly unlock a space key. Thirty seconds is a reasonable value when the system not operating under heavy load (More than 2000 transactions per second may required a longer timeout period).</p> <p>Default value is 30000.</p>
<code>be.persistenceprovider.bdb.directory</code>	<p>Optional. Specifies the name and file location of the database. If this property is not specified, a directory named <code>datastore</code> is created under the working directory.</p> <p>This property is required if you add a <code>je.properties</code> file and place it in a non-default location. (See Configuring the Embedded Persister on page 75 for details.)</p>

Table 4 CDD Configuration Properties (Cont'd)

Property	Notes
Inference Agent Properties	
<code>be.engine.cluster.persistenceProvider</code>	<p>Required. Specifies the implementation. Required value is: <code>"com.tibco.cep.persister.ASBDBPersistenceProviderImpl"</code></p> <p>Do not change this value.</p>
<code>be.backingstore.useobjecttable</code>	<p>Required. Set to <code>false</code>.</p>
<code>be.engine.cluster.as.lock.ttl</code>	<p>Required. Value is specified in milliseconds.</p> <p>Controls the time after which TIBCO BusinessEvents DataGrid will forcibly unlock a space key. The default value of thirty seconds is a reasonable timeout for normal loads, such as less than 2000 transactions per second.</p> <p>Default value is 30000.</p>
<code>be.engine.cluster.as.node.retry.times</code>	<p>Required.</p> <p>Specifies the number of times TIBCO BusinessEvents retries a <code>put</code> or <code>putAll</code> call on the TIBCO BusinessEvents DataGrid cache.</p> <p>Each retry is done after five seconds. The number of retries depends on the <code>be.engine.cluster.as.lock.ttl</code> property. To calculate the value for <code>retry.times</code>, use the following formula:</p> $\text{retry.times} = \text{lock.ttl} / 5 + 1$ <p>For example, if you set <code>be.engine.cluster.as.lock.ttl</code> to 30000, then you would set the <code>be.engine.cluster.as.node.retry.times</code> value to 7.</p>

Reference To Berkeley DB (JE) Properties

This section provides a reference to the Berkeley DB JE properties. See [Configuring the Embedded Persister on page 75](#) for details about adding the properties file. For more details on the Berkeley DB JE properties, refer to the Berkeley DB product documentation:

<http://www.oracle.com/technetwork/database/berkeleydb/je-faq-096044.html>

http://docs.oracle.com/cd/E17277_02/html/GettingStartedGuide/administration.html#propertyfile

Table 5 Berkeley DB JE Properties

Property	Notes
<code>je.txn.durability</code>	<p>Indicates the durability of a transaction. Possible values are <code>WRITE_NO_SYNC</code>, <code>NO_SYNC</code>, and <code>SYNC</code>.</p> <p>TIBCO BusinessEvents internally sets durability to <code>WRITE_NO_SYNC</code>. You can override that setting using this JE property.</p>
<code>je.log.numBuffers</code>	<p>The number of write buffers that the Berkeley DB uses internally.</p> <p>Default value is 3.</p>
<code>je.log.bufferSize</code>	<p>The size of each write buffer.</p> <p>Default value is 1048576.</p>
<code>je.log.totalBufferBytes</code>	<p>The sum of sizes of all the write buffers.</p> <p>Default value is 3145728.</p>
<code>je.maxMemoryPercent</code>	<p>The percentage of the JVM maximum memory to which the cache is limited.</p> <p>Default value is 60%</p>

Guidelines for Using Coherence Cache Provider

Documentation did not point to guidelines customers needed for using Coherence as the cache provider. The following links provide these guidelines:

Checklist and guidelines before architecting a new project:

http://download.oracle.com/docs/cd/E15357_01/coh.360/e15723/deploy_checklist.htm

http://download.oracle.com/docs/cd/E15357_01/coh.360/e15723/deploy_plat_consider.htm

http://download.oracle.com/docs/cd/E15357_01/coh.360/e15723/tune_perftune.htm

Coherence Network Protocol

http://download.oracle.com/docs/cd/E15357_01/coh.360/e15723/cluster_tcp.htm

http://download.oracle.com/docs/cd/E15357_01/coh.360/e15723/tune_datagramtest.htm

Coherence Metrics

http://download.oracle.com/docs/cd/E15357_01/coh.360/e15723/appendix_mbean.htm

http://download.oracle.com/docs/cd/E15357_01/coh.360/e15723/appendix_operational.htm

