

Report Designer Component XI

Creating an RDC Distribution Package

Overview

An application designed using Report Designer Component (RDC) requires that multiple dynamic-link libraries (DLLs) are present on a client computer for the application to install and run successfully. Although most of the DLLs are Crystal Reports DLLs, there are some required Microsoft DLLs as well.

This document discusses the process of creating an RDC distribution package to distribute an RDC application.

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Introduction

This document describes the steps for creating a successful distribution package using the Microsoft Visual Studio Installer 1.1 that is available for download from Microsoft at:

<http://msdn.microsoft.com/vstudio/downloads/tools/vsi11/default.asp>

Microsoft's Visual Studio Installer 1.1 comes bundled with a number of Microsoft merge modules. These merge modules include all of the required installation routines for many of the core Microsoft DLLs.

NOTE

The steps outlined in this document apply to most distribution software that supports merge modules. Go to <http://support.businessobjects.com/search> and search for knowledge base article **c2017383** for a listing of supported distribution software.

Runtime Files

The Crystal Reports runtime files required for distribution with your application are dependent on the following:

- The method used to access the Crystal Reports report engine.
- The data source used for the reports.
- The exporting options you want to make available to end users.
- Any additional components you may be using such as charts, maps and additional formula language functions.

When using the RDC as the reporting development tool, you will need the following core runtime files to open a report:

Crystal Reports DLLs:

- Crqe.dll (Crystal Reports Query Engine)
- Ufmanager.dll (Manager for loading UFLs)
- Craxdrt.dll (Crystal Reports ActiveX Designer Runtime 11)
- Crviewer.dll (Crystal Reports viewer. This DLL is only needed if the application previews the report)

Other DLLs:

- Atl.dll
- Msvcp60.dll

- Msvcrt.dll
- Riched20.dll

NOTE	<p>There are two versions of Atl.dll—one for Windows NT/2000 and newer and another for Windows 9x.</p> <p>These files are not cross-platform compatible so it is important to distribute the proper version of Atl.dll with your application to avoid error messages while registering the above files.</p> <p>Due to licensing restrictions, you must get the Atl.dll from Microsoft. Please see the following Microsoft knowledge base article for more information:</p> <p>http://support.microsoft.com/default.aspx?scid=kb;en-us:259403</p>
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These are the runtime files required to just open a report. Additional runtime files are required for database connectivity, previewing the report and exporting.

Business Objects provides merge modules to assist you in gathering these additional runtime files.

Merge modules

Using merge modules is the recommended and supported method for deploying Crystal Reports XI applications. Using these merge modules will ensure that all of the required Crystal Reports DLLs are added to the distribution package.

The following are the merge modules files for Crystal Reports XI RDC deployment:

NOTE	<p>These merge modules were included with the release of Crystal Reports XI and are installed to the C:\Program Files\Common Files\Merge Modules directory when Crystal Reports XI is installed.</p> <p>For updated versions of these merge modules go to http://support.businessobjects.com/search and search for crXI_rdc_merge_modules.zip.</p>
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- **CrystalReports11_rdc_reportengine.msm** - This merge module contains the Crystal Reports database and exporting DLLs. Files in this merge module include (but are not limited to) Crqe.dll, Crdb_ado.dll, Crdb_odbc.dll, Crxf_pdf.dll, Crxf_xls.dll, U2ddisk.dll and U2dapp.dll.

This merge module is now configurable in Crystal Reports XI. Distribution tools that support configurable merge modules (such as the VS .NET installer, Wise and InstallShield 8+) allow you to choose which Crystal Reports database drivers and exporting DLLs to install to your client's computer.

- **CrystalReports11_rdc_runtime.msm** - This merge module contains the core RDC engine required for all RDC applications. Files in this merge module include (but are not limited to) Craxdrt.dll, Crviewer.dll, Cselexpt.ocx, Sviewhlp.dll, Swebrs.dll.
- **CrystalReports11_rdc_license.msm** - This required merge module is configurable and requires a valid Crystal Reports XI license keycode. This merge module is designed to prompt for a license keycode when it is added to an MSI-based installation package. Not all distribution tools are designed to work with configurable merge modules, however, this is a required merge module and should always be included. Even if your distribution tool does not prompt for a license keycode when including it, the installation will install without error when it is included.

NOTE	InstallShield 8, and Microsoft Visual Studio .NET Installer can take advantage of configurable merge modules. Wise 4.0, Visual Studio Installer 1.1 and older versions of InstallShield are not able to take full advantage of configurable merge modules. To supply the license keycode with an installer that does not support configurable merge modules you can use a tool like ORCA, or add a Command Line Install to your distribution package.
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- **CrystalReports11_rdc_designtime.msm (optional)** - Include this merge module for applications using the Embeddable Designer Control (craxddrt.dll). These components may require additional licensing.
- **CrystalReports11_maps.msm (optional)** - Include this merge module if the report contains any maps.

Customizing the database driver installation options (Optional)

Your deployment may require including or excluding specific Crystal database drivers from your distribution package. Specific Crystal Reports database drivers can be individually included or excluded from the CrystalReports11_rdc_reportengine.msm merge module.

When adding CrystalReports11_rdc_reportengine.msm to your distribution package, a prompt with a list of database drivers and exporting DLLs appears.

Each of the merge module options corresponds to a driver in the table listed below. Setting the value for a specific driver to 1 will cause the driver to be installed with your application. Setting the value to 0 will exclude the driver from the target computer when your application is being installed. By default, all database drivers are set to install with CrystalReports11_rdc_reportengine.msm.

Name	Description
act	Crystal Reports database driver for PC Databases
btrieve	Crystal Reports database driver for Pervasive Databases
cdo32	Crystal Data Object database driver
crdb_ado	Crystal Reports database driver for Microsoft ActiveX Data Objects/OLE DB
crdb_adoplus	Crystal Reports database driver for Microsoft .NET ADO Datasets
crdb_cdo	Crystal Reports database driver for Crystal Data Object
crdb_com	Crystal Reports database driver for COM data provider
crdb_dao	Crystal Reports database driver for Microsoft Data Access Objects
crdb_dataset	Crystal Reports database driver for DataSet provider
crdb_fielddef	Crystal Reports database driver for Field Definitions
crdb_filesystem	Crystal Reports database driver for File System data.
crdb_javabeans	Crystal Reports database driver for Java data
crdb_odbc	Crystal Reports database driver for ODBC
crdb_oracle	Crystal Reports database driver for Oracle
crdb_query	Crystal Reports database driver for Query Data
crddt32	Crystal Reports Data Definition Tool
ibm_db2	Crystal Reports database driver for DB2 Server
informix	Crystal Reports database driver for Informix Online Server
p2bbde	Crystal Reports database driver for IDAPI
p2bxbse	Crystal Reports database driver for xBase
p2ixbse_dll	Crystal Reports physical database DLL for xBase
p2sac1	Crystal Reports database driver for Public Folder ACL
p2sevt	Crystal Reports database driver for NT Event Log
p2sexsr	Crystal Reports database driver for Exchange Server Admin
p2smapi	Crystal Reports database driver for Exchange Folders and Address Book
p2smsiis	Crystal Reports database driver for IIS Log Files
p2soutlk	Crystal Reports database driver for Outlook Data
p2srepl	Crystal Reports database driver for Exchange Public Folder Replica
p2strack	Crystal Reports database driver for Exchange Server Message Tracking Logs
p2swblg	Crystal Reports database driver for Web Log Files
sybase	Crystal Reports database driver for Sybase

Customizing the exporting DLL installation options (optional)

Your deployment may require including or excluding specific Crystal exporting DLLs from your distribution package. Specific Crystal Reports exporting DLLs can be individually included or excluded from the CrystalReports11_rdc_reportengine.msm merge module.

When adding CrystalReports11_rdc_reportengine.msm to your distribution package, a prompt with a list of database drivers and exporting DLLs appears.

Each of the merge module options corresponds to a driver in the table listed below. Setting the value for a specific driver to 1 will cause the driver to be installed with your application. Setting the value to 0 will exclude the driver from the target computer when your application is being installed. By default, all export DLLs are set to install with CrystalReports11_rdc_reportengine.msm.

Name	Description
U2dmapi	Crystal Reports export driver for MAPI destination
U2dnotes	Crystal Reports export driver for Lotus Notes Database destination
U2dvim	Crystal Reports export driver for Lotus Notes Mail format
U2fcr	Crystal Reports export driver for Report export format
U2fhtml	Crystal Reports export driver for HTML 4.0 format
U2fodbc	Crystal Reports export driver for ODBC export format
U2fpdf	Crystal Reports export driver for Adobe PDF export format
U2frec	Crystal Reports export driver for Records export format
U2frtf	Crystal Reports export driver for RTF export format
U2fsepv	Crystal Reports export driver for Separated Export Values format
U2ftext	Crystal Reports export driver for Text export format
U2fxls	Crystal Reports export driver for Microsoft Excel export format
U2fxml	Crystal Reports export driver for XML export format

Where is the runtime help file?

Previous versions of Crystal Reports included a documentation file called Runtime.chm that listed the runtime files required to distribute the Report Designer Component (RDC) to a target system. Runtime.chm is not included with Crystal Reports XI. Runtime distribution of the RDC in Crystal Reports XI is supported only when using the RDC merge modules. For more information, go to <http://support.businessobjects.com/search> and search for knowledge base article **c2017252**.

Methods for Creating an RDC Distribution Package

The only supported method for creating an RDC XI distribution package is to use the Crystal Reports merge modules.

NOTE	<p>Microsoft DLLs are also required and must be correctly installed for the RDC application to work.</p> <p>If you require further information regarding the distribution of any of the Microsoft DLLs listed in this document please contact Microsoft Technical Support.</p>
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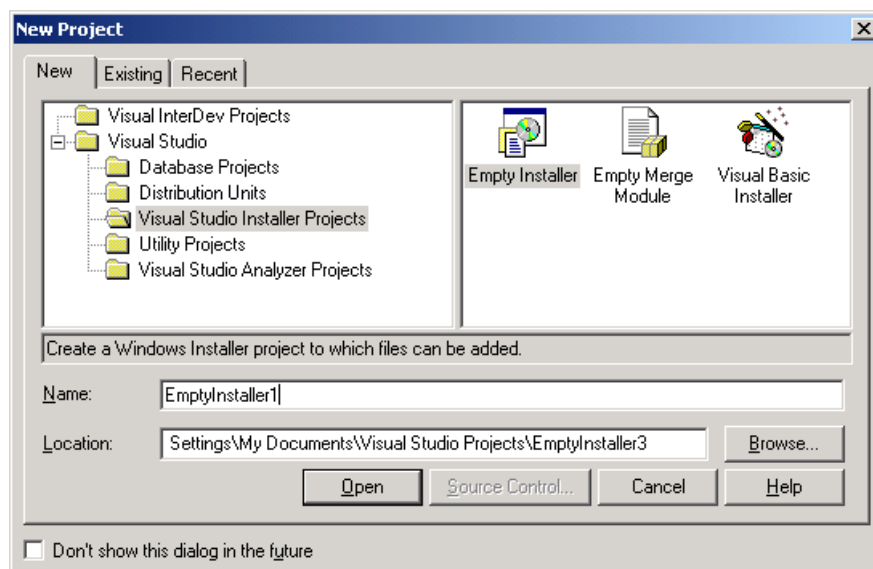
Using the RDC Merge Modules

This method describes how to create an RDC distribution package using the RDC merge modules and the Microsoft merge modules.

Creating a new Microsoft Visual Studio Installer package

To use the merge modules from Business Objects and Microsoft, open Microsoft Visual Studio Installer and create an **Empty Installer Project** using the following steps:

1. Go to **Start > Programs > Microsoft Visual Studio 6.0 > Microsoft Visual Studio 6.0 Enterprise Tools** and click **Visual Studio Installer**. The **New Project** dialog box appears.
2. Expand the **Visual Studio** node, and select **Visual Studio Installer Projects**.
3. Select the **Empty Installer** icon and then click **Open**.

**NOTE**

You can also run the Visual Studio Installer by launching Microsoft Visual J++ or Microsoft Visual InterDev.

Adding RDC merge modules

1. After adding the Microsoft merge modules, go to the **Project** menu and click **Add Merge Modules**.

In the **Browse for Merge Modules File** dialog box, browse to **C:\Program Files\Common Files\Merge Modules** or to the folder where you downloaded the RDC merge modules.

2. Select the following required merge modules:
 - CrystalReports11_rdc_license.msm
 - CrystalReports11_rdc_reportengine.msm
 - CrystalReports11_rdc_runtime.msm
3. Add any additional files to your applications such as reports, physical database, and custom DLLs.

For information on how to add additional files, refer to the [Adding Extra Files](#) section in this document.

4. Make any additional changes to the installation package and then build the Installer Package (.msi) file.

For information on how to build the Installer Package (.msi) file, refer to the [Building the Installer Package](#) section in this document.

After building the Installer Package, you can distribute it to your client computers.

Adding Report Creation API Functionality

If your application uses any Report Creation API (RCAPI) calls, a 23-digit RCAPi license keycode is required. This license keycode is available with Crystal Reports XI Developer and Server editions.

If you are using InstallShield to create the distribution package, when adding the CrystalReports11_rdc_license.msm merge module, you will be prompted to enter the required license keycode.

Add this license keycode at runtime using code if you use:

- Microsoft Visual Studio Installer
- Wise Installer

NOTE	<p>You may choose to add the license keycode through code regardless, as it provides protection against exposing your license keycode to your customers.</p> <p>For more information about licensing, go to:</p> <p>http://www.businessobjects.com/products/reporting/crystalreports/licensing</p>
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Adding the license keycode through code

To add the license keycode through code you will need to set the **SetLicenseKeycode** method.

Applying your RAPI license keycode using the **SetLicenseKeycode** method of the **Application** object will assign report creation permissions to your application.

The **SetLicenseKeycode** method is a hidden member of the **Application** object so the Visual Basic IntelliSense may not display it if it is configured to not display hidden members.

To set **SetLicenseKeycode**, use the following sample code:

```
Application.SetLicenseKeycode ("XXXXX-XXXXXXX-XXXXXXX-XXXX")
```

Use this line of code as the first method called by your **Application** object. For example:

```
Dim Application as New CRAXDRT.Application
Dim Report As CRAXDRT.Report
Application.SetLicenseKeycode ("XXXXX-XXXXXXX-XXXXXXX-XXXX")
Set Report = Application.NewReport
```

NOTE

If you have added the Crystal Reports XI Designer to your Visual Basic application then you can call the method as follows:

```
Dim Report As New CrystalReport1
Report.Application.SetLicenseKeycode ("XXXXX-XXXXXXX-XXXXXXX-XXXX")
```

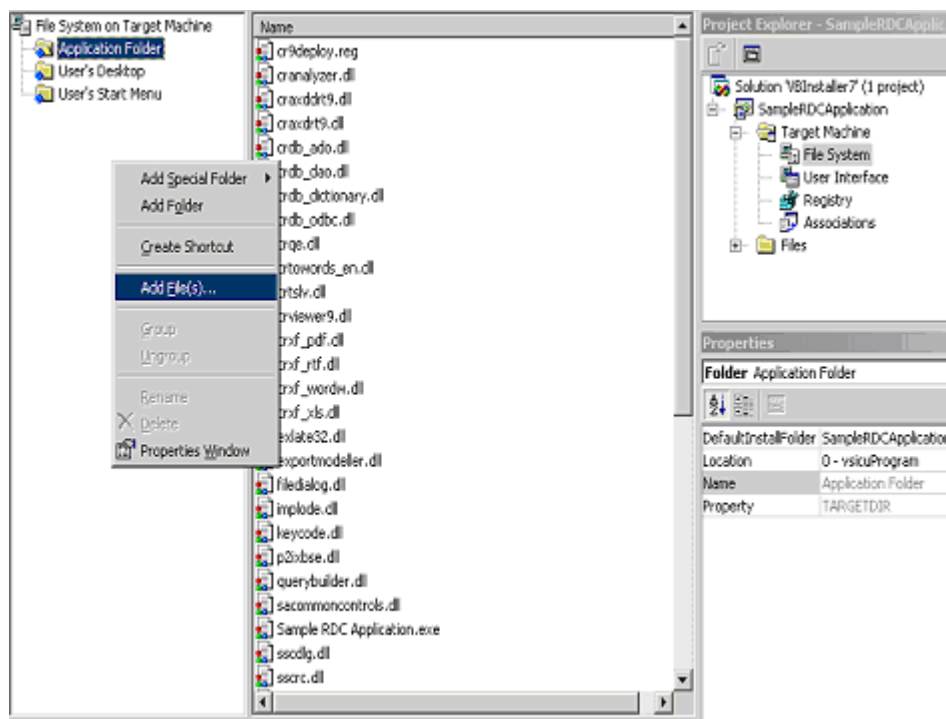
Adding Extra Files

To manually add files to your Installer Package, use the following steps:

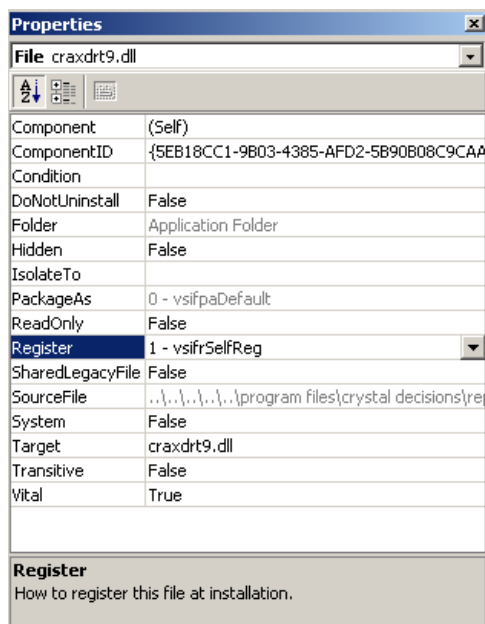
1. Go to **Start > Programs > Microsoft Visual Studio 6.0 > Microsoft Visual Studio 6.0 Enterprise Tools** and click **Visual Studio Installer**.
2. Open the solution containing your Visual Studio Installer project.
3. In the **Project Explorer**, expand the **Target Machine** node under your installer project.
4. Double-click **File System** in the **Target Machine** node.
5. In the **File System** editor, right-click the folder you want to add files to and click **Add File(s)**.

NOTE

You may choose to add another folder (such as Windows System). The **File System** editor in **Visual Studio Installer** gives you a way to configure your application files on the target computer while you add them to the installer project.



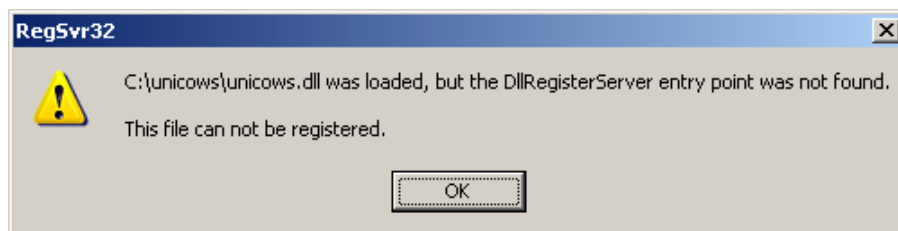
6. In the **Browse for Files** dialog box, navigate to and select the files you want to add. Click **Open**. The **File System** editor displays the selected files you added to the folder. The files are also listed in the installer project **Files** node in the **Project Explorer**.
7. If the added file needs to be registered right-click on the file and choose **Properties Window**. This will display the **Properties** dialog box for the specific file.
8. Select the property **Register** and change the value to **1-vsifrSelfReg**.



If you are unsure that a DLL needs to be registered, try registering it manually on the development computer. To manually register a file, perform the following steps:

1. On the taskbar, click the **Start** button, and then click **Run**.
2. In the **Open** box, type **regsvr32 "<full path to the file>"**
3. Click **OK**.

If an error message similar to the following appears, then the DLL does not require registration.



NOTE

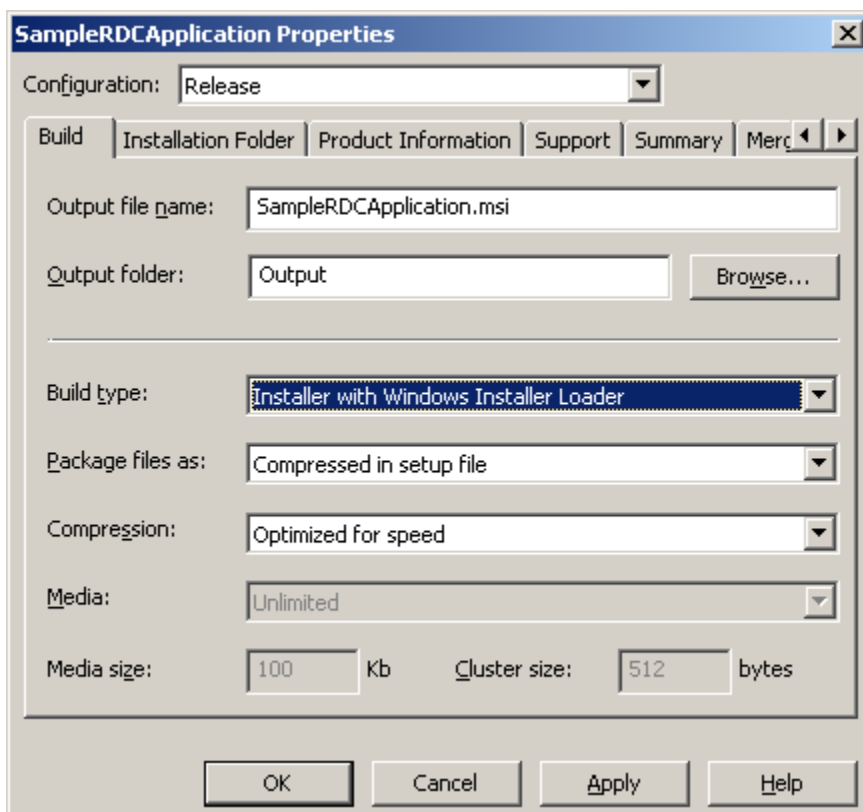
None of Crystal Reports Database, Export Destinations or Export Formats DLLs require registration.

Building the Installer Package

After configuring your Installer Package, build the project into an Installer Package (.msi) file. You can then distribute the .msi file to users who want to install your application.

To build an Installer Package (.msi) file:

1. Open the solution containing your Visual Studio Installer project.
2. In the **Project Explorer**, select your Installer project.
3. Under the **Build** menu, change the **Build Configuration** from **Debug** to **Release**. You may run the build in debug mode if you want to ensure it compiles.
4. In the **Project Explorer**, right-click your project and click **Properties**. In the **Properties** dialog box, under the **Build** tab, ensure the **Build type** value is set to either:
 - Installer
 - Installer with Windows Installer Loader



5. Change the **Output Folder** box to the folder path where you want the .msi file to be created. Click **OK**.
6. In the **Project Explorer**, right-click your project and click **Build**.

Launching an Installer Package (.msi) file

For development and debugging purposes, the best way to launch your Installer Package (.msi) file is from the Microsoft development environment. For example:

1. Open the solution containing your Visual Studio Installer project.
2. In the **Project Explorer** window, right-click the installer project you want to launch.
3. Click **Launch Installer** from the **Project** menu.

You can also double-click the .msi file to start the installation of your application.

NOTE

For more information on customizing the installation package please refer to the Visual Studio Installer Help guide

Crystal Reports XI License Keycode

A Crystal Reports license keycode is used to validate the licensing for the application. The CrystalReports11_rdc_license.msm merge module requires a valid license keycode to be specified.

The license keycode is the alphanumeric string you receive when registering Crystal Reports.

NOTE

Please note that this is not the 10-digit registration number. The license keycode will have the following pattern: **xxxxx-xxxxxxx-xxxxxxx-xxxx**.

The license keycode is determined by using the **Business Objects License Manager** that is installed on the computer with Crystal Reports XI. To access the **Business Objects License Manager**, go to **Start > Programs > Business Objects 11**.

NOTE

To highlight text in a PDF document for copying and pasting code, click the **Text Select Tool** toolbar button in Adobe Acrobat.



This procedure applies to Adobe Acrobat 4.0 and 5.0.

Finding more Information

For more information, go to <http://support.businessobjects.com/search> and search for the following knowledge base articles:

- **c2017386** - Which distribution software supports using the .NET merge modules
- **c2017252** - How to distribute the Report Designer Component (RDC) in Crystal Reports XI

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