CE Report Request Server
From CRC Business Solutions, Inc.
Product Data Sheet

About the Crystal Enterprise Report Request Server

The CE Report Request Server provides a common method for enterprise applications and services to request report execution by the Crystal Enterprise system. By using a simple database table to request a report, external systems can schedule reports on demand with the scheduling parameters, output formats, and output destinations they need without any direct interaction with the Crystal Enterprise system. As a result, any process that can write to an enterprise database can request report processing by the Crystal Enterprise system.

Integrated enterprise reporting from external applications has been supported by the CE Report Request Server since August, 2002.

Benefits of the CE Report Request Server

Ease of Integration

Any application within an enterprise can request a Crystal Enterprise report by simply inserting a report request record into a database table. When the CE Request Server finds a new report request, the record is processed into a schedule request to the Crystal Enterprise system. As each request is processed, the original record is updated for status and its ultimate completion result. Requesting applications can monitor their requests by reading the request status from the report request table.

The database interface approach eliminates cross-platform and cross-application integration requirements by simply using any commonly available database as the bi-directional communications path between enterprise applications and the Crystal Enterprise system. An additional benefit is the time separation allowed between the report request and the actual report processing, so no synchronization between the requesting application and the Crystal Enterprise system is required.

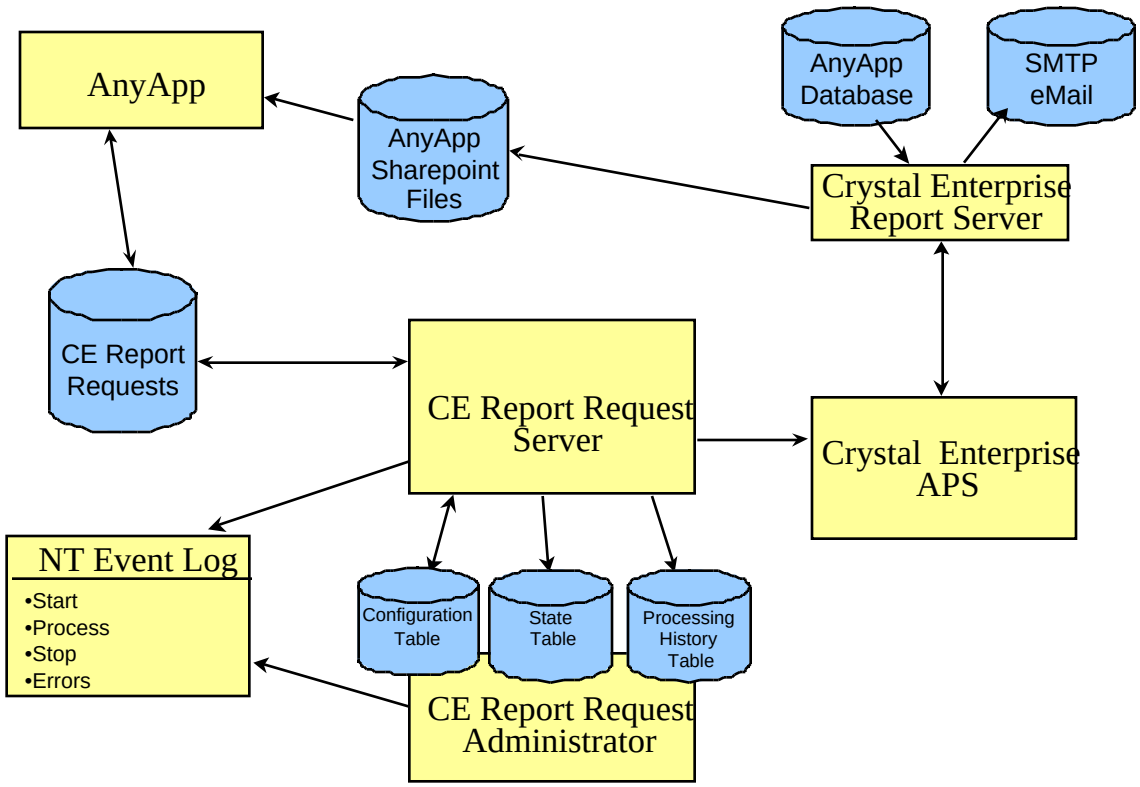
Enterprise Class Quality

As an independently managed interface to the Crystal Enterprise system, the CE Report Request Server has these “Enterprise Class” qualities:

Simple Interface	A database interface is the most accessible inter-process communication within a networked enterprise.
High Availability	CE Request Server is designed for data center reliability, availability, and robustness so that its availability is near continuous.
Processing Queue	Report requests are managed by the CE Request Server as a processing queue.
Timely Request Processing	CE Request Server processes new requests and checks the status of scheduled requests at a configured time interval, typically every 30 seconds.
Request/Run-time Independence	An application’s report request is recorded within a database; the request is processed when both the CE Request Server and the Crystal Enterprise system are available, so neither is required to request a report.
Cross Platform Support	The database interface approach requires only that a requesting application be capable of writing to an enterprise database.
State Status	The originating request application sets the request state to “New”. The CE Request Server sets the state to “Scheduled” when successfully scheduled in Crystal Enterprise, then to “Complete” or “Error” when the scheduled instance reaches its final state.
Result Status	A requesting application has full access to the request status during and after report processing.
Error Messages	Any error messages resulting from a failed report request are available to the requesting application and the monitoring administrators.
Error Recovery	By editing a request record directly, an administrator can correct request errors and reset the request status.
Reschedule Requested Reports	Any report request can be rescheduled by simply changing its status to “New”.
Diagnose at Interface Point	Each request record can be examined directly or through the web administration tools to diagnose request problems.
Server Friendly	CE Request Server “sleeps” via an operating system call, so that while in a wait state between processing the server does not require processing cycles or memory.
Fault Tolerance	CE Request Server continues processing when either the Report Request database is unavailable or the Crystal Enterprise system is unavailable. When a previously unavailable system becomes available, CE Request Server immediately resume report request processing.
Web Based Administration and Monitoring	Web based administration, through Crystal Server Pages, provides authorized access from any web browser within the enterprise at any time.

Architecture

The CE Report Request Server integrates enterprise applications with the Crystal Enterprise system as shown below:



Any enterprise application "AnyApp" that is capable of writing to the host database for the "CE Report Requests" table can request a report. The application inserts a record to the table with the report request information. The CE Report Request Server reads the request from the table and schedules the report with the Crystal Enterprise system, updating the report request status to "Scheduled". When Crystal Enterprise has completed the report, the status of the request is updated to show the result.

To the enterprise application, only the report request table is known – the interface and interactions between the CE Report Request Server and the Crystal Enterprise system are not visible to the enterprise application.

The CE Report Request Server is managed through the CE Report Request Server Administrator – either directly on the server or through a secured web interface. The server's state is visible through the administrator as well as the NT Event Log.

The CE Report Request Server Interface

The Report Request Process

The report request processing cycle involves an interplay of the Requesting Application, the CE Request Server, and Crystal Enterprise as follows:

Requesting Application	CE Request Server	Crystal Enterprise
Write report request with Status of “New”		
	Process new request	
	Schedule request with CE and set Status to “Scheduled”	
		Process report with request parameters, format, and output destination scheduling options
		Write report output to request destination and set report result in CE
	Check report result in CE and set Status to “Complete” or “Error”	
Check request result (optional)		

The Report Request Table

Report request processing is accomplished using the record format below:

Field	Data Type	Contents
Request ID	Number	Auto-generated primary key for record uniqueness
Request_DateTime	Date/Time	Date / time of report request
Requestor_System	Text ((20)	Identification of system that created the report request
Requestor_User	Text (50)	Identification of user that created the report request
Request_Status_Code	Number	Request status: 0 = New, 2 = In Process, 1 = Success, <neg> = error code
Request_Status_Text	Text (160)	Description for request status: “New”, “In Process”, “Created <datetime>”, “Sent <datetime>”, “Error: xxx”
Report_Folder	Text (100)	Name of report folder in CE (folder + name = unique)
Report_Name	Text (50)	Name of report to process in CE within Report_Folder
Report_Params	Text (200)	Report processing parameters, delimited by “||”
Request_Type	Text (40)	Report output destination type: “FILE”, “EMAIL”, “FTP”, “FRS” or “PRN” with Print Settings
Output_Report_Path	Text (100)	UNC path to report destination
Output_Report_Name	Text (50)	Name of report created in Output_Report_Path
Output_File_Type	Text (25)	Report output type: “TXT”, “TAB”, “XLS”, “XLD”, “CSV”, “CST”, “PDF”, “DOC”, “RTF”, or “RTP”, followed by format CE version-specific formatting options
Output_Address	Text (50)	For e-mail Request_Type: e-mail addressee For FTP Request_Type: FTP server address parameters For PRN Request_Type: Printer name or command
Email_Subject	Text (100)	For e-mail Request_Type: e-mail subject
Email-Body	Text (200)	For e-mail Request_Type: e-mail body
CE_Report_SID	Text (10)	Crystal Enterprise System ID for the scheduled report (used to track unique report instance status)

Supported Crystal Enterprise Scheduling Options

Report Parameter Options

Single and multiple values for report parameters are supported 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 CE Request Server.

Report Format Options

CE Request Server supports all Crystal Reports format options supported by Crystal Enterprise:

Adobe Acrobat PDF	Text Only
Microsoft Word	Paginated Text
Microsoft Excel	Tab Separated Text
Microsoft Excel (data only)	Character Separated Text
Rich Text	Crystal Reports (.RPT)

Report Destination Options

CE Request Server supports native Crystal Enterprise File Repository Server, SMTP e-mail, and Crystal Enterprise "Unmanaged Disk" (file accessed via Windows Uniform Naming Convention and secured by Windows Networking). FTP destinations accessed by server name, port, user account, and password are supported. Printer destinations and all optional Printer Settings (copies, page range, orientation, and layout) are supported.

Server Administration

Server Based Administration

Windows batch scripts are provided to start, stop, and determine status of the CE Request Server remotely or during system startup and shutdown.

Web Based Administration

Administrator tools, similar to the Crystal Management Console, are provided to start, stop, and determine status of the CE Request Server, as well as to monitor processing and to view report request summary lists and individual 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 Crystal Enterprise.

NT Application Events Reported

CE Request Server reports application Start, Stop, Processing, and Error events to the Windows Application Event Log.

Server Configuration

CE Request Server is configured for its run time environment through the CE Request Server Administrator. Configuration items include: Processing Interval, Log File generation per report request, Crystal Enterprise account information, CE Report Requests database information, SMTP mail information, and NT event reporting options.

Server Technology

Server Executable

"CE_Request_Server.exe" is a Windows executable compiled from Visual Basic 6; as such, the Visual Basic Runtime Library is used during execution. The executable may be located on any server with access to the Crystal Enterprise system via the Enterprise Framework (CORBA) and to the Report Request Database via a database client.

Supporting Components

CE Request Server is supported by "Xtimer.dll" for server-friendly wait states and by "CE_Agent.exe" for remote start, stop, and status.

Crystal Enterprise Framework

All communication with the Crystal Enterprise system uses the Crystal Enterprise Framework using the interface supported by Crystal Decisions.

Crystal Enterprise Version Compatibility

CE Request Server is compatible with Crystal Enterprise versions 8.5, 9.0, and 10.0.

Database Connectivity

CE Request Server connects to any enterprise database system supporting ODBC and Active Data Objects. Implemented databases include MS Access, SQL Server, Oracle 9, and UDB.

Licensing

CE Request Server is licensed per Crystal Enterprise APS Cluster. CE Request Server is owned and copyrighted © 2004 by CRC Business Solutions, Inc.; source code is available to licensees.

Use of CE Request Server is subject to Crystal Enterprise licensing from Crystal Decisions.

Contact Information

CE Report Request Server is available from CRC Business Solutions, Inc.,
a Crystal Decisions Professional Services Partner.

Contact: info@crcsolutions.com
510-569-2721

Product Data Sheet Version of 15-Mar-2004