IBM Cognos Real-time Monitoring Workbench
Version 10.2.0

User Guide
Contents

Introduction ........................................... vii

What's New? ........................................... ix
   New features in version 10.2.0 .................... ix
   New features in version 10.1.1 .................... ix

Chapter 1. Getting started ............................. 1
   Launching Real-time Monitoring Workbench .......... 1
   Working with the product ............................ 2

Chapter 2. Setting up data sources for lookup tables .................. 3
   Creating data source agents for lookup tables ........ 4
   Creating source definitions for lookup table data .... 8
      Creating a Java database connectivity source definition for lookup table data . . . . . . . . . . . . . . . . . . . . . . . 8
      Creating a source definition for lookup table data from a web service .................. 9
      Creating a source definition for lookup table data from Salesforce tables ............. 10
      Creating a source definition for lookup table data from a flat file ............... 11
   Editing source definitions for lookup table data ........ 11
   Lookup tables limitations ........................... 12
   Mapping Java database connectivity data types ....... 12
   Data caching ........................................ 13
      Setting caching parameters ....................... 14
      Setting invalidation schedules ................... 14

Chapter 3. Modeling business data ........................ 17
   The Scenario Modeler ................................ 17
   Working with business views ......................... 18
      Creating views ..................................... 19
   Working with business activities and scenarios .... 20
   Working with rules and alerts ....................... 20
      Setting an alert to invoke an external web service ............................................. 21
      Rule details ....................................... 21
      Alert details ...................................... 22
      Limiting the number of alert instances ............ 24
      Setting an alert to invoke an external web service ............................................. 24
   Working with rule templates ......................... 25
      Creating a rule template ......................... 25
   Working with reportlets ............................. 27

Chapter 4. Enabling support for business views ...................... 29
   Working with the Workbench .......................... 29
      Workbench folders ................................ 31
   Object dependencies and requirements ............... 33
   Working with agents ................................ 33
   Working with data streams and lookup tables ........ 34
      Creating a data stream ............................ 35
      Creating a lookup table .......................... 37
      Uploading a data file ............................. 37
      Working with consolidated data streams .......... 38
   Working with views .................................. 39
      View tabs ......................................... 39
      Creating and editing views ......................... 39
      Creating view fields ............................... 40
      Working with clauses .............................. 42

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Introduction

This document is intended for use with IBM® Cognos® Real-time Monitoring Workbench.

The Cognos Real-time Monitoring Workbench allows you to access various data sources, perform data aggregations and calculations, and create the objects to display your information on the Cognos Real-time Monitoring Dashboard. For information about using the dashboard, see the IBM Cognos Real-time Monitoring Dashboard User Guide.

Audience

This document is intended for administrators, data modelers, and application developers. Developers and data modelers use this application to create views, rules, and alerts that model their business. Administrators use this application to manage users and application servers.

Finding information

To find IBM Cognos product documentation on the web, including all translated documentation, access one of the IBM Cognos Information Centers (http://publib.boulder.ibm.com/infocenter/cogic/v1r0m0/index.jsp). Release Notes are published directly to Information Centers, and include links to the latest technotes and APARs.

You can also read PDF versions of the product release notes and installation guides directly from IBM Cognos product disks.

Accessibility features

Accessibility features help users who have a physical disability, such as restricted mobility or limited vision, to use information technology products. This product has accessibility features when it is integrated with IBM Cognos Workspace. If not integrated with IBM Cognos Workspace, it has no accessibility features. This product supports keyboard navigation and screen readers when metrics are viewed in IBM Cognos Workspace. For information on accessibility features when the product is used with IBM Cognos Workspace, see the accessibility section in the IBM Cognos Dashboard User Guide.

Samples disclaimer

Sample files may contain fictional data manually or machine generated, factual data compiled from academic or public sources, or data used with permission of the copyright holder, for use as sample data to develop sample applications. Product names referenced may be the trademarks of their respective owners. Unauthorized duplication is prohibited.

Forward-looking statements

This documentation describes the current functionality of the product. References to items that are not currently available may be included. No implication of any future availability should be inferred. Any such references are not a commitment,
promise, or legal obligation to deliver any material, code, or functionality. The development, release, and timing of features or functionality remain at the sole discretion of IBM.
What's New?

This section contains a list of new, changed, and removed features for this release. It will help you plan your upgrade and application deployment strategies and the training requirements for your users.

For information about upgrading, see the IBM Cognos Business Intelligence Installation and Configuration Guide for your product.

For information about other new features for this release, see IBM Cognos Business Intelligence New Features.

What's New information for past releases, including versions 8.3 and 8.4, is available by accessing documentation within the IBM Cognos Business Intelligence 10.2.0 information center (http://pic.dhe.ibm.com/infocenter/cbi/v10r2m0/index.jsp)

For more information about using this product or for technical assistance, this site provides information on support, professional services, and education.

To review an up-to-date list of environments supported by IBM Cognos products, such as operating systems, patches, browsers, web servers, directory servers, database servers, and application servers, visit the IBM Cognos Customer Center (http://www.ibm.com/software/data/cognos/customercenter/).

New features in version 10.2.0

There are no new features in this release of IBM Cognos Real-time Monitoring Workbench.

New features in version 10.1.1

Listed below are new features for version 10.1.1.

**Closer integration between IBM Cognos Real-time Monitoring Dashboard and IBM Cognos Business Insight**

When working with IBM Cognos Real-time Monitoring dashboard objects in IBM Cognos Business Insight, you can:
- convert one display type into another
- change the measure styles in a display
- change specific properties in a display
- use IBM Cognos Business Insight filter widgets

For more information, see the topics about changing display types, measure styles, and chart specific properties, and filtering widgets in the IBM Cognos Real-time Monitoring Dashboard User Guide.

**Streaming lookup tables support inline dimensions**

By using a streaming lookup table based on an event stream, the values in the lookup table are updated as quickly as the data is processed and can be sourced.
from non-JDBC sources such as JMS or WebSphere® MQ. You can now use inline dimensions in cubes and views without the need to create joins back to the dimension - you create the dimension in a lookup table using the same steps as a traditional dimension. For more information, see the topic about creating lookup tables on data streams and views in the IBM Cognos Real-time Monitoring Workbench User Guide.

**Support for upsert extended to flat-file and Java message service formats**

In version 10.1.0, the upsert functionality, which combines the actions of updating, inserting, and deleting data from data stream tables, was only available for JDBC data streams. Version 10.1.1 extends support of this feature to flat file streams, JMS streams, and others. For more information, see the topics about enabling upsert for a data stream in the IBM Cognos Real-time Monitoring Workbench User Guide. See also the topic about upsert in the IBM Cognos Real-time Monitoring Workbench Modeling Reference.

**Search for objects**

In previous releases, finding objects of interest by using sorted lists could be time-consuming. Now, you can search for specific text contained in the XML definition. For more information, see the topic about searching the object library in the IBM Cognos Real-time Monitoring Workbench User Guide.

**View object dependencies and requirements**

You can use the Relationships tab to see all dependencies and requirements for an object. For more information, see the topic about object dependencies and requirements in the IBM Cognos Real-time Monitoring Workbench User Guide.

**Build an external adapter framework**

You can configure an external adapter to convert data in a previously unsupported format (such as JSON, and RSS Feed) into a format supported by RTM (such as tabular, flat file, XML). For more information, see the topic about adapter frameworks in the IBM Cognos Real-time Monitoring Workbench Modeling Reference.
Chapter 1. Getting started

Your system administrator must first install, configure, and start the IBM Cognos Real-time Monitoring server components. To receive events, or to retrieve lookup table data, the servers must locate and collect the data. For example, to access a DBMS to retrieve lookup table data, the servers must be configured with the access name and password for the database.

For more information, see the IBM Cognos Real-time Monitoring Installation and Configuration Guide.

Launching Real-time Monitoring Workbench

If you are a system administrator, you access IBM Cognos Real-time Monitoring Workbench first so that you can configure the system settings before other users access the product.

Before you begin

Before launching IBM Cognos Real-time Monitoring Workbench, ensure that the following conditions are met:
• Your web browser is Microsoft Internet Explorer 6.0 or newer.
• Cognos Real-time Monitoring servers are running.
• JavaScript is enabled.
• Adobe Flash version 9 or later is installed.

About this task

You must use the rtmadmin user account with the password manager to log in. For more information, see the section about configuring Cognos Real-time Monitoring after installation in the IBM Cognos Real-time Monitoring Installation and Configuration Guide.

When safe mode is enabled, Cognos Real-time Monitoring Workbench displays a banner indicating that the system is in safe mode and that all events are paused. Data streaming stops when the system is in safe mode. For more information, see the IBM Cognos Real-time Monitoring Installation and Configuration Guide.

Procedure

1. In your Web browser, type the following URL, where servername represents the host computer name and port number:
   http://servername/cognos/realtime/landing/landingpage.htm
   The Cognos Real-time Monitoring Welcome page opens.

2. Depending on your role as an administrator, modeler, or developer, click one of the following links:
   • Administer real-time content.
   • Model my real-time data.
   • Create my real-time dashboard.

3. Log in using the user name and password assigned by your administrator.
Note: If single sign-on between IBM Cognos Business Intelligence and Cognos Real-time Monitoring is enabled, and you are already logged in to IBM Cognos Business Intelligence, the login page does not appear. You are automatically logged in to Cognos Real-time Monitoring Workbench.

Working with the product

You can perform the following tasks using IBM Cognos Real-time Monitoring Workbench.

• Setting up user accounts.
  Everyone who uses Cognos Real-time Monitoring Workbench or Cognos Real-time Monitoring Dashboard needs a user account. Users can view their account information by clicking Account Settings in the application.
  System administrators can add and modify user accounts using the Administration Console.

• Creating and modifying agents.
  Agents collect events and lookup table data to make it available to Real-time Monitoring.
  System administrators create and modify agents using the Administration Console.

• Creating data streams and lookup tables.
  Agents insert data into data stream tables and lookup tables. These tables are the source of the business views that present and aggregate the information.
  You can create data streams and lookup tables using Workbench.

• Using business views.
  Business views contain, aggregate, and provide data stream and lookup table information.
  You can create complex business views using Scenario Modeler.

• Creating scenarios, rules, and alerts.
  You can use Cognos Real-time Monitoring to identify exceptional business events and notify users about the activity.
  You do this by creating scenarios, rules, and alerts in Scenario Modeler. You can also use Scenario Modeler to define reportlets that provide metrics associated with the events.
Chapter 2. Setting up data sources for lookup tables

Lookup table data complements event data by providing additional, meaningful information. For example, an event instance may include a product number, but not a product description. Data sources for lookup tables make this additional information available for inclusion in views.

Data sources for lookup tables have two parts: the agent, which references a JDBC connection or web service invocation, and the lookup table definition, which configures the input and output for the retrieved data.

When a data stream is processed in IBM Cognos Real-time Monitoring, the data available from the data stream source may be limited. For example, a view that is processing a purchase order may have received a product identification number and the event data. By joining information from complementary data sources for lookup tables, the view can include additional information, such as product description, manufacturer, and other purchase order information. In the view definition, a `WHERE` clause, as in the following statement, would join the definition of the lookup table to the data stream table:

```
WHERE datastream.product_id = lookuptable.suppliers_of_product_id
```

When the view performs this join, it passes the ID from the data stream to the definition of the lookup table. If the matching supplier data is already in the lookup table cache, the definition uses that data and passes it to the business view. If the data is not already in memory, the ID is passed to an agent (either as an SQL query or by value for a stored procedure), which sends data to the DBMS or a web service for processing. The result of the query is then loaded into the definition for the lookup table, and subsequently included in the business view.

The following diagram illustrates the process described above. The lookup table contains data that matches some ID in the view. The data comes from a cache, which originally comes from some external source, such as a DBMS.
The source for the lookup table may be a database accessed through a JDBC connection, or a business application accessed through a web service.

Creating data source agents for lookup tables

To set up a data source for lookup table data, you must first create an agent that implements the data source connection.

You can create several types of agents; however, when setting up data sources for lookup tables, you are limited to the following types:

- **JDBC**
  Enables you to retrieve lookup table data from databases such as Oracle, MS SQL Server, DB2®, Sybase, and other databases.
  
  **Note:** You must configure a corresponding JNDI definition for the application server. For more information, see the IBM Cognos Real-time Monitoring Installation and Configuration Guide.

Specify the following attributes for this agent:

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Identifies the agent. This name must be unique among agents.</td>
</tr>
<tr>
<td>Status</td>
<td>Specifies whether the agent is enabled or disabled.</td>
</tr>
<tr>
<td>Save in</td>
<td>Specifies the folder in which to save the agent. The default is Public Folders. Click Choose Folder to select a different folder.</td>
</tr>
<tr>
<td>Description</td>
<td>Specifies a description that may contain any characters. This parameter is optional.</td>
</tr>
<tr>
<td>Database Type</td>
<td>Identifies the DBMS vendor as DB2, Oracle, SQL Server, Sybase, or PostgreSQL.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>User name</td>
<td>Specifies the user name that is used to connect to the DBMS. The users must have query access rights.</td>
</tr>
<tr>
<td>Password</td>
<td>Specifies the password associated with the user name. If you do not specify the password, the agent uses the password specified in the JDBC Source configuration definition in the application server.</td>
</tr>
<tr>
<td>Max Rows Per Query</td>
<td>Specifies the maximum number of rows to return as the query result. This prevents users from returning exceptionally large results that impact the DBMS.</td>
</tr>
<tr>
<td>Type of JDBC Connection</td>
<td>Describes how to connect to the JDBC database in the application server. The Data source-based connection connects to a JDBC database pool through a JNDI connection. The URL-based connection connects to a JDBC source through a URL. Do not use this type of connection for IBM WebSphere.</td>
</tr>
<tr>
<td>JNDI name for JDBC Source (Data source-based only)</td>
<td>Specifies the name of the data source to use as a connection to the database. The name is in JNDI form, for example, com.now.products.ProductSource. A source gets its connection from a pool of connections that the application server maintains. The server keeps the connections open to reduce delays when establishing a connection. <strong>Note:</strong> You must configure the connection pool as a non-transactional pool.</td>
</tr>
<tr>
<td>JDBC URL (URL-based only)</td>
<td>Specifies the URL that maps to the JDBC connection that is configured in the application server that is running Real-time Monitoring. Refer to your JDBC driver documentation for the appropriate format of this URL.</td>
</tr>
<tr>
<td>JDBC Driver Class (URL-based only)</td>
<td>Specifies the JDBC driver to use. This driver must reside in the classpath of the application server running Real-time Monitoring. Refer to your JDBC driver documentation for the appropriate class name of the JDBC driver.</td>
</tr>
</tbody>
</table>
**Attribute Description**

**JNDI properties** (Datasource-based only) Specifies the optional and additional Java naming and directory interface (JNDI) properties necessary to create or maintain the agent for the JDBC source. These name/value pairs allow you to specify JDBC properties. The names are either one of the shortcuts listed below, or a JNDI recognized property. The agent recognizes the following names as shortcuts to JNDI properties:

- factory maps to INITIAL_CONTEXT_FACTORY.
- provider maps to PROVIDER_URL.
- security_credentials maps to SECURITY_CREDENTIALS.
- security_principal maps to SECURITY_PRINCIPAL.

**Connection Properties** (URL-based only) Specifies the optional and additional connection properties necessary to create or maintain the agent for the JDBC source. These name-value pairs allow you to specify properties for the JDBC connection.

---

**Web Service**

Enables you to retrieve lookup table data from a web service invocation. Specify the following attributes for this agent:

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Identifies the agent. This name must be unique among agents.</td>
</tr>
<tr>
<td>Status</td>
<td>Specifies whether the agent is enabled or disabled.</td>
</tr>
<tr>
<td>Save in</td>
<td>Specifies the folder in which to save the agent. The default is <strong>Public Folders</strong>. Click <strong>Choose Folder</strong> to select a different folder.</td>
</tr>
<tr>
<td>Description</td>
<td>Specifies a description that may contain any characters. This parameter is optional.</td>
</tr>
<tr>
<td>URL</td>
<td>Specifies the HTTP location of the web service definition language file (WSDL) that describes the service, the data it provides, and how to exchange data with the service. The data that is returned must be a SOAP doc-style message. RPC binding is not supported.</td>
</tr>
<tr>
<td>User name</td>
<td>Specifies the user name that is used to connect to the service. This parameter is passed to the server when the server requires a user name. This parameter is optional.</td>
</tr>
<tr>
<td>Attribute</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td>Password</td>
<td>Specifies the user password that is used to connect to the service. This parameter is passed to the server when the server requires a password. This parameter is optional.</td>
</tr>
</tbody>
</table>

- **Salesforce**
  Allows you to retrieve lookup table data from Salesforce tables.
  Specify the following attributes for this agent:

<table>
<thead>
<tr>
<th>Salesforce</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Identifies the agent. This name must be unique among agents.</td>
</tr>
<tr>
<td>Description</td>
<td>Specifies the description that may contain any characters. This parameter is optional.</td>
</tr>
<tr>
<td>Status</td>
<td>Specifies whether the agent is enabled or disabled.</td>
</tr>
<tr>
<td>URL</td>
<td>Specifies the HTTP location of the web service definition language file (WSDL) that describes the service, the data it provides, and how to exchange data with the service. The data that is returned must be a SOAP doc-style message. RPC binding is not supported.</td>
</tr>
<tr>
<td>User name</td>
<td>Specifies the user name that is used to connect to the service. This parameter is passed to the server when the server requires a user name.</td>
</tr>
<tr>
<td>Password</td>
<td>Specifies the user password that is used to connect to the service. This parameter is passed to the server when the server requires a password.</td>
</tr>
</tbody>
</table>

- **File System**
  Allows you to retrieve lookup table data from a text file.
  For this type of agents, you optionally require a sample delimited or fixed width text file.

- **Agent Adapters**
  Allow you to retrieve lookup table data from various types of data sources.
  For this type of agents, you optionally require a sample delimited or fixed-width text file.
  Agent adapters are agents created with the agent adapter framework. For more information, see the *IBM Cognos Workbench Modeling Reference*.

**Attention:** The query or invocation is configured in the definition for the lookup table.

Before you create a new agent, your user configuration must have the necessary create permissions for agents and the connection specifications for the specific agent type. Before you edit an agent, you must have read and write permissions for the agent.
The steps in this section describe how to create a new agent for both JDBC and web service data sources. For other types of agents, see the IBM Cognos Real-time Monitoring Workbench Modeling Reference.

**Procedure**

1. Log in to Cognos Real-time Monitoring Workbench.
2. On the Workbench tab, click Activities.
3. Click Create New, and then click Agent.
4. In the Create Agent dialog box, from the Agent Type drop-down list, select JDBC, Web Service, Salesforce, or an agent created with the agent adapter framework.
5. For each selected agent type, specify the required attributes, as specified in the tables in this section.
6. Set the Status value to Enabled, and click OK.
7. To edit an agent:
   - Select the agent.
   - Click Activities, and then click Edit.
   - In the Edit Agent dialog box, modify the attributes for the agent, and click OK.

**Results**

The Create dialog box closes and the new agent is now listed on the Agents tab. The agent is immediately available to receive lookup table data.

---

**Creating source definitions for lookup table data**

You must first create the definition of a data source for a lookup table.

**Creating a Java database connectivity source definition for lookup table data**

This section describes how to create a new Java database connectivity (JDBC) source definition for lookup table data. A source definition for lookup table data from a JDBC source can take the form of either an SQL query or the invocation of a stored procedure.

**Procedure**

1. Log in to Real-time Monitoring Workbench.
2. On the Workbench tab, click Activities.
3. Click Create New, and then click Lookup Table.
4. In the New Lookup Table dialog box, click JDBC, and then click Continue.
5. Click the Browse button, select the source, and click OK.
   - The agent that you previously created for this data source appears under Agents.
6. Specify the type of source.
   - To create a source based on an SQL query, click the Query button, type a query statement in the text area, and click Continue.
If the query is not valid, an error message appears. Otherwise, the Configure Lookup Table - JDBC Query dialog box appears. The results of the query are displayed in the lower portion of the dialog box on the Field Information tab.

- To create a source based on a stored procedure, click the Stored Procedure button, and then click Continue.

The Configure Lookup Table - Stored Procedure dialog box appears. On the Field Information tab, in the Procedure name field, type the name for the stored procedure. This value must match the name of the stored procedure in the database referenced by the agent shown in step 5. Click Add Field in the Output and Input areas of the tab to add output and input fields. See the table in the next step for descriptions of these fields.

For both source types, configure data caching on the Data Caching tab. You can select the index when enabling prefetch type of caching. You can also configure the number of result sets to cache. Specifying more than the default ten result sets improves performance, but consumes more memory.

7. Click Save Lookup Table.

The tabs for the columns of the new lookup table (as read from the query) and dependencies are displayed.

For stored procedures, you can now use the source to receive lookup table data.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outputs</td>
<td>Specify the columns in the lookup table definition, their data types, and optional formatting. The procedure returns a result set with values that map to the columns in the order in which they appear in this list. The data type identifies the column type in the definition and is converted from the JDBC type as defined in &quot;Mapping Java database connectivity data types&quot; on page 12.</td>
</tr>
<tr>
<td>Inputs</td>
<td>Specify the parameters passed to the stored procedure and their data types. Inputs are passed as arguments to the procedure in the order in which they appear in the list. The data type identifies the Real-time Monitoring data type of the value being passed to the procedure. For more information about data types, see “Mapping Java database connectivity data types” on page 12.</td>
</tr>
</tbody>
</table>

Creating a source definition for lookup table data from a web service

This section describes how to create a lookup table source from a web service.

Procedure

1. Log in to Real-time Monitoring Workbench.
2. On the Workbench tab, click Activities.
3. Click Create New, and then click Lookup Table.
4. In the New Lookup Table dialog box, click Web Service, and then click Continue.
5. In the **New Web Services Lookup Table** dialog box, click **Browse** and select the agent that represents the web service that you want to use as the lookup table source.
   
   Select the agent that you configured as described in "Creating data source agents for lookup tables" on page 4.

6. Click **Continue**.
   
   The dialog box displays the methods and operations that are available in the web service.

7. Select the method that you want, and click **Continue**.
   
   The **Configure Lookup Table - Web Services** dialog box appears. The inputs and outputs (as read from the WSDL file that the agent configuration for the web service references) are displayed in the **Field Information** pane at the bottom of the dialog box.
   
   **Tip:** Depending on its relevance, use the **Hide/Show** button to show or hide the content.

8. Type a name for the lookup table in the **Name** field.

9. In the **Status** field, select **Enabled**.

10. Click the **Data Caching** tab if you want to modify the caching parameters.
    
    The default is 10 result sets.

11. When finished, click **Save Lookup Table**.
    
    The dialog box closes and the tabs for the columns of the new lookup tables (as read from the query) and dependencies are displayed.
    
    The source is now ready to receive lookup table data.

### Creating a source definition for lookup table data from Salesforce tables

When you import Salesforce tables using the Import Salesforce Object Wizard, the wizard creates a lookup table object from the imported table. The wizard creates the lookup tables names by adding context to the table name. For example, a table named Account, imported for a lookup tables is named Account_context.

For more information, see the *IBM Cognos Real-time Monitoring Workbench Modeling Reference*.

Use the following procedure to create a Salesforce source for a lookup table, if you want to create additional lookup tables from your imported Salesforce tables.

**Procedure**

1. Log in to Real-time Monitoring Workbench.
2. On the **Workbench** tab, click **Activities**.
3. Click **Create New**, and then click **Lookup Table**.
4. In the **New Lookup Table** dialog box, click **Salesforce**, and then click **Continue**.
5. Click **Browse**, and select a the Salesforce agent that you previously configured.
6. Type an SQL query statement in the **Salesforce Query** text field, for example, type `SELECT * FROM ACCOUNT`, and click **Continue**.
   
   If the query is not valid, an error message appears. Otherwise, the **Configure Lookup Table - Salesforce Query** dialog box appears. The results of the query are displayed in the lower portion of the dialog box in the **Field Information** tab.
7. Click the **Data Cache** tab to configure data caching.

8. When finished, click **Save Lookup Table**.

The dialog box closes and the tabs for the columns of the new lookup tables (as read from the query) and dependencies are displayed.

The source is ready to receive lookup table data.

**Creating a source definition for lookup table data from a flat file**

This section describes how to create a source for lookup tables data from a flat file. These can be either a delimited or fixed-width text file.

**Procedure**

1. Log in to Real-time Monitoring Workbench.
2. On the **Workbench** tab, click **Activities**.
3. Click **Create New**, and then click **Lookup Table**.
4. In the **New Lookup Table** dialog box, click **File System**, and then click **Continue**.
5. Select the type of flat file to use for your lookup table source: delimited or fixed-width.
6. Click **Browse** next to the **File System Agent**, and in the **Select Object** dialog box select the agent that you want to use and click **OK**.
7. Click **Browse** to locate the sample file that you can use when mapping the file data into the lookup table.
   This step is optional.
8. Click **Continue**.

   The **Configure Lookup Table - Delimited File System Source** dialog box appears if you are using a delimited text file. The **Set Field Widths** dialog box appears if you are using a fixed-width file. The **Configure Lookup Table - Fixed Width Flat File Source** box appears after you have set the field widths.

   For more information about the configuration settings associated with the fixed-width and delimited text files, see the IBM Cognos Real-time Monitoring Workbench Modeling Reference.

9. Set the field information for the columns as necessary.
10. Click the **Data Caching** tab if you want to modify the caching parameters.
11. Click **Save Lookup Table**.

**Editing source definitions for lookup table data**

The steps in this section describe how to edit or modify an existing source definition for lookup table data.

**Procedure**

1. Log in to the IBM Cognos Real-time Monitoring Workbench.
2. On the **Workbench** tab, select the lookup table.
3. Click **Activities**, and then click **Edit**.
   The **Configure Lookup Table** dialog box appears.
4. Modify the definition settings as required.
5. Click **Save Lookup Table**.
**Lookup tables limitations**

You can retrieve lookup tables with no limitations from a Java database connectivity (JDBC) query source.

However, the following limitations apply when retrieving lookup tables from a source that is a JDBC stored procedure or a web service:

- When the lookup table column is referenced as part of a query, somewhere in the WHERE or FROM clause it must appear in an equality expression and then only as an atomic predicate. An atomic predicate has no other operators on the same side of the equal sign. For example, this is permitted:

```sql
WHERE lookuptable_column = 10*datastream_column
```

But the following is not permitted because the left-side predicate, which contains the lookup tables column, is an expression that includes an operator (/):

```sql
WHERE lookuptable_column/10 = datastream_column
```

- The required atomic reference may not appear in a disjunct (OR) expression. This fails:

```sql
WHERE (lookuptable_column = datastream_column OR A > B)
```

However, it may appear in a conjunct (AND) expression:

```sql
WHERE (lookuptable_column = datastream_column AND A > B)
```

- Once there is at least one equality reference in the query, you may use the column in any other way. For example, these two are permitted:

```sql
WHERE (lookuptable_column = datastream_column AND lookuptable_column/10 = other_datastream_column)
WHERE ((lookuptable_column = datastream_column AND lookuptable_column >= other_datastream_column) OR (A > B))
```

But the following fails because there is no equality reference in the query:

```sql
WHERE lookuptable_column >= datastream_column
```

- The required equality expression may not reference another lookup table column in the same table. For example:

```sql
t1.lookuptable_column = t1.other_datastream_column
```

- The equality expression may reference a lookup table column in another table, for example:

```sql
t1.lookuptable_column = t2.other_datastream_column
```

**Sybase Limitations**

When making a query to a Sybase database, be aware of these limitations.

All names, including tables and columns, are case-sensitive.

All queries must be in the form SELECT * FROM table only. You cannot include any SELECT clauses. To filter the results, load them into a business view, then filter that view.

**Mapping Java database connectivity data types**

The data types of the DBMS columns display as JDBC data types and map to IBM Cognos Real-time Monitoring data types.
<table>
<thead>
<tr>
<th>JDBC data type</th>
<th>Character</th>
<th>Integer</th>
<th>Double</th>
<th>Decimal</th>
<th>Timestamp</th>
<th>Boolean</th>
<th>Long</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHAR</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>as literal</td>
<td>no</td>
</tr>
<tr>
<td>VARCHAR</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>as literal</td>
<td>no</td>
</tr>
<tr>
<td>LONGVARCHAR</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>as literal</td>
<td>no</td>
</tr>
<tr>
<td>NUMERIC</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>DECIMAL</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>BIT</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>TINYINT</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>SMALLINT</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>INTEGER</td>
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<td>yes</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>BIGINT</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>REAL</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>FLOAT</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>DOUBLE</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>BINARY</td>
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<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>VARBINARY</td>
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<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>DATE</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>yes</td>
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<td>no</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>TIMESTAMP</td>
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<td>no</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
</tbody>
</table>

Attention: Do not use a Cognos Real-time Monitoring Boolean data type in a WHERE predicate that is passed to the JDBC source. You can include Boolean values in the Select list.

## Data caching

Data caching allows you to store the results of lookup table queries in memory.

Subsequent requests for the same information are then retrieved from memory instead of impacting the DBMS with a redundant query. When caching is active and a view requests a lookup table, it searches the cache first.

You can enable two levels of data caching. These are

- **On-demand caching**
  
  You can enable on-demand caching when you select **Cache data for this lookup table** on the Data Caching tab when configuring lookup tables from JDBC and web service sources. With this type of caching, a recent-query cache is created that maintains results on a least recently used (LRU) basis. This cache tracks when each result set was last requested. When the cache is full, it keeps the most recently accessed rows, and discards the rows that were not accessed for the longest period of time. Rows containing frequently requested data remain in the recent query cache to reduce impact on the database. If data is requested that is not in the recent query cache, the data is retrieved from the external data source.

  On demand caching deliver better performance than if no caching is used. However, using prefetch caching will result in the best performance.

- **Prefetch caching**
When you enable the prefetch cache, entire external lookup table is cached either into memory or to a database from the external data source. This table becomes a replacement for the external query source. When data is requested that is not in the recent query cache, the data is retrieved from the prefetch cache. When an invalidation occurs according to your specified invalidation schedule, the recent query cache is cleared, and a query is issued to the external data source to update the prefetch copy of the lookup table. The recent query cache is updated from the prefetch cache on subsequent queries.

When enabling the prefetch data cache, consider the following:

- When in memory is enabled for the cache type, more memory is used because the information from the external data source is stored in memory, and an index is built for each checked column.
- The prefetch cache is only updated at the scheduled invalidation time. If data is not in the prefetch cache, no data is returned. Updates to the external data source are not reflected in the prefetch cache until the next scheduled invalidation.

If an exception occurs, the prefetch cache attempts to refresh on the invalidation schedule up to five times. If it cannot refresh from the external data source, the recent query cache is used until the next scheduled refresh.

Setting caching parameters

You set the caching parameters for JDBC, web service, and file system (flat file) sources on the Data Caching tab that is located in the Configure Lookup Table dialog box.

Data caching parameters for JDBC and web service lookup tables

You can set the following data caching parameters for JDBC and web service:

- **Cache data for this lookup table**
  Specify whether you want to cache the set of query result on lookup tables in the recent query cache. Selecting this parameter enables you to set the remaining parameters. You must add at least one invalidation schedule when selecting this parameter.
  Attention: If not selected, the default is 10 result sets.

- **Enable prefetch**
  Specify this parameter to enable or disable prefetch type of data caching for the lookup table.

  Note: The prefetch cache is only supported for JDBC and Salesforce web services.

- **Fallback to external source**
  Specify this parameter if you want the system to use the data from the external database when the system cannot access the data cache.

- **Number of results to cache**
  Specify this parameter to set the number of result sets to cache in memory. Each set of results may contain one or more rows of lookup table data related to the event. For example, if 3 queries are made and each result set contains 5 rows, 15 rows are stored in the cache.

- **Add Schedule**
  Select this parameter to set an invalidation schedule.
Data caching parameters for lookup tables from file system sources

You can set the following data caching parameters for file system sources:

- **Cache Type**
  - **In Memory**
    Specify this parameter to store the prefetched cached data in memory. If you select this option, **JDBC store** is not available.
  - **JDBC Store**
    Specify this parameter to store the prefetched cached data to a database. You must also select an agent from the **JDBC Agent** drop-down list.
  - **Fetch and store on restart**
    Specify this parameter so that the data can be fetched and stored by the specified JDBC agent immediately after a restart occurs.

- **Number of results to cache**
  Specify this parameter to set the number of result sets to cache in memory. Each set of results may contain one or more rows of lookup table data related to the event. For example, if 3 queries are made and each result set contains 5 rows, 15 rows are stored in the cache.

- **Add Schedule**
  Select this parameter to set an invalidation schedule.

Setting invalidation schedules

You can create multiple invalidation schedules that determine when to purge data from the cache. When a scheduled invalidation occurs, the recent query cache is cleared and updated on subsequent queries.

If lookup table data is not rapidly changing, it is best to invalidate the recent query cache less often. For example, if the lookup table is fairly static, you may invalidate the cache weekly or monthly. However, if the lookup table database is updated nightly, you may also invalidate the recent query cache nightly to ensure the latest data.

Procedure

1. In the **Configure Lookup Table** dialog box, click the **Data Caching** tab.
2. Click **Add Schedule**.
3. In the **Add Invalidation Schedule** dialog box, specify the required scheduling options, such as day, time, day of the week, and so on.
4. Click **OK**.
   The new schedule appears on the **Data Caching** tab.

   **Note:** You can add multiple schedules for each lookup table.

5. To edit a schedule:
   - In the **Invalidation Schedule** box, select the schedule that you want to modify
   - Click **Edit Schedule**.
   - In the **Add Invalidation Schedule** dialog box, modify the schedule parameters as required.

   •
6. To delete a schedule, in the **Invalidation Schedule** box, select the schedule that you want to remove and click **Remove Schedule**.
Chapter 3. Modeling business data

Business data modeling is a technique for describing the events, lookup tables, and rules that depict how your business functions. Modeling in IBM Cognos Real-time Monitoring is done by combining data stream and lookup table sources into business views: models that provide a picture of a business activity. As new events enter the system, the views immediately update to reflect the current details about the activity.

In addition to the views, modeling allows you to create and test scenarios. Scenarios allow you to test for expected or possible outcomes, and to identify exceptional business conditions. Each scenario contains rules that identify specific possible conditions, and alerts and reportlets to send to key personnel when the condition is found to exist.

The Scenario Modeler

In IBM Cognos Real-time Monitoring Workbench, all data modeling is performed with the Scenario Modeler. You use the Scenario Modeler to define scenarios and their rules, alerts, reportlets, and create views for modeling your business data.

For more information, see the topic about the business activities in the IBM Cognos Real-time Monitoring Workbench Modeling Reference.

The hierarchical tree on the left side of the Scenario Modeler displays all objects defined by you, or by other users, that you are allowed to see. This also includes a list of views that you can use to create your models. When you select an object in the tree, the window on the right side displays details about the object and, if the object is a folder, its content.

Every object has a status that indicates its ability to receive and process new data. The following types of status exist:

- Running (or enabled)
  - The object is accepting new data and is processing them. All objects are created in this state.

- Stand-by (or disabled)
  - The object is not accepting new data. Disabling an object does not affect its definition or existence. Disabling the object keeps new data from flowing into the object and to all objects that rely on the target object. All dependent objects, however, are stopped.

- Stopped (or disabled dependent)
  - The object is not accepting new data and cannot be re-enabled until first re-enabling an object it depends on. For information about determining which objects are derived from or depend on a particular object, see "Object dependencies and requirements" on page 33.

If an object has an invalid reference to another object, the object is invalid. A reference can be invalid because an object does not exist or because some attributes of the object do not match the requirements of the dependent object (such as a data
type mismatch), not because the dependent object is disabled. All objects that depend on invalid objects are also invalid.

For more information about object states and the effects of changing a state, see the *IBM Cognos Real-time Monitoring Workbench Modeling Reference*.

---

**Working with business views**

Business views are data models that provide a real-time picture of a business activity. As changes and transactions occur in your business, they generate events that are sent to IBM Cognos Real-time Monitoring. Each new event drives an immediate update of the views (the business models). The views in turn provide a real-time, updated view of the business metrics.

New events entering the system become part of a data stream that flows from the source of the event to a business view, possibly passing through other business views along the way. As such, every business view depends on a data stream or another business view, and every view optionally joins the data stream information with lookup table information provides a meaningful picture of the activity.

The following illustration shows the view AvailableSuppliers as part of a data stream starting with ShippingEvents and passing through DelayedSuppliers. PartDescription and Suppliers are each joined lookup table sources.

You can create business views using data streams or other business views as the source of the events that drives the new view. A key characteristic of business views is the ability to aggregate data stream and lookup table information; that is, to detect, analyze, and combine the information into meaningful business metrics. For example, views can perform simple aggregations on the events, such as keeping a running total of all the events received, in whole or over a period of time.

By combining aggregate data with other lookup tables, you can create more meaningful metrics for various scenarios. For example, a view can track the performance of marketing representatives to identify those that are on target to meet their individual quotas for the fiscal quarter. Each sale is recorded as an event, included in a total sales calculation, and compared against quota information retrieved as a lookup table. Those current performance results can be combined to compare the performance of different sales regions. Another view can collect the performance of all sales regions and compare those metrics with current manufacturing projections to identify possible over-production situations.

Formulas perform aggregation that display their results in fields in the view. For information about creating formulas in fields, see "Working with views" on page 39.

The rest of this section discusses how to create and work with views.
Creating views

Before you can create a view, you need either an existing data stream table or a business view on which to base your new view. You can create data stream tables and base views in IBM Cognos Real-time Monitoring Workbench.

You work with views in the Scenario Modeler. Click the Views folder on the System Objects tab to see existing views that you have access to, or to create new views. The window on the right shows the views names, locations, descriptions, and statuses. When a view is stopped, it is neither receiving events nor passing events to any views, rules, alerts, or reportlets that depend on that view. For information about stopping and starting views, and for details about invalid views, see “The Scenario Modeler” on page 17.

For information about creating more complex views, see Chapter 4, “Enabling support for business views,” on page 29.

For more information, including tips, see the topic about creating views in the IBM Cognos Real-time Monitoring Workbench Modeling Reference.

Filters allow you to restrict the view results to include only those rows that meet the specified condition. The condition can be simple. For example, only those products whose price is greater than 100.00. Filters can also be complex, and contain multiple conditions, all of which must be met before the result is allowed into the view.

To create more complex filters, define the filter in the view Where clause.

Ordering allows you to sort the view results based on the values in one or more fields and specify the sort order. When you choose to order on multiple fields, the results are sorted by the top field first, then in order from there.

Note: The Order the results by option is only available for stateful views. Stateless views cannot be ordered. For more information, see the IBM Cognos Real-time Monitoring Workbench Modeling Reference.

Maintaining results allows you to specify sets of recent event details to keep. When you look at the view results, you can see the results from more than one event. It also allows for external applications to perform trend or historical analysis, provided that they receive the view as a real-time data feed (metrics).

When you choose to maintain results, you specify a number of events or time-span units. For example, you can specify to keep events for 10 days. The number specifies the maximum number of events to maintain. For example, when maintaining 10 events, when the eleventh event arrives, it is kept, and the oldest is discarded. By default, a stateless view contains only rows representing the last event that satisfied the view condition. Rows from previous events are discarded.

When using a time interval, the actual number of events in the view varies depending on the number of events in the interval when the view updates. The set of events is determined when the last event is inserted into the view, not at the current time. For example, an interval of one hour shows all events that arrived in the view for the hour previous to the last update. If no events were inserted in the last day, the view might still show one hour of events from the previous day. However, when a new event arrives, all those events are discarded.
**Procedure**

1. In Cognos Real-time Monitoring Workbench, click the **Scenario Modeler** tab.
2. On the **System Objects** tab, click **Views**, and then click **New View** on the **Views** tab.
3. Select the base data stream or view that will supply events to your new view and click **Next**.
4. In the **New View** page, define the view attributes.
   You can add or delete the selected fields, change the field names, or edit their definitions by clicking the associated buttons.
5. In the **Results display definition** box at the bottom of the page, specify filtering, ordering, and maintaining result by clicking the associated links.
6. Click **Finish** to save the view.

---

**Working with business activities and scenarios**

The **Business Activities** folder in the **Scenario Modeler** organizes your scenarios. You must have at least one folder, but you can have as many as you need. Scenarios are restrictive. Every scenario has an associated business view, and you must base the rules, alerts, and reportlets within the scenario on that view, or on a view derived from that view.

Selecting a business activity in the object tree lists that folder scenarios on the **Scenarios** tab. Similarly, selecting a scenario lists its rules. You can edit any of the contained objects by double-clicking them on the **Scenarios** tab, or by selecting a scenario and clicking the **Edit Scenario** button.

The **Status** column on the **Scenarios** tab indicates whether the object is receiving and processing new data.

For more information, see the *IBM Cognos Real-time Monitoring Workbench Modeling Reference*.

---

**Working with rules and alerts**

Rules and alerts are associated with scenarios. Scenarios provide a base business view that its rules monitor and from which its alerts and reportlets draw data stream and lookup table details.

The data sources for rules and alerts are views and cubes. Rules monitor views or cubes looking for specific conditions, and alerts retrieve data stream and lookup table details from the data source. The view used as a data source must be associated with the scenario when you created the scenario, or a view or cube that is derived from the associated view. When you create a new rule, the system assumes the associated view unless you choose another view by clicking **Select Data Source**.

If a data source currently has results, those values are displayed to help you as you create the rule or alert.

When the data source for the rule is a cube, you identify the dimension level to monitor and optionally apply a filter that further restricts the data that the rule monitors. For more information, see the *IBM Cognos Real-time Monitoring Workbench Modeling Reference*.
**Procedure**

1. Open the scenario folder that contains the object.
2. To see a list of the objects, click the Alerts, Rules, Reportlets, or Rule Templates tab.
3. To edit the object, select it and click Edit.
4. To create a new object, click New.

**Attention:** You can create an alert without a rule, but every rule needs an associate alert as its rule-action.

**Setting an alert to invoke an external web service**

You can configure an alert message to invoke an external web service. This requires the creation of a function that constructs the web service message based on the alert payload. Specifically, this function determines which data elements in the alert payload are mapped to the inputs that the web service expects. This function is then uploaded to IBM Cognos Real-time Monitoring as a user-defined function (UDF). The web service is specified in a web service profile that calls the UDF. You can then set the web service profile as a subscriber to the desired alert.

**Procedure**

1. Create a function that constructs the web service message using parts of the alert data, and package it as a JAR file.
2. Upload the JAR file as a user-defined function in the Real-time Monitoring Workbench.
3. Create the web service profile by creating a new user in the Administration Console, selecting the Delivery Profiles tab, and clicking Create Additional Profiles, where you set the following parameters:
   - For profile type, select Web Service.
   - For profile name, type an appropriate value.
   - For web service URL, type the endpoint for the WSDL.
   - For method, specify the required method (operation) to be invoked in the web service.
   - Supply a user name and password, as required.
   - For UDF, select the JAR file you uploaded for this web service invocation.
   - Click OK.
4. When you create or modify the alert that is intended to invoke the web service, you can add the new web service profile as a subscriber.

**Rule details**

Define rules with the rules editor. Every rule has a name that identifies it, a condition to look for that indicates an exceptional state, and an action to take when the condition exists. The action either generates an alert, or lowers a previously raised alert. Optionally, you can set the rule to perform the action only when the condition holds true for a period of time.

**Rule Conditions**

A rule condition is a formula that tests the row in the associated view or cube looking for a specific condition.

When the condition exists the rule action activates an alert. They can be simple tests for a value in a column in the view, such as InvLevel>MaxThreshold, or they
can be complex expressions with functions, operators, and parenthesis groupings. For example, (InvLevel<MinThreshold OR InvLevel<(AverageInvLevel*.90)).

For more information, see the IBM Cognos Real-time Monitoring Workbench Modeling Reference.

**Rule Actions**
Rule actions either generate alerts or lower previously raised alerts.

Rules can have one of three actions:
- Send alerts every time the condition is found to exist (fire). A fire action sends an alert every time a rule identifies an exceptional condition. For example, send an alert every time inventory drops below the minimum threshold.
- Send alerts once and ignore subsequent events until the initial condition is resolved (raise). A raise action sends an alert message when the condition of the rule applies, but ignores subsequent events until after the initial condition is resolved. A raise action is useful when you do not want multiple alerts for situations where the rule condition is true for multiple, related events. For example, after the inventory falls below the minimum threshold, do not send another alert if the inventory continues to drop.
- Reset (lower) previously raised rules to allow them to again send new alerts. For example, when the inventory is once again above the minimum threshold, reset the alert so new ones can be sent if the inventory subsequently falls below the minimum threshold again.

The option **Send an alert one time (until reset) for a specific occurrence** allows you to send alerts once for each specific occurrence of the named column. For example, send an alert every time the inventory falls below the minimum threshold for each specific product.

Rules usually perform their action as soon as the condition exists. However, in some cases you would rather wait to see if the condition is corrected before alerting key personnel. In that case, you can specify a duration of time to wait. If the condition continues to exist when the rule waits, the system then sends the alert. For example, only send the alert if the inventory remains below the minimum threshold for 2 days.

You can enter a number that is the length of time or count of events to wait, or the name of a column in the view that contains the number. When you use the column name option, the rule takes the value from the data stream in the view. In this way, the data stream can determine the time to wait.

**Alert details**
Define alerts with the alert editor. Every alert has a name that identifies it, a subject that tells the recipient what the alert is about, and an optional message body that provides more detail in an HTML format.

You can also attach reportlets to the alert to provide greater details about the event as retrieved from a data source. By default the system uses the view associated with the containing scenario. To choose another view, click **Select Data Source**.
For more information, see the *IBM Cognos Real-time Monitoring Workbench Modeling Reference*.

**Subscribers**
Subscribers are the users who will receive this alert.

A mandatory subscriber will always receive this alert. An optional subscriber may choose to unsubscribe from it in the Real-time Monitoring Dashboard. For more information about subscribing to alerts, see the *IBM Cognos Real-time Monitoring Dashboard User Guide*.

**Fields**
The **Add Field** button allows you to insert a field into the subject or body text from the **Add Field** dialog box. When the alert is generated, the value of the field in the view or cube is inserted into the text, thereby replacing the field placeholder. In the illustration above, the value of ProductName from the view or cube is inserted into the **Subject** line.

When the associated view or cube has multiple rows for the event, the value from each row is inserted into the field placeholder, and separated by commas. For example, the subject might look like the following:

`Inventory level low on Nano Webber, Smoke Shifter, Locking Rail Key`

When the field has the same value in multiple rows, each occurrence is inserted. Instead, you can consolidate duplicate values by choosing that option on the **Add Field** dialog. This dialog also allows you to specify the character or string that separates duplicate values.

**Subject and body**
The **Subject** and **Body** fields are similar to an e-mail message: they provide summary and detail descriptions about the event that the rule identified.

Each field may contain a static message or text with placeholders to be completed when the message is generated.

**Acknowledgments**
An acknowledgment is a link that you can add to the message body.

When a user receives the alert notification, they can click the link to acknowledge the alert. This opens a new browser window that prompts the user to log in, and then displays a message describing when the alert was acknowledged.

To add an acknowledgment link, point to the place in the body where you want to insert the link, and click **Add Acknowledgement**. Users then click the link to go the acknowledgments page. The acknowledgment link appears as text in the body of the message. You can use the default text, customize it to use your own text, or present the link URL as the text.

**Reportlets**
Reportlets provide detailed information about the event, and are attached to or inserted into the alert when it is sent to the subscribers.

Each reportlet presentation is a table that is formatted and inserted into the message body, or included as an attachment that is formatted as either plain text or HTML.
**Attention:** You cannot create a reportlet on a cube.

Every alert may have none, one, or multiple reportlets that retrieve information from a view that is either the same view that the alert uses, or a view derived from that view. The reportlet includes all of the information in the view unless you choose to base the reportlet data on the option **Rule Filter of Data Stream data**. This option limits the reportlet information to include only those rows in the view that meet the condition identified by the rule that generated the alert. For example, when a view contains multiple rows, by default, the reportlet includes all those rows. However, by using this option, the reportlet includes only those rows that meet the rule condition.

For details about creating reportlets, see “Working with reportlets” on page 27.

**Limiting the number of alert instances**

The alert manager only displays a specified number of alert instances for a user. This limitation prevents the system from being overwhelmed by too many alerts.

The default is to display the first 200 alert instances for each user. However, this setting is configurable.

**Procedure**

1. Log in to the IBM Cognos Real-time Monitoring Workbench.
2. On the **Administration Console** tab, click the **System Settings**
3. From the **Configure** drop-down list, click **User Interface**.
4. Modify the **Maximum Alert Instances To Display** setting as required, and click **OK**.

**Setting an alert to invoke an external web service**

You can configure an alert message to invoke an external web service. This requires the creation of a function that constructs the web service message based on the alert payload. Specifically, this function determines which data elements in the alert payload are mapped to the inputs that the web service expects. This function is then uploaded to IBM Cognos Real-time Monitoring as a user-defined function (UDF). The web service is specified in a web service profile that calls the UDF. You can then set the web service profile as a subscriber to the desired alert.

**Procedure**

1. Create a function that constructs the web service message using parts of the alert data, and package it as a JAR file.
2. Upload the JAR file as a user-defined function in the Cognos Real-time Monitoring Workbench.
3. Create the web service profile by creating a new user in the **Administration Console**, selecting the **Delivery Profiles** tab, and clicking **Create Additional Profiles**, where you set the following parameters:
   - For profile type, select **Web Service**.
   - For profile name, type an appropriate value.
   - For web service URL, type the endpoint for the WSDL.
   - For method, specify the required method (operation) to be invoked in the web service.
   - Supply a user name and password, as required.
   - For UDF, select the JAR file you uploaded for this web service invocation.
Click OK.

4. When you create or modify the alert that is intended to invoke the web service, you can add the new web service profile as a subscriber.

Working with rule templates

Rule templates allow users of the IBM Cognos Real-time Monitoring Dashboard to quickly create business rules without having to define the logic of the rule conditions, or its alert message. Instead, the user chooses the template and provides the values for which the rule will test. For example, with the template condition order_total greater than amount, a user provides the value of the amount parameter, and later receives notifications when that condition is true.

Defining a template once in the Scenario Modeler allows users of the Cognos Real-time Monitoring Dashboard to create multiple, unique business rules with the same logic, but which test for different values. For example, one user might use a template to look for orders greater than $10,000, while another looks for orders over $66,000.

Attention: Business rules are based on the definition of the rule-template at the time of creation. Any subsequent changes to the template (including its alert message or reportlet) do not affect the existing business rules created from that template.

You can create a rule template that monitors either a view or a cube. For views, the rule monitors every event that enters the view. For cubes, the rule monitors the results in a specific dimension level only. Additionally, for cubes, alerts attached to rules cannot incorporate reportlets.

Creating a rule template

Creating or editing a rule template is a multi-step process. In this process, you define the conditional logic, identify the parameters that the user will provide, define the alert message, and identify the properties of the alert.

When creating rule templates, you must specify the following:

- An activation condition
  This is the test that, when true, causes the alert message to be sent.

- An optional reset condition
  This test resets the alert and re-allows the activation condition to look for new events that meet the criteria.

- Parameters and prompts
  Parameters are the values that the user will provide when creating the business rule. Prompts describe the parameters to the user.

- Alert message
  The message template that generates the notification.

- Template and alert properties
  A name and description of the template, the message's level of importance, and how the alert tracks the condition.

To create a rule template, you must have the following permissions:

- Create permissions for business activities.
• Read and Write permissions on the business activity that will contain the
  template.
• Read only permissions on the view that will feed the rule.

Parameters are the values that the user provides in Cognos Real-time Monitoring
Dashboard when creating a template-based rule. When defining the template, you
can provide a list of values, from which the user can choose, or omit the choices
and let the user enter the value. You can also provide the custom prompt that the
user sees next to the parameter field.

In the Edit Rule Template dialog box, add parameters to the condition logic with
the Insert Template Parameter option. You can insert a new parameter or choose
one already defined for the template.

Procedure
1. On the Scenario Modeler tab, select the scenario to maintain the template.
   The view on which the scenario is based identifies the data stream that is
   associated with the rule template. All dashboard objects built on this data
   stream will have access to the new rule-template.
2. Click the Rule Templates tab, and then click New Rule Template.
3. In the Create Template Parameter dialog box, define the activation condition.
   • Insert any parameters that the user will need to provide.
     You can customize the parameter name, data type, and valid choices. Add
     the valid choices to the drop-down list, or omit the choices to allow the user
     to provide the value.
   • Optionally, select the Holds For option and define a duration.
     This is the test that, when true, causes the alert message to be sent. Conditions
     can be simple tests for a value in a view column, such as InvLevel>threshold, or
     they can be complex expressions with functions, operators, and groupings, such
     as (InvLevel>threshold OR InvLevel>(AverageInvLevel*.90)). For more
     information, see the IBM Cognos Real-time Monitoring Workbench Modeling
     Reference.
4. Click Continue, and optionally, define the reset condition.
   Insert any parameters that the user will need to provide.
   This test resets the alert and allows the activation condition to look again for
   new events that meet the criteria. If you omit this condition, the activation test
   sends a notification each time an event meets the criteria (a fire rule). Include
   this condition to send the notification once (raise), and not send another until
   the reset condition (lower) is true.
5. On the Rule Templates tab, click Edit Rule Template, and define the details for
   the template parameters.
   • Define the prompts.
     The prompts describe each parameter to the Cognos Real-time Monitoring
     Dashboard user. When creating the business rule, the users see a prompt
     next to each parameter that describes what they are choosing.
   • Specify whether to show the condition(s) to the user.
6. Define the alert message.
   This is the message template that generates the notification. The page contains
   a minimum set of the parameters of an independent alert.
7. Optionally, insert or attach an existing or new reportlet to include with the alert
   message.
8. Define the following rule template properties:
   - Provide a name and optional description. Use the description to describe the
     template to the Cognos Real-time Monitoring Dashboard user.
   - Optionally, specify the severity of the alert message.
   - Optionally, specify whether to consolidate multiple alerts from the same data
     stream. For more information, see the IBM Cognos Real-time Monitoring
     Workbench Modeling Reference.
   - Optionally, identify the columns in the view that uniquely describe the
     events to track when using a reset condition. For example, if the rule looks
     for product back orders that exceed a threshold, you want to track separate
     alerts for each product. To do this, choose the columns that uniquely identify
     the products, such as product name and product family.
     Omit column selection when you do not need to track alerts individually,
     such as when total sales-to-date are below target-to-date.

9. Save the template to make it immediately available to users of the Cognos
    Real-time Monitoring Dashboard.

---

**Working with reportlets**

Reportlets describe the contents of a view, and present that information in a report
that is either attached to an alert message or sent to an external system. Frequently,
reportlets provide information about an event that puts the event into the lookup
table. For example, when an inventory is low for a product, and a restock
shipment is overdue, an alert can notify purchasing managers of that state, and a
reportlet attached to the alert can list alternative suppliers for that product.
Reportlets are attached to all subscribers of the associated alert.

There are two types of reportlets:
- Internal reportlets are the visual representation of the information in a view
  when the alert generated the reportlet. The presentation is a table formatted in
  either text or HTML. The table contains all of the information that was in the
  view.
- External (third-party) reportlets that external reporting systems produce.
  External reportlets generate their reports based on view data passed to them
  when the alert generates the reportlet.

  **Note:** External reportlets are only available when an external reporting system
  has been defined.

All reportlets are associated with a scenario. To create, edit, or delete a reportlet,
choose the **Reportlets** tab in the desired scenario.

When you create or edit a reportlet, you must identify the following properties:
- The type of reportlet (internal or external).
- The business view on which the reportlet is based, and from which it retrieves
  the values to report.
Chapter 4. Enabling support for business views

New events entering the system become part of a data stream that flows from the event source to a business view, possibly passing through other business views along the way.

Every business view depends on an event or another business view, and every view optionally joins the event information in data stream tables with lookup table information that provides a meaningful picture of the activity.

The illustration below shows the view AvailableSuppliers as part of a data stream starting with ShippingEvents and passing through DelayedSuppliers. PartDescriptions and Suppliers are each joined sources for the lookup table.

Use the IBM Cognos Real-time Monitoring Workbench to create and manage the data streams, lookup tables, and views that support business views.

Working with the Workbench

The left side of the Workbench tab lists the public folders, views, JAR files, User Defined Functions (UDFs) that you created, or to which you have access, external links, and drill through targets.

The right side of the Workbench tab shows the contents of the folder and provides information about each object (name, description, type, read and write grant ability, and status). This tab also displays the IBM Cognos Real-time Monitoring Dashboard objects. These differ from the list of Workbench objects in the following ways:
- They are not shown in the navigation tree. They are shown only in their respective folder lists and in the object library.
- They do not have a status icon.
- The permissions icon shown depends on the user's permissions.
- You cannot double-click the objects.
- You can only move or delete these objects. No other operations are possible, such as edit, disable, or permissions.

Public Folders contains the objects in the system. Objects with names that begin with "VC_" are system tables that you may access, but whose definition you cannot change. For example, the VC_SYSTEM_EVENTS is a data stream table that contains events IBM Cognos Real-time Monitoring generated. For more information, see “Monitoring the logs” on page 90.
Objects in the Workbench are identified by an icon, which displays next to the name of the object. The icons are as follows:

<table>
<thead>
<tr>
<th>Icon</th>
<th>Object Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Agent icon]</td>
<td>Agent</td>
</tr>
<tr>
<td>![Cube icon]</td>
<td>Cube</td>
</tr>
<tr>
<td>![Dashboard icon]</td>
<td>Dashboard</td>
</tr>
<tr>
<td>![Dimension icon]</td>
<td>Dimension</td>
</tr>
<tr>
<td>![Data Stream icon]</td>
<td>Data Stream</td>
</tr>
<tr>
<td>![Lookup Table icon]</td>
<td>Lookup Table</td>
</tr>
<tr>
<td>![Process Definition icon]</td>
<td>Process Definition</td>
</tr>
<tr>
<td>![View icon]</td>
<td>View</td>
</tr>
</tbody>
</table>

**Procedure**

1. To create a new object:
   - On the Workbench tab, click Activities.
   - Select Create New.
   - From the drop-down list, select the object type that you want to create.

2. To display a detailed list of objects, click on Public Folders or any subfolder in the Workbench Objects pane to display a detailed list of the objects in the contents panel.

   **Note:** From the list in the contents panel, you can delete the object by clicking Activities and then selecting Delete. You can also change the status of the object. For more information, see “The Scenario Modeler” on page 17.

3. To display object details and access the object definition, click on an object in the tree to display object details. The detailed information about the object includes:
   - Dependencies.
   - Columns showing the column (field) specifications defined for the view.
   - Results (views only) showing a snapshot of the information currently in the view.
**Workbench folders**

Under the **Workbench** tab is the **Workbench Objects** pane.

This pane contains several folders:

- **Public Folders**
  This folder contains objects and subfolders. For more information, see “Working with Workbench folders” on page 32.

- **JAR Files**
  This folder contains any JAR files that you have created. For more information, see “JAR files folder” on page 50.

- **User Defined Functions**
  Contains any User Defined Functions (UDFs) that you have uploaded. For more information, see “User defined functions folder” on page 51.

- **External Links**
  This folder contains URLs that locate external systems, and that you can use to create drill-through targets. For more information, see “Creating external links” on page 51.

- **Drill Through Targets**
  This folder contains drill-through targets that link a view to an external reporting system through a previously defined external link. For more information, see “Creating drill-through targets” on page 54.

- **Object Library**
  This folder contains all the objects that are currently defined in the **Workbench**. From within this folder you can perform the same activities on objects as when you are viewing objects in **Public Folders** or a subfolder. The **Object Library** folder does not display any subfolders.

Currently defined folders and the objects that they contain will also display in a **Select Object** dialog box when creating objects such as **Cubes** or **Dimensions**, and selecting a **Fact Table**. For information about cubes and dimensions, see the *IBM Cognos Real-time Monitoring Workbench Modeling Reference*.

**Navigating Workbench folders and objects**

You can navigate workbench folders and objects in several ways:

- In the **Workbench Objects** pane on the left side of the page, you can select an object or expand a folder and select the required subfolder or object.

- In the title bar of the objects pane, which is to the right of the **Workbench Objects** pane, the path of the currently selected object displays. You can click any name in the path to go to that folder.

  **Note:** You can toggle the object path on and off with the path toggle.

- In the objects pane, you can select the object.

- In the **Object Library** folder, select the object from the objects pane.

**Searching the object library**

You can use the search tool to find objects in the object library.

**About this task**

The object library lists all the metadata objects in the application. You may need to find objects that contain specific text.
For example, you change the name of a column in a view, making the objects that are dependent on the view invalid. You can search for all the objects that use the column name to make any necessary changes. The search tool has the following characteristics:

- The search tool only searches for text in the object definition, which is defined in XML format. The XML tags are not searched.
- The search tool is not case sensitive.
- If you type multiple words with spaces, the search tool returns objects that contain all of the words, not necessarily in succession.

For example, a search for *sales amount* may return an object that contains *sales* in its name and a column named *amount*.

**Procedure**

1. On the Workbench tab, in the Workbench Objects pane, click the Object Library icon to display a list of the objects in the contents panel.
2. In the search box, type the text you are searching for.

**Results**

After a brief delay, the search results display in the same format as the original list. To return to the original list, clear the search box.

**Note:** Search results are not saved.

**Working with Workbench folders**

Within Public Folders, you can create subfolders allowing you to group and organize objects.

The operations that you can perform on folders are:

- Create
- Rename
- Delete
- Move
- Move an object from one folder to another

**Note:** You can move objects from one folder to another by using either the Move option from the Activities button, or by editing the object.

**Procedure**

1. Click Activities, and select Create New.
2. Select Folder from the drop-down list.
3. In the Create Folder dialog box, do the following:
   - Type a folder name.
   - To specify a location for the folder, click Choose Folder, and select the folder in which you want to place the new folder.

   **Note:** The default is the root, which is the Public Folders folder.
   - Optionally, type a description for the folder.
4. To rename a folder:
   - Select the folder name, and click Activities.
   - Select Edit.
• In the name field, type a new name for the folder.

5. To delete a folder, select the folder, click Activities, and click Delete.

Note: Deleting a folder deletes all the objects in the folder, including subfolders. If an error occurs during delete, no objects or subfolders may be deleted.

6. To move a folder:
• Select the folder to move.
• Click Activities.
• Click Move.
• Select the folder to which you want to move the folder.
• Click Move.

7. To move an object:
• Select the object.
• Click Activities.
• Click Move.
• In the Select Folder dialog box, create a new folder or select an existing folder.

Object dependencies and requirements

The Relationships tab lists the dependencies and requirements for the selected object.

The dependencies of an object are other objects that depend on it in order for them to be valid. For example, the dependencies of a selected view include all views directly derived from the view and all cubes that are built on the view.

The requirements of an object are the objects that it requires in order to be valid. For example, the requirements of a cube include the dimensions and the fact table that the cube is built on.

When you click an object in the Workbench Objects pane, you can click the Relationships tab to view the object's dependencies and requirements as a tree list. You can expand the tree list to view the entire object chain.

You can expand each object in the tree list to view the object's dependencies or requirements, depending on which branch of the tree the object is in.

You can perform operations using the icons available in the top right corner of the Relationships tab, such as Find Object, Delete, Enable, Disable, Edit, Export, Move, and Permissions. The operations that are available depend on the object type and the permissions of the user.

Working with agents

Agents are IBM Cognos Real-time Monitoring objects that receive or retrieve information from external sources, such as external events, DBMS, or file storage systems.

When an agent detects or locates required information, it inserts the data into a data stream or lookup table that the system can use.
The following illustration shows how agents retrieve data from different sources.

1. Data stream agents monitor external data streams and route required data stream information to the data stream table when detected.
2. Data stream agents and all lookup table agents retrieve data from storage.

Agents are listed with other objects in the **Public Folders** folder, the **Object Library**, or might be contained in a custom folder. Agents are identified by the Agent type, such as JDBC Agent or File Agent. Use the **Activities** button to:

- **Create agents.**
  
  Click **Create New**, then click **Agent**. In the **Create Agent** dialog box, select the agent type and attributes.

- **Modify an agent.**
  
  For the specified agent, click **Activities**, then click **Edit**. You can also modify an agent by clicking the agent name in the **Tables and Views** pane, and then clicking **Edit Agent** for that agent.

- **Delete agents.**
  
  Selecting one or more agents, click **Activities**, and then click **Delete**.

- **Enable and disable agents.**
  
  Select the agent, click **Activities**, and then click either **Enable** or **Disable**.

For more information about agents, agent attributes, and about specific agent sources, see the IBM Cognos Real-time Monitoring Workbench Modeling Reference.

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### Working with data streams and lookup tables

Data streams and lookup tables drive IBM Cognos Real-time Monitoring.

- Data streams feed events to Real-time Monitoring and generate internal processing. External business applications produce events that record transactions, identify changes in business state, and synthesize the details about the business activities.

- Lookup tables support data stream processing and provide meaningful information about events. Lookup table data is the business information stored in databases, data warehouses, or is provided by Web services.

Business views get their event and lookup table information from data stream and lookup tables defined with the IBM Cognos Real-time Monitoring Workbench, and the tables get their information from agents defined in the **Workbench**. For more information, see "Working with agents" on page 33.

The illustration below shows **ShippingEvents** as a data stream table and **PartDescriptions** as a lookup table for the **DelayedSuppliers** view. The **DelayedSuppliers** views has the derived view **AvailableSupplier** that uses he
Suppliers as a lookup tables. The lookup tables feed information into the two business views. Each of the tables must exist before you can define the business views.

With the Workbench, you can create, edit, or delete the data stream and lookup tables, and see which objects depend on them.

Note: If you change a table that makes one or more dependent objects become invalid, for example, by deleting a column that a view uses, those objects also become disabled. You must then either modify the dependent objects to correct the problem, or restore the change to the table. You can then enable the dependent objects again. For more information, see the IBM Cognos Real-time Monitoring Workbench Modeling Reference.

Creating a data stream

Data stream objects are listed in the Workbench Objects pane either in Public Folders, or in a folder where you assigned the data stream object.

Click the name of an existing data stream object to see its columns and dependencies, edit or delete the object, or set its permissions. If the data stream is used for flat files, you can select [Upload Data File] to load raw event data into a data stream table.

Note: VC_SYSTEM_EVENT is a special case data stream that tracks information about IBM Cognos Real-time Monitoring activity. Use this stream to monitor the system. For more information, see "Understanding logging" on page 86.

Note: When creating JDBC data streams, you can enable the upsert functionality.

Procedure
1. On the Workbench tab, click Activities, and then click Create, Data Stream.
   The New Data Stream dialog box displays, prompting you to select the type of data stream.
2. Select the type of data stream.
   In most cases you will select Single Data Stream. Use the Consolidated Data Stream option only if you are merging multiple event sources into one stream.
3. Click Continue.
   The New Data Stream dialog box prompts you to select the type of data source that can be a flat file, JDBC, or other type of data source.
   You can only select a data source type if at least one data source is defined. That is, an agent for the data source has been created. Otherwise, the option is not available as indicated by the grayed-out radio button.
   For more information about agents, see "Working with agents" on page 33.
4. Select the type of data stream source, and click Continue.
The **New Data Stream** dialog box prompts you to select the specific agent for the data stream source.

Some agents require additional information before you can create the data stream table. Specifically:

- Flat file agents require the following types of flat files: delimited, fixed width, or XML. For more information, see the *IBM Cognos Real-time Monitoring Workbench Modeling Reference*.
  
  Optionally, you can identify sample data to load to assist you with specifying the column definitions. When you include a sample data file, that information is presented in a table that you use to format the columns in the next step.

- JDBC and Salesforce agents require an SQL SELECT query to retrieve data from the source database.

5. Configure and define the data stream table following the instructions and descriptions in the *IBM Cognos Real-time Monitoring Workbench Modeling Reference*.

After saving the table, business views, alerts, rules, and reportlets can use it.

**Enabling upsert for a data stream**

The upsert functionality combines the actions of updating, inserting, and deleting data from data stream tables.

You can enable this feature for JDBC data streams, flat file data streams, JMS data streams, and others.

The upsert functionality dynamically updates your database. As new events are added to the database tables, old events are replaced or deleted, and the database always contains only the required data.

To enable the upsert functionality, you need a JDBC agent specifically for upsert. This agent manages the data required for the upsert functionality. You can create the upsert JDBC agent before or when creating the data stream. By default, upsert uses the same JDBC agent that you specify for the creation of a JDBC data stream. For more information about agents, see "Creating data source agents for lookup tables" on page 4.

You enable the upsert functionality when creating the JDBC data stream. Do not enable this functionality when the data stream uses the event key.

**Procedure**

1. On the **Workbench** tab, start creating a data stream.
   
   For detailed information, see the steps in the section "Creating a data stream" on page 35.

2. When you reach the **Configure Data Stream - JDBC Source** dialog box, ensure that the **Treat all rows in the result as a single event** check box is not selected, and click the **Upsert** tab.

3. Select the **Enable Updates/Inserts/Deletes (Upsert)** check box.

4. Specify the **JDBC Agent**.

   You can either accept the default agent that you selected for the data stream, or click **Browse** and specify a different agent.

5. Type the name for **Table Name for Upset Data Storage**.
A table with this name is created in the database associated with the JDBC agent. This table stores the data required for the upsert functionality. Delete this table if you delete or disable the upsert stream.

6. For **Maximum age of upsert data**, specify the period of time to support upsert. The update or delete action is not valid for an event older than this period.

7. In **Action Column**, choose the column that will contain the "I/D/U" flags for the Insert/Delete/Update actions.

8. In **Key Column**, choose the appropriate columns as keys that will be used to identify the events that should be deleted or updated.
   You can select multiple check boxes. However, do not select the column that is already selected as **Action Column**.

9. Click **Save Data Stream**.

### Creating a lookup table

Lookup tables that you have access to are displayed in **Public Folders**, or in the folder to which you assigned them.

The object details and status are displayed in the detail panel. Click the name of an existing lookup table to see its dependencies and join relationships, and to edit or delete a lookup table.

**Tip:** You can also see all objects in the **Object Library**.

### Procedure

1. On the **Workbench** tab, click **Activities**, and then click **Create, Lookup Table**.

2. Select the type of data source for the lookup table.
   Only the types with previously defined agents are available. For information about creating agents, see "Working with agents" on page 33.

3. Identify the agent that you want to use.
   Some agents require additional information before you can create the lookup table. For example, JDBC agents require an SQL SELECT query to retrieve data from the source database.

4. Configure and define the lookup table following the instructions and descriptions in the *IBM Cognos Real-time Monitoring Workbench Modeling Reference*.
   After saving the table, business views can use it.

**Note:** Lookup table data does not change rapidly; therefore, to lessen the impact on the system that provides the lookup table data, you can cache the results in memory. Subsequent requests for the same data will then retrieve the results from memory instead of issuing a new query. For more information, see the *IBM Cognos Real-time Monitoring Workbench Modeling Reference*.

### Uploading a data file

In addition to receiving events as they happen, you can click **Upload Data File** to upload events from a text file directly into the system.

This option is useful for:

- Analyzing events that were gathered in batch from another system, such as the results collected from a testing system, or the Web logs gathered from HTTP servers.
Using scenarios by allowing you to test your formulas, rules, alerts, and so on.
Use this feature to test your scenarios, modify them, and retest them with the same data.

Note: This option is only available for data streams that have a text file as an event source. For more information about text files, see the IBM Cognos Real-time Monitoring Workbench Modeling Reference.

The data format of the uploaded text file must match the format defined for the data stream data source. For example, if the source is defined as receiving delimited text for 5 columns, the data in the upload file must match that format.

For XML files, the filename must end with an .xml extension, such as filename.xml.

Procedure
1. For the specified data stream, on the Workbench tab, click Upload Data File.
2. Identify the file to upload.
   Type the full path, or use the browser to select the file.
3. Click OK.
4. The File Upload Progress dialog box shows the upload status.
   If the source file contains erroneous data, click Display Error to see the descriptions of the errors in the error log.

Working with consolidated data streams
Consolidated data streams accept events from multiple event sources. However, the data from each source must map directly into the view columns of the consolidated data streams.

Consolidated data streams are useful for combining events from multiple, similar sources. For example, the results from multiple devices that are testing a single product line or the records from multiple real-time, point-of-sale devices.

Consider the following example that combines the logs from two HTTP servers into a single data stream. A business view then combines the log information with the lookup table, describing the pages to produce detailed information about the Web pages visited.

You can create a consolidated data stream in the same way as a single data stream by clicking Activities in the Workbench and selecting Create New then New Data Stream. For more information, see “Creating a data stream” on page 35.

The tables and views on which consolidated data streams are built have these restrictions:
• They must supply data that maps directly into the columns of the consolidated data stream, and the data types of the source must exactly match the target in type, width, scale, and precision.
• Stateful views are unavailable for selection.

---

**Working with views**

Business views are data models that provide a real-time picture of a business activity.

As changes and transactions occur in your business, business views generate events that are sent to IBM Cognos Real-time Monitoring. Each new event drives an immediate update of the views (the business models) which provides a real-time, updated view of the business metrics.

In the **Workbench** you create business views derived from data stream and lookup tables and from other business views. You can also define:
• How the view results are grouped and ordered.
• Formulas for aggregating the information displayed in the view columns.
• Complex join conditions (WHERE clauses) that specify how to relate the source data.
• Access filters that allow different users to see different rows of the same view depending on the criteria specified in the filter. These filters restrict the data a user sees without defining a new view for each user. For more information, see the [IBM Cognos Real-time Monitoring Workbench Modeling Reference](#).

**View tabs**

Click any view in **Public Folders**, or in the folder where you assigned the view, to see the tabs that provide detailed information about that view.

These tabs are:
• **Columns**
  Descriptions and definitions of the columns in the view.
• **Dependencies**
  Objects that depend on this view.
• **Reference Data**
  Reference data for thresholds on this view.
• **Results**
  Current values in the view, if any.
• **Access Filters**
  Access filters applied to this view. For more information about access filters, refer to the [IBM Cognos Real-time Monitoring Workbench Modeling Reference](#).

**Creating and editing views**

When you create a view, you first select the data stream that drives the view.

A data stream is either a data stream table or another business view. Optionally, you also select one or more lookup tables to join with the data stream. These tables and views become part of the workset of the derived view. In the view editor, you can see the workset tables and views and their columns on the left side of the page.
Use the **Configure View** dialog box to create and modify views. This dialog box displays the tables and views from which the current view gets its information, the list of fields or columns in the view, and how the information is joined and ordered.

For more information, see the topic about creating views in the *IBM Cognos Real-time Monitoring Workbench Modeling Reference*.

**Note:** When you change any part of the definition of a view, all results currently in the view and in any views derived from the modified view are discarded.

**Procedure**
1. On the **Workbench** tab, click **Activities**.
2. Click **Create New**, and then click **View**.
3. Select the data stream or view that is the base for the new view.
4. Optionally, select one or more lookup tables to include in the view.
   The views and tables that are available depend on the selection made in the previous step, which depend on the following:
   - If you selected a data stream or a consolidated data stream, all lookup tables and all views built on the same data stream, or consolidated data stream, display.
   - If you selected a view, the corresponding data stream or a consolidated data stream for that view displays.
5. Define the view in the **Configure View** dialog box.
   When you save the view, it is ready to receive events.
6. To edit an existing view:
   - Select the name of the view in the object browser
   - Click **Edit This View**.
   - Change the definition in the **Configure View** dialog box.

**Creating view fields**
Fields in a view are usually derived from fields in the source tables and view but may be formulas independent of the source table, such as a field that identifies the current date or time.

To add a field to a view, drag the fields from the source in the workset onto the field list of the view.

Add new, empty fields by clicking **Add Field** for the **Drag fields from workset** area.

**Field names**
Field names appear in view results and are the names that rules, alerts, reportlets, and other views use to reference the field.

Names can be mixed case, and can include numbers and special characters. However, names must not coincide with system reserved words. For information about names, see the *IBM Cognos Real-time Monitoring Workbench Modeling Reference*.

**Field definitions**
Each field definition is an expression or formula that identifies what information to produce in the view.
By default, definitions are references to the source field. For example, orderStatusEvent.OS_ID is the name of the data stream followed by the column name in the source table.

More complex definitions include functions that modify the field value or display or perform some analytic operation. The following are some examples:

- DISPLAY_MONEY(OS_PRICE) formats a number as a currency value, such as $1,234.56.
- TO_CHAR(CURRENT_TIMESTAMP(), 'd MMMM yy') formats the current data as '5 March 09'.

More complex formulas might have nested functions, such as the following:

- DISPLAY_MONEY(AVG(OS_PRICE)) formats the average price as a currency value, such as $1,234.56.
- CAST(((OS_PRICE/OS_COST)-1)*100 AS DECIMAL(5,0)) || '%' determines the percentage markup on the price of an item over its cost, strips out the decimals, and concatenates a percent symbol. The result might look like 18%.

You can type formulas directly into the field definition, or you can use the “Field Builder” feature to quickly create formulas.

For more information about functions and expressions, see the topic about formulas in the *IBM Cognos Real-time Monitoring Workbench Modeling Reference*.

**Field Builder**
The Field Builder assists you when creating field definitions.

Use the feature by clicking the Field Builder button next to the field definition.

With this feature, you can do the following:

- Edit formulas in a large text editor.
- Add fields from the work set by choosing them from the drop-down list.
- Insert operators by clicking them.
- Insert functions directly into the formula.

**Function Picker**
The More Functions option displays the Function Picker which lists the functions that you can insert into the current field.

Each function is listed by category, and each includes a synopsis that describes the function and its arguments.

For detailed descriptions about the function, click Help on the dialog box, or see the *IBM Cognos Real-time Monitoring Workbench Modeling Reference*.

**Group By**
The Group by option produces summary information for groups of rows where values in the selected fields are the same.

Consider this set of data:

<table>
<thead>
<tr>
<th>Name</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>--------</td>
<td>----------</td>
</tr>
<tr>
<td>--------</td>
<td>----------</td>
</tr>
</tbody>
</table>

Chapter 4. Enabling support for business views  41
If you create a view that groups by name and determines the sum of the quantity for each group, it would look like the following:

Name: `product.name` GROUP BY

<table>
<thead>
<tr>
<th>Name</th>
<th>Qsum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nano Webber</td>
<td>95</td>
</tr>
<tr>
<td>Fizzy Lifter</td>
<td>700</td>
</tr>
<tr>
<td>Smoke Shifter</td>
<td>310</td>
</tr>
</tbody>
</table>

You can also group on multiple fields. For example:

Name: `product.name` GROUP BY
Local: `product.location` GROUP BY

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
<th>Qsum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nano Webber</td>
<td>West</td>
<td>10</td>
</tr>
<tr>
<td>Fizzy Lifter</td>
<td>East</td>
<td>700</td>
</tr>
<tr>
<td>Nano Webber</td>
<td>East</td>
<td>85</td>
</tr>
<tr>
<td>Smoke Shifter</td>
<td>West</td>
<td>310</td>
</tr>
</tbody>
</table>

When you use the Group by option, every field must either be part of the Group by or its definition must include a set function, such as `SUM()` or `AVG()`.

For more information about Group by semantics, see the *IBM Cognos Real-time Monitoring Workbench Modeling Reference*.

**Working with clauses**

The three clause fields specify the source of the data on which the view is derived, how these sources are joined together, under what conditions the data should be joined, and how the result is sorted.

- **From Clause** names the source tables and views on which the view is derived.
- **Where Clause** accepts only those rows that meet the specified condition.
- **Window Clause** defines query windows. For more information, see the *IBM Cognos Real-time Monitoring Workbench Modeling Reference*.
- **Order By** sorts the resulting view based on column names or on expression results.
- **Advanced** allows you to set View Persistence and Drill Back to Detail for the view.

*Note:* These tabs correspond to the clauses in the C-SQL SELECT statement: FROM clause, WHERE clause, and WINDOW clause. For more information, see the *IBM Cognos Real-time Monitoring Workbench Modeling Reference*.
From clause
The From clause contains a list of the tables and views from which to derive the view.

Every table or view referenced in the “Field definitions” on page 40 must also be listed here. This list usually corresponds with the table and view objects shown in the workset.

You can also use the From clause to define an inner join relationship between the tables and views in the workset. An inner join is one where the rows in the result table are the rows from the first table that meet the specified criteria, combined with the corresponding rows from the second table that meet the specified criteria. That is, the records from the first table are combined with the records from the second table, and only those records that satisfy the join predicate remain in the result table. For example:

```
Product AS P INNER JOIN Manufacturer
AS M
ON P.productName = M.ProductName
```

For more information about join relationships, see the IBM Cognos Real-time Monitoring Workbench Modeling Reference.

Where clause
The Where clause defines how to join multiple source tables and views.

It also filters the resulting view to accept only those that meet the specified condition. For example, this clause specifies how to join the lookup table to the data stream, and how to join the lookup table to the lookup table:

```
orderStatusEvent.OS_PROD_ID = Product.prod_id AND
Product.prod_supp_id = Supplier.supp_id
```

You can expand the clause to filter out all rows whose price is greater than or equal to 10, as follows:

```
orderStatusDataStream.OS_PROD_ID = Product.prod_id AND
Product.prod_supp_id = Supplier.supp_id AND
orderStatusEvent.OS_PRICE >= 10
```

Window clause
The Window clause defines query windows that you can use in aggregations over sets of events and view rows.

For more information about query windows, see the IBM Cognos Real-time Monitoring Workbench Modeling Reference.

Order By clause
The Order By clause orders (sorts) the resulting view based on column names or on expression results. Without this clause, the same query might not produce rows in the same order on subsequent queries.

By default, the view is ordered in ascending order (ASC). To order in descending order, specify the DESC option.

This example has two fields (Name and Quantity) and the results are ordered by Name in descending order:

```
Name: product.name
```
Quantity: product.quantity
Order by: product.name DESC

<table>
<thead>
<tr>
<th>Name</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoke Shifter</td>
<td>310</td>
</tr>
<tr>
<td>Nano Webber</td>
<td>10</td>
</tr>
<tr>
<td>Nano Webber</td>
<td>50</td>
</tr>
<tr>
<td>Nano Webber</td>
<td>20</td>
</tr>
<tr>
<td>Nano Webber</td>
<td>15</td>
</tr>
<tr>
<td>Fizzy Lifter</td>
<td>700</td>
</tr>
</tbody>
</table>

**Configuring advanced features**

The **Advanced** tab allows you to configure the **View Persistence** and **Drill Back to Detail** features.

For information about using this feature, see the *IBM Cognos Real-time Monitoring Workbench Modeling Reference*.

**Persisting view data:**

IBM Cognos Real-time Monitoring can persist business view data to an external RDBMS for future reporting by third-party tools.

The information in the table is sufficient for the reporting tools to recreate a complete snapshot of the view. When persisting, the view information is written to a table in the RDBMS at a rate following a policy that you define.

To use view persistence, you will first need to have a defined JDBC agent to access the RDBMS that will store the data.

**Drill Back to Detail:**

You can create views to drill back to detail on a chart. This allows a user to see the columns in the fact table of a cube and all levels of all cube dimensions when viewing a dashboard object.

**Drill Back to Detail** has the following requirements:

- The data source of the dashboard object must be a cube.
- The view on which the cube is built must be stateless.
- The dimensions of the cube must be derived from a single external database.
- If there is more than one table in the view, you can use a persisted table for the drill back to detail table.

**Maintaining events in a stateless view**

By default, a stateless view contains only rows representing the effect of the last event. Rows from previous events are discarded. With this option you can specify a set of recent event rows to maintain in the view contents on the **Results** tab.

You cannot maintain previous stateful views. This option is only available for stateless views.

You can specify either the count or time-span of events to retain:
An event count is the maximum number of events to maintain that satisfies the view condition. The view discards the oldest event rows that do not fit in the specified size.

A time interval defines a set of the most recent events. The count of events in the view varies depending on the number of events in the interval when the view was updated. For example, if an event arrived that did not meet the view criteria, it is excluded from the view, but the view still recalculates the interval at that time.

Note: The set of events is determined when the last event was inserted, not at the current time. For example, an interval of one hour shows all the events that arrived in the view for the hour previous to the last update. If no events were inserted in the last day, the view might still show an hour of events from the previous day. However, when a new event arrives at the view, all those events are discarded.

For information about how to perform aggregations on sets of recent events, see the IBM Cognos Real-time Monitoring Workbench Modeling Reference.

Displaying SQL expressions
Create views with the view editor as an SQL SELECT statement. From the editor, you can see the SQL statement by clicking Display SQL Expression.

For information about using the SELECT statement, see the IBM Cognos Real-time Monitoring Workbench Modeling Reference.

View threshold relationships
Reference data is the data source for references in IBM Cognos Real-time Monitoring dashboard objects. For example, if a speedometer shows the current total sales, a reference line can show the target sales.

Before the dashboard objects can use the reference, you must define the references in the Workbench. To access the references associated with a view, select the view and click the Reference Data tab.

Each reference is a numeric column in the same view as the source for the dashboard object. Click Manage Reference Data to associate references with the column that will be presented in the dashboard object. For example, if a speedometer charts the value in the view Sales column, and the Target column contains the sales threshold (target), create a reference to Target and associate it with Sales.

A column can be associated as a reference to multiple presentation columns. However, the Alias Name must be unique within the view. When you create or edit the dashboard object, and when the object measures the Sales column, these references are available to the object.

For information about using reference data in dashboard objects, see the IBM Cognos Real-time Monitoring Dashboard User Guide.
Working with cubes and dimensions

A cube is a set of data organized by dimensions and measures to aggregate different subsets of the larger set of data. When rendered as a dashboard object, cubes allow you to quickly choose categories that filter data to show the results that meet your selection. For example, a cube of sales data might provide aggregations of the same data by product, by time, or by sales region dimensions. Looking at the cube, you might choose to view the total sales of a product (Nails) within a business region (West) during a fiscal quarter (Q1).

Cubes are similar to business views in that they aggregate event data, but they do so across different dimensions. The view that a cube aggregates is a fact table: a view or data stream table for an event that contains one or more columns to measure (aggregate) and that also contains columns that identify the dimensional elements associated with the event. For example, you could imagine a fact table containing an event similar to the following:

<table>
<thead>
<tr>
<th>Cost</th>
<th>Quantity</th>
<th>Product</th>
<th>State</th>
<th>Month</th>
</tr>
</thead>
<tbody>
<tr>
<td>200.00</td>
<td>1600</td>
<td>Nails</td>
<td>California</td>
<td>January</td>
</tr>
</tbody>
</table>

The dimensional elements are stored in dimensions (special lookup tables) and referenced by IDs like the following:

<table>
<thead>
<tr>
<th>Cost</th>
<th>Quantity</th>
<th>prod_id</th>
<th>region_id</th>
<th>ddim_id</th>
</tr>
</thead>
<tbody>
<tr>
<td>200.00</td>
<td>1600</td>
<td>100</td>
<td>7</td>
<td>39</td>
</tr>
</tbody>
</table>

Similar to a view, as new events enter the system they become part of an event that can feed a cube. As new events enter a cube, each measure of each dimension is recalculated to provide the latest aggregation. The following illustration shows a cube built from the OrderDetails fact table that includes measures for total sales across various business regions, products, and date and time.

For more information, see the IBM Cognos Real-time Monitoring Workbench Modeling Reference.

**Procedure**

1. Select the fact table and columns to measure.
2. Specify how to measure them (aggregate formulas to use).
3. Select one or more dimensions that classify the measurements. For example:
SUM(OrderDetails.prod_cost*OrderDetails.order_qty) AS TotalOrderSales

Creating dimensions

Dimension columns categorize the measurements. A cube must have at least one dimension, and it may have more. Also, the data in the fact table must be able to identify a unique element in each associated dimension. While the mathematical term cube implies three dimensions, a database cube can have any number greater than one.

The following table lists examples of different types of measures by category.

<table>
<thead>
<tr>
<th>Time</th>
<th>Geography</th>
<th>Inventory</th>
<th>Security</th>
<th>Taxonomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>year</td>
<td>continent</td>
<td>classification</td>
<td>type</td>
<td>kingdom</td>
</tr>
<tr>
<td>quarter</td>
<td>country or region</td>
<td>type</td>
<td>rating</td>
<td>phylum</td>
</tr>
<tr>
<td>month</td>
<td>state</td>
<td>manufacturer</td>
<td>company</td>
<td>class</td>
</tr>
<tr>
<td>week</td>
<td>county</td>
<td>model</td>
<td>cusip</td>
<td>order</td>
</tr>
<tr>
<td>day</td>
<td>city</td>
<td>configuration</td>
<td></td>
<td>family</td>
</tr>
<tr>
<td>hour</td>
<td>district</td>
<td></td>
<td></td>
<td>genus</td>
</tr>
<tr>
<td>minute</td>
<td></td>
<td></td>
<td></td>
<td>species</td>
</tr>
</tbody>
</table>

For more information, see the topic about dimensions and levels in the *IBM Cognos Real-time Monitoring Workbench Modeling Reference*.

Before creating a dimension, you must have the following:

- Create permissions for views, cubes, and dimensions.
- At least read-only access to the lookup table that provides the dimension elements

For more information, see the topic about permissions in the *IBM Cognos Real-time Monitoring Workbench Modeling Reference*.

Turn on caching for the lookup table for optimum performance. When caching is off, performance for cubes can be slowed dramatically. For more information, see the topic about controlling the caching lookup table queries in the *IBM Cognos Real-time Monitoring Workbench Modeling Reference*.

Procedure

1. On the Workbench tab, click Activities, and then select Create New, Dimension.
2. In the Configure Dimension dialog box, type a name and, optionally, a description of the dimension.
3. Select the lookup table that contains the dimension elements by clicking Browse next to the Lookup Table Name field.
4. Optionally, select Use this for Geography Charts to implement geographical maps. The Geo Categories column displays next to the Selected Fields list.
5. Define the levels of the hierarchy:
   - Add fields to the hierarchy from the Available Fields list.
• Order the levels from largest set (top) to smallest (bottom) in the **Selected Fields** list.
• Optionally, identify one or more key fields to include in the **Select Key Fields** list.
• Optionally, assign alias names to the levels.
• Optionally, assign **Geo Categories** to each level, if you selected the **Use this for Geography Charts** check box. The **Selected Fields** list displays a **Geo Categories** column. From this column, you can assign **Not Used**, **Country or Region**, **State/Province**, **City**, **Street**, or **Postal Code** geo category to a level in the hierarchy.

6. Save the dimension.
   You can immediately use the dimension in cubes.

### Creating lookup tables on data streams and views

You can use data from data streams and views as the source for values in a dimension in a cube.

**About this task**

Lookup tables provide the functionality of inline dimensions (that is, dimension values sourced from the event stream), as well as the functionality of a streaming lookup table that you can use to join to views as well to cubes.

By using a streaming lookup table based on an event stream, the values in the lookup table are updated as quickly as the data is processed and can be sourced from non-JDBC sources such as JMS or MQ Series.

You can use a streaming lookup table as a source of real-time data for a dimension in a cube. In previous releases, sometimes the event would be processed before the lookup table that sourced the dimension had been updated with new values for an event streaming in real time.

The data is also available in real time for use as a lookup table joined in a view, and can be used in a separate data stream than the one that the lookup data is arriving in. In previous releases, you could join data from a single data stream plus lookup tables, but the lookup tables were always cached or on-demand and not in real time.

For more information, see the topic about creating lookup tables in the *IBM Cognos Real-time Monitoring Workbench Modeling Reference*.

**Procedure**

1. On the **Workbench** tab, click **Activities**, and then click **Create New > Lookup Table**.
2. In the **New Lookup Table** window, select the **Data Stream or View** option and click **Continue**.
3. Click **Browse** and select a data stream or view from the available list.
   All the fields in the corresponding data stream or view display in the **Field Information** tab.
4. Select the columns that you want to include in the lookup table. You can also select a column to use as an index.
   The new lookup table keeps only unique records for the specified columns from the data stream or view.
Optionally, you can specify a schedule in the **Invalidation Schedule** tab. However, adding the invalidation schedule clears the data in the lookup table according to the schedule and is not recommended. For more information, see “Setting invalidation schedules” on page 15.

5. Click **Save Lookup Table**.
   
   You can now use this lookup table to create dimensions. For more information, see “Creating dimensions” on page 47.

**Creating cubes**

You can create a cube to build dashboards from.

To see the contents of a cube, use the **Results** tab. The **Dimension** and **Level** controls determine the cube-face to view.

If the cube is empty, or if you do not have access to a dimension or level, you see the **None available** message instead.

Using the Cognos Real-time Monitoring Dashboard, you can chart the contents of a cube or display values in a table.

**Before you begin**

Before creating a cube, you must have the following

- Create permission for views, cubes, and dimensions.
- At least Read-Only access to an existing fact table (business view).
- At least Read-Only access to the dimensions to include.

**Procedure**

1. On the **Workbench** tab, click **Activities**, and then click **Create, Cube**.
2. Type a name and, optionally, a description of the cube.
3. Click **Browse** next to the **Fact Table** field to select the fact table that contains the data to measure, and the columns that identify the dimension elements.
4. In the **Measure Columns** of the **Configure Cube** dialog box, define one or more measure columns by typing a measure name or names in the **Measure Name** column, and an expression or expressions in the **Aggregate Expression** column.
   
   For example, type:
   ```plaintext
   SUM(OrderDetails.prod_cost*OrderDetails.order_qty)
   ```
5. In the **Dimension Column Information** area of the **Configure Cube** dialog, define one or more dimension columns.
   
   This list includes all dimensions to which you have at least read-only access. (Optional) Define access filters if you want different users to see selected members within the same cube. For more information, see the topic about access filters in the *IBM Cognos Real-time Monitoring Workbench Modeling Reference*.
6. Save the cube.
   
   You can immediately begin building dashboard objects using this cube.
Cube threshold relationships

Reference data are the data sources for references in dashboard objects of IBM Cognos Real-time Monitoring. For example, if a bar chart measures total sales, a reference line can show the target sales for each category, while a range shows the sales target range for the same.

Before the dashboard objects can use the reference, you must define them in the Workbench. To access the references associated with a cube, select the cube and click the Reference Data tab.

Click Manage Reference Data to create and edit references. Each reference is a column in a lookup table that is related to a column in the cube. For more information, see the topic about lookup tables in the IBM Cognos Real-time Monitoring Workbench Modeling Reference.

For example, to have the sales targets for a product, there needs to be a product name column in the cube, and it needs to map to a product name column in the lookup table that contains the sales targets for each product. The following is an example of some data from the Product_Targets lookup table:

<table>
<thead>
<tr>
<th>PRODUCT_NAME</th>
<th>PRODUCT_MIN</th>
<th>PRODUCT_TARGET</th>
<th>PRODUCT_MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nails</td>
<td>100000.00</td>
<td>150000.00</td>
<td>200000.00</td>
</tr>
<tr>
<td>Screws</td>
<td>60000.00</td>
<td>80000.00</td>
<td>100000.00</td>
</tr>
<tr>
<td>Lag bolts</td>
<td>30000.00</td>
<td>65000.00</td>
<td>100000.00</td>
</tr>
<tr>
<td>Washers</td>
<td>120000.00</td>
<td>170000.00</td>
<td>220000.00</td>
</tr>
</tbody>
</table>

Each reference is associated with a measure in the cube (such as total sales), and is available to a single level of a single dimension of the cube. For example, the data above is only applicable to the Product Dimension, Product level of a cube.

When you create or edit the dashboard object, and when the object measures the Total_Sales column, these references will be available to the object.

For information about using reference data in dashboard objects, see the IBM Cognos Real-time Monitoring Dashboard User Guide.

Working with UDF and JAR files

Application developers may create user-defined functions (UDFs) for use in queries, views, and rules. For example, you might have a UDF that takes a set of values and concatenates them alphabetically while ignoring NULL values. In a Field expression, you would use that UDF in an expression such as the following:

ConcatSet(Product.Name)

UDFs are small Java programs that take arguments and return a value, just like the internal IBM Cognos Real-time Monitoring functions. For information about implementing UDFs, see the IBM Cognos Real-time Monitoring Workbench Modeling Reference.

The UDF Java programs are stored in JAR files. To access the UDFs, you must upload the JAR file to Real-time Monitoring servers, then identify the functions to make them available.

JAR files folder

JAR files contain one or more Java programs.
The JAR files folder provides access to the JAR files available to IBM Cognos Real-time Monitoring. Select the folder to see a list of the JAR files already installed, and to upload new JAR files. Select a JAR file in the folder to see the functions that JAR contains and the objects that depend on the functions in that JAR.

**Procedure**

1. From the Workbench, click the **JAR Files** folder.
2. Click **New JAR**.
3. Type a name for your JAR in the **Name** field, and optionally, a description.
4. Click **Browse** to locate the file in the **Path** field.
5. Click **Save**.

   The JAR file is now available to the system.

**User defined functions folder**

The **User Defined Functions** folder controls access to the User Defined Functions (UDF) available to IBM Cognos Real-time Monitoring. Select the folder to see the list of functions available, to upload or identify new functions, or to edit or delete functions already in the list.

To make a UDF available to the system, you must first upload the JAR file that contains it. You can either follow the steps provided in the section “JAR files folder” on page 50, or you can upload it when you create a new UDF in the list.

**Procedure**

1. Select the **User Defined Functions** folder, and select **New User Defined Function**.
2. The **Create UDF** dialog box prompts you to either select one of the JAR files already in the system or upload a new JAR file.
   
   If you upload a new file, it will appear in the JAR Files folder after you complete these steps.
3. After identifying the JAR file, select the UDFs that you want to include in the folder.
   
   By default, all UDFs in the JAR are selected. Each UDF is assigned a name that is the same as it appears in the JAR file. However, you can assign another name. The name appears in the **UDF Name** column in the “JAR files folder” on page 50 list.
4. Click **Finish** to make the UDFs immediately available to the system.

**Creating external links**

External links are URLs that locate external systems. Use them to create drill-through targets that are inserted into reportlets for communicating to external report mechanisms.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Specifies the name of the external link object. This is the name that appears</td>
</tr>
<tr>
<td></td>
<td>in the list of links when creating an external reportlet or drill-through</td>
</tr>
<tr>
<td></td>
<td>targets.</td>
</tr>
<tr>
<td>Description</td>
<td>Specifies the text description of this object.</td>
</tr>
</tbody>
</table>
**Property Description**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>URL Link</td>
<td>Specifies the complete URL for locating the external system. The URL must begin with http or https. If you do not assign a value for this field, the system assumes an http connection to port 80 on the same domain as the application.</td>
</tr>
</tbody>
</table>

The URL is the string that locates the reporting system. Later, when the reportlet is generated, it extends the URL with data parameters to pass to the report system. Note that the URL must contain the http:// qualifier. For example, http://reports:8091

Later, the reportlet might expand the URL similar to the following:


For information about reportlets, see the *IBM Cognos Real-time Monitoring Workbench Modeling Reference*.

**Procedure**

1. On the Workbench tab, click on External Links in the left column.
   - The right pane displays the External Links tab pane.
2. Click New External Link.
3. Name and describe the link, and define the URL.
4. Click OK.
   - The new link is immediately available for reportlets and drill-through targets.

### Creating process definitions

Process definition objects associate a process definition file with an aggregate view or cube, and optionally with a search lookup table. The dashboard uses the object when rendering a process diagram to identify the associated aggregate source for statistics, and for identifying the search lookup table and search label to show the user.

A process definition has the following properties:

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Specifies the name of the process definition object. This name appears in the list of processes when creating a process diagram in the dashboard.</td>
</tr>
<tr>
<td>Save in</td>
<td>Specifies the folder in which to save the process definition. (The default is Public Folders.) Click the Choose Folder button to select a folder.</td>
</tr>
<tr>
<td>Description</td>
<td>Specifies the text description of this object.</td>
</tr>
<tr>
<td>Process Name</td>
<td>Specifies the name that identifies the process in the uploaded process definition file. Click Upload Process Definition File. The external process management system generates the process definition.</td>
</tr>
</tbody>
</table>
Property | Description
--- | ---
Aggregate View or Cube | Specifies the view or cube that aggregates process instance data. One of the columns identifies the steps in the process, such as a step name or ID. The Current Data Source field specifies the current data source used from the view or cube. The Step Column specifies the column in the data source that contains the steps.

Detail Search | Specifies the lookup table that queries the external process management system about a specific process. Users viewing a process diagram in the dashboard can use an ID of a specific process instance and receive the information about the instance as reported in the lookup table. The Lookup Table field specifies the lookup table to use for the query. Click Select Data Source to select a lookup table. The Search Column field is a drop-down list from which you can select a column in the lookup table. You can also assign a name for your search in the Descriptive Name field. This parameter is optional.

Before creating a process definition, you must have:
- A process definition file that conforms to the XML Process Definition Language (XPDL) 2.0.
- A view or a cube that aggregates the process-instance data, where one column specifies the steps in the process.
- Read only access for the view or cube that aggregates the process data streams.
- Permission to search the lookup table (optional).

For more information, see the section about processes in the IBM Cognos Real-time Monitoring Workbench Modeling Reference.

Procedure

1. On the Workbench tab, click Activities, and then click Create, Process Definition.
2. Name process definition, specify a folder, and provide an optional description. The default folder is Public Folders.
3. Click Upload Process Definition File to upload the process definition file generated by the BPM.
   The process name from the definition file appears in the Process Name field after uploading the file.
   For more information, see the section about processes in the IBM Cognos Real-time Monitoring Workbench Modeling Reference.
4. Select the aggregate view or cube and select the column that identifies the steps in the process by doing the following:
   - Click Select Data Source to select the aggregate view or cube.
   - Use the Step Column drop-down list to select the step column. For example, each step in the process might be identified by a name or ID number.
5. If needed, create a detail search by doing the following:
   - Click **Select Data Source** to select the lookup table for the detail search
   - Select the column to search from the **Search Column** drop-down list.
   - If needed, provide a descriptive text in the **Descriptive Name** field. This text appears in the Real-time Monitoring Dashboard.

6. Click **Save**.
   You can now create process diagrams based on this definition.

---

**Creating drill-through targets**

A drill-through target links a view to an external reporting system through a previously defined external link. External links are URLs. The configuration of a drill-through target includes specifying parameters in the URL that can be substituted with values derived from columns in the view definition.

After configuration, a drill-through target can be accessed from the **Activities** submenu in IBM Cognos Real-time Monitoring Dashboard for any dashboard object that is based on the view defined in the configuration of the **Drill Through Target**.

For more information about using drill-through targets, see the *IBM Cognos Real-time Monitoring Dashboard User Guide*.

**Procedure**

1. On the **Workbench** tab, create an external link for the drill-through target, as described in "Creating external links" on page 51.
2. Click **Drill Through Targets** in the left pane.
   The right pane refreshes to show the **Drill Through Targets** tab.
3. Click **Create Drill Through Target**.
4. In the **Create Drill Through Target** dialog box, specify the following properties:

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select an External Link</td>
<td>Lists the external links that are configured for IBM Cognos Real-time Monitoring.</td>
</tr>
<tr>
<td>Select the data that this report will be associated with</td>
<td>Opens a secondary dialog box that lists the configured views with which you can associate the report.</td>
</tr>
<tr>
<td>Status</td>
<td>Indicates whether the report is available when a dashboard is being created with the specified view.</td>
</tr>
<tr>
<td>Drill Through Target Name</td>
<td>Specifies the name of the report as it will appear on the <strong>Drill Through Targets</strong> tab after the drill-through target report is created.</td>
</tr>
<tr>
<td>Description</td>
<td>Specifies the text description of this object.</td>
</tr>
<tr>
<td>Property</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Dynamic Report Parameters</strong></td>
<td>Specifies the column from which you can assign values to the variable parameters in the URL that is specified in the external link.</td>
</tr>
<tr>
<td></td>
<td>For example, consider the case in which the external link defines a base URL for an IBM Cognos report, and the base URL needs the following arguments:</td>
</tr>
<tr>
<td></td>
<td>ui.tool=CognosViewer</td>
</tr>
<tr>
<td></td>
<td>ui.object=content/folder[@name='Demo Report']/report[@name='Inventory Levels by Retailers']</td>
</tr>
<tr>
<td></td>
<td>ui.action=run</td>
</tr>
<tr>
<td></td>
<td>run.outputFormat=PDF</td>
</tr>
<tr>
<td></td>
<td>The base URL is:</td>
</tr>
<tr>
<td></td>
<td>http://server_name/ibmcognos/cgi-bin/cognos.cgi?b_action=xts.run&amp;m=portal/launch.xts&amp;ui.tool=CognosViewer &amp;ui.object=content/folder[@name='Demo Report']/report[@name='Inventory Levels by Retailers']&amp;ui.action=run &amp;run.outputFormat=PDF</td>
</tr>
<tr>
<td></td>
<td>You can create multiple parameters, as the search criteria allow.</td>
</tr>
</tbody>
</table>
**Property** | **Description**
--- | ---
**Constant Report Parameters** | Specifies argument values that you can assign to parameters in the URL that are specified in the external link. For example, consider the case in which the external link defines a base URL for an IBM Cognos report, and the base URL needs the following arguments:

- `ui.tool=CognosViewer`
- `ui.object=content/folder[@name='Demo Report']/report[@name='Inventory Levels by Retailers']`
- `ui.action=run`
- `run.outputFormat=PDF`

The base URL is: `http://server_name/ibmcognos/cgi-bin/cognos.cgi?b_action=xts.run&m=portal/launch.xts`

When the drill-through target report is called from the dashboard object, the values specified for the **Dynamic Report Parameters** and **Constant Report Parameters** are used in the URL. The actual URL request is constructed as follows:

```
http://server_name/ibmcognos/cgi-bin/cognos.cgi?b_action=xts.run&m=portal/launch.xts&ui.tool=CognosViewer
&ui.object=content/folder[@name='Demo Report']/report[@name='Inventory Levels by Retailers']&ui.action=run
&run.outputFormat=PDF
```

5. Save the values.

The dialog box closes, and the new drill-through target now appears on the **Drill Through Targets** tab.

---

**Exporting selected objects**

You can export selected IBM Cognos Real-time Monitoring objects. This is useful when exporting objects from a development environment to a production environment.

The export action writes the object information to one of the following:

- XML files in a directory on the server.
- A single compressed JAR file on the server or local client computer.

You can export a single object, an object and its dependencies, an object and its requirements, or an object and its requirements and dependencies.

The dependencies of an object are other objects that depend on your selected object in order for them to be valid. For example, when choosing to export a view with its dependencies, your export operation also includes all views directly derived...
from the view that you selected and all scenarios, rules, alerts, and reportlets that reference the view. For more information, see “Object dependencies and requirements” on page 33.

The requirements of an object are the objects that your selected object requires to be valid. For example, when choosing to export a cube with its requirements, your export operation also includes the dimensions, lookup tables, agents, views, and data streams associated with the cube.

For information about export and import of entire Cognos Real-time Monitoring metadata, see “Importing and exporting metadata” on page 82.

**Procedure**

1. On the **Workbench** tab, select the object or objects that you want to export.
2. From the **Activities** drop-down menu, click **Export objects**.
3. In the **Selective Export** dialog box, from the **Operations** drop-down menu, select one of the following types of export:
   - **Export metadata to a directory on the server**
     Selecting this option exports the metadata to the directory that you specify in the **Server Location** field. Type the full path to the directory where you want to export the metadata. The directory must exist, and you must have permission to write to the specified directory. Also, two directories are created in your specified directory. One subdirectory is named latest. The other is the timestamp of your export. If the directories already exist, they are reused.
   - **Export metadata to a JAR file on the server**
     Selecting this option exports the metadata to a JAR file in the directory you specify in the **Server Location** field. Type the full path to the directory where you want to export the metadata. The directory must exist, and you must have permission to write to the specified directory.
     The filename on the server is _export.jar. If _export.jar already exists, it is overwritten.
   - **Export metadata to a JAR file (download)**
     Selecting this option exports the metadata to a JAR file on the client. Use the browser download dialog box to identify the location (and optionally change the file name) on your local machine.
4. From the **Export Options** drop-down menu, specify what you want to include in the export.
   Choose one of the following options:
   - **Export entire project**
     Exports the selected objects, and the dependencies and requirements of all related objects.
   - **Export sub-project**
     Exports the selected objects with their requirements and dependencies, and the requirements of those dependencies.
   - **Export with requirements**
     Exports the selected objects and their requirements.
   - **Export with dependencies**
     Exports the selected objects and their dependencies. The requirements of dependencies are not exported.
   - **Export with dependencies and requirements**
Exports the selected objects with their dependencies and requirements. The requirements of dependencies are not exported.

- **Export only selected objects**
  
  Exports only the objects that you select. The dependencies and requirements of those objects are not exported.

5. Optionally, select **Include permissions on these objects**.

   This option is useful when you want to avoid reassigning permissions for your objects after you import them.

6. Click **Preview Export List** to ensure that you selected the proper export options.

7. Click **OK** to complete the export.
Chapter 5. Managing system administration

All system administration tasks are performed using the Administration Console. This section describes the configurations that you can define and change, and the activities that you can perform using the Administration Console.

Managing users

Each user that interacts with IBM Cognos Real-time Monitoring has an account in the system. The Users list in the Administration Console provides access to the user accounts.

Cognos Real-time Monitoring supports the following types of users:
- Internal
  The accounts for these users are created in Cognos Real-time Monitoring Workbench. You can create, view, edit, or delete the internal user accounts from the Users list in the Administration Console. When you choose the Internal authentication method, your system supports only internal users. The system deletes external users, if they exist.
  Tip: You can view and edit your own account information by clicking Account Settings in the upper-right corner of the application page.
- External
  The accounts for external users are created in the supported LDAP directory servers, such as IBM Tivoli®, Sun ONE, or Microsoft Active Directory, or in the directory servers supported by IBM Cognos Business Intelligence (BI). External users are added to the system when you choose the LDAP/ADS or IBM Cognos Business Intelligence authentication methods and synchronize the users. The system retains internal users, if they exist.
  External user accounts appear in the Users list in the Administration Console. You can add access permissions for the Cognos Real-time Monitoring objects to those users, and assign the required delivery profiles to them. You can also make them members of the internal roles. You cannot delete external users, or change their password and membership in the external roles.

For more information, see "User Management and Authentication" on page 80.

All internal and external users have read permissions for the user object type and can view all user accounts.

To create a new internal user, you need create permissions for the user object type. To edit or delete user account information, you need read and write permissions for that account.

All account management activities for external users are performed in the directory servers. The changes appear in Cognos Real-time Monitoring Workbench after the users are synchronized.

For more information, see the IBM Cognos Real-time Monitoring Workbench Modeling Reference.
Procedure
1. Click the Administration Console tab.
2. Click Users to see the list of all users currently defined in the system.
   You can perform the following tasks on user accounts:
   • Create a new user account.
     Click New User. On the User Details tab, specify the user name and password, and add the roles to which the user needs to belong. On the Delivery Profiles tab, specify the delivery profiles that define how to deliver alerts and data feeds to the user. On the Access Permissions tab, specify the access permissions to objects in Cognos Real-time Monitoring that the user needs.
   • Edit an existing user account.
     Double-click the user name in the list. The Edit User dialog box appears. For all users, you can change the access permissions and delivery profiles. For internal users only, you can change the user name and password, and add or remove roles.
   • Delete an internal user.
     Select one or more users in the list, and click Delete User(s). You cannot delete the rtmadmin user account, or your own account. Tip: For external users, the Delete User(s) button is disabled.
   • View or specify access permissions the user object.
     Select a user from the list, and click Permissions. View or specify the users or roles that can modify the definition of this user account. You can add new users and roles by clicking Add User or Add Role.

Managing roles
Roles define the minimum sets of permissions associated with users. Using roles, you can quickly assign the same permissions to an object, or a set of objects. The Roles list in the Administration Console shows the current roles in the system.

For more information, see the topic about roles in the IBM Cognos Real-time Monitoring Workbench Modeling Reference.

Cognos Real-time Monitoring supports the following types of roles:
• Internal
  These roles are created in Cognos Real-time Monitoring Workbench. You can create, view, edit, or delete the internal roles from the Roles list in the Administration Console. When you choose the Internal authentication method, your system supports only internal roles. The system deletes external roles, if they exist.
• External
  These roles are created in the supported LDAP directory servers, such as IBM Tivoli, Sun ONE, or Microsoft Active Directory, or in the directory servers supported by IBM Cognos Business Intelligence (BI). External roles are added to the system when you choose the LDAP/ADS or IBM Cognos Business Intelligence authentication methods and synchronize the users. The system retains internal roles, if they exist.
  External roles appear in the Roles list in the Administration Console. You can assign access permissions to the Cognos Real-time Monitoring objects for those roles. You cannot delete external roles, or change their membership properties.
Note: Some directory servers support groups instead of roles. The groups are converted to roles in Cognos Real-time Monitoring Workbench during the synchronization process.

For more information, see "User Management and Authentication" on page 80.

To see which roles a user belongs to, see the user account information, as documented in "Managing users" on page 59. To see which roles you belong to, view your user account by clicking Account Settings in the upper-right corner of the application page.

All management activities for external roles are performed in the directory servers. The changes appear in Cognos Real-time Monitoring Workbench after the synchronization process.

For more information, see the IBM Cognos Real-time Monitoring Workbench Modeling Reference.

Procedure
1. Click the Administration Console tab.
2. Click Roles to see the list of all roles in the system.
   You can perform the following tasks on roles:
   • Create new internal roles.
     Click New Role. Specify the role name and description. On the Access Permissions tab, specify the access permissions to objects in Cognos Real-time Monitoring that members of this role need. On the Members tab, add the users or roles that need to be members of this role.
     For more information, see the topic about access permissions in the IBM Cognos Real-time Monitoring Workbench Modeling Reference.
   • Modify internal and external roles.
     Double-click the role name in the Roles list. The Edit Role dialog box appears.
     For internal roles, you can change the role name, description, access permissions, and membership.
     For external roles, you can only change access permissions.
   • Delete internal roles.
     Select one or more roles in the Roles list, and click Delete Role(s).
     Tip: For external roles, the Delete Role(s) button is disabled.
   • View or specify access permissions for the role object.
     Select a role from the list, and click Permissions. View or specify the users or roles that can modify the definition of this role. You can add new users and roles by clicking Add User or Add Role.
     For more information, see the topic about permissions in the IBM Cognos Real-time Monitoring Workbench Modeling Reference.

Viewing the external processes list

External processes are external web service methods that receive specific alert messages when initiated by a user viewing the message in the dashboard. IBM Cognos Real-time Monitoring publishes the alert message and any attached reportlets as an XML document to the service.
The External Processes list in the Administration Console provides access to the processes. From this list, you can perform the following tasks:

- Create processes by clicking New Process and defining the process attributes.
- Modify a process by double-clicking its name in the list.
- Delete processes by selecting one or more of them, and clicking Delete Processes.
- Disable or re-enable processes by clicking their status indicator.

For more information, see the IBM Cognos Real-time Monitoring Workbench Modeling Reference.

### Working with system settings

You can modify the system settings for IBM Cognos Real-time Monitoring using the Administration Console. The system settings specify how the Cognos Real-time Monitoring components are configured for normal operation.

**Note:** The LDAP settings LDAP Role Mapping, LDAP Synchronization, and LDAP User Mapping are only available when you select LDAP Authentication in User Management and Authentication.

**Procedure**

1. On the Administration Console tab, click System Settings.
2. From the Configure drop-down list, choose the setting to change. The parameters for each setting are described later in this chapter.
3. Save the changes for the specific setting by clicking OK or Apply. Click OK to save the changes and exit System Settings, or click Apply to save the changes and continue working in System Settings.

### IBM Cognos Workspace Integration

Use this system setting to configure the integration between IBM Cognos Real-time Monitoring and IBM Cognos Workspace.

Set up the following properties when configuring this functionality.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Name</td>
<td>Specifies the root folder in IBM Cognos Workspace for the Cognos Real-time Monitoring dashboard objects and their folders. This folder appears in the Content pane in IBM Cognos Workspace.</td>
</tr>
<tr>
<td>Description</td>
<td>Specifies the text that appears when the pointer is positioned over the root folder specified for the Display Name parameter.</td>
</tr>
</tbody>
</table>
### Parameter Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM Cognos Real-time URL</td>
<td>Specifies the server URL to which IBM Cognos Workspace connects to display the Cognos Real-time Monitoring content. The URL format is <a href="http://servername/urlcontext">http://servername/urlcontext</a>. For example, the URL can be http://my_server/realtime.</td>
</tr>
<tr>
<td>Download contribution file</td>
<td>Specifies the download link to the Realtime_contribution.atom file. Save the file to the c10_location/configuration/icd/contributions/contrib directory, where c10_location specifies the IBM Cognos BI installation location.</td>
</tr>
</tbody>
</table>

## Checkpoint Configuration

Checkpoint Configuration allows you to enable a checkpoint, run a checkpoint, or create a schedule for checkpoints.

A checkpoint is a snapshot of the state of the system, similar to a backup. A recovery log tracks event data that has entered the system since the last checkpoint. The recovery helps to rebuild the state of the system in case of an abnormal shutdown: one where the normal shutdown checkpoint was unable to run or complete. These features restore the state of the system when the system restarts.

### Checkpoint tips

To reduce the size of the recovery logs, disable recovery features if you don't need them. If recovery is not necessary, for example when every event loads all the data it needs when the event starts up, then you can disable recovery logging. The checkpoints continue to be saved after you disable the recovery features.

- In the system settings, clear the Enable Recovery On Restart checkbox if you do not need to restore the system state on restart.
- In each data stream that does not need recovery log data stored, clear the Enable Recovery checkbox.

Use checkpoint data to evaluate memory-intensive views.

- Examine the checkpoint files, usually located here: install_location/realtime/var/checkpoints, where install_location specifies the IBM Cognos Business Intelligence installation location. The larger files use the most memory. The filenames correspond to the globally unique identifier (GUID) that represents the object in metadata, which can be found by performing an export from the Application Workbench.
- After exporting, open the Views folder and find the view with the same GUID as the large file. You can find the name and definition of the object in the XML definition file. Focus on these objects to optimize memory.

Continue to use checkpoints, even if you do not use recovery. For development systems, checkpoint often, for example every 15 minutes. For low production systems, checkpoint every 30 minutes. For high-load productions systems,
checkpoint every 15 or 20 minutes. If checkpoints stop working, it can mean that
the data streams take too long to process. This can occur because lookup tables are
not optimized as described in the preceding pair of bullets.

What is saved
The snapshot records the state of all objects defined in memory except disabled or
invalid objects. Every object in an event is saved with the same event.

The recovery log tracks new event details that occurred after the checkpoint
started. However, only for those events for which recovery logging is enabled with
the Log event data for recovery option. When a new checkpoint starts, a new
recovery log is created, and the old log is purged once the snapshot finishes.

For more information, see the IBM Cognos Real-time Monitoring Workbench Modeling
Reference.

What is recovered
When the system restarts, and the Recover State on Restart option of the System
Control is on, the system restores its state consistent to the last checkpoint.

If a recovery log exists, the system also replays the logged events, possibly raising,
lowering, and firing events.

The replay restores the system to a state consistent with the current lookup table
data. If dependent lookup table data has changed since the last checkpoint, the
new data is used. Similarly, if the lookup table data is missing, views might not
match their state prior to the checkpoint.

Because time-based moving windows are restored to the state at the time of the
snapshot and recovery, a restored view might contain stale information. For
example, if a window tracks events for the last hour, the restored view contains the
data from the last hour when the snapshot and recovery were recorded, not the
current system time. However, the next event that updates the view discards all
old information.

What is not saved
Lookup Table data in the data cache is not saved. After a restart, the lookup table
cache is empty.

Alerts with pending Holds For conditions where the conditions have
not been met are not saved either. For example, if an event met a rule condition,
but the associated alert had a Holds for condition that had not been met, such as 1
hour left on a 2-hour hold, that state is not saved and the pending alert is
discarded when the system shuts down.

Disabled or invalid objects are not saved because they do not have a state.

Error conditions
When schedules overlap, the subsequent checkpoints are ignored. For example, if
one schedule that is set to run hourly overlaps with one set to run daily, the first
one runs and the second is ignored without error.

If an error occurs when creating the snapshot, the entire checkpoint is invalid and
an error message is logged. If this happens during shutdown, the shutdown
continues without creating a valid snapshot. If this happens during a scheduled checkpoint, the error is logged and no automatic checkpoint activity occurs until the next scheduled activity.

If the recovery log encounters errors during startup, such as invalid permission on the drive, the startup fails and the system shuts down. Errors during runtime, such as running out of space during logging, stops all agents receiving data streams, a checkpoint occurs, and the servers shut down.

Email alert notifications might be duplicated if the system shuts down abnormally while sending the notifications. The system writes a warning message to the system log under such conditions. Also, if the SMTP e-mail server is terminated abnormally, the recipient might never receive the alert.

By default, the system begins checkpointing and recovery logging when the system starts. You can disable this feature for future restarts from the System Settings dialog box. However, to disable it when starting the servers, include the following option when starting the application server:

"-Dcom.cogno.obi.property.Recover State on Restart"

The first time you start the servers, you can identify a recovery logging directory by including the following option on the command-line that starts the application server:

"-Dcom.cogno.obi.property.Recovery Log Directory=/cq_logs"

**Checkpoint Configuration**

The following table describes the available checkpoint and recovery parameters.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable Checkpoint</td>
<td>Causes checkpoints to occur on defined schedules. Regardless of this setting, checkpoints always occur during normal server shutdown, and a checkpoint occurs whenever the system starts up and no previous checkpoints have occurred.</td>
</tr>
<tr>
<td>Run Checkpoint Now</td>
<td>Executes an immediate checkpoint, regardless of the schedule.</td>
</tr>
<tr>
<td>Checkpoint Schedule</td>
<td>Lists the checkpoint schedules. Add, edit, or remove schedules from this list by clicking Add Schedule, Edit Schedule, or Remove Schedule.</td>
</tr>
<tr>
<td></td>
<td>Months that do not include the specified day, such as the 31st in June, are ignored.</td>
</tr>
<tr>
<td>Recovery Log Directory</td>
<td>Specifies the directory that contains the recovery and checkpoint log files. The log file name is DEFAULTRECOVERYLOGGER_&lt;n&gt;, where &lt;n&gt; represents a number that differentiates the log files.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> If the source of the data stream is a flat-file agent, consider pointing to a different server to improve input/output performance.</td>
</tr>
</tbody>
</table>
**Custom Branding**

Custom branding allows you to change the header that appears in IBM Cognos Real-time Monitoring at the top of the application page, both in Cognos Real-time Monitoring Dashboard and in Cognos Real-time Monitoring Workbench. The image for the header must be in the GIF, JPG, or PNG format, and it must be sized as specified in the labels on the Custom Branding tab. You must change either all of the images or none.

**Encryption Configuration**

Use this page to specify the keystore passwords and keystore location for IBM Cognos Real-time Monitoring.

Cognos Real-time Monitoring encrypts passwords with asymmetric encryption that consists of a public key and a private key. The private key is used for encryption. The public key is used for decryption. Both keys are kept in the Java KeyStore. For information about the KeyStore class, see the Java documentation.

To provide additional security, the private key is placed in a certificate, and the certificate is stored in the keystore. Cognos Real-time Monitoring uses two keystores: one for the administrator and one for users. Keystore entries, the keys and certificates, are accessed through a unique alias, which is also used to create the public/private key pair. The aliases for Cognos Real-time Monitoring are:

- CQ_USER_PASSWORD_ENC
  This alias encrypts the keys for customer created users.
- CQ_ADMIN_PASSWORD_ENC
  This alias encrypts the keys for the RTMadmin and system_monitor users.

At start-up, Cognos Real-time Monitoring uses the administrator keystore. This keystore is provided on the installation CD. The file is admin.jks. You must specify its location with the Admin Keystore Location property in the file that contains the system settings properties. For more information about the file that contains the system settings properties, see the IBM Cognos Real-time Monitoring Installation and Configuration Guide.

After start-up, you must provide the keys for the user keystore and specify the keystore location. A sample keystore user_sample.jks is provided on the installation CD. To create your own keys, the administrator must use the keytool utility. For information about the keytool utility, check the vendor documentation.

If you create a new keystore, users are automatically migrated from the old keystore to the new one the next time they log in to the IBM Cognos Real-time Monitoring Dashboard. New users are always added to the user keystore.

If your are changing your administration or user keystore, make sure that the old keystore remains in the same location with the same name until after all users have been migrated. If you are changing the location of your admin keystore, you must specify the same location in your system settings properties file.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrator Keystore Location</td>
<td>Specifies the location and name of the administrator keystore. You can set the administrator keystore location at start-up in the properties file for system settings. For more information, see the installation and configuration documentation.</td>
</tr>
<tr>
<td>Administrator Keystore Password</td>
<td>Specifies the administrator keystore password. This password is used when changing the name or location of the admin keystore. The default admin keystore password is 40fd2442fa.</td>
</tr>
<tr>
<td>Administrator PrivateKey Password</td>
<td>Specifies the administrator password for accessing the Cognos Real-time Monitoring Workbench. The default administrator private key password is 40fd2442fa.</td>
</tr>
<tr>
<td>Keystore Location</td>
<td>Specifies the location and name of the user keystore.</td>
</tr>
<tr>
<td>Keystore Password</td>
<td>Specifies the user keystore password. This password is used when changing the name or location of the user keystore. The default user keystore password is 8deb5102f8.</td>
</tr>
<tr>
<td>User PrivateKey Password</td>
<td>Specifies the user password that users will use to access the Cognos Real-time Monitoring Dashboard. The default user private key password is 8deb5102f8.</td>
</tr>
</tbody>
</table>

**Execution Throttling**

Use this page to set the monitoring rate, which is the rate at which events are published and propagated into the view system. Throttling adjusts the publication rate when levels exceed the propagation rate by a specified threshold. Use the settings to reduce the amount of memory that Cognos Real-time Monitoring consumes when storing unprocessed events.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Throttling on Overproduction Enabled</td>
<td>Adjusts the publication rate for all event producers when they exceed the Event Threshold. This control does not affect the HTTP Post, web services, or system event logging event publishers. Use the &quot;Memory Monitoring&quot; on page 76 to adjust the rate of those event publishers.</td>
</tr>
<tr>
<td>Throttling on Low Memory Enabled</td>
<td>Adjusts the publication rate for all event producers when the amount of available memory is low. See &quot;Memory Monitoring&quot; on page 76 for details about the memory thresholds.</td>
</tr>
<tr>
<td>Event Threshold</td>
<td>Throttles an event producer when the number of newly published events equals the number of not yet processed events. Throttling stops when the producer backlog falls below this level.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Publisher Sample Interval</td>
<td>Specifies in seconds how often to examine the count of over-published events. Samples regardless of the Publisher Sample Event Count setting. Set to zero (0) to turn this off.</td>
</tr>
<tr>
<td>Publisher Sample Event Count</td>
<td>Specifies how frequently, in event counts, to examine the count of over-published events. Samples regardless of the Publisher Sample Interval setting. Set to zero (0) to turn this off.</td>
</tr>
<tr>
<td>Average Smoothing Factory</td>
<td>Specifies smooths fluctuations in the overflow sampling. High values are more sensitive to fluctuations than lower values. Do not change this setting without specific direction from technical support.</td>
</tr>
<tr>
<td>Deviation Multiplier</td>
<td>Adjusts how rapidly an event producer is throttled relative to the event source overflow. High values are faster than lower values. Do not change this setting without specific direction from technical support.</td>
</tr>
<tr>
<td>Backlog Weight</td>
<td>Influences how previous throttling actions affect current and future actions. Do not change this setting without specific direction from technical support.</td>
</tr>
</tbody>
</table>

**Geography Maps**

Use this page to configure geography maps. The creation of geography maps is enabled when the Use this for Geography Charts check box is selected when configuring a dimension.

You can use any mapping service that has an API similar to the Google API, for example, http://ditu.google.cn that provides Chinese maps.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geo Cache Size</td>
<td>Specifies the number of geocodes (addresses) to cache. A geocode is added to the cache the first time it is used.</td>
</tr>
<tr>
<td>Geocoder Thread Pool Size</td>
<td>Specifies the number of threads available for simultaneous geocode requests.</td>
</tr>
<tr>
<td>Base URL for Geocoder</td>
<td>Specifies the URL to use for obtaining mapping information. For example, if you use Google Maps, the URL is <a href="http://maps.google.com/maps/geo">http://maps.google.com/maps/geo</a>?</td>
</tr>
<tr>
<td></td>
<td>If this parameter is missing, an error message appears.</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td><strong>Description</strong></td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Geocode Key</td>
<td>Translates the address to longitude and latitude coordinates. For example, if you use Google Maps, obtain the key from <a href="http://www.google.com/apis/maps/signup.html">http://www.google.com/apis/maps/signup.html</a> For Google Maps, this parameter is the same as Mapping Key.</td>
</tr>
<tr>
<td>Geocoder Classname</td>
<td>Specifies the Java class name that initializes geocoding and handles the retrieval of the latitude and longitude of a given address. If you use Google Maps, the class is com.cognos.obi.maps.GoogleGeocoder</td>
</tr>
<tr>
<td>Mapping URL</td>
<td>Specifies the mapping URL. For example, if you use Google Maps, the URL is <a href="http://maps.google.com/maps">http://maps.google.com/maps</a>? If this parameter is missing, an error message appears.</td>
</tr>
<tr>
<td>Mapping Key</td>
<td>Specifies the mapping key that is used for accessing map graphics. For example, if you use Google Maps, obtain the key from <a href="http://www.google.com/apis/maps/signup.html">http://www.google.com/apis/maps/signup.html</a> For Google Maps, this parameter is the same as Geocode Key.</td>
</tr>
</tbody>
</table>

**IBM Cognos Business Intelligence**

Use this page to import user information from IBM Cognos Business Intelligence (BI) in order to enable single sign-on (SSO) between IBM Cognos Real-time Monitoring and IBM Cognos BI.

Set up the following properties when configuring this functionality.

<table>
<thead>
<tr>
<th><strong>Parameter</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM Cognos Dispatch URL</td>
<td>Specifies the IBM Cognos BI dispatcher URI, as specified in IBM Cognos Configuration, under <strong>Gateway Settings</strong> for the <strong>Environment</strong> category. For example, http://cognos_bi_server_name:9300/p2pd/servlet/dispatch/ext</td>
</tr>
<tr>
<td>Directory Administrator Username</td>
<td>Specifies the directory administrator user ID for the namespace that is used for authentication to IBM Cognos BI server. The directory administrator configures this namespace in IBM Cognos Configuration.</td>
</tr>
<tr>
<td>Directory Administrator Password</td>
<td>Specifies the directory administrator password for the namespace that authenticates to IBM Cognos BI server.</td>
</tr>
<tr>
<td>Directory Administrator Namespace</td>
<td>Specifies the name of the namespace that authenticates to IBM Cognos BI server.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Cookie Domain</td>
<td>Specifies the cookie domain setting that is specified in IBM Cognos Configuration, in global settings, on the General tab, under Cookie Settings.</td>
</tr>
<tr>
<td>Cookie Path</td>
<td>Specifies the cookie path that appears in the URL of both IBM Cognos BI and IBM Cognos Real-time Monitoring after the host name. This is the same path that is specified in IBM Cognos Configuration, in global settings, under Cookie Settings on the General tab. For example, if the IBM Cognos BI URL is myserver.ibm.com/ibm/cognos, and the IBM Cognos Real-time Monitoring URL is myserver.ibm.com/ibm/cognos/realtime, the Cookie Path can be /ibm/cognos, /ibm, or /l. The forward slash character (/) is always a valid value for this setting.</td>
</tr>
</tbody>
</table>

**Java Database Connectivity Access to Views and Cubes**

Use this page to configure the Java Database Connectivity (JDBC) driver settings. The JDBC driver enables access to views and cubes when accessing IBM Cognos Real-time Monitoring programmatically or through third-party tools that are based on the JDBC API.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JDBC Port</td>
<td>The TCP port on which the streaming database should listen for JDBC connections. Enter 0 to disable JDBC access.</td>
</tr>
<tr>
<td>JDBC ResultSet Fetch Size</td>
<td>The desired ResultSet fetch size for the JDBC connection. If the value is set to 0, the JDBC driver ignores the value and is free to make its own best guess as to what the fetch size should be.</td>
</tr>
<tr>
<td>JDBC Compression Level</td>
<td>Specifies the compression level if the ResultSet size reaches the JDBC compression threshold. The possible choices are:</td>
</tr>
<tr>
<td></td>
<td>• Best Speed Provides the fastest compression, but might not provide the best compression.</td>
</tr>
<tr>
<td></td>
<td>• Best Compression Provides the best compression, resulting in the smallest size.</td>
</tr>
<tr>
<td></td>
<td>• No Compression No compression occurs even if the threshold is reached.</td>
</tr>
<tr>
<td>JDBC Compression Threshold</td>
<td>The compression threshold of ResultSet size. A value of 0 means that the ResultSet should always be compressed.</td>
</tr>
<tr>
<td>JDBC Connection Timeout</td>
<td>The maximum idle time before a connection is closed. A value of 0 means no time-out. Therefore, the connection will not be automatically closed. The default value is 0.</td>
</tr>
</tbody>
</table>
Lightweight Directory Access Protocol

IBM Cognos Real-time Monitoring enables you to import user information from supported Lightweight Directory Access Protocol (LDAP) providers. Cognos Real-time Monitoring can be set up for scheduled synchronizations with the LDAP server to update the users and roles.

**Note:** A "role" in Cognos Real-time Monitoring maps to a "group" on the LDAP server. In the synchronization process, Cognos Real-time Monitoring adds or updates the users. LDAP groups are converted to roles in Cognos Real-time Monitoring. When roles are imported, they retain their LDAP user assignments.

Importation happens at the group level. Users are imported only if they are members of a targeted group. When a user is imported into Cognos Real-time Monitoring, a default e-mail User Profile called PrimaryEmail is created. You cannot modify this profile. When Cognos Real-time Monitoring synchronizes with the LDAP server, it uses this e-mail value to ensure that User Profile is consistent with the group memberships on the LDAP server.

When users are imported, they are assigned permissions based on the roles that they are assigned in the source directory. If Cognos Real-time Monitoring does not recognize a role, it creates the role and assigns a set of default permissions. You can modify the permissions later if necessary.

For more information about LDAP configuration, see the IBM Cognos Real-time Monitoring Installation and Configuration Guide.

**Lightweight Directory Access Protocol Role Mapping**

This section describes the role mapping parameters that determine which groups and roles are imported and synchronized. The parameters vary depending on the LDAP provider being used.

The following table lists the parameters and provides sample values for LDAP role mapping.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LDAP Role Base DN</td>
<td>Use the format appropriate to the indicated provider:</td>
</tr>
<tr>
<td></td>
<td>• Sun ONE: OU=Groups,DC=yourdomain,DC=com</td>
</tr>
<tr>
<td></td>
<td>• Active Directory: CN=Users,DC=yourdomain,DC=com</td>
</tr>
<tr>
<td></td>
<td>You can specify multiple Role Base DNs that allow you to choose the role to synchronize.</td>
</tr>
<tr>
<td></td>
<td><strong>Attention:</strong> Do not enter a blank line between rows.</td>
</tr>
<tr>
<td>LDAP Role Search Filter</td>
<td>Use the value appropriate to the indicated provider:</td>
</tr>
<tr>
<td></td>
<td>• Sun ONE: (&amp;(objectclass=groupOfUniqueNames))</td>
</tr>
<tr>
<td></td>
<td>• Active Directory: (&amp;(objectclass=group))</td>
</tr>
<tr>
<td>LDAP Role LoginID</td>
<td>Type &quot;cn&quot; for both Sun ONE and Active Directory.</td>
</tr>
</tbody>
</table>
Parameter | Value
--- | ---
LDAP Role Full Name | Type "displayname" for both Sun ONE and Active Directory.
LDAP Role Description | Type "description" for both Sun ONE and Active Directory.
LDAP Role Member | This is the name of the multi-value property that contains role members:
- Sun ONE: uniqueMember
- Active Directory: member
LDAP Role Member | Select one of the following options:
- **Distinguished Name**
  Choose this option if the role member properties identify users by distinguished names, such as
  "cn=jadmin,ou=people,dc=yourdomain,dc=com"
- **Login ID**
  Choose this option if the role member properties identify users by value of the property used as the Cognos Real-time Monitoring login ID.

**Lightweight Directory Access Protocol Synchronization**

During the synchronization process, Cognos Real-time Monitoring adds new roles to groups that appear on the LDAP server, and removes any roles whose groups have been removed from the LDAP server. To set the schedule for automatic synchronization, go to the User Management and Authentication page and use Synchronization Schedule for User Management Provider to set the time when a synchronization occurs. Set synchronization for a time when as few users as possible are logged in.

Users that were added manually are not affected by the synchronization, even if their roles are removed from the LDAP server. For more information, see "Manually Synchronizing with the Lightweight Directory Access Protocol server" on page 73.

You can only select LDAP Synchronization if you have set the LDAP/ADS authentication method in the User Management and Authentication page.

The following table lists the parameters and provides sample values for LDAP synchronization.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Lookup Table Factory</td>
<td>The Java Naming and Directory Interface (JNDI) through which Cognos Real-time Monitoring connects to the LDAP server. The default value is com.sun.jndi.ldap.LdapCtxFactory.</td>
</tr>
<tr>
<td>LDAP Server</td>
<td>The DNS name or IP address of the LDAP server.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Value</td>
</tr>
<tr>
<td>-------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>LDAP Port</td>
<td>Port on which the LDAP server is running. The default is 389. However, if you select the SSL option, the port value is likely to be 636, depending on your LDAP server configuration.</td>
</tr>
<tr>
<td>LDAP Use SSL</td>
<td>Select or clear. Select this option when the LDAP server is configured for SSL. This may affect the LDAP port setting, as described above.</td>
</tr>
<tr>
<td>LDAP Authentication</td>
<td>There are three options:</td>
</tr>
<tr>
<td></td>
<td>- <strong>Simple</strong></td>
</tr>
<tr>
<td></td>
<td>- <strong>Compare Encrypted Password</strong></td>
</tr>
<tr>
<td></td>
<td>- <strong>SASL</strong> (Simple Authentication and Security Layer)</td>
</tr>
<tr>
<td></td>
<td>Select this option for Sun ONE.</td>
</tr>
<tr>
<td>LDAP Principal DN Prefix</td>
<td>For the simple authentication method, this text is inserted before the user's login name. For LDAP servers that require DN login, set this to the appropriate property value plus the equal sign (&quot;cn=&quot;, &quot;uid=&quot;, and so on). For Active Directory, leave this blank.</td>
</tr>
<tr>
<td>LDAP Principal DN Suffix</td>
<td>For the simple authentication method, this text is inserted after the user's login name. For LDAP servers that require DN login, set this to the appropriate chain of values. For example: 'ou=Users,dc=domain,dc=net' For Active Directory, which requires simple login with e-mail address, set this to '@' plus the domain name of the Active Directory. For DN login, the first character of the prefix must be ','</td>
</tr>
<tr>
<td>LDAP Synchronization User DN</td>
<td>This user binds to the server and reads the lists of users and roles. For security purposes, use a user that has no permissions other than LDAP directory reading.</td>
</tr>
<tr>
<td>LDAP Synchronization Password</td>
<td>Password for above user.</td>
</tr>
<tr>
<td>LDAP Referral</td>
<td>Indicate to service providers how to handle referrals. Set the referral to one of the following:</td>
</tr>
<tr>
<td></td>
<td>- <strong>Follow</strong></td>
</tr>
<tr>
<td></td>
<td>Referrals are followed.</td>
</tr>
<tr>
<td></td>
<td>- <strong>Ignore</strong></td>
</tr>
<tr>
<td></td>
<td>Referral entries are ignored and returned as plain entries. This is the default.</td>
</tr>
<tr>
<td></td>
<td>- <strong>Throw</strong></td>
</tr>
<tr>
<td></td>
<td>Each referral encountered results in an exception.</td>
</tr>
</tbody>
</table>

**Manually Synchronizing with the Lightweight Directory Access Protocol server:**
You can manually synchronize IBM Cognos Real-time Monitoring with the LDAP server at any time. Synchronization requests are queued to prevent concurrent synchronizations.

**Procedure**

1. In **System Settings**, click **User Management and Authentication**.
2. From the **User Management and SSO provider** drop-down menu, select **LDAP/ADS**.
3. Click **Synchronize Now**.
   
   A message indicates that the synchronization is complete.
4. Click **OK** to save the changes and exit **System Settings**, or click **Apply** to save the changes and continue working in **System Settings**.

**Lightweight Directory Access Protocol User Mapping**

This section describes the user mapping parameters that determine which users are imported or synchronized, or imported and synchronized. The settings vary depending on the LDAP provider.

The following table lists the parameters and provides sample values for LDAP user mapping.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LDAP User Base DN</td>
<td>This is the root of the tree that is searched for users. You can specify multiple User Base DNs, allowing you to choose the users to synchronize. Do not enter a blank line between rows.</td>
</tr>
<tr>
<td>LDAP User Search Filter</td>
<td>Use the format appropriate to the indicated provider. For example, your LDAP server could have a special group for Cognos Real-time Monitoring users. This filter could then ensure that only users with this group membership are imported.</td>
</tr>
<tr>
<td>LDAP User LoginID</td>
<td>Use the value appropriate to the indicated provider. This value will become the user’s login ID in Cognos Real-time Monitoring.</td>
</tr>
<tr>
<td>LDAP User Full Name</td>
<td>Type “cn” for both Sun ONE and Active Directory.</td>
</tr>
<tr>
<td>LDAP User Description</td>
<td>Type “description” for both Sun ONE and Active Directory.</td>
</tr>
<tr>
<td>LDAP User Primary Email</td>
<td>Type “userPrincipalName”. This refers to the user’s email address in the LDAP.</td>
</tr>
<tr>
<td>LDAP User EncryptedPassword</td>
<td>Type “userPassword” for both Sun ONE and IBM Tivoli. Leave blank for Active Directory.</td>
</tr>
</tbody>
</table>

**Logging**

Use this page to configure how the system logs messages and identifies where the messages are logged.

For information about system logging, see “Understanding logging” on page 86. To identify which system modules generate log messages, see “Logging Levels” on page 76.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logging Directory</td>
<td>Specifies the directory to receive log messages written to files. By default, no directory is defined and no files are written.</td>
</tr>
<tr>
<td>Standard Out Log Level</td>
<td>Specifies logging level to standard output (stdout) on the server hosting IBM Cognos Real-time Monitoring. May be redirected to a console.</td>
</tr>
<tr>
<td>Summary File Log Level</td>
<td>Specifies the level of summary logging to the general log file named bam.log in the log directory. Use this destination for normal logging. Typically this is set to receive ERROR level messages.</td>
</tr>
<tr>
<td>Detailed File Log Level</td>
<td>Specifies the logging level for detailed logging. Use this log to track a problem without adding to the messages in the Summary file. The log file is bam_detailed.log in the log directory. Typically this is set to OFF.</td>
</tr>
<tr>
<td>System Appender Log Level</td>
<td>Specified the logging level for the system appender log, which publishes rows to the VC_SYSTEM_EVENTS data stream. This allows administrators to create views and rules that monitor Cognos Real-time Monitoring. Typically this is set to receive WARNING or ERROR level messages. Views and rules can then further filter messages as they arrive.</td>
</tr>
<tr>
<td>Logging Synchronicity</td>
<td>Specifies whether logging is synchronous or asynchronous, which determines whether messages are buffered before writing them to the log. The default mode is asynchronous: messages are buffered for a short time before output to the log destination. Although asynchronous logging is more efficient, there can be delays between when a message is logged and when a message becomes visible in the destination. The delay should be no longer than 10 seconds. If this delay is unacceptable, change the setting to synchronous, which outputs messages as they are published.</td>
</tr>
<tr>
<td>Log File Rollover Period</td>
<td>Specifies how often to close the log file and start a new one. Use this option to avoid creating overly large log files and to facilitate archiving the files. When a file is closed, it is renamed with a date-time appended to the filename. The choices are Monthly, Weekly, Daily, Twice per day, Hourly, and Per Minute. This field is only applicable when DailyRollingFileAppender is selected for Appender Class. Twice-per-day logs are closed at noon and midnight.</td>
</tr>
</tbody>
</table>

Chapter 5. Managing system administration
## Parameter Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(FileAppender) Max Log File Size (MB)</td>
<td>Specifies the maximum size (in Megabytes) of a log file before rollover occurs. When the file reaches the maximum size, a new log file is created. This field is only applicable when RollingFileAppender is selected for Appender Class.</td>
</tr>
<tr>
<td>(FileAppender) Max Number of Log Files</td>
<td>Specifies the maximum number of log files. When the maximum number of files is reached, the oldest log file is deleted. This field is only applicable when RollingFileAppender is selected for Appender Class.</td>
</tr>
<tr>
<td>Appender Class</td>
<td>Specifies which appender class to use. This field allows you to select one of two different policies for rolling over and archiving log files: rollover daily or rollover when the file reaches a size limit. To roll over daily, select DailyRollingFileAppender. For roll over based on file size, select RollingFileAppender. The Log File Rollover Period specifies how often to roll over the log when the DailyRollingFileAppender is selected. The (FileAppender) Max Log File Size (MB) setting specifies the maximum size of the log file before a new file is started. The (FileAppender) Max Number of Log Files setting specifies the maximum number of log files to maintain.</td>
</tr>
<tr>
<td>Additional Log4j Properties</td>
<td>Points to a log4j.properties file that modifies or augments the logging infrastructure, such as setting default values, configuring appenders, and modifying logger module levels. When this property is set, the file is loaded during startup and every minute thereafter. For details about this file, consult the Class PropertyConfigurator documentation in the Apache Jakarta Project.</td>
</tr>
<tr>
<td>Log File Prefix</td>
<td>Adds the specified prefix to the log files.</td>
</tr>
</tbody>
</table>

## Logging Levels
Use this page to configure and identify which system modules generate log messages, and what level of messages they publish.

For more information, see “Understanding logging modules” on page 88 and “Understanding logging” on page 86.

## Memory Monitoring
Use this page to configure how the system behaves when the amount of the virtual memory heap for the Java application becomes low on the server. When low memory conditions occur, these settings instruct the data stream producing agents to slow or stop publishing new events to the data stream.
The threshold settings identify percentages of memory consumed before the action occurs. For example, a setting of 85 means that there is 15% free memory available. Once consumed, memory crosses a threshold, and the threshold action remains in effect until the memory level falls below the triggering threshold.

Adjust the thresholds to be smaller only if your system frequently encounters out-of-memory conditions not trapped by the execution throttling. For more information, see “Execution Throttling” on page 67. Do not raise these levels without specific direction from technical support. Rather, you should increase the memory on the server or off-load to other servers processes that are not IBM Cognos Real-time Monitoring processes.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory Monitor Interval</td>
<td>Frequency (in seconds) at which to look at memory levels. Disable sampling by setting the interval to zero (0).</td>
</tr>
<tr>
<td>Low Memory Threshold</td>
<td>Slows event production and instructs the system logger to discard debug- and information-level messages when this percentage of memory is consumed.</td>
</tr>
<tr>
<td>Dangerous Memory Threshold</td>
<td>Impedes event production and restricts the system logger to recording fatal errors only when this percentage of memory is consumed.</td>
</tr>
<tr>
<td>Critical Memory Threshold</td>
<td>Blocks event production and randomly sheds system logging events when this percentage of memory is consumed.</td>
</tr>
</tbody>
</table>

The thresholds apply to the amount of memory that the application server allocates. It is possible to cross a threshold for the current memory allocation, but not be near the same threshold for maximum memory available to the server. Normally, the application server allocates more memory before a threshold is crossed. However, for optimum performance of this feature, you should set the minimum virtual memory setting (ms) of the application server to be the same as its maximum (max) setting.

**Notifications**

Use this page to set limitations on the number of alerts that can be set during a specified time interval.

For example, if you set the maximum number of alerts to 100 and the interval to 30 minutes, the alerts stop after the 100th alert. You must enable the alert manually to continue sending the alert. These settings are per defined alert.

Set the following properties:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alert Acknowledgement URL</td>
<td>A URL to include in the alert.</td>
</tr>
<tr>
<td>Maximum Alerts To Be Fired Per Interval</td>
<td>Specifies the maximum number of alerts that you can set during the defined interval period.</td>
</tr>
</tbody>
</table>
### Parameter Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval Size</td>
<td>Duration of the interval in number of time units. Units are in seconds or minutes, depending on the Interval Units setting.</td>
</tr>
<tr>
<td>Interval Units</td>
<td>Set to seconds or minutes as desired.</td>
</tr>
</tbody>
</table>

### Session Time-out Configuration

This page allows you to set the time-out period for IBM Cognos Real-time Monitoring. You can also specify a specific time-out for a group of users. When the session time-out occurs, IBM Cognos Real-time Monitoring displays a window that informs the user that the session has expired and allows the user to reenter the user name and password. Session time-out does not apply to the Anonymous user.

Specify the following parameters:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default Session Timeout</td>
<td>Specifies how long Cognos Real-time Monitoring can be idle before users must log in again. Setting the default session timeout to 0 indicates that user sessions do not time out. The default is 60 minutes.</td>
</tr>
<tr>
<td>Alternate Session Timeout</td>
<td>Specifies how long IBM Cognos Real-time Monitoring can be idle before a specified list of users must log in again. The value that you specify for the alternate session timeout overrides the default session timeout for these users. Setting the alternate session timeout to 0 creates an infinite session for those users included in the user list for session timeout. The default value is 60 minutes.</td>
</tr>
<tr>
<td>User List for Session Timeout</td>
<td>Specifies the users to which the alternate session timeout applies. To add users, click Add. To remove a user, select the user then click Remove User.</td>
</tr>
</tbody>
</table>

### Simple Mail Transfer Protocol Configuration

The simple mail transfer protocol (SMTP) configuration specifies how IBM Cognos Real-time Monitoring connects to the mail server that delivers email notifications. The server is external to IBM Cognos Real-time Monitoring. Contact your e-mail system administrator to set up an account for IBM Cognos Real-time Monitoring.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMTP Host</td>
<td>Name of the e-mail host that provides the transport. A typical name might look like this: mail.mydomain.com. Specify the port number after the address. For example server.domain.com:2500. If you do not specify a port number, the default port is 25.</td>
</tr>
<tr>
<td>SMTP From address</td>
<td>Address that appears in the From field for all e-mail messages sent by the system.</td>
</tr>
</tbody>
</table>
### System Control

Use this page to administer the operation of the IBM Cognos Real-time Monitoring installation.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMTP User</td>
<td>User name that the system uses to access the transport.</td>
</tr>
<tr>
<td>SMTP Password</td>
<td>Password that validates the user to the transport.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recover State on Restart</td>
<td>Loads the last checkpoint data when the server restarts. Turn this off to start with no checkpoint data. For more information about checkpoints, see <a href="#">Checkpoint Configuration</a></td>
</tr>
<tr>
<td>Seconds Before Starting Pollers</td>
<td>How long to wait before the data stream pollers start looking for new data. This delay gives developers time to disable events on restart before they begin feeding data into the data stream.</td>
</tr>
</tbody>
</table>

### Thread Configurations

You can view thread configurations in the **Thread Configuration** window.

IBM Cognos Real-time Monitoring uses execution threads that allow the system to process views, alerts, rules, and lookup table queries in parallel (multiple threads at the same time) when running on multiple CPU hosts. These parameters tune the thread processing.

**Note:** Do not change these parameters without direction from technical support.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Runtime Execution Threads</td>
<td>Count of processing threads to use. Increase this value only when using four or more CPUs. The default is 8.</td>
</tr>
<tr>
<td>Maximum Dequeue Batch Size</td>
<td>Count of processes to extract from the waiting pool. The default is 5.</td>
</tr>
<tr>
<td>Maximum Dequeue Block Wait in Milliseconds</td>
<td>When to check for missed extractions. The default is 50.</td>
</tr>
<tr>
<td>Number of Web Application Background Threads</td>
<td>The maximum number of threads can that you can run in the background for a web application.</td>
</tr>
</tbody>
</table>

### User Interface

Use this page to specify user interface settings for all users.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum View Snapshot Rows Returned</td>
<td>The greatest count of rows to display when showing the contents of a view. Zero (0), the default, is unlimited.</td>
</tr>
</tbody>
</table>
### Setting Description

**Alert Expiration Interval**
The maximum number of days to retain alert notifications. This is the greatest count of 24-hour days to retain alerts in IBM Cognos Real-time Monitoring. Timing begins when the alert is generated. For example, if the expiration period is 1 day, the alert is removed from the IBM Cognos Real-time Monitoring Dashboard at least 24 hours after it was generated.

Expired alerts are removed regardless of their state. Alerts do, however, retain their state; they just no longer appear in the IBM Cognos Real-time Monitoring Dashboard.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alert Expiration Interval</td>
<td>The maximum number of days to retain alert notifications. This is the greatest count of 24-hour days to retain alerts in IBM Cognos Real-time Monitoring. Timing begins when the alert is generated. For example, if the expiration period is 1 day, the alert is removed from the IBM Cognos Real-time Monitoring Dashboard at least 24 hours after it was generated. Exired alerts are removed regardless of their state. Alerts do, however, retain their state; they just no longer appear in the IBM Cognos Real-time Monitoring Dashboard.</td>
</tr>
<tr>
<td>Maximum Alerts Instances to Display</td>
<td>The maximum number of alert notifications displayed in the IBM Cognos Real-time Monitoring Dashboard.</td>
</tr>
<tr>
<td>Do not send HTML alerts</td>
<td>This setting enables or disables the option to send alerts in the HTML format. If this option is selected, all alert messages are sent in the text format. By default, you can send HTML alerts. However, in some situations, for example, when security is a concern, it may not be desirable to permit HTML content. In this case, you can disallow sending HTML alerts.</td>
</tr>
<tr>
<td>Webservice Event Host</td>
<td>The name of the host to use for web service events. For example, localhost.</td>
</tr>
<tr>
<td>Webservice Event Port</td>
<td>The port to use for web service events. For example, 8080.</td>
</tr>
</tbody>
</table>

### User Management and Authentication

Use this page to configure user management and authentication, and to enable single sign-on (SSO) between IBM Cognos Real-time Monitoring and IBM Cognos Business Intelligence (BI).
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| User Management and SSO Provider | Specifies the authentication method to use in IBM Cognos Real-time Monitoring. The following methods are available:  
  - **Internal**  
    Use this method if you want only local users of Cognos Real-time Monitoring to be authenticated.  
    **CAUTION:**  
    When you change from any of the other authentication methods to this one, all external users and their custom permissions are deleted. To avoid this, define internal roles with the custom permissions, and map the external users to those roles.  
    **CAUTION:**  
    The internal users and their permissions are retained with all authentication methods.  
  - **LDAP/ADS**  
    Use this method if you want the LDAP or Active Directory servers supported by Cognos Real-time Monitoring to authenticate users. The following settings are associated with this method:  
    – **Synchronization Schedule**  
      Click OK, then return to the User Management window to see the schedule.  
    – **LDAP Role Mapping**, **LDAP Synchronization**, and **LDAP User Mapping** are added to the Configure drop-down list.  
  - **IBM Cognos Business Intelligence**  
    Use this method if you want IBM Cognos Business Intelligence to authenticate users, and to enable single sign-on between IBM Cognos Business Intelligence and Cognos Real-time Monitoring.  
  - **Custom user management and authentication plug-in**  
    If you have a custom plug-in installed, it appears in the list of settings, and you can enable it. For more information, see the *IBM Cognos Real-time Monitoring Workbench Modeling Reference*. |
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable Single Sign-On</td>
<td>Allow users to log in to multiple applications by responding to only one authentication prompt. You can enable single sign-on between Cognos Real-time Monitoring and any external application. However, the user management and authentication system in the external application must follow the User Management and Authentication framework in Cognos Real-time Monitoring.</td>
</tr>
<tr>
<td>Sign-off URL</td>
<td>If Enable Single Sign-On is selected, this is the URL to which the user is redirected when logging out.</td>
</tr>
<tr>
<td>Request Header</td>
<td>Use this setting when you enable single sign-on with eTrust SiteMinder. The header variable must contain the user name that exists both in Cognos Real-time Monitoring and in SiteMinder. <strong>Attention:</strong> Ensure that you create the same users in Cognos Real-time Monitoring and in SiteMinder.</td>
</tr>
<tr>
<td>Synchronize Now</td>
<td>Click this button to immediately synchronize the connection to the reporting system.</td>
</tr>
<tr>
<td>Synchronization Schedule for User Management Provider</td>
<td>Schedules the synchronization of user, role, and user-role mapping for the reporting system, such as every 30 minutes between 12:00 AM and 11:30 PM daily. Use the Add Schedule, Edit Schedule and Remove Schedule buttons to manage your synchronization schedules.</td>
</tr>
</tbody>
</table>

### Importing and exporting metadata

Metadata are descriptions of the object and user definitions, and system settings. This information is stored in an RDBMS database. The export action writes this information to one of the following:

- XML files in a directory on the server.
- A single compressed JAR file on the server or local client computer.

Later you can use the import action to load those objects back into the installation.

By default, the operation includes the definition of the metadata objects only.

### Exporting metadata

The exported metadata contain the descriptions of all objects in the system, and all system settings, similar to a backup of the installation.
For information about another form of system backup, see “Checkpoint Configuration” on page 63.

Alert subscribers are not exported.

For information about object-level export, see “Exporting selected objects” on page 56.

Where the metadata is written
When exporting XML files to a directory on the server, the files are duplicated into two sibling subdirectories. One subdirectory is always named latest. The other is a new folder whose name matches the timestamp of the export. This allows you to quickly identify the last export by looking in latest, while the timestamp-named directories act as specific, past export instances.

Files written to the server have the access permission of the account that starts the Cognos Real-time Monitoring server. Because the files are not encrypted, all user account information is available to anyone with access to the files.

When exporting to a JAR file, the file contains compressed definitions of all of the objects.

Procedure
1. On the Administration Console tab, click Import/Export.
2. From the Operation drop-down list, select the type of export operation you want to perform: Full Export or Custom Export. For a description of the different types of operations, see “Export Operations.”
3. From the Export Options drop-down list, select one of the options. For a description of the options, see “Export Options” on page 84.
4. Click OK to begin the download.
   - If you are exporting metadata to a JAR file, use the browser download dialog box to identify the location (and optionally change the file name) on your local machine.
5. Depending on your browser, you might receive a prompt to confirm downloading a JAR file. Select Yes.
6. When the export of metadata is finished, click Cancel to close the Import/Export dialog box.

Export Operations
On the Import/Export page, you can select export operations from the Operations drop-down list.

The following export operations are available from the Operations drop-down list:

- Export metadata to a directory on the server
  Selecting this option exports the metadata to the directory that you specify in the Server Location field. Type the full path to the directory where you want to export the metadata. The directory must exist, and you must have permission to write to the specified directory. Also, two directories are created in your specified directory. One subdirectory is named latest. The other is the timestamp of your export. If the directories already exist, they are reused.

- Export metadata to a JAR file on the server
  Selecting this option exports the metadata to a JAR file in the directory you specify in the Server Location field. Type the full path to the directory where...
you want to export the metadata. The directory must exist, and you must have permission to write to the specified directory.
The filename on the server is _export.jar. If _export.jar already exists, it is overwritten.

- **Export metadata to a JAR file (download)**
  Selecting this option exports the metadata to a JAR file on the client. Use the browser download dialog box to identify the location (and optionally change the file name) on your local machine.

**Export Options**

On the **Import/Export** page, you can select export options from the **Options** drop-down list.

The following export options are available from the **Options** drop-down list:

- **Full export**
  All metadata is exported. If you select this option, the custom export options are not available. **Full export** is the default.

  **Note:** **Full export** does not export the system settings.

- **Custom Export**
  Allows you to select the types of objects to export. The custom export options are:
  - **Include Workbench and Dashboard objects**
    This option specifies that the metadata for workbench and dashboard objects is exported. If you also want to export the object level permissions for your workbench and dashboard objects, select **Include object level permissions**.
  - **Include users**
    User information is exported. If you also want the type level permissions for the users, also select **Include type level permissions**.
  - **Include roles**
    Role information is exported. If you also want the type level permissions for the users, also select **Include type level permissions**.
  - **Include type level permissions**
    Type level permissions are exported. These are the permissions that you see on the **Permissions** tab of the **User** dialog box.
  - **Include tasks**
    Dashboard tasks are exported.
  - **Include personal objects**
    Business rules, private perspectives, and other operational data are included in the exported metadata.
  - **Include System Settings**
    All system settings are included in the exported metadata.

**Importing metadata**

The import action reads the previously exported metadata. When importing from the server, you must know the full path to the location for the JAR file or directory of files. To import from the local machine (upload), you may browse to identify the location.
A metadata JAR file that contains LDAP user, roles, and associated Access Control Level (ACL) permissions requires that you synchronize the LDAP users before you import the metadata to a clean IBM Cognos Real-time Monitoring system. If you do not synchronize the users prior to import, you may lose the ACLs associated with the users, requiring you to import the metadata again after synchronizing the users.

Also, the synchronization of users can affect the actual number of users imported from the metadata. Only the ACLs associated with the users that you synchronized will be imported. For example, if ten users exist in the metadata, but you only synchronized five users prior to importing the metadata, only the ACLs for those five synchronized users who exist in the metadata are imported. The remaining ACLs for the other five users are not imported.

Note: Importing a large set of metadata from a busy DBMS can take several minutes to complete. In some cases, the application server might time-out waiting for the entire operation to complete. If you get a log error message about an incomplete transaction, increase the time that the server allocates to transactions. For example, by default BEA WebLogic times out after 5 minutes (300 seconds).

Perform the following steps to import metadata.

**Procedure**

1. In the Administration Console, select Import/Export.
2. Choose one of the import options:
   * **Import metadata from a directory on the server**
     Imports metadata from a location on the server where Cognos Real-time Monitoring is running. The location is the directory that you will specify in step 4.
   * **Import metadata from a JAR File on the server**
     Imports a JAR file from a location on a server where Cognos Real-time Monitoring is running. The location is the path to the JAR file that you will specify in step 4.
   * **Import metadata from a JAR file (upload)**
     Imports a JAR file from a location on the client.
3. Locate the file, or directory of files, to import.
   If you selected **Import metadata from a directory on the server** or **Import metadata from a JAR File on the server**, identify the full path to the directory containing previously exported metadata. Enter the directory in the Server Location field.
   If you selected **Import metadata from a JAR file (upload)**, enter the file name of the JAR file to upload. You can use the Browse button to locate the file on your local machine.
4. Optionally, specify a folder into which the metadata is to be imported. Only those objects that can be placed in a folder will be placed in the specified folder. The default folder is **Public Folder**.
5. Select the import mode for the metadata. The choices are:
   * **Overwrite**
     If you select this option, imported objects overwrite existing objects with the same name and type. **Overwrite** is the default.
Note: If you specify a folder into which to import the metadata, and an object with an identical identifier already exists in the system, the existing object will be overwritten then moved to the specified folder.

- **Do not overwrite**
  If you select this option, an object is not imported if an object with the same identifier already exists. All other objects are imported.

- **Create a copy**
  If you select this option, every object is copied into the selected folder as long as there are no conflicts with existing names in that folder. If a naming conflict occurs, the existing object is preserved, and the imported object is not copied.

6. Read the data from storage by clicking **OK**.
7. If the dialog box remains open after the import completes, choose **Cancel** to close it.

---

**Understanding logging**

Logging facilitates software service and maintenance by producing reports suitable for analysis by end users, system administrators, support engineers, and software development teams.

The various IBM Cognos Real-time Monitoring subsystems generate messages that provide information about the application state, and about the internal system events. For more information, see “Understanding logging modules” on page 88. These messages can be logged to “Viewing logging destinations” on page 87 that include files, console, or a data streams suitable for monitoring by a rule in a scenario.

The following diagram shows the basic logging scenario.

![Diagram of logging scenario]

1. Loggers publish messages.
2. Destinations record or report messages.
3. Log files contain reports.

Cognos Real-time Monitoring has many loggers. Most of them assist with application development and the messages that they generate are not useful for general consideration. However, some messages are important, and can indicate problems with the system. Application developers and system administrators use these messages to trace the behavior of the program, and to identify events that led up to the problem.

Messages have associated logging levels that indicate the importance and urgency of the message. Messages with higher levels indicate higher levels of importance. Use the levels to tell the loggers which messages to publish, and to tell the destinations which messages to include. The destinations ignore messages of lower
priority than they are set to record.

1. The logger is publishing low level messages.
2. The destination is recording high level messages, and filtering out low level messages.
3. The log file contains only high level messages.

When configuring logging, set the destination to match the level of the logger if you want to see all of the messages that the logger publishes. Otherwise, the destination filters and omits the lower level messages.

When a logger publishes a message, each destination checks the message level and publishes the messages whose level matches the level that the destination is configured to accept. Multiple destinations can record messages published by one logger, as shown in the following illustration.

**Viewing logging destinations**

Logging destinations identify where log messages are recorded when the destination receives messages of the level it is configured to receive. The following table lists the logging destinations.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logging Directory</td>
<td>Directory where log files are written. By default, no directory is defined and no files are written.</td>
</tr>
<tr>
<td>Standard Out Log Level</td>
<td>Standard output (stdout) on the server hosting IBM Cognos Real-time Monitoring. You can direct the output to a console.</td>
</tr>
</tbody>
</table>
### Setting Description

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summary File Log Level</strong></td>
<td>General log file named bam.log in the log directory. Use this destination for normal logging. Typically this is set to receive Error level messages.</td>
</tr>
<tr>
<td><strong>Detailed File Log Level</strong></td>
<td>Use this log to track problems when you do not want messages to go to the summary file. The file bam_detailed.log is in the log directory. This is set to Off by default.</td>
</tr>
<tr>
<td><strong>System Appender Log Level</strong></td>
<td>Publishes rows to the VC_SYSTEM_EVENTS data stream. This allows administrators to create views and rules that monitor IBM Cognos Real-time Monitoring. Typically this is set to receive Warn or Error level messages. Views and rules can then further filter messages as they arrive. For more information, see “Monitoring the logs” on page 90.</td>
</tr>
</tbody>
</table>

### Understanding logging modules

Loggers publish messages that provide information about the application state or about internal system events. Each logger publishes messages of at least the log level that you request, and discards those of lower priority.

Each logger has a name that determines where that logger fits into the logger hierarchy tree. The logger hierarchy tree allows you to configure logging details at various levels of granularity. Because each logger inherits its logging level from its parent in the logger hierarchy tree, you can assign a logging level to the top-most logger (com) and all IBM Cognos Real-time Monitoring loggers inherit that setting. By assigning a level to a specific logger, you can override the value inherited from the parent.

**Note:** Do not turn on Debug logging for modules without direction from technical support. Turning on this excessive logging for high volume modules like system, query, or exec can rapidly flood your system and kill the servers.

### Understanding logging levels

Each log message has an associated log level that gives a rough guide to the importance and urgency of the message. Each level has an associated integer value usable by rules that monitor system messages. Higher values indicate higher priorities. As such, a rule might look for Error and Fatal messages by looking for values greater than or equal to 40,000 (Level>=40000).

<table>
<thead>
<tr>
<th>Level</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inherit</td>
<td>Not applicable</td>
<td>Inherit the level from the parent logger.</td>
</tr>
<tr>
<td>Off</td>
<td>Not applicable</td>
<td>No logging.</td>
</tr>
<tr>
<td>Fatal</td>
<td>50,000</td>
<td>Very severe error events that might cause the application to terminate.</td>
</tr>
<tr>
<td>Level</td>
<td>Value</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>-------</td>
<td>-------------</td>
</tr>
<tr>
<td>Error</td>
<td>40,000</td>
<td>Error events of considerable importance that will prevent normal program execution, but might still allow the application to continue running.</td>
</tr>
<tr>
<td>Warn</td>
<td>30,000</td>
<td>Potentially harmful situations of interest to end users or system managers that indicate potential problems.</td>
</tr>
<tr>
<td>Info</td>
<td>20,000</td>
<td>Informational messages that might make sense to end users and system administrators, and highlight the progress of the application.</td>
</tr>
<tr>
<td>Debug</td>
<td>10,000</td>
<td>Relatively detailed tracing used by application developers. The exact meaning of the three debug levels varies among subsystems.</td>
</tr>
<tr>
<td>Debug - Low</td>
<td>9,000</td>
<td>Information broadly interesting to developers who do not have a specialized interest in the specific subsystem. Might include minor (recoverable) failures and issues indicating potential performance problems.</td>
</tr>
<tr>
<td>Debug - Medium</td>
<td>8,000</td>
<td>Fairly detailed tracing messages. Calls for entering, returning, or throwing an exception are traced at this level.</td>
</tr>
<tr>
<td>Debug - High</td>
<td>7,000</td>
<td>Highly detailed tracing messages. Produces the most voluminous output.</td>
</tr>
<tr>
<td>All</td>
<td>Not applicable</td>
<td>All messages.</td>
</tr>
</tbody>
</table>

You might want to increase the logging level of a logger to diagnose or debug a problem. The default level for all loggers is Inherit, and the default level for the root logger is Info.

Do not turn on Debug or higher logging without direction from technical support. Turning on this excessive logging for high volume module like system, query, or exec can rapidly flood your system and terminate the servers.

**Assigning log levels to loggers and destinations**

Use this section to assign a log level.
Procedure
1. On the Administration Console tab, click System Settings.
2. In the Configure drop-down list, click Logging.
3. Specify the value for the specific destination or destinations.
4. In the Configure drop-down list, click Logging Levels.
5. Specify the value for the specific logger.
   A subcomponent can have a higher or lower priority level than its parent.
6. Click OK to save the settings.
   The changes take effect immediately.

Monitoring the logs
You can create a rule that monitors messages for high priority error conditions, and that reports them in an alert to key administrators. When the destination of logging for the system appender is capturing log messages, it writes them to the VC_SYSTEM_EVENTS data stream, which has the following fields:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERROR_LEVEL_INT</td>
<td>Message level. [&quot;Understanding logging levels&quot; on page 88] lists the values and what they mean.</td>
</tr>
<tr>
<td>ORIGINAL_VC_EVENT_ID</td>
<td>ID of the event that generated the message.</td>
</tr>
<tr>
<td>USER_NAME</td>
<td>User that was using the application that generated the message.</td>
</tr>
<tr>
<td>MODULE_NAME</td>
<td>Subsystem that generated the message. For more information, see [&quot;Understanding logging modules&quot; on page 88].</td>
</tr>
<tr>
<td>MESSAGE_TEXT</td>
<td>Text of the message.</td>
</tr>
<tr>
<td>OBJECT_NAME</td>
<td>Name of the object that generated the message.</td>
</tr>
</tbody>
</table>

Note: You cannot edit or delete this table.

You can build views on the VC_SYSTEM_EVENTS data stream, and then build rules that monitor the views that are looking for specific messages, usually those that have a high priority.

Procedure
1. Turn on logging for the system appender and set the logging levels to the priority that you want to record.
   • On the Administration Console tab, click System Settings.
   • Set Logging Levels to publish the messages that you want. For example, set com.cognos.obi to Warn.
   • On the Logging settings, set System Appender Log Level to the same level, such as Warn.
   • Click OK to save the setting and close the dialog box.
2. Create a new view based on all fields in the VC_SYSTEM_EVENTS data stream and with no lookup table.
   • On the Workbench tab, click New View, and choose the VC_SYSTEM_EVENTS data stream and no lookup table.
Assign a view name, such as SysEventView.
Drag all of the data stream fields into the view.
Click Save View to save the view and close the dialog.

3. Create a business activity that contains a scenario for the system data streams.
   Click the Scenario Modeler tab.
   Select Business Activities, and create a business activity named SysEventsActivity by clicking New Business Activity. The new business activity displays under Business Activities.
   Select SysEventsActivity then click the New Scenario button to create a scenario within that activity named SysEventsScenario. The Create Scenario dialog displays.
   To create the scenario, enter SysEventsScenario in the Scenario Name field, select Exiting View, then select SysEventView for the View Name field.

4. Create a rule to monitor the view, an alert, and optionally a reportlet to report on the messages.
   Click New Rule to create a rule named SysEventsRule.
   In the Condition field under Define Rule Condition, define the rule condition as TRUE to report all messages that enter the view.
   Optionally, to filter messages, define a more specific rule. For example, to alert only Error messages and higher, create a rule that filters for ERROR_LEVEL_INT>=40000 (the Error level). For a list of log level values, see “Understanding logging levels” on page 88.
   Create an alert named SysEventsAlert. Assign system_monitor as a mandatory subscriber. Click Choose to select the alert. If SysEventsAlert does not already exist, click Create Alert.
   Optionally assign other subscribers.
   Optionally, create a reportlet to contain the message information by clicking Add Reportlet.
   Finish defining the alert.
   Click Finish Rule to save the changes.
   The system immediately begins monitoring the message log system.
Chapter 6. Configuring interoperability between IBM Cognos Real-time Monitoring and IBM Cognos Business Intelligence

When you implement interoperability between the two products, you can view and interact with the IBM Cognos Real-time Monitoring content in IBM Cognos Business Intelligence (BI), and with the IBM Cognos Business Intelligence content in IBM Cognos Real-time Monitoring.

Before you start configuring the interoperability settings, ensure that both products are properly installed and configured. For more information, see the installation guides for both products.

Authentication in IBM Cognos Business Intelligence must be configured to use an authentication provider. For more information, see the section about configuring IBM Cognos Business Intelligence components to use an authentication provider in the IBM Cognos Business Intelligence Installation and Configuration Guide. For information about the IBM Cognos Business Intelligence security model, see the IBM Cognos Administration and Security Guide.

The following configuration tasks are involved when setting up interoperability between the two products:

- Configure authentication in IBM Cognos Real-time Monitoring to use the IBM Cognos Business Intelligence authentication method, and enable single sign-on between the two products.
- Configure IBM Cognos Business Intelligence to use IBM Cognos Real-time Monitoring cubes or views as data sources. This task is required when you want to use the IBM Cognos Real-time Monitoring data to create reports in the IBM Cognos Business Intelligence environment. This task is not required for integration with IBM Cognos Workspace.
- Configuring the system for integration with IBM Cognos Workspace.

Enabling single sign-on with IBM Cognos Business Intelligence

When you enable single sign-on (SSO) between IBM Cognos Real-time Monitoring and IBM Cognos Business Intelligence, users need to log in only once to either application.

They gain access to the other application without a repeated prompt for authentication. The single sign-on is required for integration with IBM Cognos Workspace.

Before you begin

Before you enable single sign-on, ensure that the following settings are properly specified in IBM Cognos Configuration, the IBM Cognos Business Intelligence configuration tool:

- The gateways for IBM Cognos Business Intelligence and IBM Cognos Real-time Monitoring are in the same domain.
This is required so that the IBM Cognos Business Intelligence passportID cookie can pass to the IBM Cognos Real-time Monitoring environment, and the IBM Cognos Real-time Monitoring sessionID cookie can pass to the IBM Cognos Business Intelligence environment.

Tip: In IBM Cognos Configuration, from the Actions menu, select Edit Global Configuration. On the General tab, specify the Domain and Path properties.
- All gateway URI settings in IBM Cognos Configuration, the Environment category, contain computer-specific host names, not the default localhost.

For more information, see the IBM Cognos Business Intelligence Installation and Configuration Guide.

**About this task**

Set up the following properties when configuring this functionality.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM Cognos Dispatch URL</td>
<td>Specifies the IBM Cognos BI dispatcher URI, as specified in IBM Cognos Configuration, under Gateway Settings for the Environment category. For example, http://cognos_bi_server_name:9300/p2pd/servlet/dispatch/ext</td>
</tr>
<tr>
<td>Directory Administrator Username</td>
<td>Specifies the directory administrator user ID for the namespace that is used for authentication to IBM Cognos BI server. The directory administrator configures this namespace in IBM Cognos Configuration.</td>
</tr>
<tr>
<td>Directory Administrator Password</td>
<td>Specifies the directory administrator password for the namespace that authenticates to IBM Cognos BI server.</td>
</tr>
<tr>
<td>Directory Administrator Namespace</td>
<td>Specifies the name of the namespace that authenticates to IBM Cognos BI server.</td>
</tr>
<tr>
<td>Cookie Domain</td>
<td>Specifies the cookie domain setting that is specified in IBM Cognos Configuration, in global settings, on the General tab, under Cookie Settings.</td>
</tr>
<tr>
<td>Cookie Path</td>
<td>Specifies the cookie path that appears in the URL of both IBM Cognos BI and IBM Cognos Real-time Monitoring after the host name. This is the same path that is specified in IBM Cognos Configuration, in global settings, under Cookie Settings on the General tab. For example, if the IBM Cognos BI URL is myserver.ibm.com/ibm/cognos, and the IBM Cognos Real-time Monitoring URL is myserver.ibm.com/ibm/cognos/realtime, the Cookie Path can be /ibm/cognos, /ibm, or /. The forward slash character (/) is always a valid value for this setting.</td>
</tr>
</tbody>
</table>

**Procedure**

1. Log in to IBM Cognos Real-time Monitoring Workbench with a user ID that has system administrator access permissions.
   
   **Note:** When configuring this functionality for the first time, you must log in using the rtmadmin user ID. This ID is created in the directory server that is associated with the IBM Cognos Business Intelligence namespace that is configured for authentication to both products. For more information about this ID, see the IBM Cognos Real-time Monitoring Installation and Configuration Guide.
2. On the Administration Console tab, click System Settings.
3. In the Configure drop-down list, click User Management and Authentication.
4. In the User Management and SSO Provider drop-down list, click IBM Cognos Business Intelligence.
5. In the System Settings page, select the Enable Single Sign-On check box, and click Apply.
6. Type values for the remaining settings as specified in the table above in this section.
7. Click Synchronize Now.
8. Click Apply, and then OK.
10. Delete the cookies in your browser.

Results

After enabling single sign-on, test if it works as expected:
1. Log in to either IBM Cognos Business Intelligence or IBM Cognos Real-time Monitoring.

   **Tip:** If the login fails, ensure that you specified a correct value for Cookie Path in IBM Cognos Real-time Monitoring Workbench.

2. Open the other application in the same browser window, or in a new tab in the same window.

   The other application opens without a login prompt.

Using IBM Cognos Real-time Monitoring cubes as data sources in IBM Cognos Business Intelligence

You must configure access to the IBM Cognos Real-time Monitoring data server before you can use the data in IBM Cognos Business Intelligence. The IBM Cognos Real-time Monitoring cubes and views are supported as data sources in IBM Cognos Business Intelligence.

Perform the following tasks to make the IBM Cognos Real-time Monitoring cube data available in IBM Cognos Business Intelligence:

- Creating a data source connection to a IBM Cognos Real-time Monitoring cube
- Creating and publishing a package based on a IBM Cognos Real-time Monitoring cube
- Testing the IBM Cognos Real-time Monitoring package in the IBM Cognos studios, such as Report Studio

Creating a data source connection to a IBM Cognos Real-time Monitoring cube

You create a data source connection to the IBM Cognos Real-time Monitoring cube in IBM Cognos Administration to make the cube data available in IBM Cognos Business Intelligence.

For more information about data source connections, see the IBM Cognos Administration and Security Guide.
Ensure that single sign-on between IBM Cognos Real-time Monitoring and IBM Cognos Business Intelligence is enabled.

**Note:** You cannot use dynamic query mode in IBM Cognos Business Intelligence to connect to a IBM Cognos Real-time Monitoring cube.

For more information, see the section about data sources and connections in the *IBM Cognos Administration and Security Guide*.

**Procedure**

1. Log on to IBM Cognos Connection, and open IBM Cognos Administration.
   You must have sufficient administrative permissions to access *IBM Cognos Administration*.
   **Tip:** You can open IBM Cognos Administration by clicking *Administer IBM Cognos Content* in the Welcome page, or from the *Launch* menu in IBM Cognos Connection.

2. On the **Configuration** tab, click **Data Source Connections**.

3. Click the new data source button in the toolbar.

4. In the name and description page, type a unique name for the cube and, optionally, a description and screen tip, and then click **Next**.

5. From the **Type** drop-down list, select **IBM Cognos Now! - Real-time Monitoring Cube**, and click **Next**.

6. Specify the connection parameters.
   - For **Server name**, type the IP address or host name, and for **Port number** type the port number of your IBM Cognos Real-time Monitoring server that is configured for interoperability with IBM Cognos Business Intelligence.
   - **IBM Cognos Now! - Real-time Monitoring Cube connection string**
     Specifies the path to the cube. The path should match what is configured in your web server.

7. Click **Test the connection** and follow the steps in the wizard.

8. If the connection is successful, click **Finish**.
   The new data source appears in the **Data Source Connections** page.

   **Note:** The connection is not successful when using dynamic query mode.

**Results**

You can now create a package in IBM Cognos Framework Manager based on this data source.

**Creating and publishing a package based on a IBM Cognos Real-time Monitoring cube**

You use IBM Cognos Framework Manager to create a package based on a IBM Cognos Real-time Monitoring cube. After creating the package, you can publish it directly to IBM Cognos Connection to make the cube metadata available for use with IBM Cognos studios, such as Report Studio and Query Studio.

For more information, see the *IBM Cognos Framework Manager User Guide*.

The data source connection to the IBM Cognos Real-time Monitoring cube must already exist.
Procedure

1. Log in to Framework Manager using the same credentials as when logging in to IBM Cognos Connection.
2. In the Welcome page, click Create a new project.
   Tip: If a project already exists, click Open a project.
3. In the New Project page, specify a name and location for the project, and click OK.
4. In the Select Language page, click the design language for the project.
   You cannot change the selected language after you click OK, but you can add other languages later.
5. In the Metadata Wizard dialog box, click Data source, and click Next.
6. From the list of available data sources, select the IBM Cognos Real-time Monitoring cube that you created, and click Next.
7. Select the Create a default package check box, and click Finish.
8. Specify a name for the package.
   Optionally, you can specify a description and screen tip for the package.
9. Click Finish to import the metadata, and create the package.
10. Click Yes to open the Publish Wizard.
11. In the Publish Wizard - Select Location Type dialog box, ensure that IBM Cognos Content Store is selected as the publish location, and clear the Enable model versioning check box. Then, click Next.
12. In the Publish Wizard - Add Security dialog box, specify security settings for the package, and click Next.
   You can specify access permissions for the package when publishing it for the first time. On subsequent publish operations, you must accept the previously specified access permissions.
13. In the Publish Wizard - Options dialog box, keep the defaults, and click Publish.

   Note: Ensure that the Use Dynamic Query Mode check box is not selected.
14. Click Finish, ignore any warnings, and click Close.

Results

The package is now available in IBM Cognos Connection, and you can use it to create Cognos Business Intelligence reports and analyses. You can test the package now.

Using IBM Cognos Real-time Monitoring views as data sources in IBM Cognos Business Intelligence

You must configure access to the IBM Cognos Real-time Monitoring data server before you can use the data in IBM Cognos Business Intelligence. The IBM Cognos Real-time Monitoring cubes and views are supported as data sources in IBM Cognos Business Intelligence.

Ensure that single sign-on between IBM Cognos Business Intelligence and IBM Cognos Real-time Monitoring is enabled.

Perform the following tasks to make the IBM Cognos Real-time Monitoring view data available in IBM Cognos Business Intelligence:
Creating a data source connection to IBM Cognos Real-time Monitoring view

Creating and publishing a package based on the IBM Cognos Real-time Monitoring view

Testing the package in IBM Cognos studios

Creating a data source connection to IBM Cognos Real-time Monitoring view on Windows

You create a data source connection to the IBM Cognos Real-time Monitoring view to make the content based on that view available in IBM Cognos Business Intelligence.

For more information, see the section about data sources and connections in the IBM Cognos Administration and Security Guide.

Note: You cannot use dynamic query mode in IBM Cognos Business Intelligence to connect to a IBM Cognos Real-time Monitoring view.

Procedure

1. Open the directory where the SDK drivers.zip is located.
   By default, this is the c10_location/realtime/sdk/odbc/operating_system directory, where c10_location specifies the IBM Cognos Business Intelligence installation location.
   Ensure that the cqjdbcclient.jar file is in this directory.
2. Run the setup.exe file to install the driver and provide input for the following parameters:
   - **JVM Path**
     Type the path of the jvm.dll file, for example, C:\Program Files\IBM\cognos\c10\bin\jre\6.0\bin\j9vm\jvm.dll.
   - **JDBC Driver Path**
     Type the path of the IBM Cognos Real-time Monitoring JDBC Driver. This is the path for the cqjdbcclient.jar file contained in the jdbc_driver directory. This directory is created after you extract the contents of driver.zip.
   - **Driver Class**
     Type com/cognos/obi/jdbc/driver/Driver.
   - **Logging Details**
     To generate a driver specific log file, select On, and type the path for the log file.
3. Open the Control Panel, select Administrative Tool, then Data Sources (ODBC).
   Note: If you are installing the driver on a 64 bit Windows OS, type in the following command to configure the ODBC data source: cmd>C:\WINDOWS\SysWOW64\odbcad32.exe
4. In ODBC Data Source Administrator, select System DSN, and click Add.
5. In the Create New Data Source window, select Cognos, and click Finish.
   The Cognos ODBC-JDBC Bridge Driver dialog box displays.
6. In the Cognos ODBC-JDBC Bridge Driver dialog box, provide the following:
   - **Data source name**
     Type the DSN name; for example, RtMView.
   - **JDBC URL**
Type the JDBC URL for IBM Cognos Real-time Monitoring, in the following format:

jdbc:cognos:obi://ip:port

For example, type 2669.

Note: The port number is the same as that specified as JDBC Port in System Settings under JDBC Access to Views and Cubes.

7. Specify the User Name and Password, and then click Test Connection.

On a successful connection, a confirming message appears. Otherwise, an error message appears.

Creating a data source connection to an IBM Cognos Real-time Monitoring view on other operating systems

You create a data source connection to the IBM Cognos Real-time Monitoring view to make the content based on that view available in IBM Cognos Business Intelligence.

For more information, see the section about data sources and connections in the IBM Cognos Administration and Security Guide.

Attention: You cannot use dynamic query mode in IBM Cognos Business Intelligence to connect to a IBM Cognos Real-time Monitoring view.

Procedure

1. Ensure that your environment is set up in the following way:
   - You have installed Sun JDK version 1.4 or higher, or IBM JDK version 5.0 or higher, and unixODBC version 2.2.11 or iODBC version 3.52.6.
   - JAVA_HOME is set to the directory where Java SDK is installed.
     For example, for Sun Java JDK, set JAVA_HOME to:
     ```
     export JAVA_HOME=/usr/local/Java/j2sdk1.4.2_15
     ```
     For Java JDK, set JAVA_HOME to:
     ```
     export JAVA_HOME=/opt/ibm/java-<ver>-50/
     ```
   - LD_LIBRARY_PATH contains the path to JNI- specific libjvm.so libraries for a client, server, and i386.
     For example, for Sun Java JDK, set LD_LIBRARY_PATH to:
     ```
     export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:$JAVA_HOME/jre/lib/architecture/server
     ```
     For IBM Java JDK, set LD_LIBRARY_PATH to:
     ```
     export LD_LIBRARY_PATH=$JAVA_HOME/jre/bin:$LD_LIBRARY_PATH
     ```
   - Install the liblava.so file.
     For example, install this file to the /usr/local/lib directory.
   - Edit the odbcinst.ini file using the liblava.so directory as the Driver and Setup parameters. For example:
     ```
     Driver = /usr/local/lib/liblava.so
     Setup = /usr/local/lib/liblava.so
     ```
   - Specify other name/value pairs, as described in the sample odbc.ini and odbcinst.ini files.

2. Set up the library files.
   - Install the liblava.so file.
     For example, install this file to the /usr/local/lib directory.
   - Edit the odbcinst.ini file using the liblava.so directory as the Driver and Setup parameters. For example:
     ```
     Driver = /usr/local/lib/liblava.so
     Setup = /usr/local/lib/liblava.so
     ```
   - Specify other name/value pairs, as described in the sample odbc.ini and odbcinst.ini files.

3. Create or update the odbcinst.ini and odbc.ini files.
   Do this in at least one of the following locations:
• Home directory of the user running the application that is using the ODBC driver.
  In this case, change the file names to .odbcinst.ini and .odbc.ini.
• Corresponding system configuration files where the value/name pairs are specified.
• The location specified by the environment variables ODBCINI or ODBCINSTINI.
  Set ODBCINI to the path of the odbc.ini file. For example,
  export ODBCINSTINI=/tmp/odbcinst.ini
  Set ODBCINSTINI to the path of the odbcinst.ini file. For example,
  export ODBCINI=/tmp/odbc.ini
  Note: If the location is not specified, odbc.ini and odbcinst.ini must exist in the home directory.

4. Open the directory where the IBM Cognos Real-time Monitoring SDK drivers.zip file is located.
   By default, this is the \c10_location\realtime\sdk\odbc\operating_system directory, where \c10_location specifies the IBM Cognos Business Intelligence installation location.
   Ensure that the cgjdbcclient.jar file is in this directory.

5. Run the setup to install the ODBC driver.
   Ensure that:
   • JDBC driver jar files are present, and the corresponding paths are specified in the odbcinst.ini file under the DSN name.
   • DSN is registered with Driver Manager.
   • odbc.ini and .odbcinst.ini are present in the appropriate directory with appropriate settings.
   • the liblava.so files exist in the directory specified in the odbc.ini file.
   • IBM Cognos Real-time Monitoring is configured and running.

6. Log on to IBM Cognos Connection, and open IBM Cognos Administration.
   You must have sufficient administrative permissions to access IBM Cognos Administration.
   Tip: You can open IBM Cognos Administration by clicking Administer IBM Cognos Content in the Welcome page, or from the Launch menu in IBM Cognos Connection.

7. On the Configuration tab, click Data Source Connections.

8. Click the new data source button in the toolbar.

9. In the name and description page, type a name for the data source, and, optionally, a description and screen tip, and click Next.

10. From the Type drop-down list, select ODBC, and click Next.

11. Specify the connection parameters in the following way:
    • For ODBC data source, type the DSN ODBC data source name created previously.
    • For ODBC connect string, type any text that must be appended to the connection string. This parameter is typically left blank.
    • Select the Password check box, and type the credentials associated with the DSN ODBC data source created previously.
    • Accept the default values for the remaining parameters.
12. Click **Test the connection** and follow the steps in the wizard.
13. If the connection is successful, click **Finish**.
   The new data source appears in the **Data Source Connections** page.

   **Note:** The connection is not successful when using IBM Cognos Business Intelligence dynamic query mode.

**Results**

You can now create a package based on this data source, and publish the package to IBM Cognos Connection.

**Creating and publishing a package based on an IBM Cognos Real-time Monitoring view**

You use IBM Cognos Framework Manager to create a package based on a view. You can then publish it directly to IBM Cognos Connection to make the view metadata available for use with IBM Cognos studios.

For more information, see the **IBM Cognos Framework Manager User Guide**.

**Procedure**

1. Log in to IBM Cognos Framework Manager.
   Ensure that the IBM Cognos service is running.
2. Click **Create a new project**, type a name, and select a location for the project.
   For location, choose a folder in IBM Cognos Connection.
3. Specify the design language as English, and click **OK**.
4. In the next dialog box, click **Cancel**.
   The project name specified in step 2 appears in the right pane of Framework Manager.
5. Right-click **Model** in the left pane, and from the **Create** menu, click **Query Subject**.
6. Type a name for the query subject, select **Data source [Tables and Column]**, and click **OK**.
7. Select the data source name that you created in IBM Cognos Administration, clear the **Run database query subject wizard** check box, and click **Finish**.
8. In the **Query Subject Definition** window, select the **Query Information** tab, and click **Options**.
9. Click the **SQL Settings** tab, and select **Cognos** as **SQL Type**.
   Ignore the warning that appears.
10. In the **Generate SQL** box, select **As View**, and click **OK**.
11. Select the **SQL** tab, and enter the query `SELECT * FROM view_name`.

   **Note:** The value of `view_name` in the `FROM` clause is the view name available in IBM Cognos Real-time Monitoring.

   **Note:** Only `SELECT * FROM view_name` types of queries are supported.
12. Click **OK**.
13. Click **Data Source** and select the data source that you created in IBM Cognos Administration.
14. In the properties window, select **Limited Local** for **Query Processing**.
15. Select Project from the menu, and click Edit Governors.

16. Clear the Allow usage of local cache check box, and click OK.

17. To change the display of a column, click the plus (+) sign in front of the name. Right-click the column that you want to change, and click Rename.

18. To change the usage of a column, click the plus (+) sign in front of the name, then change the Usage field in the Properties window.

19. Save the Framework Manager project.

20. Click the Packages folder, and from the Actions menu select Create, and then Package.

21. Type a name for the package, and click Next.

22. Ensure that Model is selected, and click Next.

23. Select the From the project option, and select the model that you created in the previous step.
   If you created other packages, add package references by clicking Using existing packages.

24. In the Create Package - Select Function Lists dialog box, move all items from Select function sets to Available functions sets, and click Finish.
   The package is created.

25. Click Yes to open the Publish Wizard.

26. In the Publish Wizard - Select Location Type dialog box, ensure that IBM Cognos 10 Content Store is selected as the publish location, and clear the Enable model versioning check box. Then, click Next.

27. In the Publish Wizard - Add Security dialog box, specify security settings for the package, and click Next.
   You can specify access permissions for the package when publishing it for the first time. On subsequent publish operations, you must accept the previously specified access permissions.

28. In the Publish Wizard - Options dialog box, keep the defaults, and click Publish.
   Note: Ensure that the Use Dynamic Query Mode check box is not selected.

29. Click Finish, ignore any warnings, and click Close.

Results

The package is now available in IBM Cognos Connection, and can be used to create Cognos Business Intelligence reports and analyses. You can test the package now.

Testing the IBM Cognos Real-time Monitoring package in IBM Cognos studios

After you create and publish the package based on the IBM Cognos Real-time Monitoring cube or view, you can test the package in one of the IBM Cognos studios, such as Query Studio or Report Studio, to create reports.

To access the studios, users must have access to the associated secured functions in IBM Cognos Business Intelligence, and have the required access permissions for the package. For more information, see the security chapter in the IBM Cognos Administration and Security Guide.
Procedure
1. Log in to IBM Cognos Business Intelligence.
2. Start IBM Cognos Query Studio.
   Tip: You can start Query Studio from the Welcome page by clicking the link Query my data, or from the Launch menu in IBM Cognos Connection.
3. In the Select a package page, choose the package that you published previously.
4. In the Query Studio Menu on the left side of the page, select Insert Data.
   The published package appears below the Menu items.
5. Click the package to expand it, and view its contents.
6. Create a report based on this package.
   For information about creating Query Studio reports, see the IBM Cognos Query Studio User Guide.

Configuring the system for integration with IBM Cognos Workspace

The dashboard users can view and interact with the IBM Cognos Real-time Monitoring content in IBM Cognos Workspace, the dashboard component of IBM Cognos Business Intelligence. IBM Cognos Real-time Monitoring offers the IBM Cognos Business Intelligence users access to their operational data in real-time. Users view the content in all web browsers that IBM Cognos Workspace supports.

The Real-time Monitoring content appears in the Content pane in IBM Cognos Workspace, and you can drag content onto the dashboard canvas. When you add objects in IBM Cognos Workspace they display as widgets. Widgets are interactive containers. You can also interact with the contents of the widgets. For more information, see the IBM Cognos IBM Cognos Real-time Monitoring Dashboard User Guide.

Before you begin

Before you start configuring this functionality,
- Enable single sign-on between IBM Cognos Real-time Monitoring and IBM Cognos Business Intelligence.
- Ensure that you have the required access permissions to use IBM Cognos Workspace. For more information, see the section about configuring IBM Cognos Workspace in the IBM Cognos Business Intelligence Installation and Configuration Guide.

About this task

Set up the following properties when configuring this functionality.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display Name</td>
<td>Specifies the root folder in IBM Cognos Workspace for the Cognos Real-time Monitoring dashboard objects and their folders.</td>
</tr>
<tr>
<td></td>
<td>This folder appears in the Content pane in IBM Cognos Workspace.</td>
</tr>
</tbody>
</table>
### Parameter Description

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Specifies the text that appears when the pointer is positioned over the root folder specified for the Display Name parameter.</td>
</tr>
<tr>
<td>IBM Cognos Real-time URL</td>
<td>Specifies the server URL to which IBM Cognos Workspace connects to display the Cognos Real-time Monitoring content. The URL format is <a href="http://servername/urlcontext">http://servername/urlcontext</a>. For example, the URL can be http://my_server/realtime.</td>
</tr>
<tr>
<td>Download contribution file</td>
<td>Specifies the download link to the Realtime_contribution.atom file. Save the file to the c10_location/configuration/icd/contributions/contrib directory, where c10_location specifies the IBM Cognos BI installation location.</td>
</tr>
</tbody>
</table>

### Procedure

1. Log in to IBM Cognos Real-time Monitoring Workbench with a user ID that has system administrator access permissions.
   
   If this is the initial configuration, you must log in using the rtmadmin user ID. For more information about this ID, see the IBM Cognos Real-time Monitoring Installation and Configuration Guide.

2. On the Administration Console tab, click System Settings.

3. In the Configure drop-down list, click Business Insight Integration.

4. Type values for the Display Name, Description, and IBM Cognos Real-time URL settings.
   
   See the table in this section for descriptions of these settings.

5. Click Apply.

6. Click the Download contribution file button to download the Realtime_contribution.atom file.

   See the table in this section for a description of the download button.

7. Save the Realtime_contribution.atom file to the c10_location/configuration/icd/contributions/contrib directory, where c10_location specifies the IBM Cognos Business Intelligence installation location.

8. In System Settings, click OK to exist the page.


10. Under Security, IBM Cognos Application Firewall, add the IBM Cognos Real-time Monitoring domain that is configured for integration with IBM Cognos Workspace to the list of Valid domains or hosts.

    Ensure that both the domain name and the port number are specified. For more information, see the help in IBM Cognos Configuration.

11. From the Actions menu, click Edit Global Configuration, and on the General tab, ensure that the Cookie Settings are properly specified.

    The cookie settings are used with the single sign-on.

12. Save the configuration settings in IBM Cognos Configuration.
Tip: You can close IBM Cognos Configuration now, or keep it open so that you can restart the IBM Cognos service in step 9.

13. Go to the \ configuration \ proxy directory, where \ c10_location \ specifies the IBM Cognos Business Intelligence installation location.

14. Open the file proxy-config.xml.

15. Add the following proxy policy for Real-time Monitoring to this file:

```xml
<proxy:policy url="http://realtime_url/*" acf="none">
   <proxy:actions>
      <proxy:method>GET</proxy:method>
      <proxy:method>HEAD</proxy:method>
      <proxy:method>POST</proxy:method>
      <proxy:method>PUT</proxy:method>
      <proxy:method>DELETE</proxy:method>
   </proxy:actions>

   <proxy:cookies>
      <proxy:cookie>JSESSIONID_LC</proxy:cookie>
      <proxy:cookie>JSESSIONID</proxy:cookie>
      <proxy:cookie>LtpaToken</proxy:cookie>
      <proxy:cookie>LtpaToken2</proxy:cookie>
      <proxy:cookie>cam_passport</proxy:cookie>
      <proxy:cookie>CRN</proxy:cookie>
   </proxy:cookies>

   <proxy:users>
      <proxy:user>AllAuthenticatedUsers</proxy:user>
   </proxy:users>
</proxy:policy>
```


17. Restart the IBM Cognos service.

   You can do this from IBM Cognos Configuration, or from the Windows Control Panel.

Results

The IBM Cognos Real-time Monitoring content is now available in Workspace.
Appendix A. Troubleshooting

This section describes tasks that can help you to troubleshoot issues in IBM Cognos Real-time Monitoring Workbench.

Authentication issues when using IBM Tivoli Directory Server

When IBM Tivoli Directory Server is your LDAP authentication provider, users may encounter authentication issues in IBM Cognos Real-time Monitoring if their user names contain special characters.

IBM Tivoli automatically appends the escape character (\) before the special character in user names. After the users are synchronized in IBM Cognos Real-time Monitoring Workbench, their names include the escape character. For example, a user named user#1 is created as user\#1 in IBM Cognos Real-time Monitoring Workbench. Access permissions and role memberships are associated with user\#1.

This creates the following authentication problems:

• If the user logs in to IBM Cognos Real-time Monitoring using the name containing the escape character, Tivoli does not recognize the name, and the user cannot log in.

• If the user logs in to IBM Cognos Real-time Monitoring using the original name, Tivoli recognizes the name, and the user can log in. However, at the same time, IBM Cognos Real-time Monitoring Workbench creates a new user name, this time without the escape character. The application now contains two names for the same user.

The original name, even though it logged the user into IBM Cognos Real-time Monitoring, does not have any associated access permissions and role memberships. This makes the name unusable.

To reset the users and roles, configure IBM Cognos Real-time Monitoring to use the Internal authentication method and synchronize users. Then, change the authentication method to either LDAP/ADS or IBM Cognos Business Intelligence, and synchronize users again. For more information, see “User Management and Authentication” on page 80.

Authentication issues when using Active Directory

When Microsoft Active Directory is your LDAP authentication provider, users may encounter authentication issues in IBM Cognos Real-time Monitoring if their user names contain special characters.

Active Directory automatically replaces the special character in user names with the underscore character (_). After the users are synchronized in IBM Cognos Real-time Monitoring Workbench, their names contain the underscore instead of the special character. For example, a user named user#1 is created as user_1 in IBM Cognos Real-time Monitoring Workbench.

This creates the following problems:

• If the user logs in to IBM Cognos Real-time Monitoring using the name containing the underscore character (_), Active Directory does not recognize the name, and the user cannot log in.
If the user logs in to IBM Cognos Real-time Monitoring using the original name, Active Directory recognizes the name, and the user can log in. However, at the same time, IBM Cognos Real-time Monitoring Workbench creates a new user name, this time with the special character. The application now contains two names for the same user.

The original name, even though it logged the user into IBM Cognos Real-time Monitoring, does not have any associated access permissions and role memberships. This makes the name unusable.

To reset the users and roles, configure IBM Cognos Real-time Monitoring to use the Internal authentication method and synchronize users. Then, change the authentication method to either LDAP/ADS or IBM Cognos Business Intelligence, and synchronize users again. For more information, see “User Management and Authentication” on page 80.

### ODBC driver issues when creating a data source connection to a IBM Cognos Real-time Monitoring view on 64-bit Windows systems

When creating a data source connection to an IBM Cognos Real-time Monitoring view, you must create a System DSN ODBC data source using the Cognos ODBC driver. When doing this, on some 64-bit Microsoft Windows systems you may encounter an error message.

The following is the error message:

"The setup routines for Cognos ODBC driver could not be loaded due to the system error code 14001."

To avoid this issue, ensure that you have Microsoft Visual C++ 2005 Redistributable Package (x86) installed. This package contains additional libraries that you need to create a System DSN using the Cognos ODBC driver.

You can download and install Visual C++ 2005 Redistributable Package (x86) from the Microsoft web site.

### Unable to remove external users and roles after initial synchronization

This problem occurs after initial synchronization, and is characterized by being unable to remove external users and roles.

This problem occurs when the following scenario applies:

- Configure IBM Cognos Real-time Monitoring to use the LDAP/ADS or IBM Cognos Business Intelligence authentication methods.
- Synchronize the users.
- Change the configuration settings for the LDAP/ADS or IBM Cognos Business Intelligence authentication methods to remove the previously synchronized users and roles.
- Synchronize the users again.

The external users and roles should be removed from IBM Cognos Real-time Monitoring Workbench. However, the users and roles are still in the system, and the users can successfully log in to IBM Cognos Real-time Monitoring.
Procedure
1. In User Management and Authentication, configure IBM Cognos Real-time Monitoring to use the Internal authentication method.
2. Synchronize the users.
   This removes all existing external users and roles from the system.
3. Configure IBM Cognos Real-time Monitoring to use the LDAP/ADS or IBM Cognos Business Intelligence authentication methods again, specifying the proper settings.
4. Synchronize the users.
   Only the expected external users and roles are now in the system.

Custom import and export of tasks only does not import tasks
When doing a custom import and export of tasks only, the tasks are not imported.

In the Import/Export window, select the Include users check box and the Include tasks check box. This ensures that the tasks are imported correctly.

Avoiding cache issues when integrating IBM Cognos Real-time Monitoring with Business Insight
When a dashboard object is added, removed, or renamed in IBM Cognos Real-time Monitoring, the changes are not reflected under the IBM Cognos Real-time Monitoring folder in the Business Insight content pane, even after the refresh icon is clicked.

Similarly, when the locale is changed in Business Insight, the change does not take affect immediately for IBM Cognos Real-time Monitoring dashboard objects.

To avoid these situations, you must clear the browser cache, then log in again to see these changes.
Appendix B. Geography map tuning

This appendix explains the geography database schema and how you can improve geocoding accuracy using the database and geocoding software.

Improving geocoder accuracy

To improve the accuracy of the geocoder, you can modify the ABBREVMAP and GEOCODECACHE tables in the geography data source to affect the results.

- **ABBREVMAP**
  The ABBREVMAP table expands abbreviations so they are not ambiguous to the geocoder. The ABBREVMAP table contains ABBREV, EXPANSION, and CATEGORY columns. The system uses the table to expand abbreviations into the full name of a state, province, or country or region. Currently, the table has expansions for US states and Canadian provinces. For each row in the table, the ABBREV column stores the abbreviation, the EXPANSION column contains what the abbreviation should expand to, and the CATEGORY column stores the category to which this abbreviation should apply. Possible values for CATEGORY are city, stateprovince, country, region, and, postal code. Note that the ABBREV and EXPANSION column values are expected to be capitalized without trailing or leading spaces and no more than one single space between words.

- **GEOCODECACHE**
  The GEOCODECACHE table caches the results of the geocoders. The GEOCODECACHE table maps the logical address to the GPS latitude/longitude coordinates that are returned by the geocoder. It contains the ADDRESS, LATITUDE, LONGITUDE, ACCURACY, and LAST_ACCESS columns. The ADDRESS column stores the address. It must be capitalized, and all extraneous spaces must be removed, including spaces around commas. LATITUDE and LONGITUDE are the GPS coordinates. ACCURACY can be any number. However, if the value is 6 or greater, it will be treated as an exact location. LAST_ACCESS is the time in milliseconds since EPOCH. The higher this number, the more likely it will be precached on startup.

If the geocoder that you are using cannot look up a particular address, or the coordinates that you are getting are incorrect, you can prepopulate the GEOCODECACHE table in your geography data source. To prepopulate the table:

- Uppercase all letters in your address, and remove all preceding and trailing spaces (including around commas).
- Add the required Latitude/Longitude values in the respective columns and use any numbers in the remaining columns.

You might be able to improve accuracy by adding more abbreviations to the ABBREVMAP table in your geography data source. Ensure that all entries are uppercase, and that you trim all unnecessary spaces.

Extending geography map support

This section describes how to create a geocoder.
You can extend support for Geography Maps by creating your own geocoder. To create a geocoder, you must implement the com.cognos.obi.maps.IGeocoder interface. In System Settings > Geography Maps of IBM Cognos Real-time Monitoring Workbench, you can then type the class name of your custom geocoder and populate the Geocoder Key and URL fields with values needed by your geocoder. Your geocoder can access these values as parameters through the init(url, key) callback that you must implement.

**IGeocoder interface**

You can create your own geocoder by implementing the IGeocoder Java interface (com.cognos.obi.maps.IGeocoder).

This interface requires you to implement two methods: init and geocode.

```java
void init(String url, String key)
```

The init method is an initialization callback. It is called immediately after the geocoder is constructed, and it is assumed that the geocoder class will have a zero-argument constructor. The arguments represent the parameters “Base URL for GeoCoder” and “Geocoder Key” in the System Settings for Geography Maps. The method parameters are defined as follows:

- **url**
  The URL for the geocoder base URL entered in the system settings for Geography Maps in the Administration Console of the Real-time Monitoring Workbench.

- **key**
  The geocoder key used in the system settings for Geography Maps in the Administration Console of the Real-time Monitoring Workbench.

```java
GeoPoint geocode(String address) throws VCException
```

The geocode method takes an address and returns a GeoPoint object representing the latitude and longitude of the given address. If the address cannot be geocoded, the geocode method must throw a VCException. Also, geocoders must be re-entrant; that is, thread-safe. For more information about the GeoPoint object, see "GeoPoint class" on page 114.

You can use the geocode method of the IGeocoder interface to return latitude and longitude values for dimension values that the default geocoders cannot handle. For example, you have a Sales Territory dimension with three levels: World, Country or Region, and Local. These levels have the following values:

- **World**: “Asia and Pacific”, “Americas”, “Europe”
- **Country or Region**: “USA and Canada”, “Mexico and Central America”
- **Local**: “New England”, “West Coast”

Because the default Google geocoder does not recognize values such as “West Coast” or “USA and Canada” and cannot provide latitude and longitude coordinates for these, you need a custom geocoder that can provide the correct latitude and longitude for these addresses.

To make sure that addresses are not ambiguous, Real-time Monitoring appends all dimension levels of a higher granularity to the address. For example, “West Coast” can refer to either the west coast of “USA and Canada” or “Mexico and Central America”. Therefore, the address becomes “West Coast, USA and Canada, Americas” to specify the correct address for the west coast of “USA and Canada.” Also,
Real-time Monitoring capitalizes the string and removes any extraneous spaces to cache the results efficiently. Your geocoder should take addresses such as “WEST COAST, USA AND CANADA, AMERICAS” or “MEXICO AND CENTRAL AMERICA, AMERICAS” and return the correct latitude and longitude for that address. Also, Real-time Monitoring expands any abbreviations according to the ABBREVMAP table. For example, the abbreviations for the states California and Oregon are expanded from CA and OR to CALIFORNIA and OREGON.

Dimension levels create the address provided to the geocoder. You can program your custom geocoder in any manner you want to provide the correct longitudes and latitudes for the addresses that you expect it to receive.

Addresses are cached in the in-memory cache and GEOCODECACHE table of the database cache. After the system concatenates, uppercases and removes extra spaces (canonicalization), and expands abbreviations, the geography coordinate is returned. If the address is not in the in-memory cache, the database cache is checked, and the coordinates are returned if the address exists in the database cache. If the address is not in the in-memory cache or database cache, the geocoder processes the address and returns the coordinates. The in-memory cache and GEOCODECACHE table are then updated with the new address if the cache size is non-zero.

You can cause the system to always use the geocoder to return the coordinates by setting the cache size to zero. Setting the cache size to zero causes all requests to bypass the caches. This is useful for mapping moving coordinates and when debugging a custom geocoder.

The database cache stores the address and coordinates in the GEOCODECACHE. However, you can only delete these addresses manually. You can prepopulate the table with your own coordinates if the address that you use matches the address output after concatenation, canonicalization, and the expansion of abbreviations.

The workflow for processing addresses and updating the caches is shown in the following diagram:
After you have created your custom geocoder, you must place it in a JAR file and ensure that it is part of the classpath that Real-time Monitoring is using.

**GeoPoint class**

The GeoPoint class contains longitude and latitude information. A GeoPoint object is returned from the geocode method of the IGeocoder interface.

**Constructor for GeoPoint**

GeoPoint(double latitude, double longitude, int accuracy)

The GeoPoint class has the getter methods

- getLatitude
- getLongitude
- getAccuracy

```java
double getLatitude()
```

Returns the latitude coordinate in degrees as a double.

```java
double getLongitude()
```
Returns a longitude coordinate in degrees as a double.

int getAccuracy()

Indicates the accuracy of the latitude and longitude coordinates. The higher the value returned, the more accurate the coordinates. If the value is 6 or greater, the coordinates are treated as an exact location.
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Index

A
acknowledgements 23
Active Directory
  authentication issues 107
administration
  managing 59
Administration Console 59
agents 33
  creating 8, 33
  deleting 33
  editing 8
  modifying 33
alert editor 22
alerts
  acknowledgements 23
  creating in Scenario Modeler 21
  dashboard expiration 79
  deleting automatically 79
  external web service 21, 24
  Rule Filter of Data Stream Data 23
  setting limitations 77
  setting number of instances 24
  testing 38
Application Workbench 29
authentication
  issues when using Active Directory 107
  issues when using Tivoli 107
  LDAP 71
  user management 81

B
backup 82
branding 66
business data
  modeling 17
business views 18
  creating in Scenario Modeler 20
  enabling support 29
  lookup tables 34

C
checkpoints
  configuration 63
  clauses 42
Cognos Workspace
  integration 62
columns
  editing in View editor 40
connection pool 8
consolidated events 38
context tables
  working with Workbench 37
cubes (continued)
  publishing packages to IBM Cognos Business Intelligence 97
  threshold relationships 50
cubes
  creating 49
  creating dimensions 47
  data source connection 96
data source connections
cubes 96
data views 98, 99
data sources 4
  agents 8
data streams 34, 35, 38
  upsert 36
  views 48
data types
  JDBC 13
  DB2 JDBC agent 8
dimensions 46
  creating 47
directories
  log files 87
disabled state 17
Display SQL expression option 45
Drill back to detail
  View in editor 44
drill through targets
  creating 54
e-mail transport 78
enabled state 17
encryption 66
event file for uploading 38
events
  consolidated 38
  maintaining 45
  uploading from text 38
  VC_SYSTEM_EVENTS 90
execution throttling 67
export
  all metadata 82
  selected objects 57
external links 52
external processes list
  viewing 62
fields
  editing in View editor 40
files
  _export.jar 83
  bam_detailed.log 87
  bam.log 87
  DEFAULTRECOVERYLOGGER_ 65
  flat 11
  JAR 50
  user defined functions 50
folders 31
  adding 31
  deleting 31
  JAR 51
  moving 31
  renaming 31
  user defined functions 51

G
geocoder
  accuracy 111
  interface 112
geography maps 68
  extending support 112
  geocoder 112
  geocoder accuracy 111
  GeoPoint Class 114
  tuning 111
GeoPoint Class 114

I
IBM Cognos BI 69
IBM Cognos Business Intelligence
  IBM Cognos Workspace 103
  interoperability 93
IBM Cognos Workspace
  integration 103
images
  header logo 66
  logos 66
integration
  IBM Cognos Workspace 103
invalid object 17
invalidation schedules 15

J
JAR Files folder 51
JDBC
  access 70
  cubes 70
  data types 13
  views 70

K
keystores 66

L
LDAP 71
  role mapping 71
  synchronization 71
  user mapping 71
logging 86

logging (continued)
  Appender Class 74
  assigning levels 90
  destinations 87
  directory for log files 87
  file prefix 74
  levels 76, 88
  log4j properties 74
  loggers 88
  maximum file size 74
  maximum files 74
  modules 88
  monitoring with rules 90
  rollover period 74
  synchroneity 74
lookup tables 4, 34, 37
  data 8
  data source agents 8
  data streams 48
  editing 11
  flat file 11
  JDBC source definition 8
  limitations 12
  Salesforce tables 10
  setting up data sources 4
  source definitions 8
  web service 9

M
metadata 82
  export 82
  import 82
MySQL
  JDBC agent 8

N
new features
  version 10.2.0 ix
notifications
  deleting automatically 79

O
object dependencies 33
objects
  create new 30
  exporting 57
  invalid 17
  searching for 31
Oracle
  JDBC agent 8

P
packages
  publishing to IBM Cognos Business Intelligence 97, 101
  testing 103
performance
  event publication rate 67
performance tuning
  memory low conditions 77
permissions
  roles 61
permissions (continued)
users 60
Persist view data 44
persistence 63
plan relationships
  cubes 50
  views 46
PostgreSQL
  JDBC agent 8
process definitions
  creating 53
properties
log4j 74

R
recovery 63
reference data 50
  views 46, 50
reportlets
  data 23
  external 52
  Rule Filter of Data Stream Data 23
  Scenario Modeler 27
  testing 38
  third party 52
reports
  drill through targets 54
roles
  managing 61
  permissions 61
  removing external roles 109
RPC style messages 8
Rule Filter of Data Stream Data 23
rule templates 25
  creating 26
  details 26
rules
  creating in Scenario Modeler 21
  templates 25
  testing 38
rules editor 21
running state 17

S
Salesforce tables 10
Scenario Modeler 17
scenarios
  creating in Scenario Modeler 20
  testing 38
  what if 38
settings
  thread configuration 79
  shutdown 79
single sign-on
  IBM Cognos Business Intelligence 93
SMTP configuration 78
source definitions
  creating 8
  editing 11
  flat file 11
  Salesforce tables 10
  web service 9
SQL
  display a view definition 45
SQL (continued)
  JDBC agent 8
  stand-by state 17
  stopped state 17
  stopping the servers 79
  Sybase
    JDBC agent 8
    limitations 12
    system administration
      managing 59
    system controls 79
    system logging 86
    assigning levels 90
    destinations 87
    levels 88
    loggers 88
    modules 88
    monitoring with rules 90
    system settings 62
  T
  tabs 67
    Custom Branding 66
    Memory Monitoring 77
    workbench 30
  testing
    cube-based packages 103
    view-based packages 103
  text file
    uploading to event stream 38
    thread configuration settings 79
  time-out period
    setting 78
  Tivoli
    authentication issues 107
  troubleshooting
    authentication issues when using Active Directory 107
    authentication issues when using Tivoli 107
    cache issues when integrating with Business Insight 109
    external users and roles 109
    import and export of tasks does not import tasks 109
    Real-time Monitoring Workbench 107
    views as data sources on 64-bit Windows systems 108
  tuning
    event publication rate 67
    geography maps 111
    memory low conditions 77

U
Upload Event File 38
upsert
  data streams 36
User Defined Functions folder 51
user interface
  configuration settings 79
users
  creating 60
  managing 60
  removing external users 109
V

View editor 39
  Drill back to detail 44
  fields 40
  From clause 43
  Maintain in View 45
  Order by clause 43
  Persist view data 44
  Where clause 43
  Window clause 43
workset 40
views
  creating 40
  creating in Scenario Modeler 20
  data source connection 98, 99
  data sources in IBM Cognos Business Intelligence 98
  display definition in SQL 45
  editing 40

views (continued)
  publishing packages to IBM Cognos Business Intelligence 101
  stateless 45
  testing 38
  troubleshooting on 64-bit Windows systems 108
  View editor 39

W

web service
  creating a source definition 9
workbench 2, 30
  launching 1
workset 40
Workspace
  integration 93