



Crystal Enterprise

Crystal Query and Dictionary Support

Overview

This white paper describes the functionality and requirements for publishing Crystal Reports that use Query, Dictionary or Info View files as a data source in the Crystal Enterprise environment.

It specifically outlines how Query and Dictionary files can be integrated into the Crystal Enterprise system; how users can schedule and view-on-demand reports based off of Dictionaries or Queries; and the limitations that customers can expect when implementing Queries or Dictionaries in Crystal Enterprise.

Crystal Enterprise does not use Info Views to implement column or row security. However, Info View files can be converted to Dictionary Files so that the “dictionary” qualities of Info View files can be utilized in the Crystal Enterprise environment. For this reason, the bulk of this paper will refer only to Query and Dictionary files. The section entitled “Converting an Info View (.CIV) File to a Dictionary (.DC5) File” will explain how to convert an Info View to a Dictionary.

A typical scenario is outlined in which a report would be developed and published to an Enterprise environment using Crystal Queries or Dictionaries as a reporting data source.

Please note that this document addresses version 8.5 and 9.0 of Crystal Enterprise. Customers that deploy reports based off of dictionaries/queries in version 10 of Crystal Enterprise will not be supported. We intend to introduce a new technology that replaces data dictionaries in version 10 and we intend to provide a migration path for those customers implementing reports based off of dictionaries and queries.

We will require that customers migrate to our new technology when they upgrade to version 10 of Crystal Enterprise. Dictionaries and Queries will only be supported in version 10 for the purpose of migration to the new technology.

In addition, version 10 of Crystal Reports will be the last version to support the use of Dictionaries and Queries. After version 10 dictionaries and queries will no longer be supported; customers must migrate to our new technology.

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Introduction

A Crystal Report that uses either a dictionary or query file as a datasource can be easily published within the Crystal Enterprise environment. The use of a query file would be applicable in this environment only as a SQL substitution method, allowing for the creation of more complex SQL.

In Crystal Info, it was possible to publish a standalone query file (.QRY) and schedule it independently of a Crystal Report (the query would process and create a new query instance with saved data). This is not possible in Crystal Enterprise. Any report that is processed either by viewing or scheduling will utilize the query file only for the purposes of retrieving a SQL statement. The value of a query file in this environment is the ability to easily create and test simple to complex SQL statements and to use as one central datasource that one or more reports can connect.

Once in the Crystal Enterprise system, reports based off of dictionary or query files can be scheduled and viewed or viewed-on-demand (see [Performance](#)). Although Crystal Enterprise will support viewing and scheduling reports based off of query files, customers should begin to migrate to SQL Commands. SQL Commands are a new technology for Crystal Enterprise/Crystal Reports 9. They enable users to create free-form SQL statements and report off of the data set. Please review the Crystal Reports 9 documentation for more details.

Limitations

When implementing queries or dictionaries in a Crystal Enterprise system, there are several key limitations. Please read this section carefully, prior to implementing reports based off of queries or dictionaries.

Crystal Enterprise 9/Crystal Reports 9 Specific Limitations

Sorting and Grouping on the Server

User can sort and group data in the Crystal SQL Designer. The Designer enables users to sort data when it is retrieved from the server. Crystal Enterprise 9 does not support the sorting and grouping of data on the Server.

Data Source Linking

The ability to link of multiple Datasources in a Dictionary/Query file is not supported in Crystal Enterprise 9 and the reports will fail.

Browse Data

The Crystal Dictionary designer lets you create sample data that appears to users when they browse field data. Reports based off of dictionaries that contain sample data will not be supported in Crystal Enterprise 9.

Graphics

Crystal Dictionaries have the ability to store graphics. Crystal Enterprise 9 will not support these types of dictionaries and reports utilizing this technology will fail when scheduled or viewed.

General Crystal Enterprise Limitations

UNIX

Reports based off of queries or dictionaries can only be deployed on a Windows platform. Crystal Enterprise does allow for mixed mode deployments (UNIX and Windows platforms in the same system) so dedicated processing servers could be set-up for Dictionary-based reports. Furthermore, Reports cannot be published to Crystal Enterprise via the Crystal Management Console in UNIX. Please contact your Crystal Decisions Representative for more details.

Queries with Saved Data

Queries based off of saved data will not be supported in Crystal Enterprise.

Info Views

Info Views are a feature in Crystal Info (formally known as Seagate Info) that enables customers to create customized views of the data. They provided users with an abstraction of the underlying data that presents users with simplified and secure access to their data. Furthermore, Info Views restricted access to data using granular column and row-level security.

Crystal Enterprise will not support scheduling or viewing reports based off of Info Views. Customers are required to convert Info Views to Dictionary files. Please refer to "[Converting an Info View \(.CIV\) File to a Dictionary \(.DC5\) File](#)" for more details.

Management of Dictionaries or Queries

The Crystal Enterprise system manages all Report objects by storing them in the File Repository Server (FRS). However, dictionary and queries files will not be stored in the FRS; they must be stored on the Job and Page Server. This requires a manually file copy to the appropriate server. Any reports based off of dictionaries or queries will require a path to the dictionary/query file on the appropriate Page or Job Server. Please refer to the "[Requirements \(Local Path to File\)](#)" section more for more details.

Query files based off of Dictionaries

In Crystal Enterprise, there will be no support for Query files based off of Dictionaries. Query files will only be supported based off ODBC drivers; native drivers will not be supported.

Performance

When reports based off of dictionaries and queries are viewed on-demand in Crystal Enterprise performance and scalability will be affected. Dictionaries and Queries are based off of legacy technology and can only handle single-threaded processing. However, in Crystal Enterprise our processing servers have been enhanced to handle multi-threaded processing. Because dictionaries and queries are single-threaded, they will only take advantage of the a single thread not multiple threads thereby reducing performance and scalability. We recommend that customers that deploy many of these types of reports in a large environment do so by scheduling rather than view-on-demand. Scheduling these reports will not reduce the scalability of the system.

Publishing Reports based on .QRY and .DCT/.DC5 Files

There are four methods for publishing a Crystal Report to the Crystal Enterprise environment:

1. Crystal Publishing Wizard
2. Crystal Import Wizard
3. Crystal Report Designer (File/Save As/Enterprise Folders)
4. Crystal Management Console

This document is limited to specifically describing the use of the “Crystal Publishing Wizard” when publishing. However, the basic requirements described below also apply to use of the Crystal Import Wizard, publishing from the Crystal Report Designer, and the Crystal Management Console.

When using the Crystal Enterprise “Crystal Publishing Wizard” utility to publish a report based on either a query or dictionary file, no special steps need to be taken within the wizard. Publish the report using the same methods as any other report.

Any servers (Crystal Page Server or Crystal Report Job Server) that might be called upon to process a Crystal Report based on a query or dictionary data source must have access to the essential connectivity software, configurations, and access rights to the query or dictionary file.

Basic requirements:

1. Crystal Reports 8.X/9 should be installed on same machine as Crystal Page or Report Job Server/s.
2. Crystal Page and Report Job Servers must have a properly configured database data source (query file's data source) as well as the database client software.
3. Crystal Page and Report Job Servers must run under an account that has sufficient rights to access the query or dictionary file.

CAUTION	<p>Because the Crystal Report can run successfully without accessing the query file (due to the report having an embedded definition of the query), it is necessary that the Page or Report Server can access the query file. If the query file cannot be accessed, possible modifications to the query file will not be utilized during processing and successful report instance will not contain data reflecting modified SQL.</p> <p>For example: A scheduled report looks first for the query file in its original path. If the query file can be accessed, all modifications (e.g. changes in the WHERE clause) will be detected and the report will process, reflecting the latest version of the query file. If a report cannot access its query file, then the report will process using the embedded definition of the query file.</p>
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Development and Publishing Scenario

1. A developer designs a report using a Crystal Query file (.QRY) or a Crystal Dictionary file (.DCT or .DC5) as a datasource. The query or dictionary file is located either locally on the developer's machine or externally on a File Server.
2. The report is tested locally on the Developer's workstation until it is ready for publishing.
3. The finished report template (.RPT file) is published to the Crystal Enterprise environment using the “Crystal Publishing Wizard”.

4. The “Crystal Publishing Wizard” creates a copy of the new report in the Crystal Enterprise “FileStore” windows directory, assigning it a unique generic name. (E.g. 1911d76f2ffa00.rpt)
5. If the report was designed pointing to a local copy of the query or dictionary file, the developer must ensure that a copy of the query or dictionary file is placed in the relative path on the Crystal Page or Job servers. If a UNC path is used ([see below](#)), then it must be ensured that the **Crystal Page Server** and **Report Job Server** services run under a Domain/User account that has rights to access the network share and file.
6. The report is now published and ready to be scheduled and viewed from within the Crystal Enterprise environment.

Requirements (Local Path to File)

A local directory path to the location of the query or dictionary file is embedded in the report file.

Example:

1. On a developer’s workstation a report named Sales.rpt is created from a .QRY file located locally on the workstation at C:\Query Files\Sales.qry.
2. The report is published to Crystal Enterprise using the Crystal Publishing Wizard.
3. A randomly named copy of the original Sales.rpt template is created by the Crystal Publishing Wizard and now resides in:
C:\Program Files\Crystal Decisions\Enterprise 9\FileStore\Input\17\117\1911d76f2ffa00.rpt
4. When the report is scheduled the Page Server or Report Server will decompress 1911d76f2ffa00.rpt and will try to locally access C:\Reports\Query Files\Sales.qry. If the Sales.qry file is found and opened, the properties of Sales.qry will be used when processing the report. If the Page or Report server cannot access the Sales.qry file, 1911d76f2ffa00.rpt will be processed using the embedded definition of the Sales.qry instead.

Requirements (UNC Path to File)

A UNC path to the location of the query or dictionary file is embedded in the report file.

Example:

1. On a developer’s workstation, a report named Sales.rpt is created from a .QRY file located on a File Server at a UNC path \\FileServer\Query Files\Sales.qry or using a UNC path to the local machine.
2. The report is published to Crystal Enterprise using the Crystal Publishing Wizard.
3. A randomly named copy of the original Sales.rpt template is created by the Crystal Publishing Wizard and now resides in:
C:\Program Files\Crystal Decisions\Enterprise 9\FileStore\Input\17\117\1911d76f2ffa00.rpt
4. When the report is scheduled the Page Server or Report Server will decompress 1911d76f2ffa00.rpt and will try to access the UNC path at \\FileServer\Query Files\Sales.qry. If the Sales.qry file is found and opened, the properties of Sales.qry will be used when processing the report. If the Page or Report server cannot access the Sales.qry file, 1911d76f2ffa00.rpt will be processed using the embedded definition of the Sales.qry instead. Crystal Page Server and Report Job Server services must run under a Domain/User account that has rights to access the network share and file.

Modifying or Updating a published Report (based on a query or dictionary datasource)

If a query or dictionary file is modified, the Cache and Page Servers should be restarted and any report that uses the file should be refreshed in order to allow the report to “embed” the new definition. This can be accomplished by opening up the report in the Crystal Report Designer, accepting detected changes and/or “verifying the database” and then saving the report.

1. In Crystal Report Designer select File/Open/Enterprise Folders
2. Connect to APS dialog appears. Logon to Enterprise System.
3. Select Report to be updated and then once opened select from the menu Database/Verify Database. This will force the report to verify that the internal query definition matches the external query file. If there are any differences there will be a prompt showing what has changed and if it is ok to update the report.
4. Once the database (query or dictionary data source) has been verified, save the report to the Enterprise system. Save As/Enterprise Folders/ReportName.rpt.

The above steps are not strictly necessary in all cases (i.e. some modifications to the query or dictionary file do not require a full update), but it is considered good practice to follow them. For example, a report will process and retrieve data that reflects a change to the WHERE clause in a query file's SQL statement (providing that the report has access to query file) without the need for modification of the report in the Crystal Report Designer. However, if the SELECT or FROM statements are modified, the report's structure will need to be changed. This can only be done at design time in the Crystal Report Designer by verifying the database and proceeding to fix up the report

Converting an Info View (.CIV) File to a Dictionary (.DC5) File

An Info View may be configured with Row Security and/or Column security. Crystal Enterprise does not include Row or Column security via Info Views; however, Info Views created in a Crystal Info environment can be converted for use in Crystal Enterprise, but the security restrictions they contain will not function correctly and need to be removed to ensure the report runs properly.

If an Info View contains active Row or Column security configurations, then these references must be removed in order for the file to be used in the Enterprise system. When security references are removed from an Info View, it technically becomes no different than a Dictionary file. Info Views are essentially dictionaries with row or column security. The ability to convert an Info View to a Dictionary file allows the leveraging of existing Dictionary design qualities contained in Info Views, to be used in the Enterprise system.

To convert an Info View to a Dictionary:

1. Open the Info View in the Info View designer and then remove any row or column security references. Save the changes and close the Info View designer.
2. Rename the Info View file from **XXXX.CIV** to **XXXX.DC5**

Summary

Crystal Enterprise is the ultimate successor to Crystal Info. It provides, or will provide, an overwhelming majority of the core features used by Crystal Info customers and adds a broad range of functionality that was never available in the Crystal Info product. It offers a compelling web-based platform for Crystal Info customers who want to move their core enterprise reporting applications to the web and leverage the latest Crystal technology.

Existing Crystal Info customers who have delayed their migration because they rely heavily on Crystal Dictionaries and Crystal Queries can now begin their migration path to our Crystal Enterprise 8.5/9.0 technology. Customers should contact their Crystal Decisions Representative for more information.

Please note that customers that are looking to migrate to Crystal Enterprise 10 will be unable to view or schedule their reports based off of dictionaries/queries. In version 10 of Crystal Enterprise, Data Dictionaries and Crystal Queries will no longer be supported. Crystal Decisions intends to introduce a new technology that replaces data dictionaries in version 10. In addition, Crystal Decisions intends to provide a migration path to version 10 for those customers implementing reports based off of dictionaries and queries.

The information contained in this document represents the best current view of Crystal Decisions on the issues discussed as of the date of publication, but should not be interpreted to be a commitment on the part of Crystal Decisions or a guarantee as to the accuracy of any information presented.

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