



# *Integrating MultiValue Data with Microsoft Reporting Services*

**A** fundamental requirement for any modern business application is easy access to the underlying data, generally in the form of reports. For many organizations the challenge is getting the right information to the right people, at the right time. Organizations require flexible, on-demand access to business information to empower their employees to make informed decisions. Yet, MultiValue application developers, consultants and end users have all struggled when it comes to liberating their business data from their MultiValue databases. They have endeavored to build presentable reports, suffered poor functionality from MultiValue-only tools and experienced the vagaries of MultiValue ODBC implementations while attempting to use industry-standard reporting tools.

## **mv.NET**

**mv.NET** is a powerful and extensive toolset which enables MultiValue developers to harness the full power of both their MultiValue system and Microsoft's .NET application platform. Offering seamless integration with the Microsoft Visual Studio .NET environment, mv.NET provides a potent rapid application development environment fine-tuned for the MultiValue developer.

- Native .NET access to all major MultiValue databases including: D3, jBASE, mvBASE, Power95, Reality, UniData, UniVerse, UniVision, and others by request
- Complete development environment from Visual Studio .NET (both VS2003 and VS2005)
- Comprehensive session management capabilities
- Advanced MultiValue aware data-binding technology
- Full ADO.NET managed data provider

BlueFinity's Reporting Services Data Connector Allows MultiValue Developers to Utilize the Very Latest Microsoft Reporting Services Technology

Microsoft has invested millions of dollars in the creation of the Reporting Services infrastructure in SQL Server 2005 to provide a scalable, easy-to-use reporting solution which integrates tightly with its development toolsets - and now, using BlueFinity's Reporting Services Data Connector, MultiValue users on all platforms have a gateway into this world-class technology.

Microsoft SQL Server Reporting Services (SSRS) is a comprehensive, server-based reporting solution that can author, manage, and deliver both paper-oriented and interactive, Web-based reports and services. SSRS supports a wide range of common data sources,

such as OLE DB and Open Database Connectivity (ODBC), as well as multiple output formats such as familiar Web browsers and Microsoft Office System applications. It is flexible enough to be used in small business right through to large enterprises, and installs onto any Windows-based server able to support the .NET Framework.

The SSRS architecture allows third-party developers to integrate with its data acquisition components to facilitate report production based on a wide range of back-end datasources such as DB2, Oracle and SQL Server. BlueFinity's Reporting Services Data Connector (RSDC) supports the full feature set of Microsoft's Reporting Services product and allows it to be used against all of the major MultiValue database platforms with almost no extra work on behalf of the application developer. With support for multiple databases, multiple normalization techniques, fast data retrieval and wizard driven query creation, the RSDC product offers the most sophisticated, performant and cost-effective solution for any developer wishing to take advantage of Microsoft's excellent Reporting Services product. *Continues on page 28*



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## Reporting Services Backdrop

**T**he professional's starting point for SSRS is the Report Designer, a complete IDE utilizing the functionality provided by Visual Studio. In fact, all of its functionality is supplied in VS 2005 Professional and above, so for those not inclined to purchase Visual Studio, a Reporting Services "only" version of Visual Studio is bundled with SQL Server 2005 for Report Designer. For the professional, therefore, reports can be developed and deployed and the BlueFinity RSDC employed to access all the major MultiValue databases. RSDC provides a simple-to-use wizard interface for the specification of the database connection, query and selection commands.

The Report Designer can be used to define a report layout, preview a report, and publish a report to a test or production server. Report Designer includes query builders, an expression editor, and wizards so that simple step-by-step instructions can be followed to create a report. Report Designer also supports advanced reporting features for professional report designers who understand query languages and expression languages.

In typical Microsoft fashion, the IT team has been provided with several tools ranging from the Web-based Report Manager through to the full SQL Server Manager Studio to manage and manipulate the reports deployed from Report Designer in a single, consistent manner. The ability to configure role-based security and to manage report server content by setting properties on data sources, reports, folders, resources, and report models is also available. Report management also goes as far as being able to configure report execution and report history, to set limits on processing time, to monitor and cancel pending or in-process reports, and to create and manage data source connections and schedules independently of the reports that they are associated with.

Reporting Services is also aimed at empowering the end user. A new Report Builder tool (WinForm based) is aimed at the user who wishes to create ad hoc reports using templates and pre-organized data, saving them directly to a report server. Reports that are created in Report Builder can be accessed, distributed, and managed just as easily as any other report. The templates mentioned above can be generated by someone in the organization who understands the business and the applications, who need not necessarily be someone on the IT team. They could use the Report Builder Model Designer to build the templates whereas developers can use the full Report Designer.

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RSDC allows SSRS users to utilize MultiValue data sources in their SSRS authored reports. By integrating with the low-level data provider interface of the SSRS product, RSDC allows MultiValue databases to supply data to SSRS's data acquisition phase. This approach has the advantage of allowing the full feature set of the SSRS Report Designer and Report Builder to be leveraged in the manipulation, format and display of MultiValue data in a wide variety of end-user focused reporting layouts.

RSDC provides real-time access to D3, jBASE, mvBASE, Power95, UniData, UniVerse and UniVision databases with a high-performance, secure and reliable data access connectivity. The seamless data integration with SSRS allows MultiValue developers to leverage the capabilities of their existing information systems and connect to custom data sources, produce additional output formats and deliver to a variety of computing devices. The RSDC product also has the advantage of leveraging the full power of the standard MultiValue dictionary layer with minimal work being required prior to data being made available to the Reporting Services infrastructure.

By utilizing BlueFinity's mv.NET product as the database connectivity solution, RSDC is able to offer unparalleled SSRS integration across a wide range of MultiValue platforms. RSDC makes use of the high-performance Adapter Objects (ADO.NET) functionality provided by mv.NET to provide the underlying connectivity to the MultiValue database — from there onwards SSRS takes over to provide the complete reporting package. [See mv.NET sidebar for more information].

David Cooper is one of the lead developers at BlueFinity International. He has worked within the MultiValue community since 1986 and has extensive experience authoring both end-user applications and developer tools. Cooper feels RSDC is a major breakthrough for the MultiValue community, as it enables MultiValue users to capitalize on mainstream technology.

“BlueFinity’s RSDC provides a real opportunity for all the major MultiValue database users, both VARs and end users, to fully exploit the benefits of Reporting Services,” Cooper says. “By enabling Reporting Services to access MultiValue databases as easily as SQL-based platforms, RSDC effectively ‘levels the playing field’ in terms of end-user reach to valuable application data.” Cooper adds, “Our RSDC product provides the whole MultiValue community with a fantastic opportunity to ride on the crest of the Reporting Services wave currently being generated by the Microsoft marketing machine.”

With Reporting Services, MultiValue databases can now be used to provide sophisticated, real-time (if required) report data using a wide variety of delivery mediums (Browser, PDF, rich-client, application-embedded), incorporating all of the reporting features (for example, cross database merging, drill down, drill through and charting) expected by today’s demanding report consumer.

Reporting Services Data Connector is available now from BlueFinity International. For pricing or for more information, visit [www.bluefinity.com](http://www.bluefinity.com) or contact your BlueFinity reseller. [is](mailto:is@bluefinity.com)



## Reporting Services Deployment Options

- **On-demand access over Web connections.** Use a browser to navigate a folder hierarchy to find and work with reports and other items. Reports can be referenced from a Favorites list in a Web browser, or link from a Web portal.
- **Sharepoint Web parts.** Reporting Services provides two Web parts for report viewing and report server folder navigation. The Web parts can be embedded in a Microsoft SharePoint Portal site to easily integrate with a report server deployment.
- **My Reports and My Subscriptions.** In Report Manager, store and manage reports and subscriptions in a personal workspace.
- **Subscriptions for E-mail or File Share Delivery.** Automate report delivery through a standard subscription and set report presentation preferences. Users who prefer to view a report in Microsoft Excel, for example, can specify that format in a subscription. Deliver a rendered report to an e-mail inbox. Set delivery options that control whether the report is delivered as a link or attachment. Deliver a rendered report to a shared folder. Set delivery options that control whether the report is overwritten or added to an existing folder.
- **Data-driven subscriptions.** Automate report distribution through data-driven subscriptions, which generate a recipient list and delivery instructions at run time from an external data source. Use a query and column-mapping information to customize report output for a large number of users.
- **Multiple options for integrating Reporting Services into standard .NET based applications.** And mv.NET from BlueFinity provides the ideal .NET development tool for MultiValue databases: URL access, The Report Server Web service, also known as the Reporting Services SOAP API, The ReportViewer controls for Visual Studio 2005.

## Reporting Services Feature List

- **Report Layouts.** Tabular, matrix, chart, and free-form report layouts.
- **Ad hoc reports.** Create and save reports directly to a report server using Report Builder. Ad hoc reporting is supported through a thin client that is downloaded from the report server.
- **Drill-through reports and interactivity.** Add interactive features by providing links to related reports and reports that provide supporting details.
- **Parameterized reports.** Add parameters to refine a query or filter a dataset.

Dynamic parameters get values at run time based on user selections (the selection of one parameter builds the value list for a second parameter).

- **Presentation formats.** Choose a presentation format when you open the report, or after you open the report. Choose from Web-oriented, page-oriented, and desktop application formats. Formats include HTML, MHTML, PDF, XML, CSV, TIFF, and Excel.
- **Custom controls or report items.** Embed custom controls or report items that you create or purchase from

a third-party vendor. A custom control requires a custom report processing extension.

- **Navigation.** Add bookmarks and document maps to provide navigation options within a large report.
- **Aggregations.** Aggregate and summarize data using controls and expressions. Aggregates include sum, average, min, max, count, and running totals.
- **Graphical elements.** Embed or reference images and other resources that contain external content.