

Crystal Reports Server XI

Upgrading Crystal Enterprise 10 Embedded Edition Applications

Overview

This technical paper discusses how to upgrade your Crystal Enterprise 10 Embedded Edition applications to use managed or unmanaged reporting in Crystal Reports Server XI.

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Introduction

New to the Crystal Reports product suite, Crystal Reports Server XI is a complete reporting solution that allows you to create, manage, and deliver Crystal reports over the web, as well as embed reporting functionality into enterprise applications. It addresses all steps in the reporting process - from data access and report design, to report management and delivery, and to report integration with portals and applications. It also includes Crystal Reports XI, the world standard for report creation, making it easy for existing or new Crystal reports to be shared over the Web. Designed for use on a single server, Crystal Reports Server is the ideal reporting solution for small and medium-sized businesses.

This technical paper describes how to upgrade an existing Crystal Enterprise 10 Embedded Edition application to Crystal Reports Server XI.

Upgrade Scenarios

Upgrading to use managed reporting in Crystal Reports Server XI

Managed reporting is the recommended reporting method to get the most out of your Crystal Reports Server XI system. Managed reporting is where the Crystal reports are stored within the repository of Crystal Reports Server. This allows you to apply the security, scheduling and other capabilities to the reports through a centralized management console.

Whether your application is on a separate web server or on the same computer as Crystal Reports Server XI, you can take advantage concurrent user licensing to view reports published to Crystal Reports Server XI.

Upgrading to use unmanaged reporting in Crystal Reports Server XI

The installation procedure for Crystal Reports Server XI accomplishes most of the changes required for unmanaged reporting. If you have licenses for concurrent users, you will need only to make minimal changes to your application.

Upgrading to Managed Reporting in Crystal Reports Server XI

This section discusses how to upgrade your Crystal Enterprise 10 Embedded Edition application to use managed reporting in Crystal Reports Server XI.

Benefits of upgrading to managed reporting

Improved viewing performance

While the Report Application Server (RAS) in Crystal Enterprise 10 Embedded Edition is capable of viewing reports, its main purpose is to create and modify reports at run time. The Page and Cache servers in Crystal Reports Server XI, on the other hand, are optimized for viewing performance.

Security on reports and folders

With Crystal Reports Server, you have the option of specifying which reports you want your users to view on demand, schedule, and browse by setting security on the published reports and folders.

Easily manage system users

Crystal Reports Server gives you control over which users can use your application without writing any additional code. By creating users within the Crystal Reports Server XI system, you not only have control over who accesses your application but you also have control over what users are able to see.

Viewing large reports easier is with scheduling

By scheduling reports once or on a recurring basis, your users will have the report they need with the most current data available to them. For large, complex reports, reports can be scheduled to run during off-peak hours to save time.

You also have the flexibility of scheduling reports to various locations such as to a user's e-mail address, FTP site, or file system location.

Manage objects and system properties in your repository

The Central Management Server (CMS) interface enables you to access each object in your Crystal Reports Server system. This makes it easy to manage the reports used in your application and to set various object properties.

Modifying your reports

Before upgrading your application, first complete these steps to modify your reports:

1. Install Crystal Reports Server XI.
2. Publish your reports to Crystal Reports Server XI using the Publishing Wizard.
3. Create or modify the report data source(s) to work with the newly published reports, as required.

Updating the SDK references in your application

This section discusses the application references for each SDK that must be modified to upgrade your application.

.NET SDK

Change the assembly references in your project from 10.0.3300.0 to 11.0.3300.0 manually by updating the assembly versions in the Web.config file, or automatically by opening the project in Visual Studio .NET.

NOTE	If you have Crystal Reports XI or the Crystal Reports Server SDK installed on your development computer, you will be prompted to update the project automatically. If you click Yes , the assembly references will be updated when the project opens.
-------------	--

COM SDK (ASP)

Replace all `CrystalReports10.ObjectFactory.1` references with `CrystalReports11.ObjectFactory.1`.

For example:

```
Set objFactory =  
CreateObject("CrystalReports11.ObjectFactory.1")
```

Java SDK (JSP)

1. Copy the crystalreportviewers11 folder to your web application. By default, this folder is located at C:\Program Files\Common Files\Business Objects\3.0.
2. Delete the crystalreportviewers10 folder.
3. Copy the following Java archive (JAR) files from C:\Program Files\Common Files\Business Objects\3.0\java\lib to your web application's WEB-INF/lib folder:
 - cecore.jar
 - ceplugins.jar
 - cereports.jar
 - cesession.jar
 - ceutils.jar
 - cexsd.jar
 - CorbaIDL.jar
 - ebus405.jar
 - MetafileRenderer.jar
 - rasapp.jar
 - rascore.jar
 - Serialization.jar
 - URIUtil.jar
 - webreporting.jar
4. Copy the log4j.jar file from C:\Program Files\Common Files\Business Objects\3.0\java\lib\External to your web application's WEB-INF/lib folder.

5. In your web application's web.xml file, set the value of the **crystal_image_uri** parameter to "crystalreportviewers11".

For example:

```
<context-param>
  <param-name>crystal_image_uri</param-name>
  <param-value>
    crystalreportviewers11
  </param-value>
</context-param>
```

Modifying your application

Your Crystal Enterprise 10 Embedded Edition application must be able to do the following (in this order) to run on Crystal Reports Server XI:

1. Log on to the CMS in Crystal Reports Server XI to authenticate users.
2. Create an **InfoStore** service object.
3. Query for an **InfoObject** from the **InfoStore**. The **InfoObject** returned from the query is the report that you wish to view. However, you are not limited to retrieving just reports objects. You are also able to retrieve nearly any object published such as users, groups, and folders.
4. Create a **ReportClientDocument** object.

After completing these modifications, the rest of your application code remains the same.

Logging on to the Central Management Server

In order to log on to the CMS, your application must first create an **EnterpriseSession** object. Add the following sample code for the appropriate SDK to the beginning of your application:

.NET SDK (VB.NET)

```
Imports CrystalDecisions.Enterprise
Imports CrystalDecisions.ReportAppServer.ClientDoc

Dim ceSession As EnterpriseSession
Dim ceSessionmgr As New Session Mgr

ceSession = ceSessionmgr.Logon("<CRS user name>", "<CRS
password>", "<CRS Installed CMS>", "<Authentication Type>")

``<Autentication Type> may be; secEnterprise, secWindowsNT,
secWinAD, secLDAP
```

```
Dim ceSession As EnterpriseSession
ceSession = ceSessionmgr.Logon("<CRS user name>", "<CRS
password>", "<CRS Installed CMS>", "<Authentication Type>")
```

.NET SDK (C#.NET)

```
EnterpriseSession ceSession;
EnterpriseService ceEnterpriseService;
SessionMgr ceSessionmgr = new SessionMgr();
ceSession = ceSessionmgr.Logon("<CRS user name>", "<CRS
password>", "<CRS Installed CMS>", "<Authentication
Type>");
```

COM SDK (ASP)

```
Dim objFactory
Set objFactory =
Server.CreateObject("CrystalReports11.ObjectFactory.1")
'Load the Crystal Enterprise Session Manager
Dim ceSessionManager
Set ceSessionManager =
Server.CreateObject("CrystalEnterprise.SessionMgr")
```

```
'Logon to the Enterprise CMS
Dim ceSession
Set ceSession = ceSessionManager.Logon("<CRS user name>",
"<CRS password>", "<CRS Installed CMS>", "<Authentication
Type>")
```

Java SDK (JSP)

```
/* First, ensure that you add the following to your import
statement(s) */

com.crystaldecisions.sdk.framework.*,
com.crystaldecisions.sdk.occa.managedreports.*,
com.crystaldecisions.sdk.occa.infostore.*,
java.util.*

// Connect to Crystal Enterprise
CrystalEnterprise ce = new CrystalEnterprise();
ISessionMgr ceSessionMgr = ce.getSessionMgr();
IEnterpriseSession ceSession = ceSessionMgr.logon("<CRS
user name>", "<CRS password>", "<CRS Installed CMS>",
"<Authentication Type>");
```

Create an InfoStore service object

This section provides the code to create an **InfoStore** object. This object is used to query for the objects published to the Crystal Reports Server system. Add the following sample code for the appropriate SDK to your application:

.NET SDK (VB.NET)

```
Dim ceInfoStore As InfoStore
Dim ceEnterpriseService As EnterpriseService
ceEnterpriseService = ceSession.GetService("", "InfoStore")
ceInfoStore = New InfoStore(ceEnterpriseService)
```

.NET SDK (C#.NET)

```
InfoStore ceInfoStore;
ceEnterpriseService = ceSession.GetService("",
"InfoStore");
ceInfoStore = new InfoStore(ceEnterpriseService);
```

COM SDK (ASP)

```
'Create the Enterprise InfoStore
Dim ceInfoStore
Set ceInfoStore = ceSession.Service("", "InfoStore")
```

Java SDK (JSP)

```
// Get the Enterprise InfoStore service
IInfoStore ceInfoStore =
(IInfoStore)ceSession.getService("", "InfoStore");
```

Querying for a report InfoObject

This section provides the code to query for a report published to your Crystal Reports Server system (although you are able to query for any object published to the system).

Add the following sample code for the appropriate SDK to your application:

.NET SDK (VB.NET)

```
Dim ceReports As InfoObjects
Dim ceReport As InfoObject
```

```

Try
    ceReports = ceInfoStore.Query("Select SI_ID,SI_NAME From
    CI_INFOOBJECTS Where SI_NAME = 'Consolidated Balance
    Sheet' And SI_INSTANCE=0")
    ceReport = ceReports.Item(1)
Catch err As Exception
    `handle error
End Try

```

.NET SDK (C#.NET)

```

InfoObjects ceReports;
InfoObject ceReport;
try
{
    ceReports = ceInfoStore.Query("");
    ceReport = ceReports[1];
}
catch (Exception e)
{
    //handle error
}

```

COM SDK (ASP)

```

Set ceReports = IStore.query("Select * from CI_INFOOBJECTS
where SI_NAME='Consolidated Balance Sheet'")

```

Java SDK (JSP)

```

// Retrieve the report by name
IInfoObjects ceReports = ceInfoStore.query("Select SI_ID,
SI_NAME From CI_INFOOBJECTS Where SI_NAME = 'Consolidated
Balance Sheet'");

```

Create and open a ReportClientDocument object

This section provides to code to create a **ReportClientDocument** object. This object is created by invoking the **OpenDocument** method of the **RASReportFactory** object. Add the following sample code for the appropriate SDK to your application:

.NET SDK (VB.NET)

```

Dim rptClientDoc As ReportClientDocument
Dim rptAppFactory As ReportAppFactory

rptAppFactory =
ceInfoStore.EnterpriseSession.Interface.Service("",
"RASReportFactory")

'open the report

rptClientDoc = rptAppFactory.OpenDocument(ceReport.ID,
CdReportClientDocumentOpenOptionsEnum.cdReportClientDocumen
tOpenAsReadOnly)

```

.NET SDK (C#.NET)

```

ReportClientDocument rptClientDoc;
ReportAppFactory rptAppFactory;

rptAppFactory = ceSession.GetService("",
"RASReportFactory");

rptClientDoc = rptAppFactory.OpenDocument(ceReport.ID,
CdReportClientDocumentOpenOptionsEnum.cdReportClientDocumen
tOpenAsReadOnly);

```

COM SDK (ASP)

```

Dim rptClientDoc
Dim rptAppFactory

if (ceReports.resultCount > 0) then
    'Initialize Report Application Server
    Set rptAppfactory =
ceInfoStore.EnterpriseSession.Service("",
"RASReportFactory")
    'Open the infoObject as a reportClientDocument
    Set rptClientDoc =
rptAppFactory.openDocument(oInfoObjects.item(1))
else
    'handle error
end if

```

Java SDK (JSP)

```

/* Get the Report Application Factory service from Crystal
Enterprise */

IReportAppFactory rptAppFactory =
(IReportAppFactory)ceSession.getService("",
"RASReportService");

```

```
// Open the report into a Report Document object
ReportClientDocument rptClientDoc =
rptAppFactory.openDocument((IInfoObject)ceReports.get(0),
0, Locale.ENGLISH);
```

Putting it all together

After having completed these steps, your application is now able to use all the features available in Crystal Reports Server XI. Below is an example of a complete COM SDK (ASP) application that changes the database location at runtime:

```
Dim objFactory
Set objFactory =
Server.CreateObject("CrystalReports.ObjectFactory")

`Load the Crystal Enterprise Session Manager
Dim ceSessionManager
Set ceSessionManager =
Server.CreateObject("CrystalEnterprise.SessionMgr")

`Logon to the Enterprise CMS
Dim ceSession
Set ceSession = ceSessionManager.Logon("<CRS user name>",
"<CRS password>", "<CRS Installed CMS>", "<Authentication
Type>")

Set ceReports = IStore.query("Select * from CI_INFOOBJECTS
where SI_NAME='Consolidated Balance Sheet'")

`Create the Enterprise InfoStore
Dim ceInfoStore
Set ceInfoStore = ceSession.Service("", "InfoStore")

Dim rptClientDoc
Dim rptAppFactory

If (ceReports.resultCount > 0) Then
  `Initialize Report Application Server
  Set rptAppfactory =
  ceInfoStore.EnterpriseSession.Service("",
  "RASReportFactory")
  `Open the infoObject as a reportClientDocument
  Set rptClientDoc =
  rptAppFactory.openDocument(oInfoObjects.item(1))
```

```
Else
    'handle error
End If

'Get the connection information from the report document
for the first table in the collection
Set oDBInfo =
    RptClientDoc.DatabaseController.GetConnectionInfos().
    Item(0)

'Get the connection info attributes
Set pbLevel1 = oDBInfo.Attributes

'This 'first level' property bag will be used to define the
'basic database info for the report
pbLevel1.Item("QE_ServerDescription") = Database

With pbLevel1
    .Item("Database Name") = Database
    .Item("Server Name") = DSNName
    .Item("Server Type") = "ODBC - " & DSNName
End With

'This 'second level' property bag contains info that is
'specific to the type of db connection
'in this case, it will contain our OLE DB specific
'information
Set pbLevel2 = pbLevel1.item("QE_LogonProperties")
pbLevel2.Item("DSN") = DSNName

'Attaching the QE specific properties to the 'level 1'
'property bag
pbLevel1.Item("QE_LogonProperties") = pbLevel2

'Add the new property bag info to the connection object
'(and set the username/password)
oDBInfo.Attributes = pbLevel1
oDBInfo.UserName = username
oDBInfo.Password = password

'=====
'CHANGING THE MAIN REPORT DATABASE INFO
```

```
`=====
`Get the collection of tables in the main report
Set Tables = RptClientDoc.DataDefController.Database.Tables

For Each table in Tables
    `clone the table object
    Set newTable = Table.Clone

    `set the table's connectionInfo to the current
    `connection info
    newTable.ConnectionInfo = oDBInfo

    `set the table object qualified name to include
    `the new database name
    `That is, original = 'db1.dbo.myTable', new
    ='db2.dbo.myTable'
    newTable.QualifiedName = Database & ".dbo." &
    Table.Name

    `put this newly modified table object back into the
    `report client doc
    RptClientDoc.DatabaseController.SetTableLocation table,
    newTable

Next

`Create the Crystal Reports Viewer
Dim viewer
Set viewer =
CreateObject("CrystalReports.CrystalReportViewer")

`IMPORTANT NOTE:
`For a complete list of properties of the Page Viewer look
`in the RAS "COM Viewer SDK" Help file

With viewer
    .Name = "Crystal Reports Viewer"
    .IsOwnForm = true
    .IsOwnPage = true
    .IsDisplayGroupTree = False
    .HasToggleGroupTreeButton = True
```

```
`Set the source for the viewer to the
`ReportClientDocuments report source
.ReportSource = Session("oClientDoc").ReportSource

`Set the enterpriseSession property of the viewer
.EnterpriseLogon = Session("es")

`Process the http request to view the report
.ProcessHttpRequest Request, Response, Null
End With
```

Upgrading to Unmanaged Reporting in Crystal Reports Server

This section discusses how to use unmanaged reporting in Crystal Reports Server XI. Unmanaged reporting is available only in the standalone version of Crystal Reports Server XI. This option is not available in the special 5 named user offer included with Crystal Reports Developer and Professional editions. For more information, see the [Promotional Licenses](#) section.

There are two different types of upgrades from Crystal Enterprise 10 Embedded Edition to Crystal Reports Server XI:

- Upgrading a local installation of Crystal Enterprise 10. In a local installation, the Crystal Reports Server XI services and SDK are installed on your web server.
- Upgrading a distributed installation of Crystal Enterprise 10. In a distributed installation, the Crystal Reports Server XI services are located on one computer while the Crystal Reports Server XI SDK is installed on your web server. You would choose this option if you currently have your Crystal Enterprise 10 Report Application Server installed on a separate computer from your SDK.

Upgrading a local installation of Crystal Enterprise 10

To upgrade a local installation of Crystal Enterprise 10 Embedded Edition, complete these steps:

1. Install Crystal Reports Server XI on the same computer. The installer removes Report Application Server (RAS) 10 server but keeps the SDK.
2. Configure the report directory by completing the following steps:
 - i. Go to **Start > Programs > Business Objects Enterprise 11 > Crystal Reports Server > Central Configuration Manager**.
 - ii. Click **Report Application Server** and then click the **Stop** button.
 - iii. Right-click **Report Application Server** and then click **Properties**.

- iv. On the **Parameters** tab, click the **Option Type** list, and then click **Server**.
 - v. Click the **Browse** button and browse to the folder where your reports are stored.
 3. Update your application's SDK references as specified in the [Updating SDK References for Crystal Reports Server XI](#) section.

Upgrading a distributed installation of Crystal Enterprise 10

To upgrade a distributed installation of Crystal Enterprise 10 Embedded Edition, complete these steps:

1. Install Crystal Reports Server XI on a separate computer.
2. Install the Crystal Reports Server XI SDK components on the same computer that your application is installed on.
3. Configure the report directory by completing the following steps:
 - i. Go to **Start > Programs > Business Objects Enterprise 11 > Crystal Reports Server > Central Configuration Manager**.
 - ii. Click **Report Application Server** and then click the **Stop** button.
 - iii. Right-click **Report Application Server** and then click **Properties**.
 - iv. On the **Parameters** tab, click the **Option Type** list, and then click **Server**.
 - v. Click the **Browse** button and browse to the folder where your reports are stored.
4. Update application SDK references as specified in the [Updating SDK References for Crystal Reports Server XI](#) Section.
5. Copy the reports to the new server and set up the database connections required for those reports.

NOTE

To open a report that is located on the web server (that is, on the computer hosting the web application server only), prefix the full path with "rassdk://".

For example:

```
rassdk://c:\my_reports\Alerting.rpt
```

Without this prefix, the application attempts to open the report on the computer running Crystal Reports Server XI.

6. Set the value of the **Server** parameter in the clientSDKOptions.xml file to the name of the server on which Crystal Reports Server XI is installed (by default, this file is located in the C:\Program Files\Common Files\Business Objects\3.0\bin\ folder)

- OR -

Set the **ReportClientDocument.ReportAppServer** property in your application to the name of the server on which Crystal Reports Server XI is installed.

Updating references to use the Crystal Reports Server XI SDK

This section discusses the application references for each SDK that must be modified to upgrade your Crystal Enterprise 10 Embedded Edition application to Crystal Reports Server XI.

.NET SDK

Change all assembly references in your project from 10.0.3300.0 to 11.0.3300.0 manually by updating the assembly versions in the Web.config file, or automatically by opening the project in Visual Studio .NET.

NOTE	If you have Crystal Reports XI or the Crystal Reports Server SDK installed on your development computer, you may be prompted to update the project automatically. If you click Yes , the assembly references will be updated when the project opens.
-------------	---

COM (ASP) SDK

Replace all "CrystalReports10.ObjectFactory.1" references with "CrystalReports11.ObjectFactory.1". For example:

```
Set objFactory =
CreateObject("CrystalReports11.ObjectFactory.1")
```

Java SDK (JSP)

1. Copy the crystalreportviewers11 folder to your web application. By default, this folder is located at C:\Program Files\Common Files\Business Objects\3.0.
2. Delete the crystalreportviewers10 folder.
3. Copy the following JAR files from C:\Program Files\Common Files\Business Objects\3.0\java\lib to your web application's WEB-INF/lib folder:
 - CorbaIDL.jar
 - MetafileRenderer.jar
 - rasapp.jar
 - rascore.jar
 - Serialization.jar
 - URIUtil.jar
 - webreporting.jar
4. Copy the log4j.jar file from C:\Program Files\Common Files\Business Objects\3.0\java\lib\External to your web application's WEB-INF/lib folder.
5. In your web application's web.xml file, set the value of the **crystal_image_uri** parameter to "crystalreportviewers11". For example:

```
<context-param>
  <param-name>crystal_image_uri</param-name>
  <param-value>
    crystalreportviewers11
  </param-value>
</context-param>
```

Promotional Licenses

Crystal Reports Server is included as a five named user special offer in Crystal Reports Professional and Crystal Reports Developer editions. It is important to note that if you choose to expand beyond these five named users, you will only be able to add Concurrent Access Licenses. This section explains how to migrate an unmanaged Crystal Enterprise Embedded application to use Crystal Reports Server in named user mode.

When Crystal Reports Server XI opens an unmanaged report, it uses the Guest account like a named user. When Crystal Reports Server XI or Business Objects Enterprise XI is setup to use Named User Licenses, however, you are not permitted to use the Guest account as specified in the [Upgrading to Unmanaged Reporting in Crystal Reports Server XI](#) section.

As stated in the *Software End User License Agreement*, each individual Named User must be specifically identified as the sole holder of a Named User License. The sharing of the Named User License by more than one individual is expressly prohibited. In addition, Named User License(s) may not be transferred from one individual to another unless the original End User no longer requires, and is no longer permitted, access to the program. This means that you must ensure that the number of individual users of your application does not exceed the number of Named User Licenses that you have purchased.

In order to ensure your application does not violate the license agreement, it is recommended that you change your application to use managed reporting as specified in the [Upgrading to Managed Reporting in Crystal Reports Server XI](#) section. Managed reporting also requires that all users log on using their own Named User account.

Finding More Information

Crystal Report Server XI Documentation

Refer to the following link on the Business Objects Support Site:

http://support.businessobjects.com/library/docfiles/cps10/docs_en.asp

Business Objects Developer Zone

For additional developer resources, visit the Developer Zone:

http://www.businessobjects.com/products/dev_zone/

Business Objects Support Site

For additional support resources, visit the Business Objects support site:

<http://support.businessobjects.com>

For more information and resources, refer to the product documentation and visit the support area of the web site at www.businessobjects.com.

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