crystal decisions™

Crystal Reports

Object Models for Crystal Reports for Visual Studio .NET

This document discusses the three object models for Crystal Reports for Visual Studio .NET. This document will outline how each object model is used, how the object models are different and when you should use each object model.

Contents

Introduction

Crystal Reports for Visual Studio .NET extends the powerful reporting capability of Crystal Reports on the Microsoft .NET platform. You can use the Crystal Report Designer in Visual Studio .NET to create a new Crystal report or modify an existing Crystal report.

You can store the report on a local computer, or publish it as a Report Web Service on a web server. Depending on whether you develop a Windows or Web application, you can host the report with either the Windows Forms Viewer or the Web Forms Viewer respectively.

This document outlines the three object models that ship with Crystal Reports for Visual Studio .NET:

- Engine Object Model
- Windows Forms Viewer Object Model
- Web Forms Viewer Object Model

The Three Object Models

Engine Object Model

The **CrystalDecisions.CrystalReports.Engine** namespace (CrystalDecisions.CrystalReports.Engine.dll) provides support for the report engine.

The top level of the Engine object model is the ReportDocument object. The ReportDocument object offers the most control over your report. The ReportDocument object contains all the properties and methods needed to interface with and customize a report. You can use its Load method to open a report file, or assign it a strongly typed report.

The ReportDocument object can be used in either a Windows or Web application; however, *it cannot view your reports*. This is where the Viewer controls and the ReportDocument object fit together. You can use the ReportDocument object to modify your report and then pass the report to the Viewer controls for viewing.

NOTE	Refer to Appendix A for an overview diagram of the ReportDocument Object Model.

Windows Forms Viewer Object Model

The **CrystalDecisions.Windows.Forms** namespace (CrystalDecisions.Windows.Forms.dll) provides support for the Windows Forms Viewer control and its associated classes.

Using the Windows Forms Viewer control you can host and view a Crystal Report in a Windows application. You can also dynamically update the report being hosted and interact with controls within a Windows application. The viewer control's main purpose is to view reports within your application. You can pass a path to a report file, a ReportDocument object, or a Crystal Web Service to the Windows Forms Viewer.

Besides displaying reports, the Windows Forms Viewer only has a limited amount of control over the report. The viewer has the ability to:

- Set log on information
- Set parameters
- Set the selection formula

- Print and export from the preview window

NOTE	Refer to Appendix B for an overview diagram of the Windows and Web Forms Viewer Object Model.

Web Forms Viewer Object Model

The **CrystalDecisions.Web** namespace (Crystaldecisions.web.dll) provides support for the Web Forms Viewer control and its associated classes.

With the Web Forms Viewer control you can host and view a Crystal Report in a web application. You can also dynamically update the report it is hosting and interact with the controls within a web application.

The Web Forms Viewer is an ASP.NET Web Forms control running inside Microsoft Internet Information Server (IIS). The viewer's main function is to host and update Crystal Report pages in HTML on the client machine. You can pass a path to a report file, a ReportDocument object, or a Crystal Web Service to the Web Forms Viewer.

Besides displaying reports, the Web Forms Viewer controls only have a limited amount of control over the report. The viewer has the ability to:

- Set log on information
- Set parameters
- Set the selection formula.

NOTE	The Web Forms Viewer object model **does not** have the ability to export or print the report. For more information, go to http://support.crystaldecisions.com/docs and search for 'crnet_web_app_printing.pdf'.

This Crystal Reports control works in the same manner as other Web application controls in the Visual Studio .NET environment: the control on the server side renders itself into HTML and sends the HTML to the client.

To host the requested report page in HTML, the Web Forms Viewer control interacts with either the Report Engine on the local Web server or the Report Web Service on a remote server.

NOTE	Refer to Appendix B for an overview diagram of the Windows and Web Forms Viewer Object Model.

Using the Engine Object Model Vs. the Viewer Object Models

How To Determine Which Object Model to Use

When building your project, you need to determine which object model you want to use. Use the following guidelines to assist you in selecting an object model:

Engine Object Model

If you answer '**Yes'** to any of the following questions, you need to use the Engine Object model:

- Are you using ADO.NET or classic ADO?
- Do you wish to manipulate the report beyond passing log on information, parameters and/or selection formulas?
- Do you wish to export or print the report from an ASP.NET application?

Window or Web Viewer Object model

If you answer '**Yes'** to the following question, you will need to use the Windows or Web Viewer Object model:

- Is your application consuming Crystal Report Web Services?

If you did not answer '**Yes'** to any of the above questions, then you can use either the Engine object model or the appropriate Viewer object model.

NOTE	Once you have decided which object model you need to use, all properties and methods should use this object model in your code. Do not mix code by using the Viewer object models for some properties and/or methods and the Engine object model for other properties and/or methods.

The ReportSource property

To select which object model to use, pass your desired object to the **ReportSource** property of the appropriate viewer.

There are multiple methods to load the report into the Windows or Web viewer at runtime. The object you pass to the viewer's **ReportSource** property determines if you are using the Engine or the Viewer object model. The viewer's **ReportSource** property accepts the following objects:

When using the Engine Object Model

Strongly typed Report Document

You can pass the ReportSource property the strongly typed ReportDocument.

For example:

```
Dim crReportDocument As CrystalReport1
CrReportDocument = New CrystalReport1()
CrystalReportViewer1.ReportSource = crReportDocument
```

Un-Typed Report Document

You can pass the ReportSource property an un-typed ReportDocument.

For example:

```
Dim crReportDocument As New ReportDocument
CrReportDocument.Load("C:\Program Files\Microsoft Visual
Studio .NET\Crystal Reports\Samples\Reports\General
Business\World Sales Report.rpt" )
CrystalReportViewer1.ReportSource = crReportDocument
```

When using the Windows or Web Forms Viewer

Local Report File on a Physical drive

You can pass the ReportSource property a string with path to the .rpt file. This can be a fully qualified path to the rpt or a UNC.

For example:

```
CrystalReportViewer1.ReportSource = "C:\Program
Files\Microsoft Visual Studio .NET\Crystal
Reports\Samples\Reports\General Business\World Sales
Report.rpt"
```

Crystal Web Services

You can pass the ReportSource property a web service. This may be a URL to an asmx file, a server file report or an Enterprise managed web service. All of these methods are considered Crystal Web Services and use the Viewer Object model.

For example:

You can pass the ReportSource property a URL to Report Web Service (.asmx)

```
CrystalReportViewer1.ReportSource =
"http://Machine/CrystalReport1Service.asmx"
```

Object Model Feature Comparison

Caption

'Y' denotes feature currently exists in the specified object model.
'N' denotes feature currently does not exist in the specified object model.
'N*' denotes feature does not exist in the specified object model, and based on the current design, it is not applicable to the object model.

Features	Engine Object Model	Windows Forms Viewer Object Model	Web Forms Viewer Object Model
Viewing			
Preview reports	N*	Y	Y
Consume Crystal Web Services	N*	Y	Y
Customize Viewer	N*	Y	Y
Print and Export			
Printing	Y	Y	N[1]
Export reports	Y	Y	N[2]
Data Access			
Log on to a secured database	Y	Y	Y
Classic ADO support	Y	N	N
ADO.NET support	Y	N	N
Report Manipulation			
Set Selection Formula	Y	Y[3]	Y[4]
Set Parameter Fields	Y	Y	Y
Set Formula Fields	Y	N	N
Format Objects on the report	Y	N	N
Group	Y	N	N
Print Options	Y	N	N
SortFields	Y	N	N

[1] The Web Forms Viewer does not have the ability to print. Printing from an ASP.NET application must be done using the Browser's print functionality or by using the Engine Object model to print server side or export the report to a printer friendly format such as Portable Document Format (.pdf). For more information, go to http://support.crystaldecisions.com/docs and search for 'crnet_web_app_printing.pdf'.
[2] The Web Forms Viewer does not have the ability to export. Exporting would have to be done using the Engine Object model.
[3] The Windows Forms Viewer does not have the ability to pass a selection formula to the subreport. This can only be done using the Engine Object model
[4] The Web Forms Viewer does not have the ability to pass a selection formula to the subreport. This can only be done using the Engine Object model.

Additional Resources

- For a listing of .NET sample applications, go to http://support.crystaldecisions.com/docs and search for:

  - Apps_vbnet.pdf

  - Apps_net.pdf

- Crystal Reports for Visual Studio .NET product site. Access this site at http://www.crystaldecisions.com/net

- .NETzone – Crystal Decisions' exclusive club for .NET developers. Access this site at http://www.crystaldecisions.com/netzone

- Crystal Reports documentation is included as part of the Visual Studio .NET documentation.

  Documentation is available online at the Microsoft Developer Network (MSDN) web site and is also bundled with Visual Studio .NET as part of MSDN:

  The following link leads directly to the Crystal Reports for VS .NET documentation in the MSDN Library:

  http://msdn.microsoft.com/library/?url=/library/en-us/crystlmn/html/crconcrystalreports.asp?frame=true

Contacting Crystal Decisions for Technical Support

We recommend that you refer to the product documentation and that you visit our Technical Support web site for more resources.

Self-serve Support:

http://support.crystaldecisions.com/

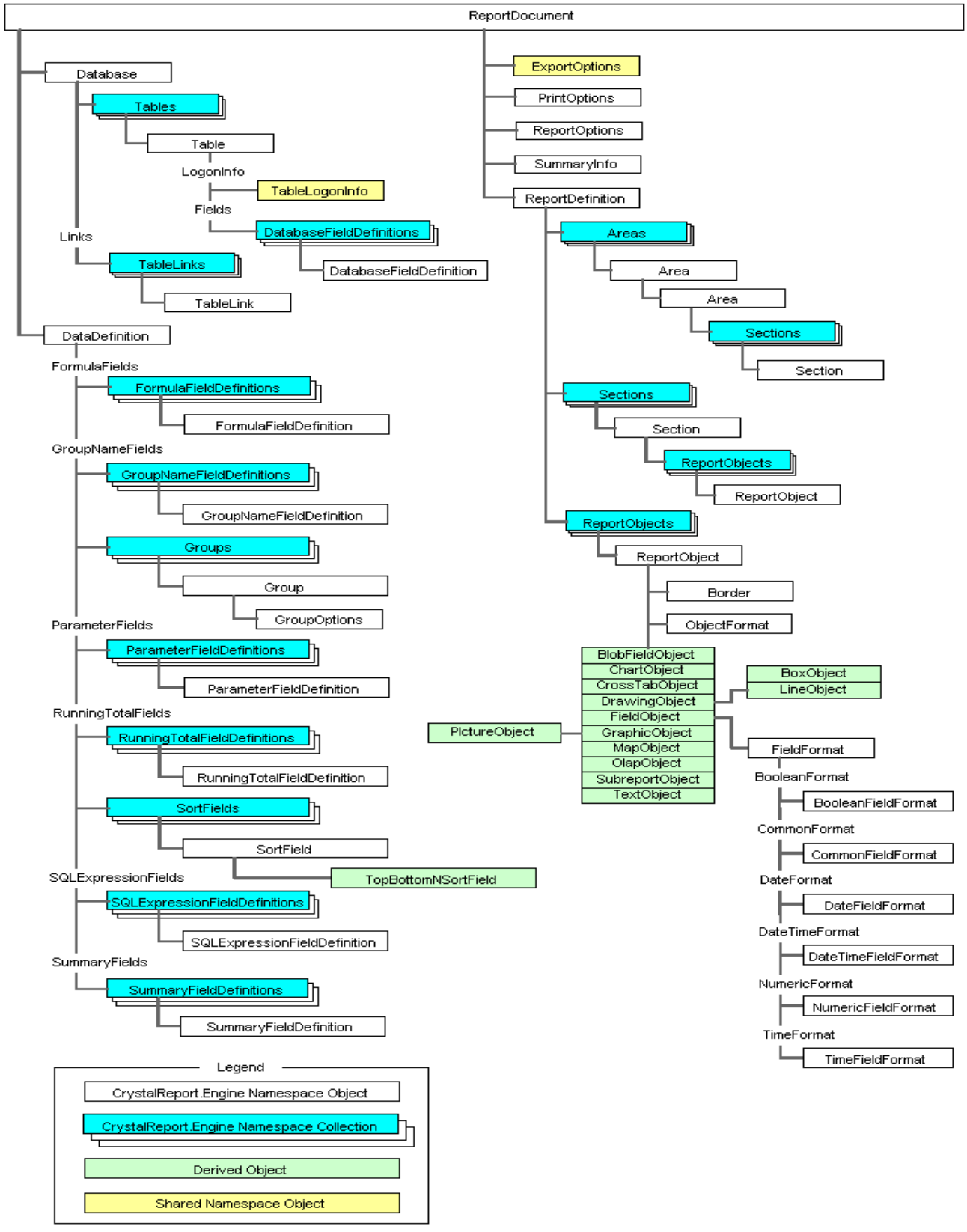
Email Support:

http://support.crystaldecisions.com/support/answers.asp

Telephone Support:

http://www.crystaldecisions.com/contact/support.asp

Appendix A - ReportDocument Object Model



Appendix B - Windows and Web Forms Viewer Object Model