

WebFOCUS

Introduction to WebFOCUS
Release 8.1 Version 05

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Contents

Preface	9
Related Publications	9
Customers Are Everything	9
User Feedback	10
Information Builders Solutions	11
1. Self-Service for Everyone	13
Self-Service Business Intelligence Solutions.....	13
Defining Users	14
Key Benefits.....	15
Information Distribution Chain.....	16
Core Business Intelligence	17
2. Reporting and Dashboards	19
WebFOCUS App Studio.....	19
Key Features.....	19
App Studio Architecture.....	22
For More Information.....	23
3. Active Technologies	25
Active Technologies Key Features and Benefits.....	25
For More Information.....	26
4. Query and Analysis	27
InfoAssist.....	28
WebFOCUS InfoAssist Key Features and Benefits.....	28
For More Information.....	29
5. Content Management	31
WebFOCUS Business Intelligence Portal.....	32
WebFOCUS Business Intelligence Portal Key Features.....	33
For More Information.....	34
6. Information Delivery	35
ReportCaster.....	35
ReportCaster Functionality.....	37
ReportCaster Tools.....	38
For More Information.....	39
7. Microsoft Office Integration and Electronic Publishing	41

Microsoft Office Integration.....	41
Electronic Publishing With PDF Compound Reports.....	42
Document Navigation Features.....	42
For More Information.....	43
WebFOCUS Quick Data	44
8. Monitoring, Governing, Analysis, and Security	47
WebFOCUS Client Repository and Authorization Security.....	47
Designing a Security Policy.....	48
Components of the Security System.....	49
Privileges.....	49
Resources.....	49
Rules.....	50
For More Information.....	50
Resource Analyzer and Resource Governor.....	50
Administering Resource Management From the Web Console.....	50
For More Information.....	51
Extended Business Intelligence	53
9. Performance Management	55
Performance Management Framework.....	56
WebFOCUS Components Used by PMF.....	58
For More Information.....	59
Healthcare Performance Analytics.....	59
For More Information.....	59
10. Data Discovery	61
WebFOCUS InfoDiscovery.....	62
InfoDiscovery Key Benefits.....	62
InfoDiscovery Highlights.....	63
InfoDiscovery Components.....	64
InfoDiscovery Server.....	65
High-Speed Analytics Sandbox.....	66
InfoDiscovery Differentiators	67
For More Information.....	68
11. Predictive Analytics	69
WebFOCUS RStat.....	69

Data Mining With WebFOCUS RStat.	70
Benefits of a Fully Integrated Environment.	70
RStat Architecture.	71
For More Information.	72
12. Search-Based Applications and Social Media Analytics	73
Magnify.	73
For More Information.	74
WebFOCUS Social Media Integration.	74
Social Media Integration.	74
Sentiment Analytics.	75
Word Analytics.	75
Google Analytics.	75
WebFOCUS Social Media Integration at a Glance.	76
For More Information.	76
13. Mobile Applications	77
WebFOCUS Mobile.	77
Suite of Mobile BI Products.	78
Mobile Faves App.	79
Mobile Faves Security.	79
Mobile Faves Customer-Branded Versions.	80
For More Information.	80
14. Write-Back Applications	81
WebFOCUS Maintain.	81
Maintain Key Benefits.	81
For More Information.	82
15. High Performance Data Store	83
Hyperstage Overview.	83
Hyperstage and PostgreSQL.	83
For More Information.	84
16. Embedded Applications	85
WebFOCUS Authentication RESTful Web Service Requests.	85
WebFOCUS Managed Reporting RESTful Web Service Requests.	85
WebFOCUS Reporting Server RESTful Web Service Requests.	86
WebFOCUS Security Administration RESTful Web Service Requests.	86
ReportCaster RESTful Web Service Requests.	87

RESTful Web Services Test Console.....	87
For More Information	88
Data Integrity	89
17. Data Profiling	91
Key Features and Advantages.....	91
For More Information.....	92
18. Master Data Management	93
Components of the iWay Master Data Suite.....	94
For More Information.....	94
19. Data Stewardship	95
Key Features and Advantages.....	95
For More Information.....	96
20. Data Quality	97
Components of the iWay Data Quality Suite.....	97
For More Information.....	98
Application Integration	99
21. Batch ETL	101
DataMigrator.....	101
DataMigrator Architecture.....	102
DataMigrator Server.....	102
DataMigrator Data Management Console.....	103
For More Information.....	104
22. Real-Time ESB	105
Overview.....	105
iWay Service Manager.....	106
For More Information.....	107
iWay Integration Tools.....	107
For More Information.....	107
iWay Software Development Kit.....	108
For More Information.....	108
23. Incremental Integration	109
iWay Change Data Capture (CDC) Solutions.....	109
iWay Change Data Capture (CDC) Solution for Informix.....	110
For More Information.....	110

iWay Change Data Capture (CDC) Solution for Microsoft SQL Server.	110
For More Information.	110
iWay Change Data Capture (CDC) Solution for Oracle.	111
For More Information.	111
iWay High Water Mark (HWM) Listeners.	111
iWay Relational Database High Water Mark Listener.	111
For More Information.	112
iWay LDAP High Water Mark Listener.	112
For More Information.	113
iWay Schedule and Calendar Providers.	113
Schedule Provider.	113
For More Information.	113
Calendar Provider.	113
For More Information.	113
iWay Real Time Data Replication (RTDR) Extension.	113
For More Information.	114
Customer Connections	115

Preface

The WebFOCUS business intelligence (BI) platform delivers rich, consumable, interactive information to the widest range of users. This documentation describes the extensive features of WebFOCUS 8. This manual is intended for any reader who wants to become more familiar with WebFOCUS products.

How This Manual Is Organized

This manual includes the following sections:

Section	Description
Information Builders Solutions	Introduces the WebFOCUS 8 product.
Core Business Intelligence	Build applications using core components of WebFOCUS.
Extended Business Intelligence	Build more application types with extensions to the WebFOCUS platform.
Data Integrity	iWay Integrity Solutions ensure data quality by providing a consistent and accurate view of data from every interaction point.
Application Integration	iWay Integration Solutions work on any platform, with proprietary technologies as well as industry standards, and support more than 300 database and application adapters.

Related Publications

Visit our Technical Content Library to see our latest WebFOCUS 8 publications, <http://documentation.informationbuilders.com>.

Customers Are Everything

At Information Builders, we are as open and flexible as our software, and our customers are our greatest asset. For every new product and feature, there is a customer who drove it. Everything we do is to improve the success of our customers' business initiatives.

Our customer-centric philosophy is bolstered by an integrated support network of professionals passionately dedicated to create the best customer experience possible. Our support network is the sum of these teams:

- ❑ Technical Content Management Services offers technical product manuals and content management applications to support your effective use of our software products. Visit the Technical Content Library at <http://documentation.informationbuilders.com>.
- ❑ World Wide Customer Support Services are accessible 24 hours a day through our website <http://www.informationbuilders.com/support>.
- ❑ Customer Education and Training Services offers a wide variety of training courses for this and other Information Builders products. For information on course descriptions, locations, and dates, or to register for classes, visit <http://education.informationbuilders.com>.
- ❑ Professional Services specializes in building custom-tailored decision support systems. Learn more at <http://www.informationbuilders.com/consulting>.

Information Builders has also created Focal Point, a community website for developers, at http://www.informationbuilders.com/support/wf_dev_center. You can visit our message boards and browse through numerous helpful resources, or ask your own question to fellow developers in an informal and cooperative environment.

User Feedback

Information Builders Technical Content Management team is comprised of many talented individuals who work together to design and deliver quality technical documentation products. We would like to know what you think of this publication and invite you to contact us with your feedback.

Visit <http://documentation.informationbuilders.com/connections.asp> to participate in our Customer Connections program, where you can share your feedback or join a usability program to test new documentation products.

We look forward to hearing from you.

Information Builders Solutions

Information Builders provides software and services that transform data into business value and customers into industry leaders.



Self-Service for Everyone

"Information is a company's most valuable asset, yet organizations have historically struggled with effective dissemination of data outside of an elite circle of employees, severely limiting its value. InfoApps offer next-generation, self-service BI to everyone, enabling a much broader range of both internal and external users to benefit from reporting and analytics insight that was previously unavailable to them. Information Builders is dedicated to providing our customers with the latest in BI technology, and we're excited to be at the forefront of this revolutionary new trend in information sharing, collaboration, and business improvement."

- Gerald D. Cohen, President and CEO of Information Builders

In this chapter:

- ❑ [Self-Service Business Intelligence Solutions](#)

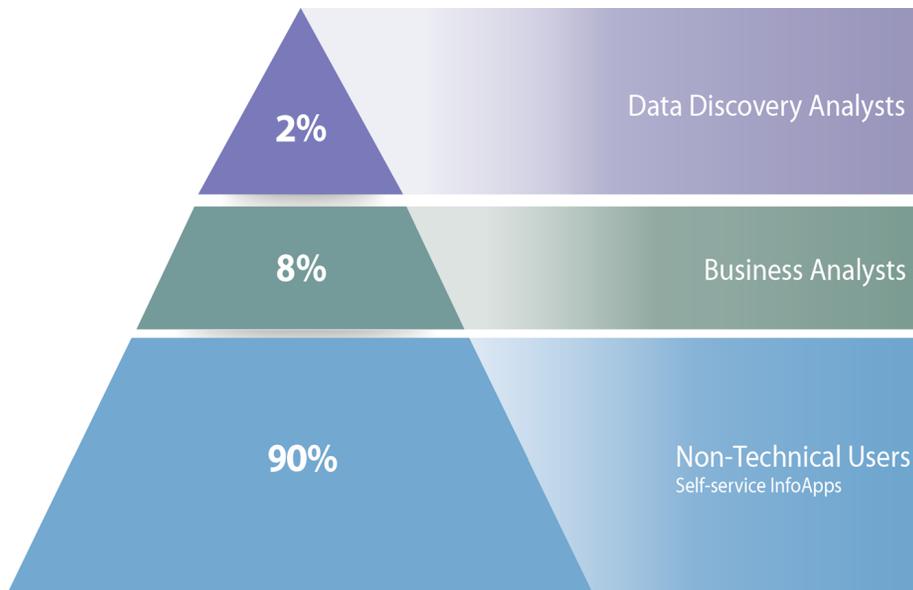
Self-Service Business Intelligence Solutions

Self-service business intelligence solutions need to empower all types of users across an organization to be able to easily and quickly access data in order to operationalize strategies, insights, and ideas.

The WebFOCUS Business Intelligence and analytics platform provides comprehensive, real-time management of any information from any data source, regardless of where the data resides, whether it is in a structured or unstructured format. WebFOCUS provides a flexible security infrastructure that integrates and leverages security at multiple levels of your system, resulting in a comprehensive, tightly integrated security net for the most sensitive data and applications.

Defining Users

As shown in the following Population pyramid, studies show that a large percentage of users in a typical organization are non-technical or consist of other types of users, who need information using self-service applications, not tools, while only a small percentage of users are business analysts or data discovery analysts, who create new information and perform analytical functions using development tools.



For Data Discovery Analysts, the InfoDiscovery product provides traditional Data Discovery options to perform analytics and to find insights and patterns in data. Using the InfoDiscovery High-Speed Analytics Sandbox, designed specifically for analytic applications, large amounts of data can be stored for fast retrieval, aggregation, and calculations.

For Business Analysts, who understand the data and need to create specific ad hoc reports, InfoAssist offers access to the most advanced, yet simple to use, ad hoc reporting features needed to create intricate reports and perform insightful analysis against their own data or to publish data for their constituents.

For non-technical users or other types of users, who need to leverage the output of analytical models, but may not have the required skills or know-how, simple selection mechanisms and the need to be flexible in changes to what they want to see require intuitive, self-service apps as a means to select and manage their own content.

Self-service InfoApps™ deliver interactive analytic content, such as data visualizations, charts, graphs, and reports to users through the interactive WebFOCUS BI Portal interface for fast, easy, and direct answers and insights to specific questions. InfoApps make it easy for non-technical, mainstream users to get and analyze information on both web browsers and mobile devices. Examples of InfoApps include guided self-service reports, search-based apps, and predictive analytics apps, all of which can be customized for a highly personalized user experience. InfoApps offer a variety of controls and filters to aid in decision support. In addition to using the InfoDiscovery and InfoAssist products, developers can create InfoApps using the WebFOCUS App Studio development environment tool, which provides a fully integrated environment for rapidly designing and creating any type of BI content.

The robust combination of our BI Portal and InfoApps empowers all users with the tools and apps they need to leverage timely, vital information for improved decision-making.

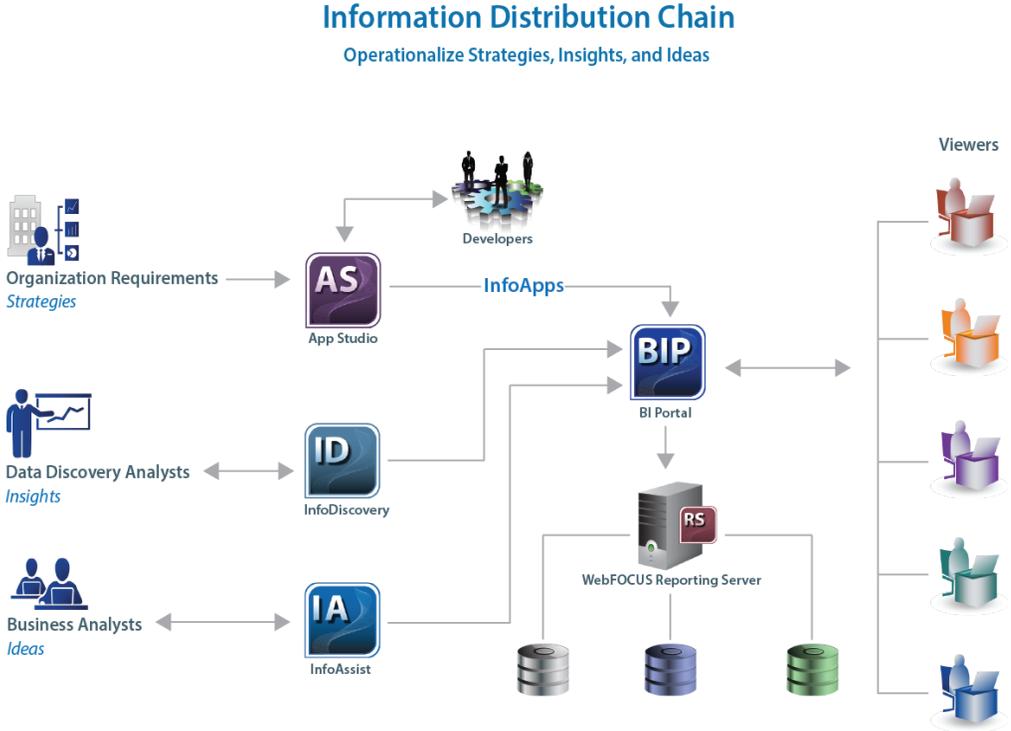
Key Benefits

The benefits of these self-service BI solutions are:

- ❑ Shorter cycles and lower costs.
- ❑ User interfaces that are intuitive and easy to use, with no manuals to read.
- ❑ Users can independently create their own individual reports and analytical queries.
- ❑ Users can easily deploy and publish data for their constituents.
- ❑ Users can assess performance, track the potential for errors and uncertainty, and transform data into meaningful business views.
- ❑ Users can create decision support applications and operational reports using performance management, InfoApps, and InfoAssist to track potential errors and uncertainty. These applications can include procedures, standards, controls, and reviews.
- ❑ Users can gain insights into patterns, correlations, exceptions, contradictions, and coincidences using InfoDiscovery, including sentiment analysis, social media, and other outside data sources.

Information Distribution Chain

The self-service implementation is illustrated in the following Information Distribution Chain diagram.



In addition to the products that are depicted on the Information Distribution diagram, the Integration and Integrity Foundation Components, shown on the Information Builders Solutions diagram, are vital to WebFOCUS BI. Foundation Components enable you to harness critical information assets and resources in your organization, and ensure their integrity.

For more information on any of the Information Builders products and the facilities that you can use to integrate into an InfoApp and the Integration and Integrity Foundation Components, see the corresponding chapters within this documentation.

Core Business Intelligence

Build applications using core components of WebFOCUS.



Chapter 2, *Reporting and Dashboards* on page 19. The reporting and dashboard tools fulfill reporting needs, from financial statements and form reports, to analytical reports, charts, forecasts, scorecards, and Geographic Information Systems mashups. WebFOCUS App Studio provides an integrated environment for creating any type of business intelligence content.



Chapter 3, *Active Technologies* on page 25. Active Technologies integrates business intelligence and analytical capabilities into reports, making reports more interactive and more valuable than ever before.



Chapter 4, *Query and Analysis* on page 27. WebFOCUS InfoAssist provides business users with the most advanced, yet simple to use, ad hoc reporting features needed to create intricate reports and perform insightful analysis.



Chapter 5, *Content Management* on page 31. The WebFOCUS Business Intelligence Portal offers a full suite of web development tools that accelerate the creation of fully customized portals.



Chapter 6, *Information Delivery* on page 35. ReportCaster is the WebFOCUS report scheduling, distribution, and report storage solution designed to centralize the execution and distribution of WebFOCUS reports, the contents of URLs, and files



Chapter 7, *Microsoft Office Integration and Electronic Publishing* on page 41. WebFOCUS offers integration with Microsoft® Office® to create Excel® spreadsheets and PowerPoint® presentations. Reports can be available for electronic distribution in the form of high-quality, print-ready PDF documents, brochures, and magazines.



Chapter 8, *Monitoring, Governing, Analysis, and Security* on page 47. Resource Analyzer and Resource Governor tools help Information Systems (IS) organizations analyze and control end user data access, as well as provide site-specific control options.

Reporting and Dashboards

WebFOCUS, the most powerful and flexible reporting environment in the industry, can be used to satisfy virtually any reporting need, from financial statements and form reports, to analytical reports, charts, forecasts, scorecards, and Geographic Information Systems (GIS) mashups. Unique guided ad hoc capabilities allow non-technical users to instantly generate their own reports, by customizing options at run time. These reports can be saved and refreshed at any time, or automatically updated and delivered at scheduled intervals.

Reports can be created against more than 300 distinct data sources and information sources, including relational, legacy, ERP, CRM, data staged in warehouses, cubes or data marts, web services, and real-time data from operational systems, on any platform. Achieve a single view of your business with WebFOCUS dashboards. Whether you are tracking performance metrics, giving line-of-business workers in-depth analytical capabilities, or monitoring business activity in real time, WebFOCUS can handle everything from custom and analytical portals to geographical and active dashboards.

In this chapter:

- ❑ [WebFOCUS App Studio](#)

WebFOCUS App Studio

WebFOCUS App Studio is a Windows-based graphical user interface development environment for creating advanced WebFOCUS applications. App Studio utilizes the Microsoft Windows® ribbon framework to deliver an interactive user interface, from which you can build multiple business intelligence applications in the same workspace. WebFOCUS App Studio provides a fully integrated environment for rapidly designing and creating any type of BI content.

Key Features

The following are key features of App Studio:

- ❑ A unified development environment that consists of a set of graphical development and code generation facilities which can be utilized to organize and create WebFOCUS BI content.
- ❑ Developers can simply and easily build BI content and organize applications through an intuitive workflow design.

- ❑ Development workflow allows developers to create BI content for any type of information stakeholder, including internal and external users, partners and suppliers, and mobile users. For example, using responsive web design, there is no need to create separate “mobile ready” applications and other versions for desktop users, thus reducing development time and costs, as well as enhancing the user experience.
- ❑ Content can be designed specifically to be used on smartphones, using mobile layout options. Content is automatically sized, and takes full advantage of the page-swipe navigation and touch-screen capabilities of smartphones.
- ❑ A modern, Microsoft Office-like ribbon interface for creating reports, dashboards, InfoApps, and other types of BI applications and content.
- ❑ A library of more than 120 HTML5 chart types to meet the needs of every information consumer.
- ❑ The ability to build dashboards that can be viewed online or offline in disconnected mode, with full interactivity and analytical capabilities.
- ❑ A single, unified canvas for all application component development.
- ❑ Responsive web design capabilities to allow all content to render correctly regardless of the device form.

In App Studio, you can:

Access Data and Descriptions. Using the Metadata canvas, you can create new synonyms, and view or modify existing synonyms, in a graphical user interface. Synonyms enable you to access and interpret data sources for use in reporting applications.

Analyze Procedures. Using Impact Analysis, you can generate a list that identifies the WebFOCUS procedures and Business Views that access a specific Master File or a single field within a Master File. This enables you to analyze the potential impact of modifying or deleting Master Files or fields.

Create Reporting Applications. Build reporting procedures in the Report canvas, Chart canvas, HTML canvas, or Document canvas.

- ❑ **Reports.** Display your data in a tabular format. You can create stand-alone reporting procedures, or add the report to a document or an HTML page.
- ❑ **Precision Reports.** With Precision Reports, you can create perfectly aligned PDF, PS, and DHTML output for a pre-printed form, such as a Bill of Sale.
- ❑ **Charts.** Communicate your data in a more illustrative format. You can translate complex data into an easy-to-read and understandable visual format. This often provides a new perspective to the information that users view.

- ❑ **HTML Pages.** Build webpages from which users can launch, view, and analyze data. You can add multiple reports and charting procedures to an HTML page, in addition to the controls that enable you to manipulate the data. You can also apply styling through the use of cascading style sheets, JavaScript files, and jQuery animations. You can preview your HTML output in Internet Explorer, Chrome, and Firefox browsers.
- ❑ **Documents.** Combine multiple report and charting procedures in a single output that you can organize and format. You can also add Pre-process and Post-process codes to customize how your document is executed.
- ❑ **Visualizations.** Create charts, maps, and grids to visually represent your data. You can add multiple visuals to the canvas to create a complete visualization, and you can update, change, or revise the visualization at any time to account for shifts in data needs. You can create conditional formatting and data visualizations for forecast data to distinguish between actual and forecast values in a column.
- ❑ **Alerts.** Create event procedures that apply test conditions and then trigger customized reports if the test conditions are true. You can schedule an Alert, using ReportCaster Distribution Methods.
- ❑ **Reporting Objects.** Transform complex views of data into simple objects that are labeled with common business terminology. Users can understand and use these objects as templates to create their own reports.

Customize Reporting Applications. In addition to customizing your reporting applications by applying styling and color, you can add the following components to a procedure.

- ❑ **Virtual Fields (DEFINE or COMPUTE Statements).** Create temporary fields that are treated as real fields stored in the data source.
- ❑ **Define Functions.** Create user functions that you can use in components of a procedure. You can retrieve your stored functions from the Functions Arguments dialog box.
- ❑ **Joins.** Define relationships between two or more data sources so that a report can use the data from all sources at once. You can also merge data sources by creating logical expressions.
- ❑ **OLAP Hierarchies.** Create temporary OLAP hierarchies and dimensions for a procedure.

Manage Your Environment. You can apply the following functions to your reporting applications to change the behavior of your environment.

- ❑ **Set.** Control the way that reports and charts appear on the screen or when printed, the content of reports and charts, data retrieval characteristics that affect performance, and system responses to user requests. The Set component also helps you to set up your metadata and manipulate information, such as dates. Use the Set component to override default settings for your procedure.
- ❑ **Allocation.** Assign logical names and storage locations to the files that you create and use in WebFOCUS.
- ❑ **Use.** Identify a FOCUS data source to use in your procedure.
- ❑ **Execute.** Allow one procedure to execute or call another procedure, supply values for parameters in the called procedure, and test the called procedure.

App Studio Architecture

WebFOCUS App Studio includes the following components:

- ❑ **App Studio Graphical User Interface (GUI).** Graphical development and code generation features for application development.
- ❑ **WebFOCUS Reporting Server.** A basic Reporting Server for local processing, stand-alone development, and access to data, report generation, chart generation, and running requests.
- ❑ **WebFOCUS Client.** A scaled-down WebFOCUS Client with available functionality that is based on the App Studio edition you license.
- ❑ **Derby Database.** An embedded database that stores user accounts and policies required to connect App Studio to its local WebFOCUS Client. Derby is only installed in App Studio editions that are licensed for local/stand-alone development. It is used for authentication, and comes with preloaded user IDs that possess developer and administrator permissions.

Note: If you install App Studio on the same machine as WebFOCUS 8, you can configure App Studio to utilize the WebFOCUS 8 Derby database.

For More Information

See the following manuals at <http://documentation.informationbuilders.com>:

- ❑ *WebFOCUS App Studio Installation and Configuration Guide*
- ❑ *Getting Started With WebFOCUS App Studio*
- ❑ *WebFOCUS App Studio Reference Guide*

Active Technologies

WebFOCUS Active Technologies reports, dashboards, and InfoApps provide robust business intelligence (BI) for any computer or mobile device running a web browser, without requiring a costly individual license or complex desktop software. Active Technologies reports, dashboards, and InfoApps can run anywhere on any device, including laptops, iPad®, iPhone®, Android™, BlackBerry®, Treo™, and Samsung™ devices, as well as DELL™ and HP® PDAs. With Active Technologies, companies can deliver device-independent, yet device exploitive, content by creating a single web application that leverages the inherent capabilities of the browser to dynamically take advantage of its native look and feel, including gesturing on touch screen devices.

Report consumers can then manipulate the contents into diverse permutations on their own, and forward these reports to other users without any network or device constraints. In addition, Active Technologies reports and dashboards delivered as self-contained Adobe® Flash® files, or Adobe Flash content embedded in Adobe PDFs, become engaging, fully interactive, user-friendly applications.

In WebFOCUS Release 8.1 Version 03, Active Technologies provide new design and styling capabilities for active reports, dashboards, and InfoApps.

In this chapter:

- ❑ [Active Technologies Key Features and Benefits](#)

Active Technologies Key Features and Benefits

Active Technologies reports, dashboards, and InfoApps can:

- ❑ Minimize the backlog of report requests in the IT queue by delivering a single report that can be transformed again and again, without repeated connections to the data.
- ❑ Simplify distribution of sophisticated reports, using the same delivery vehicle for users inside and outside the enterprise.
- ❑ Give field workers access to information, on their mobile device, at the exact moment they need it.
- ❑ Reduce network costs by enabling users to work in disconnected mode.
- ❑ Solve the dilemma of how to provide enterprise data to outside users.

- ❑ Eliminate dependence on third-party software that may not be available to users outside the enterprise.
- ❑ Offer an intuitive user interface, enabling data analysis for report consumers not highly skilled with spreadsheets.

An active report is a report that is designed for offline analysis. When using an active report, you can:

- ❑ Interact with the data, using analysis options similar to those found in an Excel® workbook, without any connection to a server. Analysis options include filtering, sorting, charting, and much more.
- ❑ Work offline without any additional plug-ins or programs. An active report is a self-contained report, meaning that it contains all the data and JavaScript® within the HTML output file. Packaging the data and the interactive functions in the HTML file also makes the output highly compressible for email, and transparent to security systems.
- ❑ Save the report on a local machine with active report functionality. Since no connection to a server is required to view the data or use the analysis options, you can save and use the report anywhere.

An active report for Adobe Flash Player includes most of the capabilities available in the HTML version of active reports in a visually enhanced, user-friendly report format. An active report delivered as a self-contained Adobe Flash SWF file that is Adobe Flash Player compatible allows for faster analysis of large data sets, and interaction with the active report.

For More Information

See the following manual at <http://documentation.informationbuilders.com>:

- ❑ *WebFOCUS Active Technologies User's Guide*

Query and Analysis

The broad range of query and analysis capabilities in WebFOCUS allows users at all levels to access, review, analyze, and, most importantly, benefit from critical corporate information, regardless of their level of technical savvy.

WebFOCUS InfoAssist provides business users with the most advanced, yet simple to use, ad hoc reporting features needed to create intricate reports and perform insightful analysis.

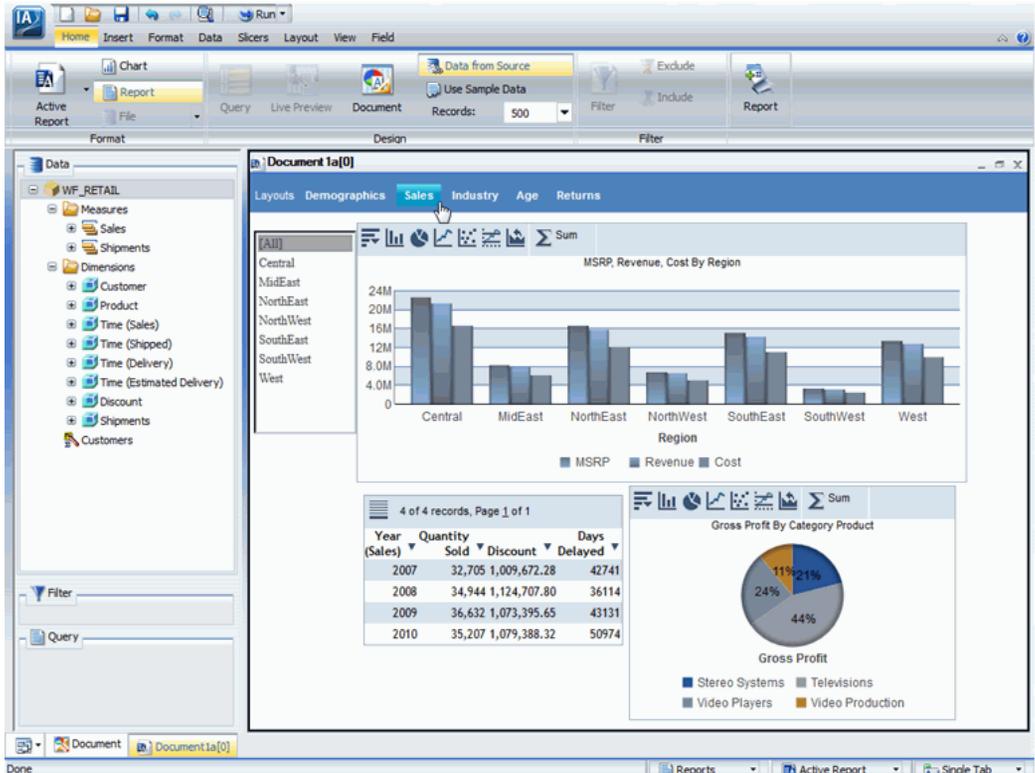
WebFOCUS InfoAssist offers powerful and innovative solutions to overcome the challenges associated with ad hoc reporting. Designed for business users, WebFOCUS InfoAssist makes complex report development effortless, all due to a perfect balance of robust features and easy-to-use ribbon based interface. This helps business professionals perform data analysis and accelerate decision-making processes.

In this chapter:

- ❑ [InfoAssist](#)
-

InfoAssist

WebFOCUS InfoAssist delivers its cutting-edge functionality using a familiar Microsoft Windows ribbon interface. This powerful ad hoc reporting tool enables rapid and efficient design and deployment of reports and charts. It uses an interactive and fully-customizable WYSIWYG (What You See Is What You Get) development environment, as shown in the following image. Users receive instant feedback throughout the development process to ensure that reports and charts are properly built.



WebFOCUS InfoAssist Key Features and Benefits

The following are key benefits of InfoAssist:

- ❑ Generate highly complex reports, charts, documents, and dashboards from any enterprise information in a single user interface.
- ❑ Convert reports to charts, or charts to reports, with a single click. Changes are visible as content is created in Live Preview.

- ❑ Browse more than 300 enterprise-information sources, including multi-dimensional sources.
- ❑ Analyze multiple reports and charts simultaneously, using advanced tiling options to view data from multiple perspectives.
- ❑ Output report and chart data in a variety of formats, including HTML, HTML5 (charts only), active reports, active Flash, PDF, active PDF, Excel, and PowerPoint.
- ❑ Customize options within the tool (with user preferences), the look of the interface (with application theme), and the output (with document theme).
- ❑ Ability to package a subset of InfoAssist features within a run-time report, using InfoMini.
- ❑ Document mode allows for content to be created on multiple pages, resulting in multi-page documents and tabbed active dashboards.
- ❑ Save and store output files (using the HOLD command) for further processing and the generation of new reports. You can control how HOLD file components are referenced by rearranging the order in the Query pane.
- ❑ Enable subqueries, which are nested queries that can be used in a calculation, filter, or join. A subquery is valuable because it is highly-reusable and it allows users to create more complex queries with minimal effort. You can control how subquery components are referenced by rearranging the order in the Query pane.
- ❑ Create state-of-the-art charts, which utilize the latest capabilities of the HTML5 web standard, including animation, high-quality vector output, and attractive alpha-channel and gradient effects.
- ❑ Create slicers, dynamic selection criteria that can be used to filter reports and charts without saving explicit selection clauses to the procedure.

For More Information

See the following manual at <http://documentation.informationbuilders.com>:

- ❑ *WebFOCUS InfoAssist User's Manual*

Content Management

With WebFOCUS, building and deploying new business intelligence portals is fast and economical. A robust, fully integrated portal development tool accelerates the creation of fully customizable portals that deliver information to end users in the most convenient and personalized manner possible. Information can be altered, changed, or modified on the fly, directly from within the reporting environment.

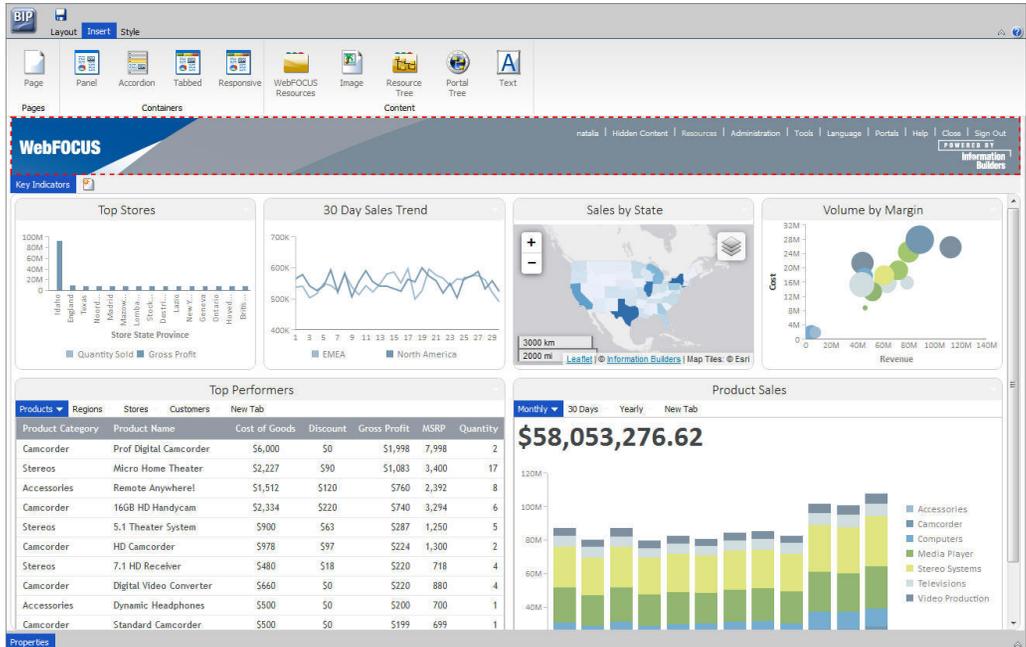
The WebFOCUS Business Intelligence (BI) Portal offers a full suite of web development tools, similar to those used to create popular consumer applications. It is the successor to the Business Intelligence Dashboard (BI Dashboard). It does everything that BI Dashboard does, and more.

In this chapter:

- ❑ [WebFOCUS Business Intelligence Portal](#)
-

WebFOCUS Business Intelligence Portal

The WebFOCUS BI Portal combines the best of web development with unmatched user customization capabilities, delivering a rich, interactive BI experience to any user, on any platform, browser, or mobile device. Users can create a beautiful portal, as shown in the image below, with minimal effort and training.



This highly interactive experience gives users infinite possibilities to personalize the BI experience by tailoring the consumption of information to their own workflow preferences.

The ribbon-based user interface, combined with a Properties Panel similar to industry-standard products like Adobe® Dreamweaver®, offers an intuitive experience to both the BI analyst and the web developer for accessing styles and formatting content, and creating layouts that adapt to any screen size.

The management of portals is made much easier by providing security at both the portal and page level. This allows users to create a single portal for multiple groups and to restrict access to pages when needed.

Additionally, the WebFOCUS BI Portal is tightly tied to the WebFOCUS Client repository and authorization security model, automatically displaying the appropriate view and controls based on user role and group membership.

WebFOCUS Business Intelligence Portal Key Features

The WebFOCUS BI Portal offers the following key features:

- ❑ Simple, self-service access to BI information, both corporate and user-created, significantly minimizes reliance on IT for dashboard creation and maintenance.
- ❑ Rapid creation of comprehensive BI portals, that are unmatched in aesthetics, interactivity, and usability, eliminates expensive or time-consuming custom coding.
- ❑ A familiar and intuitive ribbon-based interface simplifies and accelerates portal design.
- ❑ Dynamic styling eliminates the need for expensive designers and long design cycles, allowing developers to quickly build and deploy visually compelling, fully stylized visualizations and reports that can be automatically applied for each portal and page.
- ❑ Page drill-down links to enable dynamic navigation to pages and reports within your portal, linking to a specific item or point in your content, and passing a parameter from a link to the output, such as a chart or report.
- ❑ Theme controls, including several predefined themes, the Neutral theme, and a Custom theme to enable the styling of the banner, the page tabs, the panels, and the styling of the reports.
- ❑ Responsive design options take content beyond the desktop and deliver a quality experience to users, on any display.
- ❑ Easy portal versioning and customization for departments, partners, suppliers, and customers drives higher levels of adoption, while containing development costs and allowing for the expansion of BI using existing IT resources.
- ❑ A consistent, visually appealing look and feel, regardless of screen size, is ensured through optimization of portal real estate for every device form factor. The introduction of various display containers enables the presentation of more visualizations and reports within less screen space.
- ❑ Page-level security reduces the number of portals to be managed by allowing pages to be hidden from unauthorized groups or users. It also dramatically simplifies daily upkeep in SaaS environments.
- ❑ A new coordinated portal engine allows BI content to be designed in an ad hoc fashion, with individual components linked through global variables for joint interaction and filtering. End users can gain insights from multiple sources, and update content or replace components in complex applications without IT intervention.

- The responsive container is designed to help you build a responsive portal that automatically adapts to different screen sizes and mobile devices, providing an optimal viewing experience for users everywhere. You can build your responsive portal on your desktop, and make it available to users on different platforms. The following image shows an example of a responsive portal displayed on a desktop, tablet, and smartphone.



For More Information

See the following manual at <http://documentation.informationbuilders.com>:

- *Business Intelligence Portal*

Information Delivery

The powerful electronic information delivery capabilities within WebFOCUS allow you to push reports directly to end users, wherever they are, whenever they need them. Reports, alerts, and notifications can be dynamically sent to email addresses, web servers, database archives, mobile devices, printers, or fax machines, on a scheduled basis, or at the moment a critical event occurs. This reduces paper and mailing costs by eliminating the need to print and distribute hard-copy reports. It also allows your business to take a more proactive approach to information sharing by automatically sending vital information directly to decision-makers. These decision makers can then spend less time searching for the data they need, and more time addressing issues, solving problems, and leveraging opportunities. Additionally, large reports can be generated once, split up, categorized, and sent to different recipients, minimizing IT's workload by reducing the need to run similar queries over and over again.

ReportCaster is the WebFOCUS report scheduling, distribution, and report storage solution. It is designed to centralize the execution and distribution of WebFOCUS reports, the contents of URLs, and files. ReportCaster supports multiple administrators and provides a single point of control for managing information distribution within an organization.

In this chapter:

- ❑ [ReportCaster](#)

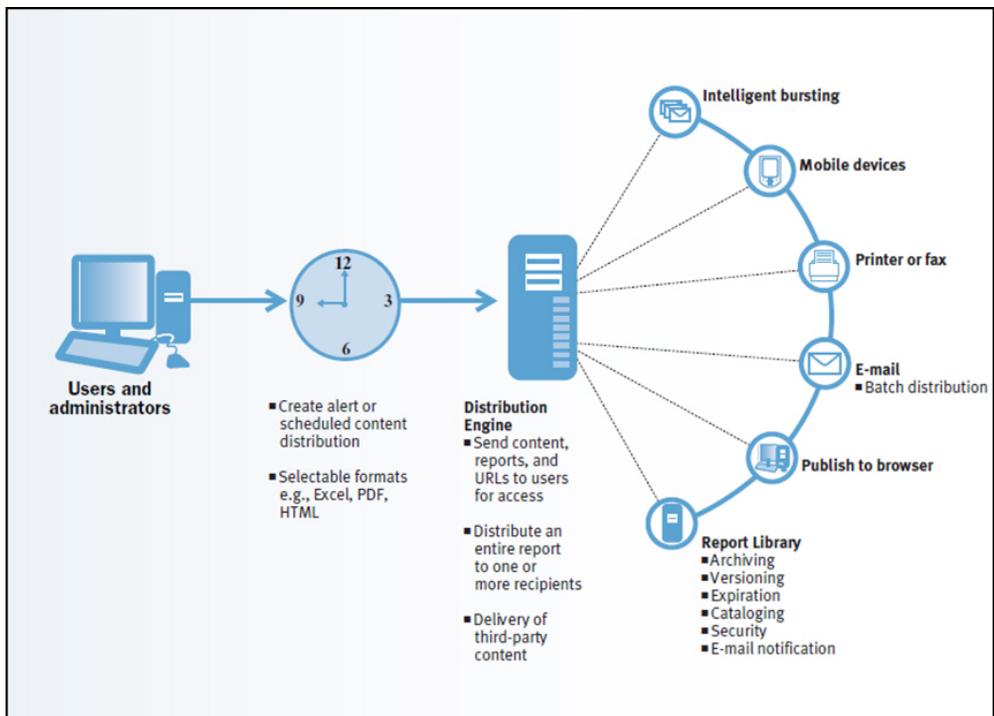
ReportCaster

As a robust report scheduling, distribution, and storage tool, ReportCaster offers a number of features to enhance productivity and improve overall timeliness and accuracy with regard to reporting. These features are designed to enhance report scheduling and distribution, while offering secure access to reporting history and general report storage. These features include the ability to:

- ❑ Automate the execution and distribution of reports.
- ❑ Distribute reports using a variety of methods (for example, FTP and email).
- ❑ Burst reports, with delivery of individual sections to specific users.
- ❑ Securely store and version, or archive, reports.

- ❑ Set up event driven alert processing.
- ❑ Produce reports in a wide variety of formats.
- ❑ Deliver third-party content.
- ❑ Establish secure access to libraries and set notifications accordingly.
- ❑ Implement watch list functionality to monitor reports or activities.
- ❑ Manage failover and load balancing, ensuring the integrity of the application.

One of the features of ReportCaster is that it enables you to schedule a report to run at specific times or intervals. These reports can then be distributed through email or FTP servers, to printers, or to the WebFOCUS Repository that stores Report Library and Managed Reporting reports. Reports distributed to the Report Library or the WebFOCUS Repository are stored in a database and can only be accessed by authorized users. You have the option to distribute the report to a single address or to a group of recipients using the distribution list, distribution file, or dynamic list options.



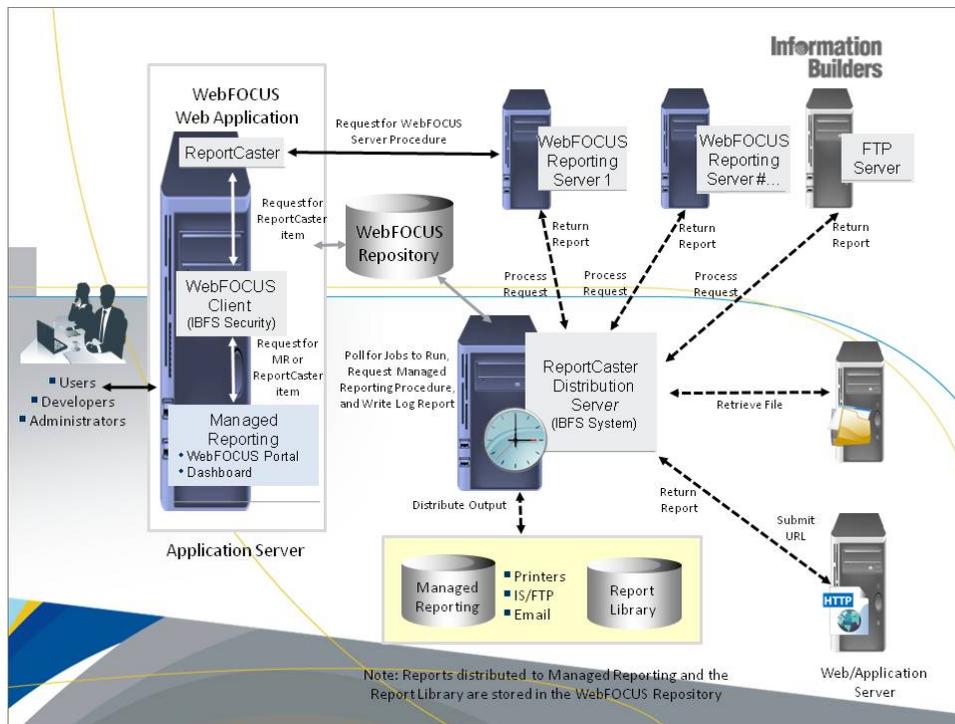
You can distribute an entire report or you can break a report into sections using the ReportCaster burst feature. When you burst a report, you send only the report sections specified.

Overall, ReportCaster fully automates report distribution, scheduling, and secure storage with versioning. With capabilities such as automatic bursting, alert-driven reporting, dynamic reporting formats, and robust delivery methods, ReportCaster aims to ensure that organizations can run, distribute, and securely store reports for present and future access and use.

ReportCaster Functionality

A primary function of ReportCaster is that it offers better scalability, through which information can be distributed to thousands of recipients. For example, distributing month-end financial information to key business executives, or collating and distributing hundreds of thousands of brokerage statements, utility bills, or wireless phone invoices.

The following image shows the ReportCaster components and the processing that takes place when creating a schedule and during schedule job processing.



The ReportCaster Distribution Server is a Java application that governs the process of submitting and processing a scheduled job. You can install the ReportCaster Distribution Server on the same platform as the WebFOCUS Reporting Server and the WebFOCUS components (which reside on the web or application server), or install it on a different platform.

The WebFOCUS Reporting Server processes a scheduled request, retrieves the data, and returns the report to the ReportCaster Distribution Server, which distributes the output. ReportCaster supports multiple WebFOCUS Reporting Servers (specified in the ReportCaster Configuration tool), and one WebFOCUS Repository (specified in the WebFOCUS Client Configuration in the WebFOCUS Administration Console).

When you create a ReportCaster schedule, one of the properties of the schedule set by ReportCaster is the next run time (NEXTRUNTIME) for that schedule. The ReportCaster Distribution Server checks for schedules in the WebFOCUS Repository that have a next run time less than or equal to the current time. Once the scheduled job runs, the NEXTRUNTIME is updated to the next instance that the schedule is set to run.

Access to each of the ReportCaster tools is controlled by a WebFOCUS security operation. This enables administrators to control the users who are authorized to access ReportCaster to perform the following operations:

- ❑ Create and maintain a Distribution List.
- ❑ Create and maintain a schedule.
- ❑ Create and maintain Library Access Lists for Report Library reports.
- ❑ Track the status of a schedule.
- ❑ View and delete schedule log information.
- ❑ Manage the ReportCaster configuration.

ReportCaster also offers a Report Library and an Application Programming Interface (API). The Report Library enables you to store and manage content distributed by ReportCaster for rapid retrieval and future use. The ReportCaster API employs both Java® technology and web services.

ReportCaster Tools

ReportCaster tools are web-based Rich Internet Application facilities, through which you manage the ReportCaster Configuration and the ability to create and access schedules, distribution lists, access lists, log reports, and Report Library reports. Access to each ReportCaster tool is controlled by the WebFOCUS Client security authorization model.

Certain ReportCaster tools can be accessed by authorized users from the WebFOCUS Repository tree in the Business Intelligence Portal, Dashboard, and Developer Studio.

These tools include:

- ❑ **Schedule Tool.** The ReportCaster Basic Scheduling tool and Advanced Scheduling tool provide the options to define the parameters of a schedule, such as when a report procedure (FEX) will run, what format the output will take, and where the output will be distributed.
- ❑ **Distribution List.** A list stored in the WebFOCUS Repository that allows you to specify multiple email recipients to whom the report output of a schedule will be distributed. If you have an LDAP data source, you can access email information that is stored in it by configuring the LDAP Email Setting in the ReportCaster Console Configuration tool. Once configured, you can select email addresses from within the email address book of your company, eliminating the need to type them in manually.

You can also set FTP and Print destinations that allow you to specify the file system location and file name, or the printer to which to distribute the report output.

- ❑ **Access List.** A list that defines the groups and users that are authorized to view the content distributed by schedules to the Report Library.
- ❑ **Log Report.** This report enables you to view information about the processing of a schedule job, such as whether the job executed successfully or not, when the report output was distributed, in what format the report output was sent, and the method of distribution.
- ❑ **ReportCaster Explorer.** The Explorer interface enables users to list and review all ReportCaster items of a specific type at once. Each ReportCaster item type (schedule, distribution list, access list, library, and watch list report) lists with column information specific to the selected item type.
- ❑ **ReportCaster Console.** The Console is the interface that provides access to the administration tools (Server Status, Job Status, Configuration, Global Update) and schedule management tools (Job Logs, Blackout Dates, Execution Ids) for ReportCaster.

For More Information

See the following manuals at <http://documentation.informationbuilders.com>:

- ❑ *WebFOCUS ReportCaster*
- ❑ *ReportCaster Legacy API Developer's Reference*
- ❑ *WebFOCUS Security and Administration*

Microsoft Office Integration and Electronic Publishing

WebFOCUS is integrated with Microsoft Office, providing users with many benefits, including the ability to access any enterprise data directly from within Microsoft Excel. Users can create fully formatted single-worksheet or multi-worksheet spreadsheets and PivotTables containing live data, complete with drill downs, formulas, summations, and color-coding. This integration not only increases productivity, but also eliminates the time-consuming cut and paste work that causes countless errors.

WebFOCUS reports can be available for electronic distribution in the form of high-quality, print-ready Adobe PDF documents, brochures, magazines, and PowerPoint presentations. This capacity increases the speed and convenience of information distribution, while helping you minimize distribution and printing costs.

In this chapter:

- ❑ [Microsoft Office Integration](#)
- ❑ [Electronic Publishing With PDF Compound Reports](#)
- ❑ [WebFOCUS Quick Data](#)

Microsoft Office Integration

Recognizing the importance of providing flexible choices in business analysis tools, WebFOCUS offers industry-leading integration with Excel and PowerPoint. These integration capabilities provide the following features and benefits:

- ❑ The ability to automatically access WebFOCUS Reporting Servers and connected data sources from within Excel using WebFOCUS Quick Data, our ad hoc analysis add-in for Excel.
- ❑ The ability to save a complex WebFOCUS report in Excel format, while preserving report summations, calculations, formatting, and drill downs, to detail data through hyperlinks active in the spreadsheet.
- ❑ Pagination of data across multiple tabbed spreadsheets within a workbook, making it easy to organize and navigate information.

- ❑ The ability to export reports and charts directly to PowerPoint presentations or templates.
- ❑ Automatic updating of data through Excel and PowerPoint templates, ensuring that users receive up to the minute data in approved, centrally located spreadsheets and presentations.

Electronic Publishing With PDF Compound Reports

Compound reports provide sophisticated electronic publishing by combining multiple reports, graphs, and styling features into a single electronic document.

Using a compound report, you can create highly stylized electronic magazines and documents, including brochures, invoices, and annual reports. These can support sophisticated electronic navigation, including Drill Down, Drill Through, and Bookmarks.

A compound report is comprised of individual component reports or graphs that can be positioned anywhere on the page. You can assign specific pages to combinations of reports, and specify how to handle overflow onto additional pages.

A common technique in business reporting is to create two related reports:

- ❑ **Summary Report.** Contains condensed information for a category, such as a business account, with summed data such as total balances and total sales.
- ❑ **Detail Report.** For specified fields in the associated summary report. A detail report contains all the component values that contributed to each summary field value.

Coordinated Compound reports contain reports and graphs with a common sort field that can be burst into individual documents. Pages are generated for each value of the common sort field, with every component displaying the data it retrieved for that value on that page. An example of a coordinated compound report is a customer statement, where each customer receives a document with only their individual transactions.

Using ReportCaster, you can distribute a single generated compound report, or burst to distribute a single instance for each primary key in your data source.

Document Navigation Features

Document navigation features include Drill Down, Drill Through, Bookmarks, and Excel Table of Contents workbooks:

- ❑ **Drill Down.** WebFOCUS enables the integration of powerful hyperlink drill downs to any other report, program, location, or multiple locations within enterprise reports. These hyperlink drill downs are available in all supported output formats, including HTML, Excel, and PDF.

WebFOCUS offers developers three types of drill-down options for enterprise reporting applications: automatic drill downs defined by the metadata, conditional drill downs defined by the unique value of the data, and knowledge mapping, a new and groundbreaking cross-contextual drill down. Knowledge mapping allows powerful analysis across contexts, even across data marts, cubes, and information systems. By integrating knowledge mapping into reports, developers empower users to make intuitive leaps with their enterprise information.

For example, an end user can drill down from the Sales report for a particular product to a Human Resources report for the person who developed that product, and then to the manufacturing report to get information on the supplier who provided the parts for that product, and so on.

- ❑ **Drill Through.** WebFOCUS supports intra-document navigation using Drill Through to link different locations within your document by key values. This makes it easy to navigate within related data in large complex documents.
- ❑ **Bookmarks.** Quick navigation can be provided within a PDF document by placing key values from your data into the PDF bookmarks. The bookmarks link directly to locations within the document.
- ❑ **Excel Table of Contents Workbook.** Enables you to create a workbook with an individual worksheet for each of your primary keys, providing easy access to key information.

For More Information

See the following manuals at <http://documentation.informationbuilders.com>:

- ❑ *Creating Reports With WebFOCUS Language*
- ❑ *WebFOCUS InfoAssist User's Manual*
- ❑ *Creating Reports With Report Painter*
- ❑ *Creating Compound Reports With Document Composer*

WebFOCUS Quick Data

WebFOCUS Quick Data is a Microsoft Office add-in file that enables you to connect Microsoft Excel directly to WebFOCUS reporting tools, where you can access and analyze all of your enterprise data. Once WebFOCUS Quick Data is installed and configured, Quick Data is visible from within Excel through the WebFOCUS menu in the Add-Ins tab. Quick Data has a full Report Generator that enables you to load output to Excel. Using the WebFOCUS reporting engine, you can quickly and easily build Excel reports using data from any system that WebFOCUS can access. This includes all SQL data sources, NoSQL, Hadoop, legacy systems, such as IMS and VSAM, and over 120 additional data sources.

All WebFOCUS Quick Data reports are dynamically updated each time they are opened, or more frequently based on user requests, so the information required for mission-critical business analysis is accurate and up to date at all times.

WebFOCUS Quick Data offers the following key features:

- ❑ Create new reports quickly and easily from enterprise information without having to know SQL.
- ❑ Select and load data directly from a data source into an Excel spreadsheet.
- ❑ Eliminate data entry errors by loading data directly from a database into an Excel spreadsheet.
- ❑ Easily refresh the extracted data in the existing report query using the Refresh Data option.
- ❑ Combine multiple reports from various data sources into a single worksheet.
- ❑ Rapidly generate PivotTables.
- ❑ Burst data into multiple worksheets within a workbook.
- ❑ Refresh data in any server-based Excel application or template.

Built with the power of WebFOCUS industry-leading Excel integration capabilities, WebFOCUS Quick Data also offers:

- ❑ Automatic creation of named ranges.
- ❑ Presentation of computations and totals as native Excel formulas.
- ❑ Output styling, formatting, data filtering, sorting, joining, and drill-down capabilities.
- ❑ Advanced security, including full control over spreadsheet access rights, as well as the ability to lock all or specific cells populated by WebFOCUS, and password-protect entire worksheets.
- ❑ A software-as-a-service (SaaS)-type model that minimizes the time and cost associated with installation and maintenance.

- ❑ Ability to create a new report query directly from Excel by accessing a Structured Ad Hoc Form, an HTML form containing a report procedure that is already connected to a data source.

To maximize its compatibility with your current environment, WebFOCUS Quick Data:

- ❑ Supports the 32-bit version of Excel 2007, 2010, and 2013.
- ❑ Supports the 64-bit version of Excel 2010 and Excel 2013.
- ❑ Supports SSO (Single Sign On) Systems.
- ❑ Integrates with the new security system and report infrastructure that is available in WebFOCUS Release 8.
- ❑ Uses InfoAssist for reporting.

Monitoring, Governing, Analysis, and Security

Repositories that store Managed Reporting content, ReportCaster information, security roles and privileges, and other metadata for WebFOCUS web-tier components have been unified into a single RDBMS-based repository, which simplifies administration and configuration. The new security model is extremely flexible, allowing for custom roles, granular assignment of privileges, and control of the user interface experience. New multi-tenancy capabilities facilitate centralized administration and deployment of SaaS and externally-facing business intelligence applications. For new implementations, WebFOCUS Resource Templates simplify the creation of security policies for both enterprise reporting and multi-tenancy SaaS deployments.

Resource Analyzer and Resource Governor tools help Information Systems (IS) organizations analyze and control end user data access, as well as provide site-specific control options.

In this chapter:

- ❑ [WebFOCUS Client Repository and Authorization Security](#)
- ❑ [Resource Analyzer and Resource Governor](#)

WebFOCUS Client Repository and Authorization Security

The WebFOCUS Client repository and authorization security model uses an implementation of role-based access control (RBAC) to enforce security across all resources in the repository. The flexibility of the new model enables an administrator to implement security at a granular level for every resource in the WebFOCUS repository, if needed. User actions can be permitted for individual combinations of users and resources. Access can be granted, or specifically denied, on a group or individual level, and it can be inherited from higher folders.

The WebFOCUS Client repository and authorization security model expands and generalizes the access to Managed Reporting and business intelligence assets.

The highlights of the WebFOCUS Client repository and authorization security model include:

- ❑ **Resource Templates.** To help organizations become productive more quickly, WebFOCUS includes resource templates. These templates create folders, portals, groups, roles, server application directories, and security rules to help enterprise and SaaS providers launch new departments or customers. You can also develop your own custom resource templates.

- ❑ **Security Zones.** Using security zones, you can authenticate users with different methods based on their network location.
- ❑ **Remember Me.** Administrators can configure an option so users can bypass the sign in page.
- ❑ **Enhanced Configuration for Trusted Connections.** Using the WebFOCUS Administration Console, you can configure a trusted connection to the Reporting Server, where the user ID and groups are passed in the connection protocol.
- ❑ **Enhanced Security Integration With LDAP and Active Directory.** LDAP and Active Directory authentication and authorization are facilitated through the Reporting Server LDAP security provider. WebFOCUS is configured to authenticate and authorize users to the Reporting Server.
- ❑ **Authentication and Authorization to Data in an RDBMS.** WebFOCUS can authenticate and/or authorize users based on information maintained in an RDBMS.
- ❑ **Developing a Custom Security Provider.** Custom authentication and authorization solutions can be developed using the Reporting Server custom security provider interface. The custom provider can access security information from any source accessible to one of the Reporting Server data adapters.
- ❑ **Pre-Authentication Support for OpenID.** WebFOCUS can be configured to authenticate users through an OpenID provider, including Google Accounts, Yahoo, and AOL. You can also use this feature to integrate WebFOCUS with an in-house OpenID service to provide users with a single sign-on experience.

Designing a Security Policy

As an administrator, you can create a comprehensive security model for your WebFOCUS implementation. To design security that fits the needs of your organization, you must consider several fundamental issues:

- ❑ **Authentication.** One of the primary decisions to make about any application is whether you need to know and control who is allowed to execute it. Authentication is the process of confirming the identity of a user.
- ❑ **Authorization.** Once you have authenticated a user, the next step is to determine, and then enforce, an appropriate level of access. Authorization is the process of enforcing user privileges to control the access to resources and tools within an application.
- ❑ **Confidentiality.** Confidentiality ensures privacy, usually by encrypting information transmitted between, or stored on, components in an environment. Encryption may be weak or strong, and can be based on private or public encryption schemes. A decision regarding which data is sensitive is different for every organization.

- ❑ **Data Integrity.** Data integrity is the assurance that information cannot be altered without proper authorization.
- ❑ **Auditing.** Auditing tracks user access to tools and resources, and also logs important administrative actions, such as adding users to groups. All copies of trace files can be saved into a single zip file. The License Analysis report provides information on the total number of licenses by license type, the number of licenses in use by license type, and an analysis of license assignment by group and by user.

Components of the Security System

The basic components of the security system are privileges, resources, and rules. WebFOCUS determines the security policy for each user by determining which combination of rules applies to the user for each specific resource. The rules control which privileges are available to each user under different circumstances. For example, a user may have the privilege to edit a resource in one folder, but not in another.

Privileges

A privilege is an atomic function that controls access to a tool, resource, or ability. For example, different privileges control access to each of the following:

- ❑ Folders, which can contain procedures, library content, schedules, and other resources.
- ❑ Context menu options, such as the ability to run a procedure or delete a folder.
- ❑ The Administration and Tools menus, within the menu bar, and the menu items within them.
- ❑ Resource tree nodes, which enable access to resources on Reporting Servers.
- ❑ The list of users available within Security Center to a group administrator in an enterprise deployment, or to a tenant administrator in an SaaS deployment.

Similar privileges are grouped into roles so they can be used in security rules. Privileges and roles are not assigned directly to users or groups, but are used in rules that associate users and groups with resources. For example, you might want to create a role containing all the privileges you wish to grant basic users, or a role containing all the privileges you wish to grant developers.

Resources

A resource is any folder, item, library content, portal, privilege, report procedure, role, user, or group to which access can be controlled or to whom abilities can be granted.

Different resource types have different controlled privileges. For example, all resource types can be deleted, but report request resources cannot be made members of a group, and user resources cannot be run or scheduled.

Rules

Rules determine what a user is allowed or not allowed to do in any particular location. A rule associates a resource with a subject (a user or group), a role, an action (such as permit or deny), and a scope (whether the rule applies to only the resource or also to its children). Through these rules, users are either permitted or denied the various privileges contained in the role.

For More Information

See the following manual at <http://documentation.informationbuilders.com>:

- ❑ *WebFOCUS Security and Administration*

Resource Analyzer and Resource Governor

Resource Analyzer provides Information Systems (IS) organizations with the ability to manage the growing volume and unpredictable nature of ad hoc data access. Resource Analyzer monitors data usage activity by collecting the attributes of requests and storing them in a set of Usage Monitoring tables. It automatically keeps track of each request, which data sources and columns the request accessed, when it was run, how long it took, which resources it consumed, and more. Resource Analyzer allows you to report on, graph, and analyze end-user request traffic.

Resource Governor controls monitoring, system configuration parameters, and governing rules. It provides preemptive governing for requests issued to both relational and non-relational data sources.

Administering Resource Management From the Web Console

The Usage Monitoring facility allows you to monitor requests as they are submitted by users, and logs information about request usage. This information includes the usage statistics associated with data retrieval or data manipulation. This request information is stored in Usage Monitoring tables. You can specify the Monitor Preference, which allows you to change what information is collected for monitored data sources.

The Web Console enables you to administer Resource Management.

You can:

- ❑ Enable and disable monitoring and governing.
- ❑ Maintain the Repository.

- ❑ Remove Resource Management.
- ❑ Enable and disable global monitoring.
- ❑ Set monitoring preferences.
- ❑ Add data sources to be monitored.
- ❑ View the properties of data sources and the sample data they produce.
- ❑ Access reports.

For More Information

See the following manuals at <http://documentation.informationbuilders.com>:

- ❑ *Resource Analyzer Administrator's and User's Manual*
- ❑ *Resource Governor Administrator's and User's Manual*

Extended Business Intelligence

Build more application types with extensions to the WebFOCUS platform.



Chapter 9, *Performance Management* on page 55. Performance Management Framework (PMF) stores and tracks metrics and aggregates these metrics into scorecards to evaluate your enterprise goals.



Chapter 10, *Data Discovery* on page 61. WebFOCUS Visual Discovery and WebFOCUS Visual Discovery Analyst Edition (AE) enable data analysts to visually explore large amounts of data.



Chapter 11, *Predictive Analytics* on page 69. RStat is a data mining and predictive modeling workbench, which bridges the gap between backward-facing and forward-facing views of business operations.



Chapter 12, *Search-Based Applications and Social Media Analytics* on page 73. Magnify is a powerful enterprise search solution that makes any structured or unstructured data easy to index and find, regardless of its source or location.



Chapter 13, *Mobile Applications* on page 77. WebFOCUS Mobile enables users to access and analyze any information from any smartphone or tablet.



Chapter 14, *Write-Back Applications* on page 81. WebFOCUS Maintain is an application development tool that creates web-based data maintenance applications to be deployed across an enterprise.



Chapter 15, *High Performance Data Store* on page 83. WebFOCUS Hyperstage is an embedded data store that dramatically improves the performance of your business intelligence environment.



Chapter 16, *Embedded Applications* on page 85. WebFOCUS RESTful Web Services provide an API into WebFOCUS so that you can use your preferred development environment to embed WebFOCUS content within your application.

Performance Management

Performance management includes activities that ensure that goals are consistently being met in an effective and efficient manner. Performance management can focus on the performance of an organization, a department, employee, or even the processes to build a product or service, as well as many other areas.

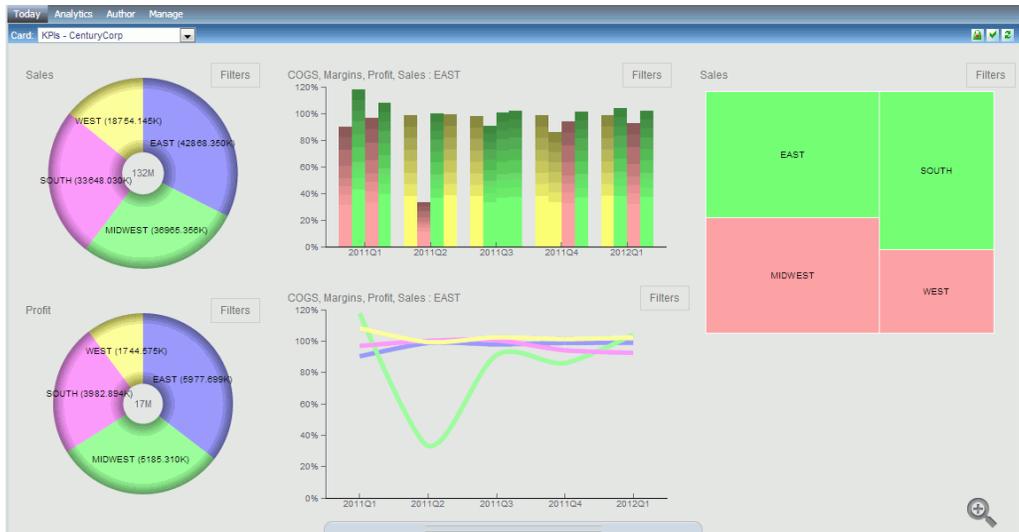
Performance Management Framework (PMF) is a WebFOCUS application that allows your enterprise to store and track metrics, and aggregate these metrics into scorecards to evaluate your enterprise goals. It also provides tools to help you keep the metrics updated with current data. PMF metrics are multi-dimensional, to let employees at all levels track their own progress and see how their work integrates with overall enterprise strategy.

In this chapter:

- ❑ [Performance Management Framework](#)
 - ❑ [Healthcare Performance Analytics](#)
-

Performance Management Framework

PMF is a standard WebFOCUS application that runs on a WebFOCUS Reporting Server. It takes advantage of many of the capabilities of WebFOCUS, including tabular and financial reporting, user configuration, document distribution, and security.



PMF utilizes standard tools, including tabs, trees, views, and forms, to provide advanced capabilities in three core areas:

- ❑ **Communication.** PMF provides you with multiple ways to summarize your metrics, communicate performance trends, distribute information to constituents, show important metrics, and track related projects and processes. You can also easily set up, distribute, and centrally manage customizable dashboards for each user.
- ❑ **Collaboration.** PMF includes many web 2.0 style collaboration capabilities that enable users to mesh their work with that of colleagues to discover, analyze, inform, document, and act.
- ❑ **Analysis.** PMF utilizes powerful analytic tools that enable you to trend, track, and discover the why behind the performance of your organization.

PMF delivers these communication, collaboration, and analysis capabilities through the following functionalities:

- ❑ **Fully Comment Capable.** Feedback blogging enables you to instantly enter feedback comments about measures and objectives to explain variances from targets. Each instance of feedback is stored and tracked by the user, and provides valuable data, including Owner ID, the date and time the feedback was entered, percent of target achieved, and the indicator color at the time of input. PMF also captures information on how metrics are calibrated, allowing for full compliance with audit standards.
- ❑ **Planning, Budgeting, and Forecasting.** PMF has the capability to plug in standard budgeting and forecasting applications. These can be Information Builders produced, or an external budgeting or forecasting system. An open API allows you to integrate any forecasting application with PMF, to allow PMF data to be used in the forecasting tool, and to allow output of completed forecasts into PMF to create targets.
- ❑ **Customizability.** Every aspect of PMF is developer customizable. The scorecards, windows, forms, style sheets, and the underlying database are built with production WebFOCUS components. You can use WebFOCUS capabilities to change, revise, or extend any part of PMF.
- ❑ **User-friendly Scorecard Setup.** All work flow for adding, changing, and deleting scorecards and scorecard data, and input of strategies, perspectives, objectives, measures, and themes, is done through user-friendly, web-based forms and wizards.
- ❑ **Powerful Analytics.** PMF has a full suite of views that allows analysis of your organization metrics, both with and without a strategic component. In PMF, there are many ways you can slice and dice the multi-dimensional metrics. Structured ad hoc tools provide full ad hoc capability, so you can design information presentations in millions of ways. PMF data is easy to integrate with the financial, process, and operational data for your enterprise.
- ❑ **Thin-client Strategy Map.** Unlike many other systems, PMF includes a built-in interactive Strategy Map. Based on industry-standard Scalable Vector Graphics (SVG), the Strategy Map has a live relationship to underlying scorecards and data and allows you to save your changes to the underlying scorecard, thus giving you an easy-to-use graphical method for updating the strategic flow of your organization.
- ❑ **Multi-Dimensional Data.** PMF has a built-in, cross-platform OLAP database that can be installed and used with any RDBMS. The database permits assigning measures to relationships with standard dimension types (for example, Location, Product, Customer, Time, and Organization). In PMF, you can create up to 15 user-defined dimensions.

- ❑ **Loading Data.** PMF built-in dimension and measure loaders allow you to design your data loads and feeds for PMF using the flexible, powerful data extraction capabilities built into WebFOCUS. Scheduling your loads and feeds is an automated process.
- ❑ **Scorecard Inheritance.** PMF lets you cascade your scorecards so that you can create a top-level scorecard for high-level management, and then let your scorecards for other levels of the organization hierarchy inherit one or more aspects of the management scorecard.
- ❑ **Standard Analysis Views.** PMF includes a pre-packaged set of financial, user, customer, location, time, and trend views that allow you to be instantly productive with the application as soon as it is deployed. You can also use the powerful ad hoc reporting capability of WebFOCUS to create any other views you need.

WebFOCUS Components Used by PMF

PMF incorporates nearly every product capability across the WebFOCUS product line. The WebFOCUS system components required for basic operation include the following:

- ❑ **WebFOCUS Reporting Server and WebFOCUS Client.** Provides a standard reporting infrastructure including data access drivers, complex business rules, exports to Excel, HTML, and PDF, charting capabilities, and drill downs.
- ❑ **WebFOCUS Managed Reporting.** Provides user administration, a repository for storing components, and ad hoc and OLAP (online analytical processing) tools if you choose to expand the PMF application to include these.
- ❑ **WebFOCUS Business Intelligence Portal.** Supports the selectable views needed for each distinct role in the PMF user base. Provides a customizable user interface.
- ❑ **WebFOCUS Maintain.** Provides a platform for updating all data in the customer framework.
- ❑ **WebFOCUS ReportCaster.** Delivers alerts and schedules metric loads. Also offers a library that allows tracking and history.

Optional components include:

- ❑ **Adapters.** For data and applications.
- ❑ **ESRI.** Allows GIS (Geographic Information System) operations to be performed in the field on a mobile device, on a desktop, and throughout the enterprise.
- ❑ **Integrated Search (Magnify) Support.** PMF supports full integration with WebFOCUS Magnify, which enables you to search for feedback, and measure tasks, objectives, measures, and dimension-level values.

- ❑ **Mapping/GIS Support.** PMF allows you to place Google Maps™ or ESRI in a dashboard gadget, and integrate Google Maps capabilities directly into the PMF dashboard.

For More Information

See the following manuals at <http://documentation.informationbuilders.com>:

- ❑ *Performance Management Framework*
- ❑ *Performance Management Framework Installation and Configuration Guide*

Healthcare Performance Analytics

The Healthcare Performance Analytics Pack (HPA) for PMF is a comprehensive data mart and reporting solution for healthcare analytics and management. It is a complete set of purpose-built performance metrics for helping customers manage healthcare networks facilities, and for monitoring the management of healthcare networks and facilities for payers. It also consists of a complete set of purpose-built performance metrics for helping customers manage regulatory compliance with clinical standards.

- ❑ The metrics are organized into clear categories and pre-organized in PMF for rapid deployment of analytics.
- ❑ The metrics come with a Detail reporting warehouse, predesigned for deployment to most major RDBMS systems.
- ❑ The detail data warehouse includes comprehensive Business Views that you can use to create any number of optimized reports.
- ❑ The package also includes an ad hoc reporting facility that allows rapid design of reports against the Detail data warehouse. These reports can be quickly integrated into PMF Dashboards and used as detail drills from PMF metrics.
- ❑ The metrics are fully documented, providing full information on appropriate use of each metric, and full ETL instructions on how to load the source data for these metrics from your source EDW, EDM, and operational systems into the data warehouse.
- ❑ The system is designed to fully integrate with Information Builders Performance Management Framework to extend into performance management for healthcare.

For More Information

See the following manual at <http://documentation.informationbuilders.com>:

- ❑ *Healthcare Performance Analytics for PMF*

Business analysts play an increasingly critical role in real-time decision making. They need the ability to quickly and accurately analyze data from all sources, process it, and deliver results, without having to be an expert statistician or needing to request IT involvement.

WebFOCUS InfoDiscovery, part of Information Builders business analytics suite, is an in-memory analytics solution with cutting-edge data visualization capabilities. Analysts can perform in-depth, intuitive analysis in real time without the need for a pre-built data model.

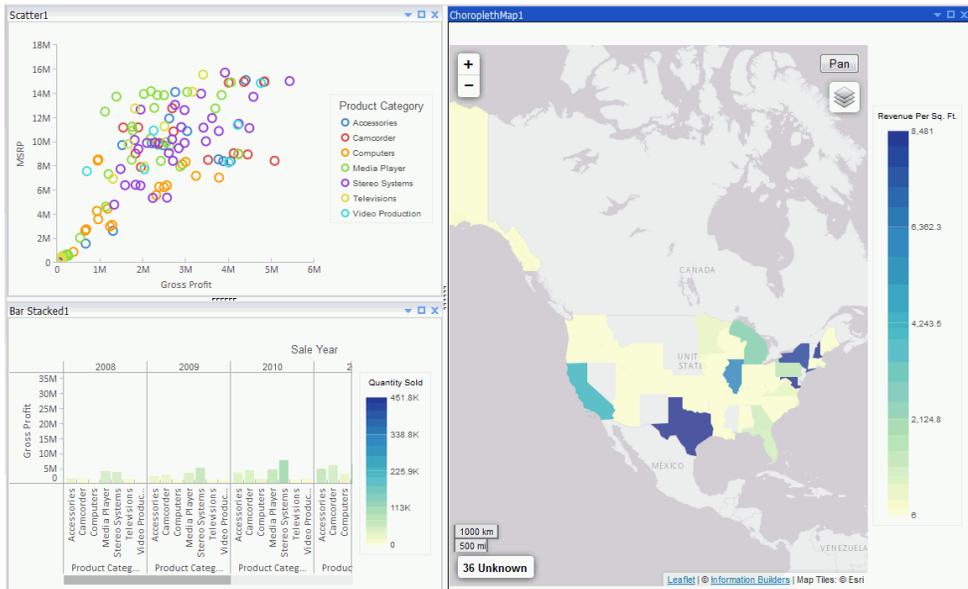
In this chapter:

- ❑ [WebFOCUS InfoDiscovery](#)
-

WebFOCUS InfoDiscovery

InfoDiscovery is a web-based self-service data discovery tool that empowers users to gain deep insights. Analysts and business users can retrieve and decipher data from spreadsheets, databases, and other sources faster than ever before, by easily combining, preparing, analyzing, visualizing, and sharing information, without the help of IT. Multiple charts can be combined into interactive analytic dashboards that can be used to find the answers to pressing questions and issues.

Unusual, yet critical items, that would normally go undetected in a summarized report stand out clearly with InfoDiscovery. It accelerates interpretation and understanding by applying charts, maps, filters, and colors, combining them into a single interactive dashboard. Large volumes of data, aggregated at multiple dimensional levels, can be represented in a compelling and meaningful way on a single screen, giving analysts the ability to effortlessly discover the patterns, trends, and relationships hidden in raw data. These new insights can boost intelligence and enhance decision making across the enterprise.



InfoDiscovery Key Benefits

The following are key benefits of InfoDiscovery:

- Ease of Use.** InfoDiscovery provides the ease of use of a desktop tool in a self-contained, thin-client, browser-based environment.

- ❑ **Blend and Prepare Big Data, Enterprise Data, and Personal Data.** Blend personal data sources with enterprise sources. Data from spreadsheets, local data stores, databases, transactions, and applications can be blended, prepared, and joined, to deliver insightful visualizations.
- ❑ **Analytics That Speeds Discovery.** Trends, patterns, and connections hidden within data are discovered with a library of intuitive pre-built charts, maps, grids, filters, sliders, and other interactive data discovery tools. Users can explore rich visualizations to instantly understand data and find fast, accurate ways to answer questions, seize opportunities, or resolve problems.
- ❑ **Share and Collaborate.** A central repository allows users within a workgroup to collaborate and publish dashboards with a single click to the web, mobile devices, or other enterprise sources.

InfoDiscovery Highlights

The following are highlights of InfoDiscovery:

- ❑ **Geographic Analysis.** Intuitive and compelling maps blend spatially-related data with external demographic or market information to help users understand the location of customers, potential customers, suppliers, and employees. InfoDiscovery includes access to cloud-based ESRI Maps, the most advanced mapping service. Users can also utilize color-coding and points on maps, lasso areas to view the related attributes of a particular location, or leverage 18 layers of detailed zoom, from a world map down to local neighborhoods.
- ❑ **Matrix Charts for Spotting Outliers.** Graphic matrix charts make it easy to compare many charts side by side. They allow authors to create rows and columns of the same chart, so they can discover more detail about the things they are measuring. For example, a simple chart showing sales by region could be displayed in a matrix to show sales by region broken down across gender and by different products. More detailed dimensions can be used to further investigate and compare the data.
- ❑ **Color By Attribute and Multi-Dimension Charts to Deliver More Insight.** Bar charts are a great way to compare data across categories, or to break data down into stacked bars. The InfoDiscovery Color By attribute takes it one step further, allowing additional dimensions or measures to be presented by shading the bars in a gradual scale. For example, this will help show which product also produces the highest average margin, within the same space. By using color, popup tool tips, and matrix attributes that break charts down into finer dimensional detail, more information can be conveyed in less space than crosstab reports or spreadsheets.

InfoDiscovery Components

The following are key components of InfoDiscovery:

InfoDiscovery Workbench. The first thin-client data discovery tool. Modeled after the Microsoft Office ribbon-based interface, it provides a comfortable and familiar environment for analysts to quickly build interactive visualizations. Those visualizations can also be stored and shared with other analysts, who can enhance them further in the workbench, or deploy them directly to business users.

Key InfoDiscovery Workbench features include:

Visualization and Analysis

InfoDiscovery provides a new mode of visual analytic design that allows business users and analysts to learn about their data through a visual and cumulative process. No matter how big the data set, InfoDiscovery can deliver immediate visual feedback through:

- ❑ **HTML5 Chart Library.** A comprehensive library of rich, interactive charts and visualizations, based on the latest HTML5 technology, which can be accessed through any browser or device.
- ❑ **Tool Tips.** Authors can add additional measures and descriptive information in the form of a popup tool tip. Users learn more about the item as they hover over the item and the tool tip appears. For example, as a user hovers over a bar on a bar chart that shows sales by product, the tool tip may display the largest sale, the average sale size, and the number of sales that make up that bar. Tool tips can also list all of the hyperlinks (drill downs) available to provide further detail about an item.
- ❑ **View Data.** Authors can identify and capture data associated with a visualization, and easily share that data with any user through email.

Design and Development

InfoDiscovery eliminates cumbersome, iterative report design processes between business users and IT. Business users are empowered with interactive tools and data access capabilities, so they can efficiently satisfy their own requirements for deep visual analysis.

- ❑ **Responsive Layout.** Visualization objects are automatically organized and optimized for any device to provide clear understanding and interpretation, enabling users to focus on the meaning behind the data.

- ❑ **Auto Layout.** Visualization objects are automatically organized to provide the clearest understanding and interpretation. Screen space is dynamically distributed between these objects as the user builds their visual display. Adjustments can be easily made by pointing, clicking, and dragging the divider between objects. Users can spend less time worrying about screen design and more time focused on the meaning behind the data. Visualizations are fluid, automatically filling the space of their container, ensuring that dashboards will display as perfectly on a tablet as they will on a high-resolution desktop monitor.
- ❑ **Automatic Visual Isolation and Filtering.** Visual isolation helps users understand how outliers, both good or bad, are constructed, and to determine which attributes of an outlier make it unique. They can then filter out obstructing data to more closely pinpoint and document those attributes.
- ❑ **Filter Controls.** Advanced controls, such as sliders, calendar controls, and check boxes, make it easy to add or eliminate partial data sets from visual displays.
 - ❑ **Sliders.** Add or remove data from a range of numbers. For example, eliminate all transactions below \$25,000 from sales analysis.
 - ❑ **Calendar Controls.** Adjust data by date. For example, view only transactions for the last two weeks of March.
 - ❑ **Check Boxes.** Remove larger sets of data from analysis. For example, analyze sales for just the Eastern region or sales for all regions except the East.
- ❑ **Continuous Visual Query.** Statistics show that information is interpreted more efficiently and accurately when it is presented visually. With InfoDiscovery, users can blend large volumes of data into interactive visual displays that answer hundreds of questions in a single screen. By combining summary and detail data in an InfoDiscovery Dashboard, rather than displaying it in spreadsheets, users can gain a deeper understanding of their data, which leads to faster, better decisions.

InfoDiscovery Server

The InfoDiscovery Portal and Repository is a secure adaptive container for all InfoDiscovery visualization projects. It lets authors organize pages of visualizations, views, and style them to the default *look and feel* of their organization. This streamlines and accelerates the creation and deployment of web-based InfoDiscovery applications. Other business users can interact with resulting visualization projects to visually query and interrogate the underlying data.

All work is stored in a central web-based repository. Administrators can define groups of users with different roles and privileges, allowing content to be quickly shared, while securing it from unauthorized viewing. The repository allows a single user of InfoDiscovery to get started as if they were using a simple desktop product, but they can quickly grow to a work group of analysts and business users who can share their work across an organization.

Key InfoDiscovery Portal and Repository features include:

- ❑ **Application Container.** The InfoDiscovery Portal simplifies deployment of work to other users, so authors can focus their efforts on building rich, informative visualizations. Visualizations can be stored in a simple folder system that makes it quick and easy to add new pages. Portals can also be branded with company logos and themes, so, in an instant, an entire web-based application, complete with URL web address and secure sign on, is available for users.
- ❑ **Secure Central Content Repository for Groups of Users.** A rich analytics workgroup environment allows users to work alone or in groups. They can rapidly build compelling, intuitive, interactive analytic dashboards that can be accessed securely from any web browser on any device. Users can be identified as:
 - ❑ **Authors/Administrators.** Users who can do everything from defining and blending data sources to building new visualizations, designing portals for other users, and managing secure access to their work. These users can get started quickly, without worrying about security and deployment, and can analyze data immediately. InfoDiscovery automatically organizes their work under the covers, and allows them to worry about security and deployment when they are ready.
 - ❑ **Power Users.** Users who can run or edit projects created by the author, or create new visualizations from the data they have been given access to.
 - ❑ **Viewers.** Users who can view and use the resulting visualization dashboards to investigate their own data from the secure InfoDiscovery Portal. All content and data is automatically tailored according to their specific access rights.

High-Speed Analytics Sandbox

The InfoDiscovery High-Speed Analytics Sandbox is a *columnar* data store that can be used to store large amounts of data for lightning-fast retrieval, aggregation, and calculation, without the need for complex indexing or pre-aggregation of data. Because it uses memory efficiently, but is not limited to computer memory, the Sandbox can deliver near-instant response times for very large data sets.

Key high-speed analytics Sandbox features include:

- ❑ **Data Compression.** Information is compressed by as much as 90 percent, which provides five to 20 times greater speed performance over relational data stores.
- ❑ **QuickCopy Utility.** This utility allows authors to quickly and easily move complete copies (or subsets) of an original data set. It mimics the original metadata schema, so that analysts familiar with access to the original will recognize all aspects of the copy. QuickCopy also creates an isolated sandbox for analysts to use, so the performance of the original operational data is not impacted. And, the QuickCopy bulk load facility gives analysts the ability to refresh the combined data sets quickly, either on-demand or on a scheduled basis.
- ❑ **Join/Blend Utility.** The Join/Blend utility enables users to blend data from multiple sources into a single view. Join/Blend intelligently aggregates the data, so users do not have to worry about the incorrect results that are common with relational joins.

InfoDiscovery Differentiators

The following are differentiators of InfoDiscovery:

- ❑ **Discovery for Workgroups.** A rich analytics workgroup environment allows users to work alone or in groups to build compelling, intuitive, interactive analytic dashboards. Users can be identified as group administrators to manage roles and privileges, data administrators, analysts, or business users who can run visualizations only.
- ❑ **Metadata Reusability.** Dynamic creation of metadata, under the covers, can be re-used for other projects, such as reporting, predictive analytics, or ETL.
- ❑ **Small Footprint and High Performance.** InfoDiscovery includes a high-speed data store or sandbox that can deliver near-instant response times for very large data sets. On average, it compresses data at a ratio of 10:1, but can achieve much higher compression levels, with some clients experiencing ratios in the 30:1 to 40:1 range. This compression drastically reduces I/O and delivers excellent performance, particularly for ad hoc visual discovery, without indexes or manual tuning.
- ❑ **InfoApps and Smart Dashboards.** Documents, images, graphics, and maps can be inserted into dashboards to deliver greater intelligence. Users can also highlight and filter associated data. Dashboards can connect to operational data, or be connected to the Sandbox to accelerate analytics.
- ❑ **Comprehensive Security.** Self-service productivity is combined with powerful security features, such as seamless single sign on, metadata-based deployment, multi-tenancy templates, and a fine-grained security model with authorized users based on RDMS data or web services.

For More Information

See the following manuals at <http://infocenter.informationbuilders.com/idis/index.jsp>:

- ❑ *Installing InfoDiscovery*
- ❑ *InfoDiscovery Getting Started*
- ❑ *InfoDiscovery Reference*
- ❑ *InfoDiscovery Release Guide*

WebFOCUS offers the industry's first fully integrated business intelligence and data-mining environment, seamlessly bridging the gap between backward-facing and forward-facing views of business operations.

WebFOCUS RStat supports common statistical and data mining tasks, and the development of predictive models that can be deployed as scoring applications on any WebFOCUS platform. Built on the market-leading R engine, a powerful and flexible statistical programming language, this comprehensive platform delivers results that are consistent, complete, and correct.

In this chapter:

- ❑ [WebFOCUS RStat](#)

WebFOCUS RStat

RStat enables data miners and business intelligence developers to collaborate with the same tools to access, manipulate, and transform data, develop predictive models, and incorporate this scoring functionality into operational business intelligence applications. Data models include decision trees, neural networks, linear and logistic regressions, random forests, support vector machines, boosting, association rules, K-means, and hierarchical clustering.

WebFOCUS RStat includes:

- ❑ An intuitive user interface in a WebFOCUS desktop product to access the most widely used statistical and data mining models: Decision Trees, Neural Networks, Linear and Logistic Regressions, Random Forests, Support Vector Machine, Boosting, Association Rules, and K-means, Ewkm, Hierarchical, and BiCluster clustering.
- ❑ The ability to prepare the data, for example, extract it from any data source, manipulate and transform fields to prepare data for analysis, and perform the modeling in Developer Studio.
- ❑ Access to a simple web form so that you can, with the click of a button, generate scores and predictions without having to know anything about data mining and modeling.
- ❑ The ability to perform common data exploration tasks and various distribution tests, in order to determine the most appropriate modeling technique.
- ❑ The ability to explore the data visually with a robust set of charts and interactive visualizations.

- ❑ The ability to incorporate predicted values and scores into any WebFOCUS report, so that users can benchmark their intuitions and expert opinions to ensure that they have taken all factors into consideration when making decisions.
- ❑ The ability to leverage the numerous packages developed by industry experts and scientists to perform highly complex analyses and rapidly deploy applications. RStat is extensible through scripts and open source, which makes this leveraging possible.
- ❑ Support on 32-bit and 64-bit systems.

Data Mining With WebFOCUS RStat

Until recently, data mining was a branch of business intelligence (BI) used only by expert statisticians. Few people understood their mathematical methods. Thus, statistical results were communicated only to upper management. But, increasingly, operational users are required to make decisions and take actions based on their expectations about the future.

Most reporting applications do a good job of recording what has happened, but that is just a rear-facing view of the business. They do not provide guidance about future actions. To compete effectively in the business world today, decision makers at every level of an organization need access to predictive modeling applications. Police officers need to determine where crimes are likely to occur so patrol cars can be in areas where they are most needed. Marketing managers need to predict who is most likely to respond to an email blast or ad campaign. Auto insurance personnel need to create risk profiles based on the likelihood of certain individuals to file claims.

RStat bridges the gap between the rear-facing and forward-facing views of business operations. It offers the first fully integrated BI and data mining environment for developing predictive models and distributing scoring applications, so operational users can make decisions with confidence instead of relying on their instincts.

Benefits of a Fully Integrated Environment

Data mining is the technique of identifying patterns and relationships within large databases through the use of advanced statistical methods. It extracts historical data and then applies statistical techniques to build a model. Traditionally, highly trained analysts and statisticians built these models. However, unless their results were widely deployed, they ended up as isolated research products, doing little good for the business.

A scoring application deploys analytic models for repeated use on new data sets by non-technical users to support decision-making. For example, a marketing analyst would use a scoring application to score new mailing lists in order to screen for the best possible respondents. In simple terms, the scoring application labels a prospect as either good or bad.

Statisticians spend much of their time extracting and querying data. But, by working in the same BI environment, developers can create queries that statisticians reuse to create models. The statisticians can compile their models as standard WebFOCUS functions that BI developers turn into WebFOCUS scoring applications, deployable on any platform. There is no need to work with multiple tools or to pay for extra licenses. By unifying BI and data mining environments, RStat reduces licensing costs by consolidating software tools. This has the corollary effect of simplifying maintenance and making optimum use of IT resources.

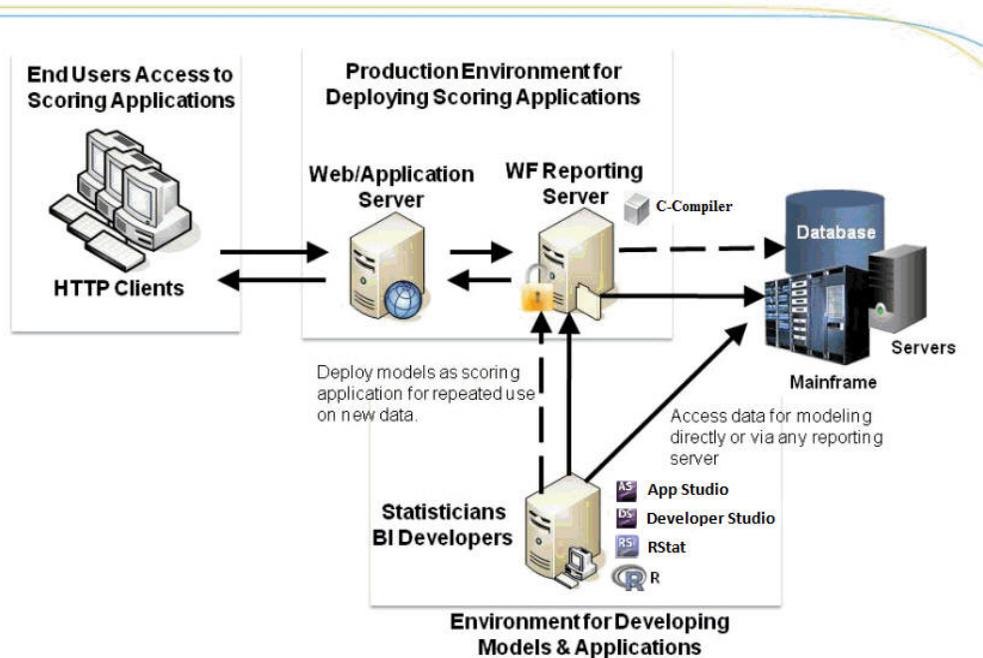
RStat Architecture

RStat is built on the open source R engine. R is well known as the most powerful and flexible statistical programming language available. It is used by over one million analysts worldwide, is taught in countless universities, and has more than one thousand packaged extensions for various types of analysis exercises.

R is a powerful scripting environment designed for technical users. RStat integrates R within Developer Studio. This user interface provides an easy and intuitive workflow. It incorporates the top most commonly used data mining routines, including regression decision trees, neural networks, clustering, association, support vector machine, and other algorithms that are familiar to business and engineering students. A wide variety of users, including statisticians, business analysts, and other professionals, can easily use RStat to develop models.

The unique capability to compile models as native WebFOCUS functions directly in RStat enables an organization to spread data mining benefits to operational users. Those users will find the scoring application familiar and accessible. Clicking on a web-based form, users can generate scores and predictions to support decision-making, without having to know anything about data mining and modeling, and without the need to install R or other scoring engines in the operational environment. This ease of use and scalability will drive organizations to adopt more and more users in the predictive modeling environment.

To develop data mining applications, you can access RStat from within Developer Studio or as a stand-alone product. The installation program installs a full R environment. Once RStat is installed, you can use Developer Studio to access data through any Reporting Server. Once a model is built, the model can be compiled and deployed on any WebFOCUS Server. Users do not need to have R or RStat installed on the production environment in order to run scoring applications.



For More Information

See the following manual at <http://documentation.informationbuilders.com>:

- ▣ *Using WebFOCUS RStat for Predictive Analytics*

A robust search engine works in conjunction with a powerful BI engine, allowing users to index all structured and unstructured content in order to obtain heuristic answers to any business question. For example, a social media manager can search to locate a Facebook or Twitter comment, identify the product being discussed, and then drill down to see if the sentiment had an impact on sales.

Magnify is a powerful enterprise search solution that makes any structured or unstructured data easy to index and find, regardless of its source or location.

WebFOCUS Social Media Analytics transform sales, marketing, and social data into information that drives growth, profitability, and better customer experiences.

In this chapter:

- ❑ [Magnify](#)
- ❑ [WebFOCUS Social Media Integration](#)

Magnify

Magnify is an Enterprise Search solution that helps users to first find business content across the entire organization, and then to understand that information using business intelligence. Users are provided a single entry point from which to search structured and unstructured data stored in nearly any location. The Magnify search page is a simple and interactive user interface that dynamically categorizes search results with various navigation, sorting, and viewing options, such as analyzing search results in a tabular format, with the added ability to chart and filter an array of metrics and dimensions. Users can access real-time information by drilling down on links to WebFOCUS reports.

Magnify integrates with the DataFacet Taxonomy Server for Sentiment (installed separately) to perform sentiment analysis on structured and unstructured content. As content is indexed by Magnify, the DataFacet Taxonomy Server is called using a web service to determine the overall expressed feeling of the content as positive, negative, or neutral. The DataFacet Taxonomy Server returns a score to Magnify, which is stored as a meta tag with each search result. The score of the content is displayed as part of the Magnify Category Tree. This allows users to filter search results based on the overall tone of the information. Additionally, you can sort the search results by the sentiment score.

Key Magnify search capabilities allow you to:

- ❑ Search business content, which can include information stored in databases, email, and files.
- ❑ Search specific collections of information. Magnify can be organized by departments (for example, Administration, Human Resources, Professional Services, Sales, Support, and so on) or business units (for example, iWay, WebFOCUS, Magnify, and so on).
- ❑ Search either public or secure content. Magnify integrates with corporate security to ensure that private or sensitive information is protected.
- ❑ Use the dynamic category tree, as well other sorting and viewing options, to narrow result sets. Magnify also provides charting and filtering features based on various metrics and dimensions stored within the search content.

For More Information

See the following manuals at <http://documentation.informationbuilders.com>:

- ❑ *Magnify End User's Manual*
- ❑ *Magnify Developer's Guide*
- ❑ *Magnify Security and Administration*
- ❑ *Magnify Quick Start Guide*

WebFOCUS Social Media Integration

Every day, millions of people around the world use social media sites, such as Facebook and Twitter to express themselves. Their communications often include thoughts about good and bad business experiences, and opinions about products and companies they like and dislike. This presents a valuable opportunity to get to know your customers in ways never before possible.

Using a WebFOCUS Social Media Integration solution, you can collect data directly from Facebook®, Twitter®, LinkedIn®, and Google Analytics® and leverage it to positively influence sales and marketing, customer service, product development, and other important operations. Unlike expensive surveys, which deliver outdated intelligence, this solution offers real-time insight into how audiences perceive your company, your products and services, and your competitors.

Social Media Integration

Facebook, Twitter, and LinkedIn contain a wealth of vital information about consumer sentiment. For example, this valuable information can provide answers to key questions, such as:

- ❑ What image do you portray to your customers?

- ❑ Do they like your products and services?
- ❑ Are they satisfied with the support they receive?

The Facebook Adapter can be used to retrieve posts and comments for Company and User Facebook pages.

The Twitter Adapter can be used to search and retrieve Tweets based on a defined search criteria.

The LinkedIn Adapter can be used to retrieve posts and comments for LinkedIn Group Discussions and Company Event Status Updates.

All of this type of information can assist in making key business decisions. WebFOCUS reports can be created to either report directly against this information or a data warehouse created using DataMigrator. Metrics can then be shown graphically through the use of WebFOCUS dashboards with drill-down to specific tabular information.

Sentiment Analytics

A Sentiment Analytics solution allows you to gather and interpret consumer sentiment with the highest degree of accuracy, and helps you determine which comments require your immediate attention. Sophisticated algorithms precisely gauge the emotional intensity within large volumes of written text, including Facebook posts and comments, Twitter Tweets, LinkedIn posts and comments, and other sources such as email and electronic survey information. Each message is then assigned a sentiment score (displayed as a negative to positive range of numeric values) so that it can be prioritized and passed to the appropriate stakeholder for follow up.

Word Analytics

Knowledge of the specific words used to describe your company and its offerings is crucial to your ability to effectively assess public opinion. The Word Analysis Adapter employs an advanced algorithm that breaks sentences into component parts, removes common words, and provides visualizations of the most meaningful words and the frequency of their use over time. You can also drill down to individual messages, so words can be understood in full context. Using this adapter, social media professionals, marketing analysts, compliance officers, and others can quickly and easily detect which words are gaining popularity, and which ones are positively or negatively impacting the business.

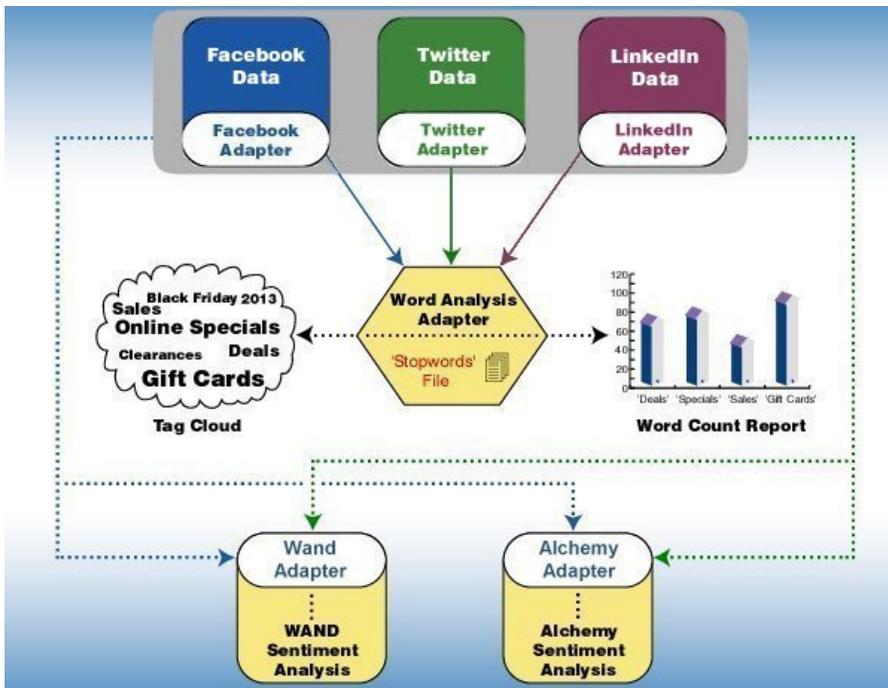
Google Analytics

The Google Analytics Adapter is used to report against the information residing in the Google Analytics environment. Metrics, such as Page Views and Users, can be analyzed by various dimensions (for example, Country and City).

You can configure the Google Analytics Adapter using the WebFOCUS Reporting Server Web Console. The adapter requires a connection, which stores the access token. A valid Google Analytics access token is required to issue Google Analytics API calls. This token is associated with a Google Analytics application and a specific Google Analytics user.

WebFOCUS Social Media Integration at a Glance

The following diagram illustrates the key components that are required in WebFOCUS Social Media Integration.



For More Information

See the following manual at <http://documentation.informationbuilders.com>:

- ❑ *WebFOCUS Social Media Integration Guide*

The rapid adoption of tablets and smartphones has triggered a revolution in the way we deliver and consume information. With the emergence of touch-based UIs, business intelligence (BI) at your fingertips has become a reality. Information Builders is committed to the *develop once and deploy anywhere* principle, which minimizes development, deployment, and training costs, and future-proofs investments as new devices and browsers continually enter a dynamic, volatile market. We believe our customers should be able to repurpose their web assets, so all WebFOCUS reports can be mobilized with no coding required.

WebFOCUS Mobile, a suite of powerful, extensible mobile BI solutions, fully exploits the native capabilities of the most popular mobile appliances today, allowing users to access and analyze any information from any smartphone (BlackBerry®, iPhone®, Android™) or tablet (iPad®, Android).

In this chapter:

- ❑ [WebFOCUS Mobile](#)

WebFOCUS Mobile

Information Builders eliminates the barriers to mobile BI with WebFOCUS Mobile. WebFOCUS Mobile:

- ❑ Complies with emerging mobile technology trends.
- ❑ Requires no additional hardware or development tools, and has a low total cost of ownership (TCO).
- ❑ Meets end-user customization requirements.
- ❑ Leverages existing skills and infrastructure, making deployments quick and easy.
- ❑ Meets current and emerging business intelligence (BI) and reporting requirements, even as devices and browsers change.

Suite of Mobile BI Products

The suite of Mobile BI products include:

- ❑ **WebFOCUS Active Technologies.** A device-independent solution that combines data and interactive analytic capabilities into a single document that can be delivered to any type of mobile appliance.

Information Builders designed WebFOCUS Active Technologies as a web app, and standardized our charting technologies on HTML5 to ensure that reports can be used across all devices. This resulted in a single source code for easy maintenance, and enabled even non-technical users to create rich mobile BI apps.

Users of Active Technologies dashboards and reports on iPad, iPhone, and Android phones and tablets will automatically take advantage of the new HTML5-based visualizations, as well as device-aware user interface characteristics and gestures.
- ❑ **Mobile Favorites and the Mobile Faves App.** WebFOCUS delivers portable and device-exploitive BI content that can be accessed using mobile browsers and email attachments, or using our Mobile Faves native app for iPad, iPhone, and Android phones and tablets.
 - ❑ **WebFOCUS Mobile Favorites.** Deploy specific BI content, such as reports and dashboards, to mobile devices.
 - ❑ **Mobile Faves App.** A native application, or *helper app*, that enables users to manage and view content on iPhones, iPads, and Android phones and tablets, supporting the common paradigms and gestures to which users of these devices have become accustomed. This app acts as a container that resides on your device, and makes it easier for users to organize, access, and interact with their favorite web reports and dashboards.
- ❑ **WebFOCUS Maintain.** Provides mobile transaction services that enable organizations to efficiently and economically build and deploy online transaction applications that can be accessed and used from any smartphone or tablet computer.

Mobile Faves App

WebFOCUS Mobile Faves is a simple, intuitive app that empowers users of iPad and iPhone devices, or Android phones and tablets, with robust, innovative, easy-to-use reporting and analysis. WebFOCUS Mobile Faves, through integration with WebFOCUS Active Technologies, delivers rich, deep, highly interactive analytic functionality to iPad, iPhone, and Android phones and tablets, fully exploiting their native gestures. As a result, users can manipulate data from a variety of sources in an almost unlimited number of ways in just a couple of taps. The app allows users to manage their business dashboards and content for viewing and interactive analysis, even when they are not connected to the Internet.



Mobile Faves Security

The Mobile Faves app for Apple® devices has been enhanced to include significant new security features, such as Single Sign-on support and data encryption and password protection of content. The Single Sign-on engines that are supported are CA SiteMinder®, Tivoli®, Integrated Windows Authentication (IWA), and NTLM. Customers can now brand the Mobile Faves app through a new service. A final highlight in the mobile arena is the ability to easily build applications that update databases from any mobile device, through a wizard user interface in Developer Studio.

Mobile Faves Customer-Branded Versions

The Mobile Faves Customer-Branded offering for iOS and Android now lets you deploy a custom-branded version of the Mobile Faves app. The custom-branded version gives you all the power of the Information Builders Mobile Faves app, with your enterprise branding in place in the app. As a result, your partners and customers can see an app that comes directly from you. You can give the app a name that you choose, add your branded launch icon to it, alter the startup and splash screens for the app, and burn your default server configuration information into it, so that it is already configured and ready to use with your identity.

Note: Android requests must be sent through a CSS case.

For More Information

See the following manuals at <http://documentation.informationbuilders.com>:

- ❑ *Mobile Faves for iOS User's Manual*
- ❑ *Mobile Faves Branding Package Developer's Guide*
- ❑ *Mobile Faves for Android User's Manual*

Write-Back Applications

By augmenting your WebFOCUS environments, you can enable users to design their own forms, update business logic, and run web applications that can function in stand-alone environments or linked from existing WebFOCUS reports and applications. Full write-back capabilities include the ability to access, modify, delete, or add data to back-end systems from any mobile device.

WebFOCUS Maintain is an application development tool that creates web-based data maintenance applications to be deployed across an enterprise.

In this chapter:

- ❑ [WebFOCUS Maintain](#)

WebFOCUS Maintain

Using WebFOCUS Maintain and its multi-platform language, you can easily create, test, and deploy complex business applications that span the Internet, IBM mainframes, midrange servers, and workstations. WebFOCUS Maintain, another type of web app, provides transaction services that allow write-back applications to be created and intermixed with traditional BI applications.

Using the Form Editor in the Maintain Development Environment, you develop the application front-end (or user interface). Then, continuing to use the Maintain Development Environment, you develop the code that extracts data from your data sources and updates the data sources with new data.

At run time, end users start the application and access a WebFOCUS Reporting Server where the data or procedures reside. The application extracts data from the data source, displays it for the end users to see, updates the data source with new information, and runs any procedures.

Maintain Key Benefits

Using WebFOCUS Maintain, you can:

- ❑ Easily develop web-based data maintenance applications with no prior knowledge of HTML, Java™, or complex 3GLs.
- ❑ Access and update data on every major operating system and every major database system (using the power of the WebFOCUS Reporting Server).

- ❑ Access and update data from different platforms at the same time, for example, the inventory system on MVS and the accounting system on UNIX.
- ❑ Preserve your investments in existing software, since WebFOCUS Maintain can easily run COBOL, C, or other 3GL programs, CICS transactions, IMS transactions, RDBMS stored procedures, FOCUS procedures, and many more.
- ❑ Take advantage of the strengths of your computing systems while sidestepping the weaknesses by partitioning your application among the platforms that can support them.
- ❑ Integrate seamlessly with Java, Java applets, and JavaScript.

For More Information

See the following manuals at <http://documentation.informationbuilders.com>:

- ❑ *WebFOCUS Maintain Getting Started*
- ❑ *Developing WebFOCUS Maintain Applications*
- ❑ *Maintain Language Reference*

Hyperstage is a column-oriented, high performance analytic engine designed for analytic applications and data marts that need fast query response across large data volumes. Hyperstage was designed specifically for large volume data analytics applications with up to 50 Terabytes of data.

In this chapter:

- ❑ [Hyperstage Overview](#)
- ❑ [Hyperstage and PostgreSQL](#)
- ❑ [For More Information](#)

Hyperstage Overview

Hyperstage uses a unique and patent-pending approach to compressing, storing, and processing data that allows it to be installed and run on commodity hardware with little or no DBA intervention. Hyperstage requires little tuning to support ad hoc or complex business analytic queries.

Hyperstage is a database engine utilizing the PostgreSQL database environment. As such, Hyperstage is fully compatible with all PostgreSQL-compliant Business Intelligence tools and utilizes the PostgreSQL administrative interface to reduce the learning curve for system administrators.

Hyperstage provides a versatile, highly-compressed database system optimized for analytic-type queries. The ratio of possible compression and the speed of data import and retrieval are optimized at the expense of some transactional features of the engine performance, like the frequent data updating.

Hyperstage executes complex or ad hoc queries across vast amounts of data with a low cost of ownership.

Hyperstage and PostgreSQL

Hyperstage combines the Hyperstage storage engine with PostgreSQL server implementation. Hyperstage consists of several layers. The upper layers are provided by the PostgreSQL server implementation, and the lower layers are provided by Hyperstage.

Hyperstage includes both its own optimizer and executor along with the storage engine. The PostgreSQL query engine can be used with Hyperstage. However, since the PostgreSQL storage engine interface is row oriented, it cannot take full advantage of the column orientation or the Knowledge Grid and hence query execution through this path is reduced. Queries will be directed to the Hyperstage optimizer whenever possible.

Hyperstage ships with the full PostgreSQL binaries required. PostgreSQL is used to store catalog information (as with other storage engines). You can use the PostgreSQL instance for other purposes, but joining PostgreSQL and Hyperstage tables may result in reduced performance as the PostgreSQL query engine will be used.

PostgreSQL provides:

- ❑ Mature connectors, tools and resources.
- ❑ Interconnectivity and certification with BI tools.
- ❑ Management services and utilities.

Hyperstage provides:

- ❑ Load function that compresses data.
- ❑ Column-oriented storage engine.
- ❑ Knowledge Grid metadata layer that contains information about the compressed data.
- ❑ Optimizer/executor that uses the Knowledge Grid.

For More Information

See the following manual at <http://documentation.informationbuilders.com>:

- ❑ *Hyperstage Database for PostgreSQL Reference Guide*

WebFOCUS RESTful Web Services provide an API into WebFOCUS so that you can use your preferred development environment (for example, Visual Studio.Net or Java) to embed WebFOCUS content (for example, reports, charts, dashboards, alerts, and so on) within your application.

In this chapter:

- ❑ [WebFOCUS Authentication RESTful Web Service Requests](#)
- ❑ [WebFOCUS Managed Reporting RESTful Web Service Requests](#)
- ❑ [WebFOCUS Reporting Server RESTful Web Service Requests](#)
- ❑ [WebFOCUS Security Administration RESTful Web Service Requests](#)
- ❑ [ReportCaster RESTful Web Service Requests](#)

WebFOCUS Authentication RESTful Web Service Requests

You can configure a WebFOCUS RESTful Web Service request to authenticate logon requests that are made to WebFOCUS. The XML response that is returned indicates whether the authentication was successful or unsuccessful.

WebFOCUS Managed Reporting RESTful Web Service Requests

WebFOCUS RESTful Web Service requests can be configured for a variety of WebFOCUS Managed Reporting tasks, including:

- ❑ Creating and updating a folder.
- ❑ Deleting a folder.
- ❑ Deleting a WebFOCUS Managed Reporting report.
- ❑ Listing folders and subfolders.
- ❑ Listing reports, schedules, and library content within WebFOCUS Managed Reporting.
- ❑ Listing the versions for a stored report in the ReportCaster library.
- ❑ Listing the parameters for a report within Managed Reporting.

- ❑ Running a report from WebFOCUS Managed Reporting.
- ❑ Change Management Import.
- ❑ Publishing an item.
- ❑ Unpublishing an item.
- ❑ Copying an item.
- ❑ Moving an item.
- ❑ Renaming an item.
- ❑ Uploading a WebFOCUS report.

WebFOCUS Reporting Server RESTful Web Service Requests

WebFOCUS RESTful Web Service requests can be configured for a variety of WebFOCUS Reporting Server tasks, including:

- ❑ Listing WebFOCUS Reporting Server nodes.
- ❑ Listing applications.
- ❑ Listing files within an application.
- ❑ Listing the parameters for a report within an application.
- ❑ Running a report within an application.
- ❑ Deleting a file within an application.
- ❑ Deleting an application.
- ❑ Change Management Import.

WebFOCUS Security Administration RESTful Web Service Requests

WebFOCUS RESTful Web Service requests can be configured for a variety of WebFOCUS security and administration tasks, including:

- ❑ Listing users.
- ❑ Listing groups.
- ❑ Listing users.
- ❑ Listing privileges.

- ❑ Listing roles.
- ❑ Adding and updating a user.
- ❑ Deleting a user.
- ❑ Adding and updating a group.
- ❑ Deleting a group.
- ❑ Adding a user to a group.
- ❑ Removing a user from a group.
- ❑ Adding a role.
- ❑ Deleting a role.
- ❑ Adding a rule.
- ❑ Deleting a rule.
- ❑ Running a template.

ReportCaster RESTful Web Service Requests

WebFOCUS RESTful Web Service requests can be configured for a variety of WebFOCUS ReportCaster tasks, including:

- ❑ Retrieving reports from the ReportCaster library.
- ❑ Creating and updating a Library Access List.
- ❑ Deleting a Library Access List.
- ❑ Creating and updating Schedules.
- ❑ Creating and updating Address Books.
- ❑ ReportCaster Log Functionality
- ❑ ReportCaster Console Functionality

RESTful Web Services Test Console

An online test console is available to test and debug the functionality of RESTful Web Services.

For More Information

See the following manuals at <http://documentation.informationbuilders.com>:

- ❑ *WebFOCUS RESTful Web Services Developer's Guide*
- ❑ *ReportCaster Web Services*
- ❑ *WebFOCUS Web Services*

Data Integrity

iWay Integrity Solutions ensure data quality by providing a consistent and accurate view of data from every interaction point.



Chapter 16, *Data Profiling* on page 91. iWay Data Profiler (iDP) is a tool for business users that is designed as a Web 2.0 application leveraging the Profiler functionality in iWay Data Quality Server (iWay DQS) and the strength of WebFOCUS business intelligence capabilities.



Chapter 17, *Master Data Management* on page 93. The iWay Master Data Suite is a comprehensive, unified toolset that ensures consistency, uniformity, and accuracy across all critical data assets. This powerful, scalable multi-domain master data management environment, allows organizations to enable effective data governance by rapidly creating and efficiently maintaining a single view of their core entities.



Chapter 18, *Data Stewardship* on page 95. iWay Data Quality Portal (DQP) is a tool for business users that allows data stewards to resolve various data quality defects. Problematic records identified by iWay Data Quality Server (DQS) are stored as data quality issues.



Chapter 19, *Data Quality* on page 97. With the iWay Data Quality Suite, organizations can better control transactional and analytical applications, enhance system migration or software integration projects, improve customer identification processes, validate inputs in self-service and other online applications, and much more.

iWay Data Profiler (iDP) is a tool for business users that is designed as a Web 2.0 application leveraging the Profiler functionality in iWay Data Quality Server (iWay DQS) and the strength of WebFOCUS business intelligence capabilities.

iDP generates eye catching active reports using the latest business intelligence technology, including Adobe PDF and Adobe Flex, for easy analysis of key business data by integrating output from iWay DQC. In addition, iDP supports the iOS mobile operating system (iPad®, iPhone, or iPod touch®).

It allows business users to view, analyze, distribute, and monitor how much of their data follows the rules defined by their company. iDP also enables steady improvement in data quality towards following defined business rules and standards. In addition, iDP also allows a company to generate a Data Quality Assurance report.

The iDP Security Center allows administrators to limit access to iDP by creating, editing, and deleting groups, users, folders, and their roles.

In this chapter:

- ❑ [Key Features and Advantages](#)

Key Features and Advantages

Key features and advantages that are provided through iWay Data Profiler (iDP) include:

- ❑ A browser-driven, thin-client solution, iDP allows you to extend powerful data profiling capabilities to anyone who needs them without any additional client software, plug-ins, or report viewers.
- ❑ Collecting profiling data easily and directly from iWay DQS through seamless integration.
- ❑ Tagging and archive profiling data input as a set into an associated RDBMS for easy retrieval.
- ❑ Viewing the data profiling set using advanced data manipulation and graphics.
- ❑ Comparing multiple archived data profiling sets to view the variance in profiling data.
- ❑ Printing and exporting any of the supported views in industry-standard formats, such as HTML, PDF, and Excel.
- ❑ Sharing data with other users across the intranet or Internet.

For More Information

See the following manual at <http://documentation.informationbuilders.com>:

- ❑ *Introduction to iWay Version 7*

Master Data Management

The iWay Master Data Suite is a comprehensive, unified toolset that ensures consistency, uniformity, and accuracy across all critical data assets. This powerful, scalable multi-domain master data management environment, allows organizations to enable effective data governance by rapidly creating and efficiently maintaining a single view of their core entities.

With the iWay Master Data Suite, organizations can:

- ❑ Obtain a browser-based, 360-degree view of golden records mastered across all functional domains.
- ❑ Interact with a wide array of different data structures, including industry-standard message formats, NoSQL-type repositories, packaged applications, and software-as-a-service solutions.
- ❑ Assess and visualize data through dashboards, hierarchy management, open presentation interfaces, user-driven/interactive execution, or scheduled/batch execution.
- ❑ Identify related data entities by leveraging deterministic, probabilistic, linguistic, cross-language, and weighting techniques for the execution of rules and schemes.
- ❑ Improve data quality with an embedded real-time data quality engine with support for standardization, validation, cleansing, custom business rules, and integration with external data sources.
- ❑ Facilitate data governance using an integrated data stewardship portal with customizable workflows for insight and remediation.

The iWay Master Data Suite provides a complete end-to-end solution for managing master data with complete governance and data quality capabilities. The iWay Master Data Suite includes all the features of the iWay Data Quality Suite, in addition to specialized master data management capabilities.

In this chapter:

- ❑ [Components of the iWay Master Data Suite](#)
-

Components of the iWay Master Data Suite

The iWay Master Data Suite includes the following components:

- ❑ **iWay Master Data Server.** Is designed to integrate seamlessly with existing systems, and consolidate millions of records according to easy-to-define business rules, by using a next generation Master Data Management (MDM) technology to manage data.
- ❑ **iWay Hierarchy Manager.** A plug-in for Eclipse that is used to create and maintain hierarchies within a hierarchy management system. Specifically, this plug-in provides design-time interfaces for Eclipse development environments.
- ❑ **360 Viewer.** A business users tool that provides a browser-based comprehensive view of the golden records that are mastered across defined domains (for example, Patient, Provider, Employee, and Facility).

For More Information

See the following manual at <http://documentation.informationbuilders.com>:

- ❑ *Introduction to iWay Version 7*

iWay Data Quality Portal (DQP) is a tool for business users that allows data stewards to resolve various data quality defects. Problematic records identified by iWay Data Quality Server (DQS) are stored as data quality issues. iWay DQP allows users to prioritize, assign, resolve, and monitor these data quality issues. Once the defects in the data are corrected, the source systems are updated based on the decision-making logic, thus, resolving the original faulty data.

In this chapter:

- ❑ [Key Features and Advantages](#)
-

Key Features and Advantages

Key features and advantages that are provided through iWay DQP include:

- ❑ A user-friendly web portal/dashboard interface that provides a single, easy-to access location for all activities related to the monitoring, auditing, management, and resolution of data quality issues.
- ❑ Dynamic, proactive capture of bad data as it is entered into ERP systems or other applications, dropped into file directories, transmitted over FTP servers, generated during the course of automated processes and transactions, or sent through email.
- ❑ Intuitive color-coding, making it easy to see where data discrepancies or problems exist within data values.
- ❑ The ability to import bad records quickly, including full and incremental imports, to create new issues in the system or update existing ones.
- ❑ A customizable workflow engine that supports multiple tiers of reviewers and approvers, and allows for quick and easy assignment of issues to one or more data stewards.
- ❑ Automatic routing of changes to an approval queue.
- ❑ Flexible issue handling, including proposing corrections automatically, as well as allowing users to make manual adjustments to data as needed or merge duplicate records by selecting individual values from each.
- ❑ An end-to-end audit trail of all changes made to records.

- ❑ Proactive event triggers that route issues to specific individuals based on certain criteria, or automatically notify key stakeholders when certain types of problems are identified.
- ❑ Advanced, role-based security that keeps sensitive data fully protected at all times.

The established workflow is what defines an issue lifecycle, from the creation of the issue to its correction. Within the workflow, state and transition are two concepts that guide the issues through iWay DQP. States represent the static points at which issues exist during their lifecycle and transitions represent the shifting of an issue from one state to another.

For More Information

See the following manual at <http://documentation.informationbuilders.com>:

- ❑ *Introduction to iWay Version 7*

With the iWay Data Quality Suite, organizations can better control transactional and analytical applications, enhance system migration or software integration projects, improve customer identification processes, validate inputs in self-service and other online applications, and much more by:

- ❑ Building a real-time data quality firewall, complete with real-time reporting and monitoring.
- ❑ Profiling and analyzing data, to assess its quality and immediately identify and correct any integrity issues.
- ❑ Dynamically cleansing data using an automated rules engine. Restrictions, constraints, and other data quality rules can be defined and implemented, then automatically applied to data values across the information landscape, triggering instant changes to existing data to eliminate mistakes.
- ❑ Enriching information by appending it with relevant content gathered from external sources.
- ❑ Matching and merging information across multiple data sets to promote consistency, in conjunction with the iWay Master Data and Integration Suites.

Easy to implement and packed with rich functionality, the iWay Data Quality Suite leverages modern platforms and code optimization techniques to minimize initial investment and total cost of ownership.

In this chapter:

- ❑ [Components of the iWay Data Quality Suite](#)

Components of the iWay Data Quality Suite

The iWay Data Quality Suite includes the following components:

- ❑ **iWay Data Quality Server.** A complete tool for complex data quality management. iWay DQS not only evaluates, monitors, and manages the quality of data in different information systems, but it also prohibits inaccurate data from being admitted into those systems.

- ❑ **iWay Data Profiler.** A tool for business users that is designed as a Web 2.0 application leveraging the Profiler functionality in iWay Data Quality Server (iWay DQS) and the strength of WebFOCUS business intelligence capabilities.
- ❑ **iWay Data Quality Portal.** A tool for business users that allows data stewards to resolve various data quality defects. Problematic records identified by iWay Data Quality Server (DQS) are stored as data quality issues. iWay Data Quality Portal allows users to prioritize, assign, resolve, and monitor these data quality issues.

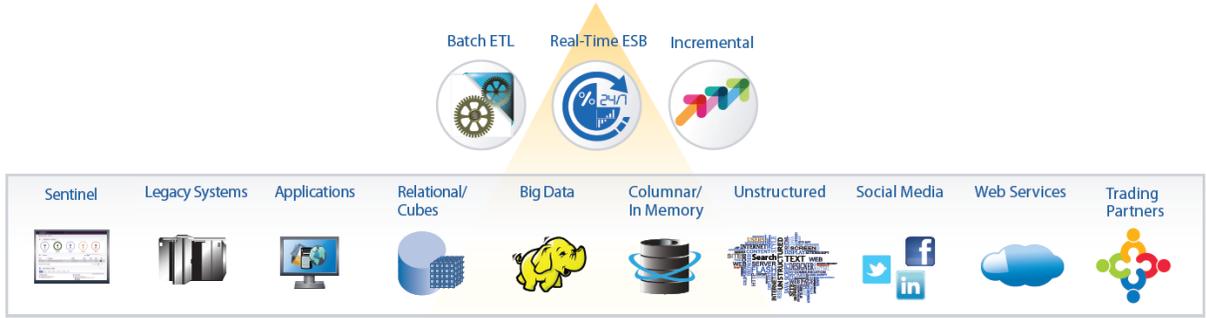
For More Information

See the following manual at <http://documentation.informationbuilders.com>:

- ❑ *Introduction to iWay Version 7*

Application Integration

iWay Integration Solutions work on any platform, with proprietary technologies as well as industry standards, and support more than 300 database and application adapters.



Chapter 20, *Batch ETL* on page 101. ETL solutions simplify the creation, maintenance, and expansion of data warehouses, data marts, micro marts, and operational data stores.



Chapter 21, *Real-Time ESB* on page 105. Enables the creation, composition, and management of services, whether invoked as web services or through other interfaces.



Chapter 22, *Incremental Integration* on page 109. The iWay Integration Suite provides efficient solutions for incremental data load requirements at the enterprise level.

Information Builders fully automated extract, transform, and load (ETL) solutions simplify the creation, maintenance, and expansion of data warehouses, data marts, micro marts, and operational data stores.

DataMigrator, an intuitive, easy-to-use interface, enables fast end-to-end creation and management of virtually any ETL process, from scheduling and execution through tracking and auditing, including those involving heterogeneous data structures across disparate computing platforms. From source extraction through target load, data is transformed through the application of business rules. Once the transformation is complete, the data is loaded into table structures that have been optimized for a particular application. Information from any combination of sources can be quickly and easily aggregated, joined, merged, filtered, and moved across back-office systems and e-business platforms, loaded into databases, or transformed into formats suitable for any application.

In this chapter:

- ❑ [DataMigrator](#)

DataMigrator

DataMigrator is a suite of software components that automates the process of building and maintaining a data warehouse or data mart. Using DataMigrator, you can:

- ❑ Access source data in numerous formats and operating systems.
- ❑ Integrate multiple data sources into a single target or multiple data targets.
- ❑ Apply powerful data cleansing rules and transformation logic.
- ❑ Aggregate data and create roll-ups to aid decision support.
- ❑ Use specialized, high-volume data loaders.
- ❑ Schedule data updates at user-defined intervals, triggered by events, or based on conditional dependencies.
- ❑ Load a Star Schema with Slowly Changing Dimensions.
- ❑ Monitor and manage key server functions.

- ❑ View comprehensive logging and transaction statistics.

Since DataMigrator is a true client/server middleware solution, underlying communications protocols and data source subsystems are transparent.

DataMigrator Architecture

DataMigrator is comprised of two basic components and one supplementary component:

- ❑ **DataMigrator Server.** A server must be installed and configured to support DataMigrator operations. The server houses and executes data and process flows, which are the key DataMigrator design elements.
- ❑ **DataMigrator Data Management Console (DMC).** The main component of the DMC is the DataMigrator graphical user interface. It runs on a Windows PC, where you design, test, and run data and process flows.
- ❑ **Server Web Console.** The Server Web Console is installed with the server. It enables you to perform browser-based server administration tasks.

You must install and/or configure these components before you can begin using DataMigrator to build the data flows and process flows that will build your data targets.

DataMigrator Server

The server houses and executes the data and process flows from which a data warehouse, data mart, or other data targets are constructed. The server consists of the following components:

- ❑ Engines for data sorting, transformations, email notification, scheduling, and security rules.
- ❑ Read and write adapters, which are used to extract and load the data.
- ❑ Metadata or synonyms (.mas and .acx files) that describe column information and access rules to data sources and/or data targets.
- ❑ Data flows, which are procedures that contain the necessary instructions for extracting, transforming, and loading the data targets. These procedures are built by the DMC and stored on the server in two files:
 - ❑ A procedure with the extension .fex, which is ready to run.
 - ❑ A file with the extension .etg, which contains detailed information needed for the graphical display.
- ❑ Process flows, which contain the necessary instructions for interleaving data flows with other objects. Like data flows, these instructions are built by the DMC and stored on the server as .fex and .etg files.

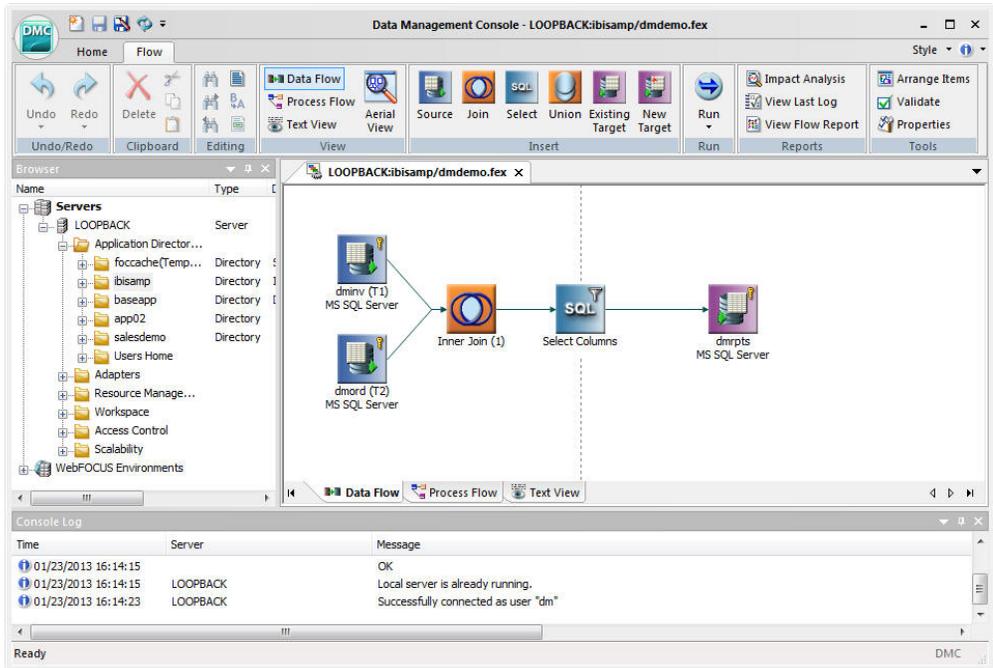
- ❑ DataMigrator internal tables, containing the DataMigrator log and run-time statistics.
- ❑ Stored procedures, which contain instructions for specific tasks. These procedures are edited using the text editor of the DMC.
- ❑ iWay remote server (optional). Access to a remote server is required when source data is on a different platform from the DataMigrator Server. Adapters to extract the source data reside on the remote server (subserver). Though optional, one or more subservers are used at many DataMigrator sites.

DataMigrator Data Management Console

The DataMigrator Data Management Console is a graphical design interface that runs on Windows platforms. You can use the DMC to:

- ❑ Design and test data flows and process flows.
- ❑ Create and run stored procedures.
- ❑ Add and configure data adapters.
- ❑ Test synonyms and data adapter configurations.
- ❑ Manage metadata by creating and editing synonyms.
- ❑ View log and report statistics.

The following image shows the main window of the DMC in Data Flow mode.



For More Information

See the following manual at <http://documentation.informationbuilders.com>:

□ *DataMigrator User's Guide*

Information Builders unique and powerful real-time enterprise service bus (ESB) enables the creation, composition, and management of services, whether invoked as web services or through other interfaces.

Information Builders unique and powerful real-time enterprise service bus (ESB) enables the creation, composition, and management of services, whether invoked as web services or through other interfaces.

In this chapter:

- ❑ [Overview](#)
- ❑ [iWay Service Manager](#)

Overview

In simple terms, an enterprise service bus (ESB) is a software protocol that delivers messages from one system to another, for example, email (SMTP).

iWay provides a native ESB if required. It also provides event-driven integration and B2B interaction management and, unlike other ESBs, interoperates with other ESBs and proprietary technologies as well as industry standards.

The iWay Integration Suite lays the foundation for real-time integration, and web-oriented or event-driven architectures. It delivers rapid throughput and latency, making it a prime component of high-performance networks and business processing solutions. The iWay Integration Suite:

- ❑ Optimizes skilled and expensive IT resources by reducing IT complexity and simplifying service design, deployment, and maintenance.
- ❑ Drastically reduces integration total cost of ownership (TCO) by eliminating most custom integration code.
- ❑ Provides complete support for service-enabling disparate enterprise technologies.
- ❑ Does not require proprietary technology. It runs on top of popular messaging systems, a variety of JMS implementations, and dozens of other common protocols, and can be deployed to a standalone Java Virtual Machine, open-source J2EE application servers, or any commercial J2EE application server. It also supports security, architecture, and B2B standards including ebXML, AS1, AS2, AS3, SOAP, and REST.

- ❑ Decentralizes development while centralizing administration with a unique combination of distributed run-time environments, easy-to-use graphical tools, and broad-reaching monitoring and policy management.
- ❑ Provides real-time activity monitoring, to identify and correct bottlenecks or inefficiencies and remediate process and data exceptions.
- ❑ Is fully integrated with the iWay Data Quality Suite and Master Data Suite to enhance the completeness, accuracy, and consistency of information.
- ❑ Automates and accelerates deployment through tools, a console, or a script. Users can build applications, then deploy them to a test and production environment, or to multiple servers. iWay Integration Applications and the iWay Software Development Kit (SDK) enable rapid deployment across multiple environments in a managed and controlled manner, while fitting into existing enterprise infrastructures.
- ❑ Facilitates real-time data replication by copying source tables to target tables, even when the database types vary, or by performing complex actions such as manipulating data as it is transferred between tables, or cleansing and transforming data as it is moved between databases.
- ❑ Supports Simple Network Management Protocol (SNMP), allowing users to track iWay activity within a managed network using any popular third-party SNMP tool.
- ❑ Facilitates big data management by enabling high-volume, high-performance document storage through MapReduce-style parallel processing capabilities, as well as integration with the Hadoop Distributed File System.
- ❑ Enables rapid, effective management of trading partner and related activities through a comprehensive infrastructure that dramatically improves the way partner transactions, as well as those performed over external exchanges, are planned, executed, and tracked.

iWay Service Manager

iWay Service Manager (iSM) is an enterprise service bus (ESB) product that enables you to create, compose, and manage services, whether they are deployed as web services or as services accessible through other commonly-used and industry-standard interfaces. iSM lays the foundation for a quickly deployable and easily maintainable Service-Oriented Architecture (SOA) or Event-Driven Architecture (EDA) for your enterprise. iSM is lightweight, general purpose, and highly configurable.

iSM provides a robust, highly scalable and customizable platform for message and transaction processing. iSM is packaged with its own high performance ESB, which enables integration across an array of systems. It also enables you to join other ESBs already in place in other enterprise deployments by providing and following standard interfaces and message processing concepts for synchronous and asynchronous communication. For a seamless deployment into existing infrastructures, iSM can also run within common web application servers.

For More Information

See the following manuals at <http://documentation.informationbuilders.com>:

- ❑ *Introduction to iWay Version 7*
- ❑ *iWay Service Manager User's Guide*

iWay Integration Tools

Developed in Eclipse, iWay Integration Tools (iIT) is a unified, design-time environment, which allows you to connect with source systems for data discovery.

In addition, iIT enables you to design process flows, and develop applications for deployment. This user-friendly environment integrates with popular source management systems such as SVN, through an Eclipse plug-in framework. Following Eclipse standards, iIT can integrate with other Eclipse-based plug-ins, and is deployable as a plug-in into an existing Eclipse-based environment.

iIT includes the following set of design-time graphical tools to help you create sophisticated integration services without the need, in many cases, for any custom programming:

- ❑ **iIT Designer.** The capability of graphically visualizing a business process is a powerful and necessary component of any application integration offering. iIT Designer provides a visual and user-friendly method of creating a business process, also called a process flow.
- ❑ **iIT Transformer.** iIT Transformer offers integrated data transformation services within iWay Service Manager. Transformation is the means by which messages are converted from one data format or structure to another.

For More Information

See the following manuals at <http://documentation.informationbuilders.com>:

- ❑ *Introduction to iWay Version 7*
- ❑ *iWay Integration Tools User's Guide*
- ❑ *iWay Integration Tools Designer User's Guide*

- ❑ *iWay Integration Tools Transformer User's Guide*

iWay Software Development Kit

The iWay Software Development Kit (SDK) provides the tools and technologies that are required for the development of iWay applications and their web archives at an enterprise level.

The iWay SDK provides a complete Java/ANT based framework, which can be integrated into an existing IT operations cycle as part of an existing build process.

For More Information

See the following manuals at <http://documentation.informationbuilders.com>:

- ❑ *Introduction to iWay Version 7*
- ❑ *iWay Software Development Kit User's Guide*

The iWay Integration Suite provides efficient solutions for incremental data load requirements at the enterprise level, including:

- ❑ iWay Change Data Capture (CDC) solutions.
- ❑ iWay High Water Mark (HWM) listeners.
- ❑ iWay Schedule and Calendar providers.
- ❑ iWay Real Time Data Replication (RTDR) extension.

In this chapter:

- ❑ [iWay Change Data Capture \(CDC\) Solutions](#)
 - ❑ [iWay High Water Mark \(HWM\) Listeners](#)
 - ❑ [iWay Schedule and Calendar Providers](#)
 - ❑ [iWay Real Time Data Replication \(RTDR\) Extension](#)
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iWay Change Data Capture (CDC) Solutions

Using the iWay Integration Suite, you can take advantage of iWay Change Data Capture (CDC) solutions for managing incremental data loads. iWay CDC offers effective solutions to the challenges encountered when performing incremental loads from data source tables, systems, and data warehouses.

iWay CDC solutions are available for:

- ❑ Informix
- ❑ Microsoft SQL Server
- ❑ Oracle

iWay Change Data Capture (CDC) Solution for Informix

The iWay Informix CDC Agent is a key component of the iWay CDC Solution for Informix, which enables integration between IBM Informix Dynamic Server (IDS) and other iWay accessible enterprise systems. The agent accomplishes this task by exploiting the IDS 11.5 CDC API, a significantly improved technology for Change Data Capture (CDC) over previous methods. The second component of this solution is the iWay Log Event Listener that runs on the target Oracle database server.

The combination of iWay Integration Technology and the IDS 11.5 CDC API provides:

- ❑ Real-time CDC capture and staging of CDC records in a standard form.
- ❑ Remote retrieval of IDS CDC records via shared file system.
- ❑ Natural queuing while network connections are unavailable.

This architecture exploits the IDS logging facilities, so that overall impact upon existing IDS systems is minimal. Security is ensured by limiting CDC data capture to only preselected schemas, tables and columns with an existing DBMS.

For More Information

See the following manual at <http://documentation.informationbuilders.com>:

- ❑ *iWay Change Data Capture Solution for Informix*

iWay Change Data Capture (CDC) Solution for Microsoft SQL Server

The iWay CDC Solution for Microsoft SQL Server consists of the iWay Log Event Adapter for Microsoft SQL Server, which is used to integrate a Microsoft SQL 2000/2005/2008 database with an Oracle and SQL database with near real-time data replication. The iWay Log Event Adapter for Microsoft SQL Server consists of several components. The key component is the SQL Server wrapper (C# .NET client), which interacts with the server-side components.

For More Information

See the following manual at <http://documentation.informationbuilders.com>:

- ❑ *iWay Log Event Adapter for Microsoft SQL Server*

iWay Change Data Capture (CDC) Solution for Oracle

The iWay CDC Solution for Oracle consists of the iWay Log Event Adapter for Oracle. This adapter is designed to replicate data changes from Oracle 10g/11g to Oracle 10g/11g or SQL 2000, 2005, or 2008. The iWay Log Event Adapter for Oracle uses a listener to capture the changed data from the Oracle redo logs using Oracle LogMiner.

The following types of supported operations can be captured from the source Oracle 10g/11g database table:

- INSERT
- DELETE
- UPDATE
- DDL

Note: DDL can be captured only and not replicated.

For More Information

See the following manual at <http://documentation.informationbuilders.com>:

- iWay Log Event Adapter for Oracle*

iWay High Water Mark (HWM) Listeners

iWay High Water Mark (HWM) listeners provide the ability to read new or modified data based on changes that take place over a specified time interval.

iWay HWM listeners are available for:

- Relational Databases
- Lightweight Directory Access Protocol (LDAP)

iWay Relational Database High Water Mark Listener

The iWay Relational Database High Water Mark listener (RDBHWM) provides the ability to read records from an RDBMS if a column or set of columns is defined with increasing values, such as a timestamp of last change.

The iWay RDBHWM operates in real-time to acquire newly inserted or updated rows from a relational database. In order to identify the desired rows, a column (or concatenation of columns) must exist, which contains an increasing high water mark value.

The listener saves the highest HWM value read with each SELECT, and constructs the subsequent query using the saved value. Unlike the iWay RDBMS listener, no deletes or updates are necessary to prevent the rereading of processed rows. Because the iWay RDBHWM listener can access the database as read-only, the performance of the iWay RDBHWM listener is faster than the iWay RDBMS listener.

Support for UNION

The iWay RDBHWM listener can also address more sophisticated SQL in which the HWM predicate appears multiple times in the SELECT statement. This situation may arise in situations in which the SQL addresses multiple databases in JOIN or UNION statements. The net effect is to allow support for more complex SQL and as a consequence, simplify the resulting application.

For More Information

See the following manual at <http://documentation.informationbuilders.com>:

- ❑ *iWay Service Manager Protocol Guide*

iWay LDAP High Water Mark Listener

The iWay LDAP High Water Mark listener provides the ability to read new or modified entries from an LDAP server, provided there is an attribute which steadily increases over time. Attributes such as an employee number or a timestamp may serve this purpose.

The iWay LDAP High Water Mark (HWM) listener follows the HWM design pattern by acquiring new or changed records (LDAP entries) from a data store (the LDAP server) that meet a specific, evolving criteria. The data that is returned is determined by the scope and the specified filter. To avoid retrieving duplicate entries, the iWay LDAP HWM listener keeps track of the highest value of the filter attribute which has been read. Usually the filter value is the creation or modification time of the entry, but any unique and steadily increasing value can be used. Each entry satisfying the filter is returned as an iWay XML document for further processing in an iWay Service Manager channel.

The iWay LDAP HWM listener is triggered (begins processing messages) when an entry is inserted or modified in the LDAP directory that is based on an increasing value of an attribute. The iWay LDAP HWM listener works similar to the iWay Relational Database High Water Mark listener.

A diagnostic tool (*testldap*), is provided in the extension to manually access and explore the LDAP directory from the iSM command console.

For More Information

See the following manual at <http://documentation.informationbuilders.com>:

- ❑ *iWay Service Manager Protocol Guide*

iWay Schedule and Calendar Providers

This section describes the iWay Schedule and Calendar providers that are available in iWay Service Manager (iSM).

Schedule Provider

The Schedule provider allows you to schedule defined iSM processes and tasks for execution (separate from the channel architecture) at specific times of the day, week, or month.

For More Information

See the following manual at <http://documentation.informationbuilders.com>:

- ❑ *iWay Service Manager User's Guide*

Calendar Provider

The Calendar provider allows you to define 18 months (starting with the current month) of Holiday/Skip dates, which when used with the Schedule provider, allows you to fine tune your scheduler execution. The Calendar provider can be shared in real time by any iSM instance to which it has access.

For More Information

See the following manual at <http://documentation.informationbuilders.com>:

- ❑ *iWay Service Manager User's Guide*

iWay Real Time Data Replication (RTDR) Extension

The iWay Real Time Data Replication (RTDR) extension is composed of the SQL Batch Insert Iterator object and the Data Integration object.

In the simplest use case, the iWay RTDR extension can be used to replicate data from a source database to a target database. The source and target databases can be the same type or different types. Both databases must exist prior to replication.

In a more complex use case, the iWay RTDR extension can be used to extract data one row at a time from a source database, cleanse or transform the data, and then insert the row into another database. The source and target databases must exist prior to execution.

For More Information

See the following manual at <http://documentation.informationbuilders.com>:

- ❏ *iWay Service Manager Extensions User's Guide*



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