

# CRC External RunReport For BusinessObjects Enterprise From CRC Business Solutions, Inc. Product Data Sheet

## About CRC External RunReport

CRC External RunReport allows users to process on-demand Crystal Reports with user-specified parameters through any web server using HTTP. Because the users request reports using a web page, users can view reports on demand with the scheduling parameters and view formats they need without any direct interaction with the BusinessObjects Enterprise system. CRC External RunReport also captures request history and comes with administration tools to help monitor usage.

## Benefits of CRC External RunReport

### *Ease of Integration*

Any user on a web server using HTTP can request a BusinessObjects Enterprise report by referencing the CRC External RunReport Crystal Server Page. In practice, the request is typically embedded in a web application that is external to the BusinessObjects Enterprise system. When this CSP receives the request, it logs on to the datasource database in real-time and runs the report with parameters specified in the request line. Then, it determines the requested viewer and sends the report to that viewer for the user.

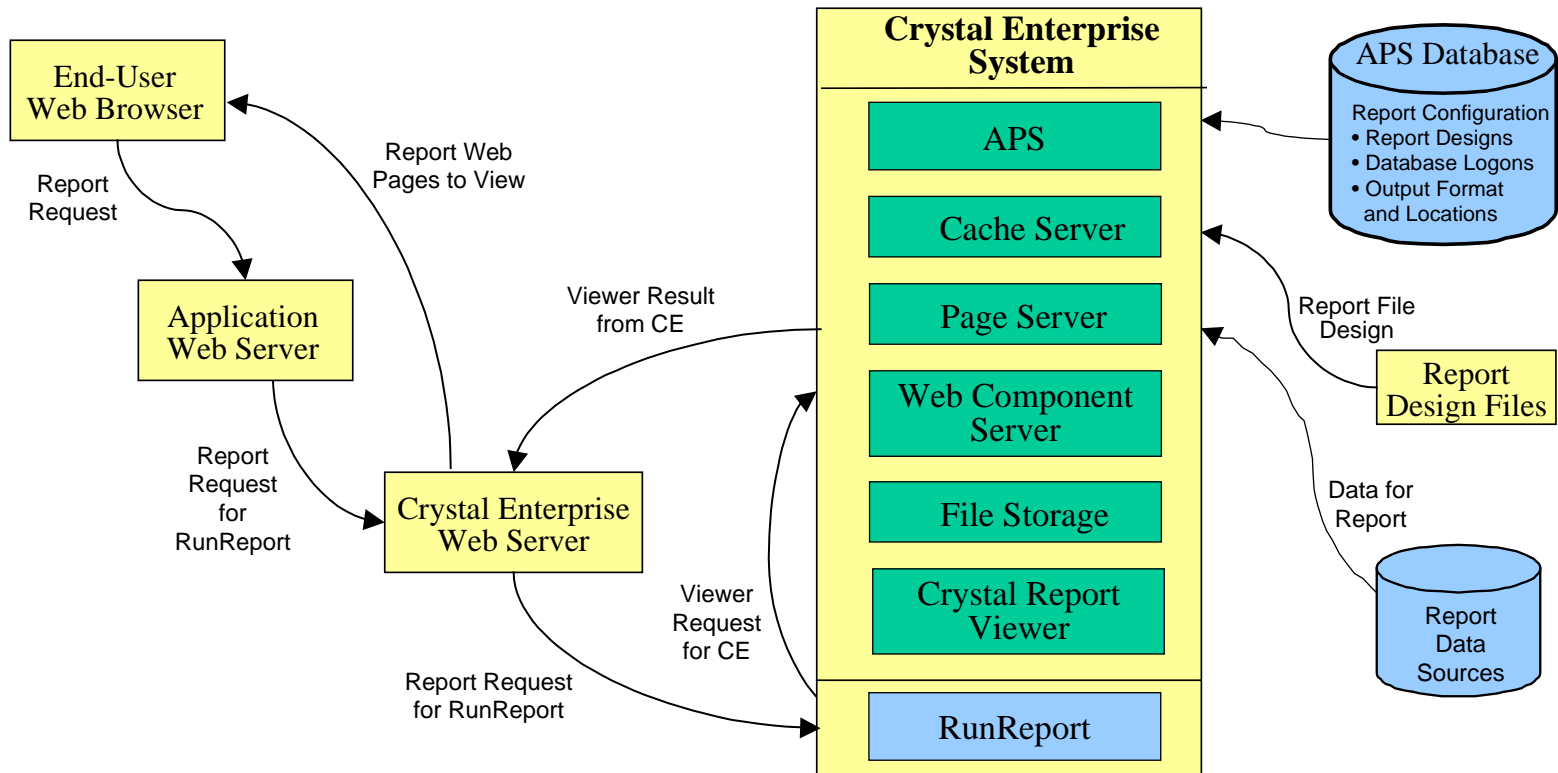
The HTTP interface approach eliminates cross-platform and cross-application integration requirements. Any web application can integrate Crystal Report processing using the BusinessObjects Enterprise services through a simple URL request without requiring other software to be installed.

### *Enterprise Class Quality*

As an independently managed interface to the BusinessObjects Enterprise system, CRC External RunReport has these “Enterprise Class” qualities:

Simple Interface	An HTTP interface is the most accessible web based communication within a networked enterprise.
On-demand Reporting	RunReport uses BusinessObjects Enterprise technology to process reports with Crystal Reports parameters in real time for reporting current datasource information.
High Availability	CRC External RunReport is designed for data center reliability, availability, and robustness so that its availability is near continuous.
Real-time Request Processing	CRC External RunReport processes requests for immediate viewing in the requesting user’s web browser
Cross Platform Support	The HTTP interface approach requires only that a requesting application be capable of making a URL request.
Error Messages	Any error messages resulting from a failed report request are available in the resulting web page and the web based administration tool.
Diagnose at Interface Point	Each request record can be examined directly or through the web administration tools to diagnose request problems.
Server Friendly	CRC External RunReport logs on to the datasource database, requests the report, then logs off for immediate release of the connection
Network Friendly	The Crystal Report Viewer uses page on demand technology to view reports one page at a time in a web browser.
Web Based Administration and Monitoring	Web based administration, through Crystal Server Pages, provides authorized access from any web browser within the enterprise.

# CRC RunReport System Diagram



When an end-user selects an action to run a report within the web application, the local application's web server receives the request. The request is relayed to the BusinessObjects Enterprise web server, specifying the report to run and the Crystal Report parameters for the report. The Enterprise web server invokes RunReport through the BusinessObjects Enterprise Web Server Adapter. From the request information, RunReport forms a request for the Crystal Report Viewer. The Crystal Report Viewer then works with the BusinessObjects Enterprise system to run the report in real time against the report's data sources. When complete, the viewer result is sent to the Enterprise web server, which then displays the report in the end-user's browser.

## The CRC RunReport Process

The report request processing cycle involves an interplay of the Requesting Application, CRC External RunReport, and BusinessObjects Enterprise as follows:

User Web Browser	Application Web Server	Enterprise Web Server	CRC RunReport	BusinessObjects Enterprise
Click on link or submit form to run a report				
	Receive request and send on-demand report request in the form of a browser URL request or submitted form to Enterprise Web Server			
		Receive request and transfer to "RunReport.csp"		
			Receive the request to run the report	
			Log on to BusinessObjects Enterprise	
			Locate named folder for requested report	
			Locate the requested report within the requested folder	
			Resolve any shortcuts to requested report target	
			Write the request history to the RunReport Request History table in the RunReport Administrator database	
			Request Enterprise to run the Crystal Report Viewer and transfer the report ID and Crystal Report parameters to the viewer	
				Open the Crystal Report Viewer and transfer the report information request
				Access datasource database
				Run the report with Crystal Report parameters, accessing the report's datasource in real time
				Send formatted report pages to Enterprise Web Server
		Send report web pages to User Web Browser		
View requested report				

### **The Report Request History Table**

RunReport's request history is recorded using the record format below:

<b>Field</b>	<b>Data Type</b>	<b>Contents</b>
Sequence_ID	AutoNumber	Auto-generated primary key for record uniqueness
Request_DateTime	Date/Time	Date / time of report processing
Requestor_System	Text (50)	Identification of system that created the report request
Requestor_User	Text (50)	Identification of user that created the report request
Request_Report	Text (250)	Request.QueryString ("rptname")
Request_Type	Text (5)	'WEB'
Report_Folder	Text (100)	Name of report folder in CMS ("rptfolder")
Report_Name	Text (100)	Name of report processed in CMS
Report_Params	Text (250)	Report processing parameters 'ParamString'
Request_Status_Code	Number	Request status: 1 = Success, <neg> = error code
Request_Status_Text	Text (140)	Description for request status "Processed ...", "Error: xxx"
QueryString	Text (250)	Request Server Variables("QUERY_STRING") (250)
User_Address	Text (15)	Request Server Variables("REMOTE_ADDR") ('123.123.123.123')
CMS_Name	Text (25)	Name of CMS used for report processing
WCS_Name	Text (25)	Name of WCS used for report processing
RequestURL	Text (250)	Crystal Viewer Request URL
Request_Referrer	Text (250)	Referrer Web Page URL
CE_Report_SID	Text (10)	BusinessObjects Enterprise System ID for the on-demand report

## **Supported BusinessObjects Enterprise RunReport Options**

### **Report Request Arguments**

RunReport supports named request arguments via URL QueryString arguments or via named fields in web page forms.

<b>Argument</b>	<b>Content</b>
rptname	HTML encoded name of the report to run on-demand
rptfolder	HTML encoded name of the folder containing the report (optional)
P0	Parameter values for first report parameter
P1	Parameter values for second report parameter
Pn	Parameter values for nth report parameter, etc.
rptuser	Name of viewing user on the external system (optional)
rptsystem	Name of external system requesting the report (optional)
viewer	Name of the Crystal Report viewer for viewing the report (optional) Active-X
debug	"Y" to set debug mode to display request processing (implemented as a checkbox in a form)

Form fields may be used instead of QueryString Arguments, with form fields having priority. Field names are identical to the QueryString Arguments. All fields are "text" or "hidden", except the "debug" field is a "checkbox".

### Crystal Report Parameter Options

RunReport supports single and multiple values for report parameters as discrete values, bounded and unbounded range values, or any combination of parameter types. In essence, all report parameter options provided by Crystal Reports are supported by CRC RunReport.

RunReport Argument	Crystal Report Parameter
p0="Accessories"	Set first parameter to the discrete value: "Accessories"
p0="Accessories","Bicycles"	Set first parameter to the multiple discrete values: "Accessories" and "Bicycles"
p1=["25"-50"]	Set second parameter to the range: "25 to 50" (inclusive)
p1=["500"-)	Set second parameter to the range: "500 or over"
p1=["25"-50"],["500"-)	Set second parameter to the multiple ranges: "25 to 50" (inclusive) or "500 or greater"
p1=(-50),["1000"-)	Set second parameter to the multiple ranges: "less than 50" or "1000 or greater"

Numeric ranges are indicated using mathematical notation. "((" and ")") exclude the range end point; "[[" and "]" include the range end point.

Note: The display result from requests using Debug Mode shows the Crystal Report name, data type, and entry type for each parameter in the report design, as shown below:

#	Parameter	Type	Entry Type
1	Product Category	String	Multiple Entries Discrete Values
2	Price_Range	Number	Multiple Entries Range Values Discrete Values

### Report Viewer Options

CRC External RunReport supports these Crystal Report Viewer options:

RunReport Argument	Crystal Report Viewer
ACTIVE-X	Active-X
HTML	DHTML
JAVA	Java Viewer (J2EE VM)
JAVA_PLUGIN	Java Plug-in
EXPORT	Export (text format)

### RunReport Request Examples

The following are examples of RunReport requests for Enterprise Web Server “crc2400”:

RunReport Request URL
http://crc2400/businessobjects/External_Requests/ RunReport.csp? rptname=Product%20Catalog%20With%20Ranges& p0="Accessories","Bicycles"&p1=["25"-50],[500-)
http://crc2400/ businessobjects /External_Requests/ RunReport.csp? rptname=Product%20Catalog%20With%20Ranges &p0="Accessories","Bicycles"&p1=(-50),"1000-)
http://crc2400/ businessobjects l/External_Requests/ RunReport.csp? rptname=ProductCatalog &p0="Accessories"&p1="Gloves"
http://crc2400/ businessobjects /External_Requests/ RunReport.csp? rptname=ProductCatalog &p0="Bicycles"&p1="Mountain","Competition"

### Request History Report Request Status

For each received request , RunReport records a status code and status message in the Request History table.

Status Code	Status Message
1	Report run
-1001	A report name was not specified
-1002	Couldn't create SessionManager
-1003	Unable to log on to <CMS> as <UserID>
-1003	Unable to log on to <CMS> via token
-1004	Unable to query <ReportsFolderName> folder
-1005	Unable to find <ReportsFolderName> folder
-1006	More than one folder named <ReportsFolderName>
-1007	Unable to query report <report name>
-1008	Unable to find report <report name>
-1009	Unable to resolve shortcut <report name>
-1010	Unable to run report with instances: <report name>

The “Request\_Status\_Code” field of the Request History table can be used for record selection. For example, any value less than 0 indicates an error condition for the request processing.

# RunReport Administration

## Web Based Administration

Administrator tools are provided to monitor request processing and to view report request details. The tools are implemented as Crystal Server Pages for access from any web browser. Tool users must be a member of an administration group authorized in BusinessObjects Enterprise.

Request Status: All Day Span: 1 Row Limit: 10 Run Query

Request ID	Request Date/Time	Report	Status
209	7/9/2004 1:01 PM	Product Catalog With Ranges	Report run
208	7/9/2004 1:01 PM	Product Catalog With Ranges	Report run (debug mode)
207	7/9/2004 1:00 PM	Product Catalog With Ranges	Report run (debug mode)
206	7/9/2004 12:57 PM	Consolidated Income Statement	Report run
205	7/8/2004 11:31 PM	ProductCatalog	Report run
204	7/8/2004 11:31 PM	ProductCatalog	Report run
203	7/8/2004 11:30 PM	ProductCatalog	Report run
202	7/8/2004 11:30 PM	ProductCatalog	Report run
201	7/8/2004 11:30 PM	ProductCatalog	Report run
200	7/8/2004 11:29 PM	ProductCatalogue	Unable to find report 'ProductCatalogue'

10 Requests shown of 58 available  
Request Table is 'RunReport\_History' in DSN 'CE\_External\_Request\_History'

Requests can be selected by status of “All”, “Completed”, and “Failed”. Day Span ranges from 1 to 90 days, and Row Limit ranges from 5 to 500 rows.

Each RunReport request is supported by details in the request history database.

Field	Value
Request_ID	203
Request_Status_Code	1
Request_Status_Text	Report run
Requestor_System	defSystem
Requestor_User	defUser
Processing_DateTime	7/8/2004 11:30:56 PM
Request_Type	Web
Report_Folder	External Web Reports - On-demand
Report_Name	ProductCatalog
Report_Params	&promptex0="Accessories", "Bicycles"&promptex1="Competition"
QueryString	
User_Address	127.0.0.1
APS_Name	CRCW2KM
WCS_Name	CRCW2KM.WCS
RequestURL	http://CRCW2KM/crystal/enterprise/viewrpt.cwr?id=2490&apstoken=CRCW2KM@4162Jcc57C92wsQHkjd4161JaUsLEZSvRwnzpXi&init=actx&pro
Referrer	http://crcw2km/crystal/External_Requests/External_Request_Tests/RunReportHelper.htm
CE_Report_SID	2490

[Show Processing Details for 2490](#)

### ***RunReport Configuration***

RunReport is configured for its run time environment by editing the “CSP Configuration.inc” file within its directory. Items include: default values for the report’s containing folder name, the default viewer, default requesting user name, default requesting system name, and the External Request History DSN for ODBC and the table name. A single configuration file is used for RunReport and RunReportAdmin.

## **RunReport Security**

As an interface for external applications to view reports from the BusinessObjects Enterprise system, RunReport has a trusted relationship to its caller. The requesting web application must provide the appropriate menus, page context, viewing links, and parameter values authorized for its authenticated users.

RunReport supports security audits by recording the Requestor System, Requestor User, and web page referrer in RunReport’s Request History database.

## **Viewing Window in the End-User’s Browser**

The requested report is viewed using the Crystal Report Viewer, and the viewer opens within the referring web page. Consequently, to run and view a Crystal Report in a separate web page window, the requesting application must open a new window and refer to RunReport.csp from within the new window.

The “RunReportTest.htm” sample web page demonstrates running and viewing a report within the requesting window. The “RunReportTestForm.htm” sample web page demonstrates running and viewing a report within a new window.

# RunReport Technology

## ***BusinessObjects Enterprise Interface Executable***

“CRC\_RunReport” is implemented as a set of Crystal Server Pages (“CSP”); as such, the BusinessObjects Enterprise Web Server Adapter is used during execution. The executable web pages may be located on any server with access to the BusinessObjects Enterprise system via the Enterprise Framework (CORBA) and to the Report Request History Database via a database client through ODBC.

## ***BusinessObjects Enterprise Framework***

All communication with the BusinessObjects Enterprise system uses the BusinessObjects Enterprise Framework using the interface supported by Business Objects using Crystal Server Pages and the Web Server Adapter.

## ***BusinessObjects Enterprise Connection Optimization***

RunReport uses previous BusinessObjects Enterprise connection information for each user’s browser when logging on to the BusinessObjects Enterprise system to run a report. As a result, only one connection is maintained per user when multiple reports or successive reports are processed, and the number of server connections is minimized.

## ***BusinessObjects Enterprise Version Compatibility***

CRC RunReport is compatible with Crystal Enterprise versions 8.5, 9.0, and 10.0, and BusinessObjects Enterprise XI and XI R2.

## ***Database Connectivity***

For the Administrative database containing the Report Request History, CRC RunReport connects to any enterprise database system supporting ODBC and Active Data Objects. Implemented databases include MS Access, SQL Server, Oracle 9, and UDB. The ODBC connection uses a System DSN defined in the “CSP Configuration.inc” file within its directory.

# RunReport Test Web Applications

RunReport is supplied with a complete web application that demonstrates using the external interface to run BusinessObjects Enterprise reports with parameters.

<b>Web Page</b>	<b>Purpose</b>
External_Request_Tests.htm	The default web page for the “External_Request_Tests” directory, with links to “RunReportTest.htm” and “RunReportTestForm.htm”
RunReportTest.htm	Sample web page demonstrating report requests through URL links
RunReportTestForm.htm	Sample web page demonstrating report requests through Forms
RunReportHelper.htm	Sample web page opened by “RunReportTestForm.htm” to demonstrate running and viewing a report in a new window

As provided, the test web applications are configured to refer to the BusinessObjects Enterprise web server on “localhost”. The “About External\_Request\_Tests.txt” file documents configuring the test web applications to run on other web servers that refer to the BusinessObjects Enterprise web server by name.

## Licensing

CRC External RunReport and CRC External RunReport Administrator are licensed per BusinessObjects Enterprise CMS Cluster. CRC External RunReport and CRC External RunReport Administrator are owned and copyrighted © 2004 by CRC Business Solutions, Inc.; source code is provided to licensees.

Use of these products is subject to BusinessObjects Enterprise licensing from Business Objects.

## Contact Information

CRC External RunReport and CRC External ViewReport are available from CRC Business Solutions, Inc., a Business Objects Professional Services Partner.

Contact: [info@crsolutions.com](mailto:info@crsolutions.com)  
510-569-2721

Information about other BusinessObjects Enterprise integration products from CRC Business Solutions, Inc. is available at <http://www.crsolutions.com>.

*Product Data Sheet Version of 25-Oct-2006*