IBM Cognos Business Intelligence
Version 10.2.1

Dynamic Query Guide
# Contents

## Introduction

Chapter 1. What’s new in the Dynamic Query Mode

- New features in the dynamic query mode in version 10.2.1... 
- New governors in Cognos Framework Manager to control query performance and execution...
- New property to control stored procedures requiring read/write transactions...
- New features in the dynamic query mode in version 10.2.0...

Chapter 2. Dynamic query mode

- Key improvements...
- In-memory caching...
- Optimized master detail relationships in reports...
- Enhanced null suppression...
- Query visualizations...
- Considerations when using the dynamic query mode...
  - OLAP over relational considerations...
  - Models that use multiple data sources...
  - Minimal support for SAP BW modeling in Framework Manager...
  - Importing relational metadata to Framework Manager...

Chapter 3. Set up the dynamic query mode

- Setting up reporting connectivity for relational databases to use the dynamic query mode...
  - Setting up connectivity for IBM DB2 data sources on Linux, UNIX, and Microsoft Windows...
  - Setting up connectivity for IBM DB2 data sources on z/OS...
  - Setting up connectivity for IBM Netezza data sources...
  - Setting up connectivity for Microsoft SQL Server data sources...
  - Setting up connectivity for Oracle data sources...
  - Setting up connectivity for SAP ECC data sources...
  - Setting up connectivity for Siebel data sources...
  - Setting up connectivity for Teradata data sources...
  - Setting up connectivity for data sources using the JDBC connection type...
  - Setting up reporting connectivity for OLAP data sources to use the dynamic query mode...
  - Setting up connectivity for IBM Cognos TM1 data sources...
  - Setting up connectivity for Oracle Essbase data sources...
  - Setting up connectivity for Microsoft SQL Server Analysis Services data sources...
  - Setting up connectivity for SAP BW data sources...

- Enabling Framework Manager models and packages to use the dynamic query mode...
  - Creating a project, connection, and package for an IBM DB2 data source...
  - Creating a project, connection, and package for an IBM Cognos TM1 data source...
  - Creating a project, connection, and package for an IBM Netezza data source...
  - Creating a project, connection, and package for a Teradata data source...
  - Creating a project, connection, and package for a Microsoft SQL Server Analysis Services data source...
  - Creating a project, connection, and package for a SAP BW data source...
  - Creating a project, connection, and package for an ERP data source...
  - Creating a project, connection, and package for an Oracle data source...
  - Changing the query mode for a project...

- Overriding the query mode for packages or query testing...

Administer the Query Service...

Member ordering...

Test migrated reports using Lifecycle Manager...

Framework Manager governors for the dynamic query mode...

Stored procedures and transaction access modes...
Introduction

This document describes the benefits of the dynamic query mode of IBM® Cognos® Business Intelligence and will help you decide whether to use it for your organization. It provides the steps that are necessary to implement dynamic query mode.

Finding information

To find IBM Cognos product documentation on the web, including all translated documentation, access one of the IBM Cognos Information Centers (http://pic.dhe.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

IBM Cognos HTML documentation has accessibility features. PDF documents are supplemental and, as such, include no added accessibility features.

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.

Samples disclaimer

The Sample Outdoors Company, Great Outdoors Company, GO Sales, any variation of the Sample Outdoors or Great Outdoors names, and Planning Sample depict fictitious business operations with sample data used to develop sample applications for IBM and IBM customers. These fictitious records include sample data for sales transactions, product distribution, finance, and human resources. Any resemblance to actual names, addresses, contact numbers, or transaction values is coincidental. Other 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.
Chapter 1. What’s new in the Dynamic Query Mode

This section contains a list of new, changed, deprecated, 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.

To review an up-to-date list of the environments that are supported by IBM Cognos products, including information about operating systems, patches, browsers, web servers, directory servers, database servers, and application servers, see Supported Software Environments (http://www.ibm.com/support/docview.wss?uid=swg27037784).

For an overview of new features for this release, see the IBM Cognos Business Intelligence New Features Guide.

New features in the dynamic query mode in version 10.2.1

This release contains new features.

**New governors in Cognos Framework Manager to control query performance and execution**

There are new governors available in IBM Cognos Framework Manager that control the performance and execution of queries.

**(DQM) Context sensitive join selection**

Controls the computation of join paths for a query in a star schema grouping that does not contain a fact.

**(DQM) Local cache policy**

Controls the level of queries for which reusable cursors are created.

**(DQM) Cursor mode**

Controls how long the resources required by a query are retained before they are released.

**(DQM) Master-detail optimization**

Controls whether detail query caching occurs for a relational master-detail query.

**Related concepts:**

“Framework Manager governors for the dynamic query mode” on page 46

IBM Cognos Framework Manager provides governors that are specific to the dynamic query mode.

**New property to control stored procedures requiring read/write transactions**

In the dynamic query mode, you can now control how the data is processed for a query subject that is based on a stored procedure.
Set the **Transaction Access Mode** property in IBM Cognos Framework Manager to specify whether a data source is accessed in read-only or read/write mode.

**Related concepts:**

“Stored procedures and transaction access modes” on page 50

For query subjects that are based on stored procedures, modify the **Transaction Access Mode** property in IBM Cognos Framework Manager to affect how the data is processed.

---

**New features in the dynamic query mode in version 10.2.0**

Listed are new features since the last release.

**Access to ERP data sources**

You can now directly access data sources from various ERP vendors in the dynamic query mode. Support is added for the following data sources:

- Salesforce.com
- SAP ECC
- Siebel

For more information, see “Creating a project, connection, and package for an ERP data source” on page 32.

**Improved documentation**

The *IBM Cognos Dynamic Query Guide* is improved by the inclusion of additional information that describes how to use specific data sources with the dynamic query mode. Much of this information previously was included in the IBM Cognos 10 *Dynamic Query Cookbook*, available only as a web download. The cookbook continues to be available with other material in the Cognos Proven Practices section of the IBM website (http://www.ibm.com/developerworks/data/library/cognos/cognosprovenpractices.html).

**Improved support for data items with more than 15 digits of precision**

Previous versions of IBM Cognos Business Intelligence were unable to support data items with more than 15 digits of precision. Up to 32 digits of precision are now supported in the dynamic query mode.
Chapter 2. Dynamic query mode

The success of your business depends on your ability to analyze information, quickly find the right answers, and make timely responses. To meet this challenge, IBM Cognos Business Intelligence provides an enhanced Java™-based query execution mode while still maintaining native access to the leading data sources.

The dynamic query mode is recommended for new applications of IBM Cognos Business Intelligence.

It offers key query optimizations to address query complexity and data volumes with improved query execution. It also provides advanced query capabilities such as in-memory caching, that provide benefits for query planning, execution, and results. You can still maintain secure access to your business data based on users' security permissions.

You can visualize and troubleshoot the query logs generated by the dynamic query mode with IBM Cognos Dynamic Query Analyzer, a query visualization tool.

You can use the dynamic query mode with the following OLAP data sources:
- IBM Cognos TM1®
- SAP Business Information Warehouse (SAP BW)
- Oracle Essbase
- Microsoft Analysis Services

You can use the dynamic query mode for OLAP over relational models with the following relational data sources:
- IBM DB2®
- IBM DB2 for z/OS®
- IBM Informix®
- IBM Netezza®
- Oracle
- Microsoft SQL Server
- SAP ECC
- Siebel
- Teradata

You can use the dynamic query mode to perform relational reporting with relational data sources.

**Tip:** You cannot use XML data sources with the dynamic query mode.

To review an up-to-date list of the environments that are supported by IBM Cognos products, including information about operating systems, patches, browsers, web servers, directory servers, database servers, and application servers, see [Supported Software Environments](http://www.ibm.com/support/docview.wss?uid=swg27037784).
64-bit report server

If you use a 64-bit installation of IBM Cognos Business Intelligence and the dynamic query mode, you can use the 64-bit report server. This report server supports only reports created with the dynamic query mode. It provides improved report performance in demanding environments that involve the execution of multiple reports simultaneously, large data sets, and complex reports.

For more information about configuring the 64-bit report server, see the *IBM Cognos Business Intelligence Installation and Configuration Guide*.

How the dynamic query mode helps your organization

The following table outlines the benefits of the dynamic query mode for each role within your organization.

<table>
<thead>
<tr>
<th>Role</th>
<th>Business problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT Manager and Data Professional</td>
<td>You have or are moving to Java-based architectures and you require JDBC or Java connectivity to data sources.</td>
<td>The dynamic query mode provides expanded data reach to support connectivity to various data sources.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IBM Cognos Business Intelligence now provides Java connectivity to OLAP data source such as IBM Cognos TM1, Oracle Essbase, and SAP BW.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IBM Cognos Business Intelligence now provides JDBC connectivity to many relational data sources.</td>
</tr>
<tr>
<td>IT Manager and IT Administrator</td>
<td>More database vendors exclusively support 64-bit platforms. You want your applications to take advantage of your investment in 64-bit technology.</td>
<td>The IBM Cognos Business Intelligence query platform supports 64-bit environments which provide better memory management and improved scalability and performance.</td>
</tr>
<tr>
<td>Modeler and IT Manager</td>
<td>Your business users want to quickly find answers when looking at information. As an IT manager, you want to provide this while maintaining the security of your applications.</td>
<td>With the dynamic query mode, business users get the right information quickly without compromising security.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In-memory caching stores both the query plan and the query results while maintaining the security permissions for each user.</td>
</tr>
<tr>
<td>Role</td>
<td>Business problem</td>
<td>Solution</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>BI Director and IT Manager</td>
<td>You invested in OLAP and relational technologies and you want to optimize and gain the maximum value from your investment.</td>
<td>The dynamic query mode provides optimized access to OLAP data sources. It provides customized and enhanced MDX for the specific source and version of your OLAP technology, and it harnesses the intelligence of the OLAP data source. The dynamic query mode provides SQL generation optimizations for relational data sources.</td>
</tr>
<tr>
<td>BI Administrator</td>
<td>You find it challenging to easily troubleshoot what happens when a query is planned and executed.</td>
<td>The dynamic query mode provides detailed logging and query visualization. IBM Cognos Dynamic Query Analyzer enables you to visualize the logs and helps you troubleshoot.</td>
</tr>
</tbody>
</table>

To review an up-to-date list of the environments that are supported by IBM Cognos products, including information about operating systems, patches, browsers, web servers, directory servers, database servers, and application servers, see [Supported Software Environments](http://www.ibm.com/support/docview.wss?uid=swg27037784).

### Key improvements

The dynamic query mode offers query and data source optimizations to address increasing query complexity, large data volumes, and timeliness expectations with improved query execution techniques.

### Dynamic query mode highlights for your data source

The dynamic query mode offers different optimization benefits depending on the data source that you use.

<table>
<thead>
<tr>
<th>Data sources</th>
<th>Benefits of dynamic query mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>OLAP over relational (dimensionally-modeled relational)</td>
<td>JDBC connectivity&lt;br&gt;64-bit connectivity&lt;br&gt;Null suppression optimizations&lt;br&gt;Master-detail optimizations&lt;br&gt;In-memory caching</td>
</tr>
</tbody>
</table>
### Data sources

<table>
<thead>
<tr>
<th>Data sources</th>
<th>Benefits of dynamic query mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAP Business Information Warehouse (SAP BW)</td>
<td>Java connectivity for Oracle Essbase and SAP BW</td>
</tr>
<tr>
<td>and</td>
<td>64-bit connectivity for SAP BW</td>
</tr>
<tr>
<td>Oracle Essbase</td>
<td>Null suppression optimizations</td>
</tr>
<tr>
<td></td>
<td>Master-detail optimizations</td>
</tr>
<tr>
<td></td>
<td>In-memory caching</td>
</tr>
<tr>
<td>IBM Cognos TM1</td>
<td>64-bit connectivity</td>
</tr>
<tr>
<td></td>
<td>Null suppression optimizations</td>
</tr>
<tr>
<td></td>
<td>Master-detail optimizations</td>
</tr>
<tr>
<td>Microsoft Analysis Services</td>
<td>XMLA provider support</td>
</tr>
<tr>
<td></td>
<td>Null suppression optimizations</td>
</tr>
<tr>
<td></td>
<td>Master-detail optimizations</td>
</tr>
</tbody>
</table>

### In-memory caching

By default, with the dynamic query mode, all data sources use a local cache.

The dynamic query mode offers improved caching for OLAP over relational, SAP BW, and Oracle Essbase data sources. When the dynamic query mode is enabled on a package, the cache is built on demand as users build and run reports, perform analyses, execute reports in batch mode, and so on. When a report is run, a number of requests are made to the underlying data sources. Those requests range from metadata requests to data requests. As results are returned, the query engine caches each request for future use. By default, the cache is specific to the user and the data source. In addition, the cache is independent and can be shared by all report processes on the same dispatcher.

The optimized cache provides better query performance by reusing previously executed results and, when possible, avoids sending new queries to the data source. Caching provides the greatest performance improvement when reports are re-run with small modifications, analyses are performed within the same cube, and repetitive master detail requests are performed for large reports. The cache maintains the security permissions of the user who is executing the request.

Report authors benefit from the performance improvements of the cache. For example, a report is authored and includes various dimensions and measures. The report author runs the report and then decides to add calculations using the existing measures. Caching allows report authors to make changes to reports, from simple formatting to complex calculation adjustments, without the need to constantly refresh data.
Users also benefit when running the same report in different output formats. For example, you run a report in CSV format. You then run the same report in PDF format. With caching, re-querying the data source is not required because all data is retrieved from the cache.

When performing analyses, metadata requests from the data source are required to present data to users. Metadata requests are often costly, in terms of speed and performance, when running reports. Without the use of the dynamic query mode, only some metadata results could be reused. For example, with SAP BW data sources, metadata requests that were obtained using MDX with variables are never reused. With the dynamic query mode, they can now be reused. This makes hierarchy navigation easier and faster.

For relational data sources, enable caching by changing one of the following settings:
- Enable the **Allow usage of local cache** governor in IBM Cognos Framework Manager.
- Enable the **Use Local Cache** query property for a report in IBM Cognos Report Studio.

For OLAP over relational data sources, you can use the **Cache is sensitive to DB info** and **Cache is sensitive to model security** governors in Cognos Framework Manager.

Using IBM Cognos Administration, you can analyze cache usage and maintain cache storage manually or automatically using scheduling. For more information about administering the cache, see the *IBM Cognos Administration and Security Guide*.

For more information about how the cache works, see the IBM Cognos 10 Dynamic Query Cookbook in the Business Analytics Proven Practices section of the IBM web site (http://www.ibm.com/developerworks/data/library/cognos/cognosprovenpractices.html).

**Related concepts:**
- "Framework Manager governors for the dynamic query mode" on page 46

IBM Cognos Framework Manager provides governors that are specific to the dynamic query mode.

---

### Optimized master detail relationships in reports

Master detail relationships allow you to deliver information that would otherwise require two or more reports.

You specify a relationship between the query in the master data container and the query in the detail data container. For example, you can combine a master list with a detail chart. The list can contain product lines and the chart can show details for each product line.

With the dynamic query mode, master detail reports with a crosstab report object are optimized to use a single query whenever possible, rather than a separate query for each report object instance.

For more information about creating master detail relationships, see the IBM Cognos Report Studio *User Guide*. 
Enhanced null suppression

Suppressing rows and columns that contain only null values makes a report easier to read.

For example, a product that has no sales for a given quarter may result in a very large report with thousands of cells that contain no data.

The time required to evaluate a table to determine which rows and columns contain only null values is mainly determined by the number of cells in the table. Other factors such as the nesting levels on the axes and the use of complex calculated columns might also affect the time.

The number of cells in a table is determined by the number of cross joins, which are the Cartesian product of member sets. The number of cross joins are calculated as follows:

crossjoin ((a1, a2), [b1,b2], [c]) = ([a1,b1,c] (a1,b2,c) (a2,b1,c) (a2,b2,c))

In the following example, the resolved edge has $1 \times 1 \times 170 \times 818 = 113,751,080$ tuples, or cells, to process.

IBM Cognos Business Intelligence introduces query optimizations for suppression when authoring reports with OLAP data sources in IBM Cognos Query Studio, IBM Cognos Report Studio, and IBM Cognos Workspace Advanced, where you can enable suppression with the suppress button.

If a cell's expression evaluates to null, it does not have to be computed during query evaluation, which reduces the number of cells that need to be processed.

The results vary based on a combination of the structure of the cube, the cardinality, the style of report, the size of the query, and the sparsity of the results.

In IBM Cognos Analysis Studio, when using a package with the dynamic query mode enabled, null suppression of rows and columns is processed at the data source, which results in improved performance.

For more information about null suppression and implementing optimizations specific to IBM Cognos TM1 data sources, see the IBM Cognos 10 Dynamic Query Guide.
Query visualizations

IBM Cognos Dynamic Query Analyzer, a query visualization tool available on the Microsoft Windows and Linux operating systems, helps you troubleshoot by allowing you to look at your IBM Cognos queries in a graphical way.

It allows you to easily access and analyze the query log files. It allows you to view the MDX code generated by a query in a friendlier format than looking at the log files in a text editor.

For example, you create a report that runs slower than expected or produces unexpected results. Or you have a report that fails and it is not clear from the error message why the report is failing. You capture the run tree and analyze it using Dynamic Query Analyzer.

For more information about how to install, configure, and use Dynamic Query Analyzer, see the IBM Cognos Dynamic Query Analyzer Installation and Configuration Guide and the IBM Cognos Dynamic Query Analyzer User Guide.

Considerations when using the dynamic query mode

The dynamic query mode features query optimizations and enhanced query behavior. It enforces modeling and reporting best practices in the user interface and applies clear behavior rules that are consistent with constructs used in the report.

The dynamic query mode is recommended for new applications of IBM Cognos Business Intelligence. You can enable the dynamic query mode for new or existing Cognos Framework Manager projects.

Migrating existing applications to the dynamic query mode will require that you adjust your model and modify your reports to resolve differences in the migrated reports. Report differences will occur because of changes in query behavior. For example, changes in sorting, aggregation, and suppression will require that you modify your existing reports. Stronger enforcement of best practices and query syntax in the dynamic query mode may result in you receiving warnings and errors from migrated reports.

Before you begin to migrate existing applications to the dynamic query mode, you must plan carefully and prepare accordingly. For more information, see the IBM Cognos 10 Dynamic Query Cookbook in the Business Analytics Proven Practices section of the IBM website (http://www.ibm.com/developerworks/data/library/cognos/cognosprovenpractices.html).

OLAP over relational considerations

If you use OLAP over relational data sources, consider the following.

As a business analyst working with your business intelligence application, you do not always know what questions you want to ask of the data. You are often on a discovery mission to determine what questions the data can answer. When you need to ask a question of the data, you cannot afford to tweak the models or ask
your database administrator to tune the generated SQL to run against the data. Generating ad hoc analyses or reports that use the appropriate combination of technologies, such as caching and data source capabilities, produces an efficient query strategy.

A common requirement is to produce reports that contain metrics that each have their own filtering criteria. For example, a hotel property report shows revenue for total stays, revenue for rewards members, and revenue for rewards members that have enrolled within the last six months. This query can be solved by calculating each metric separately and then joining the final results.

You can combine data from multiple large fact tables, each having a different granularity. For example, an ad hoc report shows a market analysis query that gives insight to the behavior, over time, of a set of customers or accounts that meet some criteria.

**Models that use multiple data sources**

You cannot enable the dynamic query mode on models that contain both supported and unsupported data sources.

If a package containing both supported and unsupported data sources is published with dynamic query mode, users will get an error when opening the package in the Studios.

**Minimal support for SAP BW modeling in Framework Manager**

The dynamic query mode provides limited support for modeling SAP BW data sources in IBM Cognos Framework Manager.

Creating the following objects in a model is not supported:

- Shortcuts
- Query subjects
- Calculations
- Expressions that include filters

In addition, the test functionality is disabled when you work in the dynamic query mode. You can still model and publish packages, however you cannot test dimensions or other objects.

When modeling SAP BW metadata for the dynamic query mode, the following actions are supported:

- Setting attributes for prompts (modelFilterReference)
- Changing variable prompt types
- Setting variable default values
- Using all the governors for SAP BW

For more information about modeling SAP BW metadata, see the *IBM Cognos Framework Manager User Guide*.

**Importing relational metadata to Framework Manager**

A new capability has been added to IBM Cognos Administration. The *Import relational metadata* capability specifies that a group has the ability to import relational metadata into a Framework Manager project using dynamic query mode.
By default, the System Administrator, Directory Administrator and Report Administrators groups belong to the **Import relational metadata** capability.

To perform relational imports to a dynamic query mode project, other groups must to be manually added to the capability. For example, if you create a Framework Manager Users group and add your Framework Manager users to that group, you also need to add the group to the **Import relational metadata** capability.
Chapter 3. Set up the dynamic query mode

If you decide to use the dynamic query mode, complete the following tasks to configure the mode, set up connectivity, and publish and test your reports.
1. Set up connectivity to the dynamic query mode by installing JDBC drivers for relational data sources and the required database client for OLAP data sources.
2. In IBM Cognos Administration, create data source connections. For relational data sources, you must enable a JDBC connection when you create or modify existing data source connections. For more information about creating data source connections, see the IBM Cognos Administration and Security Guide.
3. In IBM Cognos Administration, administer the Query Service.
4. Use IBM Cognos Lifecycle Manager to compare your reports run with the dynamic query mode with the same reports run in a previous version of IBM Cognos Business Intelligence.
5. In IBM Cognos Framework Manager, enable packages to use the dynamic query mode and then publish them.
6. Use IBM Cognos Dynamic Query Analyzer to view a graphical representation of the queries generated when running a report and to troubleshoot the queries. You can also run reports from within Dynamic Query Analyzer. For more information about using Dynamic Query Analyzer, see the IBM Cognos Dynamic Query Analyzer User Guide.

Setting up reporting connectivity for relational databases to use the dynamic query mode

To allow the reporting engine to connect to supported relational databases using dynamic query mode, you must install the required Java Database Connectivity (JDBC) driver files, and then either copy them to the IBM Cognos installation directory or specify their location in a properties file.

If you copy the driver files to the IBM Cognos installation directory and modify the properties file, the driver files in the IBM Cognos installation directory take precedence over the settings in the properties file.

**Important:** Dynamic query mode requires Java Runtime Environment (JRE) 1.5 or 1.6. You must use the driver files that are provided with the JRE that your relational database uses.

**What to do next**

You must also do the following:
- Create data source connections that use JDBC connectivity to the relational databases. Existing data source connections will not use JDBC connectivity. For more information, see the IBM Cognos Administration and Security Guide.
- Publish packages with the option to use dynamic query mode. Existing packages will not use dynamic query mode. For more information, see the IBM Cognos Framework Manager User Guide.
Related tasks:

“Enabling Framework Manager models and packages to use the dynamic query mode” on page 22

Use IBM Cognos Framework Manager to create models and publish packages to IBM Cognos Business Intelligence in the dynamic query mode.

Setting up connectivity for IBM DB2 data sources on Linux, UNIX, and Microsoft Windows

You can set up connectivity between IBM Cognos Business Intelligence and IBM DB2 data sources on computers running a Linux, UNIX, or Microsoft Windows operating system for use with the dynamic query mode.

Connectivity requires access to the IBM DB2 type 4 JDBC driver and its appropriate license file.

Procedure

1. If you are running DB2 for Linux, UNIX and Windows, do the following:
   a. Copy the following files from the DB2_installation\SQLLIB\JAVA directory to the c10_location\webapps\p2pd\WEB-INF\lib directory:
      • db2jcc4.jar
      • db2jcc_license_cu.jar
   b. Stop and restart the IBM Cognos service.
2. If you are running DB2 for z/OS, do the following:
   a. Copy the following files from the DB2_installation\SQLLIB\JAVA directory to the c10_location\webapps\p2pd\WEB-INF\lib directory:
      • db2jcc4.jar
      • db2jcc_license_cisuz.jar
   b. Stop and restart the IBM Cognos service.

Setting up connectivity for IBM DB2 data sources on z/OS

You can set up connectivity between IBM Cognos Business Intelligence and IBM DB2 data sources on the z/OS operating system for use with the dynamic query mode.

You must be running DB2 UDB for Linux, UNIX, Windows, z/OS, OS/390®, and iSeries®.

You can either copy the appropriate driver and license files or create symbolic links to them.

Connectivity requires access to the IBM DB2 type 4 JDBC driver and its appropriate license file.

Procedure

1. Before you create symbolic links to the files, ensure that you have write permission in the directory where the link will reside.
   a. To create symbolic links to the universal driver file, db2jcc4.jar, type the following commands:
      • ln -s $DB2HOME/db2910_jdbc/classes/db2jcc4.jar c10_location/
v5dataserver/lib/db2jcc.jar
To create symbolic links to the license file, `db2jcc_license_cisuz.jar`, type the following commands:

```
ln -s $DB2HOME/db2910_jdbc/classes/db2jcc_license_cisuz.jar c10_location/
webapps/p2pd/WEB-INF/lib/db2jcc.jar
```

2. To copy the driver and license files, in your DB2 installation, go to the directory where the JDBC driver and license files are located. For example, the `$DB2HOME/db2910_jdbc/classes` directory.

   a. Copy the following files to the `c10_location/v5dataserver/lib` and `c10_location/webapps/p2pd/WEB-INF/lib` directories:
      - The universal driver file, `db2jcc4.jar`
      - The license file for DB2 on z/OS, `db2jcc_license_cisuz.jar`

3. Stop and restart the IBM Cognos service.

### Setting up connectivity for IBM Netezza data sources

You can set up connectivity between IBM Cognos Business Intelligence and IBM Netezza data sources for use with the dynamic query mode.

Connectivity requires access to the Netezza type 4 JDBC driver.

**Procedure**

1. Copy the `nzjdbc.jar` file from the `Netezza_client_installation` directory to the `c10_location/webapps/p2pd/WEB-INF/lib` directory.
2. Stop and restart the IBM Cognos service.

### Setting up connectivity for Microsoft SQL Server data sources

You can set up connectivity between IBM Cognos Business Intelligence and Microsoft SQL Server data sources for use with the dynamic query mode.

Connectivity requires access to the Microsoft SQL Server type 4 JDBC driver.

**Procedure**

1. Download and install the Microsoft SQL Server JDBC driver from the Microsoft website. To locate it, use the search term “Microsoft SQL Server JDBC Driver”.
2. Copy the `sqljdbc4.jar` file from the `Microsoft_SQL_Server_JDBC_driver_installation` directory to the `c10_location/webapps/p2pd/WEB-INF/lib` directory.
3. Stop and restart the IBM Cognos service.

### Setting up connectivity for Oracle data sources

You can set up connectivity between IBM Cognos Business Intelligence and Oracle data sources for use with the dynamic query mode.

Connectivity requires access to the Oracle type 4 JDBC driver.
Procedure
1. Copy the appropriate file from the Oracle_installation directory of the database to be used for the connection to the c10_location\v5databserver\lib directory.
   - If your version of IBM Cognos BI uses Java version 1.5, copy the ojdbc5.jar file.
   - If your version of IBM Cognos BI uses Java version 1.6, copy the ojdbc6.jar file.
2. Stop and restart the IBM Cognos service.

Setting up connectivity for SAP ECC data sources
You can set up connectivity between IBM Cognos Business Intelligence and SAP ECC data sources for use with the dynamic query mode.

Connectivity requires access to the SAP JCO 3.0 libraries.

Procedure
1. On a Microsoft Windows operating system, copy the sapjco3.dll file from the SAP JCO 3.0 libraries to the appropriate location:
   a. If you have a 32-bit version of IBM Cognos BI, copy the file to the c10_location\bin directory.
   b. If you have a 64-bit version of IBM Cognos BI, copy the file to the c10_location\bin64 directory.
2. On a UNIX operating system, copy the libsapjco3.so file from the SAP JCO 3.0 libraries to the appropriate location:
   a. If you have a 32-bit version of IBM Cognos BI, copy the file to the c10_location\bin directory.
   b. If you have a 64-bit version of IBM Cognos BI, copy the file to the c10_location\bin64 directory.
3. Copy the sapjco.jar file to the c10_location\webapps\p2pd\WEB-INF\lib directory.
4. Stop and restart the IBM Cognos service.

Related tasks:
“Creating a project, connection, and package for an ERP data source” on page 32
To use an ERP data source with the dynamic query mode in IBM Cognos Business Intelligence, you must first create a project, connection, and package in IBM Cognos Framework Manager. You then publish the package, which makes it available in Cognos BI and uses the dynamic query mode for reports.

Setting up connectivity for Siebel data sources
You can set up connectivity between IBM Cognos Business Intelligence and Siebel data sources for use with the dynamic query mode.

Connectivity requires access to the Siebel version 8.0 or 8.1 library.

Procedure
1. From the Siebel library, copy the following files to the c10_location\webapps\p2pd\WEB-INF\lib directory:
   - Siebel.jar
   - SiebelJl_enu.jar
2. Stop and restart the IBM Cognos service.

Related tasks:
“Creating a project, connection, and package for an ERP data source” on page 32

To use an ERP data source with the dynamic query mode in IBM Cognos Business Intelligence, you must first create a project, connection, and package in IBM Cognos Framework Manager. You then publish the package, which makes it available in Cognos BI and uses the dynamic query mode for reports.

Setting up connectivity for Teradata data sources

You can set up connectivity between IBM Cognos Business Intelligence and Teradata data sources for use with the dynamic query mode.

Connectivity requires access to the Teradata type 4 JDBC driver.

Procedure
1. Copy the following files from the Teradata_installation directory of the database to be used for the connection to the c10_location\webapps\p2pd\WEB-INF\lib directory:
   • terajdbc4.jar
   • tdsccsconfig.jar
2. Stop and restart the IBM Cognos service.

Setting up connectivity for data sources using the JDBC connection type

You can set up connectivity using the JDBC connection type between IBM Cognos Business Intelligence and certain data sources for use with the dynamic query mode.

To review an up-to-date list of the environments that are supported by IBM Cognos products, including information about operating systems, patches, browsers, web servers, directory servers, database servers, and application servers, see [Supported Software Environments](http://www.ibm.com/support/docview.wss?uid=swg27037784).

Before you begin

You must have access to the JDBC driver provided by your database vendor. Select the version that matches your version of your data source. This version may vary depending on software updates, patches, revisions, and service packs.

Procedure
1. Install the appropriate driver software. Copy the driver file to the c10_location\webapps\p2pd\WEB-INF\lib directory.
2. Stop and restart the IBM Cognos service.

Setting up reporting connectivity for OLAP data sources to use the dynamic query mode

To allow the reporting engine to connect to supported OLAP data sources using dynamic query mode, you must install the full, or thick, client provided by the OLAP vendor.
For information about how to set up connectivity to your OLAP data source provider, see the IBM Cognos Dynamic Query Guide.

**What to do next**

You must also do the following:

- If you use Oracle Essbase version 11.1.2 on a UNIX or 64-bit Microsoft Windows operating system, you must configure the ARBORPATH and ESSBASEPATH environment variables.

  During the Oracle Essbase client installation, the two environment variables ARBORPATH and ESSBASEPATH are created. IBM Cognos BI uses these variables to find the Oracle Essbase client location. You must install the 64-bit Essbase client provided by Oracle. This 64-bit client includes a 32-bit client that IBM Cognos BI uses. To point to this 32-bit client, you must manually change the ARBORPATH and ESSBASEPATH environment variables to replace EssbaseClient with EssbaseClient-32.

  For more information, see the IBM Cognos Dynamic Query Guide.

- If you use Oracle Essbase version 11.1.1, you must edit a configuration file to inform the IBM Cognos BI server of your version.

  By default, IBM Cognos BI is configured to use Oracle Essbase version 11.1.2. Therefore, no configuration is required if you use this version. If you use another supported version of Oracle Essbase, you must edit the qfs.config.xml file for your version.

  In addition, if you use Oracle Essbase version 11.1.2, you must install Oracle Foundation Services as well as the Oracle Essbase client.

  For more information, see the IBM Cognos Dynamic Query Guide.

- Create new data source connections to the OLAP data sources.

  Existing data source connections will not use dynamic query mode. For more information, see the IBM Cognos Administration and Security Guide.

- Publish packages with the option to use dynamic query mode.

  Existing packages will not use the dynamic query mode unless you republish them with the dynamic query mode option. For more information, see the IBM Cognos Framework Manager User Guide.

To review an up-to-date list of the environments that are supported by IBM Cognos products, including information about operating systems, patches, browsers, web servers, directory servers, database servers, and application servers, see [Supported Software Environments](http://www.ibm.com/support/docview.wss?uid=swg27037784).

**Related tasks:**

“Enabling Framework Manager models and packages to use the dynamic query mode” on page 22

Use IBM Cognos Framework Manager to create models and publish packages to IBM Cognos Business Intelligence in the dynamic query mode.

**Setting up connectivity for IBM Cognos TM1 data sources**

You can set up connectivity between IBM Cognos 10 Business Intelligence and IBM Cognos TM1 data sources for use with the dynamic query mode.

If you are running IBM Cognos 10 BI on the Microsoft Windows operating system, you must install the IBM Cognos TM1 client software on all computers running IBM Cognos Content Store.
Important: If you are running IBM Cognos 10 BI either on a UNIX or Linux operating system, the IBM Cognos TM1 client software is already installed. You do not need to configure or install any software and connectivity is already established between IBM Cognos 10 BI and IBM Cognos TM1.

Before you begin

You must have access to the IBM Cognos TM1 Server installation media.

Ensure that you have administrator privileges for the computer on which you are installing software.

Ensure that the computer has a TEMP system variable that points to the directory where you want to store temporary files. During installation, files are temporarily copied to this directory.

Procedure

1. To start the installation:
   - Go to the download location for the Cognos TM1 installation program that you want to use.
   - Or, insert the IBM Cognos TM1 product disk.
     If the installation wizard does not open automatically, go to the operating system directory to locate the issetup.exe file.

2. Depending on your operating system software, right-click or double-click the issetup.exe file.
   - On Microsoft Windows Vista, Windows 7, or Windows Server 2008 operating system software, right-click the issetup.exe file and click Run as Administrator.
   - For all other Windows operating system software, double-click the issetup.exe file.

3. Follow the directions in the installation wizard. Specify an installation path that is outside that of the IBM Cognos 10 BI directory structure, such as C:\Program Files\ibm\cognos\tm1. Choose to perform a custom installation.

4. In the Component Selection page, ensure that the only component selected is Clients > TM1 Client > TM1 OLEDB Provider.

5. In the TM1 Client Configuration page, ensure that all options are cleared and that the Admin Server Host machine name box is cleared.

6. Click Next until the installation begins. The installation runs until the component has been installed.

7. Click Finish.

8. Stop and restart the IBM Cognos service.

Setting up connectivity for Oracle Essbase data sources

You can set up connectivity between IBM Cognos Business Intelligence and Oracle Essbase data sources for use with the dynamic query mode.

By default, IBM Cognos BI is configured to use Oracle Essbase version 11.1.2. Therefore, no configuration is required if you use this version. If you use another supported version of Oracle Essbase, you must edit the qfs.config.xml file for your version.
In addition, if you use Oracle Essbase version 11.1.2, you must install Oracle Foundation Services as well as the Oracle Essbase client.

Both the compatible query mode and the dynamic query mode use the same Oracle Essbase client installation. The compatible query mode uses the grid API from the Oracle Essbase bin directory. The dynamic query mode uses JAR files located in the Oracle Essbase Java API lib directory. Both types of files are located using the Oracle Essbase environment variables created by the Oracle Essbase client install.

**Before you begin**

You must install Oracle Essbase client software on the computer running IBM Cognos BI.

**Procedure**

1. Open a command prompt and type `esscmd`. If the Oracle Essbase client was installed successfully, the Essbase Command Mode Interface runs and displays the product version.
2. Go to the `c10_location\configuration` directory.
3. Open the qfs_config.xml file in an xml or text editor.
4. Locate the following lines:
   ```xml
   <!--provider name="DB2OlapODP" libraryName="essodp111" connectionCode="DO"-->
   <provider name="DB2OlapODP" libraryName="essodp1112" connectionCode="DO">
   ```
5. For Oracle Essbase 11.1.1, change them as follows:
   ```xml
   <provider name="DB2OlapODP" libraryName="essodp111" connectionCode="DO">
   ```
6. For Oracle Essbase 11.1.2, ensure that the lines appear as follows:
   ```xml
   <provider name="DB2OlapODP" libraryName="essodp111" connectionCode="DO">-->
   ```
7. Save the qfs_config.xml file and close it.
8. Stop and restart the IBM Cognos service.

**Configuring Oracle Essbase on a UNIX or 64-bit Microsoft Windows operating system**

If you use an Oracle Essbase version 11.1.2 data source with IBM Cognos Business Intelligence on a UNIX or 64-bit Microsoft Windows operating system, you must manually configure the ARBORPATH and ESSBASEPATH environment variables.

The ARBORPATH and ESSBASEPATH environment variables are created during the installation of the Oracle Essbase client. IBM Cognos BI uses these variables to find the Oracle Essbase client location.

To use Oracle Essbase with IBM Cognos BI on a UNIX or 64-bit Microsoft Windows operating system, you must install the 64-bit Oracle Essbase client. This 64-bit client includes a 32-bit client that IBM Cognos BI uses. To point to this 32-bit client, you must manually change the ARBORPATH and ESSBASEPATH environment variables to replace EssbaseClient with EssbaseClient-32. The following example assumes that the client is installed on the C drive. Your installation location might be different.

```
ARBORPATH=C:\Hyperion\EPMSystem11R1\products\Essbase\EssbaseClient-32
ESSBASEPATH=C:\Hyperion\EPMSystem11R1\products\Essbase\EssbaseClient-32
```
Setting up connectivity for Microsoft SQL Server Analysis Services data sources

You can set up connectivity between IBM Cognos Business Intelligence and Microsoft SQL Server Analysis Services data sources for use with the dynamic query mode.

This process involves using the OLE DB Provider client software for Microsoft SQL Server Analysis Services.

Before you begin

You must have access to the Microsoft SQL Server Analysis Services OLE DB Provider client software installation media. There are many versions of this client software available from Microsoft. Select the version that matches your version of the SQL Server Analysis Services data source. This version may vary depending on software updates, patches, revisions, and service packs.

You may also need to install Microsoft Core XML Services for the client software installation to succeed.

Procedure

1. Install the appropriate Microsoft SQL Server Analysis Services OLE DB Provider client software:
   • If you are exclusively using the dynamic query mode on this computer, install the 64-bit client if your installation of IBM Cognos Business Intelligence also is 64-bit. Otherwise, install the 32-bit client.
   • If both the dynamic query mode and the compatible query mode will be used on the same computer, install the 32-bit client.
2. Stop and restart the IBM Cognos service.

Setting up connectivity for SAP BW data sources

You can set up connectivity between IBM Cognos Business Intelligence and SAP BW data sources for use with the dynamic query mode.

Both the compatible query mode and the dynamic query mode can use the same SAP BW client and the same client library.

Important: Apart from installing SAP BW client software on the computer running IBM Cognos BI, you only need to perform this task if you are running a 64-bit version of IBM Cognos BI and intend to use both the dynamic query mode and the compatible query mode.

Before you begin

You must install SAP BW client software on the computer running IBM Cognos BI.

You must obtain both the 32-bit and 64-bit librfc client libraries from the SAP BW Administrator or SAP Marketplace. The 64-bit librfc library must be version 7.10 or earlier.
Procedure
1. If either of the client libraries is compressed using SAPCAR, use the following command to decompress it: `s彦ar -xvf libfxxxxx.sar`, where `xxxxxx` is the version number.
2. Copy the 32-bit library into the `c10_location\bin` directory.
3. Copy the 64-bit library into the `c10_location\bin64` directory.
4. Stop and restart the IBM Cognos service.

Enabling Framework Manager models and packages to use the dynamic query mode

Use IBM Cognos Framework Manager to create models and publish packages to IBM Cognos Business Intelligence in the dynamic query mode.

After you enable connectivity by installing the required database client or JDBC driver file, you can create data source connections.

You can then enable the dynamic query mode only for new Framework Manager projects that use data sources that are supported for the dynamic query mode. The Use Dynamic Query Mode option at the project level is a global setting that controls all modeling actions within the project. When enabled at the project level, validating model objects, testing query subjects, updating and importing data, and publishing packages are all automatically performed in the dynamic query mode. In addition, all reports that use the package are run using the dynamic query mode.

Tip: You cannot enable the dynamic query mode if your model contains both supported and unsupported data sources for the dynamic query mode.

Related tasks:
- “Setting up reporting connectivity for relational databases to use the dynamic query mode” on page 13
To allow the reporting engine to connect to supported relational databases using dynamic query mode, you must install the required Java Database Connectivity (JDBC) driver files, and then either copy them to the IBM Cognos installation directory or specify their location in a properties file.
- “Setting up reporting connectivity for OLAP data sources to use the dynamic query mode” on page 17
To allow the reporting engine to connect to supported OLAP data sources using dynamic query mode, you must install the full, or thick, client provided by the OLAP vendor.

Creating a project, connection, and package for an IBM DB2 data source

To use an IBM DB2 data source with the dynamic query mode in IBM Cognos Business Intelligence, you must first create a project, connection, and package in IBM Cognos Framework Manager. You then publish the package, which makes it available in Cognos BI and uses the dynamic query mode for reports.

Before you begin

To use the compatible query mode in your model, you must install and configure the IBM DB2 client on the computer running Cognos Framework Manager.
Procedure

1. Open Cognos Framework Manager, then click Create a new project.
2. Enter a name and location for the new project.
3. Select Use Dynamic Query Mode, then click OK.
4. Choose a design language and click OK.
5. Ensure that Data Sources is selected, then click Next.
6. Click New to create a data source connection.
7. Click Next. In the Name field, enter a name for your new connection, then click Next.
8. From the Type list, select IBM DB2. Ensure that Configure JDBC connection is selected. Click Next.
9. Based on the connection information provided by your DB2 database administrator, enter the appropriate information. If applicable, select the authentication mode to be used. Configure the signon credentials, if applicable. Click Next.
10. On the Specify the IBM DB2 (JDBC) connection string page, specify the server name, port number, and database name.
11. Click Test the connection, then click Test. On the View the results page, the status of the connection tests for the dynamic query mode should be Succeeded.
12. Click Close, click Close again, then click Finish.
13. Click Close. The new data source appears in the list and can be queried using either the dynamic or compatible query modes.
14. Ensure that the IBM DB2 data source that you created is selected. Click Next, then select the tables that you want to import.
15. Click Import, then click Finish.
16. In the Project Viewer, expand the query. Double-click one of the query subjects. Its definition appears.
17. Click the Test tab. If the Query Mode property of the project is set to Dynamic, the test query runs in the dynamic query mode. If the Query Mode property is set to Compatible, there is an option to use the dynamic query mode on the Test tab. This option appears only if the query subject is for a data source supported by the dynamic query mode.
18. Select Use Dynamic Query Mode, if this option is available.
19. Click Test Sample. A test query is sent through the IBM Cognos Gateway to one of the Cognos BI servers, then to your DB2 database. The data retrieved by the test query appears in the Test tab.
20. Optional: On the Query Information tab, review the generated Cognos SQL and native SQL as well as the XML response from the Cognos BI server.

Tip: Test all of your model objects with the dynamic query mode to ensure that the SQL that was generated is as expected. If you are building a dimensionally modeled relational model, test foundation objects such as data source and model query subjects as well as regular and measure dimensions.
21. Click OK.
22. In the Project Viewer, right-click Packages, then click Create, then click Create Package.
23. Enter a name for the package, then click Next.
24. Click Yes to open the Publish wizard. Clear Enable model versioning and click Next twice to reach the Options page.
25. Select **Use Dynamic Query Mode**.

*Tip:* This option is available only when the **Query Mode** property of the project is set to **Compatible** and the package contains only supported data sources. If this option is not available and the **Query Mode** property of the project is set to **Dynamic** and the package contains only supported data sources, proceed to the next step.

26. Click **Publish**, then click **Finish**. The package is now available in Cognos BI and uses the dynamic query mode for reports.

*Tip:* In IBM Cognos Connection, you can verify the type of query mode used by the package by viewing the package properties.

**Creating a project, connection, and package for an IBM Cognos TM1 data source**

To use an IBM Cognos TM1 data source with the dynamic query mode in IBM Cognos Business Intelligence, you must first create a project, connection, and package in IBM Cognos Framework Manager. You then publish the package, which makes it available in Cognos BI and uses the dynamic query mode for reports.

You must publish a Cognos TM1 package directly from Cognos Framework Manager.

**Before you begin**

Ensure that the Cognos TM1 client is installed on your IBM Cognos BI servers and configured for connectivity to Cognos TM1.

To use the compatible query mode in your model, you must install and configure the Cognos TM1 client on the computer running Cognos Framework Manager.

**Procedure**

1. Open Cognos Framework Manager, then click **Create a new project**.
2. Enter a name and location for the new project.
3. Select **Use Dynamic Query Mode**, then click **OK**.
4. Choose a design language and click **OK**.
5. Ensure that **Data Sources** is selected, then click **Next**.
6. Click **New** to create a data source connection.
7. Click **Next**. In the **Name** field, enter a name for your new connection, then click **Next**.
8. From the **Type** list, select **IBM Cognos TM1**, then click **Next**.
9. Based on the connection information provided by your Cognos TM1 administrator, enter the administration host and server name, and provide the security signon configuration. The administration host is the name of the computer hosting the Cognos TM1 server. The server name is the name of the cube being served by the Cognos TM1 server on the administration host computer.
10. Click **Test the connection**, then click **Test**. On the View the results page of the connection test, the status of the connection tests for both the compatible query mode and the dynamic query mode should be **Succeeded**.
11. Click **Close**, click **Close** again, then click **Finish**.
12. Click **Close**. The new data source appears in the list.
13. Ensure that the IBM Cognos TM1 data source that you created is selected. Click Next, then select the cube that you want to import.
14. Click Next, then select the dimensions, alias tables, and language for the cube.
15. Click Next, ensure that the Create a default package option is selected, then click Finish.
16. Enter a name for the package. Click Finish, then click Yes to open the Publish wizard.
17. Follow the wizard instructions, responding as required. Click Next until you reach the Options page.
18. Select Use Dynamic Query Mode.

   Tip: This option is available only when the Query Mode property of the project is set to Compatible and the package contains only supported data sources. If this option is not available and the Query Mode property of the project is set to Dynamic and the package contains only supported data sources, proceed to the next step.
19. Click Publish, then click Finish. The package is now available in Cognos BI and uses the dynamic query mode for reports.

   Tip: In IBM Cognos Connection, you can verify the type of query mode used by the package by viewing the package properties.

**Creating a project, connection, and package for an IBM Netezza data source**

To use an IBM Netezza data source with the dynamic query mode in IBM Cognos Business Intelligence, you must first create a project, connection, and package in IBM Cognos Framework Manager. You then publish the package, which makes it available in Cognos BI and uses the dynamic query mode for reports.

**Before you begin**

To use the compatible query mode in your model, you must install and configure the IBM Netezza client on the computer running Cognos Framework Manager.

**Procedure**

1. Open Cognos Framework Manager, then click Create a new project.
2. Enter a name and location for the new project.
3. Select Use Dynamic Query Mode, then click OK.
4. Choose a design language and click OK.
5. Ensure that Data Sources is selected, then click Next.
6. Click New to create a data source connection.
7. Click Next. In the Name field, enter a name for your new connection, then click Next.
8. From the Type list, select Netezza (ODBC). Ensure that Configure JDBC connection is selected. Click Next.
9. Based on the connection information provided by your IBM Netezza database administrator, enter the appropriate information. If applicable, select the authentication mode to be used. Configure the signon credentials, if applicable. Click Next.
10. On the Specify the Netezza (JDBC) connection string page, specify the server name, port number, and database name.
11. Click Test the connection, then click Test. On the View the results page, the status of the connection tests for the dynamic query mode should be Succeeded.

12. Click Close, click Close again, then click Finish.

13. Click Close. The new data source appears in the list and can be queried using either the dynamic or compatible query modes.

14. Ensure that the IBM Netezza data source that you created is selected. Click Next, expand the database and schema, then expand Tables.

15. Select the tables that you want to import.

16. Click Import, then click Finish.

17. In the Project Viewer, expand the query. Double-click one of the query subjects. Its definition appears.

18. Click the Test tab. If the Query Mode property of the project is set to Dynamic, the test query runs in the dynamic query mode. If the Query Mode property is set to Compatible, there is an option to use the dynamic query mode on the Test tab. This option appears only if the query subject is for a data source supported by the dynamic query mode.

19. Select Use Dynamic Query Mode, if this option is available.

20. Click Test Sample. A test query is sent through the IBM Cognos Gateway to one of the Cognos BI servers, then to your IBM Netezza database. The data retrieved by the test query appears in the Test tab.

21. Optional: On the Query Information tab, review the generated Cognos SQL and native SQL as well as the XML response from the Cognos BI server.

   Tip: Test all of your model objects with the dynamic query mode to ensure that the SQL that was generated is as expected. If you are building a dimensionally modeled relational model, test foundation objects such as data source and model query subjects as well as regular and measure dimensions.

22. Click OK.

23. In the Project Viewer, right-click Packages, then click Create, then click Create Package.

24. Enter a name for the package, then click Next.

25. Click Yes to open the Publish wizard. Clear Enable model versioning and click Next twice to reach the Options page.

26. Select Use Dynamic Query Mode.

   Tip: This option is available only when the Query Mode property of the project is set to Compatible and the package contains only supported data sources. If this option is not available and the Query Mode property of the project is set to Dynamic and the package contains only supported data sources, proceed to the next step.

27. Click Publish, then click Finish. The package is now available in Cognos BI and uses the dynamic query mode for reports.

   Tip: In IBM Cognos Connection, you can verify the type of query mode used by the package by viewing the package properties.

Creating a project, connection, and package for an Oracle Essbase data source

To use an Oracle Essbase data source with the dynamic query mode in IBM Cognos Business Intelligence, you must first create a project, connection, and
package in IBM Cognos Framework Manager. You then publish the package, which makes it available in Cognos BI and uses the dynamic query mode for reports.

**Before you begin**

Ensure that the Oracle Essbase client is installed on your IBM Cognos BI servers and configured for connectivity to Oracle Essbase.

**Important:** If IBM Cognos BI is running on a UNIX or 64-bit Microsoft Windows operating system, you must install and configure the 64-bit Oracle Essbase client. You must also manually configure the `ARBORPATH` and `ESSBASEPATH` environment variables.

To use the compatible query mode in your model, you must install and configure the Oracle Essbase client on the computer that runs Cognos Framework Manager.

**Procedure**

1. Open Cognos Framework Manager, then click **Create a new project**.
2. Enter a name and location for the new project.
3. Select **Use Dynamic Query Mode**, then click **OK**.
4. Choose a design language and click **OK**.
5. Ensure that **Data Sources** is selected, then click **Next**.
6. Click **New** to create a data source connection.
7. Click **Next**. In the **Name** field, enter a name for your new connection, then click **Next**.
8. From the **Type** list, select **Oracle Essbase**, then click **Next**.
9. Based on the connection information that is provided by your Oracle Essbase administrator, enter a **Server name** and configure the credentials in the **Signon** section.
10. Click **Test the connection**, and then click **Test**. On the View the results page of the connection test, the statuses of the connection tests for both the compatible query mode and dynamic query mode should be **Succeeded**.
11. Click **Close**, click **Close** again, and then click **Finish**.
12. Click **Close**. The new data source appears in the list.
13. Select the Oracle Essbase data source, click **Next**, then locate and select the cube that you want to import.
14. Click **Next**, then select the wanted language for the cube and how to present attribute dimensions.
15. Click **Next**, ensure that the **Create a default package** option is selected, then click **Finish**.
16. Enter a name for the package. Click **Finish**, then click **Yes** to open the Publish wizard.
17. Follow the wizard instructions, responding as required. Click **Next** until you reach the Options page.
18. Select **Use Dynamic Query Mode**.

**Tip:** This option is available only when the **Query Mode** property of the project is set to **Compatible** and the package contains only supported data sources. If this option is not available and the **Query Mode** property of the project is set to **Dynamic** and the package contains only supported data sources, proceed to the next step.
19. Click **Publish**, then click **Finish**. The package is now available in Cognos BI and uses the dynamic query mode for reports.

**Tip:** In IBM Cognos Connection, you can verify the type of query mode used by the package by viewing the package properties.

**Related concepts:**

“Configuring Oracle Essbase on a UNIX or 64-bit Microsoft Windows operating system” on page 20

If you use an Oracle Essbase version 11.1.2 data source with IBM Cognos Business Intelligence on a UNIX or 64-bit Microsoft Windows operating system, you must manually configure the `ARBORPATH` and `ESSBASEPATH` environment variables.

### Creating a project, connection, and package for a Microsoft SQL Server Analysis Services data source

To use a Microsoft SQL Server Analysis Services data source with the dynamic query mode in IBM Cognos Business Intelligence, you must first create a project, connection, and package in IBM Cognos Framework Manager. You then publish the package, which makes it available in Cognos BI and uses the dynamic query mode for reports.

You must publish a Microsoft SQL Server Analysis Services package directly from Cognos Framework Manager.

**Before you begin**

Ensure that the appropriate OLE DB Provider client software for your version of Microsoft SQL Server Analysis Services is installed on your IBM Cognos BI servers and configured for connectivity.

To use the compatible query mode in your model, you must install and configure the Microsoft SQL Server Analysis Services client on the computer running Cognos Framework Manager.

**Procedure**

1. Open Cognos Framework Manager, then click **Create a new project**.
2. Enter a name and location for the new project.
3. Select **Use Dynamic Query Mode**, then click **OK**.
4. Choose a design language and click **OK**.
5. Ensure that **Data Sources** is selected, then click **Next**.
6. Click **New** to create a data source connection.
7. Click **Next**. In the **Name** field, enter a name for your new connection, then click **Next**.
8. From the **Type** list, select the version of Microsoft SQL Server Analysis Services that you want to use. Click **Next**.
9. Based on the connection information provided by your Microsoft SQL Server Analysis Services administrator, enter the server name and instance name, if applicable. If applicable, select the authentication mode to be used. Configure the namespace or signon credentials, if applicable.
10. Click **Test the connection**, then click **Test**. On the View the results page of the connection test, the status of the connection tests for both the compatible query mode and the dynamic query mode should be **Succeeded**.
11. Click **Close**, click **Close** again, then click **Finish**.
12. Click Close. The new data source appears in the list.
13. Ensure that the Microsoft SQL Server Analysis Services data source that you created is selected. Click Next, then select the cube that you want to import.
14. Click Next, ensure that the Create a default package option is selected, then click Finish.
15. Enter a name for the package. Click Finish, then click Yes to open the Publish wizard.
16. Follow the wizard instructions, responding as required. Click Next until you reach the Options page.
17. Select Use Dynamic Query Mode.

Tip: This option is available only when the Query Mode property of the project is set to Compatible and the package contains only supported data sources. If this option is not available and the Query Mode property of the project is set to Dynamic and the package contains only supported data sources, proceed to the next step.
18. Click Publish, then click Finish. The package is now available in Cognos BI and uses the dynamic query mode for reports.

Tip: In IBM Cognos Connection, you can verify the type of query mode used by the package by viewing the package properties.

Creating a project, connection, and package for an SAP BW data source

To use an SAP BW data source with the dynamic query mode in IBM Cognos Business Intelligence, you must first create a project, connection, and package in IBM Cognos Framework Manager. You then publish the package, which makes it available in Cognos BI and uses the dynamic query mode for reports.

You can publish an SAP BW package directly from IBM Cognos Connection or through Cognos Framework Manager. However, importing SAP BW metadata into Cognos Framework Manager allows for additional modeling and testing before the package is published. For information about publishing SAP BW packages directly in IBM Cognos Connection, see the IBM Cognos BI Administration and Security Guide.

Before you begin

Ensure that the SAP BW client is installed on your IBM Cognos BI servers and configured for connectivity to SAP BW.

To use the compatible query mode in your model, you must install and configure SAP GUI software on the computer running Cognos Framework Manager.

Procedure

1. Open Cognos Framework Manager, then click Create a new project.
2. Enter a name and location for the new project.
3. Select Use Dynamic Query Mode, then click OK.
4. Choose a design language and click OK.
5. Ensure that Data Sources is selected, then click Next.
6. Click New to create a data source connection.
7. Click Next. In the Name field, enter a name for your new connection, then click Next.

8. From the Type list, select SAP BW, then click Next.

9. Based on the connection information provided by your SAP BW administrator, select the SAP logon type, enter the application server name, system number, and client number, and provide the security signon configuration.

10. Click Test the connection, then click Test. On the View the results page of the connection test, the status of the connection tests for both the compatible query mode and dynamic query mode should be Succeeded.

11. Click Close, click Close again, then click Finish.

12. Click Close. The new data source appears in the list.

13. Ensure that the SAP BW data source that you created is selected. Click Next, then select the reporting objects (InfoQuery or InfoCube) that you want to import.

14. Click Next, then select the language for the cube and how to present attribute dimensions.

15. Click Next, then, on the Generate Dimensions page, select how you want to display object names and organize the dimensions.

16. Click Next to import the metadata, then click Finish.

17. In the Project Viewer, expand the new namespace created for the SAP BW metadata and notice that all the dimensions and key figures have been imported.

    If the Query Mode property of the project is set to Dynamic when testing these SAP BW objects, the test queries will run in the dynamic query mode. Otherwise, there is an option to use the dynamic query mode instead of the compatible query mode on the Test tab.

    For more information about working with SAP BW metadata, see the IBM Cognos Framework Manager User Guide.

18. In the Project Viewer, right-click Packages, point to Create, then click Package

19. Enter a name for the package. Click Next.

20. Select the objects to include in the package.

21. Click Next, click Finish, then click Next to open the Publish wizard.

22. Follow the wizard instructions, responding as required. Click Next until you reach the Options page.

23. Select Use Dynamic Query Mode.

    **Tip:** This option is available only when the Query Mode property of the project is set to Compatible and the package contains only supported data sources. If this option is not available and the Query Mode property of the project is set to Dynamic and the package contains only supported data sources, proceed to the next step.

24. Click Publish, then click Finish. The package is now available in Cognos BI and uses the dynamic query mode for reports.

    **Tip:** In IBM Cognos Connection, you can verify the type of query mode used by the package by viewing the package properties.
Creating a project, connection, and package for a Microsoft SQL Server data source

To use a Microsoft SQL Server data source with the dynamic query mode in IBM Cognos Business Intelligence, you must first create a project, connection, and package in IBM Cognos Framework Manager. You then publish the package, which makes it available in Cognos BI and uses the dynamic query mode for reports.

Before you begin

To use the compatible query mode in your model, you must install and configure the Microsoft SQL Server client on the computer running Cognos Framework Manager.

You must know what connection type you use to connect to the Microsoft SQL Server database. For more information about Microsoft SQL Server connection types and connection parameters, see the IBM Cognos Business Intelligence Administration and Security Guide.

Procedure

1. Open Cognos Framework Manager, then click Create a new project.
2. Enter a name and location for the new project.
3. Select Use Dynamic Query Mode, then click OK.
4. Choose a design language and click OK.
5. Ensure that Data Sources is selected, then click Next.
6. Click New to create a data source connection.
7. Click Next. In the Name field, enter a name for your new connection, then click Next.
8. From the Type list, select the appropriate connection type for your Microsoft SQL Server database. Ensure that Configure JDBC connection is selected. Click Next.
9. Based on the connection information provided by your Microsoft SQL Server database administrator, enter the appropriate information. If applicable, select the authentication mode to be used. Configure the signon credentials, if applicable. Click Next.
10. On the Specify the Microsoft SQL Server (JDBC) connection string page, specify the server name, port number, instance name, and database name.
11. Click Test the connection, then click Test. On the View the results page, the status of the connection tests for the dynamic query mode should be Succeeded.
12. Click Close, click Close again, then click Finish.
13. Click Close. The new data source appears in the list and can be queried using either the dynamic or compatible query modes.
14. Ensure that the Microsoft SQL Server data source that you created is selected. Click Next, expand the database and schema, then expand Tables.
15. Select the tables that you want to import.
16. Click Import, then click Finish.
17. In the Project Viewer, expand the query. Double-click one of the query subjects. Its definition appears.
18. Click the Test tab. If the Query Mode property of the project is set to Dynamic, the test query runs in the dynamic query mode. If the Query Mode property is set to Compatible, there is an option to use the dynamic query mode.
mode on the Test tab. This option appears only if the query subject is for a data source supported by the dynamic query mode.

19. Select Use Dynamic Query Mode, if this option is available.

20. Click Test Sample. A test query is sent through the IBM Cognos Gateway to one of the Cognos BI servers, then to your Microsoft SQL Server database. The data retrieved by the test query appears in the Test tab.

21. Optional: On the Query Information tab, review the generated Cognos SQL and native SQL as well as the XML response from the Cognos BI server.

   Tip: Test all of your model objects with the dynamic query mode to ensure that the SQL that was generated is as expected. If you are building a dimensionally modeled relational model, test foundation objects such as data source and model query subjects as well as regular and measure dimensions.

22. Click OK.

23. In the Project Viewer, right-click Packages, then click Create, then click Create Package.

24. Enter a name for the package, then click Next.

25. Click Yes to open the Publish wizard. Clear Enable model versioning and click Next twice to reach the Options page.

26. Select Use Dynamic Query Mode.

   Tip: This option is available only when the Query Mode property of the project is set to Compatible and the package contains only supported data sources. If this option is not available and the Query Mode property of the project is set to Dynamic and the package contains only supported data sources, proceed to the next step.

27. Click Publish, then click Finish. The package is now available in Cognos BI and uses the dynamic query mode for reports.

   Tip: In IBM Cognos Connection, you can verify the type of query mode used by the package by viewing the package properties.

Creating a project, connection, and package for an ERP data source

To use an ERP data source with the dynamic query mode in IBM Cognos Business Intelligence, you must first create a project, connection, and package in IBM Cognos Framework Manager. You then publish the package, which makes it available in Cognos BI and uses the dynamic query mode for reports.

In Cognos BI, you can use supported versions of ERP data sources:
- Salesforce.com
- SAP ECC
- Siebel

Before you begin

Before you begin this procedure, you must set up connectivity for your data source.

Procedure
1. Open Cognos Framework Manager, then click Create a new project.
2. Enter a name and location for the new project.
3. Select **Use Dynamic Query Mode**, then click **OK**.
4. Choose a design language and click **OK**.
5. Ensure that **Data Sources** is selected, then click **Next**.
6. Click **New** to create a data source connection.
7. Click **Next**. In the **Name** field, enter a name for your new connection, then click **Next**.
8. From the **Type** list, select the type of data source that you want to create. Click **Next**.
9. Based on the connection information provided by your database administrator, specify the connection parameters for the data source. For more information about connection parameters for your data source, see the following topics:
   - “Connection parameters for Salesforce.com data sources” on page 34
   - “Connection parameters for SAP ECC data sources” on page 34
   - “Connection parameters for Siebel data sources” on page 36
10. Optional: Click **Test the connection**, then click **Test**. On the View the results page, the status of the connection tests for the dynamic query mode should be **Succeeded**.
11. Click **Close**, click **Close** again, then click **Finish**.
12. Click **Close**. The new data source appears in the list.
13. Ensure that the data source that you created is selected. Click **Next**, then select the tables that you want to import.
14. Click **Import**, then click **Finish**.
15. In the **Project Viewer**, expand the query. Double-click one of the query subjects. Its definition appears.
16. Click the **Test** tab. If the **Query Mode** property of the project is set to **Dynamic**, the test query runs in the dynamic query mode. If the **Query Mode** property is set to **Compatible**, there is an option to use the dynamic query mode on the **Test** tab. This option appears only if the query subject is for a data source supported by the dynamic query mode.
17. Select **Use Dynamic Query Mode**, if this option is available.
18. Click **Test Sample**. A test query is sent through the IBM Cognos Gateway to one of the Cognos BI servers, then to your database. The data retrieved by the test query appears in the **Test** tab.
19. Optional: On the **Query Information** tab, review the generated Cognos SQL and native SQL as well as the XML response from the Cognos BI server.

   **Tip:** Test all of your model objects with the dynamic query mode to ensure that the SQL that was generated is as expected. If you are building a dimensionally modeled relational model, test foundation objects such as data source and model query subjects as well as regular and measure dimensions.
20. Click **OK**.
21. In the **Project Viewer**, right-click **Packages**, then click **Create**, then click **Create Package**.
22. Enter a name for the package, then click **Next**.
23. Click **Yes** to open the Publish wizard. Clear **Enable model versioning** and click **Next** twice to reach the Options page.
24. Select **Use Dynamic Query Mode**.

   **Tip:** This option is available only when the **Query Mode** property of the project is set to **Compatible** and the package contains only supported data.
sources. If this option is not available and the Query Mode property of the project is set to Dynamic and the package contains only supported data sources, proceed to the next step.

25. Click Publish, then click Finish. The package is now available in Cognos BI and uses the dynamic query mode for reports.

Tip: In IBM Cognos Connection, you can verify the type of query mode used by the package by viewing the package properties.

Related tasks:

“Setting up connectivity for SAP ECC data sources” on page 16
You can set up connectivity between IBM Cognos Business Intelligence and SAP ECC data sources for use with the dynamic query mode.

“Setting up connectivity for Siebel data sources” on page 16
You can set up connectivity between IBM Cognos Business Intelligence and Siebel data sources for use with the dynamic query mode.

**Connection parameters for Salesforce.com data sources**

IBM Cognos Business Intelligence supports Salesforce.com as a data source.

The following table describes the connection parameters for setting up a Salesforce.com data source.

<table>
<thead>
<tr>
<th>Table 1. Salesforce.com adapters connection parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parameter</strong></td>
</tr>
<tr>
<td>Name</td>
</tr>
<tr>
<td>URL</td>
</tr>
<tr>
<td>Concurrent calls limit</td>
</tr>
<tr>
<td>User concurrent calls limit</td>
</tr>
<tr>
<td>Connection timeout (sec)</td>
</tr>
<tr>
<td>Query batch size</td>
</tr>
<tr>
<td>Maximum retries</td>
</tr>
<tr>
<td>Wait between retries (sec)</td>
</tr>
<tr>
<td>User ID</td>
</tr>
<tr>
<td>Password</td>
</tr>
</tbody>
</table>

**Connection parameters for SAP ECC data sources**

IBM Cognos Business Intelligence supports SAP ECC as a data source.

You must ensure that you have an adapter that supports:

- SAP ECC version 5.0 or 6.0.
- A platform that supports the dynamic query mode with SAP Java Connector (SAP JCo) libraries.
The following table describes the connection parameters for setting up an SAP ECC data source.

Table 2. SAP ECC adapter connection parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>User-supplied name to represent the underlying SAP ECC data source. When the process of adding the data source is complete, this name is displayed in the resource tree.</td>
</tr>
<tr>
<td>Application server</td>
<td>The name or IP address of the computer that hosts the SAP ECC server.</td>
</tr>
<tr>
<td>SAP ECC router string</td>
<td>This value is required if you are accessing a router to connect to the SAP ECC application server.</td>
</tr>
<tr>
<td>System number</td>
<td>System number of the SAP ECC application server.</td>
</tr>
<tr>
<td>Client</td>
<td>Client number of the connecting SAP ECC system.</td>
</tr>
<tr>
<td>Language</td>
<td>SAP ECC instance logon language. For example, EN, DE, and FR.</td>
</tr>
<tr>
<td>Maximum connections in pool</td>
<td>The maximum number of simultaneous connections in the connection pool that is created.</td>
</tr>
</tbody>
</table>
| Table read function                | An SAP ECC function that is used to query SAP ECC tables. The default setting is RFC_TABLE_READ. You can choose to implement your own table read function. You must modify a configuration file if you implemented your own function and its data field length is not 512. Follow these steps to modify the configuration file.  
    1. Open the \configuration\xqeerp.config.xml file.  
    2. Uncomment the following line:  
       ```xml  
      <rfc name="YRFC_READ_TABLE" rowLength="4010" parseDecimalValues="true" > -->
      ```  
    3. Change the value of the **rfc name** parameter to match the name of your custom table read function.  
    4. Change the value of the **rowLength** parameter to match the data field length of your custom table read function.  
    5. If your custom RFC function does not process decimal values correctly, set the value of the **parseDecimalValues** parameter to true. The default is false. |
| Table row count                    | Controls the maximum number of rows returned by SAP ECC for table queries. Set this value to zero to remove this restriction. |
| ABAP Query DB Access limit         | Limits the maximum number of accesses during query or infoset execution. A lesser value results in fewer database accesses and rows returned. |
| Message server                     | Host name of the SAP ECC message server. This property is required for connecting to SAP ECC in a load balanced environment. |
| System ID                          | Specifies the system id of the SAP ECC system. This property is required for connecting to SAP ECC in a load balanced environment. |
Table 2. SAP ECC adapter connection parameters (continued)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logon Group</td>
<td>Specifies the group of SAP application servers. This property is required for connecting to SAP ECC in a load balanced environment.</td>
</tr>
<tr>
<td>Username</td>
<td>The username required to connect to and authenticate with the SAP ECC system.</td>
</tr>
<tr>
<td>Password</td>
<td>The password required to connect to and authenticate with the SAP ECC system.</td>
</tr>
</tbody>
</table>

Connection parameters for Siebel data sources

IBM Cognos Business Intelligence supports Siebel as a data source.

You must ensure that you have an adapter that supports Siebel versions 8.0 and 8.1.

Fields of type Multi-valued Groups (MVG) will have (M) appended to their column names. MVG fields that are configured to use a primary join will have (MP) appended to their column names. You can change the display names of columns in Framework Manager.

The following table describes the connection parameters for setting up a Siebel data source.

Table 3. Siebel adapters connection parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>User-supplied name to represent the underlying Siebel data source. When the process of adding the data source is complete, this name displays in the resource tree.</td>
</tr>
<tr>
<td>Gateway name server</td>
<td>The name of the gateway server that is used to coordinate the Siebel Enterprise Server and Siebel servers in the environment.</td>
</tr>
<tr>
<td>Gateway Port</td>
<td>The port number used by the gateway name server.</td>
</tr>
<tr>
<td>Siebel Enterprise Name</td>
<td>Name of Siebel Enterprise Server.</td>
</tr>
<tr>
<td>Application Object Manager</td>
<td>Name of Siebel Application Object Manager.</td>
</tr>
<tr>
<td>Language</td>
<td>Siebel instance language.</td>
</tr>
<tr>
<td>Siebel Repository</td>
<td>Specifies the name of the Siebel Repository from which to fetch the metadata. This property is required for introspection.</td>
</tr>
<tr>
<td>Transport</td>
<td>Specifies the transport protocol to be used by the Siebel Data Bean API for communication with the Siebel server.</td>
</tr>
<tr>
<td>Compression</td>
<td>Specifies the compression algorithm to be used by the Siebel Data Bean API for communication with the Siebel server.</td>
</tr>
<tr>
<td>Encryption</td>
<td>Specifies the encryption algorithm to be used by the Siebel Data Bean API when communicating with the Siebel server.</td>
</tr>
<tr>
<td>Login Retries</td>
<td>Specifies the number of times to retry after an initial login failure.</td>
</tr>
<tr>
<td>Login Retry Delay (Sec)</td>
<td>Specifies the wait period between login retries.</td>
</tr>
</tbody>
</table>
Table 3. Siebel adapters connection parameters (continued)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Sort</td>
<td>Specifies the maximum number of rows of data to be fetched for a data query.</td>
</tr>
<tr>
<td>Collation Level</td>
<td>Specifies the Collation Level for fetching data. This provides the ability to achieve role-based access to data.</td>
</tr>
<tr>
<td>CharSet</td>
<td>Specifies the character encoding. The default value is UTF-8.</td>
</tr>
<tr>
<td>Advanced Parameters</td>
<td>Allows you to enter multiple advanced parameters separated by a semicolon. For example, you can run queries on primary child records for “Multi-Valued Fields” by setting this parameter to true: primaryRecordOnly=true. The default value is false.</td>
</tr>
<tr>
<td>Username</td>
<td>The username required to connect to and authenticate with Siebel.</td>
</tr>
<tr>
<td>Password</td>
<td>The password required to connect to and authenticate with Siebel.</td>
</tr>
</tbody>
</table>

Creating a project, connection, and package for a Teradata data source

To use a Teradata data source with the dynamic query mode in IBM Cognos Business Intelligence, you must first create a project, connection, and package in IBM Cognos Framework Manager. You then publish the package, which makes it available in Cognos BI and uses the dynamic query mode for reports.

You can publish a Teradata package directly from IBM Cognos Connection or through Cognos Framework Manager. However, importing Teradata metadata into Cognos Framework Manager allows for additional modeling and testing before the package is published. For information about publishing Teradata packages directly in IBM Cognos Connection, see the IBM Cognos BI Administration and Security Guide.

Before you begin

Ensure that the Teradata client is installed on your IBM Cognos BI servers and configured for connectivity to Teradata.

To use the compatible query mode in your model, you must install and configure the Teradata ODBC driver software and its dependant components software on the computer running Cognos Framework Manager.

Procedure

1. Open Cognos Framework Manager, then click **Create a new project**.
2. Enter a name and location for the new project.
3. Select **Use Dynamic Query Mode**, then click **OK**.
4. Choose a design language and click **OK**.
5. Ensure that **Data Sources** is selected, then click **Next**.
6. Click **New** to create a data source connection.
7. Click **Next**. In the **Name** field, enter a name for your new connection, then click **Next**.
8. From the Type list, select Teradata (ODBC). Ensure that Configure JDBC connection is selected. Click Next.

9. Based on the connection information provided by your Teradata database administrator, enter the ODBC connection name you configured for Teradata, and then under Signon, select Password. This information depends on the configuration of the following components of your software:
   - The Teradata ODBC driver on the computer running Framework Manager
   - The IBM Cognos BI servers
   - The security setup of your Teradata database

10. Enter a user ID and a password and confirm the password, then click Next.

11. On the Specify the Teradata (JDBC) Connection String page, specify the server name, port number, and database name.

12. Optional: Click Test the connection, then click Test. On the View the results page of the connection test, the status of the connection tests for both the compatible query mode and dynamic query mode should be Succeeded.

13. Click Close, click Close again, then click Finish.

14. Click Close. The new data source appears in the list.

15. Ensure that the Teradata data source that you created is selected, then click Next.

16. Expand the database and schema, then expand Tables. Select the tables that you want to import.

17. Click Next, click Import, then click Finish.

18. In the Project Viewer, expand the query. Double-click one of the query subjects. Its definition appears.

19. Click the Test tab. If the Query Mode property of the project is set to Dynamic, the test query runs in the dynamic query mode. If the Query Mode property is set to Compatible, there is an option to use the dynamic query mode on the Test tab. This option appears only if the query subject is for a data source supported by the dynamic query mode.

20. Select Use Dynamic Query Mode, if this option is available.

21. Click Test Sample. A test query is sent through the IBM Cognos Gateway to one of the Cognos BI servers, then to your Teradata database. The data retrieved by the test query appears in the Test tab.

22. Optional: On the Query Information tab, review the generated Cognos SQL and native SQL as well as the XML response from the Cognos BI server.

   Tip: Test all of your model objects with the dynamic query mode to ensure that the SQL that was generated is as expected. If you are building a dimensionally modeled relational model, test foundation objects such as data source and model query subjects as well as regular and measure dimensions.

23. Click OK.

24. In the Project Viewer, right-click Packages, point to Create, then click Package

25. Enter a name for the package. Click Next.

26. Select the objects to include in the package.

27. Click Next, click Finish, then click Next to open the Publish wizard.

28. Follow the wizard instructions, responding as required. Click Next until you reach the Options page.

29. Select Use Dynamic Query Mode.
Tip: This option is available only when the Query Mode property of the project is set to Compatible and the package contains only supported data sources. If this option is not available and the Query Mode property of the project is set to Dynamic and the package contains only supported data sources, proceed to the next step.

30. Click Publish, then click Finish. The package is now available in Cognos BI and uses the dynamic query mode for reports.

Tip: In IBM Cognos Connection, you can verify the type of query mode used by the package by viewing the package properties.

Creating a project, connection, and package for an Oracle data source

To use an Oracle data source with the dynamic query mode in IBM Cognos Business Intelligence, you must first create a project, connection, and package in IBM Cognos Framework Manager. You then publish the package, which makes it available in Cognos BI and uses the dynamic query mode for reports.

Before you begin

To use the compatible query mode in your model, you must install and configure the Oracle client on the computer running Cognos Framework Manager.

Procedure

1. Open Cognos Framework Manager, then click Create a new project.
2. Enter a name and location for the new project.
3. Select Use Dynamic Query Mode, then click OK.
4. Choose a design language and click OK.
5. Ensure that Data Sources is selected, then click Next.
6. Click New to create a data source connection.
7. Click Next. In the Name field, enter a name for your new connection, then click Next.
8. From the Type list, select Oracle. Ensure that Configure JDBC connection is selected. Click Next.
9. Based on the connection information provided by your Oracle database administrator, enter the appropriate information. In the Oracle *Net connect string field, enter the Oracle service name that you defined during the configuration of the Oracle client. If applicable, select the authentication mode to be used. Configure the signon credentials, if applicable. Click Next.
10. On the Specify the Oracle (JDBC) connection string page, specify the Connection Type, then enter the appropriate information. Specify a connection type to connect to your Oracle database using the method that you prefer.

Connection type

Definition

Service ID

Connect directly to the Oracle database without an Oracle client. Enter the server name, port number and service ID provided to you by the database administrator.
**TNS Names Alias**
Connect to the Oracle database through a TNS name defined in the local Oracle client. Enter the TNS name you defined when configuring the client.

**Oracle Net Descriptor**
Connect to the Oracle database using an Oracle Net connection. Enter the Oracle Net descriptor provided to you by the database administrator. For example, enter the following descriptor:

```
(DESCRIPTION=
  (ADDRESS=(PROTOCOL=tcp)(HOST=servername)(PORT=1521))
  (CONNECT_DATA=
    (SERVICE_NAME=ORCL)))
```

11. Click Test the connection, then click Test. On the View the results page, the status of the connection tests for the dynamic query mode should be Succeeded.

12. Click Close, click Close again, then click Finish.

13. Click Close. The new data source appears in the list and can be queried using either the dynamic or compatible query modes.

14. Ensure that the Oracle data source that you created is selected. Click Next, then expand the database and expand Tables.

15. Select the tables that you want to import, then click Next.

16. Click Import, then click Finish.

17. In the Project Viewer, expand the query. Double-click one of the query subjects. Its definition appears.

18. Click the Test tab. If the Query Mode property of the project is set to Dynamic, the test query runs in the dynamic query mode. If the Query Mode property is set to Compatible, there is an option to use the dynamic query mode on the Test tab. This option appears only if the query subject is for a data source supported by the dynamic query mode.

19. Select Use Dynamic Query Mode, if this option is available.

20. Click Test Sample. A test query is sent through the IBM Cognos Gateway to one of the Cognos BI servers, then to your Oracle database. The data retrieved by the test query appears in the Test tab.

21. Optional: On the Query Information tab, review the generated Cognos SQL and native SQL as well as the XML response from the Cognos BI server.

   **Tip:** Test all of your model objects with the dynamic query mode to ensure that the SQL that was generated is as expected. If you are building a dimensionally modeled relational model, test foundation objects such as data source and model query subjects as well as regular and measure dimensions.

22. Click OK.

23. In the Project Viewer, right-click Packages, then click Create, then click Create Package.

24. Enter a name for the package, then click Next.

25. Click Yes to open the Publish wizard. Clear Enable model versioning and click Next twice to reach the Options page.

26. Select Use Dynamic Query Mode.

   **Tip:** This option is available only when the Query Mode property of the project is set to Compatible and the package contains only supported data...
sources. If this option is not available and the **Query Mode** property of the project is set to **Dynamic** and the package contains only supported data sources, proceed to the next step.

27. Click **Publish**, then click **Finish**. The package is now available in Cognos BI and uses the dynamic query mode for reports.

**Tip:** In IBM Cognos Connection, you can verify the type of query mode used by the package by viewing the package properties.

### Creating a project, connection, and package for a JDBC data source

To use a JDBC data source with the dynamic query mode in IBM Cognos Business Intelligence, you must first create a project, connection, and package in IBM Cognos Framework Manager. You then publish the package, which makes it available in Cognos BI and uses the dynamic query mode for reports.

To review an up-to-date list of the environments that are supported by IBM Cognos products, including information about operating systems, patches, browsers, web servers, directory servers, database servers, and application servers, see [Supported Software Environments](http://www.ibm.com/support/docview.wss?uid=swg27037784).

Additional capabilities are available if you use a JDBC connection to connect to an IBM Informix database with the dynamic query mode. These abilities are not available in the compatible query mode.

- You can use connection command blocks.
- You can reuse the user ID’s and passwords that users provided when they authenticated to the portal instead of storing authentication information in signons.

### Before you begin

To use the dynamic query mode in your model, you must install and configure the JDBC client on the computer running Cognos Framework Manager.

If you intend to reuse an existing data source connection to an Informix database, you must set its **Interface** property to **JDBC-IF**. You cannot leave it blank.

### Procedure

Create a data source connection.

1. Open Cognos Framework Manager, then click **Create a new project**.
2. Enter a name and location for the new project.
3. Select **Use Dynamic Query Mode**, then click **OK**.
4. Choose a design language and click **OK**.
5. Ensure that **Data Sources** is selected, then click **Next**.
6. Click **New** to create a data source connection.
7. Click **Next**. In the **Name** field, enter a name for your new connection, then click **Next**.
8. From the **Type** list, select **JDBC**. Click **Next**.
9. On the Specify the JDBC connection string page, specify the data source type.
10. Based on the connection information provided by your database administrator, enter a value in the **JDBC URL** field. The connection string updates automatically.

11. Specify signon information.

12. Click **Test the connection**, then click **Test**. On the View the results page, the status of the connection tests for the dynamic query mode should be **Succeeded**.

13. Click **Close**, click **Close** again, then click **Next**.

14. On the Specify the commands page, specify the commands that the database executes, if any. Then click **Finish**.

15. Click **Close**. The new data source appears in the list and can be queried in either the dynamic or compatible query modes.

Create a project.

16. Ensure that the data source that you created is selected. Click **Next**, then expand the database.

17. Select the data items that you want to import and follow the steps in the wizard.

18. Finally, click **Import**, then click **Finish**.

19. In the **Project Viewer**, expand the query. Double-click one of the query subjects. Its definition appears.

20. Click the **Test** tab. If the **Query Mode** property of the project is set to **Dynamic**, the test query runs in the dynamic query mode. If the **Query Mode** property is set to **Compatible**, there is an option to use the dynamic query mode on the **Test** tab. This option appears only if the query subject is for a data source supported by the dynamic query mode.

21. Select **Use Dynamic Query Mode**, if this option is available.

22. Click **Test Sample**. A test query is sent through the IBM Cognos Gateway to one of the Cognos BI servers, then to your database. The data retrieved by the test query appears in the **Test** tab.

23. Optional: On the **Query Information** tab, review the generated Cognos SQL and native SQL as well as the XML response from the Cognos BI server.

   **Tip:** Test all of your model objects with the dynamic query mode to ensure that the SQL that was generated is as expected. If you are building a dimensionally modeled relational model, test foundation objects such as data source and model query subjects as well as regular and measure dimensions.

24. Click **OK**.

Create a package.

25. In the **Project Viewer**, right-click **Packages**, then click **Create**, then click **Create Package**.

26. Enter a name for the package, then click **Next**.

27. Click **Yes** to open the Publish wizard. Clear **Enable model versioning** and click **Next** twice to reach the Options page.

28. Select **Use Dynamic Query Mode**.

   **Tip:** This option is available only when the **Query Mode** property of the project is set to **Compatible** and the package contains only supported data sources. If this option is not available and the **Query Mode** property of the project is set to **Dynamic** and the package contains only supported data sources, proceed to the next step.
29. Click Publish, then click Finish. The package is now available in Cognos BI and uses the dynamic query mode for reports.

Tip: In IBM Cognos Connection, you can verify the type of query mode used by the package by viewing the package properties.

Changing the query mode for a project

You can change the query mode for a project from the dynamic query mode to the compatible query mode.

The **Dynamic mode** setting specifies that publishing packages, validating model objects, testing query subjects, updating, and importing data are done using the dynamic query mode.

The **Compatible mode** setting specifies that the dynamic query mode is not enabled. However, you still have the option of using the dynamic query mode when you test query subjects and dimensions, and publish packages.

The default setting is **Compatible mode**.

Note: You cannot enable the dynamic query mode if your model contains both supported and unsupported data sources for the dynamic query mode.

Procedure

On the project Properties tab, specify the **Query Mode** property.

Overriding the query mode for packages or query testing

If your project uses the compatible query mode, you can still publish packages and test queries and dimensions using the dynamic query mode.

Once a Framework Manager package is enabled to use the dynamic query mode, all reports that use the package are run using the dynamic query mode. You can change back to the compatible query mode by clearing the **Use Dynamic Query Mode** option in the publish wizard and re-publishing the package.

Procedure

1. To test queries using the dynamic query mode, select the **Use Dynamic Query Mode** check box.
2. To publish packages using the dynamic query mode, select the **Use Dynamic Query Mode** check box on the last page of the publish wizard. You will be asked to confirm this selection when you click Publish. This step applies when the **Query Mode** property of the project is set to Compatible.

Note: If a package containing both supported and unsupported data sources is published with dynamic query mode, users will get an error when opening the package in the Studios.

Administer the Query Service

The Query Service supports the dynamic query mode. It manages dynamic query requests and returns the result to the requesting batch or report service.

Using IBM Cognos Administration, you can administer the Query Service properties and the Query Service caching.
Member ordering

The order of members is a fundamental aspect of dimensional analysis. Member-relative and time-series functions rely on the order of members to provide meaningful results.

Examples of these functions include NextMember, PreviousMember, ClosingPeriod, and OpeningPeriod.

The dynamic query mode contains natural order and sort specification mechanisms to ensure consistent ordering of members.

Natural order

The default order of members is called the natural order. The natural order of members in OLAP over relational is ascending order by the member caption, with nulls last. If two or more captions are identical, the secondary sort key is the business key in ascending order. The business key is assumed to be unique.

For example, there is a Return Reason level in a dimension of a data model for product sales. If there are no explicit member sort specifications in the model, the dynamic query mode sorts the members in alphabetical order according to the member caption.

- Defective product
- Incomplete product
- Unsatisfactory product
- Wrong product ordered
- Wrong product shipped

In the compatible query mode, there is no consistent default sort and the natural order is dependent on the query and the data source.

Sort specification

In IBM Cognos Framework Manager you can explicitly set the member sort specification according to your business needs. This option is available in the Dimension Definition window, on the Members Sort tab.

Member-relative analysis always respects the order of members, whether explicit or implicit (natural order). If a particular order of the members is important to the business view, then use the Level Sort properties to define an explicit sort specification. Multiple Level Sort properties apply in the order listed. If all sort properties are identical, the natural order applies.

When there is no explicit sort specification, the natural order applies. If you rely on the natural order, member-relative functions may give unexpected results when a particular order of members is required. This problem especially occurs for the month level in a time dimension.

In the dynamic query mode, any settings in the Sorting options box that appears on the Members Sort tab are ignored. Instead, the following sorting options take effect:
• The metadata tree display always respects the order of members.
• The members are always ordered. The report author can apply a different sort to display the members.

Use the **Level Sort Properties** box in the Dimension Definition window to explicitly specify the order of the members. The default sort order of the members is by the ascending order of the member caption of the level.

For more information about how to specify member sort order, see the *IBM Cognos Framework Manager User Guide*.

**Example**

Member ordering defined in the model follows the hierarchy defined for the dimension. However, sorting in a report follows the report layout. For example, a Retailers dimension defines the following hierarchy:

• Region
• Retailer country or region
• Retailer
• Retailer site

In this example model, the Retailer country or region level has an ascending sort on the member caption, which contains the name of the country or region. When projecting the Retailer country or region level in a report, the members appear in order by caption within Region, according to the defined hierarchy. The output resulting from projecting Region and Retailer country or region in a list report without report sorting appears as the following output:

*Table 4. Report output for Region and Retailer country or region.*

<table>
<thead>
<tr>
<th>Region</th>
<th>Retailer country or region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Americas</td>
<td>Brazil</td>
</tr>
<tr>
<td>Americas</td>
<td>Canada</td>
</tr>
<tr>
<td>Americas</td>
<td>Mexico</td>
</tr>
<tr>
<td>Americas</td>
<td>United States</td>
</tr>
<tr>
<td>Asian Pacific</td>
<td>Australia</td>
</tr>
<tr>
<td>Asian Pacific</td>
<td>China</td>
</tr>
<tr>
<td>Asian Pacific</td>
<td>Japan</td>
</tr>
<tr>
<td>Asian Pacific</td>
<td>Korea</td>
</tr>
<tr>
<td>Asian Pacific</td>
<td>Singapore</td>
</tr>
<tr>
<td>Central Europe</td>
<td>Belgium</td>
</tr>
<tr>
<td>Central Europe</td>
<td>France</td>
</tr>
</tbody>
</table>

You can instead project only Retailer country or region in a list report with an alphabetical sort applied to the column. The result is a list with the Retailer country or region members appearing in alphabetical order by caption.

Sorting in the report does not interfere with any member-relative operations. They continue to follow the member sort order in the model, whether it is explicit or implicit.
Test migrated reports using Lifecycle Manager

You can use IBM Cognos Lifecycle Manager to help you test your reports. Lifecycle Manager is a verification tool that checks that your reports run and produce the same results in the new environment as they did in the previous environment.

Lifecycle Manager connects to the source and target environments, validates and executes reports in both environments, and then compares them. The results of the comparison are presented in a dashboard. To test and compare reports that are run with the dynamic query mode enabled, ensure that you select DQM Enabled in the Query mode Options in Lifecycle Manager (Settings menu > Configure > Preferences tab).

For more information about testing your reports, see the Lifecycle Manager User Guide.

Framework Manager governors for the dynamic query mode

IBM Cognos Framework Manager provides governors that are specific to the dynamic query mode.

You specify governors in the model before you create packages to ensure the metadata in each package uses the specified limits. All packages that are published later use the new settings.

Important:

For governors that affect caching, you must enable caching in one of the following ways:

- Enable the Allow usage of local cache governor in IBM Cognos Framework Manager.
- Enable the Use Local Cache query property for a report in IBM Cognos Report Studio.

For more information about using governors, see the IBM Cognos Framework Manager User Guide.

(DQM) Adjust SQL generation for exact numeric division

This governor controls how calculations with division are adjusted to ensure that the division results contain information that is significant for the reports.

The Cast to Double setting converts the calculation as follows:

- \([item1] / [item2]\) becomes \(\text{cast}([item1] \text{ as double precision}) / [item2]\)
- \(\text{cast } ([item1] \text{ as decimal}(9,2)) / [item2]\) becomes \(\text{cast}([\text{cast}([item1] \text{ as decimal}(9,2)) \text{ as double precision}) / [item2]\)

The Cast to Double conditional setting converts the calculation in the following ways. Use this setting if the numerator is not a cast operation

- \([item1] / [item2]\) becomes \(\text{cast}([item1] \text{ as double precision}) / [item2]\)
- \(\text{cast } ([item1] \text{ as decimal}(9,2)) / [item2]\) becomes \(\text{cast}([\text{cast}([item1] \text{ as double precision}) \text{ as double precision}) / [item2]\)

The Do not adjust setting does not convert the calculation.
The default setting is **Cast to Double**.

**DQM) Cache is sensitive to connection command blocks**

This governor specifies whether the key to the cache includes the expanded value of the connection command blocks. If the connection command block evaluates to different values for different users, you likely want the key to the cache to include this information.

For example, you create a connection command block that contains a macro with a reference to the session parameter for a user name. As a result, the expanded value of the command block is different for each user. However, this difference is not significant if the user name is used only for logging. In this case, the cache likely can be shared and you can turn off this governor. However, if the user name controls data retrieval, the cache likely cannot be shared and you must select this governor.

If this governor is selected, the cache is shared only by users that share the version of the expanded connection command blocks used to load data into the cache.

If this governor is not selected, differences in connection command blocks are ignored.

The governor is selected by default.

For more information about using command blocks, see “Using Command Blocks” in the *IBM Cognos Business Intelligence Administration and Security Guide*.

**DQM) Cache is sensitive to DB info**

This governor controls the sensitivity of the cache that is associated with a Framework Manager package that is shared by users of the connection. It also specifies what database information is used to restrict sharing in that cache. The information is originally specified in IBM Content Manager and is provided on the request to the cache.

The **DB + Connection + Signon** setting specifies that the cache is shared only if users specify the same data sources, connection strings, and signon information.

The **DB + Connection** setting specifies that the cache is shared only if users specify the same data sources and connection strings.

The **DB** setting specifies that the cache is shared only if users specify the same data sources.

The **None** setting specifies that none of the data sources, connection strings, or signon information is shared.

The default setting is **DB + Connection + Signon**.

**DQM) Cache is sensitive to model security**

This governor controls the security that is used to access the cache.
The **Automatic** setting specifies that the Cognos user and user classes are used to confirm access to all the security filters in the model. The union of the security objects with the model security filters is used to identify the cache.

The **User** setting specifies that the Cognos user identity is used to identify the cache. The cache is reusable for the current user only. No sharing with other users takes place.

The **UserClass** setting specifies that the Cognos user classes are used to identify the cache.

The **None** setting disables checking for model security filters, even if there are such filters in the model.

The default setting is **Automatic**.

**DQM) Context sensitive join selection**

Use this governor to control the computation of join paths for a query in a star schema grouping that does not contain a fact.

Use star schema groupings to choose a join path.

The **Disabled** setting specifies that the star schema grouping is ignored when the join path of the main query is computed. If there are multiple join paths, the first alphabetically sorted one is chosen.

The **Automatic** setting specifies that the star schema grouping is used to influence the computation of the join path if all query subjects and shortcuts that are directly accessed in the query can unwind to their lowest database query subject and all intermediate query subjects are without relationships. The star schema grouping is ignored otherwise. This behavior is also how join paths are computed in the compatible query mode.

The **Explicit** setting specifies that the star schema grouping is used to influence the computation of the join path. If the **DQM) Use in Join Path** property is set to **True** for a query subject or shortcut, then the tables that they were built on are used in the final join path in the SQL. If no query subject is marked to be used in the join path, then the context-sensitive join selection is not applied on the star schema grouping.

The default setting is **Disabled**.

For example, you have four query subjects: Store, Country_or_region, Camera_sales (a fact), and Returned_cameras (a fact). The following joins are specified: between Store and Camera_sales, between Store and Returned_cameras, between Country_or_region and Camera_sales, and between Country_or_region and Returned_cameras.

You want to create a report that displays stores and countries in which cameras were returned. The report includes the stores and countries only. The context of the report is provided only in the report title. This query is fact-less because the Returned_cameras query subject is not selected. To get the correct output, the join path must be from Store through Returned_cameras to Country_or_region. The join path must include Returned_cameras. If you do not create a star schema to group Store, Returned_cameras, and Country_or_region, the join path goes through
Camera_sales. This result occurs because Camera_sales is the first fact query subject in alphabetical order. To solve this problem, create a star schema grouping. Create a folder named Returned_cameras and under that folder, create shortcuts to Store, Returned_cameras, and Country_or_region. Set the (DQM) Context Sensitive Join Selection governor to Automatic.

Important: This example is simplistic. Models usually contain hundreds of query subjects and are organized in namespaces and folders. If you set this governor to Automatic, all folders and namespaces are eligible to be considered as star schema groupings. This may cause an unintended join path to be used. Set the governor to Explicit and set the (DQM) Use in Join Path property on a query subject or shortcut to True to remove ambiguity. This combination of settings restricts the query processing to the folders and namespaces that contain objects that have the (DQM) Use in Join Path property to True.

(DQM) Local cache policy

Use this governor to control the level of queries for which reusable cursors are created.

The Lowest summary sub-query setting specifies that the cache is created only on lowest summary subqueries of the request. This behavior is also the behavior in the compatible query mode.

The Query referenced by layout setting specifies that the cache is created only on queries using the dynamic query mode that are referenced by the layout. The cursor that is created in this option does not contain nesting cursors.

The Explicitly per query setting specifies that the cache is created on every query that has a local cache that is enabled. The cursor that is created in this option contains nesting cursors if required.

The default setting is Lowest summary sub-query.

The Allow usage of local cache governor specifies that all reports based on the model use cached data. By default, if the Allow usage of local cache governor is enabled, reusable cursors on the lowest summary subqueries are automatically created. However, if a query has query references such as join or union queries, the join or union process is not pushed to the database. If the join or union process can be better handled by the database when the database server has more resources, choose either the Query referenced by the layout or Explicitly per query setting.

(DQM) Cursor mode

Use this governor to control how long the resources required by a query are retained before they are released.

The query engine loads data from a data source into a data set with a cursor. The cursor can be read completely or partially. As soon as the query engine reads the last record, the result set is complete and the database resources are released.

The Automatic setting specifies that the query engine stops reading data after the requested number of records. It leaves the resources active in anticipation of further requests for data. The stopped query retains the database connection and the cursor for future data retrieval requests. Stopped queries are released after a specified amount of idle time. As a result, database resources are released either
after all data is rendered or after a certain amount of idle time or maximum age time. During this time, these resources cannot be used by other queries.

The **Query Per Page** setting specifies that the query engine releases resources as soon as the current report page is rendered to the user. Every subsequent page request, including those requests that previously loaded the complete result set, requires that the database connection and the cursor to be reestablished. This setting releases data source resources the fastest, but requires the most use of time and resources to re-execute a query.

The **Load In Background** setting specifies that the query engine returns the requested portion of the data and then starts a background thread to load the rest of the data into a cache. The background thread runs at a lower priority. Further requests return the data that is loaded by the background thread from the cache. If more data is required before the background thread loads sufficient data, the new request takes priority. This setting provides a fast first page response and improved response time for subsequent pages. The resources are released as soon as all the data is loaded into the cache. However, more memory is used for the cached data than with the other settings.

The default setting is **Automatic**.

***(DQM) Master-detail optimization***

Use this governor to control whether detail query caching occurs for a relational master-detail query. To minimize the amount of SQL execution against the database for detail queries, cache the detail query. For example, if you have 1000 detail queries then only one SQL execution will occur. By default, detail queries are not cached, so for 1000 detail queries, 1000 SQL executions occur.

The **Disabled** setting specifies that no detail query caching occurs.

The **Cache Relational Detail Query** setting specifies that detail query caching occurs.

The default setting is **Disabled**.

**Stored procedures and transaction access modes**

For query subjects that are based on stored procedures, modify the **Transaction Access Mode** property in IBM Cognos Framework Manager to affect how the data is processed.

In the dynamic query mode, for query subjects that are based on stored procedures, the **Transaction Access Mode** property that is specified for the model data source is used. For all other query subjects, the JDBC connection uses the JDBC driver's default transaction access mode.

When a query runs, the JDBC connection is set based on the **Transaction Access Mode** property.

You can set the **Transaction Access Mode** property to any of the following values:

**Unspecified**

In the dynamic query mode, the JDBC driver's default transaction access
mode is used, which is typically read/write. This setting is the default. See your JDBC driver vendor’s documentation to determine the default transaction access mode.

**Read-Only**
In the dynamic query mode, the JDBC connection is set to read-only mode.

**Read-Write**
In the dynamic query mode, the JDBC connection is set to read/write mode.

**Tip:** The support and enforcement of read-only and read/write mode varies by database vendor. See your database vendor's documentation for more details.

For more information about specifying transaction access modes, see the *IBM Cognos Framework Manager User Guide*.

### Transaction access modes and local caches

You can specify in the model and in a report that the report can use the local cache to resolve a query's result set. A query is a candidate to use a local cache if it meets specific criteria. Many of these criteria can be set by using governors in Cognos Framework Manager. If a candidate query contains a stored procedure, whether the local cache is used depends on how the following *Transaction Access Mode* property values are set:

- **Unspecified**
  - The stored procedure's result set is resolved by using the local cache.

- **Read-Only**
  - The stored procedure's result set is resolved by using the local cache.

- **Read-Write**
  - The stored procedure's result set is not resolved by using the local cache.
  - The query that contains the stored procedure is run again.

If you do not set the appropriate transaction access mode, in some circumstances the report does not return the wanted data. For example, you have a stored procedure that generates data and returns a result set. If you set the transaction access mode of the model data source to *Unspecified* or *Read-Only*, the same result set that is stored in the cache is returned. This result is because the local cache is used to resolve the query's result set. If you always want to see the newest result set, set the transaction access mode to *Read-Write*.

### Transaction access modes and data modification query subjects

A query subject that contains a data modification stored procedure requires write access. However, if you set the *Transaction Access Mode* property on your model's data source to *Read-Only*, an error message is displayed.

For example, in Cognos Framework Manager, when you test a data modification stored procedure that uses a read-only model data source, the following error message is displayed:

```
XQE-PLN-0309 The [Namespace].[dataModification_StoredProcedureName]
data modification query subject requires that the transaction access mode property is set to Read-Write
on the [read_Only_Model_Data_Source] model data source.
```
To solve this problem, you must set the **Transaction Access Mode** property to **Read-Write**.

**Transaction access modes and queries that use multiple model data sources**

When a query uses multiple Framework Manager model data sources that reference the same Content Manager Data Source, the query uses the JDBC connection transaction access mode that is specified for the model data source whose name is first in alphabetical order.

**Related concepts:**

“Framework Manager governors for the dynamic query mode” on page 46

IBM Cognos Framework Manager provides governors that are specific to the dynamic query mode.

**Troubleshooting the dynamic query mode**

You can troubleshoot query-related issues in the dynamic query mode by using tracing capabilities. You can access settings for tracing in the properties of the QueryService service in IBM Cognos Administration.

By default, the trace files are saved in the `c10_location\logs\XQE` directory. However, you can change the output directory by changing a configuration file.

**Query execution trace**

The query execution trace writes information such as the native MDX to a run tree log file. Profile information is written to one or more separate logs. Profiling logs include execution and waiting-time metrics for query constructs.

Log files from the query execution trace are written to the `c10_location\logs\XQE` directory. Log files are generated every time each report is executed. The log files follow specific naming conventions:

- Tree log files are saved as `timestamp_reportName\runtreeLog.xml`.
- Profiling log files are saved as `timestamp_reportName\profilingLog-\log_number.xml`.

For example, executing a report called Retailers results in a log tree file named `2012-01-10_11h33m700s_Retailers\runtreeLog.xml` and several profiling logs with sequential file names: `2012-01-10_11h33m700s_Retailers\profilingLog-0.xml` and `2012-01-10_11h33m700s_Retailers\profilingLog-1.xml`.

Some reports require the execution of subqueries. Trace files for subqueries, including run tree logs and profiling logs, are stored under a separate directory within the main report directory.

For example, if the Retailers report requires the execution of one or more subqueries, the trace files for those subqueries are stored in a directory named `2012-01-10_11h33m700s_railers\subqueries`.

For more information about enabling the query execution trace, see the *IBM Cognos Business Intelligence Administration and Security Guide*.
Query planning trace

The query planning trace writes information related to the transformation of the query to the plan tree log file. Use the query planning trace when you want to determine how the execution plan was determined by the dynamic query mode.

Log files from the query planning trace are written to the c10_location\logs\XQE directory. Log files are generated every time each report is executed. The log files follow specific naming conventions:

- Tree log files are saved as timestamp_reportName\planningLog.xml.
- Profiling log files are saved as timestamp_reportName\planningLog_pass_log_number.xml.

For example, executing a report called Retailers results in a planning log file named 2012-01-10_11h33m700s_Retailers\planningLog.xml and several pass logs with sequential file names: 2012-01-10_11h33m700s_Retailers\planningLog_pass_001.xml and 2012-01-10_11h33m700s_Retailers\planningLog_pass_002.xml.

Some reports require the execution of subqueries. Subquery trace files, including planning logs and pass logs, are stored under a separate directory within the main report directory.

For example, if the Retailers report requires the execution of one or more subqueries, the trace files for those subqueries are stored in a directory named 2012-01-10_11h33m700s_retailers\subqueries.

Important: The resultant log files are large and enabling the query planning trace may have an impact on overall query performance.

For more information about enabling the query planning trace, see the IBM Cognos Business Intelligence Administration and Security Guide.

Changing the default log file output directory

You can change the location where the query execution trace and query planning trace log files are created by modifying a configuration file.

About this task

You must perform this task for every installation of IBM Cognos Business Intelligence.

Procedure

1. Locate and back up the c10_location\configuration\xqe.config.xml file.
2. Using a text editor, open the original file and locate the following line:
   
   <!--logsFolder value="../../logs"/

3. Remove the comment marks and add the new physical location for the log files. For example, if the new physical location is the D:\logs directory on a Microsoft Windows server, change the line to the following value:

   <logsFolder value="D:\logs"/>

4. Save the changes and close the file.
5. In IBM Cognos Configuration, stop and restart the IBM Cognos service.
Sample reports for the dynamic query mode

Sample models and reports that are optimized for the dynamic query mode are included with IBM Cognos Business Intelligence.

When installed and deployed, you can find the updated samples in the Public Folders tab in IBM Cognos Connection, in a folder named Samples_DQ. The updated reports were also renamed with the suffix _DQ.

The samples were modified slightly to benefit from the key improvements of the dynamic query mode. For example, reports were updated to apply a specific sorting order and to specify an aggregation mode.

To access the dynamic query mode samples, you must modify the data source connections to two sample data sources to enable JDBC connections and then import the updated samples deployment archive.

Modify the data source connections to the sample data sources

To import and then use the dynamic query sample reports, you must modify the existing data source connections to two sample relational databases to enable a JDBC connection.

Procedure

1. In IBM Cognos Administration, click the Configuration tab and click Data Source Connections.

   Note: To access this area in IBM Cognos Administration, you must have the required permissions for the Administration tasks secured feature.

2. Click the great_outdoors_sales sample data source.

3. In the Actions columns, click the set properties button for the great_outdoors_sales data source connection.

4. On the Connection tab, under Connection string, click the Edit the connection string icon.

5. On the JDBC tab, select the Enable JDBC connection check box.

6. Specify the JDBC connection parameters for the data source.

7. Click Test the connection and click Test.

   On the results page of the connection test, notice the JDBC results under the Type / Query Mode column.

8. Repeat steps 1 to 6 with the great_outdoors_warehouse sample data source connection.

Import the dynamic query samples content (packages) into the content store

After you have modified the data source connections to the sample data sources, you must import the dynamic query samples content, or packages from the sample deployment archive.

The dynamic query samples are in the deployment archive named IBM_Cognos_Samples_DQ.zip.
Procedure

1. Copy the IBM_Cognos_Samples_DQ.zip file from the c10_location/webcontent/samples/content directory to the directory where your deployment archives are saved. The default location is c10_location/deployment. The location is set in the configuration tool. For information about changing the location, see the configuration tool online help.

2. In IBM Cognos Administration, click the Configuration tab and click Content Administration.

   **Note:** To access this area in IBM Cognos Administration, you must have the required permissions for the Administration tasks secured feature.

3. On the toolbar, click the New Import button. The New Import wizard appears.

4. In the Deployment Archive box select the archive IBM_Cognos_Samples_DQ and click Next.

5. Type a unique name and an optional description and screen tip for the deployment archive, select the folder where you want to save it, and then click Next.

6. In the Public Folders Content box, select the Samples_DQ folder.

7. Select the options you want, along with your conflict resolution choice for options that you select, and then click Next.

8. In the Specify the general options page, select whether to include access permissions and references to external namespaces, and who should own the entries after they are imported.

9. Click Next. The summary information appears.

10. Review the summary information and click Next.

11. Click Save and run once.

12. Click Finish, specify the time and date for the run, then click Run.

13. Review the run time and click OK.

14. When the import is submitted, click Finish.

Results

You can now use the dynamic query sample package to create reports and to run the sample reports that are available in the Samples_DQ folder on the Public Folders tab in the portal.
Notices

This information was developed for products and services offered worldwide.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user’s responsibility to evaluate and verify the operation of any non-IBM product, program, or service. This document may describe products, services, or features that are not included in the Program or license entitlement that you have purchased.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785
U.S.A.

For license inquiries regarding double-byte (DBCS) information, contact the IBM Intellectual Property Department in your country or send inquiries, in writing, to:

Intellectual Property Licensing
Legal and Intellectual Property Law
IBM Japan Ltd.
19-21, Nihonbashi-Hakozakicho, Chuo-ku
Tokyo 103-8510, Japan

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law: INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product and use of those Web sites is at your own risk.
IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:

IBM Software Group
Attention: Licensing
3755 Riverside Dr
Ottawa, ON K1V 1B7
Canada

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this document and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement or any equivalent agreement between us.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

All statements regarding IBM’s future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

If you are viewing this information softcopy, the photographs and color illustrations may not appear.
IBM, the IBM logo and ibm.com are trademarks or registered trademarks of
International Business Machines Corp., registered in many jurisdictions worldwide.
Other product and service names might be trademarks of IBM or other companies.
A current list of IBM trademarks is available on the Web at "Copyright and

The following terms are trademarks or registered trademarks of other companies:
• Microsoft, Windows, Windows NT, and the Windows logo are trademarks of
  Microsoft Corporation in the United States, other countries, or both.
• Linux is a registered trademark of Linus Torvalds in the United States, other
  countries, or both.
• UNIX is a registered trademark of The Open Group in the United States and
  other countries.
• Java and all Java-based trademarks and logos are trademarks or registered
  trademarks of Oracle and/or its affiliates.
Microsoft SQL Server Analysis Services (continued)
models
   samples  54

N
new features
   in version 10.2.0  2
   in version 10.2.1  1
nulls
   suppressing  8

O
Oracle
   creating projects  39
   database connectivity  16
Oracle Essbase
   64-bit Microsoft Windows  20
   creating projects  27
   data source connectivity  20
   UNIX  20

P
packages
   samples  54
   plan tree log files  53
   profiling log files  52
projects
   IBM Cognos TM1  24
   IBM DB2  22
   IBM Netezza  25
   JDBC data sources  41
   Microsoft SQL Server  31
   Microsoft SQL Server Analysis Services  28
   Oracle  39
   Oracle Essbase  27
   publishing with Framework Manager  22
   Salesforce.com  32
   SAP BW  29
   SAP ECC  32
   Siebel  32
   Teradata  37

Q
queries
   visualizing  9
query execution trace
   overview  52
query mode
   changing  43
   overriding for packages  43
   overriding for query testing  43
query planning trace
   overview  53
Query Service  43

R
relational metadata
   importing  11
   reports
      samples  54

S
Salesforce.com
   creating projects  32
   samples  54
   data source connections  54
   importing  55
SAP BW
   creating projects  29
   data source connectivity  21
SAP BW data sources
   modeling  10
SAP ECC
   creating projects  32
   database connectivity  16
Siebel
   creating projects  32
   database connectivity  16
   sorting
      overview  44
stored procedures
   transaction access modes  50
   suppressing
      nulls  8

T
Teradata
   creating projects  37
   database connectivity  17
   testing
      reports  46
   trace files
      overview  52
   transaction access modes
      stored procedures  50
   tree log files  52
   troubleshooting
      overview  52
      plan tree log files  53
      profiling log files  52
      tree log files  52

X
XQE-PLN-0309
   errors  50