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Report Services Document Creation Guide:

Creating Boardroom Quality Documents

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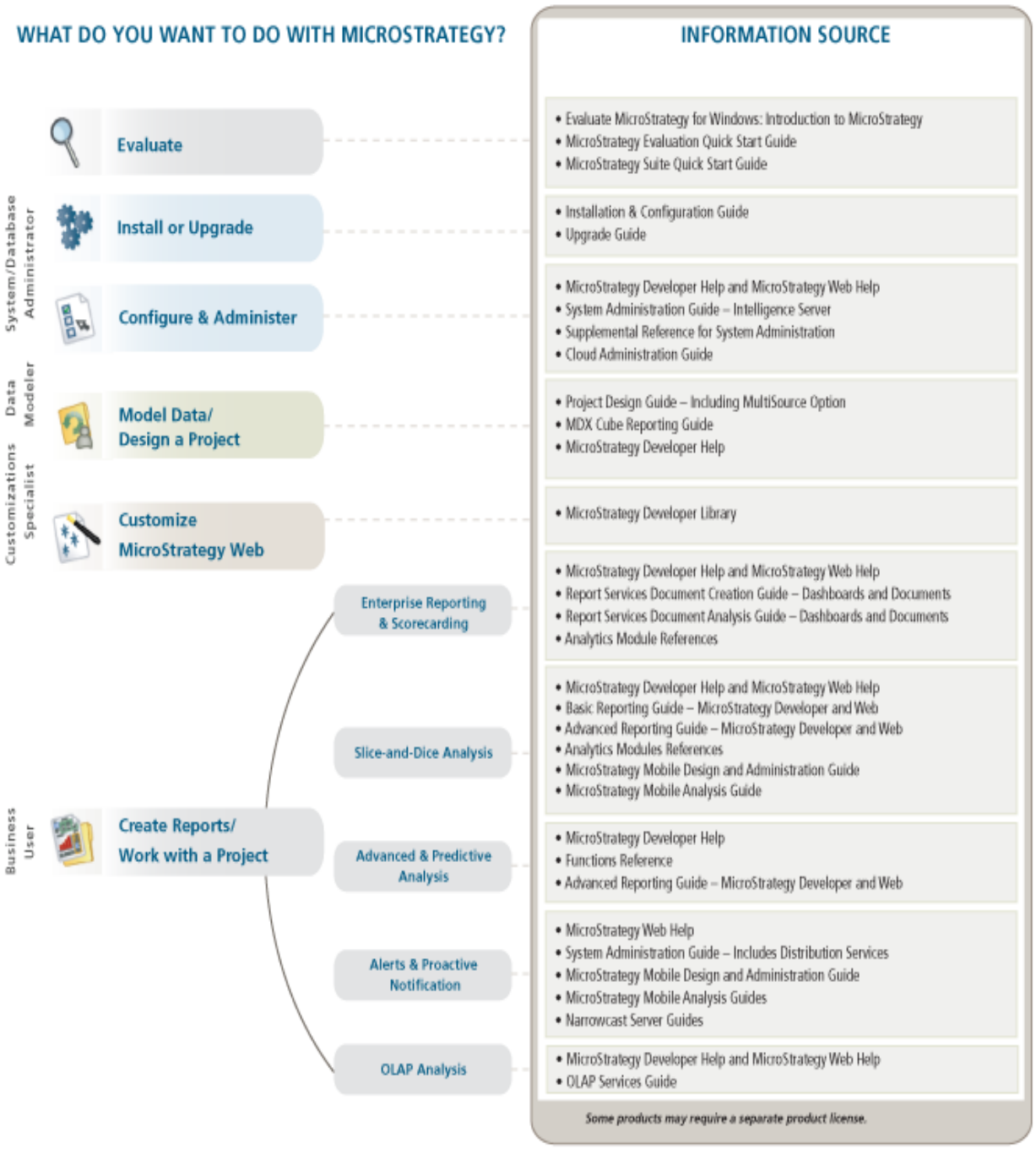
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BOOK OVERVIEW AND ADDITIONAL RESOURCES

Description of this guide

This guide is the primary resource for you to use to learn about designing and creating MicroStrategy Report Services documents using MicroStrategy Developer. It builds on the basic concepts about documents presented in the *Document and Dashboard Analysis Guide*, which helps document designers understand how end users will use documents for data analysis. The chapters, which are described below, are organized to help guide you through creating a new document, from creating the document itself, to adding objects to the new document, and formatting the document and its objects:

- *Chapter 1, Designing and Creating Documents* begins with a brief review of basic concepts, such as executing and printing documents, that are covered in the *Document and Dashboard Analysis Guide*. The chapter is focused on creating new documents, so it includes procedures and best practices to create and design documents.
- *Chapter 2, Adding Text and Data to Documents* discusses how datasets provide the data for the document and how multiple datasets are joined in the document. The chapter includes procedures to work with datasets, to import data, and to create many of the objects that make up documents, such as text fields, images, and shapes.

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- *Chapter 3, Displaying Reports in Documents: Grid/Graphs* describes Grid/Graphs, which display reports in a document. The chapter provides instructions to create and format Grid/Graphs.
- *Chapter 4, Formatting Documents* describes how to format the document and its objects.
- *Chapter 5, Grouping and Sorting Records in a Document* explains how to group and sort documents. Grouping defines the document's hierarchy and therefore its sort order. Page-by interactively displays groups on separate pages in PDF View.
- *Chapter 6, Linking from Documents* explains how to connect a document with a report, a web page, or another document, passing parameters to answer any prompts that are in the target. Use links as a tool to present investigative workflows, such as navigating from data at one level to different levels of aggregation.
- *Chapter 7, Transaction-enabled Documents* explains how to create a document that uses Transaction Services to embed write-back functionality into documents, for the purposes of decision-making or initiating a transaction.
- *Chapter 8, Adding Additional Usability Features to Documents* provides steps to add additional features to documents, such as adding multiple "pages" of content to a multi-layout document or defining default prompt answers.
- *Chapter 9, Improving Document Performance* describes ways to improve document execution performance by defining options such as whether documents load and display content in batches or all at once.

Most of the tasks in this guide are performed in MicroStrategy Web. Some are performed in MicroStrategy Developer, and are clearly labeled. You can also design and create documents using MicroStrategy Developer. The concepts are the same, but the procedures differ slightly. For steps, see the *MicroStrategy Developer help* (formerly the *MicroStrategy Desktop help*).

About this book

This book is divided into chapters that begin with a brief overview of the chapter's content.

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The following sections provide the location of additional examples, list prerequisites for using this book, and describe the user roles the information in this book was designed for.

The sample documents and images in this guide, as well as some example steps, were created with dates that may no longer be available in the MicroStrategy Tutorial project. If you are re-creating an example, replace the year(s) shown in this guide with the most recent year(s) available in the software.

How to find business scenarios and examples

Within this guide, many of the concepts discussed are accompanied by business scenarios or other descriptive examples. For examples of basic Report Services documents and dashboards, see the *Document and Dashboard Analysis Guide*.

For examples of reporting functionality, see the MicroStrategy Tutorial, which is MicroStrategy's sample warehouse and project. Information about the MicroStrategy Tutorial can be found in the *Basic Reporting Guide*. Detailed examples of advanced reporting functionality can be found in the *Advanced Reporting Guide*.

What's new in this guide

MicroStrategy 10

- You can allow a document to automatically resize itself each time that the document is run or the browser window that displays the document is resized. This is especially useful for optimizing the display of documents designed to be viewed on devices with different screen resolutions. For steps, see *Automatically resizing documents in Express Mode, page 354*.
- You can format a text field based on the contents of the text field using conditional formatting. You can format data based on static text, auto text codes, or dynamic text. For steps, see *Conditional formatting based on the contents of a text field, page 333*.
- You can use a relationship set qualification in a view filter on a Grid/Graph. A relationship set qualification restricts data based on relationships between attributes. For example, you can display stores selling Nike shoes in the Washington, DC area, or customers from the

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same region as a specific customer, Hugh Abarca. For steps, see *Creating, editing, and deleting view filters, page 227*.

- You can use dynamic conditions in a view filter on a Grid/Graph, to dynamically update the qualifications in a view filter when a user chooses items in a selector. For example, a user can select the Books and Music categories in a selector. The grid is then filtered to display data only for Books and Movies. You can combine dynamic conditions with other qualifications to create more complex filtering than is possible with selectors alone. For steps, see *Creating, editing, and deleting view filters, page 227*.
- You can create interactive, adaptable documents that respond to user input. To do this, you can hide, disable, or require users to select a value for controls in a Transaction Services-enabled document. You define the conditions under which to perform these actions using the Transaction Conditions Editor. For steps, see *Creating documents that adapt to user input: Transaction conditions, page 492*.

Analytics Enterprise

The name of MicroStrategy Desktop has been changed to MicroStrategy Developer.

MicroStrategy 9.4

- You can import data from different data sources directly into a document. The data source can include an Excel file, a table in a database, the results of a Freeform SQL query, or a Salesforce.com report. Your imported data is saved and can be used immediately in the document. For background information on using imported data as a dataset, see *Importing data from different data sources, page 47*.
- A document can use multiple Intelligent Cubes as datasets, or a mix of Intelligent Cubes and reports. For background information on using Intelligent Cubes as datasets, see *Using Intelligent Cubes as datasets, page 74*.
- If you remove or replace a dataset, controls on the document that contain data that is no longer available from the dataset will be updated and will no longer contain data from the replaced or removed dataset. You can change this behavior to instead display the missing objects in the Grid/Graph. For a more detailed explanation, including examples, and a procedure, see *Removing or keeping missing objects in a Grid/Graph when datasets are removed or replaced, page 55*.

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- When a document contains multiple datasets, a threshold or a view filter on a Grid/Graph can include any objects from any of the datasets, regardless of whether the Grid/Graph uses that dataset. For examples, see *Conditional formatting on a document with multiple datasets, page 323* and *View filters in documents with multiple datasets, page 222*.
- When a document contains multiple datasets, the elements available in the grouping fields are the elements available in the target (what is being grouped). If the target is filtered, the grouping elements are also filtered. For examples, see *Page-by on a document with multiple datasets, page 421*.
- By default, objects in a Grid/Graph must come from a single dataset. You can allow a single Grid/Graph to contain objects from multiple datasets. For steps, see *Determining whether Grid/Graphs can use multiple datasets, page 58* and *Adding a Grid/Graph that uses multiple datasets, page 180*. For details on how the datasets are joined and metrics are resolved in the Grid/Graph, see *Adding a Grid/Graph that uses multiple datasets, page 180*.
- You can allow a document to be refreshed automatically, and select the length of time between refreshes. When document refresh is enabled, a user can pause and resume automatic document refreshing in Express Mode. For steps to enable document refresh, see *Allowing a document to be refreshed automatically in Express Mode, page 353*.

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- When you create a link, you can allow the link to automatically pass values chosen in a selector in the source to a selector in the target. For an example, see *Passing selector values from the source to the target, page 454*.
- You can create a button that links to a web page, report, or another document. For an example, see *Linking from a button, page 437*.

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- A user can drill on one grid or graph (the source) in a document to simultaneously drill on one or more target grids or graphs. For example, a grid containing profit data across several product categories targets a graph displaying inventory data. If you drill to Subcategory in the source grid, the target graph will automatically be updated to display inventory data drilled to the Subcategory level.

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- If a user changes the grouping in one layout of a document and then switches to a different layout that contains the same grouping field, the grouping may be applied to the new layout, if you enabled the Apply grouping selection to all layouts option. For steps to enable this option, see *Applying grouping selections to the current layout or all layouts, page 413*.
- You can specify formatting options for the table of contents included in documents exported as PDF files, including font size and color, the style in which to display the border around the table of contents, and where in the document to display the table of contents. For steps to format the table of contents, see *Including interactive tables of contents in PDFs, page 372*.
- When you create a document, you can specify whether or not the contents of the selected document section are repeated on each page of the PDF. To create repeated sections with controls that do not display on the last page, you can use this option with the Show only in repeated sections option, which is defined for individual controls, not document sections. You can use these options to display text such as "Continued on next page" on every page except the last page. For steps to use these options, see *Repeating information on each page, page 313*.
- When a user views a grouped document, drop-down lists are displayed to allow the user to select which elements, or subsets of data, to display. You can select which attribute forms are displayed in the list, and the order of the forms. For steps to specify the forms in grouping, see *Displaying forms in a group, page 393*.

Prerequisites

Before working with this manual, you should be familiar with the information in the *Document and Dashboard Analysis Guide*, *Basic Reporting Guide,* and *Advanced Reporting Guide*.

To work with Report Services documents, you must have purchased a license for Report Services and installed it on your machine. You must also have the proper privileges assigned to your user login. These privileges are described below:

- **Execute document**, to execute documents in MicroStrategy Developer

  To execute a document in MicroStrategy Developer, you must connect to the project in three-tier (server) mode.

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- **Use document editor**, to create and edit documents using the Document Editor in MicroStrategy Developer
- **Web execute document**, to browse and execute documents in MicroStrategy Web
- **Web document design**, to create and edit documents in Web
- **Web manage document datasets**, to add and remove datasets from a document in Web
- **Execute Report that Uses Multiple Data Sources**, to view Grid/Graphs that use objects from multiple datasets
- **Import Table from Multiple Data Sources**, to create Grid/Graphs that use objects from multiple datasets

If you do not have Report Services, contact your MicroStrategy sales representative for more information.

Who should use this guide

This guide is designed for all users who need to design and create documents.

Document design is the process of building documents that are used widely by other users on the business intelligence platform and throughout the enterprise. To design documents you use the Document Editor in either MicroStrategy Developer or Web. The Document Editor allows you to create document objects (called controls) such as text fields, auto text codes, Grid/Graphs, HTML containers, images, and so on. You can also create a special type of document called Report Services (RS) dashboards, which are interactive, visually intuitive displays of data that summarize key business indicators for a status check. RS dashboards provide interactive features that let users change how they view the RS dashboard's data. The interaction is provided by these types of controls: panels, selectors, and widgets.

For examples of RS dashboards and the objects that they contain, including instructions to create RS dashboards, see the *Dashboards and Widgets Creation Guide*.

In general, the role of document designer is made available only to a group of advanced users who can design documents. The Developer and Web Professional user roles in MicroStrategy include the set of privileges required to create documents and controls, for each respective product.

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For an introduction to documents, you should review the *Document and Dashboard Analysis Guide*, which provides a basic understanding of how to manipulate the data in a document to analyze business information.

Resources

This section provides details on how to access books, online help, MicroStrategy Education and Consulting resources, and how to contact MicroStrategy Technical Support.

Documentation

MicroStrategy provides both manuals and online help; these two information sources provide different types of information, as described below:

- **Manuals**: MicroStrategy manuals provide:
  - Introductory information and concepts
  - Examples and images
  - Checklists and high-level procedures to get started

  The steps to access the manuals are described in *Accessing manuals and other documentation sources, page xxviii*.

  Most of these manuals are also available printed in a bound, soft cover format. To purchase printed manuals, contact your MicroStrategy Account Executive with a purchase order number.
- **Help**: MicroStrategy online help provides:
  - Detailed steps to perform procedures
  - Descriptions of each option on every software screen

Additional formats

MicroStrategy manuals are available as electronic publications, downloadable on the Apple iBooks Store or Google Play, and can be read on your iOS or Android device respectively. To download a book, search for the book's title in the iBookstore or Google Play. To view a list of manuals that

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are currently available, scan the following QR codes using your device's camera:

- For iOS devices, scan the following QR code:



- For Android devices, scan the following QR code:



For new MicroStrategy releases, it may take several days for the latest manuals to be available on the iBookstore or Google Play.

Translations

For the most up-to-date translations of MicroStrategy documentation, refer to the MicroStrategy Knowledge Base. Due to translation time, manuals in languages other than English may contain information that is one or more releases behind. You can see the version number on the title page of each manual.

Finding information

You can search all MicroStrategy books and Help for a word or phrase, with a simple Google™ search at *http://www.google.com*. For example, type "MicroStrategy derived metric" or "MicroStrategy logical table" into a Google search. As described above, books typically describe general concepts and examples; Help typically provides detailed steps and screen options. To limit

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your search to MicroStrategy books, on Google's main page you can click **More**, then select **Books**.

Manuals for MicroStrategy overview and evaluation

- *Introduction to MicroStrategy: Evaluation Guide*

  Instructions for installing, configuring, and using the MicroStrategy Evaluation Edition of the software. This guide includes a walkthrough of MicroStrategy features so you can perform reporting with the MicroStrategy Tutorial project and its sample business data.

- *MicroStrategy Evaluation Edition Quick Start Guide*

  Overview of the installation and evaluation process, and additional resources.

Resources for security

- *Usher Help*

  Steps to perform mobile identity validation using the Usher mobile security network to issue electronic badges for identifying users.

Manuals for query, reporting, and analysis

- *MicroStrategy Installation and Configuration Guide*

  Information to install and configure MicroStrategy products on Windows, UNIX, Linux, and HP platforms, and basic maintenance guidelines.

- *MicroStrategy Upgrade Guide*

  Steps to upgrade existing MicroStrategy products.

- *MicroStrategy Project Design Guide*

  Information to create and modify MicroStrategy projects, and create the objects that present your organization's data, such as facts, attributes, hierarchies, transformations, advanced schemas, and project optimization.

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- *MicroStrategy Basic Reporting Guide*

  Steps to get started with MicroStrategy Web, and how to analyze and format data in a report. Includes the basics for creating reports, metrics, filters, and prompts.

- *MicroStrategy Advanced Reporting Guide: Enhancing Your Business Intelligence Application*

  Steps to create Freeform SQL reports, Query Builder reports, complex filters and metrics, use Data Mining Services, and create custom groups, consolidations, and complex prompts.

- *Document and Dashboard Analysis Guide*

  Steps to execute, analyze, and format a dashboard in MicroStrategy Web.

- *MicroStrategy Report Services Document Creation Guide: Creating Boardroom Quality Documents*

  Steps to create Report Services documents, add objects, and format the document and its objects.

- *MicroStrategy Dashboards and Widgets Creation Guide: Creating Interactive Dashboards for Your Data*

  Steps to create MicroStrategy Report Services dashboards and add interactive visualizations.

- *MicroStrategy In-memory Analytics Guide*

  Information to use MicroStrategy OLAP Services features, including Intelligent Cubes, derived metrics, derived elements, dynamic aggregation, view filters, and dynamic sourcing.

- *MicroStrategy Office User Guide*

  Instructions to use MicroStrategy Office to work with MicroStrategy reports and documents in Microsoft® Excel, PowerPoint, and Word, to analyze, format, and distribute business data.

- *MicroStrategy Mobile Analysis Guide: Analyzing Data with MicroStrategy Mobile*

  Steps to use MicroStrategy Mobile to view and analyze data, and perform other business tasks with MicroStrategy reports and documents on a mobile device.

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- *MicroStrategy Mobile Design and Administration Guide: A Platform for Mobile Intelligence*

  Information and instructions to install and configure MicroStrategy Mobile, as well as steps for a designer working in MicroStrategy Developer or MicroStrategy Web to create effective reports and documents for use with MicroStrategy Mobile.

- *MicroStrategy System Administration Guide: Tuning, Monitoring, and Troubleshooting Your MicroStrategy Business Intelligence System*

  Steps to implement, deploy, maintain, tune, and troubleshoot a MicroStrategy business intelligence system.

- *MicroStrategy Supplemental Reference for System Administration: VLDB Properties, Internationalization, User Privileges, and other Supplemental Information for Administrators*

  Steps for administrative tasks such as configuring VLDB properties and defining data and metadata internationalization, and reference material for other administrative tasks.

- *MicroStrategy Functions Reference*

  Function syntax and formula components; instructions to use functions in metrics, filters, attribute forms; examples of functions in business scenarios.

- *MicroStrategy MDX Cube Reporting Guide*

  Information to integrate MicroStrategy with MDX cube sources. You can integrate data from MDX cube sources into your MicroStrategy projects and applications.

- *MicroStrategy Operations Manager Guide*

  Instructions for managing, monitoring, and setting alerts for all of your MicroStrategy systems from one console. This guide also includes instructions for setting up and using Enterprise Manager to analyze your MicroStrategy system usage.

Manual for the Human Resources Analytics Module

- *Human Resources Analytics Module Reference*

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Software Development Kits

- *MicroStrategy Developer Library (MSDL)*

  Information to understand the MicroStrategy SDK, including details about architecture, object models, customization scenarios, code samples, and so on.

- *MicroStrategy Web SDK*

  The Web SDK is available in the MicroStrategy Developer Library, which is part of the MicroStrategy SDK.

Documentation for MicroStrategy Portlets

- *Enterprise Portal Integration Help*

  Information to help you implement and deploy MicroStrategy BI within your enterprise portal, including instructions for installing and configuring out-of-the-box MicroStrategy Portlets for several major enterprise portal servers.

  This resource is available from *http://www.microstrategy.com/producthelp*.

Documentation for MicroStrategy GIS Connectors

- *GIS Integration Help*

  Information to help you integrate MicroStrategy with Geospatial Information Systems (GIS), including specific examples for integrating with various third-party mapping services.

  This resource is available from *http://www.microstrategy.com/producthelp*.

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Help

Each MicroStrategy product includes an integrated help system to complement the various interfaces of the product as well as the tasks that can be accomplished using the product.

Some of the MicroStrategy help systems require a web browser to be viewed. For supported web browsers, see the MicroStrategy Readme.

MicroStrategy provides several ways to access help:

- Help button: Use the Help button or ? (question mark) icon on most software windows to see help for that window.
- Help menu: From the Help menu or link at the top of any screen, select MicroStrategy Help to see the table of contents, the Search field, and the index for the help system.
- F1 key: Press F1 to see context-sensitive help that describes each option in the software window you are currently viewing.

For MicroStrategy Web, MicroStrategy Web Administrator, and MicroStrategy Mobile Server, pressing the F1 key opens the context-sensitive help for the web browser you are using to access these MicroStrategy interfaces. Use the Help menu or ? (question mark) icon to access help for these MicroStrategy interfaces.

Accessing manuals and other documentation sources

The manuals are available from *http://www.microstrategy.com/producthelp*, as well as from your MicroStrategy disk or the machine where MicroStrategy was installed.

Adobe Reader is required to view these manuals. If you do not have Adobe Reader installed on your computer, you can download it from *http://get.adobe.com/reader/*.

The best place for all users to begin is with the *MicroStrategy Basic Reporting Guide*.

To access the installed manuals and other documentation sources, see the following procedures:

- *To access documentation resources from any location, page xxix*
- *To access documentation resources on Windows, page xxix*

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- *To access documentation resources on UNIX and Linux, page xxix*

To access documentation resources from any location

1 Visit *http://www.microstrategy.com/producthelp*.

To access documentation resources on Windows

1 From the Windows **Start** menu, choose **Programs** (or **All Programs**), **MicroStrategy Documentation**, then **Product Manuals**. A page opens in your browser showing a list of available manuals in PDF format and other documentation sources.

2 Click the link for the desired manual or other documentation source.

If bookmarks are not visible on the left side of a product manual, from the **View** menu click **Bookmarks and Page**. This step varies slightly depending on your version of Adobe Reader.

To access documentation resources on UNIX and Linux

1 Within your UNIX or Linux machine, navigate to the directory where you installed MicroStrategy. The default location is `/opt/MicroStrategy`, or `$HOME/MicroStrategy/install` if you do not have write access to `/opt/MicroStrategy`.

2 From the MicroStrategy installation directory, open the `Help` folder.

3 Open the `Product_Manuals.htm` file in a web browser. A page opens in your browser showing a list of available manuals in PDF format and other documentation sources.

4 Click the link for the desired manual or other documentation source.

If bookmarks are not visible on the left side of a product manual, from the **View** menu click **Bookmarks and Page**. This step varies slightly depending on your version of Adobe Reader.

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Documentation standards

MicroStrategy online help and PDF manuals (available both online and in printed format) use standards to help you identify certain types of content. The following table lists these standards.

These standards may differ depending on the language of this manual; some languages have rules that supersede the table below.

Type	Indicates
bold	• Button names, check boxes, options, lists, and menus that are the focus of actions or part of a list of such GUI elements and their definitions Example: Click **Select Warehouse**.
italic	• Names of other product manuals and documentation resources • When part of a command syntax, indicates variable information to be replaced by the user Example: Type `copy c:\`*`filename`* `d:\`*`foldername`*`\`*`filename`*
`Courier font`	• Calculations • Code samples • Registry keys • Path and file names • URLs • Messages displayed in the screen • Text to be entered by the user Example: `Sum(revenue)/number of months.` Example: Type `cmdmgr -f scriptfile.scp` and press **Enter**.
+	A keyboard command that calls for the use of more than one key (for example, SHIFT+F1).
	A note icon indicates helpful information for specific situations.
	A warning icon alerts you to important information such as potential security risks; these should be read before continuing.

Education

MicroStrategy Education Services provides a comprehensive curriculum and highly skilled education consultants. Many customers and partners from over 800 different organizations have benefited from MicroStrategy instruction.

Courses that can help you prepare for using this manual or that address some of the information in this manual include:

- MicroStrategy Report Services: Document Essentials

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- MicroStrategy Report Services: Dynamic Dashboards

For the most up-to-date and detailed description of education offerings and course curricula, visit *http://www.microstrategy.com/Education*.

Consulting

MicroStrategy Consulting Services provides proven methods for delivering leading-edge technology solutions. Offerings include complex security architecture designs, performance and tuning, project and testing strategies and recommendations, strategic planning, and more. For a detailed description of consulting offerings, visit *http://www.microstrategy.com/services-support/consulting*.

Technical Support

If you have questions about a specific MicroStrategy product, you should:

1. Consult the product guides, Help, and readme files. Locations to access each are described above.
2. Consult the MicroStrategy Knowledge Base online at *https://resource.microstrategy.com/support*.

   A technical administrator in your organization may be able to help you resolve your issues immediately.
3. MicroStrategy Technical Support can be contacted by your company's Support Liaison. Contact information and the Technical Support policy information is available at *http://www.microstrategy.com/services-support/support/contact*.

Feedback

Please send any comments or suggestions about user documentation for MicroStrategy products to:

`documentationfeedback@microstrategy.com`

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Send suggestions for product enhancements to:

`support@microstrategy.com`

When you provide feedback to us, please include the name and version of the products you are currently using. Your feedback is important to us as we prepare for future releases.

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1

DESIGNING AND CREATING DOCUMENTS

Introduction

A MicroStrategy Report Services document contains objects representing data coming from one or more datasets, as well as images and shapes. A dataset is a set of data that can be displayed on a document. A dataset can be a MicroStrategy report, a MicroStrategy Intelligent Cube, or data imported directly from an external data source. The information in a dataset can include MicroStrategy objects such as attributes, custom groups, consolidations, and metrics.

Documents can appear in almost as many ways as you can imagine and are generally formatted to suit your business needs, in a single display of presentation quality.

This chapter describes the ways in which you can design and create a MicroStrategy Report Services document. If you are new to designing documents, see *Best practices for designing effective documents, page 10* before you begin a new document.

Note the following:

- While you can connect an older MicroStrategy Developer client to a newer Intelligence Server (such as an 8.1.x MicroStrategy

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Desktop client and a 9.x Intelligence Server), none of the newer 9.x functionality for Report Services documents is supported.

- If some fonts are not available on an Intelligence Server installed on the UNIX operating system, copy True Type fonts into the Intelligence Server installation directory. Copy these fonts, which have a .ttc or .ttf extension, to *INTELLIGENCE_SERVER_INSTALL_PATH*\PDFGeneratorFiles. The default installation path for the Intelligence Server in UNIX is home\MicroStrategy\PDFGeneratorFiles. For the change to take effect, you must restart Intelligence Server.

Before you begin

Before you begin creating a document, you should understand how end users will use documents for data analysis. For examples of manipulating data in documents and steps to perform analysis, see the *Document and Dashboard Analysis Guide*.

This section describes how to display a document during the design process so that you can achieve your design goals. It also describes all display modes so you can determine which display modes to make available to end users.

Display modes in MicroStrategy Web

In MicroStrategy Web, you can view and work with a document using several display modes. For example, you might use Interactive Mode to analyze data in grid and graph reports, or you can use Flash Mode to work with Flash-only features like MicroStrategy widgets, which are a common feature of Report Services (RS) dashboards.

When a document is created, it is saved in a default display mode by the document's designer. If the designer enabled other display modes to make them available, users can view the document in another display mode by switching display modes. (To enable or disable display modes for end users, see *Determining display for end users, page 350*.)

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To change display modes

1 Click the name of a document to open it.

2 From the **Home** menu, select **Design Mode**, **Express Mode**, **Editable Mode**, **Interactive Mode**, or **Flash Mode**. The options available depend on your user privileges and the display modes enabled for the document.

The following summary table of display modes is a useful reference.

Display Mode	What You Can Do In It	Limitations
Design Mode	• Requires document designer privileges • Displays document structure and placeholders for document components, without associated contents • Quicker performance, since document results are not displayed • Create a new document • Edit an existing document • Add and remove dataset objects • Insert controls such as Grid/Graph containers, text fields, lines, shapes, and panel stacks • Edit and format controls • Format Grid/Graph containers • Pivot report objects on grid reports • Use group-by	• Must switch modes to view the results of a document • Cannot format all aspects of grid or graph reports, including metric values and attribute headers • Cannot format widget Flash settings • Cannot use selectors to flip through panels in a panel stack or display attribute elements or metrics in a grid or graph report • Cannot use page-by to group data • Cannot sort grid reports • Cannot use the Fit to contents/ window feature • Cannot show or hide rulers
Editable Mode	• Requires document designer privileges • Quickly see the effect of changes to the document • Create a new document • Edit an existing document • View the results of a document • Add and remove dataset objects • Insert controls such as Grid/Graph containers, text fields, lines, shapes, and panel stacks • Edit and format controls • Format grid and graph reports, including metric values and attribute headers • Use selectors to flip through panels in a panel stack or display attribute elements or metrics in a grid or graph report • Use page-by and group-by to group data • Use the Fit to contents/window feature • Sort grid reports and pivot report objects • Show or hide rulers	• Performance reflects the fact that you can see all document results as you work • Cannot format widget Flash settings

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Display Mode	What You Can Do In It	Limitations
Interactive Mode	• Intended for document analysts • Optimized for RS dashboard viewing • Edit an existing document • View the results of the document • Use selectors to flip through panels in a panel stack or display attribute elements or metrics in a grid or graph report • Format grid and graph reports • Sort grid reports and pivot report objects • Add totals • Resize rows and columns • Create metrics based on report objects already on the grid report	• Cannot create a new document • Cannot format layout and positioning of objects on the document • Cannot format widget Flash settings
Flash Mode	• Intended for document analysts • Access and interact with features provided by Flash, such as widgets • Edit an existing document • View the results of a document • Use selectors to flip through panels in a panel stack or display attribute elements or metrics in a grid or graph report • Format widget Flash settings • Sort grid reports and pivot report objects	• Cannot create a new document • Cannot manipulate or format grid and graph reports, except to sort and pivot objects on them • If a Grid/Graph uses a graph type that is not supported in Flash, the graph is not displayed
Express Mode	• Intended for document analysts • View the results of the document, as you might in a static PDF file • Provides better performance than all other modes	• Cannot create a new document • Cannot edit an existing document • Cannot manipulate objects or interact with features on the document • Documents containing multiple pages cannot display ascending page numbers

Document views in MicroStrategy Developer

In MicroStrategy Developer, you can open a document in the following views:

- **PDF View** (the default view), which displays the document as it will look when printed (for example, with page breaks). Use PDF View to:
  - View the document as a PDF (especially helpful to see how your changes affect the final display of the document)
  - Interactively display groups on separate pages (using page-by)

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  - Navigate through large quantities of data that have been grouped into separate pages of the document
  - View associated websites by clicking hyperlinks
  - Print the document
  - Save the final PDF (by exporting it)
  - Export the PDF to Excel, PDF, Flash, or HTML

- **Flash View**, which displays a preview of the document as it will look in Flash Mode in MicroStrategy Web. In Flash View, you can interact with the document by using selectors, performing some manipulations such as pivoting and sorting, and viewing and interacting with widgets.
- **HTML View**, which displays a preview of the document as it will look in other MicroStrategy Web modes.
- **Design View**, which displays the structure of the document, or the placeholders for the document objects, without the actual results. It allows you to create and edit the document and the various objects that make up the document. Use Design View for the procedures described in this manual.

Opening a document

If a document has embedded Transaction Services, the document does not open. Instead, a message is displayed indicating that transaction-enabled documents are not supported in MicroStrategy Developer.

To open a document in Design View

1. From a project in MicroStrategy Developer, navigate to the folder containing the document.
2. Right-click the document name or icon, and select **Edit**. The Document Editor opens.

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To open a document in PDF View

1 From a project in MicroStrategy Developer, navigate to the folder containing the document.

To enhance PDF viewing performance, open Acrobat Reader before opening the document.

2 Double-click the document name or icon. The document opens in PDF View, in Acrobat Reader.

Designing and creating documents: An overview

First, you open a blank document and select a report to use as the document's dataset. A dataset is a set of data that can be displayed on a document, Report Services dashboard, or Visual Insight dashboard. A dataset can be a MicroStrategy report, a MicroStrategy Intelligent Cube, or data imported directly from an external data source. Reports include Freeform SQL reports, Query Builder reports, MDX cube reports, and reports that access Intelligent Cubes. Intelligent Cubes can be based on MicroStrategy data or imported data. The information in a dataset can include MicroStrategy objects such as attributes, custom groups, consolidations, and metrics.

If a report is used as a dataset, these dataset objects are all of the objects from the dataset report, regardless of whether they are displayed on the report. For example, if a metric is in the Report Objects but not displayed on the grid, that metric is listed as a dataset object. For background information about view reports, including the different methods to add them to a document, see *Using a view report or base report as a dataset, page 74*.

When you create a new document, you can select the report or Intelligent Cube to use as the dataset, or import the data. Once the document is created, you can:

- Add another dataset to the document
- Replace an existing dataset with another dataset
- Replace all the datasets in the document with a single dataset

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- Remove a dataset from the document

For steps, see *Adding, changing, or removing a dataset, page 48*.

You can create a document with multiple datasets, and you can add more datasets after you create a document. One dataset must be defined as the grouping and sorting dataset; you can group and sort only by the objects on this dataset. For details on how multiple datasets join together in a document, see *Working with multiple datasets, page 52*. For instructions to change the grouping and sorting dataset, see *Changing the grouping and sorting dataset for a document, page 51*.

An Intelligent Cube is a multi-dimensional cube (sets of data) that allow you to use OLAP Services features on reports, as well as share sets of data among multiple reports and documents. You can use an Intelligent Cube as a dataset, allowing you to use one Intelligent Cube for many different documents, while reducing access to the data warehouse. For background information on using Intelligent Cubes as datasets, including how to add a Grid/Graph with an Intelligent Cube as a dataset, see *Using Intelligent Cubes as datasets, page 74*.

After you open a document and add one or more datasets to it, you add controls to the document. Controls are the objects that display the data, images, and shapes in a document. Controls are shown in the document's Layout area as you design the document. A control can be any of the following:

- **Text field**, which displays text such as:
  - Data (attributes, consolidations, custom groups, and metrics) from the document's datasets. See *Adding text and data to a document: Text fields, page 81*, for examples and instructions.
  - Static text for labels. See *Adding a static text label to a document, page 82*, for examples and instructions.
  - Information about the document (such as page numbers) and the datasets (such as report names and filter information). See *Displaying document and dataset information: Auto text codes, page 88*, for examples and instructions.
  - Metrics created within the document, which use the metrics on the datasets to obtain data not directly available from the datasets. These include derived metrics, calculated expressions, and summary metrics. For instance, a calculated expression combines metrics from different datasets. For more examples, and instructions to create them, see *Working with metrics in documents, page 114*.

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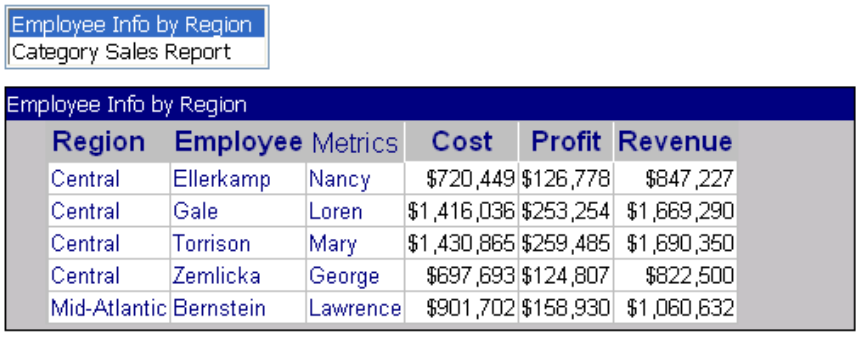
- **HTML container**, which displays real-time information from the web. For steps to create HTML containers, and examples of how they can be used, see *Displaying real-time web and other HTML content: HTML containers, page 143*.
- **Line** or **Rectangle**. For instructions to create lines and rectangles, and examples of how they can be used, see *Adding shapes and lines to a document, page 150*.
- **Image**. For instructions to create images, including guidelines to ensure that the images are available as needed, see *Inserting images in a document, page 152*.
- **Grid/Graph**, which displays data in the form of a standard MicroStrategy grid report or graph report. For instructions to create Grid/Graphs and examples of how they can be used, see *Chapter 3, Displaying Reports in Documents: Grid/Graphs*.

Creating a Table Control is reserved for MicroStrategy use.

Other types of controls, such as selectors and widgets, provide interactivity and visually intuitive graphic images for users. These controls are commonly used on Report Services (RS) dashboards, which are a specific type of document providing additional interactivity. These types of controls include:

- **Panel stack**, which is a holder for a collection of **panels**, or layers of data, in a document. A user can navigate or flip through the panels in a panel stack; only one panel is displayed at a time.

  The document sample below shows a Grid/Graph, Employee Info By Region, on a panel in a panel stack.

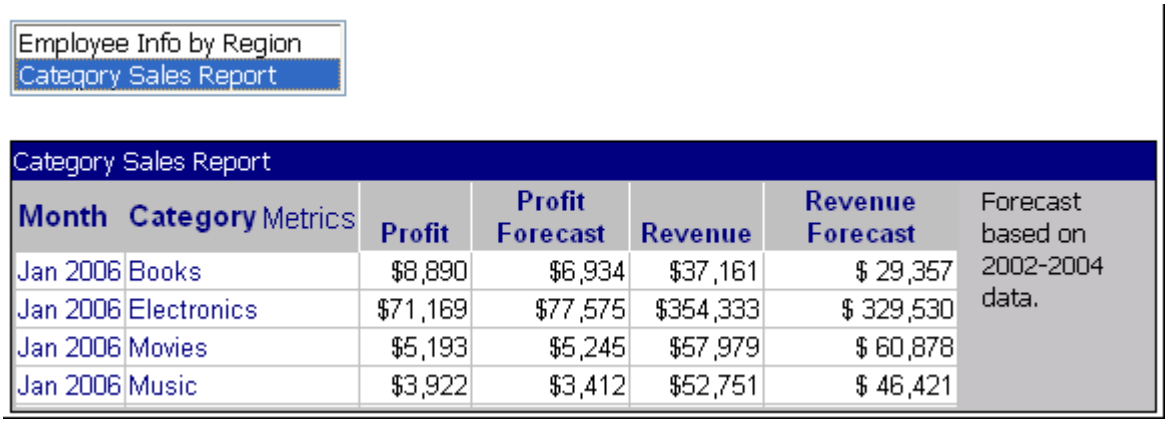


Region	Employee	Metrics	Cost	Profit	Revenue
Central	Ellerkamp	Nancy	$720,449	$126,778	$847,227
Central	Gale	Loren	$1,416,036	$253,254	$1,669,290
Central	Torrison	Mary	$1,430,865	$259,485	$1,690,350
Central	Zemlicka	George	$697,693	$124,807	$822,500
Mid-Atlantic	Bernstein	Lawrence	$901,702	$158,930	$1,060,632

- **Selector**, which allows users to interact with the document by easily flipping through the panels in a panel stack or by displaying different attributes or metrics in a Grid/Graph.

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The selector in the document sample above is the list of Grid/Graphs at the left. When a user clicks Category Sales Report, that Grid/Graph on another panel in the panel stack is displayed, as shown below.



- **Widget**, which displays the results of a dataset in Flash in MicroStrategy Web, allowing users to visualize data in different ways than traditional reports displayed as Grid/Graphs do.

For more details and examples of RS dashboards and these controls, as well as procedures to define these controls, see the *Dashboards and Widgets Creation Guide*.

Each of these different kinds of controls is referred to as a control type.

Dragging and dropping a dataset object onto the Layout area of the Document Editor creates a control. If the dragged object is a dataset report, a Grid/Graph is created; otherwise, a text field containing the dataset object is added to the Layout area. When the document is displayed as a PDF, the Grid/Graph is displayed like a MicroStrategy report; the text field displays the elements or values of the dataset object.

The document section where a control is placed determines not only the location of the values but also whether the control is repeated on subsequent pages of the document, and at what level the values are calculated. For example, some document sections, such as the Page Header or Page Footer, are appropriate for displaying page numbers because those sections are automatically repeated throughout the document. A metric placed in different document sections is calculated differently in each section. In the Detail section, the metric is calculated at the level of the attribute element, while the same metric placed in the Group Header section is calculated at the level of the group. This is described in more detail, including examples, in *Metric calculation in document sections, page 114*.

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For details of each document section, including explanations of where they appear when the document is generated and the type of information they typically contain, see *Understanding and working with document sections, page 28*.

After you add controls, you can move and arrange them to determine how they appear when the document is viewed as a PDF. For instructions and examples of the various ways in which you can move and arrange controls, see *Arranging controls on a document, page 158*.

You can format the document as a whole, and also the separate controls that are included in the document. For information on the formatting available in documents, including instructions and examples, see *Chapter 4, Formatting Documents*.

Best practices for designing effective documents

Before you begin creating a document, review the best practices listed below. These suggestions will help you design an effective, attractive, and practical document.

The best practices are grouped into the following sections:

- *Gather information about your user audience, page 11*
- *Gather information about your data source, page 11*
- *Gather information about your MicroStrategy project, page 12*
- *Locate or create time-savers, page 13*
- *Design the Report Services document or dashboard effectively, page 14*
- *Best practices: Designing documents for Excel, page 14* if you are designing a document that may be exported to Excel
- *Best practices: Designing documents for Kindle and Nook, page 16* if you are designing a document that may be exported to a Nook or Kindle

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Gather information about your user audience

Ask yourself who the audience is for the document you plan to create. Questions you should have answers to include:

- What is the main topic area the document needs to address? In other words, at a general level, what do users need to know?
- What level of detail do users need? For example, sometimes executive level users only want to see a few key metrics of certain data. Other analysts may need to see very detailed financial numbers or inventory counts.
- What types of documents do users expect? Higher level executives sometimes have expectations about how data is displayed in a document, so it can be helpful to ask what types of documents they are used to receiving, and whether it is important to try to adhere to that data display style.
- Who is your universe of users made up of?
    - If your universe of users is extremely diverse, consider making documents as flexible as possible for each user who executes them, by adding prompts. A prompt asks users questions about the results they want to see on a document, and then submits the appropriate query to the data source. For an introduction to prompts, see the *Basic Reporting Guide*.
    - Your universe of users may include different security requirements. For example, you may need a single document for a group of users, but that group includes both external and internal users, and you want to restrict some data from external view. You must confirm that appropriate security is in place for a document's underlying objects, and that security filters are in place to control row-level access to data. Object-level security is performed using ACLs, or access control lists.

      Security filters and ACLs are generally implemented by your system administrator, but one or both may be under the control of your project designer. See the *System Administration Guide* for details on security filters, ACLs, and other security features.

Gather information about your data source

If you need an introduction to or refresher on data sources, see the *Basic Reporting Guide*.

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Make sure the data your organization stores can support the information your users want to analyze in a reporting environment. Questions you should ask include:

- Does your organization gather the data that users want to see documents on?
- Is your data organized in such a way that it can be used? Is the data reliable, and is it clean? One way to check on the reliability of your data is to create some simple grid reports designed to validate whether your data reflects your understanding of reality.

  For example, if you have a good sense of how many customers own two or three of your organization's products, create a report that shows basic data on the count of customers who purchased those specific products over the past few years. If the numbers you see in the report do not come close to what you expected to see, it is worthwhile to spend some time with your database administrator to address the reliability of the data stored in your data source.

Gather information about your MicroStrategy project

Many of the objects within a project are generally created by the project's designer when the project is first created. Since you use these objects to design datasets for documents, it can be useful to understand your project's design, and specifically how the project's objects reflect the actual data in your organization's data source. In this way, you can choose objects to use in datasets with full knowledge of the data source tables that data is coming from when the document is executed.

For details on general project design and data modeling, see the *Project Design Guide*.

Questions you should ask about your project include:

- Do objects exist in the MicroStrategy metadata which match what users want to see on documents? If not, you (or a user with the appropriate privileges) can create them.

  MicroStrategy provides flexibility in combining information from your data source into specific objects which reflect the concepts that make sense to your users. Consolidations and custom groups are just two examples of ways you can present data to your users in a way that does not directly reflect your data source's storage structure. For an introduction to consolidations and custom groups, see the *Advanced Reporting Guide*.

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- What VLDB (Very Large Database) options have been set? These settings affect how the SQL is written when a document sends a SQL query to your data source. VLDB settings are usually determined by an administrator, but some may also be defined by a project's designer. All VLDB settings are described in detail in the *MicroStrategy Supplemental Reference for System Administration*.
- What project configuration settings have been set that will affect reports or documents? Ask your project designer about any configuration settings made for the project as a whole, because most reports and report objects revert to the project's settings when no object-specific or report-specific settings override them.

Locate or create time-savers

- Before you create a document, search through MicroStrategy to see whether a similar document already exists that can serve the same purpose as the document you intend to create. This can save you time and help you avoid unnecessary duplication in your MicroStrategy metadata.

  You can deploy out-of-the-box documents to your project by reconciling the documents' content to your own project objects. For example, you can use a Report Services document or dashboard from the MicroStrategy Tutorial project in your own project. To do this, you use the portable documents feature. A portable document contains all the design of the document without the data, allowing you to copy documents between projects, even when the projects do not have the same metadata. When you import the document into the replacement project, you map the document to the new project (referred to as reconciling the document). For steps to create and reconcile portable documents, see *Portable documents: Reusing documents across projects, page 532*.
- Before you create the finished document, use Microsoft Excel, Paint, PowerPoint, or another tool to create a mock-up of the document you intend to design. Send the mock-up to your user community to gather their feedback on its usefulness. This can save you valuable time creating a complex, finished document that may have to be redone.
- You can select multiple controls on a document so that you can perform an action on all of them, such as formatting, aligning, or sizing. To select multiple controls, press and hold CTRL while you click each control.

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Design the Report Services document or dashboard effectively

- Hide unused document sections (by collapsing the section on the template) so that the document is easier to work with. See *Displaying, hiding, and resizing document sections, page 36*.
- Use the grouping feature and/or incremental fetch to minimize the amount of data passed between the web server and the web browser, for documents designed to be viewed in MicroStrategy Web. See *Grouping records in a document, page 388* and *Introduction, page 539*.
- Determine whether the dataset(s) will return a large amount of data. If so, consider adding grouping to the document, by choosing which attributes you want to group the pages by. See *Grouping records in a document, page 388*.
- Make the following decisions as you are planning the design of your document, not after you are finished:
  - Determine the logic for page breaks. See *Adding page breaks and numbering pages, page 357*.
  - Decide what export options you will enable for users of this document. See *Formatting a document for export, page 377*.
  - Decide whether you need landscape or vertical orientation to best display the data you want to include. See *Formatting a document for exporting or printing, page 356*.
  - If the document will be viewed in PDF, be sure to include bookmarks. See *Including or hiding bookmarks in PDFs, page 370*.
- Do not include so many graphical objects that the data becomes unimportant. Make sure the data is the main focus of the document. The overall goal is to achieve a clean look.
- Plan your design so that all related data can be seen on a single screen or page, and that it can be interpreted from the top left to the bottom right.
- Save your document frequently as you design and make formatting changes to it.

Best practices: Designing documents for Excel

The following best practices will help ensure that your document is displayed correctly when it is exported to Microsoft Excel. When you export to Excel,

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the resulting spreadsheet looks like a PDF of the document. For example, objects have the same position and size in Excel that they do in a PDF.

For steps to export a document to Excel, see the *Document and Dashboard Analysis Guide* or click **Help**.

When designing a document that might be exported to Excel, do the following to ensure that the document is displayed correctly in Microsoft Excel:

- Know how different object types are exported and displayed in Excel, as shown in the following table:

Object Type	Excel Export Result
Text field	Data in spreadsheet cells
Grid/Graph: • Displayed as a grid • Displayed as a graph • Displayed as both a grid and a graph	• Data in spreadsheet cells • Excel chart object • A combination of the above
Line	Not exported
Rectangle	Not exported
Image	Linked image

- Choose Excel-compatible colors for all objects, including panels, shapes, and Grid/Graphs. Use the set of 40 colors that appear in the Color dialog box in the Document Editor. Excel supports these 40 colors in addition to many more. Other colors are matched by Microsoft Excel as closely as possible. Avoid using gradient colors, since they are not exported to Excel.
- Use graph styles that are supported by Microsoft Excel. For example, if you include a Gauge graph in the document, it is not displayed in Excel. If you include a Combination graph, the exported version in Excel may not be displayed exactly like the original graph in MicroStrategy Web. For a list of graph types that appear differently in Excel than in MicroStrategy, see *Displaying images in Excel, page 382*.
- Avoid overlapping objects. When exported, the document may not be displayed correctly. For example, an object in the background of the document may be displayed in the foreground of the Excel spreadsheet.
- Provide extra space around objects because they may increase in size when the document is exported to Excel.

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- Use text field borders to create lines and rectangles. Standard MicroStrategy line and rectangle controls may not be displayed correctly in Excel. You can also use a panel stack to create a colored background; for instructions to create panel stacks, see the *Dashboards and Widgets Creation Guide*.
- Avoid inserting line breaks within text fields. Line breaks (inserted by typing CTRL+ENTER) are not rendered in Excel.
- Do not enable word-wrapping in a column header on a Grid/Graph in MicroStrategy. If you do so, the headers are not displayed correctly in Excel or PDF. Enable word-wrapping in Excel after you export the document.
- Use an absolute file path to define the location of an image used in a document. Do not use a relative file path. Images in documents specified with paths relative to MicroStrategy Web and Intelligence Server are not displayed when exported to Excel.

Best practices: Designing documents for Kindle and Nook

You can export a document to a PDF, then transfer the PDF to a Kindle or Nook for viewing. A Kindle user can go to a specific page in the PDF, search for text phrases, and switch between landscape to portrait view (on the Kindle DX). A Nook user can use bookmarks to jump to a specific section of the PDF, go to the last read page, change the text font size, rotate PDF pages, and search for text phrases.

For directions to export a document to PDF, see the *Document and Dashboard Analysis Guide* or click **Help**.

When designing a document that might be viewed on a Kindle or Nook, do the following to ensure that the document is displayed correctly:

- If the document contains multiple layouts, set the default export option to export all layouts. This ensures that the Kindle or Nook user can view all the data. For information about multiple layouts, see *Creating multi-layout documents, page 512*; for information about setting default export options, see *Specifying default export options, page 379*.
- If your document contains page-by fields, set the default export option to export all pages. This ensures that the Kindle or Nook user can view all the data. For information about page-by, see *Using page-by on a document, page 418*; for information about setting default export options, see *Specifying default export options, page 379*.

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- If the document will be viewed on a Nook, include bookmarks so that a user can quickly access a specific section of the document. Bookmarks are displayed in the PDF in a tree format, creating a table of contents as a navigation aid. Bookmarks are created only when a document is grouped or contains multiple layouts. For instructions to create bookmarks, see *Including or hiding bookmarks in PDFs, page 370*.
- Embed fonts in the PDF, so that bullets, thresholds, and any other objects that require special fonts are displayed correctly. A Nook user can change the text font only if the fonts are embedded. For instructions, see *Embedding fonts in PDFs, page 367*.
- Both the Kindle and the Nook have a gray-scale display, so be sure that the contrast in graphs and other images are high enough so that a user can easily distinguish between different areas.
- The Kindle resizes the PDF to the size of the Kindle screen, so ensure that text and graphics are sized large enough to be clearly viewable on the Kindle.

Creating documents

You can create a document in one of several ways, depending on your needs:

- On your own from start to finish using the Document Editor, which allows you to select the information to be included and the formatting of the document (see *Creating a document from scratch, page 18*). You can add one or more datasets to the document.
- Using another document as a template, which allows you to pattern the new document after an existing one (see *Creating a document using another document as a template, page 20*). The same dataset, controls, formatting, and layout as the template are used in the new document. You can add to or modify the new document after it is created.
- From a report. The report is added as a Grid/Graph (an object that acts like a standard MicroStrategy report) in the Detail Header of the new document (see *Creating a document from a report, page 25*). You can also select multiple reports at the same time to create a multi-layout document (see *Creating a document from a report, page 25* for instructions and *Creating multi-layout documents, page 512* for background information on layouts).

You can also create, edit, or delete multiple documents at the same time by using a Command Manager script. Command Manager is a

MicroStrategy tool designed to automate certain tasks and processes. For example, you can create multiple empty documents that use the same document template. For more information about Command Manager, including instructions, see the *Command Manager* chapter of the *System Administration Guide*.

For steps to create a document in MicroStrategy Developer, see the *MicroStrategy Developer help* (formerly the *MicroStrategy Desktop help*).

Prerequisites

- To create a document using any method (from scratch, from a template, or from a report), you must have the necessary document designer privileges in MicroStrategy. For details, contact your administrator.
- To create a document from a report, it is assumed that the report is already created and saved. See the *Basic Reporting Guide* for steps to creating reports.

Creating a document from scratch

When you create a document from scratch, you can select the information to be included on the document and the formatting of the document. Documents use datasets as sources for the objects placed on the documents.

To create a document using the Document Editor

1. In MicroStrategy Web, click the MicroStrategy icon at the top of any page and select **New Document**. The Create Document page opens.
2. If you have the appropriate privileges, the View document in Design Mode check box is selected by default. Clear the check box if you want to open the document in the default mode specified by the template's designer.
3. Select **Blank Document** in the Document Templates area (you may have to scroll down). A new document opens in Design Mode.

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Add a dataset

4 To designate a dataset to supply the data for your document, do one of the following:

- From the **Data** menu, select **Add Dataset**.
- Click the **Add Dataset** icon on the Dataset Objects panel on the left.

The Select Dataset dialog box opens.

5 Browse to and select the MicroStrategy report or Intelligent Cube to use as a dataset. You can select a single dataset or multiple datasets. To locate a specific dataset, type a name in the **Find** field.

6 Click **OK**. The selected dataset and its objects are displayed in the Dataset Objects panel.

If you have OLAP Services, be aware that the Dataset Objects panel contains all of the objects from a dataset report, regardless of whether they are displayed on the report. For example, even if a metric is in the Report Objects but not displayed on the report's grid, that metric is still listed as a Dataset Object.

7 Repeat the steps above, starting at *Add a dataset*, for each dataset you want to include in the document.

If you include multiple datasets on the document, the first dataset that you add to the document is automatically defined as the grouping and sorting dataset. You can sort and group the document using fields from the grouping and sorting dataset. For steps to change the grouping and sorting dataset, see *Defining a dataset as primary or secondary, page 60*. For an introduction to using multiple datasets in documents, see *Working with multiple datasets, page 52*.

Add objects to the document

8 Select and add the dataset objects to the appropriate sections in the document. Dataset objects can be added to the document inside various fields, grid or graph reports (Grid/Graphs), or HTML containers. You an also add images and shapes. For details of each, see:

- *Adding text and data to a document: Text fields, page 81*
- *Displaying document and dataset information: Auto text codes, page 88*

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- *Adding a Grid/Graph to a document, page 172*
- *Displaying real-time web and other HTML content: HTML containers, page 143*
- *Inserting images in a document, page 152*
- *Adding shapes and lines to a document, page 150*

9 Arrange the controls as you like. For steps, see *Arranging controls on a document, page 158*.

10 Format the various controls and sections, as well as the document as a whole. For descriptions of the various formatting options, and steps to apply them, see *Chapter 4, Formatting Documents*.

11 Group and sort the data. For instructions and background information, see *Grouping and Sorting Records in a Document, page 387*.

12 Add totals, if desired. For instructions, see *Calculating totals in documents, page 125*.

Save the document

13 Save the document by selecting **Save As** from the **Home** menu.

14 Type a name for the document and click **OK**.

Creating a document using another document as a template

You can save a document as a template and create new documents based on template. Any new document made using this template will contain the same underlying datasets, fields, formatting, and layout as the template document. After the new document is created, you can edit the new document as you want.

A document automatically becomes a template when it is saved in the `Object Templates/Documents` folder. It is then available as a choice in the New Document dialog box when you create a new document.

The `Object Templates` folder is a hidden folder. To see it, use the steps below to have hidden objects displayed.

1 In MicroStrategy Developer, from the **Tools** menu, choose **Developer Preferences**. The Developer Preferences dialog box opens.

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2 Expand the **Developer** folder, and click **Browsing**.

3 At the bottom of the dialog box on the right, select **Display Hidden Objects**.

4 Click **OK**. The Object Templates folder appears in your project list.

MicroStrategy provides predefined document templates, including the Blank Document template and the Blank Dashboard template. Use the Blank Document template to create a traditional document, with multiple sections. The Blank Dashboard template displays only one section, the Detail Header, allowing you to easily design a Report Services (RS) dashboard using the whole screen. For a detailed description of the Blank Dashboard template, including default settings and an example of a document created with it, see the *Dashboards and Widgets Creation Guide*.

Steps are below to create new document templates from scratch. Steps are also below to create a new template, and to import and export documents between projects to use as document templates.

You can also use portable documents to reuse documents across projects. Unlike a document template imported and exported between projects, a portable document can contain dependencies on schema or application objects, such as a dataset report. After importing a portable document into a project, you reconcile the document to the new project. For more details on portable documents and the reconciliation process, including reasons to use them and instructions, see *Portable documents: Reusing documents across projects, page 532*.

Do not confuse document templates and Autostyles. Autostyles contain formatting information only, while document templates contain datasets, controls, and layout as well. Layout templates, available only in the Document Wizard, affect only the position and placement of controls on the document.

To create a document using a document template

1 In MicroStrategy Web, click the MicroStrategy icon  at the top of any page and select **New Document**. The Create Document page is displayed.

2 If you have the appropriate privileges, the View document in Design Mode check box is selected by default. Clear the check box if you want to open the document in the default mode specified by the template's designer.

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3 Document templates are listed on the Create Document page. Select a document template. The new document opens in Design Mode, displaying the datasets, controls, formatting, and layout of the template.

Add a dataset

The document template may already include a dataset. You can add other datasets, as described below. You can also remove datasets; for steps see *Adding, changing, or removing a dataset, page 48*.

4 To designate a dataset to supply the data for your document, do one of the following:

- From the **Data** menu, select **Add Dataset**.
- Click the **Add Dataset** icon on the Dataset Objects panel on the left.

The Select Dataset dialog box opens.

5 Browse to and select the MicroStrategy report or Intelligent Cube to use as datasets. You can select a single dataset or multiple datasets. To locate a specific dataset, type a name in the **Find** field.

6 Click **OK**. The selected dataset and its objects are displayed in the Dataset Objects panel.

If you have OLAP Services, be aware that the Dataset Objects panel contains all of the objects from a dataset report, regardless of whether they are displayed on the report. For example, even if a metric is in the Report Objects but not displayed on the report's grid, that metric is still listed as a Dataset Object.

7 Repeat the steps above, starting at *Add a dataset*, for each dataset you want to include in the document.

If you include multiple datasets on the document, the first dataset that you add to the document is automatically defined as the grouping and sorting dataset. You can sort and group the document using fields from the grouping and sorting dataset. For steps to change the grouping and sorting dataset, see *Changing the grouping and sorting dataset for a document, page 51*. For an introduction to using multiple datasets in documents, see *Working with multiple datasets, page 52*.

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Add objects to the document

8 Add controls such as data, Grid/Graphs, images, shapes, and web feeds to the document. For examples and steps, see the following:

- *Adding text and data to a document: Text fields, page 81*
- *Displaying document and dataset information: Auto text codes, page 88*
- *Displaying real-time web and other HTML content: HTML containers, page 143*
- *Adding shapes and lines to a document, page 150*
- *Inserting images in a document, page 152*
- *Adding a Grid/Graph to a document, page 172*

9 Move, size, and align the controls that you added. For steps, see *Arranging controls on a document, page 158*.

10 Format the document and controls by applying colors, effects, borders, drop shadows, gradients, and more. For descriptions of the various formatting options, and steps to apply them, see *Chapter 4, Formatting Documents*.

11 Group and sort the data, as required. For descriptions of these options, and steps to apply them, see *Chapter 5, Grouping and Sorting Records in a Document*.

12 Add totals, if desired. For instructions, see *Calculating totals in documents, page 125*.

13 Save the document by selecting **Save As** from the **Home** menu.

14 Type a name for the document and click **OK**.

To create a new template for documents

1 If you want a document to be available as a template so that you can format your other documents based on it, save it or copy it to the following folder in MicroStrategy Developer:

`Project name\Object Templates\Documents`

The document will then be available as a template for selection in the Create Document page in MicroStrategy Web and the New Document dialog box in MicroStrategy Developer, when you create a new document.

The Object Templates folder is hidden by default. To display it, from the **Tools** menu in MicroStrategy Developer, select **Developer Preferences**. On the **Developer** tab, click **Browsing Options**. Select the **Display Hidden Objects** check box and click **OK**.

To export a document template

A document can be exported from one project and then imported into another project to use as a template to create a new document. The document cannot have any dependencies on schema or application objects, such as a dataset.

1. In MicroStrategy Developer, select the document to export.
2. From the **Tools** menu, select **Export Document Template**. The Browse for Folder dialog box opens.
3. Navigate to the folder to save the file in, then click **OK**.

   The document, named *document_name*.rst, is saved in the selected folder.

To import a document template

After you export a document from one project, you can import it into another project to use it as a template to create new documents.

1. In MicroStrategy Developer, from the **Tools** menu, select **Import Document Template**. The Open dialog box opens.
2. Navigate to and select the file to import as a document template.
3. Click **Open**.

   The document template is saved in the `Object Templates\Documents` folder in MicroStrategy Developer.

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Creating a document from a report

You can quickly and easily create a document from an existing report. The report is added as a Grid/Graph (an object that acts like a standard MicroStrategy report) in the Detail Header section of a document. For full details on Grid/Graphs, including formatting, display modes, and view filters, see *Chapter 3, Displaying Reports in Documents: Grid/Graphs*.

The Grid/Graph reflects the definition of the report as closely as possible, as described below:

- The Grid/Graph uses the same definition as the report, including all embedded objects and derived metrics.

  The current view of the report is used as the definition of the Grid/Graph in the document. For example, an attribute that is in the Report Objects pane but not on the report grid is not included in the Grid/Graph, although it is included as a dataset object.

  Training metrics, used for Data Mining Services, will create predictive metrics when the document is executed, if they are included on the Grid/Graph and defined to automatically create predictive metrics. For background information about Data Mining Services, including training metrics, see the *Data Mining Services* chapter of the *Advanced Reporting Guide*.

- The mode in which the Grid/Graph is displayed is the same as the report-viewing mode for the report. A graph report creates a Grid/Graph that displays as a graph, and a grid report creates a Grid/Graph that displays as a grid. A report that displays as SQL is displayed as a grid in the document.
- All report formatting is duplicated in the Grid/Graph.
- If the report has a view filter, it is applied to the Grid/Graph.
- Any prompt answers that are stored in the report are copied to the document.

  For an introduction to prompts in reports, and steps to create them, see the *Building Query Objects and Queries, for Designers* chapter of the *Basic Reporting Guide*.

- If page-by is applied to the report:
  - The page-by fields are added as grouping fields on the document, based on the following:

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  - The current element for each of the page fields in the report is set as the current element for each of the grouping fields in the document.
  - If a current element is not selected in the report, the first group-by element, other than All, is used. This scenario can occur when the report was not executed before a document was created from it; therefore, an element was not selected for the page-by. It can also occur if a subtotal is selected as the page-by in the report because documents do not allow subtotals as grouping elements.
  - If neither of the options above are possible, the grouping field is set to All. This scenario can occur when the report was not executed before a document was created from it; therefore, an element was not selected for the page-by. It can also occur if a subtotal is selected as the page-by in the report because documents do not allow subtotals as grouping elements.

- A Group Header and Group Footer for each page-by field are added to the document.

For information on how grouping and sorting works, including examples and instructions, see *Grouping records in a document, page 388*, and *Using page-by on a document, page 418*. For background information on page-by in reports, see the *Building Query Objects and Queries, for Designers* chapter of the *Basic Reporting Guide*.

Prerequisite

You must save the report before creating a document from it.

To create a document from a report

1. In MicroStrategy Web, do one of the following:
   - From a folder, right-click a report and then select **Create Document**.
   - Execute the report. Select **Create Document** from the **Tools** menu. The new document opens in Express Mode. To edit the document, click the **Design Mode** icon on the toolbar.

   The new document opens in Design Mode, with the report set as the grouping and sorting dataset and displayed as a Grid/Graph in the Detail Header section of the document.

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2. Format or edit the Grid/Graph. For steps to edit and format Grid/Graphs, as well as background information about Grid/Graphs, see *Chapter 3, Displaying Reports in Documents: Grid/Graphs*.

3. Format and edit the rest of the document. A few suggestions are listed below:

   - Select additional data for the document. Add data fields, auto text codes, text labels, images, and other controls. See the following for instructions:
     - *Adding text and data to a document: Text fields, page 81*
     - *Displaying document and dataset information: Auto text codes, page 88*
     - *Displaying real-time web and other HTML content: HTML containers, page 143*
     - *Adding shapes and lines to a document, page 150*
     - *Inserting images in a document, page 152*
     - *Adding a Grid/Graph to a document, page 172*
   - Move, size, and align the controls that you added. For instructions, see *Arranging controls on a document, page 158*.
   - Change the formatting of the document. You can format the various controls and sections, as well as the document as a whole. For descriptions of the various formatting options, and instructions to apply them, see *Chapter 4, Formatting Documents*.
   - Group and sort the data. For instructions, see *Chapter 5, Grouping and Sorting Records in a Document*.
   - Add totals, if desired. For instructions, see *Calculating totals in documents, page 125*.

4. Save the document by selecting **Save As** from the **Home** menu.

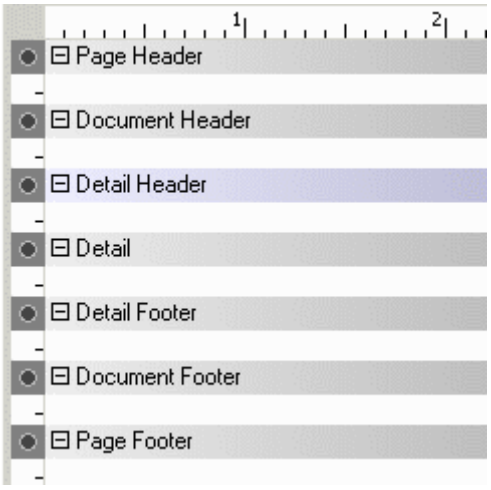
5. Type a name for the document and click **OK**.

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Understanding and working with document sections

A section of a document is a portion of the document that is commonly used for a specific purpose or certain type of information. For example, headers generally contain titles or other general information that should be shared at the top of all pages of the document. Likewise, footers generally contain page numbers or other similar information.

The Layout area of the Document Editor displays all the document's sections, as shown below:

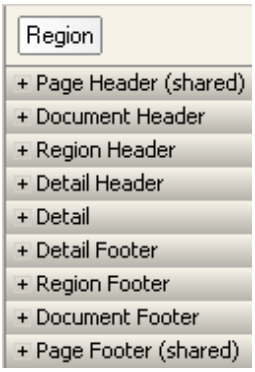


If the document is grouped, a Group Header section is displayed between the Document Header and the Detail Header, and a Group Footer section between the Detail Footer and the Document Footer. (When you group records in a document, you define the document's hierarchy and therefore its inherent sort order. You can then sort a group in either ascending or descending order. For examples of grouped documents, see *Grouping records in a document, page 388*.)

The following document sample shows a document grouped by Region, so a Region Header and a Region Footer are displayed. The document contains

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only one layout, so a single Document Header and Document Footer are displayed.



The first page of the executed document is shown below.

Page Header Printed: 6/30/2009

Document Header Document name: Regional Revenue

Region (Group) Header Data for the Central region

Detail Header
Employee Name Revenue

Detail
Ellerkamp:Nancy $847,227
Detail
Gale:Loren $1,669,290
Detail
Torrison:Mary $1,690,350
Detail
Zemlicka:George $822,500

Detail Footer

Region (Group) Footer Total Revenue for Central: $5,029,366

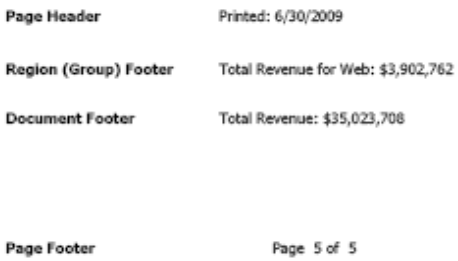
Region (Group) Header Data for the Mid-Atlantic region

Detail Header
Employee Name Revenue

Detail
Bernstein:Lawrence $1,060,632
Detail
Brown:Vernon $331,735
Detail
Corcoran:Peter $325,147
Detail
Folks:Adrienne $1,047,776
Detail
Hollywood:Robert $1,026,874
Detail

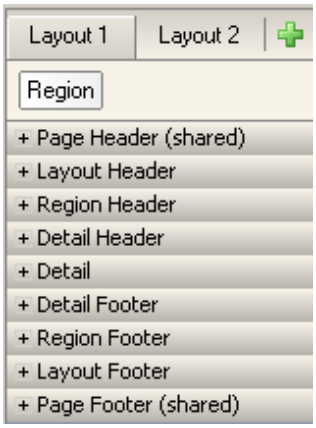
Page Footer Page 1 of 5

The only document section not displayed on the first page is the Document Footer, which appears at the end of the document. The following sample shows the last page of the document, with the Document Footer.



The Page Footer was moved up on the page to conserve space.

If the document contained multiple layouts, the Document Header and Document Footer are replaced by the Layout Header and Layout Footer, as shown in the multi-layout document below:



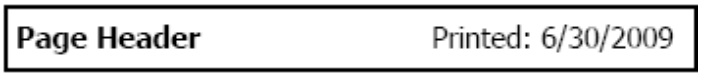
The Page Header and the Page Footer are shared, by default, although you can change that. For steps to create a multi-layout document, see *Creating multi-layout documents, page 512*.

Each document section is described below, with an explanation of where it appears when the document is generated, and the type of information it typically contains.

This chapter also contains information on collapsing, expanding, hiding, and resizing document sections; for details, see *Displaying, hiding, and resizing document sections, page 36*. You can also insert additional sections within the predefined document sections. This allows you to customize a section without affecting another section. For examples and steps, see *Adding sections in documents, page 39*.

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Page Header



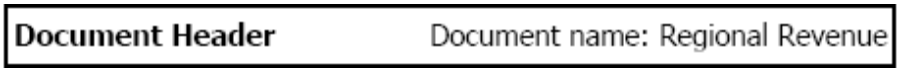
The Page Header section and the controls within it print at the top of every page in the document. Any data fields placed in the Page Header are calculated once for the entire document, and then repeated on every page.

You can use the Page Header for the types of controls that will not change from page to page, such as a logo, the document title, execution time, and so on. For information about these auto text fields, see *Displaying document and dataset information: Auto text codes, page 88*.

Page Header in a multi-layout document

If a document contains multiple layouts, the Page Header sections are shared for all layouts. You can change this setting so that each layout has a separate Page Header. For an example and steps, see *Using a separate Page Header and Page Footer for a layout, page 520*.

Document Header



This section prints once at the beginning of the document immediately below the Page Header section. Any data fields placed in the Document Header are calculated using all of the data in the document. The Document Header can be used for grand totals and document information, such as the name and execution time.

Document Header in a multi-layout document

If a document contains multiple layouts, the Document Header is replaced by the Layout Header, described below.

Layout Header

The Layout Header only appears in multi-layout documents. This section prints once at the beginning of the layout, immediately below the Page

Header section. Any data fields placed in the Layout Header are calculated using all of the data in the layout. For example, a metric in the Layout Header displays as a grand total.

Each layout of a multi-layout document contains a Layout Header and a Layout Footer, so a document can contain several Layout Header sections and several Layout Footer sections.

A document with only one layout has a Document Header, described above, instead of Layout Headers.

Group Headers

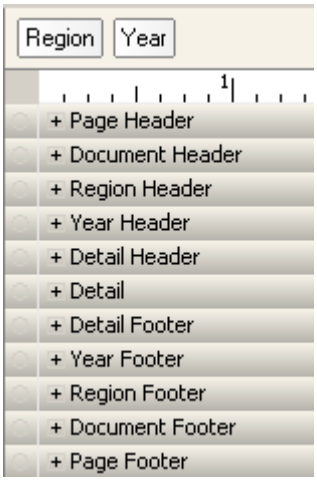


In Design View/Mode, this type of section is displayed as *Group* Header, where *Group* is replaced by the name of the group, such as Region.

If the document is grouped, the Group Headers follow the Document Header. If the document contains multiple layouts, the Group Headers are displayed after the Layout Header. The Group Headers can be used to display information about the group, such as the group element (such as Northeast or Southwest) and group totals.

For each field in the Grouping panel at the top of the editor, there is a corresponding header and footer surrounding the Detail sections. For example, if you have Region and Year in the Grouping panel, the layout area of the document has a pair of Region Header/Footer sections and a pair of Year Header/Footer sections as shown in the following example.

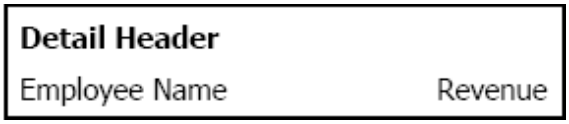
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For the attribute that is farthest to the left in the Grouping panel, its corresponding header follows the Document Header or Layout Header section. The rightmost attribute Group Header immediately precedes the Detail Header. All other headers for attributes in the Grouping panel fall in between.

You can also display groups horizontally (across the page) instead of vertically. If you choose to display groups horizontally, the Group Header, Group Footer, Detail Header, Detail Footer, and the Detail sections are all displayed horizontally. For an example and steps, see *Displaying a group horizontally, page 403*.

Detail Header



The Detail Header is commonly used to display column headings, above their corresponding data fields in the Detail section. You can also have the column headings repeat on each page.

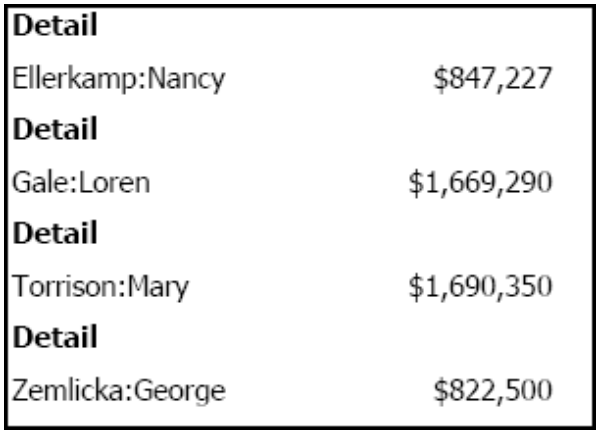
This section immediately precedes the Detail section of the document. If the document is not grouped, the Detail Header follows the Document Header. If the document is grouped, it follows the Group Headers.

If the document contains multiple layouts, the Layout Header replaces the Document Header, so the Detail Header follows either the Layout Header or the Group Headers.

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You can display the Detail Header, Detail, and Detail Footer sections horizontally across the page, instead of vertically. For an example, reasons to use horizontal display, and steps, see *Displaying sections horizontally, page 303*.

Detail

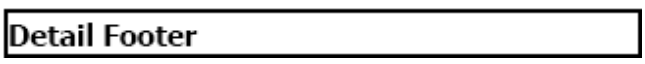


This section often contains the main content of the document. One row prints for each row of data in the document's dataset. Typically, this is where you place most of the attributes and metrics. The Detail section provides the most detailed or granular information.

You do not always need to use the Detail section of a document. You can place controls in the Group Header, for example, to aggregate data to a higher level. In addition, you cannot place a Grid/Graph in the Detail section. A Grid/Graph displays a MicroStrategy report in a document. Since controls in the Detail section are repeated once per row of the dataset, the Grid/Graph would be repeated on each row. You can place a Grid/Graph anywhere in a document except in the Detail section. For examples, and steps to create Grid/Graphs, see *Chapter 3, Displaying Reports in Documents: Grid/Graphs*.

You can display the Detail section horizontally, across the page, instead of vertically. For an example, reasons to use horizontal display, and steps, see *Displaying sections horizontally, page 303*.

Detail Footer

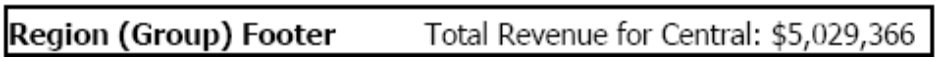


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Controls in this section print immediately following the Detail section. This is typically a good place for totals. In this document, totals are placed in the Region Group Footer, so there was no need to duplicate them here.

You can also display the Detail Header, Detail, and Detail Footer sections horizontally across the page, instead of vertically. For an example, reasons to use horizontal display, and instructions, see *Displaying sections horizontally, page 303*.

Group Footers



In Design View/Mode, this type of section is displayed as *Group* Footer, where *Group* is replaced by the name of the group, such as Region.

Group Footers are used to display totals at the group level. The order of the Group Footer sections varies depending on the fields in the Grouping panel, as described in *Group Headers, page 32*.

You can display groups horizontally across the page, instead of vertically. If you choose to display groups horizontally, the Group Header, Group Footer, Detail Header, Detail Footer, and the Detail sections are all displayed horizontally. For an example and steps, see *Displaying a group horizontally, page 403*.

Layout Footer

The Layout Footer only appears in multi-layout documents. This section displays only once, at the end of the layout. It can be used to display closing notes, a conclusion, or a summary.

Each layout of a multi-layout document contains a Layout Header and a Layout Footer. Therefore, a document can contain several Layout Headers and several Layout Footers, unlike other document sections.

A document with only one layout has a Document Footer, described below, instead of a Layout Footer.

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Document Footer



The Document Footer displays once at the end of the document. It can be used to display information such as closing notes, a conclusion, or a summary.

Document Footer in a multi-layout document

If a document contains multiple layouts, the Document Footer is replaced by the Layout Footer, described above.

Page Footer



The Page Footer displays at the bottom of every page in the document. You may want to insert the page number or the date/time in this section.

Page Footers in a multi-layout document

If a document contains multiple layouts, the Page Footers are shared for all layouts. You can change this setting so that each layout has a separate Page Footer. For an example and steps, see *Using a separate Page Header and Page Footer for a layout, page 520*.

Displaying, hiding, and resizing document sections

You can hide or display sections of a document for several purposes, as well as resize sections:

- *Collapsing and expanding document sections for design purposes, page 37*
- *Displaying and hiding document sections for end users, page 37*
- *Displaying document sections horizontally, page 38*

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- *Resizing document sections, page 38*

For information on hiding and displaying sections in the finished document, see *Hiding or displaying sections for a finished document, page 299*.

Collapsing and expanding document sections for design purposes

Collapsing sections conserves space within the editor as you design the document. Collapsing a section does not affect its size or whether controls in it appear or are hidden when the document is viewed as a PDF.

By default, when you create a new document using the Blank Document template, the Detail Header, Detail section, and Detail Footer are expanded. The other sections are collapsed.

The Blank Dashboard template displays only one section, the Detail Header, by default, allowing you to easily design a Report Services (RS) dashboard using the whole screen.

To expand or collapse a document section, click the plus sign or minus sign next to it (as highlighted in the example below).



You can also create your own template that has the sections that you commonly work with expanded by default. For steps to create a document using a template and to create a template, as well as general information about templates, see *Creating a document using another document as a template, page 20*.

Displaying and hiding document sections for end users

You can determine whether end users open a document with certain sections hidden or displayed. For example, a Page Footer section contains page numbers, which makes sense in a printed document but not in one displayed in MicroStrategy Web. In this case, you can hide the Page Footer in all MicroStrategy Web modes but display it when the document is viewed as a PDF. (The section is still displayed in Design View/Mode in both MicroStrategy Developer and MicroStrategy Web.) For steps and examples, see *Hiding or displaying sections for a finished document, page 299*.

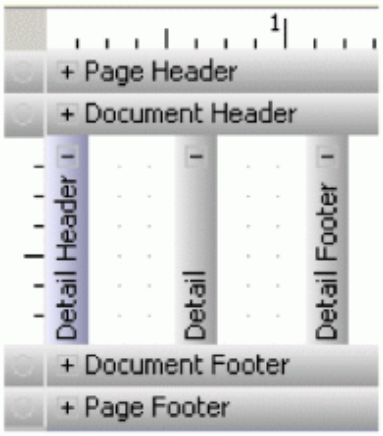
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By default, all document sections are displayed to all users, in all views in MicroStrategy Developer and in all modes in MicroStrategy Web. If a section is empty and does not contain any controls, that section is automatically not displayed to users.

If the document contains multiple layouts, you can hide and display different sections for different layouts. Each layout is independent of the others in this regard. For background information on multi-layout documents, including which options apply to the document as a whole or to individual layouts, see *Creating multi-layout documents, page 512*.

Displaying document sections horizontally

The Detail Header, Detail, and Detail Footer sections can be displayed horizontally so that they are listed across the page instead of vertically. In the following image, only these horizontally arranged sections are expanded.



For an expanded example, reasons to use horizontal display, and steps, see *Displaying sections horizontally, page 303*.

You can also horizontally display the Group Header and Group Footer for a group. For an example and steps, see *Displaying a group horizontally, page 403*.

Resizing document sections

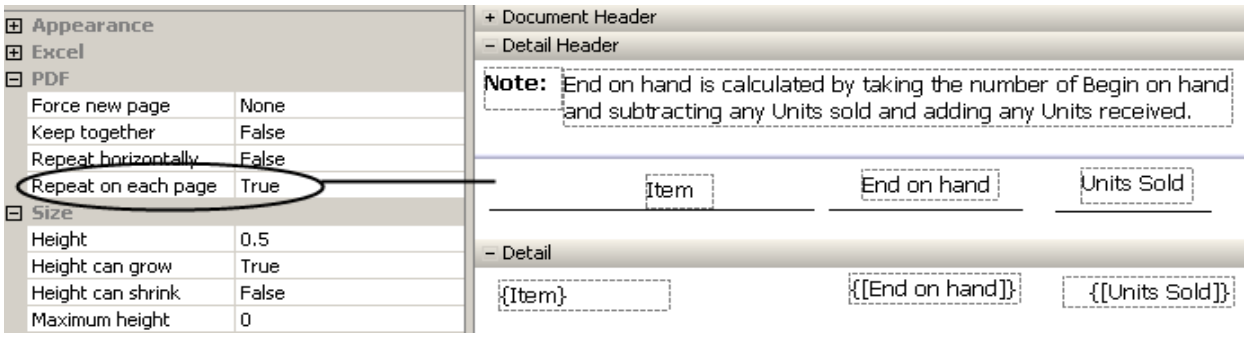
To resize a document section, drag its lower boundary to make it larger or smaller. By default, sections expand to fit the controls that they contain but they do not shrink if the controls are smaller than the size of the section. For steps to use the section size options in combination, see *Changing the size of a section, page 306*.

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Adding sections in documents

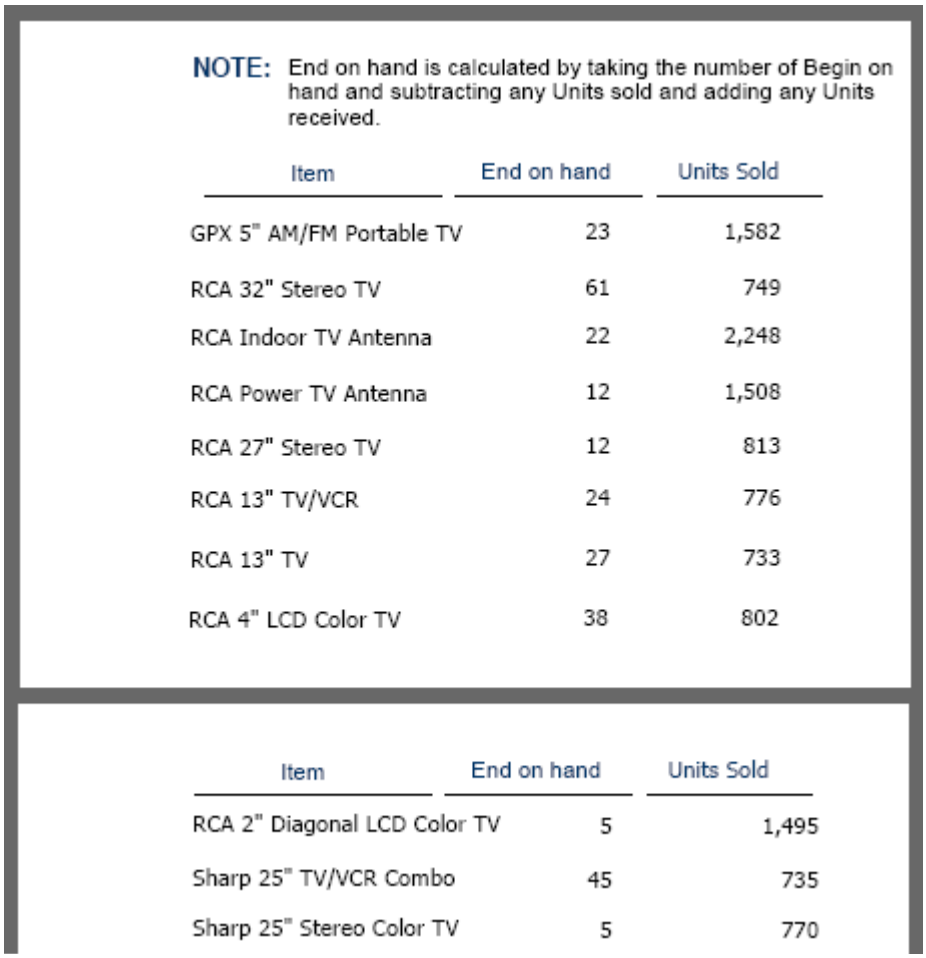
You can add other sections to the predefined document sections. This allows you to customize a section without affecting another section. For example, you may want one section that repeats before the Detail section and after any Group Headers, and a second section that does not repeat. You can add an additional section within the Detail Header, which divides the Detail Header into two sections, and set the options for each section.

As shown in the following example, the Detail Header of the document has two sections in it.



The first Detail Header section contains an explanation of how the metrics are calculated. It does not repeat on every page in the document because the explanation is needed only once. The second Detail Header section contains

column headers and repeats on each page in the document. When viewed as a PDF, the sample document appears as follows.



NOTE: End on hand is calculated by taking the number of Begin on hand and subtracting any Units sold and adding any Units received.

Item	End on hand	Units Sold
GPX 5" AM/FM Portable TV	23	1,582
RCA 32" Stereo TV	61	749
RCA Indoor TV Antenna	22	2,248
RCA Power TV Antenna	12	1,508
RCA 27" Stereo TV	12	813
RCA 13" TV/VCR	24	776
RCA 13" TV	27	733
RCA 4" LCD Color TV	38	802

Item	End on hand	Units Sold
RCA 2" Diagonal LCD Color TV	5	1,495
Sharp 25" TV/VCR Combo	45	735
Sharp 25" Stereo Color TV	5	770

The formatting of the new section is copied from the section in which it is added.

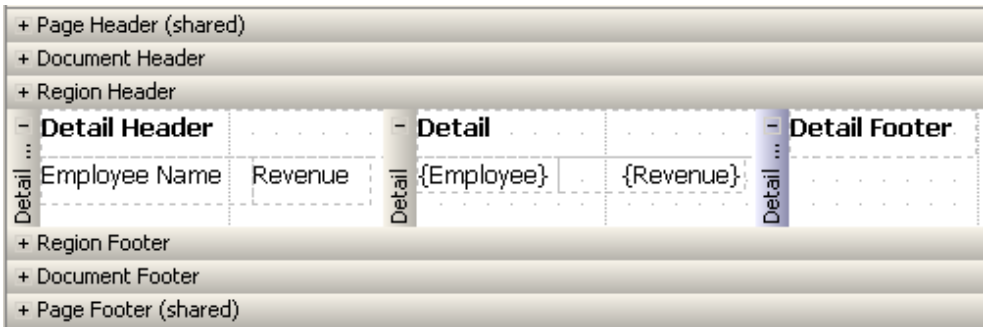
Sections can be added to existing sections that are either horizontally or vertically displayed. Examples are below, followed by steps to add a section.

Adding sections to horizontally displayed sections

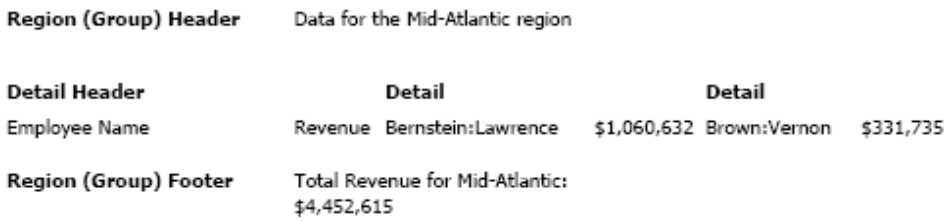
If a section is displayed horizontally, it is printed horizontally across the page. For example, the Detail Header, Detail, and Detail Footer in the

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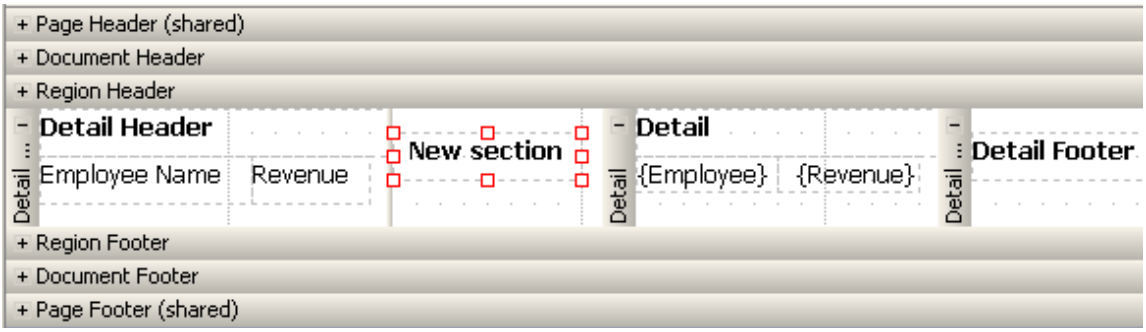
following document sample, shown in Design View/Mode, are displayed horizontally.



When viewed as a PDF, the Detail section is displayed next to the Detail Header, beneath the Region Header, as shown in the document sample below. (The remaining employees in the Detail section, and the Detail Footer that follows, are not shown in the sample, for space reasons.)



You can add a section to a horizontally displayed section. You insert the section to the left or right of the original section. The new section is displayed horizontally. For example, a section has been added to the previous document, to the right of the Detail Header. The new section is shown below, in Design View.

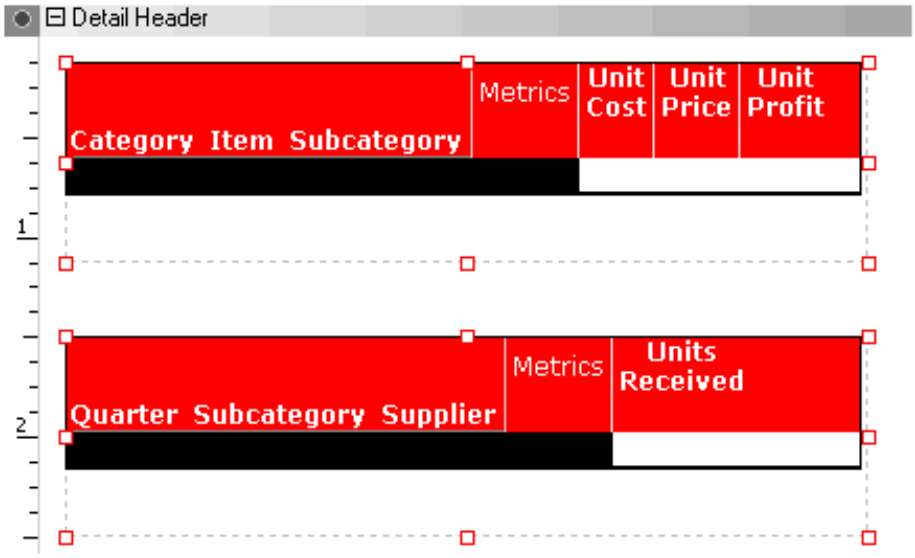


For an expanded example, reasons to use horizontal display, and steps, see *Displaying sections horizontally, page 303*.

Controlling vertical positioning of sections

Another reason for inserting additional sections is relative vertical positioning. If you have one Grid/Graph placed above another in a section, the resulting grid or graph reports can overlap when the PDF is generated. Inserting a new section and placing each Grid/Graph into its own section allows them to grow without overlapping.

For example, a document contains two datasets: Cost, Price, and Profit per Unit, and Inventory Received from Suppliers by Quarter. A Grid/Graph is created from each dataset. In Design View/Mode, it appears as if the Grid/Graphs are positioned well, as shown below:



When you view the document as a PDF, the resulting grid reports overlap because of the amount of information they contain, as shown below:

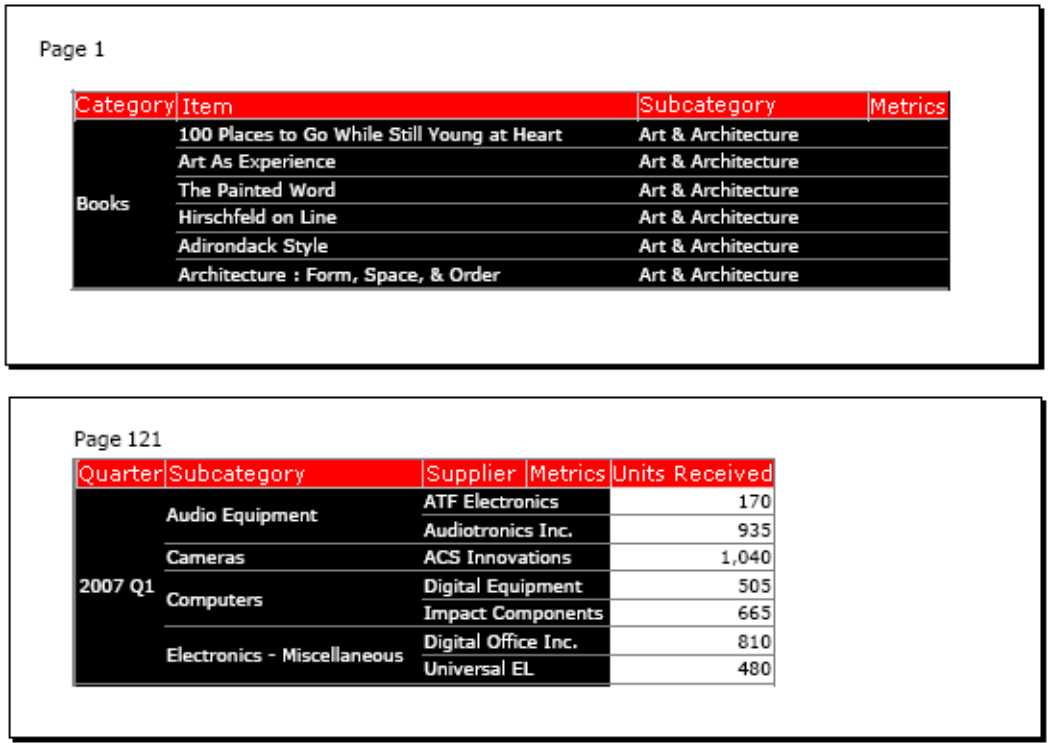
Category	Item	Subcategory	Metrics
	100 Places to Go While Still Young at Heart	Art & Architecture	
	Art As Experience	Art & Architecture	
	The Painted Word	Art & Architecture	
	Hirschfeld on Line	Art & Architecture	
	Adirondack Style	Art & Architecture	

Quarter	Subcategory	Supplier	Metrics	Units Received	tecture
	Audio Equipment	ATF Electronics		170	tecture
		Audiotronics Inc.		935	tecture
	Cameras	ACS Innovations		1,040	tecture

To resolve this problem, you can insert a new section into the Detail Header. This creates two Detail Headers, named Detail Header 1 and Detail Header 2. Place the second Grid/Graph into the new section. When you generate the

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PDF, the resulting grid reports are separated as shown in the following image:



To add a section to a document

1 In MicroStrategy Web, open the document in **Design Mode**.

2 In the Layout area, right-click in the section above or below where you want to add the new section, and then select either **Insert Section Above** or **Insert Section Below**. A line appears in the Layout area to divide the sections.

> If the selected section is displayed horizontally, the options are **Insert Section Left** and **Insert Section Right**. For instructions to specify that a section displays horizontally, see *Displaying sections horizontally, page 303*.

3 You can size the sections by clicking the line divider and dragging it.

The new section is automatically formatted like the section it was added to. You can format the new section and the original section independently.

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2

ADDING TEXT AND DATA TO DOCUMENTS

Introduction

After you create a new document, you specify the data that appears and control the layout, formatting, grouping, and subtotaling of data. In addition, you can insert pictures and draw borders in the document. All of these capabilities provide for documents that are suitable for presentation to management for printing boardroom quality material. They are used to create the highest-quality, *Pixel Perfect*™ documents such as scorecards and dashboards, managed metrics documents, production and operational documents, and more.

This chapter contains examples of the different kinds of objects that you can add to a document, with steps to create them.

Using datasets in documents

A dataset is a set of data that can be displayed on a document. A dataset can be a MicroStrategy report, a MicroStrategy Intelligent Cube, or data imported directly from an external data source. Reports include Freeform SQL reports, Query Builder reports, MDX cube reports, and reports that

access Intelligent Cubes. Intelligent Cubes can be based on MicroStrategy data or imported data. The information in a dataset can include MicroStrategy objects such as attributes, custom groups, consolidations, and metrics.

For example, the following report contains four rows.

Region	Year	Metrics	Revenue	Units Sold
Northeast	2007		$2,246,294	53,938
	2008		$2,870,291	69,707
Mid-Atlantic	2007		$1,140,008	27,636
	2008		$1,518,592	36,363

The same report is used as a dataset in a document, and each of its objects are used in the Detail section. The document contains four rows as well.

Region	Year	Profit
Northeast	2007	$339,961
Northeast	2008	$435,701
Mid-Atlantic	2007	$171,354
Mid-Atlantic	2008	$228,509

You can also add a Grid/Graph, which displays the information from the dataset report; it looks like a report. The Grid/Graph in the document would also contain the same four rows.

Dataset information can include objects such as attributes, custom groups, consolidations, or metrics. These dataset objects include all of the objects from the report that the dataset is based on (the dataset report), regardless of whether they are displayed on the report itself. For example, if a metric is in the report's set of Report Objects but is not displayed on the report's grid, that metric is still part of the dataset and is listed as a dataset object.

A report that displays only a subset of the objects that define it is called an OLAP Services report. For more information about these subset reports, see *Using a view report or base report as a dataset, page 74*.

Freeform SQL reports, Query Builder reports, MDX cube reports, and reports created using the Data Import feature can be used as datasets in documents. You can also import data directly from a data source to create a dataset. The imported data is used as a dataset on the document.

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- For information on Freeform SQL and Query Builder reports, see the *Advanced Reporting Guide*.
- For information on modeling MDX cube sources into MicroStrategy to be used as datasets, see the *MDX Cube Reporting Guide*.
- For information on importing data into a document, see *Importing data from different data sources* below.

Importing data from different data sources

You can use MicroStrategy Web to import data from different data sources into MicroStrategy metadata with minimum project design requirements. You link this imported data to define attributes and metrics. You then save and publish it as an Intelligent Cube. The data sources include a file in a folder on your computer or stored in Dropbox, a table in a database, the results of a SQL query, a Salesforce.com report, Facebook, and Twitter. For a complete list of data sources, see the *MicroStrategy Web Help*.

You can:

- Import data while creating a document. Your imported data is saved and can be used immediately in the document.
- Import and save data in a folder location. If desired, you can create a document immediately from the imported data.

Some common uses for importing data include:

- Combining and analyzing personalized data with your project data
- Quickly integrating data into MicroStrategy as part of a proof-of-concept
- Importing and reporting on personalized data from various data sources
- Immediately building reports, documents, and dashboards without having to “model” the data source
- Modifying the data in your data source, then republishing the Intelligent Cube to quickly update the data in your reports, documents, and dashboards

You can import data from the following data sources:

- A file on your computer, network, or from a specified URL or UNC path
- A table in a database

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- The results of a Freeform SQL query on a database
- A Salesforce.com report

When you import data into a document, the imported data is automatically linked to attributes that already exist in the document. For example, a document contains a dataset that includes the Year attribute. You import data from a file that contains year and region information. The year is automatically linked to the Year attribute during the data import process. You can unlink the data, if the link is incorrect for your needs.

For high-level steps to import data as a dataset, see *To import data to use as a dataset, page 50*. For more detailed steps, including steps to link data to attributes, see the *MicroStrategy Web Help*. For more information on including supplemental data in a project using the Data Import feature, see the *Creating and Configuring a Project* chapter in the *Project Design Guide*.

Adding, changing, or removing a dataset

When you create a document, you must provide the data that appears in the document by selecting at least one dataset. The dataset can be an existing report or Intelligent Cube, or you can import data directly into the document. You can add a dataset to a document, replace a dataset that has already been added, or remove a dataset from a document. A document can contain multiple datasets.

If you remove or replace a dataset, controls on the document that contain data that is no longer available from the dataset will be updated and will no longer contain data from the replaced or removed dataset. For example, if a Grid/Graph contains attributes and metrics from a dataset, and the dataset is deleted from the document, the Grid/Graph is cleared and no longer contains any data. (A Grid/Graph displays the information from the dataset in a report-like format.)

If the document contains multiple datasets, and one dataset is removed or replaced, objects from that dataset that are available in another dataset are updated to contain data from the other dataset. Objects from the deleted or replaced dataset that are not available in another dataset are cleared or removed. For example, a document contains two datasets. Dataset 1 has Category, Region, and the Revenue and Cost metrics. Dataset 2 has Category, Year, and the Revenue and Profit metrics. A Grid/Graph displays Category, Region, Revenue, and Cost from Dataset 1, and Year and Profit from Dataset 2. Dataset 1 is removed from the document. The Grid/Graph now displays

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Category, Year, Revenue, and Profit from Dataset 2. Region and Cost, which only exist in Dataset 1, are removed.

You can change this behavior by specifying that missing units are kept, at either the project or document level. For steps, see *Removing or keeping missing objects in a Grid/Graph when datasets are removed or replaced, page 55*.

If you delete a dataset from a multi-layout document, it is deleted from the entire document. A multi-layout document contains multiple documents, each in its own layout, creating a "book" of documents. For information about multiple layouts, see *Creating multi-layout documents, page 512*.

A document can be grouped and sorted only by the objects in the grouping and sorting dataset, as described in *Changing the grouping and sorting dataset for a document, page 51*. If you delete the grouping and sorting dataset, any grouping fields are removed, including the corresponding Group Header and Group Footer sections, all of their contents, and the grouping sort keys.

If a Grid/Graph in a document is linked as a shortcut to a dataset, when you replace that dataset, the data from the new dataset automatically replaces the data in the Grid/Graph. For information about shortcuts, see *Adding a Grid/Graph as a shortcut, page 193*.

You can add a dataset and use it to populate an empty Grid/Graph in one step. For steps, see *Adding a dataset to an empty Grid/Graph, page 179*.

To add an existing report or Intelligent Cube as a dataset

1. In MicroStrategy Web, open the document in **Design Mode** or **Editable Mode**.
2. From the **Data** menu, select **Add Dataset**. The Select Dataset dialog box opens.
3. Navigate to and select the report or Intelligent Cube to use as the dataset, then click **OK**. The dataset is added to the document.

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To import data to use as a dataset

1. In MicroStrategy Web, open the document in **Design Mode** or **Editable Mode**.
2. From the **Data** menu, select **Add Dataset**. The Select Dataset dialog box opens.
3. Click **Import new data**. The Connect to Your Data page opens.
4. Click the source of the data, such as File From Disk or Dropbox.
5. Select the appropriate options to import your data. For detailed steps, see the *MicroStrategy Web Help*. The imported data is saved and published as an Intelligent Cube, and added to the document as a dataset.

To remove a dataset from a document

1. In MicroStrategy Web, open the document in **Design Mode**.
2. From the Dataset Objects panel, right-click the name of the dataset to remove, then select **Delete from Document**.
3. A dialog box is displayed warning you that you are about to delete the dataset. Click **OK**. The dataset is removed from the document.

To replace a dataset in a document

1. In MicroStrategy Web, open the document in **Design Mode**.
2. From the Dataset Objects panel, right-click the name of the dataset to replace, then select **Replace Dataset**. The Select Dataset dialog box opens.
3. Navigate to and select the replacement report or Intelligent Cube, then click **OK**. The dataset is replaced.

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To replace all datasets in a document with a single dataset

1. In MicroStrategy Web, open the document in **Design Mode**.
2. From the Dataset Objects panel, right-click the name of any dataset to replace, then select **Replace all datasets**. The Select Dataset dialog box opens.
3. Navigate to and select the replacement report or Intelligent Cube, then click **OK**. All of the datasets in the document are removed and replaced with the new dataset.

Changing the grouping and sorting dataset for a document

When a document contains multiple datasets, one dataset is designated as the grouping and sorting dataset. The document can be grouped and sorted only by the objects in this dataset. By default, the first dataset added to the document is designated as the grouping and sorting dataset, although you can select another dataset.

If the document contains multiple layouts, each layout can have its own grouping and sorting dataset. A multi-layout document contains multiple documents, each in its own layout, creating a "book" of documents. For information about multiple layouts, see *Creating multi-layout documents, page 512*.

The grouping and sorting dataset is bolded in the Dataset Objects panel.

For example, a document contains two datasets. Dataset 1, which is designated as the grouping and sorting dataset, contains the Region and Call Center attributes, as well as the Revenue metric. Dataset 2 contains the Region and Category attributes, as well as the Revenue metric. You can group the document by Region and Call Center, but not by Category. You can sort the Detail section of the document by Region or Call Center.

For more information on how to group or sort data, see *Chapter 5, Grouping and Sorting Records in a Document*.

When you change the grouping and sorting dataset of a document, all the grouping fields (the attributes that the document is grouped by) that are associated with the old grouping and sorting dataset but do not exist in the

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new one are removed. These items are also removed from the corresponding headers and footers.

To change the grouping and sorting dataset

1. In MicroStrategy Web, open the document in **Design Mode**.
2. In the Dataset Objects panel, right-click the dataset that you want to be the primary dataset and select **Set as grouping and sorting dataset**. The dataset appears in bold text.

Working with multiple datasets

You can create a document with multiple datasets, and you can add more datasets after you create a document.

You can define the join behavior of each dataset as either **primary or secondary**. This functionality allows you to control which datasets determine the attribute elements that appear in the document results.

- All of the elements from the **primary datasets** are displayed in the results.
- Elements from the **secondary datasets** are displayed only if they also appear in a primary dataset.

These rules do not affect Grid/Graphs that use a single dataset report (the report that the Grid/Graph is based on). In this case, an element from a secondary dataset is displayed in a grid or graph report in a document even if it does not also appear in a primary dataset. If the Grid/Graph uses data from multiple dataset reports, the join behavior affects the content of the Grid/Graph. For more details on how join behavior affects Grid/Graphs, see *Chapter 3, Displaying Reports in Documents: Grid/Graphs*.

Datasets are joined following these rules:

- If a document contains one primary dataset, then all secondary datasets are joined to the primary dataset using left outer joins.
- If a document contains at least two primary datasets, all primary datasets are joined using compound joins. The results are used to left outer join all secondary datasets.

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- If a document does not contain any primary datasets, all datasets are joined using inner joins.

For examples, see *Defining a dataset as primary or secondary, page 60*.

For a compound join, Intelligence Server joins the data in the datasets as described below:

- If the datasets have any of the same attributes, the common attribute elements are matched.
- Then, beginning with the first row of each dataset and continuing to the last, a row is created in a virtual dataset, which is the complete set of joined rows held in memory. The virtual dataset contains all attributes, consolidations, custom groups, and metrics. You can determine whether sections that do not have metric data are displayed and whether grouping elements that contain null values are displayed. For examples and instructions, see *Displaying grouping elements that contain null values, page 75* and *Removing sections that do not have metric data, page 79*.

The compound join saves memory space and processing time on the Intelligence Server executing the document. For examples of joining datasets, see *Defining a dataset as primary or secondary, page 60* and *Joining multiple datasets: Examples, page 65*.

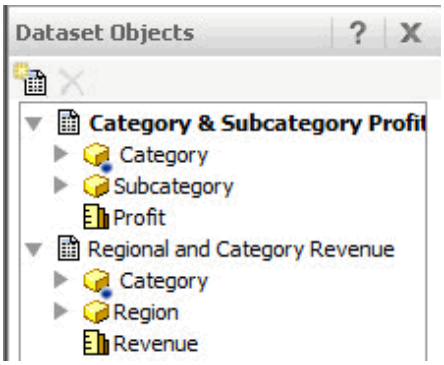
When there are multiple datasets in a document, the grouping and sorting dataset is the one that is bolded in the Dataset Objects panel. A document can be grouped and sorted using fields from the primary dataset only.

A document can also pull data from any number of MDX cube, Freeform SQL, and Query Builder reports, which facilitate joining data across multiple sources. For details on these types of reports, see the *MDX Cube Reporting Guide* and the *Advanced Reporting Guide*.

Any attributes common to multiple datasets are displayed with a blue icon in Dataset Objects. In the example below, the Category attribute is available in

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both the “Category & Subcategory Profit” dataset and the “Regional and Category Revenue” dataset:



When a document contains multiple datasets, a threshold or a view filter on a Grid/Graph can include any objects from any of the datasets, regardless of whether the Grid/Graph uses that dataset. Thresholds are special formatting that is automatically applied to data in a Grid/Graph, when the data meets a specified value. A view filter on a Grid/Graph places conditions on attributes and metrics which restrict the amount of data displayed on the Grid/Graph.

For example, a document contains a Regional Revenue dataset and a Regional Profit dataset. A Grid/Graph is created for the Regional Revenue dataset. Profit is not displayed on the Grid/Graph, nor is it in the data source for the Grid/Graph.

- In the Grid/Graph, you can create a threshold to change the formatting of the revenue amounts when the profit is greater than a specified amount. For a more detailed example, see *Conditional formatting on a document with multiple datasets, page 323*. For background information on thresholds in general, see *Formatting conditional data in documents, page 317*.
- In the Grid/Graph, you can create a view filter to display only the regions with profits greater than a specified amount. For a more detailed example, see *View filters in documents with multiple datasets, page 222*. For background information on view filters in general, see *Using view filters on Grid/Graphs, page 219*.

If a document contains multiple datasets and a selector, which items are displayed in a selector depends whether the selector filters or slices the data. A selector provides interactivity, allowing each user to change how he sees the data. When a user clicks a selector, a selector can change the focus of a grid or graph report or dynamic text fields (a text field that is a reference to an object on a report) in a panel stack.

- A slicing selector shows only the items available on the target.

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- A filtering selector shows all the items available in all the datasets.

For example, a selector on Category targets a Grid/Graph that displays only Books and Movies. A second dataset on the document is filtered for Books and Music, but is not used on the Grid/Graph.

- If the selector is filtered, the selector displays Books, Movies, and Music (all the categories available in all the datasets).
- If the selector is sliced, the selector displays Books and Movies (only the categories available on the target).

For a more detailed example of filtering vs. slicing selectors on a document with multiple datasets, as well as general background information on selectors, see the *Dashboards and Widgets Creation Guide*.

Removing or keeping missing objects in a Grid/Graph when datasets are removed or replaced

If you remove or replace a dataset, controls on the document that contain data that is no longer available from the dataset will be updated and will no longer contain data from the replaced or removed dataset. For a Grid/Graph, objects that are available in another dataset are updated to contain data from the other dataset. Any missing objects can then be kept or replaced:

- If missing objects are kept, the headers for the missing objects are displayed in the Grid/Graph, without any data.
- If missing objects are removed, the missing objects are not displayed in the Grid/Graph. If the Grid/Graph only contains missing objects, it is displayed as an empty placeholder.

No matter whether missing objects are removed or kept, a text field that contains a dataset object (such as an attribute or a metric) will display the object name instead of values. For example, a text field displays {Region} instead of North, South, and so on.

For example, a document contains two datasets. Dataset 1 has Category, Region, and the Revenue and Cost metrics. Dataset 2 has Category, Subcategory, and the Revenue and Profit metrics. A Grid/Graph displays

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Category, Region, Revenue, and Cost from Dataset 1, and Subcategory and Profit from Dataset 2. A part of this Grid/Graph is shown below:

Category	Region	Subcategory	Revenue	Profit	Cost
Books	Central	Art & Architecture	$480,173	$110,012	$295,505
		Business	$400,871	$89,274	$295,505
		Literature	$296,229	$57,986	$295,505
		Books - Miscellaneous	$315,929	$53,007	$295,505
		Science & Technology	$811,787	$184,275	$295,505
		Sports & Health	$335,106	$74,724	$295,505
	Mid-Atlantic	Art & Architecture	$480,173	$110,012	$264,862
		Business	$400,871	$89,274	$264,862
		Literature	$296,229	$57,986	$264,862
		Books - Miscellaneous	$315,929	$53,007	$264,862
		Science & Technology	$811,787	$184,275	$264,862
		Sports & Health	$335,106	$74,724	$264,862
	Northeast	Art & Architecture	$480,173	$110,012	$506,490
		Business	$400,871	$89,274	$506,490
		Literature	$296,229	$57,986	$506,490
		Books - Miscellaneous	$315,929	$53,007	$506,490
		Science &			

Dataset 1 is removed from the document. The Grid/Graph now displays Category, Subcategory, Revenue, and Profit from Dataset 2. By default, Region and Cost, which only exist in Dataset 1, have been removed. A part of the updated Grid/Graph is shown below:

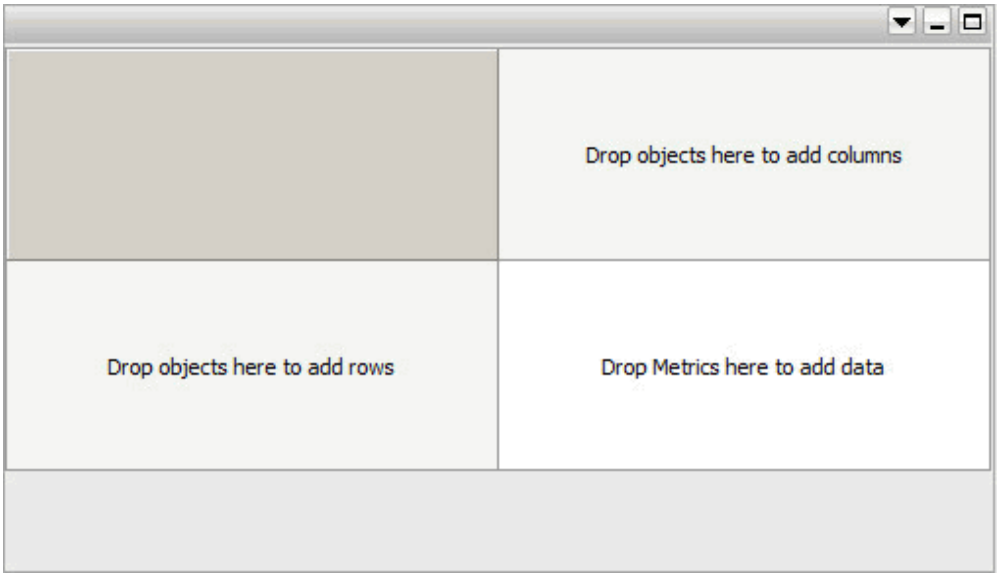
Category	Subcategory	Revenue	Profit
Books	Art & Architecture	$480,173	$110,012
	Business	$400,871	$89,274
	Literature	$296,229	$57,986
	Books - Miscellaneous	$315,929	$53,007
	Science & Technology	$811,787	$184,275
	Sports & Health	$335,106	$74,724
Electronics	Audio Equipment	$3,782,832	$633,169
	Cameras	$5,061,148	$900,830
	Computers	$1,928,998	$338,585
	Electronics - Miscellaneous	$4,671,957	$810,424
	TV's	$3,837,906	$679,393
	Video Equipment	$5,108,464	$927,202
	Action		

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You can instead allow objects missing from the source dataset to be displayed. The object name is displayed, but without any data. In the example above, the Region and Cost headers are displayed, as shown below:

Category	Region	Subcategory	Revenue	Profit	Cost
Books		Art & Architecture	$480,173	$110,012	
		Business	$400,871	$89,274	
		Literature	$296,229	$57,986	
		Books - Miscellaneous	$315,929	$53,007	
		Science & Technology	$811,787	$184,275	
		Sports & Health	$335,106	$74,724	
Electronics		Audio Equipment	$3,782,832	$633,169	
		Cameras	$5,061,148	$900,830	
		Computers	$1,928,998	$338,585	
		Electronics - Miscellaneous	$4,671,957	$810,424	
		TV's	$3,837,906	$679,393	
		Video Equipment	$5,108,464	$927,202	
Movies		Action	$617,565	$37,746	
		Comedy	$669,642	$33,243	
		Drama	$698,840	$42,376	

If the document contains only one dataset, and it is removed, the Grid/Graph is displayed as an empty placeholder, because the document no longer contains any data. The missing objects behavior does not apply in this case.



MicroStrategy recommends that objects missing from datasets are displayed. This can alert you if objects are removed from a report used as a dataset. You can change this at the project or document level. Steps to change this behavior at the document level are provided below. For steps to change it at

the project level, see *Determining whether Grid/Graphs can use multiple datasets, page 58*.

To determine whether missing objects are displayed or removed in a document

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. From the **Tools** menu, select **Document Properties**. The Properties dialog box opens.
3. From the left, select **Advanced**, under Document Properties.
4. From the **Remove Missing Units** drop-down list, select one of the following:
   - To use the project-level property, select **Inherit value from project-level setting**.
   - To remove unavailable objects, select **Remove objects not available in the source datasets**.
   - To display unavailable objects, select **Do not remove objects not available in the source dataset**.
5. Click **OK** to save your changes and return to the document.

Determining whether Grid/Graphs can use multiple datasets

A Grid/Graph displays the information from a dataset in a report-like format. For examples, see *Chapter 3, Displaying Reports in Documents: Grid/Graphs*.

By default, a single Grid/Graph can contain objects from multiple datasets. For example, a document contains two datasets. Dataset 1 contains Region and Revenue; Dataset 2 contains Region and Profit. You can create a Grid/Graph with Region, Revenue, and Profit.

You can change the project configuration settings to require that all objects in a single Grid/Graph come from a single dataset. In the example above, a Grid/Graph could contain Region and Revenue, or Region and Profit, but not Region, Revenue, and Profit.

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To allow a single Grid/Graph to contain objects from multiple datasets, you can change the project configuration settings as described below.

If Grid/Graphs can contain objects from multiple datasets, a single visualization in a Visual Insight (VI) dashboard can also use objects from multiple datasets. If this setting is disabled, each visualization can only use objects from a single dataset.

Prerequisites

- To view Grid/Graphs that use objects from multiple datasets, you must have the Execute Report that Uses Multiple Data Sources privilege.
- To create Grid/Graphs that use objects from multiple datasets, you must have the Import Table from Multiple Data Sources privilege.

To determine whether Grid/Graphs and visualizations can contain objects from multiple datasets

1. In MicroStrategy Developer, right-click the project to update, and select **Project Configuration**. The Project Configuration Editor opens.
2. Expand **Project Definition** in the list of categories, and then click **Advanced**.
3. Click **Configure...** in the Project-Level VLDB Properties section. The VLDB Properties Editor opens.
4. Expand **Analytical Engine** in the list on the left, and select **Document Grids from Multiple Datasets**.

   If this VLDB property is not displayed, you must upgrade the project metadata. For steps, see the *Upgrade Guide*.
5. If the **Use default inherited value** check box is selected, clear it.
6. Do one of the following:
   - To allow a single Grid/Graph or visualization to use objects from multiple datasets, select **Allow objects in document grids to come from multiple datasets**.
   - To require that Grid/Graphs and visualizations use objects from a single dataset, select **Objects in document grids must come from the grid's source dataset only**.

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7 MicroStrategy recommends that objects missing from the source datasets are displayed. The object name is displayed, but without any data. This can alert you if objects are removed from a report used as a dataset. For examples of the different behaviors, see *Removing or keeping missing objects in a Grid/Graph when datasets are removed or replaced, page 55*. To select this property, follow the steps below:

   a In the list on the left, select **Remove Missing Units in Documents**.

   b Clear the **Use default inherited value** check box.

   c Select **Do not remove objects not available in the source dataset(s)**.

   You can also define this property at the document level, in the Document Properties dialog box. For instructions, see *To determine whether missing objects are displayed or removed in a document, page 58*.

8 Click **Save and Close**.

9 Click **OK**.

10 Restart Intelligence Server.

Defining a dataset as primary or secondary

If a document contains multiple dataset reports, you can define the join behavior of each dataset as either **primary** or **secondary**. This functionality allows you to decide which datasets determine which attribute elements appear in the document results.

Primary and secondary datasets examples

For example, consider the following three datasets:

- Dataset 1 contains Region and the Revenue metric, filtered for Central, Mid-Atlantic, Northeast, and Southeast

Metrics / Region	Revenue
Central	$5,029,366
Mid-Atlantic	$4,452,615
Northeast	$8,554,415
Southeast	$2,239,951

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- Dataset 2 contains Region and the Profit metric, filtered for Mid-Atlantic, Northeast, Northwest, and South

Region (Metrics)	Profit
Mid-Atlantic	$764,323
Northeast	$1,300,732
Northwest	$266,986
South	$336,675

- Dataset 3 contains Region and the Customer Count metric, filtered for Mid-Atlantic, Northwest, Southeast, and Southwest

Region (Metrics)	Customer Count
Mid-Atlantic	1,432
Northwest	554
Southeast	731
Southwest	1,206

A document contains all three datasets. The Detail section contains Region and the three metrics. The document could contain a Grid/Graph with the same objects, instead of text fields, and the results would be the same.

By default, all three datasets are primary datasets. Since the datasets are joined together using compound joins, all of the elements from all three datasets are therefore displayed in the seven rows of results. A metric value is displayed only when that region appears in the dataset report that contains the metric. For example, Southwest shows a value only for Customer Count because Southwest appears only in Dataset 3 (the Customer Count dataset).

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Similarly, Mid-Atlantic shows values for all three metrics because Mid-Atlantic is the only region included on all three datasets.

Region	Revenue (Dataset 1)	Profit (Dataset 2)	Customer Count (Dataset 3)
Central	$5,029,366		
Mid-Atlantic	$4,452,615	$673,084	1,432
Northeast	$8,554,415	$1,300,732	
Northwest		$266,986	554
South		$806,956	
Southeast	$2,239,951		731
Southwest			1,206

Change the join behavior:

- Dataset 1 and Dataset 2 = primary
- Dataset 3 = secondary

Dataset 1 and Dataset 2, as primary datasets, are joined with compound joins, and all their regions are displayed on the document. Those results are left outer joined with Dataset 3, so the only regions from Dataset 3 that appear in the document are the regions that also appear in one of the primary datasets. In this case, Southwest appears only in Dataset 3, so it is not displayed in the results. Only six rows are displayed, as shown below:

Region	Revenue (Dataset 1)	Profit (Dataset 2)	Customer Count (Dataset 3)
Central	$5,029,366		
Mid-Atlantic	$4,452,615	$673,084	1,432
Northeast	$8,554,415	$1,300,732	
Northwest		$266,986	554
South		$806,956	
Southeast	$2,239,951		731

Change the join behavior:

- Dataset 1 and Dataset 3= primary

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- Dataset 2 = secondary

Again, only six regions are displayed, but now Southwest is shown instead of South, since South is available only in Dataset 2.

Region	Revenue (Dataset 1)	Profit (Dataset 2)	Customer Count (Dataset 3)
Central	$5,029,366		
Mid-Atlantic	$4,452,615	$673,084	1,432
Northeast	$8,554,415	$1,300,732	
Northwest		$266,986	554
Southeast	$2,239,951		731
Southwest			1,206

Change the join behavior:

- Dataset 1 = secondary
- Dataset 2 and Dataset 3 = primary

This time, Central does not appear because it is available only on Dataset 1, a secondary dataset.

Region	Revenue (Dataset 1)	Profit (Dataset 2)	Customer Count (Dataset 3)
Mid-Atlantic	$4,452,615	$673,084	1,432
Northeast	$8,554,415	$1,300,732	
Northwest		$266,986	554
South		$806,956	
Southeast	$2,239,951		731
Southwest			1,206

Change the join behavior:

- Dataset 1 = primary
- Dataset 2 and Dataset 3 = secondary

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Since the document has only one primary dataset, all the other datasets are joined to the primary dataset with left outer joins. Only the four regions from the primary dataset are displayed in the document. Those are the regions that have Revenue values, since Revenue is the metric in Dataset 1. South, which is only in Dataset 2, and Southwest, which is only in Dataset 3, are not displayed. Northwest is in both Dataset 2 and Dataset 3, but since it is not in the primary dataset, it is not displayed.

Region	Revenue (Dataset 1)	Profit (Dataset 2)	Customer Count (Dataset 3)
Central	$5,029,366		
Mid-Atlantic	$4,452,615	$673,084	1,432
Northeast	$8,554,415	$1,300,732	
Southeast	$2,239,951		731

Change the join behavior:

- Dataset 1 and Dataset 3 = secondary
- Dataset 2 = primary

Since Dataset 2 is primary, only the four regions that are in that dataset are displayed.

Region	Revenue (Dataset 1)	Profit (Dataset 2)	Customer Count (Dataset 3)
Mid-Atlantic	$4,452,615	$673,084	1,432
Northeast	$8,554,415	$1,300,732	
Northwest		$266,986	554
South		$806,956	

Change the join behavior:

- Dataset 1 and Dataset 2 = secondary
- Dataset 3 = primary

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Similarly, since Dataset 3 is primary, only the four regions that are in that dataset are now displayed. Notice that these regions all have values for the Customer Count metric, since that is the metric in that dataset.

Region	Revenue (Dataset 1)	Profit (Dataset 2)	Customer Count (Dataset 3)
Mid-Atlantic	$4,452,615	$673,084	1,432
Northwest		$266,986	554
Southeast	$2,239,951		731
Southwest			1,206

Change the join behavior:

- Dataset 1, Dataset 2, and Dataset 3 = secondary

Since the document does not contain any primary datasets, all datasets are joined using inner joins. Only the one region (Mid-Atlantic) that is in all the datasets is displayed.

Region	Revenue (Dataset 1)	Profit (Dataset 2)	Customer Count (Dataset 3)
Mid-Atlantic	$4,452,615	$673,084	1,432

To define the join behavior of a dataset

1 In MicroStrategy Web, open the document in **Design Mode**.

2 Make sure that the Dataset Objects pane is displayed. (If it is not displayed, click **Dataset Objects** in the list on the left.)

3 Right-click the dataset in the Dataset Objects pane, point to **Join Behavior**, and select either **Primary** or **Secondary**.

Joining multiple datasets: Examples

The following examples show how datasets are joined.

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- Example 1: Same attributes in both datasets, different metric, and same filter (same element values). Result: Acts as one dataset. (See *Example 1: Same attributes, same filter, page 66*)
- Example 2: Same attributes with different element values. Result: Acts mostly as one dataset, but missing values are blank. (See *Example 2: Same attributes, different filter, page 68*)
- Example 3: Dataset with attributes that are a superset of attributes in other datasets. Result: All Detail is at a level combining all attributes. (See *Example 3: Dataset with a superset of attributes that are in another dataset, page 69*)
- Example 4: Different attributes. Result: All Detail is at a level combining all attributes. (See *Example 4: Different attributes, page 71*)

Example 1: Same attributes, same filter

This example explains how a document behaves with multiple datasets that have the same attributes and the same report filter. The result is that the Detail, Group Header, and Group Footer sections behave as if the document has only one dataset.

Two sample dataset reports are executed as standard MicroStrategy reports displayed in grid view. Both datasets contain the same Region and Year attributes. Dataset 1 (the grouping and sorting dataset) contains the metrics Revenue and Units Sold, while dataset 2 contains the metric Profit.

Dataset 1 (grouping and sorting dataset)

Region	Year	Revenue	Units Sold
Northeast	2002	$1,230,989	29,368
Northeast	2003	$1,103,875	27,380
Mid-Atlantic	2002	$1,784,622	42,757
Mid-Atlantic	2003	$1,628,718	39,211

Dataset 2

Region	Year	Profit
Northeast	2002	$298,472
Northeast	2003	$266,107
Mid-Atlantic	2002	$432,541
Mid-Atlantic	2003	$393,828

A document contains these two reports as datasets. When the document is executed, it creates a virtual dataset by joining the two datasets. In this case, because the attributes and the filter are the same, the result displayed in the

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Detail section has the same number of rows as the original reports, but it can display all three metrics together, as shown below.

Region	Year	Revenue	Units Sold	Profit
Northeast	2002	$1,230,989	29,368	$298,472
Northeast	2003	$1,103,875	27,380	$266,107
Mid-Atlantic	2002	$1,784,622	42,757	$432,541
Mid-Atlantic	2003	$1,628,718	39,211	$393,828

You can also create a Grid/Graph that contains the attributes and metrics from the two datasets. The Grid/Graph would display the same four rows and data, as shown below:

Region	Year	Revenue	Units Sold	Profit
Northeast	2002	$1,230,989	29,368	$298,472
Northeast	2003	$1,103,875	27,380	$266,107
Mid-Atlantic	2002	$1,784,622	42,757	$432,541
Mid-Atlantic	2003	$1,628,718	39,211	$393,828

You can create a Grid/Graph for each of the datasets, so that each Grid/Graph shows the data from its respective dataset, with no impact from the other datasets. For example, if we add Year to the Grouping panel and add a grid for each of the datasets to the Year Header, the grids display a summary of the year values, as shown below:

2002

Region	Year	Revenue	Units Sold
Northeast	2002	$1,230,989	29,368
Mid-Atlantic	2002	$1,784,622	42,757

Region	Year	Profit
Northeast	2002	$298,472
Mid-Atlantic	2002	$432,541

Region	Year	Revenue	Units Sold	Profit
Northeast	2002	$1,230,989	29,368	$298,472
Mid-Atlantic	2002	$1,784,622	42,757	$432,541

2003

Region	Year	Revenue	Units Sold
Northeast	2003	$1,103,875	27,380
Mid-Atlantic	2003	$1,628,718	39,211

Region	Year	Profit
Northeast	2003	$266,107
Mid-Atlantic	2003	$393,828

Region	Year	Revenue	Units Sold	Profit
Northeast	2003	$1,103,875	27,380	$266,107
Mid-Atlantic	2003	$1,628,718	39,211	$393,828

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Example 2: Same attributes, different filter

This example explains the behavior of a document that contains multiple datasets having the same attributes but different report filters or prompt answers. The result is that the Detail, Group Header, and Group Footer sections behave as if the document has only one dataset, but with some data missing.

The following example has a document with two datasets. Dataset 1, which is the grouping and sorting dataset, has information for the Year 2002 and Dataset 2 has information for the Year 2003 because of the different filters or prompt answers. The Detail section displays a combination of both datasets and has empty cells where the data does not exist.

Dataset 1 (grouping and sorting dataset)

Region	Year	Revenue	Units Sold
Northeast	2002	$1,230,989	29,368
Northeast	2003	$1,103,875	27,380
Mid-Atlantic	2002	$1,784,622	42,757

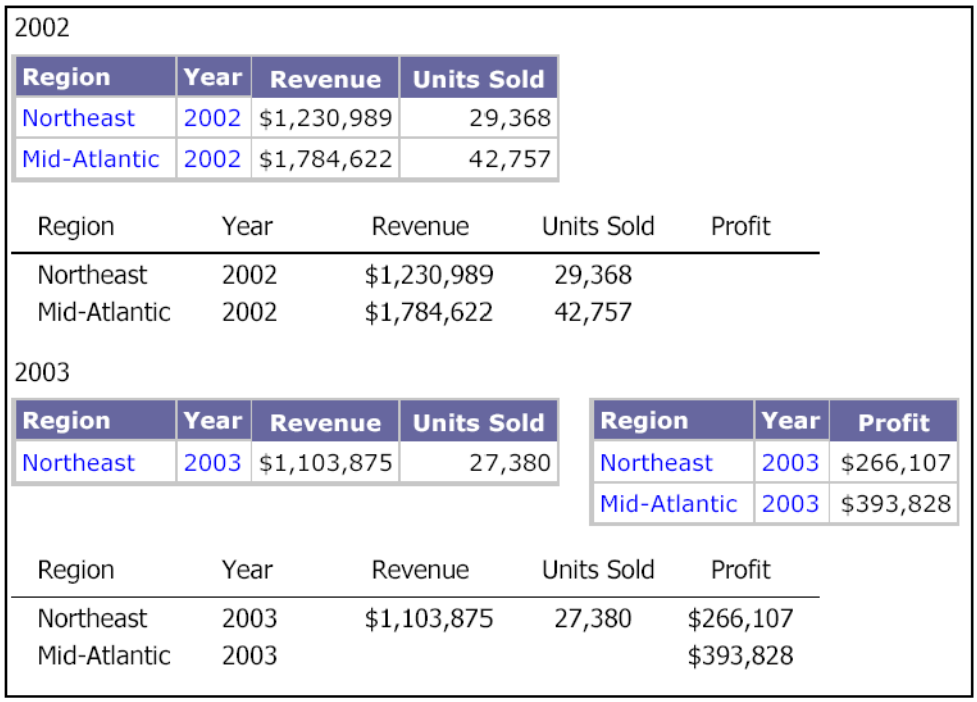
Dataset 2

Region	Year	Profit
Northeast	2003	$266,107
Mid-Atlantic	2003	$393,828

Region	Year	Revenue	Units Sold	Profit
Northeast	2002	$1,230,989	29,368	
Northeast	2003	$1,103,875	27,380	$266,107
Mid-Atlantic	2002	$1,784,622	42,757	
Mid-Atlantic	2003			$393,828

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If you group by Year, you see the following:



Example 3: Dataset with a superset of attributes that are in another dataset

In a document, if the attributes in one of the datasets are a superset of the attributes in the other datasets, the Detail section of the document is at the same level as in the superset dataset.

For example, consider the following scenario:

- Dataset 1, the grouping and sorting dataset, contains Region, Year, and Category.
- Dataset 2 contains Region and Year.
- Dataset 3 contains Region and Category.

The grouping and sorting dataset contains all of the attributes that are in the other datasets, so the grouping and sorting dataset contains a superset of the attributes in the other datasets.

The following image shows the Revenue metric supplied by the grouping and sorting dataset for Region, Year, and Category. In this example, the following was selected for all three datasets:

- Year: 2002 and 2003
- Region: Mid-Atlantic
- Category: All

Dataset 1 (grouping and sorting dataset)

Region	Year	Category	Revenue
Mid-Atlantic	2002	Books	$6,771
Mid-Atlantic	2002	Electronics	$1,196,217
Mid-Atlantic	2002	Movies	$288,814
Mid-Atlantic	2002	Music	$292,820
Mid-Atlantic	2003	Books	$6,807
Mid-Atlantic	2003	Electronics	$1,085,630
Mid-Atlantic	2003	Movies	$268,436
Mid-Atlantic	2003	Music	$267,845

Dataset 2

Region	Year	Profit
Mid-Atlantic	2002	$432,541
Mid-Atlantic	2003	$393,828

Dataset 3

Region	Category	Cost
Mid-Atlantic	Books	$9,948
Mid-Atlantic	Electronics	$1,658,723
Mid-Atlantic	Movies	$419,327
Mid-Atlantic	Music	$498,973

The Detail section of the document is calculated at the level of Region, Year, and Category with the metrics coming from the respective datasets. In this example, each metric comes from a different dataset. Since the Revenue metric is from the grouping and sorting dataset, it is calculated at the Region-Year-Category level. The Profit metric originated in Dataset 2, so it is calculated at the Region-Year level. Finally, the Cost metric is from Dataset 3 and is calculated by Region-Category. This is shown in the following image. Notice that there are eight rows in the Detail section—one row for each combination of Region, Year, and Category.

Region	Year	Category	Revenue	Profit	Cost
Mid-Atlantic	2002	Books	$6,771	$432,541	$9,948
Mid-Atlantic	2002	Electronics	$1,196,217	$432,541	$1,658,723
Mid-Atlantic	2002	Movies	$288,814	$432,541	$419,327
Mid-Atlantic	2002	Music	$292,820	$432,541	$498,973
Mid-Atlantic	2003	Books	$6,807	$393,828	$9,948
Mid-Atlantic	2003	Electronics	$1,085,630	$393,828	$1,658,723
Mid-Atlantic	2003	Movies	$268,436	$393,828	$419,327
Mid-Atlantic	2003	Music	$267,845	$393,828	$498,973

Metrics are never displayed at a level of greater detail than the level in the dataset report that they come from. The value for the Profit metric repeats for all four categories, because Dataset 2 contains only two values for Profit.

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If you group by Year, you see the following:

2002

Region	Year	Category	Revenue
Mid-Atlantic	2002	Books	$6,771
Mid-Atlantic	2002	Electronics	$1,196,217
Mid-Atlantic	2002	Movies	$288,814
Mid-Atlantic	2002	Music	$292,820

Region	Year	Profit
Mid-Atlantic	2002	$432,541

Region	Category	Cost
Mid-Atlantic	Books	$9,948
Mid-Atlantic	Electronics	$1,658,723
Mid-Atlantic	Movies	$419,327
Mid-Atlantic	Music	$498,973

Region	Year	Category	Revenue	Profit	Cost
Mid-Atlantic	2002	Books	$6,771	$432,541	$9,948
Mid-Atlantic	2002	Electronics	$1,196,217	$432,541	$1,658,723
Mid-Atlantic	2002	Movies	$288,814	$432,541	$419,327
Mid-Atlantic	2002	Music	$292,820	$432,541	$498,973

2003

Region	Year	Category	Revenue
Mid-Atlantic	2003	Books	$6,807
Mid-Atlantic	2003	Electronics	$1,085,630
Mid-Atlantic	2003	Movies	$268,436
Mid-Atlantic	2003	Music	$267,845

Region	Year	Profit
Mid-Atlantic	2003	$393,828

Region	Category	Cost
Mid-Atlantic	Books	$9,948
Mid-Atlantic	Electronics	$1,658,723
Mid-Atlantic	Movies	$419,327
Mid-Atlantic	Music	$498,973

Region	Year	Category	Revenue	Profit	Cost
Mid-Atlantic	2003	Books	$6,807	$393,828	$9,948
Mid-Atlantic	2003	Electronics	$1,085,630	$393,828	$1,658,723
Mid-Atlantic	2003	Movies	$268,436	$393,828	$419,327
Mid-Atlantic	2003	Music	$267,845	$393,828	$498,973

Example 4: Different attributes

If the datasets in a document do not have any of the same attributes, the Detail section of the document represents a compound join of the attributes in all of the datasets.

For example, consider the following scenario:

- Dataset 1, the grouping and sorting dataset, contains Year
- Dataset 2 contains Region

- Dataset 3 contains Category

The datasets are shown below.

Dataset 1 (grouping and sorting dataset)

Year	Revenue
2002	$8,876,630
2003	$8,059,804

Dataset 2

Region	Profit
Northeast	$564,579
Mid-Atlantic	$826,369
Southeast	$489,254
Central	$428,729
South	$335,333
Northwest	$358,453
Southwest	$681,266
Web	$415,125

Dataset 3

Category	Cost
Books	$47,174
Electronics	$8,214,789
Movies	$2,090,825
Music	$2,484,538

The Detail section is at the level of Region, Year, and Category with the metrics coming from the respective datasets. Because no relationship exists between the attributes, they cannot be joined in a meaningful way, as shown below.

Region	Year	Category	Revenue	Profit	Cost
Southeast		Movies		$489,254	$2,090,825
Central		Music		$428,729	$2,484,538
South				$335,333	
Northwest				$358,453	
Southwest				$681,266	
Web				$415,125	
Northeast	2002	Books	$8,876,630	$564,579	$47,174
Mid-Atlantic	2003	Electronics	$8,059,804	$826,369	$8,214,789

The “holes” in the data occur because metrics cannot be any more detailed than in their datasets. So, Revenue cannot be calculated for the South region because that level of granularity does not exist in the grouping and sorting dataset, which is the origin of the Revenue metric. Since the grids in this document are meaningful and predictable, they can be used for data reporting.

If the same document is grouped by Year, eight rows of data are still returned—one row for each Year, with the remaining six rows, which do not have a Year attribute, placed in a separate grouping section. Again, the data cannot be joined in a meaningful way because no relationships exist between the attributes.

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2002

Year	Revenue
2002	$8,876,630

Region	Profit
Northeast	$564,579
Mid-Atlantic	$826,369
Southeast	$489,254
Central	$428,729
South	$335,333
Northwest	$358,453
Southwest	$681,266
Web	$415,125

Category	Cost
Books	$47,174
Electronics	$8,214,789
Movies	$2,090,825
Music	$2,484,538

Region	Year	Category	Revenue	Profit	Cost
Northeast	2002	Books	$8,876,630	$564,579	$47,174

2003

Year	Revenue
2003	$8,059,804

Region	Profit
Northeast	$564,579
Mid-Atlantic	$826,369
Southeast	$489,254
Central	$428,729
South	$335,333
Northwest	$358,453
Southwest	$681,266
Web	$415,125

Category	Cost
Books	$47,174
Electronics	$8,214,789
Movies	$2,090,825
Music	$2,484,538

Region	Year	Category	Revenue	Profit	Cost
Mid-Atlantic	2003	Electronics	$8,059,804	$826,369	$8,214,789

Region	Profit
Northeast	$564,579
Mid-Atlantic	$826,369
Southeast	$489,254
Central	$428,729
South	$335,333
Northwest	$358,453
Southwest	$681,266
Web	$415,125

Category	Cost
Books	$47,174
Electronics	$8,214,789
Movies	$2,090,825
Music	$2,484,538

Region	Year	Category	Revenue	Profit	Cost
Southeast		Movies		$489,254	$2,090,825
Central		Music		$428,729	$2,484,538
South				$335,333	
Northwest				$358,453	
Southwest				$681,266	
Web				$415,125	

Using Intelligent Cubes as datasets

After you create an Intelligent Cube, you can use it as a dataset in a document. An Intelligent Cube is a multi-dimensional cube (set of data) that allows you to use OLAP Services features on reports, as well as share sets of data among multiple reports and documents. Intelligent Cubes also help optimize performance by reducing access to the data warehouse. You can have multiple Intelligent Cubes in the same document, or a mix of Intelligent Cubes and reports.

For an introduction to Intelligent Cubes, see the *In-memory Analytics Guide*.

Using a view report or base report as a dataset

If you move objects from the body of a report to the Report Objects pane, or you use a view filter or create a derived metric on the report, you have created a subset report. The report before you made these modifications is referred to as the base report.

The new report is called the view or subset report. If you use that subset report as a dataset for a document, all the information on the base report is available in the document. All the objects from the base report, whether they are displayed on the grid or are only available on the Report Objects panel, are displayed in the Dataset Objects panel in Design Mode. Any view filter on the report is ignored, so that all the data from the base report is available in the document.

Creating a subset report requires MicroStrategy OLAP Services.

A Grid/Graph is a document object that displays the information from a dataset; it looks like a report. (For more information on Grid/Graphs in general, see *Chapter 3, Displaying Reports in Documents: Grid/Graphs*.) How you add a Grid/Graph to a document impacts whether the base report or the subset report is used:

- If you add the Grid/Graph without formatting, the base report is used.
    - The view filter is ignored, so all the data from the base report is displayed on the Grid/Graph.
    - All objects from the report are displayed in the Grid/Graph, whether or not the objects are on the grid or only in the Report Objects pane of the report.

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- If you add the Grid/Graph with formatting or as a shortcut, the subset report is used.
  - The view filter is applied.
  - Only objects on the grid of the report are displayed in the Grid/Graph.

In all cases, any derived metrics on the dataset are included in the Grid/Graph.

You can create view filters in Grid/Graphs, as long as the Grid/Graph is not a shortcut. These view filters are local to the document, so they do not affect the report results, only the Grid/Graph defined in the document. For more information about view filters in documents, see *Using view filters on Grid/Graphs, page 219*. For more information on Grid/Graph shortcuts, see *Adding a Grid/Graph as a shortcut, page 193*.

For steps to create Grid/Graphs, see *Adding a Grid/Graph to a document, page 172*. For more information on view filters and report objects in reports, see the *Advanced Reporting Guide*.

Displaying grouping elements that contain null values

A join between datasets can result in null values. If null values are produced in the dataset join, you can determine whether or not to display grouping elements that contain null values. Null values are produced in the following scenarios:

- If the attributes in the datasets are not in the same hierarchy, no null values are produced. For example, Dataset 1 contains Region and Profit, while Dataset 2 contains Category and Revenue. Since Region and Category are from different hierarchies, no null values are produced.
- If the attributes in the datasets are in the same hierarchy, and a full dataset relationship exists to support the join, no null values are produced. For example, Dataset 1 contains Category, Subcategory, and Profit, and Dataset 2 contains Category and Revenue. Since both datasets contain Category, and each category can be matched to its subcategories, no null values are produced.
- If the attributes in the datasets are in the same hierarchy, and only a partial dataset relationship exists to support the join, null values are produced. For example, Dataset 1 contains Category, Subcategory, and Profit. Dataset 2 contains Category and Revenue, filtered to display the Books category only. Although Category and Subcategory are from the

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same hierarchy, because of the filter, each category cannot be matched to its subcategories, so null values are produced.

- If the attributes in the datasets are in the same hierarchy, and no dataset relationship exists to support the join, null values are produced. For example, Dataset 1 contains Category and Profit, while Dataset 2 contains Subcategory and Revenue. Although Category and Subcategory are from the same hierarchy, they do not exist in the same dataset in the document. Therefore, the category cannot be matched to its subcategories, so null values are produced.

When null values are produced, you can decide whether their related grouping elements are displayed.

For example, a document contains two datasets. Dataset 1 contains Category and Profit. Dataset 2 contains Category, Subcategory, and Revenue, filtered to display Books only. The document contains Category, Subcategory, Profit, and Revenue in the Detail section. The dataset join is supported by a partial relationship between Category and Subcategory: the Books category is matched to its subcategories, but the other categories are not.

As shown below, the document contains nine rows:

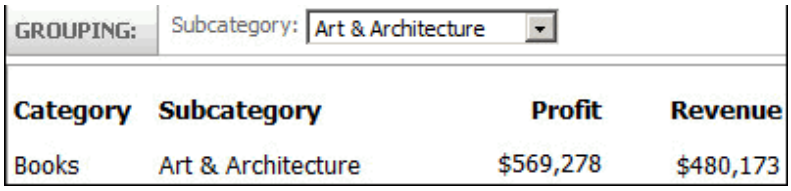
Category	Subcategory	Profit	Revenue
Books	Art & Architecture	$569,278	$480,173
Books	Business	$569,278	$400,871
Books	Literature	$569,278	$296,229
Books	Books - Miscellaneous	$569,278	$315,929
Books	Science & Technology	$569,278	$811,787
Books	Sports & Health	$569,278	$335,106
Electronics		$4,289,603	
Movies		$254,698	
Music		$180,044	

Null values are displayed for the Electronics, Movies, and Music subcategory and Revenue, because that data is not available in either dataset.

Now, group the document by Subcategory. When you execute the document, only the subcategories for the Books category are displayed in the page-by

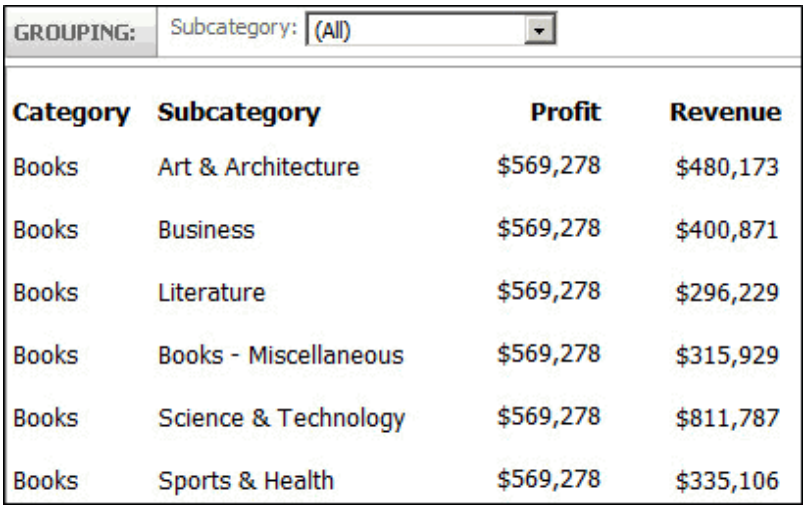
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options. When you select Art & Architecture, only the row for Art & Architecture is shown, as displayed below:



Category	Subcategory	Profit	Revenue
Books	Art & Architecture	$569,278	$480,173

If you select All for the page-by, six rows are displayed, as shown below:

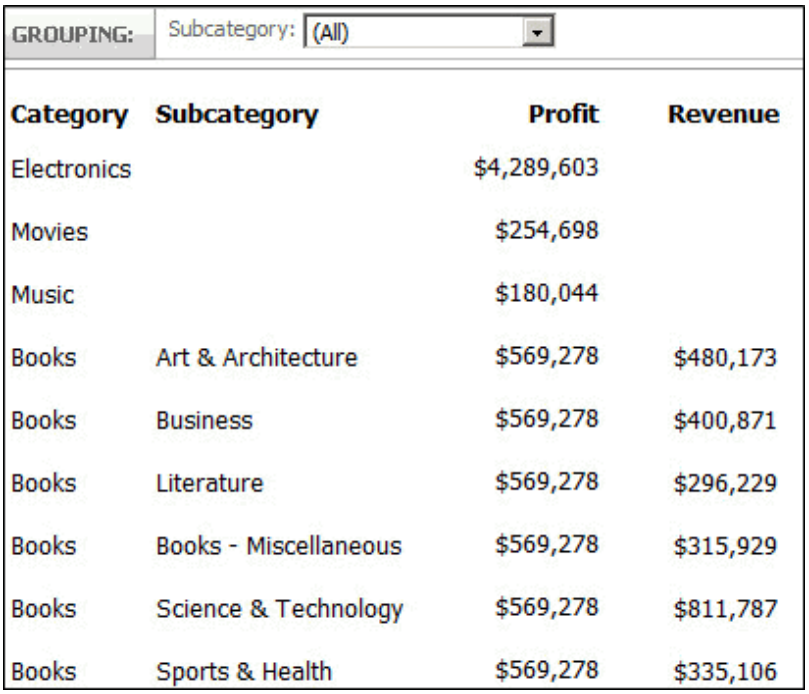


Category	Subcategory	Profit	Revenue
Books	Art & Architecture	$569,278	$480,173
Books	Business	$569,278	$400,871
Books	Literature	$569,278	$296,229
Books	Books - Miscellaneous	$569,278	$315,929
Books	Science & Technology	$569,278	$811,787
Books	Sports & Health	$569,278	$335,106

Three of the rows from the original document are missing, the ones containing the data for Electronics, Movies, and Music. You are grouping by Subcategory and that row does not contain any information about categories. The rows for Electronics, Movies, and Music are not displayed, because they contain null values for Subcategory and by default, groups that contain null elements are removed.

To see the information for all the categories, clear the **Remove groups that contain null elements** check box. The page-by options are now the book

subcategories, NULL, and All. When you select All for the page-by, the document displays with nine rows, as shown below:


GROUPING: Subcategory: (All)

Category	Subcategory	Profit	Revenue
Electronics		$4,289,603	
Movies		$254,698	
Music		$180,044	
Books	Art & Architecture	$569,278	$480,173
Books	Business	$569,278	$400,871
Books	Literature	$569,278	$296,229
Books	Books - Miscellaneous	$569,278	$315,929
Books	Science & Technology	$569,278	$811,787
Books	Sports & Health	$569,278	$335,106

If you select NULL, the rows for Electronics, Movies, and Music are displayed.

To display grouping elements that contain null values

1. In MicroStrategy Web, open the document in **Design Mode**.
2. From the **Tools** menu, select **Document Properties**. The Properties dialog box opens.
3. Under Document Properties on the left, select **Advanced**.
4. By default, the **Remove groups that contain null elements** check box is selected. To display any grouping elements sections that contain null elements, clear this check box.
5. Click **OK** to return to the document.

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Removing sections that do not have metric data

A cross join between datasets can result in rows or Group Header/Footer sections that do not have metric data. For example, a document contains two datasets. Dataset 1 contains Year and Revenue, with data for three years (2007-2009). Dataset 2 contains Year and Profit, filtered to return data for only two years (2008 and 2009). If you place Year and Profit in the Details and execute the document, it displays three rows, although no profit data exists for 2007. This is a product of the cross join between the two datasets.

Year	Profit
2007	
2008	$1,740,085
2009	$2,249,397

You do not want to see the blank line for 2007 since it does not give you any data for profit. You can select the **Trim sections for which no metric value data is available** check box. This removes the row for 2007, since no metric data for Profit is available for 2007. The results are shown below:

Year	Profit
2008	$1,740,085
2009	$2,249,397

An alternative solution is to define Dataset 2 as a primary dataset and Dataset 1 as secondary. For instructions and details, see *Defining a dataset as primary or secondary, page 60*.

In another example, a document contains two datasets. Dataset 1 contains Region and Revenue, filtered to display Northeast and Northwest only. Dataset 2 contains Year and Profit. Data for three years (2007-2009) is available. The document contains Region and Revenue in the Detail section. You want to display:

- A Grid/Graph that contains three years of Profit in the Document Header
- A row for each region, with year and profit information

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You do not want to group the document by region. The document looks like the following:

Year Metrics	Profit
2007	$1,304,141
2008	$1,740,085
2009	$2,249,397

Region	Year	Revenue
	2009	
Northeast	2007	$8,647,238
Northwest	2008	$11,517,606

The Grid/Graph contains the three rows of yearly profit data. The document contains three rows, one of which is blank, a product of the cross join between the two datasets. Since you want only a row for each region, and the blank row is not providing any information about region or revenue, it can be removed. To do this, select the **Trim the sections for which no metric value data is available** check box. The resulting document is shown below:

Year Metrics	Profit
2007	$1,304,141
2008	$1,740,085
2009	$2,249,397

Region	Year	Revenue
Northeast	2007	$8,647,238
Northwest	2008	$11,517,606

To remove sections that do not have metric data

1. In MicroStrategy Web, open the document in **Design Mode**.
2. From the **Tools** menu, select **Document Properties**. The Properties dialog box opens.
3. Under Document Properties on the left, select **Advanced**.

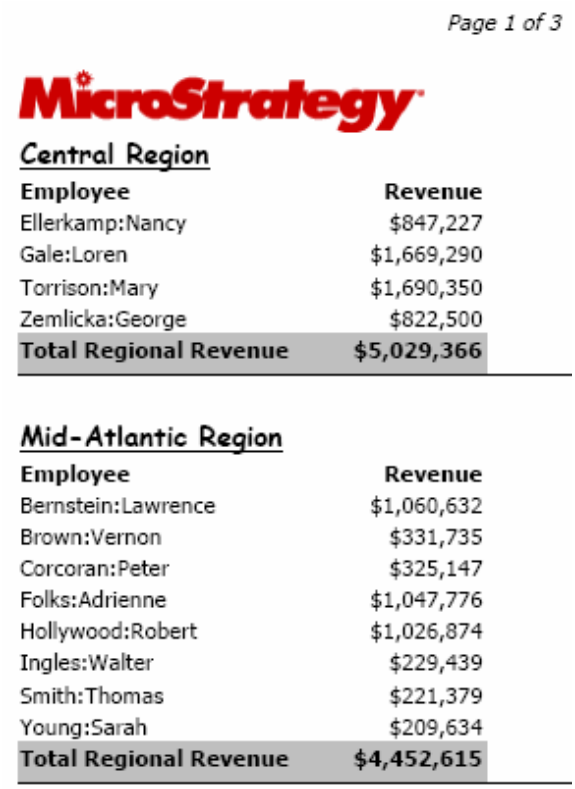
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4 Select the **Trim sections for which no metric value data is available** check box.

5 Click **OK** to return to the document.

Adding text and data to a document: Text fields

Text is displayed in documents using text fields. All of the text (such as employee names, numbers, the words “Employee” and “Revenue”, page numbers, and so on) in the following document are displayed in text fields:



Page 1 of 3

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Central Region

Employee	Revenue
Ellerkamp:Nancy	$847,227
Gale:Loren	$1,669,290
Torrison:Mary	$1,690,350
Zemlicka:George	$822,500
Total Regional Revenue	**$5,029,366**

Mid-Atlantic Region

Employee	Revenue
Bernstein:Lawrence	$1,060,632
Brown:Vernon	$331,735
Corcoran:Peter	$325,147
Folks:Adrienne	$1,047,776
Hollywood:Robert	$1,026,874
Ingles:Walter	$229,439
Smith:Thomas	$221,379
Young:Sarah	$209,634
Total Regional Revenue	**$4,452,615**

A text field is the type of document control that displays data and text. Text fields can display metrics, attributes, consolidations, and custom groups from a dataset. They can also display page numbers or descriptive labels, such as the words “Employee” and “Region” in the sample above.

The different types of text fields include:

- **Static text**: This text does not change and is commonly used for labels or descriptions. Examples in the sample above are the words “Employee”

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and “Revenue”. For steps to add static text, see *To add a text field to a document, page 85*.

- **Dynamic text**: This text is automatically populated by the document or dataset. Dynamic text is always included within braces { }. There are two types of dynamic text:
  - Data field: This is automatically populated from a dataset with data that originated in the data warehouse (or an Intelligence Server cache), such as the employee names and revenue amounts in the document sample above. A data field is a reference to an object on a report. The object can be a metric, attribute, consolidation, or custom group. For an example and steps, see *Adding dynamic data to a document, page 83*.
  - Auto text code: This is automatically populated by the document or dataset. It consists of the document’s or dataset’s settings rather than data from the data warehouse. For example, auto text codes can display the document’s name and page numbers, and the dataset’s name and filter information. In the document sample above, auto text codes display the page numbers. For the full list of available codes, as well as steps to create auto text codes, see *Displaying document and dataset information: Auto text codes, page 88*.
- **A combination of any or all of the types**: You can use a combination of different types of text fields in a single text field. For example, the text “Central Region” in the sample document above contains the dataset object Region, followed by the static text “Region”. For an example and steps, see *Combining different types of text fields in a document, page 86*.

You can edit the text within any text field in a document. For steps, see *Editing the text in a text field, page 87*.

Adding a static text label to a document

Static text serves as a label in the document. A static text field does not change when viewed as a PDF; static text displays just as it is typed and formatted in the text field when the document is in Design Mode. Any text in a text field prints as it exists in the field unless it is within braces { } and the document recognizes it as an auto text code or as data from a dataset.

For steps, see *To add a text field to a document, page 85*.

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Adding dynamic data to a document

A data field is a text field that contains a reference to an object (metric, attribute, consolidation, or custom group) on a report. When you view the document as a PDF, the data fields are replaced by the actual data.

The reference in a data field is the object name inside braces { }. The braces indicate that the text fields are data fields, not static text. In Design View/ Mode, data fields for the Employee attribute and the Revenue metric look like the following:



When the document is executed, all data fields are automatically populated from a dataset with data that originated in the data warehouse (or an Intelligence Server cache).

When the data fields shown above are displayed in PDF View, the attribute elements and revenue values are displayed, as shown below:

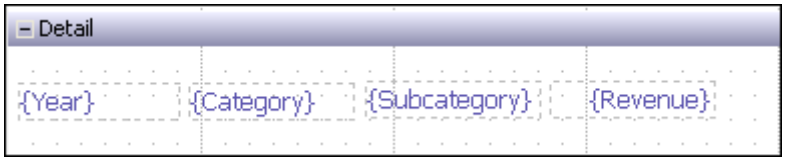
Ellerkamp:Nancy	$847,227
Gale:Loren	$1,669,290
Torrison:Mary	$1,690,350
Zemlicka:George	$822,500

If the object referenced by a data field is removed from the dataset, the data field will become static text when the PDF is created.

The value of a metric, whether it is created in the document or is a dataset object, is calculated differently depending on its location in the document, as described in *Metric calculation in document sections, page 114*.

You can add data fields in any of the following ways:

- Drag and drop a dataset object onto any section of the Layout area. A text field containing a reference to the dataset object is added to the document. For example, if you drag Year, Category, and Subcategory to the Detail section, near the Revenue metric that you added before, it looks like this:



When you view the document as a PDF, the result looks like this:

2006	Books	Art & Architecture	$17,492
2007	Books	Art & Architecture	$22,372
2006	Books	Business	$14,589
2007	Books	Business	$18,947
2006	Books	Literature	$11,087
2007	Books	Literature	$14,699
2006	Books	Books - Miscellaneous	$12,245
2007	Books	Books - Miscellaneous	$15,577
2006	Books	Science & Technology	$30,045
2007	Books	Science & Technology	$36,204
2006	Books	Sports & Health	$12,744
2007	Books	Sports & Health	$16,248

- Drag and drop a specific attribute form into any section of the Layout area. Many attributes have both an ID and description. In the document sample below, Item is displayed in two attribute forms: ID, which is listed in the SKU column, and Description.



To display a particular attribute form, expand the attribute in the Dataset Objects panel. Drag and drop the desired attribute form into the Layout area. The format of the data field is `attribute@attribute_form`. See the following image, which generated the document sample above.



- Insert a blank text field in any section of the Layout area, then type the reference to the dataset object in the text field.
- Create a metric within the document, which creates a text field containing a reference to the metric. For details, see *Creating metrics in documents, page 128*.

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To add a text field to a document

1 In MicroStrategy Web, open the document in **Design Mode**.

2 Add a text field using one of the following methods depending on your goal for the text field:

- To create a static label, type text:
  a From the **Insert** menu, select **Text**. A blank text field is inserted.
  b Type the static text.
  c Press **Enter**.
- To create dynamic text, drag and drop a dataset object:
  a From the objects displayed in Dataset Objects, select the object you want to use.
  b Drag and drop the selected object into the Layout area.

  Note the following:
  - If an object name contains special characters, the text field is automatically placed within square brackets [ ] when you drop it in the Layout area. This ensures that data fields are resolved correctly when the PDF is displayed in a language other than English. A special character is any character other than a - z, A - Z, 0 - 9, #, _, and . (period).
  - When you add a metric to the document, the dataset name is added to the string if the metric exists in multiple datasets.
- To create dynamic text, type the data field manually:
  a From the **Insert** menu, select **Text**. A blank text field is inserted.
  b Type the object's name within braces, such as `{Revenue}` or `{Region}`. The name must match either the name of an object in a dataset or its alias. If either name contains spaces or special characters, you must type it in square brackets [ ] within the braces, as in {[Last Year Revenue]}. A special character is any character other than a-z, A-Z, 0-9, #, _, and . (period).
  c To display a particular attribute form, type `@ attribute_form` after the object name, within braces, where *attribute_form* is the name of the attribute form to be displayed. If you specify an

attribute form that does not exist for an attribute, the data field cannot be resolved and the syntax is displayed as text in the PDF.

d If a metric exists in multiple datasets, use the syntax `{[dataset name]:[object name]}`. Do not associate an attribute with a specific dataset, as attribute elements come from the joined datasets.

e Press **Enter**.

3 To resize the text field, click and drag the field.

The text field is automatically formatted in the default style for the text field control type. To change the formatting, right-click the text field and select **Properties and Formatting**. For details to format the text field, see *Formatting text fields, page 283*.

If you want a user to be able to click a piece of text and go to a web page, you can define the text field as a link. For details, see *Linking to a web page, page 431*.

Combining different types of text fields in a document

You can combine any number of static text entries, data fields, and auto text codes in a single text field. The document displays any auto text codes and data fields according to the dataset and document details and combines it with the static text in the field.

For example, if you type `Date/time:` in a text field, then insert the Date and Time auto text code into the same field, the final text field looks like `Date/time: {&DATETIME}`, in Design Mode. When viewed as a PDF, the result is displayed as:

```
Date/time: 11/15/2003 07:15:00 PM
```

When different types of text are combined in one text field, the entire text field has the same formatting and settings. For example, if you want to make the label `Date/time:` bold but keep the actual date and time in plain text, you should place them in separate text fields and format them differently.

To combine different types of text fields

1 In MicroStrategy Web, open the document in **Design Mode**.

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2 Expand the section where you want to place the text, by clicking the plus sign next to the section name.

3 Add a text field of any type. For steps, see *To add a text field to a document, page 85*.

4 Type some text in the text field. To create a new line in the text field, press **Enter**.

5 Add another text field of any type, as described below. The new data is added at the position of the text cursor.

- To add a data field, drag and drop a dataset object into the selected text field.
- To add an auto text code, from the **Insert** menu, select **Auto Text** and select the code, or type the code into the text field. For a list of auto text codes, see *Auto text codes for document information, page 90* or *Auto text codes for dataset information, page 91*.

6 When you have finished making all the text entries in the text field, click anywhere outside the text field.

You can change the formatting of the text field. See *Formatting text fields, page 283* for steps.

Editing the text in a text field

You can edit any text field in a document. One common reason to edit a text field is to update an object name that has been changed in the project. When you rename an object, such as a metric, any text fields that reference that metric are not automatically updated with the new name.

Use the steps below to edit a text field in a document.

To edit a text field

1 In MicroStrategy Web, open the document in **Design Mode**.

2 Double-click a text field.

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3 Edit the text by doing any of the following:

- Type new text.
- Add a data field by dragging and dropping a Dataset Object into the selected text field.
- Add an auto text code by selecting **Auto Text** from the **Insert** menu, then typing the code into the text field. For lists of auto text codes, see *Auto text codes for document information, page 90* or *Auto text codes for dataset information, page 91*.
- Begin on another line by pressing **Enter**.

4 To exit editing, click anywhere outside the text field.

5 Save the document to save your changes.

Displaying document and dataset information: Auto text codes

Auto text codes allow you to automatically display information in a document, such as page numbers, the current date and time, and report filter details. For example, you can add the auto text code {&DOCUMENT} to a text field in a document. When you view the document as a PDF, or display the document in Interactive, Express, or Flash Modes, the auto text code is automatically replaced with the name of the document.

Auto text codes are grouped into two types:

- Document information includes page numbers, the document name and description, the prompts used in the document, and so on.
- Dataset information includes the dataset name and description, the prompts on the specific dataset, information about the report filter used on the dataset, and so on.

This section provides steps to add an auto text code and explains the auto text codes that you can use to display these types of variables, with examples of each.

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To add an auto text code to a document

1. In MicroStrategy Web, open a document in **Design Mode**.
2. Expand the section where you want the auto text code by clicking the plus sign next to the section name.
3. Do one of the following:
   - To select the auto text code from a list, from the **Insert** menu, select **Auto Text**, then select the code to insert. The text field that contains the auto text code is added at the top left corner of the selected section, although you can move the text field to any position.
   - To add an auto text code to an existing text field, edit the text field (select it and press **F2**) and then add the auto text code. You may need to resize the text field to view the auto text code.
   - To type the auto text code manually, insert a blank text field and type the code within braces { }. If an object's name contains spaces or special characters, enclose it in square brackets [ ] within the braces.

   For lists of the available auto text codes, see the following:
   - *Auto text codes for document information, page 90*
   - *Auto text codes for dataset information, page 91*
4. After you add an auto text code, you can configure how it is displayed. For example, if you add an auto text code to display the filter information for a dataset, you can select whether to include view filter information or to display attribute names. For report details, you can choose whether to include information on prompts, filters, or both. For examples and steps, see *Configuring auto text codes, page 93*.

When you view the document as a PDF or display it in Interactive, Express, or Flash Modes, the code is replaced with the information from the document or dataset.

For steps to format the text field that contains the auto text code (such as the font name or background color), see *Formatting text fields, page 283*.

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Auto text codes for document information

The following auto text codes allow you to add document variable information to your document. These auto text codes are automatically replaced by information about the document.

Description	Code	Sample Output	Comments
Page number	`{&PAGE}`	1	The current page number
Total number of pages	`{&NPAGES}`	12	The total number of pages in the document or in the group's section before page numbering restarts
Date & Time	`{&DATETIME}`	11/15/2003 7:10:55 PM	Current date and time, of the client computer. For PDFs, this is the date and time when the PDF was generated You can display only the date without the time, or the month name rather than the number, and so on. To format the date and time, see *Formatting text field options, page 284*.
Current user	`{&USER}`	Jane User	The full name, not login, of the user who generates the PDF or views the document
Document name	`{&DOCUMENT}`	Regional Sales Summary	The name of the document as stored in the project
Document description	`{&DESCRIPTION}`	Revenue and profit by region	Short description of the document
Document inbox title	`{&TITLE}`	Regional Sales Summary for Tuesday	The name of the document instance If you send a document to your History List, you can rename that instance of the document. This auto text code displays that name, rather than the document name stored in the project.
Document notes	`{&NOTES}`	User1: 8/15/2010 10:10:10 AM: Reviewed and approved	Notes (annotations) added to the document. For background information on notes, see *Notes, page 582*.
Project name	`{&PROJECT}`	MicroStrategy Tutorial	The name of the project in which the document is stored

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Description	Code	Sample Output	Comments
Prompts	{&PROMPT1&} {&PROMPT2&} : {&PROMPT*n*&}	South (for example, if prompt1 is for the attribute Region)	The user's answers to each prompt in the document, identified by number If *n* is greater than the number of prompts in the document, the code cannot be replaced with pertinent information. Therefore the code itself is displayed in the PDF.
Prompt details	{&PROMPTDETAILS}	Prompt 1: Region prompt Northwest, Southwest Prompt 2: Year Year (ID)= 2007	Details for all the prompts in the document You can define how this auto text code is displayed (for example, if the prompt name is shown). For steps, see *Configuring the prompt details auto text code, page 102*.
MicroStrategy Web Server	{&WEBSERVER}	http://localhost:8080 /MicroStrategy/servlet/ mstrWeb	Path to the web server being used, if the document is executed in MicroStrategy Web; otherwise, the value in project configuration
Document execution time	{&EXECUTIONTIME}	11/15/2003 7:11:15	The date and time the document was executed You can display only the date without the time, or the month name rather than the number, and so on. To format the date and time, see *Formatting text fields, page 283*.

To differentiate between Date and Time and Document execution time, do the following:

1. Run a document and send it to the History List.
2. Each time you retrieve the document from the History List, the PDF is regenerated. The Date and Time change each time, but the Document execution time does not change.

Auto text codes for dataset information

The following auto text codes allow you to add dataset information to your document. For all these codes, replace *REPORTNAME* with the name of the related dataset. If the name contains any spaces or special characters, type the name within square brackets [ ]. For example, to display the report details for a report named Sales Forecast, type {&[Sales

`Forecast]:REPORTDETAILS}`. Special characters are anything other than a - z, A - Z, #, _, . (period), and 0 - 9.

Description	Code	Sample Output	Comments
Dataset report description	`{&REPORTNAME: DESCRIPTION}`	Revenue, profit, & cost by employee & region	The short description of the specified dataset. If the dataset does not have a description, the text field remains blank.
Dataset report details	`{&REPORTNAME: REPORTDETAILS}`	Report Description: Revenue, profit, & cost by region & employee Report Filter: (2007) Filter for Year = 2007 Year = 2007 Report Limits: Revenue > 2000000 Template: Region, Employee Metrics: Revenue, Revenue {~+}, Cost, Sum(Cost){~+}, Profit, Sum(Profit){~+}	The complete report details, including report description, prompt details, filter details, and template details of the specified dataset. You can configure how this auto text code is displayed (for example, if the report description is shown). For steps, see *Configuring the report details auto text code, page 96*.

Dataset report filter and limit details	`{&REPORTNAME: FILTERDETAILS}`
	or
	`{&FILTERDETAILS}`
		If the filter in the dataset's Filter editor is defined as:
		A=1
		AND
		B=2
		OR
		C=3
		it prints as:
		A=1 and (B=2 or C=3)
		For example, Region= South and (Year=2002 or Year=2003)
			The report filter and report limit used in the dataset. An example is `{&[Sales Forecast]: FILTERDETAILS}` for the Sales Forecast report.
			If the dataset has a report filter and a report limit, the system displays an “or” between them. If there is no filter, “Empty Filter” is displayed. If there is no limit, “Empty Limit” is displayed.
			If you do not replace *REPORTNAME* with the name of the dataset, the filter and limit information from the document’s grouping and sorting dataset are displayed.
			By default, only the report filter and report limit are displayed, but other filters, such as view filters and security filters, can be displayed as well. For details, see *Configuring the filter details auto text code, page 105*.

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Description	Code	Sample Output	Comments
Dataset report prompt details	{&*REPORTNAME*: PROMPTDETAILS}	Prompt 1: Region prompt Northwest, Southwest Prompt 2: Year Year (ID)= 2007	The prompt information for all prompts in the specified dataset. You can configure how this auto text code is displayed (for example, if the prompt name is shown). For details, see *Configuring the prompt details auto text code, page 102*.
Dataset report filter details	{&*REPORTNAME*: REPORTFILTER DETAILS}	Report Filter: Year = 2007	The report filter used in the specified dataset. If you do not replace *REPORTNAME* with the name of the dataset, the filter information from the document's grouping and sorting dataset is displayed.
Dataset report limit details	{&*REPORTNAME*: REPORTLIMIT DETAILS}	Report Limits: Revenue > 2000000	The report limit used in the specified dataset. If you do not replace *REPORTNAME* with the name of the dataset, the report limit information from the document's grouping and sorting dataset is displayed.
Dataset report template details	{&*REPORTNAME*: TEMPLATEDETAILS}	Template: Region, Employee Metrics: Revenue, Revenue {~+}, Cost, Sum(Cost){~+}, Profit, Sum(Profit){~+}	The complete template details, including attribute details and metric details. You can define how this auto text code is displayed (for example, if the template name is shown). For steps, see *Configuring the template details auto text code, page 100*.
Dataset report execution time	{&*REPORTNAME*: EXECUTIONTIME}	11/15/2003 7:10:55 PM	The date and time the dataset was executed, or, for an Intelligent Cube, the cube publication date and time.

Configuring auto text codes

You can configure the content of any of the following auto text codes:

- **Filter details**, which display the report filter and report limit by default. You can also configure user filter details and view filter details. See *Configuring the filter details auto text code, page 105*.

- **Report limit details**, which displays the report limit. Report limits are minimum and maximum values for a metric that you specify at the report level. They determine the rows for a dataset that are displayed in the final report. See *Configuring the filter details auto text code, page 105*.
- **Prompt details**, which display the prompt information for all prompts in the report. See *Configuring the prompt details auto text code, page 102*.
- **Report details**, which display the report description, prompt details, filter details, and template details. See *Configuring the report details auto text code, page 96*.
- **Template details**, which display attribute details and metric details. See *Configuring the template details auto text code, page 100*.

You can configure different options for different types of auto text codes. For example, you can select whether to include view filter information or the attribute name in a report filter details auto text code. For report details, you can choose whether to include information on prompts or filters. See *Configuring the display of object name delimiters for auto text codes, page 95*

To format the text field that contains the auto text code (such as the font name or background color), see *Formatting text fields, page 283*.

Levels of auto text code configuration

You can configure:

- The auto text codes in a specific text field in a document, from the Properties and Formatting dialog box (the text field level)
- All the auto text codes in a specific document, from the Document Properties dialog box (the document level)
- The Report Details in the Report Editor, from the Report Details Properties option (the report level)
- All the auto text codes in a project, using the Project Configuration Editor (the project level)

The list above shows the order of precedence. The configuration of a particular text field in a document overrides the configuration at the document level, which overrides the configuration in the related dataset report, which overrides the project configuration. For example, if an option is set one way for a document and another for the report, the document setting takes precedence.

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Configuring the display of object name delimiters for auto text codes

One setting, **Use delimiters around report object names**, is used in all the auto text codes. Report objects include attributes and metrics. Delimiters are the characters around these objects which set them off from other text. In the executed document, braces { } are used as delimiters. You can select whether to:

- Display delimiters for all report objects
- Omit delimiters for all report objects
- Automatically display delimiters only for those objects that contain a special character

  Special characters are characters other than a - z, A - Z, 0 - 9, #, _, and . (period).

For example, the following filter details auto text code displays delimiters:

({Revenue} > 10000000) And ({Profit} > 2000000) And ({Region} = Mid-Atlantic)

Region Metrics	Revenue	Profit
Mid-Atlantic	$23,178,823	$4,007,580

You can choose to inherit the setting instead. If you are configuring the auto text codes in a specific text field, the setting is inherited from the document setting. If you are configuring all the auto text codes in the document, the setting is inherited from the report setting. For a list of the levels of inheritance, see *Levels of auto text code configuration, page 94*.

To configure the display of object name delimiters for auto text code

1. In MicroStrategy Web, open the document in **Design Mode**.
2. Expand the section where you want the auto text code by clicking the plus sign next to the section name.
3. Perform one of the following:

- To select the auto text code from a list, from the **Insert** menu, select **Auto Text**, then select the auto text code to insert. You can move the text field to any desired position.

  For a list of auto text codes, see *Displaying document and dataset information: Auto text codes, page 88*

- To add an auto text code to an existing text field, double-click the text field to edit it, and then add the auto text. You may need to resize the text field to view the auto text.

- To type the auto text code manually, insert a blank text field and type the code within braces { }. If an object's name contains spaces or special characters, enclose it in square brackets [ ] within the braces.

4 Right-click the auto text code and then click **Report Details Properties**. The Report Details Properties dialog box opens.

5 Click the **General** tab.

6 Select one of the following from the **Use delimiters around report object names** drop-down list:

- To display delimiters for all report objects, select **Always**.
- To omit delimiters for all report objects, select **Never**.
- To automatically display delimiters only for those objects that contain a special character, select **Only when the name contains special characters**.

  Special characters are characters other than a - z, A - Z, 0 - 9, #, _, and . (period).

- To inherit the document or report setting, as described in *Levels of auto text code configuration, page 94*, select **Inherit**.

7 Click **OK** to save your changes and return to the document.

When you view the document as a PDF or display it in Interactive, Express, or Flash Modes, the code is replaced with the information from the document or dataset.

Configuring the report details auto text code

The report details auto text code can be used to display the complete report details, including report description, prompt details, filter details, and

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template details of the specified dataset. Steps are below to add auto text code to a document, as well as to edit existing auto text.

You can choose whether to include or omit the following:

- Report description (the short description of the report)
- Prompt details (the prompts on the report)
- Filter details (the report filter, view filter (for view reports based on Intelligent Cubes only), and report limits)
- Template details (the objects on the report and the metric definitions)

You can also choose to inherit the setting instead. If you are configuring the auto text codes in a specific text field, the setting is inherited from the document setting. If you are configuring all the auto text codes in the document, the setting is inherited from the report setting. For a list of the levels of inheritance, see *Levels of auto text code configuration, page 94*.

The following document sample shows the report details, as well as a portion of the grid report within the Grid/Graph container, displayed as a PDF.

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Notice that the report description, report filter, report limits, and template information are displayed.

Report Description:
Revenue, profit, and cost by region & employee

Report Filter:
Year = 2007

Report Limits:
Empty Filter

Template:
Region
Employee
Metrics:
Revenue
Revenue
{~+}
Cost
Sum(Cost)
{~+}
Profit
Sum(Profit)
{~+}

Region	Employee	Metrics	Revenue	Cost	Profit
Central	Gale	Loren	$559,002	$472,987	$86,016
	Torrison	Mary	$548,764	$464,924	$83,839
Mid-Atlantic	Bernstein	Lawrence	$373,407	$317,366	$56,041
	Folks	Adrienne	$377,455	$319,976	$57,479
	Hollywood	Robert	$338,471	$288,536	$49,935
Northeast	Kelly	Laura	$797,466	$676,808	$120,658
	Sawyer	Leanne	**$787,343**	$666,516	$120,827
	Yager	Beth	$777,573	$659,368	$118,205

Based on the information provided by the auto text code in the sample above, you may decide that the template information is not valuable to you, but that you do need to know how the dataset is filtered, to know how the metrics are calculated, and which employees are included on the grid report. In addition, the report description is not very informational in this case. The image below

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shows the same document, but the Report Details auto text code has been configured to display only the information you need.

Report Filter:
Year = 2007

Report Limits:
Empty Filter

Region	Employee	Metrics	Revenue	Cost	Profit
Central	Gale	Loren	$559,002	$472,987	$86,016
	Torrison	Mary	$548,764	$464,924	$83,839
Mid-Atlantic	Bernstein	Lawrence	$373,407	$317,366	$56,041
	Folks	Adrienne	$377,455	$319,976	$57,479
	Hollywood	Robert	$338,471	$288,536	$49,935
Northeast	Kelly	Laura	$797,466	$676,808	$120,658
	Sawyer	Leanne	**$787,343**	$666,516	$120,827
	Yager	Beth	$777,573	$659,368	$118,205

To configure the report details auto text code or edit auto text

1 In MicroStrategy Web, open the document in **Design Mode**.

2 Expand the section where you want the auto text code by clicking the plus sign next to the section name.

3 Perform one of the following:

- To select the auto text code from a list, from the **Insert** menu, select **Auto Text**, then select the auto text code to insert. You can move the text field to any desired position.

  For a list of auto text codes, see *Displaying document and dataset information: Auto text codes, page 88*

- To add an auto text code to an existing text field, double-click the text field to edit it, and then add the auto text. You may need to resize the text field to view the auto text.

- To type the auto text code manually, insert a blank text field and type the code within braces { }. If an object's name contains spaces or special characters, enclose it in square brackets [ ] within the braces.

4 Right-click the auto text code and then click **Report Details Properties**. The Report Details Properties dialog box opens.

5 Click the **General** tab and choose whether to include the features listed in the **Report Details** area.

6 Modify options in the Miscellaneous area of the General tab.

When you view the document as a PDF or display it in Interactive, Express, or Flash Modes, the code is replaced with the information from the document or dataset.

Configuring the template details auto text code

The template of a report contains:

- The group of objects (attribute, metrics, custom groups, and so on) that defines the columns of data to be included in the report
- The layout and format of these objects

The template details auto text code displays the complete template details, including attribute details and metric details, unless the template details have been configured differently at the report or project level. For a list of the different levels and their order of precedence, see *Levels of auto text code configuration, page 94*. Steps are below to add auto text code to a document, as well as to edit existing auto text.

You can:

- Determine whether the template name of the dataset is displayed. You can also select how to identify an embedded template.
- Determine whether the short description of the template is included. If the template is embedded or does not have a description, the template description line is not displayed.
- Determine whether dataset objects other than metrics (such as attributes and consolidations) are listed.
- Determine whether the metrics on the dataset are listed.
- If metrics are displayed, select whether or not to display each of the following:
  - Conditional metrics only
  - Metric formulas
  - Metric dimensionality
  - Metric conditionality

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- Metric transformation

If you choose to inherit whether metrics are displayed, these settings are also inherited.

Use the **Units from View or Base** setting to choose whether to include the report objects from either the base report or the view report. If you move objects from the grid of a report to the Report Objects pane, or you use a view filter or create a derived metric, you have created a view report. The report before you made these kinds of modifications is referred to as the base report. The template details can show all the objects on the report, regardless of whether they are on the report grid, if you select **Base**. If you select **View**, only those objects on the report grid are included in the template details.

To configure the template details auto text code or edit auto text

1. In MicroStrategy Web, open the document in **Design Mode**.
2. Expand the section where you want the auto text code by clicking the plus sign next to the section name.
3. Perform one of the following:
   - To select the auto text code from a list, from the **Insert** menu, select **Auto Text**, then select the auto text code to insert. You can move the text field to any desired position.

     For a list of auto text codes, see *Displaying document and dataset information: Auto text codes, page 88*.
   - To add an auto text code to an existing text field, double-click the text field to edit it, and then add the auto text. You may need to resize the text field to view the auto text.
   - To type the auto text code manually, insert a blank text field and type the code within braces { }. If an object's name contains spaces or special characters, enclose it in square brackets [ ] within the braces. To see all template details, type the following text into the text field:

     ```
     {&TEMPLATEDETAILS}
     ```
4. Right-click the auto text code and then click **Report Details Properties**. The Report Details Properties dialog box opens.

5 Click the **Template Details** tab and choose whether to include the features listed.

By default, each setting on this tab inherits the document or report setting, as described in *Levels of auto text code configuration, page 94*. You can return to this default by selecting **Inherit** from the drop-down list for the specific setting.

When you view the document as a PDF or display it in Interactive, Express, or Flash Modes, the code is replaced with the information from the document or dataset.

Configuring the prompt details auto text code

The prompt details auto text code displays the prompt information for all prompts in the document. Steps are below to add auto text code to a document, as well as to edit existing auto text.

You can configure:

- Whether the prompt title and index (a number indicating the order of the prompts in the dataset) are displayed.
- The text to display when a prompt is unanswered. The options are:
  - Use the default document or report setting for unanswered prompts
  - Display nothing
  - Display “Prompt Not Answered”
  - Display “No Selection”
  - Display “All/None”

    Whether the word “All” or “None” displays depends on the type of prompt. For example, an unanswered object prompt displays as “None” because no objects are selected. An unanswered filter definition prompt displays as “All” because the report is not filtered and therefore all the objects appear on the report.
- Whether and how to display the attribute name for any attribute element list prompts in the document. The options are:
  - Use the default document or report setting for attribute element prompts
  - Display the attribute name (for example, Region)

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- Omit the attribute name
- Repeat the attribute name for each prompt answer (for example, Region = North, Region = South)

The browse form of the attribute, which is displayed when a user answers the prompt, is used to display the attribute elements in the prompt details auto text code. For information on browse forms, see the *Project Design Guide*.

- Whether to include unused prompts. An unused prompt occurs when you drill on a grid or graph report in a document, and the grid or graph report contains a prompt. The resulting report, which you can use as a dataset, can display or omit the prompt details from the original report (the report that you drilled on).

For example, a document contains two datasets, which are displayed as grid reports in the document:

- Customers per Employee contains the Region attribute and the metrics Count of Customers, Employee Headcount, and Customers per Employee. It is prompted for Region.
- Regional Revenue contains the Year and Region attributes, and the Revenue metric. It is prompted for Region and Year.

The document also contains a prompt details auto text code, which is configured to display the prompt titles and index. The prompt title is specified when the prompt is created (Region prompt and Year in the example below), and the index is a number indicating the order of the prompts in the datasets (Prompt 1 and Prompt 2 below).

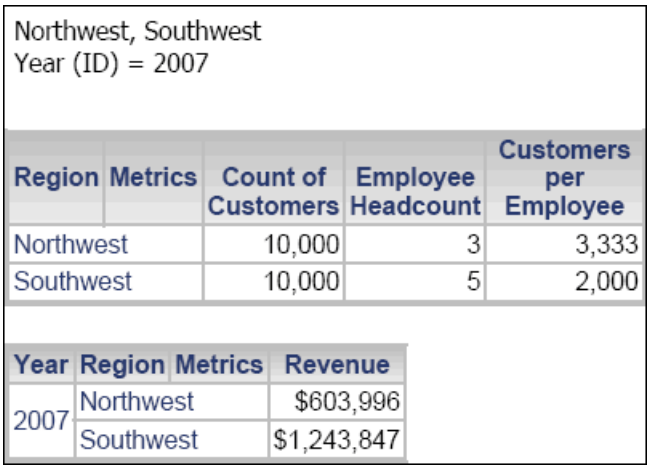
Prompt 1: Region prompt
Northwest, Southwest
Prompt 2: Year
Year (ID) = 2007

Region	Metrics	Count of Customers	Employee Headcount	Customers per Employee
Northwest		10,000	3	3,333
Southwest		10,000	5	2,000

Year	Region	Metrics	Revenue
2007	Northwest		$603,996
	Southwest		$1,243,847

Although the datasets contain three prompts, only two are displayed. Since both datasets contain the same prompt on Region, that prompt is only displayed once.

If you change the prompt details auto text code to omit the prompt titles and index, only the prompt answers are displayed, as shown below:

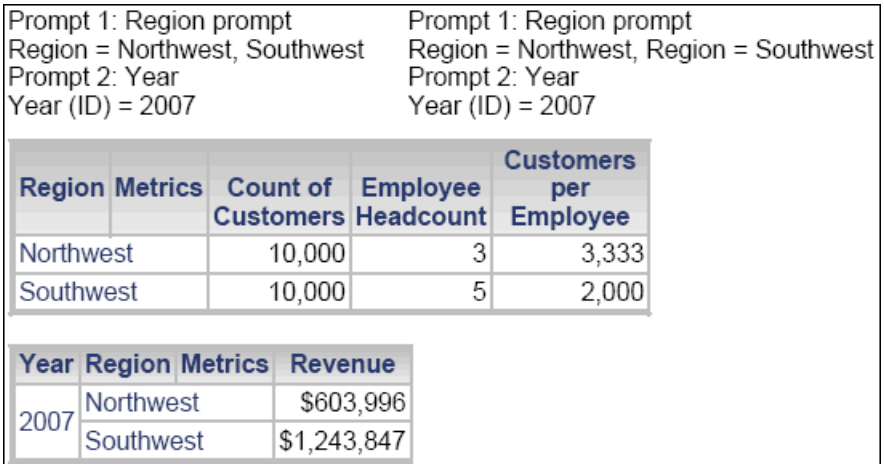


Northwest, Southwest
Year (ID) = 2007

Region	Metrics	Count of Customers	Employee Headcount	Customers per Employee
Northwest		10,000	3	3,333
Southwest		10,000	5	2,000

Year	Region	Metrics	Revenue
2007	Northwest		$603,996
	Southwest		$1,243,847

The Region prompt is an attribute element list prompt, so you can also specify whether and how to display the attribute name. In the example above, the attribute name is not displayed; the auto text code lists the selected attribute elements only. In the following document sample, the remaining options are shown. The prompt details auto text code on the left displays the attribute name, while the one on the right repeats the attribute name for each prompt answer.



Prompt 1: Region prompt
Region = Northwest, Southwest
Prompt 2: Year
Year (ID) = 2007

Prompt 1: Region prompt
Region = Northwest, Region = Southwest
Prompt 2: Year
Year (ID) = 2007

Region	Metrics	Count of Customers	Employee Headcount	Customers per Employee
Northwest		10,000	3	3,333
Southwest		10,000	5	2,000

Year	Region	Metrics	Revenue
2007	Northwest		$603,996
	Southwest		$1,243,847

Sometimes users do not answer all the prompts. You can choose what to display when a prompt is not answered. You can select pre-defined text, or you can choose to display nothing at all.

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To configure prompt details auto text codes or edit auto text

1 In MicroStrategy Web, open the document in **Design Mode**.

2 Expand the section where you want the auto text code by clicking the plus sign next to the section name.

3 Perform one of the following:

- To select the auto text code from a list, from the **Insert** menu, select **Auto Text**, then select the auto text code to insert. You can move the text field to any desired position.

  For a list of auto text codes, see *Displaying document and dataset information: Auto text codes, page 88*

- To add an auto text code to an existing text field, double-click the text field to edit it, and then add the auto text. You may need to resize the text field to view the auto text.

- To type the auto text code manually, insert a blank text field and type the code within braces { }. If an object's name contains spaces or special characters, enclose it in square brackets [ ] within the braces.

4 Right-click the auto text code and then click **Report Details Properties**. The Report Details Properties dialog box opens.

5 Click the **General** tab and choose whether to include the features listed in the **Prompt Details** area.

When you view the document as a PDF or display it in Interactive, Express, or Flash Modes, the code is replaced with the information from the document or dataset.

Configuring the filter details auto text code

The filter details auto text code displays information about the report filter and report limit used in the specified dataset by default, although other types of filters can be displayed. Steps are below to add auto text code to a document, as well as to edit existing auto text.

You can configure the following:

- You can configure the content of the filter details auto text code, by selecting which filter types to include (report filter, view filter (for view reports based on Intelligent Cubes only), report limits, and so on) and how the filters are displayed. For example, you can select whether to include the name of the filter type and whether to display the report limits before or after view filters.
- For filters that contain attribute element list qualifications, you can configure how those lists are displayed. For example, you can specify whether to show the attribute name (such as Region or Year) and the separator between attribute names.
- You can configure how attribute form and set qualifications in filters are displayed. For example, you can select whether to use names or symbols for the operators.
- You can configure how logical operators, which join multiple qualifications or filters, are displayed. For example, you can choose whether or not to display operators. You can select to display only the AND operator or only the OR operator.
- You can configure whether aliases replace object names in the filter details.

For an introduction to filters, see the *Basic Reporting Guide*.

To configure the filter details auto text code or edit auto text

1. In MicroStrategy Web, open the document in **Design Mode**.
2. Expand the section where you want the auto text code by clicking the plus sign next to the section name.
3. Perform one of the following:
   - To select the auto text code from a list, from the **Insert** menu, select **Auto Text**, then select the auto text code to insert. You can move the text field to any desired position.

     For a list of auto text codes, see *Displaying document and dataset information: Auto text codes, page 88*.
   - To add an auto text code to an existing text field, double-click the text field to edit it, and then add the auto text. You may need to resize the text field to view the auto text.

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- To type the auto text code manually, insert a blank text field and type the code within braces { }. If an object's name contains spaces or special characters, enclose it in square brackets [ ] within the braces.

4 Right-click the auto text code and then click **Report Details Properties**. The Report Details Properties dialog box opens.

5 Click the **Filter Details - Contents** tab and the **Filter Details - Other** tab and choose whether to include the features listed below:

- You can choose whether or not to include each type of filter.
- You can configure how the filters are displayed in the filter details auto text code by specifying the following settings:
  - Whether to include the names of the filter types (Report Filter, View Filter, and so on). If the filter type names are omitted, the auto text code displays as:

    ```
    (Local Filter): Year=2006, 2007

    Region=Northeast, Mid-Atlantic, Southeast
    ```

  - If the filter type name is included, specify whether to include empty expressions. An empty expression is a filter type that is not included on the dataset.
  - Whether to add a new line after each filter type name, before the definition of the filter.

    For example, if the new line is omitted, the auto text code displays as:

    ```
    Report Filter (Local Filter): Year=2006, 2007

    Security Filter: Region= Northeast, Mid-Atlantic,
    Southeast
    ```

  - Whether to add a new line between the different filter types to help differentiate between them.

    For example, if the new line is omitted, the results are:

    ```
    Report Filter (Local Filter): Year=2006, 2007
    Security Filter: Region= Northeast, Mid-Atlantic,
    Southeast
    ```

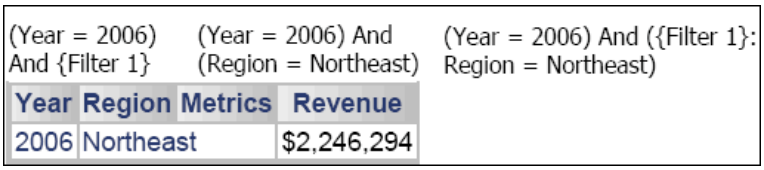
  - Whether to show the report limits before or after the view filter.

- Whether to display details about shortcut filters, which are stand-alone filters used in the report filter.

  For example, Filter 1 is created as a stand-alone filter in the Filter Editor. The filter is defined as Region = Northeast. A report contains the Year and Region attributes, as well as the Revenue metric. A local filter (a filter defined in the Report Editor, not the Filter Editor) is created in the report, filtering on 2005. Then Filter 1 is added to the report filter, so Filter 1 becomes a shortcut filter in the report.

  This report is used to create the document shown below, which contains three filter details auto text codes, one for each of the shortcut filter options. The definition of the local filter (Year = 2005) is displayed in each auto text code.

  - The first auto text code shows just the filter name, Filter 1.
  - The second auto text code shows the filter definition, Region = Northeast.
  - The third auto text code shows both the name and filter.

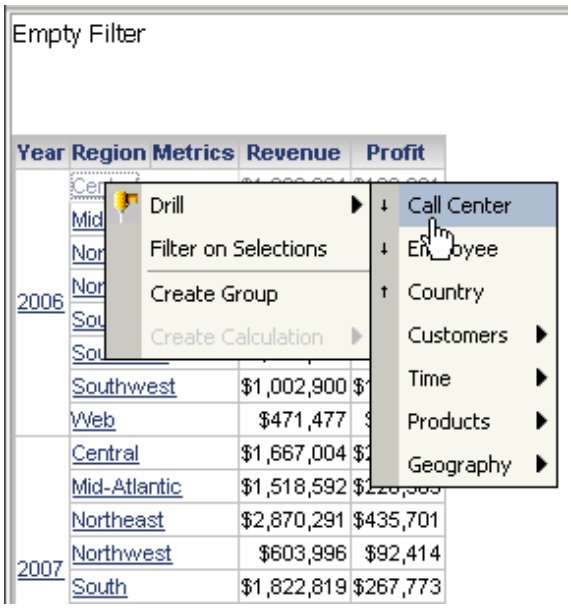


- The drill filter is displayed on the report that is created by drilling on a grid or graph report in a document. The drill filter is the attribute element(s) that you selected when you drilled on the grid or graph report.

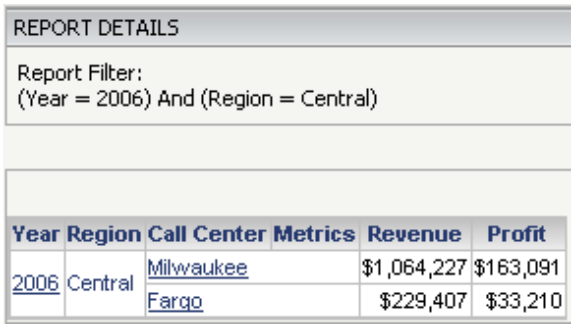
  For example, a Grid/Graph in a document contains the Year and Region attributes, as well as the Revenue and Profit metrics. The document uses a filter details auto text code which is configured to display only the drill filter. A portion of the document is shown below in Interactive Mode in MicroStrategy Web. The filter details auto text

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code displays as "Empty Filter," since the only filter displayed is a drill filter, and no drilling has occurred.



Drill on the Grid/Graph from 2006 Central down to Call Center, as shown above. The following report is displayed, with a Report Details pane that displays the drill filter information, that 2006 and Central were selected when the drill was performed.



If the drill filter was disabled, the Report Details pane would be blank in the drilled-to report.

If you drill from an attribute (as opposed to drilling from attribute elements), a drill filter is not created. The resulting report is not filtered; it is just displayed at a different level from the grid or graph report in the document.

- A filter can contain an attribute element list qualification, which qualifies on a list of attribute elements. For example, you can use an attribute element list qualification on the attribute Customer, in a

report, to return data only for those customers that you specify in your list.

For these filters, you can configure how the lists are displayed using the following settings.

- **Show attribute name for In List conditions**: Determines whether or not the name of the attribute in the filter's attribute element list is displayed. The name can also be repeated for each attribute element (for example, Region = Northeast, Region = Mid-Atlantic).
- **Separator after attribute name**: Specifies the characters that separate the attribute name from the attribute element.
- **New line after attribute name**: Determines whether or not the attribute name and its element display on separate lines.
- **Separator between last two elements**: Specifies the text that separates the last two attribute elements in the list. The choices are:
  - **or**
  - **and**
  - **comma** (the character is used, not the text)
  - **custom** (in the **Custom separator** field, type the characters to use as the separator)
- **New line between elements**: Determines whether or not each attribute element displays on a separate line.
- **Trim elements**: Determines whether extra spaces in the attribute elements are deleted. For example, an element of an account attribute is PSI2415 : 10 : COMMERCIAL. If **Trim elements** is enabled, the attribute is displayed as PSI2415:10:COMMERCIAL, omitting the extra spaces.

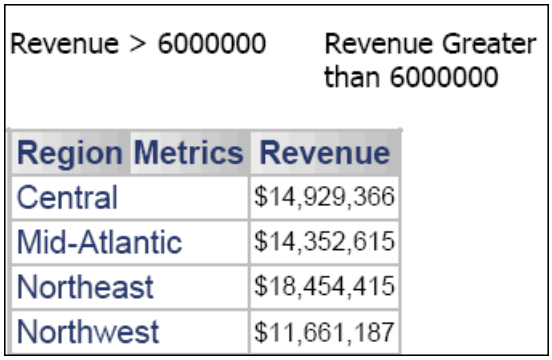
- A filter can contain:
  - An attribute form qualification, which is based on attribute forms (such as First Name and Last Name for the Customer attribute)
  - A metric set qualification, which is based on metric value or rank
  - A relationship set qualification, which is based on relationships between attributes

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For these types of filters, you can configure how the qualifications are displayed using the following settings:

- **Use names or symbols for operators**: Determines whether names (such as Equals or Greater Than) or symbols (such as = or >) are displayed.

  The following document sample shows two filter details auto text codes. The one on the left uses a symbol to indicate the operator, while the one on the right uses a name.

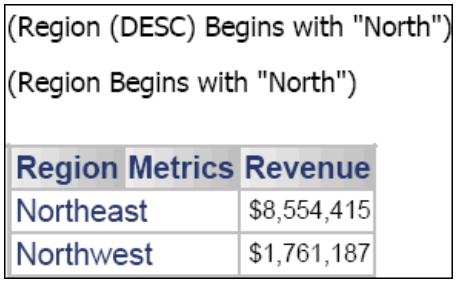

Revenue > 6000000

Revenue Greater than 6000000

Region Metrics	Revenue
Central	$14,929,366
Mid-Atlantic	$14,352,615
Northeast	$18,454,415
Northwest	$11,661,187

- **Include attribute form names in qualification conditions**: For conditions in attribute qualification filters, determines whether or not to display attribute form names (such as DESC or ID).

  The following document sample shows two filter details auto text codes. The first one includes the attribute form name (DESC), while the second does not.


(Region (DESC) Begins with "North")

(Region Begins with "North")

Region Metrics	Revenue
Northeast	$8,554,415
Northwest	$1,761,187

- **Dynamic dates**: Determines whether dynamic dates are shown as the date or as the expression that calculates the date.

The following document sample shows two filter details auto text codes. The top one displays the dynamic date as a date, while the bottom one shows the expression.

Report Filter:Day (ID) = 4/1/2008

Report Filter:Day (ID) = Today minus 12 Month(s)

Region Metrics	Revenue
Mid-Atlantic	$2,993
Northeast	$8,102
Southeast	$3,781

- Filters can have multiple qualifications, which are the conditions (such as Revenue > 6,000,000) that the data must meet to be included in a report. A dataset can also contain multiple filters in its report filter.

  Use the following settings to configure how to display the logical operators that join multiple conditions:

  - **New line between conditions**: Determines whether or not each condition is placed on a separate line. You can also select **Automatic**, which inserts a line only when conditions are joined by different logical operators.

    For example, a report is filtered for revenue greater than 10 million and profit greater than 2 million and the Mid-Atlantic region. A second report uses the same filter conditions, except the second logical operator is replaced by or, which filters the report for revenue greater than 10 million and either profit greater than 2 million or the Mid-Atlantic region. These two reports are used in the following document. A filter details auto text code is displayed for each dataset; both use the **Automatic** option for **New line between conditions**. In the first filter details auto text code, the text wraps within the text field. In the second filter details, a new line is started at the logical operator AND, and again before the second condition. Using the new lines helps to distinguish between the conditions.

(Revenue > 10000000) And (Profit > 2000000) And (Region = Mid-Atlantic)

Region Metrics	Revenue	Profit
Mid-Atlantic	$23,178,823	$4,007,580

Revenue > 10000000
And
(Profit > 2000000 Or Region = Mid-Atlantic)

Region Metrics	Revenue	Profit
Mid-Atlantic	$23,178,823	$4,007,580
Northeast	$11,375,413	$2,009,740

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  - If you select **Yes** or **Automatic**, you can specify whether to **Single space** or **Double space** the conditions.

- **Parentheses around conditions**: Determines whether or not parentheses are placed around each condition, such as (Region = Northeast). If a new line is inserted between conditions, you can often omit the parentheses since the conditions are already differentiated from each other.

  You can also select **Automatic**, which displays parentheses only when they resolve ambiguity in the expression. Parentheses are not included around conditions that are joined by the same logical operator. When conditions are joined by different operators, the parentheses are necessary to ensure that the conditions are grouped correctly.

- **Logical operator between conditions**: Specifies whether or not to display the logical operator between conditions. The options are:

  - **Yes** to display all operators
  - **No** to omit all operators
  - **AND only** to display only the AND operator
  - **OR only** to display only the OR operator

  The first filter details auto text code in the following document sample displays all the logical operators. The second one displays "and" only; notice that the "or" before the Region condition is replaced by a comma.

(Revenue > 10000000) And ((Profit > 2000000) Or (Region = Mid-Atlantic))

(Revenue > 10000000) And ((Profit > 2000000),(Region = Mid-Atlantic))

Region Metrics	Revenue	Profit
Mid-Atlantic	$23,178,823	$4,007,580
Northeast	$11,375,413	$2,009,740

- You can rename an object on a report, to display a more meaningful description in the context of that particular report, for example. An alias does not change the name of the object, only the name displayed on the report. A filter uses the name of the object, not the alias. You can determine whether aliases replace object names in a filter details auto text code.

By default, each setting on these tabs inherits the document or report setting, as described in *Levels of auto text code configuration,*

page 94. You can return to this default by selecting **Inherit** from the drop-down list for the specific setting.

When you view the document as a PDF or display it in Interactive, Express, or Flash Modes, the code is replaced with the information from the document or dataset.

Working with metrics in documents

This section assumes that you understand the concepts of metrics, levels of calculation on reports, and how calculation works on various document sections. For background information on metrics and reports, see the *Advanced Reporting Guide*. For background information on document sections, see *Understanding and working with document sections, page 28*.

This section describes how metrics are calculated based on their location in the document. It also provides steps to add a metric to a document or create a new metric based on existing metrics in the document.

The level of calculation for metrics depends on their location in the document. This allows you to create metric totals in documents, such as a grand total or a group total. This section describes how metrics are calculated based on their location in the document; for details, see *Metric calculation in document sections, page 114*.

For a description of the different types of metrics that you can create in a document and steps to create them, see *Creating metrics in documents, page 128*.

Metric calculation in document sections

A metric is calculated differently depending on its location in a document. This section of the guide describes how metrics are calculated in each document section:

- *Calculating metrics at the dataset level: Detail section, page 115*
- *Calculating metrics at the group level: Group Headers and Group Footers, page 116*

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- *Calculating grand totals for metrics: header and footer sections, page 118*
- *Calculating metrics at the level of a Grid/Graph, page 120*
- *Calculating metrics at the level of a Grid/Graph and a group: Group Headers and Group Footers, page 122*
- *Dynamic aggregation in documents, page 124*

  When a metric is placed in a document section other than the Detail section, the metric is calculated using the dynamic aggregation specified in the metric definition. For details on how metrics are aggregated in documents, see *Dynamic aggregation in documents, page 124*.

For a description of the different types of metrics you can create in a document and steps to create them, see *Creating metrics in documents, page 128*.

Calculating metrics at the dataset level: Detail section

A metric placed in a text field in the Detail section is calculated at the level returned by the dataset that the metric comes from. The level of the dataset is defined by the attributes, consolidations, and custom groups on the dataset.

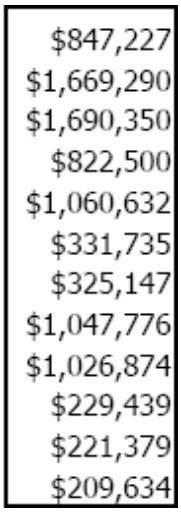
For example, a report contains the Region and Employee attributes, as well as the Revenue metric. A portion of this report is shown below.

Region	Employee		Metrics	Revenue
Central	Ellerkamp	Nancy		$847,227
	Gale	Loren		$1,669,290
	Torrison	Mary		$1,690,350
	Zemlicka	George		$822,500
Mid-Atlantic	Bernstein	Lawrence		$1,060,632
	Brown	Vernon		$331,735
	Corcoran	Peter		$325,147
	Folks	Adrienne		$1,047,776
	Hollywood	Robert		$1,026,874
	Ingles	Walter		$229,439
	Smith	Thomas		$221,379
	Young	Sarah		$209,634

This report is used as the dataset for a document. The Revenue metric is placed in a text field in the Detail section of the document. When the document is executed, the Revenue metric is calculated at the level of the

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dataset, which is Employee, as shown below. A portion of the document is shown below:



The numbers in the document match those calculated in the original report. A document would include additional information to give perspective to the numbers. This example shows that the numbers are calculated regardless of what is placed on the document.

To change the calculation of a metric, place it in a Grid/Graph or a text field in a different section of the document. For example, placing a metric in the Document Footer provides a grand total for the document.

Calculating metrics at the group level: Group Headers and Group Footers

A metric placed in a text field in a Group Header section or Group Footer section is calculated at the level of the group. Grouping allows you to specify the attribute, consolidation, or custom group to use to calculate the metric. (For an introduction to grouping data in a document, see *Chapter 5, Grouping and Sorting Records in a Document*.)

For example, a report contains the Region and Employee attributes and the Revenue metric. A portion of the report is displayed below. The report is

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subtotaled by Region for this example to help you compare metric values between the report and the document.

Region	Employee		Metrics	Revenue
Central	Ellerkamp	Nancy		$847,227
	Gale	Loren		$1,669,290
	Torrison	Mary		$1,690,350
	Zemlicka	George		$822,500
	Total			**$5,029,366**
Mid-Atlantic	Bernstein	Lawrence		$1,060,632
	Brown	Vernon		$331,735
	Corcoran	Peter		$325,147
	Folks	Adrienne		$1,047,776
	Hollywood	Robert		$1,026,874
	Ingles	Walter		$229,439
	Smith	Thomas		$221,379
	Young	Sarah		$209,634
	Total			**$4,452,615**

This report is used as the dataset for a document. The document is grouped by Region. The Revenue metric is placed in two text fields, one in the Group Header and the other in the Detail section. The region name is included in the Group Header, to differentiate between the groups.

In the executed document, in the Group Header, the Revenue metric is calculated at the level of the group (Region). The group's elements are the elements of the Region attribute. This provides regional totals. In the Detail section, the Revenue metric is calculated at the level of the dataset, which is Employee. A portion of the document is shown below:

Central	$5,029,366
	$847,227
	$1,669,290
	$1,690,350
	$822,500
Mid-Atlantic	$4,452,615
	$1,060,632
	$331,735
	$325,147
	$1,047,776
	$1,026,874
	$229,439
	$221,379
	$209,634

The metric values match those calculated in the report.

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The example above uses a metric in a text field. Metric values in a Grid/Graph in the Group Header or Group Footer are calculated at the level of both the group and the Grid/Graph. For details and an example, see *Calculating metrics at the level of a Grid/Graph and a group: Group Headers and Group Footers, page 122*.

The calculation of the group total is determined by the metric's definition, specifically by the dynamic aggregation function. For a description of how dynamic aggregation works in documents, see *Dynamic aggregation in documents, page 124*. Summary metrics explicitly set the aggregation function. For other metrics created directly in the document, the function specified in the definition is also used as the aggregation function, if the function is SUM, MIN, or MAX. For steps to create metrics in documents, see *Creating metrics in documents, page 128*.

Calculating grand totals for metrics: header and footer sections

A metric placed in a text field in any header or footer section other than a Group Header or Group Footer is calculated as a grand total, totaled across the entire dataset. These document sections include:

- Detail Header
- Detail Footer
- Document Header
- Document Footer
- Layout Header
- Layout Footer

  Layout Headers and Layout Footers are only displayed in multi-layout documents. For descriptions and examples of these document sections, see *Layout Header, page 31* and *Layout Footer, page 35*. For background information about layouts in documents, including examples and steps, see *Creating multi-layout documents, page 512*.

- Page Header
- Page Footer

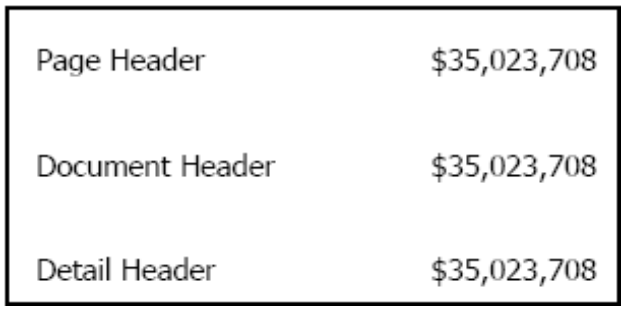
For example, a report contains the Region and Call Center attributes, as well as the Revenue metric. A portion of this report is shown below. The report

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contains a grand total to help you compare metric values between the report and the document.

Region	Call Center	Metrics	Revenue
Total			**$35,023,708**
Central	Milwaukee		$4,182,139
	Fargo		$847,227
Mid-Atlantic	Washington, DC		$3,135,283
	Charleston		$1,317,332
Northeast	Boston		$1,487,936
	New York		$7,066,478
Northwest	San Francisco		$1,021,447
	Seattle		$739,741
South	New Orleans		$3,305,039
	Memphis		$2,084,241
Southeast	Atlanta		$1,052,108
	Miami		$1,187,843
Southwest	San Diego		$2,962,719
	Salt Lake City		$731,413
Web	Web		$3,902,762

This report is used as a dataset for a document. The Revenue metric is placed in text fields in the Page Header, Document Header, and Detail Header. Because it is not placed in the Detail section, the Call Center revenue values are not displayed. Labels are included in each document section to indicate the different groups.



Notice that the metric values are the same for all the document sections, and they match the grand total calculated in the report. Which document section you place the metric in depends on where you want the information to appear, for instance, the top or bottom of each page (Page Header or Page Footer) or at the beginning or end of the document (Document Header or Document Footer).

The preceding example uses metrics in text fields. Metric values in a Grid/Graph in these document sections are calculated at the level of the Grid/Graph. For details and an example, see *Calculating metrics*

at the level of a Grid/Graph and a group: Group Headers and Group Footers, page 122.

The calculation of grand totals is determined by the metric's definition, specifically by the dynamic aggregation function. For a description of how dynamic aggregation works in documents, see *Dynamic aggregation in documents, page 124*. Summary metrics explicitly set the aggregation function; this is their primary role. For other metrics created directly in the document, the function specified in the definition is also used as the aggregation function, if the function is SUM, MIN, or MAX. For steps to create metrics in documents, see *Creating metrics in documents, page 128*.

Calculating metrics at the level of a Grid/Graph

A metric placed in a Grid/Graph is calculated at the level defined by the attributes, consolidations, and custom groups on the Grid/Graph. (For background information on Grid/Graphs and steps to create them, see *Chapter 3, Displaying Reports in Documents: Grid/Graphs*.)

Note the following:

- If the Grid/Graph is placed in a Group Header or Group Footer, the level of the group is also included in the metric calculation, as described in more detail in *Calculating metrics at the level of a Grid/Graph and a group: Group Headers and Group Footers, page 122*.
- A Grid/Graph cannot be placed in the Detail section. This is because the Grid/Graph would be repeated on each row since controls in the Detail section are repeated once per row of the dataset.

For example, a dataset contains the Region and Employee attributes, as well as the Revenue metric. A Grid/Graph containing all these objects is placed in the Detail Header section of the document. A second Grid/Graph, which contains only Region and Revenue, is placed in the Document Header. In the sample report shown below, all of the Grid/Graph containing Region only is

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shown, but only a portion of the Grid/Graph with both Region and Employee is included.

Region Metrics	Revenue
Central	$5,029,366
Mid-Atlantic	$4,452,615
Northeast	$8,554,415
Northwest	$1,761,187
South	$5,389,280
Southeast	$2,239,951
Southwest	$3,694,132
Web	$3,902,762

Region	Employee	Metrics	Revenue
Central	Ellerkamp	Nancy	$847,227
	Gale	Loren	$1,669,290
	Torrison	Mary	$1,690,350
	Zemlicka	George	$822,500
Mid-Atlantic	Bernstein	Lawrence	$1,060,632
	Brown	Vernon	$331,735
	Corcoran	Peter	$325,147
	Folks	Adrienne	$1,047,776
	Hollywood	Robert	$1,026,874
	Ingles	Walter	$229,439
	Smith	Thomas	$221,379
	Young	Sarah	$209,634

The metrics in the Grid/Graphs are calculated at the level of the attributes in the Grid/Graphs—Region only in the top Grid/Graph, Region and Employee in the bottom Grid/Graph. If a Grid/Graph contained only Employee and Revenue, and an employee generates revenue in two regions, the metric value displayed in each region would reflect the total revenue of the employee, for both regions.

If the Grid/Graph does not contain any objects other than the metric, the metric behaves as though it were in a text field in that document section. A metric in a text field in any header or footer section other than a Group Header or Group Footer is calculated as a grand total, totaled across the entire dataset. For example, if Region and Employee were removed from the Grid/Graphs in the previous example, both Grid/Graphs calculate a revenue grand total, as shown below:

Metrics	Revenue
	$35,023,708

Metrics	Revenue
	$35,023,708

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The calculation of these grand totals is determined by the metric's definition, specifically by the dynamic aggregation function. For a description of how dynamic aggregation works in documents, see *Dynamic aggregation in documents, page 124*.

Calculating metrics at the level of a Grid/Graph and a group: Group Headers and Group Footers

A metric placed in a Grid/Graph is calculated at the level defined by the attributes, consolidations, and custom groups on the Grid/Graph, as described in *Calculating metrics at the level of a Grid/Graph, page 120*. When the Grid/Graph is placed in a Group Header or Group Footer, the level of the group is also included in the metric calculation, but only for those grouping fields that exist on the dataset to which the Grid/Graph belongs.

For example, a report contains the Region and Category attributes, as well as the Revenue metric. A portion of this report is shown below:

Region	Category	Metrics	Revenue
Central	Books		$376,836
	Electronics		$3,506,062
	Movies		$589,357
	Music		$557,112
Mid-Atlantic	Books		$337,656
	Electronics		$3,106,940
	Movies		$518,969
	Music		$489,049

This report is used as the dataset for a document. The document is grouped by Region, and its Group Header contains a Grid/Graph with Category and Revenue. The Group Header also contains the Region name, to indicate the different groups. A portion of the document is shown below:

Central

Category	Metrics	Revenue
Books		$376,836
Electronics		$3,506,062
Movies		$589,357
Music		$557,112

Mid-Atlantic

Category	Metrics	Revenue
Books		$337,656
Electronics		$3,106,940
Movies		$518,969
Music		$489,049

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The revenue values are calculated at the level defined by the Grid/Graph (Category) but also at the group level (Region). Each Grid/Graph contains the revenue for its specific region and no others. The group (Region) exists on the dataset of the Grid/Graph.

In another example, a document contains two datasets:

- Dataset 1 contains Region, Category, and Revenue. It is the grouping and sorting dataset. (For a description of the role of the grouping and sorting dataset in a document, see *Using Intelligent Cubes as datasets, page 74*.)
- Dataset 2 contains Region, Call Center, and Revenue.

The document is grouped by Category (from Dataset 1). A Grid/Graph containing Call Center and Revenue (from Dataset 2) is placed on the Group Header. The Group Header also contains the Category name, to indicate the different groups. The Group Header is displayed horizontally, so that the Grid/Graphs are easier to compare. A portion of the document is shown below.

Books

Call Center / Metrics	Revenue
Atlanta	$1,052,108
San Diego	$2,962,719
San Francisco	$1,021,447
Washington, DC	$3,135,283
Salt Lake City	$731,413
Miami	$1,187,843
Milwaukee	$4,182,139
New Orleans	$3,305,039
Seattle	$739,741
Boston	$1,487,936
New York	$7,066,478
Fargo	$847,227
Memphis	$2,084,241
Charleston	$1,317,332
Web	$3,902,762

Electronics

Call Center / Metrics	Revenue
Atlanta	$1,052,108
San Diego	$2,962,719
San Francisco	$1,021,447
Washington, DC	$3,135,283
Salt Lake City	$731,413
Miami	$1,187,843
Milwaukee	$4,182,139
New Orleans	$3,305,039
Seattle	$739,741
Boston	$1,487,936
New York	$7,066,478
Fargo	$847,227
Memphis	$2,084,241
Charleston	$1,317,332
Web	$3,902,762

Notice that the revenue values are the same for each Call Center, regardless of which Category is displayed. The revenue values are calculated at the level defined by the Grid/Graph (Call Center) but not at the group level (Category). Each Grid/Graph contains the revenue for all categories. The group (Category) does not exist on the dataset of the Grid/Graph.

If the Grid/Graph does not contain any objects other than the metric, the metric behaves as though it were in a text field in the same document section. As with metrics in text fields in Group Headers and Group Footers, the

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calculation is determined by the metric's definition, specifically by the dynamic aggregation function. For a description of how dynamic aggregation works in documents, see *Dynamic aggregation in documents, page 124*.

Dynamic aggregation in documents

For background information on dynamic aggregation in metrics, see the *In-memory Analytics Guide*.

Dynamic aggregation is the rollup of metric values that occurs when a text field or a Grid/Graph containing a metric is placed in any document section other than the Detail section. The function used in this aggregation is defined in the metric definition, as described in the following points:

- If the metric function is SUM, MIN, or MAX and the dynamic aggregation function is set to default, the document aggregates the metric using SUM, MIN, or MAX accordingly. If you do not want SUM, MIN, or MAX to be used as the dynamic aggregation, change the metric definition by specifying the new function to be used as the dynamic aggregation function.
- If a metric function other than SUM, MIN, or MAX is used and the dynamic aggregation function is set to default, dynamic aggregation does not occur. Instead of a value, dashes (--) are displayed (unless you have changed the replacement text). To use a specific function, change the metric definition by specifying the function to use as the dynamic aggregation function.

Compound metrics follow the same rules for aggregation. If a compound metric does not use a SUM, MIN, or MAX function, and the dynamic aggregation function is set to default, a null value is generated when the compound metric is placed in any section other than the Detail section. To trigger dynamic aggregation, specify the function to use for calculation.

In the case of metrics created directly in the document (calculated expressions and derived metrics), the function specified in their definition is used as the aggregation function if the function is SUM, MIN, or MAX. For details on metrics created directly in a document, see *Creating metrics in documents, page 128*.

For steps to change the dynamic aggregation function, see the *Dynamic Aggregation* chapter of the *In-memory Analytics Guide*.

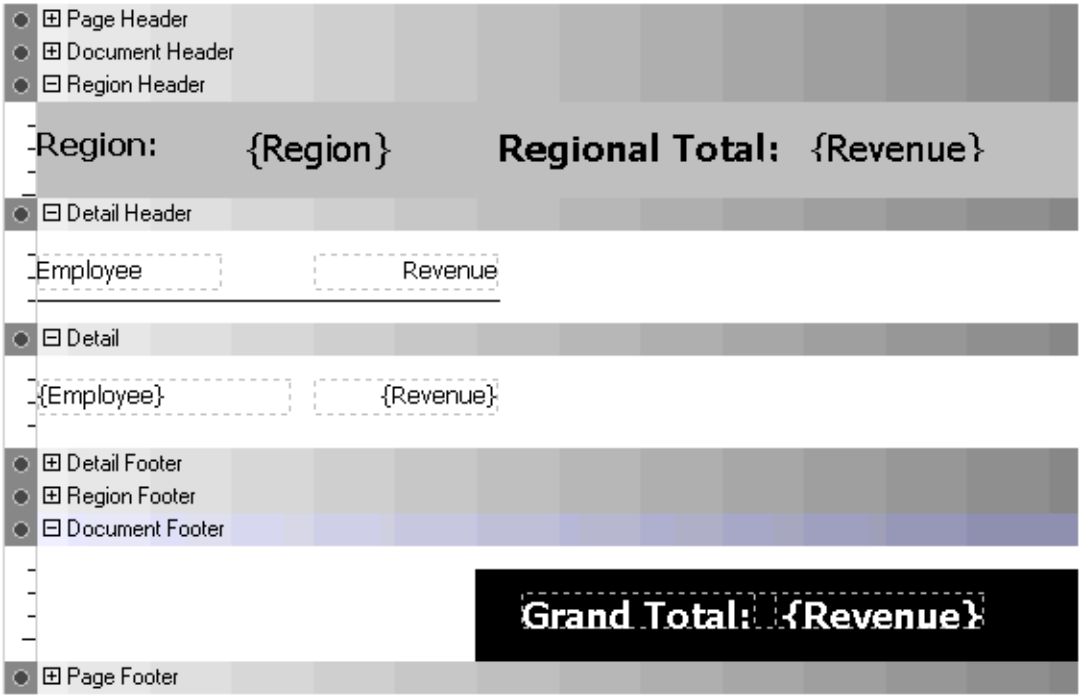
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Calculating totals in documents

Totals reflect accumulations at a given level, and can be applied to any document. A total or subtotal is calculated differently depending on its location in the document.

The calculation of the total is determined by the default subtotal function that is defined in the metric's definition. To specify the function used to calculate a subtotal, create a summary metric (see *Using a function to create a subtotal: Creating summary metrics, page 140*). If a total does not aggregate the way that you want it or if it does not aggregate at all, see *Dynamic aggregation in documents, page 124*. To have grand totals calculated for the entire dataset, see *Calculating grand totals for metrics: header and footer sections, page 118*.

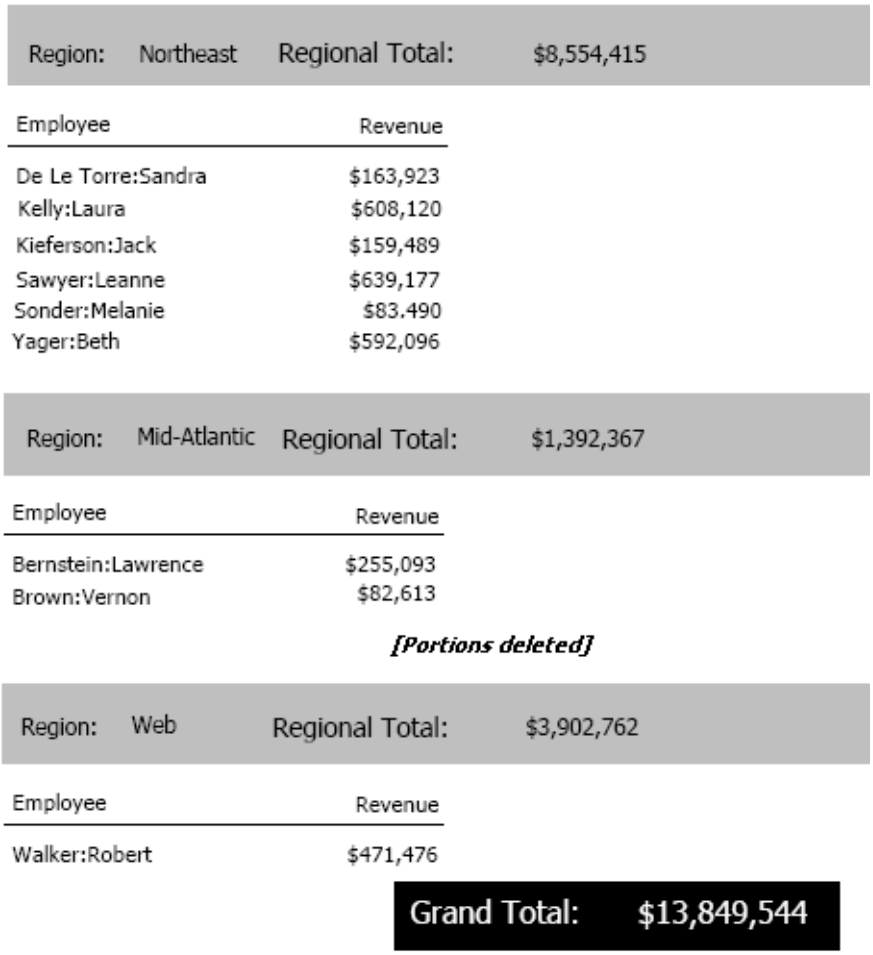
For example, the following document, which is shown in Design View/Mode, is grouped by Region. The same metric is placed in text fields in the Region Header, Detail, and Document Footer sections.



When the PDF is generated, the same metric returns different values in the different locations. The metric in the Detail section is revenue by employee; the metric in the Region Header is regional revenue; and the Document Footer calculates a revenue grand total for the entire document. These

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differences reflect the different locations in the document where the metric is placed.



The metric calculation for the totals is determined by the default subtotal specified in the metric definition. In this case, the Revenue metric uses SUM.

The following table describes where to place a metric in the document to calculate the metric at a specific level:

How the Metric is Totaled	Where to Place the Metric to Achieve This Calculation
Totaled at the level returned by the dataset	In a text field in the Detail section
Totaled at the level of the group	In a text field in a Group Header/Footer
Totaled across entire dataset	In a text field in the Document Header/ Footer or Page Header/Footer

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How the Metric is Totaled	Where to Place the Metric to Achieve This Calculation
Totaled at the level defined by attributes, consolidations, or custom groups on the Grid/ Graph, and at the level of the grouping section	In a Grid/Graph control in a Group Header/Footer
Totaled at the level defined by attributes, consolidations, or custom groups on the Grid/ Graph	In a Grid/Graph control in the Document Header/Footer or Page Header/Footer

You can also display totals for groups and for selectors. For examples and steps to show totals for groups, see *Showing totals for a group, page 394*. For details to show totals for selector, see the *Dashboards and Widgets Creation Guide*.

To calculate a total on a document

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. In the document's Layout area, right-click the metric to be totaled and select **Copy**.
3. Right-click in the location where you want to place the metric and select **Paste**.
   - If you copy the metric to a Group Header or Footer, the metric subtotals at that level.
   - If you copy the metric to the Page Header or Footer, or the Document Header or Footer, a grand total for the metric is calculated.

   For details of how a metric is totaled depending on the document section it is placed in, see *Metric calculation in document sections, page 114*.

Copying the metric from the Layout area also copies the metric's formatting. If you drag the metric from the Dataset Objects pane, the default formatting for the control is used (for details, see *Defining default formatting for control types: control defaults, page 265*).

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Creating metrics in documents

You can add metrics to a document in any of the following ways:

- Add metrics from the datasets of a document. See *Adding metrics from a dataset to a document, page 128* for steps.
- Create new metrics directly in the document; for steps, see *Creating metrics directly in the document, page 129*. This approach is useful if you need to achieve any of the following:
  - Perform additional calculations on the metrics from the datasets (such as multiplying by a constant or using a function)
  - Create calculations that combine metrics from different datasets
  - Create totals using specific functions

  For descriptions of the types of metrics that you can create within a document and steps to create each type, see *Creating metrics directly in the document, page 129*.

Adding metrics from a dataset to a document

To use an existing metric from a dataset, place the metric into the document in either a Grid/Graph or a text field. In summary:

- A metric in a text field is calculated at the level of the document section in which it is placed. For example, a metric in a Region Group Header is calculated at the regional level. A metric in the Document Footer section is calculated as a grand total for the entire document.
- A metric in a Grid/Graph is calculated at the level of the objects in the Grid/Graph. If the Grid/Graph is placed in a Group Header, the group level is also taken into account. For background information on Grid/Graphs and instructions to create them, see *Chapter 3, Displaying Reports in Documents: Grid/Graphs*.

For a more detailed description of how metrics are calculated in a document, see *Metric calculation in document sections, page 114*.

To add a metric from a dataset to a document

1 In MicroStrategy Web, open the document in **Design Mode**.

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2 Expand the document section where you want to place the metric by clicking the plus sign next to the section name.

The metric is calculated at the level of the section that you place it in. For example, a metric in a Region Group Header is calculated at the regional level. A metric in the Document Footer section is calculated as a grand total for the entire document. For more details, see *Metric calculation in document sections, page 114*.

3 Select the metric from the objects displayed in the Dataset Objects panel, then drag and drop the metric into the Layout area.

The metric is added to the document in a text field. The dataset name is added to the metric name if the metric exists in multiple datasets.

If the Dataset Objects panel is not displayed, click **Datasets** at the bottom of the panel on the left.

4 The metric is automatically formatted in a default style using the control defaults. You can change the formatting of the text field, as described in *Formatting text fields, page 283*.

5 You can also resize the text field, if needed. See *Sizing controls, page 163* for instructions.

Creating metrics directly in the document

Metrics that can be defined directly in the document include calculated expressions, derived metrics, and summary metrics. They are created in the document, not added from the dataset. Like other metrics, they are calculated at the level returned by the dataset, based on the attributes, consolidations, and custom groups on the dataset.

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The various types of metrics that can be created directly in a document all help to achieve different goals. Use the table below to determine which type of metric you should create based on your goal.

Summary metrics provide subtotals; they are discussed in *Calculating totals in documents, page 125* and *Using a function to create a subtotal: Creating summary metrics, page 140*.

Goal	Calculated expression	Derived metric
Use metrics from multiple datasets	Yes	• Yes, in a Grid/Graph • No, in a text field
Use advanced functions, such as banding, cosine, and Chi square distribution	Yes **Note**: See *Appendix D, Advanced Functions for Calculated Expressions* for a list of supported functions.	Yes
Place in a grid	No	Yes
Place in a text field	Yes	Yes
Use in conditional formatting	No	Yes
Reuse within the document	No	Yes
Create on the fly in a text field, without creating a new object and adding it to the layout	Yes	No

Creating calculated expressions

A calculated expression is a metric that is calculated dynamically when the document is executed, directly from metrics on a document dataset. Metrics used to define the calculated metric can come from different datasets.

Calculated expressions are created directly in text fields on the document, which makes them quicker to create than derived metrics. Unlike derived metrics, calculated expressions cannot be reused within the document because they are not added to the document as dataset objects. They appear as text fields only.

A calculated expression is created using at least one of the metrics in the document. To define a calculated expression, you combine metrics using any of the following:

- Constants
- Simple arithmetic operators (+, -, *, /)

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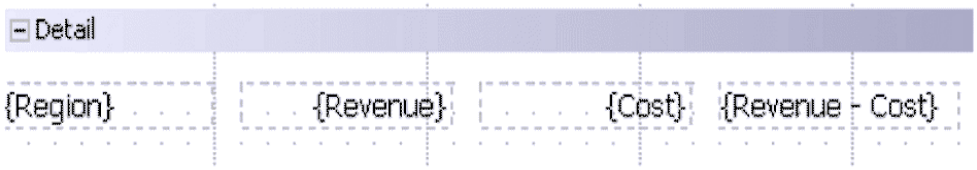
- Certain advanced functions including many financial, statistical, and mathematical functions

  To use an advanced function, you must type the function syntax in the calculated expression. Syntax for supported functions is included in *Appendix D, Advanced Functions for Calculated Expressions*. For details on the individual functions, see the *MicroStrategy Functions Reference*.

- The logical operator IF
- Parentheses to set the order of arithmetic operations

For example, your grouping and sorting dataset contains the Revenue by Region metric and a second dataset contains Cost by Region. (For details on the grouping and sorting dataset, see *Working with multiple datasets, page 52*.) You need to find the profit, which is calculated from the revenue less the cost, so you create a calculated expression with a definition of Revenue - Cost.

To create the calculated expression for profit in MicroStrategy Developer, drag the Revenue metric from the Dataset Objects panel to the Layout area, which automatically creates a new text field. Right-click the new text field and select **Edit Text**. Type `- Cost` inside the braces, then press **ENTER**. The final text field looks like `{Revenue - Cost}`, as shown on the right side of the image below.



The resulting document looks like the following sample:

Region	Revenue	Cost	Profit
Central	$5,029,366	$4,265,043	764,323
Mid-Atlantic	$4,452,615	$3,779,531	673,084
Northeast	$8,554,415	$7,253,683	1,300,732
Northwest	$1,761,187	$1,494,202	266,986
South	$5,389,280	$4,582,324	806,956
Southeast	$2,239,951	$1,903,276	336,675
Southwest	$3,694,132	$3,132,800	561,331
Web	$3,902,762	$3,319,225	583,538

An example of an advanced function is Banding, which maps metric values that fall within a certain range to a particular band value. The function returns a number indicating the band. The syntax of this function is `Banding(ValueList, StartAt, StopAt, Size)`.

For example, create bands on the Revenue metric in the document above. Bands are created in $1,000,000 increments, starting at $1,000,000 and ending at $7,000,000. Band 1 is $1,000,000 to $2,000,000, which includes the Northwest region; Band 2 is $2,000,001 to $3,000,000, which includes the Southeast; Band 3 is $3,000,001 to $4,000,000, which includes the Regions Southwest and Web, and so on.

To create these bands in a calculated expression, create a text field and type the following in it:

```
{Banding(Revenue, 1000000, 7000000, 1000000)}
```

Remember to use braces { } if you type the expression.

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The resulting document is shown below.

Region	Revenue	Revenue Band
Central	$5,029,366	5
Mid-Atlantic	$4,452,615	4
Northeast	$8,554,415	0
Northwest	$1,761,187	1
South	$5,389,280	5
Southeast	$2,239,951	2
Southwest	$3,694,132	3
Web	$3,902,762	3

Because two regions have revenue between $3,000,001 and $4,000,000, there are two lines for Band 3. Because no Revenue value falls between $6,000,001 and $7,000,001, there is no Band 6.

To create a calculated expression

1 In MicroStrategy Web, open the document in **Design Mode**.

2 Expand the section where you want to place the calculated expression by clicking the plus sign next to the section name.

3 To enter the expression, do one of the following:

- Drag and drop data fields from the Dataset Objects panel.
- Add a text field and type the expression in it.
- Combine the above methods.

Join data fields with an arithmetic operator (+, -, *, /) or use an advanced function. You can use constants and parentheses within the calculation. Parentheses indicate the order of arithmetic operations.

For more detailed instructions to use these methods, see *Adding dynamic data to a document, page 83*. For a list of supported functions and their syntax, see *Appendix D, Advanced Functions for Calculated Expressions*.

Note the following:

– If you type the expression, use braces { } around the entire calculated expression. If the name contains spaces or special characters, type it in brackets [ ] within the braces. Special

characters are characters other than a - z, A - Z, 0 - 9, #, _, and . (period).

– If the object exists in multiple datasets, use the format {[dataset name]:[object name]}. This format also allows you to create calculated expressions across datasets.

Creating, editing, and deleting derived metrics

A derived metric calculates data and displays results dynamically, when a document is executed, by using at least one of the metrics in a document dataset. Metrics used to define the derived metric can come from different datasets, when the derived metric is used on a Grid/Graph. Derived metrics provide the dynamic application of calculations to a document without requiring new metric definitions.

For example, if your dataset contains the dollar sales for a particular region, and you want to view the same data in millions, you can create a derived metric with a definition of `[Dollar Sales]/1000000`.

A derived metric:

- Must be a compound metric. A compound metric does not have to be a derived metric.
- Can be reused within the document, including in Grid/Graphs and in conditional formatting expressions.
- Is calculated by the MicroStrategy Analytical Engine based on metrics that are contained in the Dataset Objects pane.
- Cannot use transformation objects.
- If the derived metric will be used on a Grid/Graph, it can use metrics from multiple datasets.
- If the derived metric will be used in a data field, the derived metric must use metrics from the same dataset. To create a calculation that uses metrics from multiple datasets in a data field, create a calculated expression. For steps, see *Creating calculated expressions, page 130*.

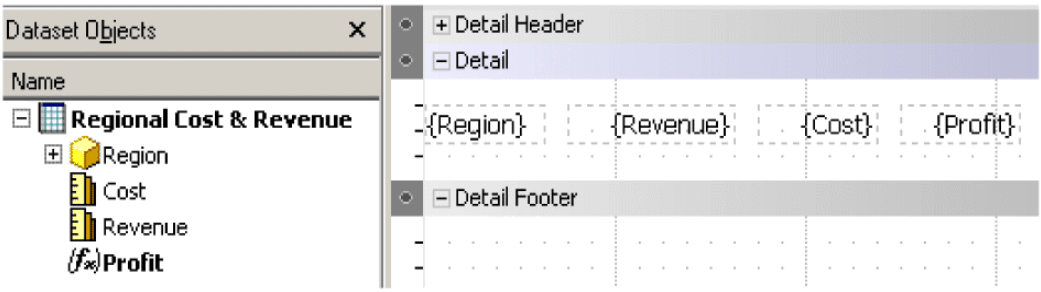
You can also create derived training metrics, which are used for Data Mining Services, on a Grid/Graph. A training metric analyzes data and generates a forecast, or predictive metric. For background information on training metrics and predictive metrics, including instructions to create a derived training metric on a Grid/Graph, see the *Data Mining Services* chapter of the *Advanced Reporting Guide*.

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When you create a derived metric, it is added to the Dataset Objects pane but is not placed on the document. You can add it to the document just as you would any other dataset object. If you select a Grid/Graph before creating the derived metric, the metric is added to the Grid/Graph as well as placed in the Dataset Objects pane for future use.

For example, you want to show profit for each region of your business. The grouping and sorting dataset contains both Revenue and Cost by Region. You create a derived metric defined as `(Revenue - Cost)`.

The following image shows the new derived metric, Profit, in both the Layout area on the right and the Dataset Objects pane on the left.



The resulting document looks like the following sample:

Region	Revenue	Cost	Profit
Central	$5,029,366	$4,265,043	764,323
Mid-Atlantic	$4,452,615	$3,779,531	673,084
Northeast	$8,554,415	$7,253,683	1,300,732
Northwest	$1,761,187	$1,494,202	266,986
South	$5,389,280	$4,582,324	806,956
Southeast	$2,239,951	$1,903,276	336,675
Southwest	$3,694,132	$3,132,800	561,331
Web	$3,902,762	$3,319,225	583,538

Another document contains two datasets:

- Dataset 1: Category, Subcategory, and Profit

- Dataset 2: Category, Region, and Revenue

A Grid/Graph displays Category, Subcategory, Revenue, Profit, and a derived metric called Derived Cost. The formula of the Derived Cost metric is Revenue - Profit. Notice that the metrics come from different datasets. A sample of the resulting document is displayed below:

Category	Subcategory	Revenue	Profit	Derived Cost
Books	Art & Architecture	$2,640,094	$110,012	$2,530,082
	Business	$2,640,094	$89,274	$2,550,821
	Literature	$2,640,094	$57,986	$2,582,108
	Books - Miscellaneous	$2,640,094	$53,007	$2,587,088
	Science & Technology	$2,640,094	$184,275	$2,455,820
	Sports & Health	$2,640,094	$74,724	$2,565,370
Electronics	Audio Equipment	$24,391,303	$633,169	$23,758,134
	Cameras	$24,391,303	$900,830	$23,490,473
	Computers	$24,391,303	$338,585	$24,052,718
	Electronics - Miscellaneous	$24,391,303	$810,424	$23,580,879
	TV's	$24,391,303	$679,393	$23,711,909
	Video Equipment	$24,391,303	$927,202	$23,464,101

Notice that the Revenue amount is the same for each subcategory in a category, because Revenue is available at the Category level (from Dataset 2), but not at the Subcategory level. Therefore, the Derived Cost metric calculates as Category Revenue - Subcategory Profit. This can be helpful to create a percent-to-total metric.

When a metric is requested at a level lower than it exists in a dataset, the metric level on the Grid/Graph is raised to that of the dataset. This occurs whether a single dataset or multiple datasets are involved.

Steps are below to create, edit, and delete basic derived metrics. You can also create more sophisticated metrics to meet your needs, by typing the metric formula directly, using custom expressions, and adding conditional calculations using the Metric Expression Editor. For steps, see the *MicroStrategy Web Help*.

Prerequisite

Before you can combine metrics from multiple datasets in a single derived metric, you must have the Import Table from Multiple Data Sources privilege and enable this behavior at the project level. For steps, see *Determining whether Grid/Graphs can use multiple datasets, page 58*.

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To create a derived metric

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

2 Do one of the following:

- To create a derived metric in a Grid/Graph: Right-click a Grid/Graph in the document's Layout area and select **Insert New Metric**. The Metric Editor opens.
- To create a derived metric based on an attribute in a Grid/Graph: Right-click the attribute in the Grid/Graph, point to **Insert Metric**, and select the function. The derived metric is created, and you can skip the remaining steps of this procedure.
- To create a derived metric directly from a metric in the document: From the Dataset Objects pane, right-click the metric on which to base the derived metric, and select **Insert New Metric**. The Metric Editor opens.

  You must be in Design Mode to access the Dataset Objects pane.

- To create a derived metric directly from a metric or an attribute in the document and base the derived metric on a function: Right-click the metric or attribute in the Layout area and select **Insert Function**. The Insert Function dialog box opens. Continue creating this derived metric by following the steps to create a summary metric in *Using a function to create a subtotal: Creating summary metrics, page 140*.

3 Click **Switch to Function Editor**.

4 Type a name for the metric in the **Metric Name** field.

5 From the **Functions** list on the left, browse to and select the function to use to create the derived metric.

- To display only functions from a specific category in the pane, select the category from the drop-down list.
- To search for a function, type a function name in the search field.
- To view a description of a function, hover your cursor over the function.

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6 In the pane to the right, select the appropriate options to define the function, as described below. To view more details about the function, including descriptions of the options and examples, click **Details** at the bottom of the interface.

- If you selected an aggregation function (also known as a grouping function), such as Sum, Average, First, or Maximum, the Expression field is displayed, along with settings for defining the level and condition. Perform the following steps:

  a Select the metric to group, in the second drop-down list.

  b If the function requires any parameters, they are listed. Select the appropriate options to define each parameter, then click OK to apply your changes. For an explanation of a function parameter, click the **Information** icon next to the parameter.

  c By default, the function is calculated at the level of the attributes on the document section or Grid/Graph on which the metric is placed. You can specify an attribute to use as the level, by selecting the attribute from the **Level** drop-down list.

  For example, if a Grid/Graph contains Region and Category, by default the metric calculates regional and category values on that Grid/Graph. If you select Region as the level, the metric calculates the regional revenue values on that Grid/Graph; it does not include a breakdown by Category. This allows you to compare revenue across regions.

- If you selected a non-aggregation function, such as data mining, date, OLAP, and ranking functions, you are presented with options to define the input values (called arguments) for the function, as well as any parameters you can use to determine the behavior of the function. For example, the NTile function has two parameters, Ascending and Tiles. Ascending controls whether the NTiles are ordered in ascending or descending order, while Tiles sets the number of splits. Perform the following steps:

  a For each argument listed, type a value to use as input values of the function.

  b For each parameter listed, type a value or select the parameter value from the drop-down list.

7 By default, the aggregation and subtotal behavior for derived metrics is automatically determined. (Dynamic aggregation is the roll-up of metric values that occurs when an attribute is removed from a Grid/Graph or a document section.) If you need a different calculation than the values

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provided by the default automatic behavior, you can use manual mode. Manual mode allows you to specify whether the derived metric is calculated using the whole dataset (the base) or the data in the document section or Grid/Graph that it is placed on. To use manual mode, complete the steps below:

a Click **Properties**. The Metric Options dialog box opens.

b From the **Aggregation and Subtotal Behavior** drop-down list, select **Manual**.

c By default, the derived metric is aggregated at the level of the attributes on the document. To aggregate it at the level of its dataset, select the **Aggregate From Base** check box.

d By default, the derived metric is subtotaled at the level of the attributes on the document. To subtotal it at the level of its dataset, select the **Subtotals From Base** check box.

e Click **OK** to return to the Metric Editor.

8 Click **Save**. Your derived metric is created and added to the appropriate dataset in the Dataset Objects pane. If you selected a Grid/Graph before creating the metric, the new metric is also added to that Grid/Graph.

9 You can change the number format of the derived metric:

a In Design Mode, right-click the derived metric in the Dataset Objects pane and select **Number Format**. The Format dialog box opens.

b Select a number format option, such as Currency or Percentage. An example of the number category and additional options are displayed on the right.

c Specify the options, such as the number of decimal places.

d Click **OK** to return to the document.

You can now use the derived metric as you would any other dataset object. You can drag and drop it from the Dataset Objects pane to the document's Layout area to place it into the document.

If the derived metric uses metrics from multiple datasets, place the derived metric on a Grid/Graph to ensure correct calculations.

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To edit a derived metric

1. In MicroStrategy Web, open the document in **Design Mode**.
2. Right-click the derived metric in the Dataset Objects pane and select **Edit**. The Metric Editor opens.
3. Apply any changes you want to make to the metric. See the steps above for creating a derived metric, for details to make changes to the metric.

To delete a derived metric

1. In MicroStrategy Web, open the document in **Design Mode**.
2. Right-click the derived metric in the Dataset Objects pane and select **Delete from Document**.

Using a function to create a subtotal: Creating summary metrics

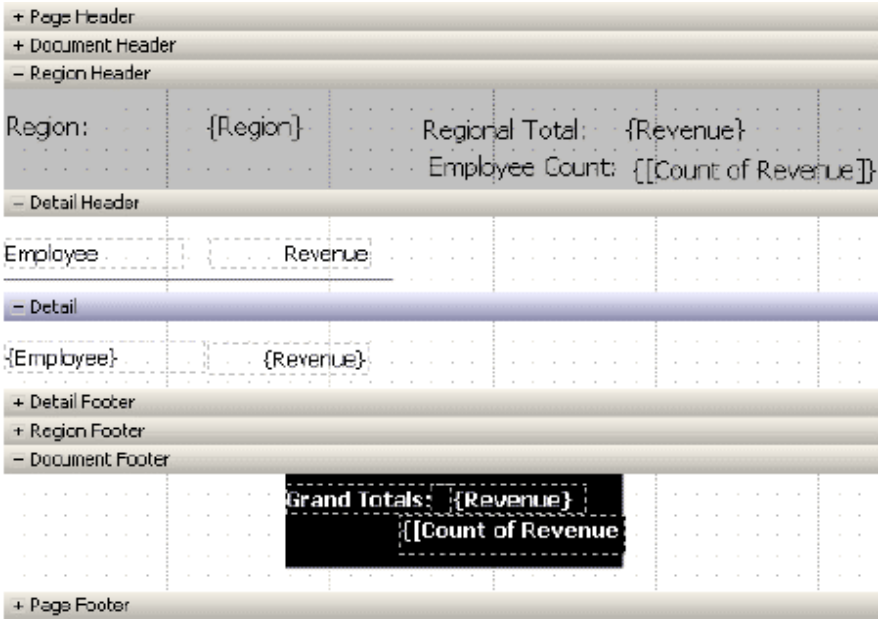
A summary metric is essentially a shortcut to a subtotal. It allows you to select the function to use to calculate the subtotal. If you use a metric from a dataset rather than a summary metric, the default subtotal function is used to subtotal the metric. This default subtotal function is defined in the metric's definition and cannot be changed in the document.

A summary metric is calculated differently depending on its location in the document. (For details on how metrics calculate depending on their document section, see *Calculating totals in documents, page 125*.) You can place the same summary metric in multiple locations in the same document.

For example, you need to add a count of employees to a document containing Region and the Revenue metric. The count must be calculated at the regional and document levels. The Revenue metric uses SUM as the default subtotal, but the COUNT function is needed in this case. You can create a summary metric for Revenue that uses COUNT. With the new summary metric named

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Count of Revenue, placed in the Region Header and the Document Footer, the result is shown in the following sample.



When the PDF is generated, the same summary metric returns different values in the different document section locations. The metric in the Region

Header calculates a regional count, and the metric in the Document Footer calculates a count for the entire document.



Region:	Northeast	Regional Total:	$2,334,864
		Employee Count:	6

Employee	Revenue
De Le Torre:Sandra	$514,524
Kelly:Laura	$329,888
Kieferson:Jack	$389,888
Sawyer:Leanne	$316,786
Sonder:Melanie	$421,036
Yager:Beth	$362,742

Region:	Mid-Atlantic	Regional Total:	$3,413,340
		Employee Count:	8

Employee	Revenue
Bernstein:Lawrence	$403,122
Brown:Vernon	$548,862

[Portions deleted]

Region:	Web	Regional Total:	$1,716,267
		Employee Count:	1

Employee	Revenue
Walker:Robert	$1,716,267

Grand Totals: $16,936,434
34 employees

To create a summary metric

1 In MicroStrategy Web, open the document in **Design Mode**.

2 Right-click the metric in the Dataset Objects pane, point to **New Summary Metric**, then select the function to use. The new summary metric is added to the appropriate dataset in the Dataset Objects pane.

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3 If you need to, you can rename the summary metric:

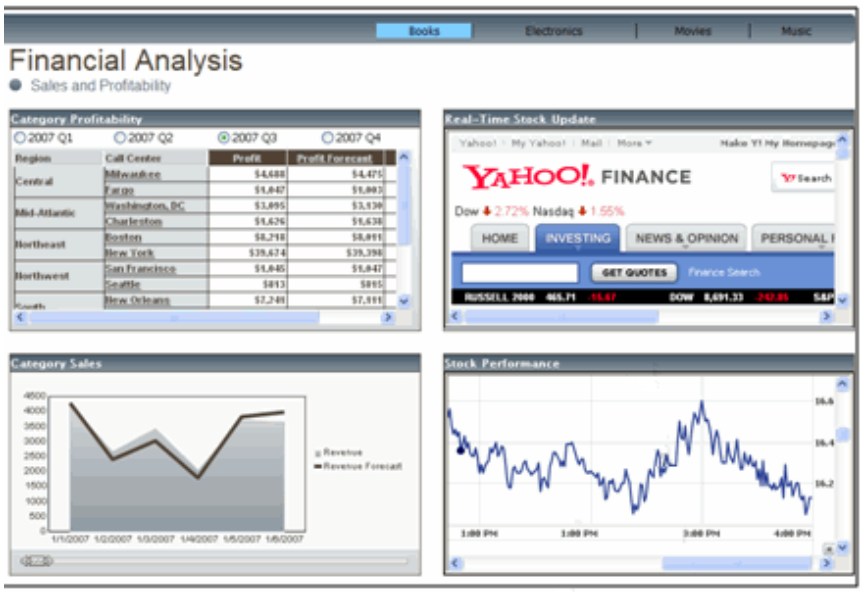
a Right-click the summary metric in the Dataset Objects pane and select **Edit**. The Input Metric Formula dialog box opens.

b Change the metric name and click **OK**.

You can now use the summary metric as you would any other dataset object, by dragging and dropping it from the Dataset Objects pane to the Layout area to place it in the document.

Displaying real-time web and other HTML content: HTML containers

You can display real-time information from the web, directly in your document. For example, you can display a stock ticker running in real time next to a Grid/Graph displaying a MicroStrategy report and interactive graphs displaying your corporate financial data, as shown below:



The interactive graphs shown on the bottom of the sample document above are displayed using widgets, which are Flash-based displays of the results of a dataset. For details on widgets and how to create them, including examples, see the *Dashboards and Widgets Creation Guide*.

You can interact with the web from the document, such as changing the stock that is being tracked in the stock ticker or clicking links on the web page.

You can also use an HTML container to display text that is formatted by HTML tags, by entering HTML tags into the HTML container. For an example, see *Displaying text formatted by HTML in an HTML container, page 145*.

You can achieve this by adding an *HTML container* to your document. Then you enter the URL of the website or enter the HTML tags. The real-time information from the web or the formatted HTML is displayed within the HTML container, in the following modes in MicroStrategy Web:

- Express
- Editable
- Flash (to display text formatted with HTML)
- Interactive

You can create HTML containers using either of the following methods:

- You can display a website by typing a URL in the HTML container. The HTML is retrieved dynamically when the document is executed. For examples, see *Displaying a website using a URL (iFrame), page 147*.
- You can display formatted HTML by entering HTML tags in the HTML container. The HTML is interpreted by the user's browser when the document is executed. For an example, see *Displaying text formatted by HTML in an HTML container, page 145*.

Fully formatted HTML is not displayed when the document is displayed as a PDF or when the document is exported to Excel.

You can format the HTML container itself, with borders and drop shadows, for instance. For examples and steps, see *Formatting HTML containers, page 291*. The formatting of content inside the HTML container is determined by either the HTML tags (as shown in the example below) or the website displayed by the URL.

You can also arrange and resize HTML containers, as you do other controls. For examples and steps, see *Arranging controls on a document, page 158* and *Sizing controls, page 163*.

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Displaying text formatted by HTML in an HTML container

You can type text and HTML tags directly into the HTML container when you create an HTML container. The HTML tags are executed when the document is run in MicroStrategy Web's Express Mode, Editable Mode, Flash Mode, and Interactive Mode.

For example, the following document, which is shown in Express Mode in MicroStrategy Web, contains an HTML container. The HTML tags in it are simple, but you can use most HTML tags; note the exceptions described in *HTML tags supported in Flash Mode, page 145*.



The HTML tags are interpreted by the user's browser.

HTML tags supported in Flash Mode

The following HTML tags are supported in Flash Mode:

- <A href, event, target>
- <B>
-
- <FONT color, face, size>
- <IMG src, width, height, align, hspace, vspace, id, checkPolicyFile>
- <I>
- <LI>
- <P align, class>
- <SPAN class>
- <TextFormat blockindent, indent, leading, leftmargin, rightmargin, tabstops>

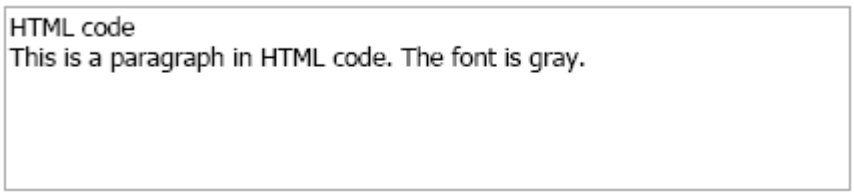
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- <U>

For a full description of the HTML that Flash supports, see the Adobe website at `livedocs.adobe.com/flex/201/langref/flash/text/TextField.html#htmlText`.

HTML containers in PDF and Excel

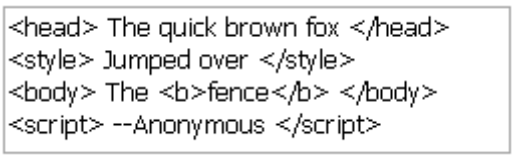
When the document is exported to PDF or Excel, only the text in the HTML container is displayed. The formatting is determined by the formatting of the HTML container, not the HTML tags within it. Notice that the first line is the same size and color as the second line, unlike in the previous sample.



In PDF and Excel, anything within the following tags is removed, and does not display:

- <HEAD>
- <STYLE>
- <SCRIPT>

For example, this HTML container, shown in Design Mode:



Displays as the following in a PDF:



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Notice that the text within the head, style, and script tags is not displayed, and the word “fence” is not bolded.

The HTML tags in the examples above are not complete; they are used only to demonstrate the concept.

To insert a HTML container that uses HTML tags

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Do one of the following:
   - Click the **HTML Container** icon on the toolbar.
   - From the **Insert** menu, select **HTML Container**.
3. In the Layout area, click and drag in the location in which to insert the HTML container.
4. Right-click the HTML container and select **Properties and Formatting**. The Properties and Formatting dialog box opens.
5. By default, an HTML container uses HTML tags rather than a URL to generate the display (see *Displaying a website using a URL (iFrame), page 147*). Ensure that **HTML text** is selected for the **HTML type**.
6. Click **OK** to save your changes and close the Properties and Formatting dialog box.
7. Double-click the HTML container to type text.
8. Enter the HTML tags in the HTML container. To create a new line, press **CTRL**+**ENTER**. When you have finished typing, press **ENTER** or click anywhere outside the HTML container.

To see the changes, switch to Express Mode.

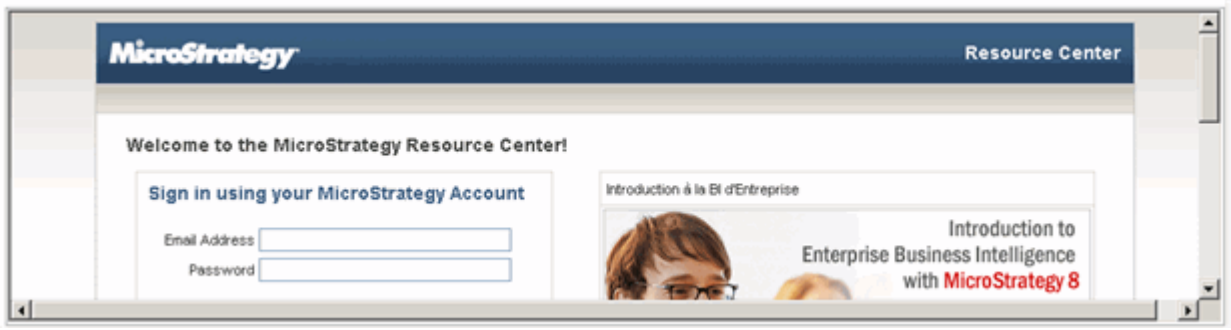
Displaying a website using a URL (iFrame)

You can enter the URL of a website in an HTML container. When the document is executed in MicroStrategy Web, the HTML tags are retrieved from the website. This type of HTML container is an iFrame, which is an

HTML element allowing one HTML document to be embedded inside another.

HTML containers in MicroStrategy Web

When you display the document in Express Mode, Editable Mode, or Interactive Mode in MicroStrategy Web, the website is displayed within the borders of the HTML container. For example, the HTML container in the following document uses a URL to display the MicroStrategy Resource Center website.



The website is not displayed in Flash Mode. Instead, the website's URL is displayed within the HTML container.

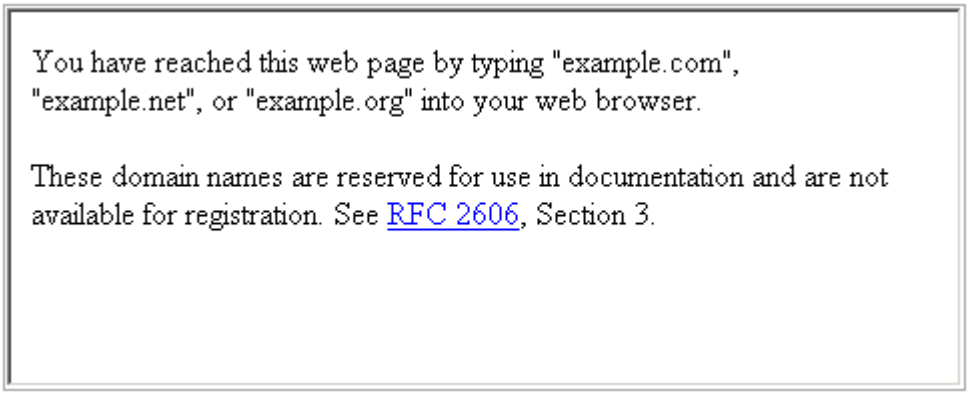
URLs that point to the same MicroStrategy Web server as the one that you are using are not supported. This prevents you from opening the same URL to avoid an infinite loop.

HTML containers in PDF and Excel

When the document is exported to PDF or Excel, the contents of the web page are retrieved. The text is displayed, without any of the formatting from the HTML tags on the web page. The formatting is determined by the formatting of the HTML container, not from any HTML tags within it.

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For example, the URL `www.example.org` displays this web page in Interactive Mode in MicroStrategy Web:



In the PDF, the website from the same URL displays as:



To insert an HTML container that uses a URL

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Do one of the following:
   - Click the **HTML Container** icon on the toolbar.
   - From the **Insert** menu, select **HTML Container**.
3. In the Layout area, click and drag in the position in which to insert the HTML container.
4. Right-click the HTML container and select **Properties and Formatting**. The Properties and Formatting dialog box opens.

5 Select **iFrame** for the **HTML type**.

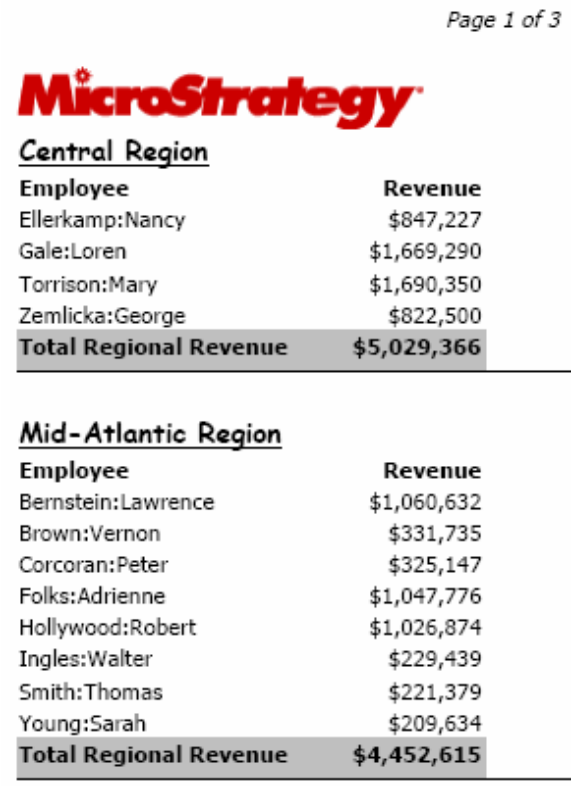
6 In the **iFrame Source** field, type the URL of the website. The text "http://" is already automatically filled in, but you can edit or remove it.

7 Click **OK** to save your changes and close the Properties and Formatting dialog box.

The URL is displayed in the HTML container in Design View. To view the URL's website, you must view the document in Express Mode, Editable Mode, or Interactive Mode in MicroStrategy Web.

Adding shapes and lines to a document

Shapes and lines can make it easier for business analysts to distinguish between parts of a document, and can help you highlight certain information. In the document sample below, lines are used to differentiate between the regions. A shaded rectangle sets off the regional totals.



Page 1 of 3

MicroStrategy

Central Region

Employee	Revenue
Ellerkamp:Nancy	$847,227
Gale:Loren	$1,669,290
Torrison:Mary	$1,690,350
Zemlicka:George	$822,500
Total Regional Revenue	**$5,029,366**

Mid-Atlantic Region

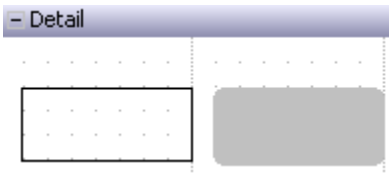
Employee	Revenue
Bernstein:Lawrence	$1,060,632
Brown:Vernon	$331,735
Corcoran:Peter	$325,147
Folks:Adrienne	$1,047,776
Hollywood:Robert	$1,026,874
Ingles:Walter	$229,439
Smith:Thomas	$221,379
Young:Sarah	$209,634
Total Regional Revenue	**$4,452,615**

You can add any of the following to a document:

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- Rectangle
- Rounded rectangle
- Horizontal line
- Vertical line

A regular rectangle is shown on the left in the image below, in contrast to the rounded rectangle on the right.



The rounded rectangle in the sample above does not have a border. You can apply borders to rounded rectangles. Borders appear in Flash Mode in MicroStrategy Web.

For steps to change line and rectangle formatting, see *Formatting lines and rectangles, page 294*.

To add a rectangle to a document

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Expand the section where you want the rectangle to be located by clicking the plus sign next to the section name.
3. From the **Insert** menu, select **Shape**, and then **Rectangle** (for a rectangle with square corners) or **Rounded rectangle (Flash only)**.
4. Click in the document where you want to place the rectangle. Drag to resize the rectangle.

To format a line or rectangle, see *Formatting lines and rectangles, page 294*.

For rounded rectangles, you can adjust how the rounded corners are displayed in Flash Mode in MicroStrategy Web. For examples and steps, see *Controlling the display of rounded corners in Flash Mode, page 295*.

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To insert a line into a document

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Expand the section where you want the rectangle to be located by clicking the plus sign next to the section name.
3. From the **Insert** menu, select Line.
4. Click and drag to draw either a vertical or horizontal line, and to size the line.

You can format the line, such as changing the color and whether the line is solid or dashed. For a list of the various formatting options, see *Formatting lines and rectangles, page 294*.

Inserting images in a document

You can insert an image such as a logo into a document. The image must be stored so that it is available to both the Intelligence Server and to the designers of the document. If the designers do not have access to the image, they cannot see the image while creating the document.

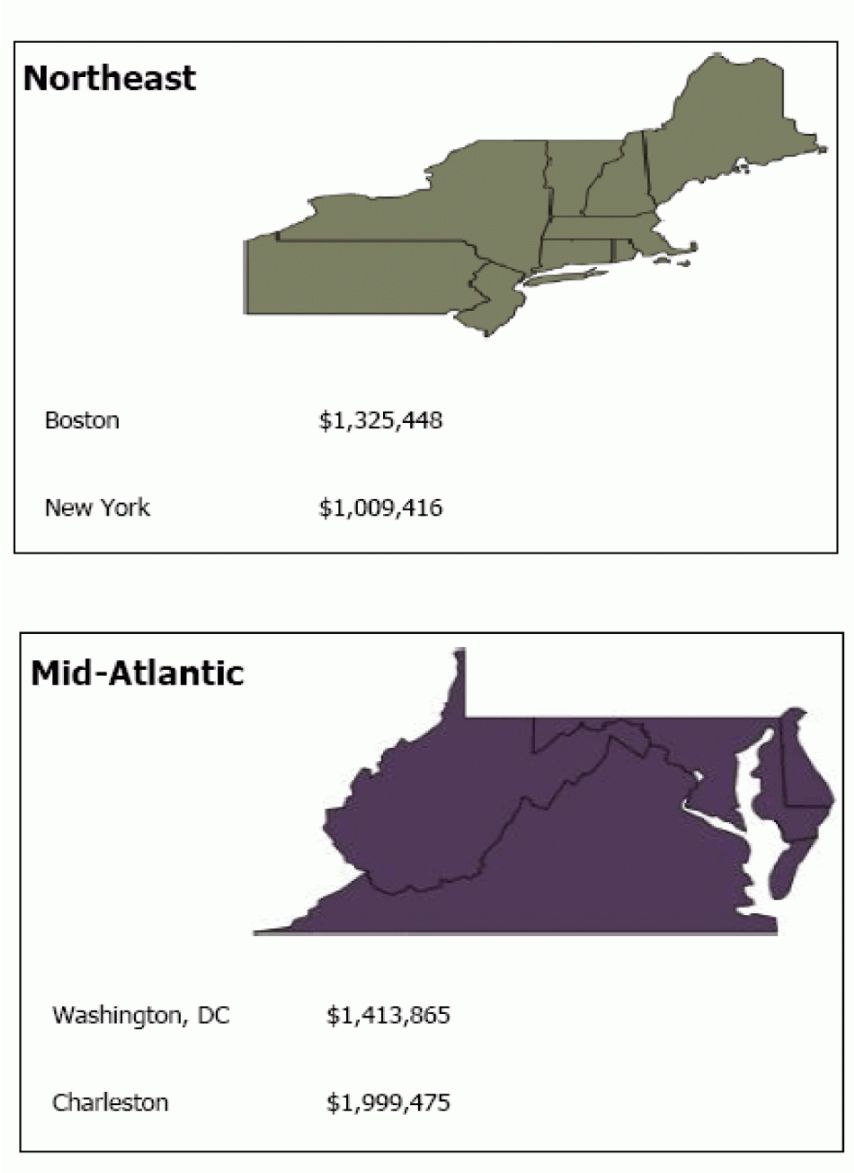
You can also use dynamic images in documents.

Using dynamic images

Dynamic images allow different images to be displayed depending on the data in the dataset. You can use attributes and metrics to determine the file name of the image.

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For example, a document is paged by Region. For each Region, a map for that particular region must be displayed, as in the two pages of the following sample document.



To do this, save the graphic files as the names of the Regions (for example, `Northeast.jpg` and `Mid-Atlantic.jpg`). Insert an image in the Region Header. Use the attribute name, within braces, as the name of the image file, for example, `\\my_computer\shared\{Region}.jpg`. Specify the directory path and follow the guidelines above to ensure that the image is available to users and designers.

When the PDF is displayed, `{Region}` in the filename is replaced with the attribute element used in the page-by field. For example, on the Northeast page, the image displayed is `Northeast.jpg`.

In the same way, you can use a metric to return the name of the image file. For example, a document must display an icon for the daily revenue trend. For revenue growth, the icon is an arrow pointing up; for revenue decline the arrow points down; and for stable revenue the arrow is replaced by a bar.

To do this, create a metric that returns a 1 for growth, 2 for no change, and 3 for decline. Create and name the images accordingly. In the document, point the image to `{MetricName}.jpg` in the correct directory. When the PDF is displayed, the image path is resolved and the correct file is displayed on each line.

Format the metric as Fixed Type, zero decimal places, and no thousands separator. This ensures that the metric value is returned as 1, 2, or 3, not as $1.00, for example.

If you want to create multiple dynamic images that use the same attribute elements or metric values, ensure that the correct dynamic image is used by giving each dynamic image a different name that contains the attribute element or metric value. For example, one file may be named `Map_Northeast.jpg` while the other is named `Graph_Northeast.jpg`. Other than the name of the attribute element, the names of each dynamic image's files must be the same, for example, `Map_Northeast.jpg`, `Map_Mid-Atlantic.jpg`.

When adding multiple dynamic images, embed the attribute or metric's name, in braces, in the name of the image file. For example, `\\my_computer\shared\Map_{Region}.jpg`, or `\\my_computer\shared\raph_{Region}.jpg`.

When the dashboard is displayed, `{Region}` in the filename is replaced with the appropriate attribute element. If the attribute element is Northeast, the images named `Map_Northeast.jpg` and `Graph_Northeast.jpg` are used.

Ensuring access to images

To ensure that the image is available as needed, MicroStrategy recommends that you save the image file on a web server that all your MicroStrategy products, including Intelligence Server, can use and access. When you add the image to a document, use an http reference to that accessible Web server machine, such as `http://microstrategy/Test/myimage.jpg`.

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The advantages of using http paths are:

- You can view the image when the document is in Flash mode. Images that use a non-HTTP-based path are not displayed in Flash mode.
- The image does not need to be duplicated onto each machine, since MicroStrategy Developer, Intelligence Server, and the web server access the images from the same central web server.

If you cannot store and access the images on a web server, you can store images on alternative network locations and use either a full or partial path.

The advantage of using a full path is:

- The image does not need to be duplicated onto each machine, since MicroStrategy Developer, Intelligence Server, and the web server access the images from the same shared file location.

The advantages of using partial or relative paths are:

- The path of the image is not part of the document definition. If the path changes, you do not have to manually change the image path in the document.
- All machines do not need to be able to access the same machine, because the image is copied onto the different machines.
- You can display a different image in the document for each machine used to access the image. For example, you have a high resolution version of an image you want to display in Mobile and a lower resolution version for Web. You can save the high resolution version in the Mobile server and the lower resolution version in the Web server with the same name, then use a relative path so that the appropriate image is used.

The type of path you can use depends on where you save the image and whether MicroStrategy and your users can access the image. For example, if the image is on a Web server machine, you can specify the URL (an http reference) for the file as long as the Intelligence Server and users who design the documents can access that location.

Based on the type of path you want to use, save the image in the appropriate location listed in the table below. Once the location is established and the

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image file that you want to insert is available in that location, you can insert the image into a document:

Path type	Where to save the image
HTTP For example, `http://microstrategy/Test/myimage.jpg`	An accessible web server machine that all your MicroStrategy products, including Intelligence Server, can use and access. Avoid using spaces in the URL. On UNIX machines, images with spaces in their URLs cannot display in PDFs. You can remove the space from the image name or replace the space with %20. In most instances, you can find the path and file name of images to use by viewing the source of a Web page.
Full path For example, `\\my_computer\shared\myimage.jpg`	A shared network drive. All users, the Intelligence Server, and the web server must be able to access the drive. If you are adding the image to the document in MicroStrategy Developer, then MicroStrategy Developer must also be able to access the drive.
Partial path For example, `Images\myimage.jpg`	The folder where the product you want to use to access the image is installed. Save the image in the appropriate folder below or, if you want all MicroStrategy products to be able to access the image, save the image in all of the following folders: • `Desktop` (for a document viewed in MicroStrategy Developer) • `Intelligence Server` (for a document exported to PDF from MicroStrategy Web) • `Web ASPx\asp` (for documents in MicroStrategy Web) or `\jsp` (for documents in MicroStrategy Web Universal) ▫ The Web directory is the physical location where the Web product is installed (for MicroStrategy Web) or where it is deployed (for MicroStrategy Web Universal). • `Mobile ASPx` (for a documented viewed in MicroStrategy Mobile)

Inserting an image

To insert an image, follow the steps below.

Prerequisites

- The image file must be saved in the correct image type: bmp, jpg, jpeg, or gif.

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- The image file must be stored so that it is available to both the Intelligence Server and to the designers of the document.
- For dynamic images, you must have created the image files with the appropriate names. To use an attribute, save the image files so that their names are the attribute's elements; to use a metric, save the files so that their names are the values returned by the metric.

  If you have multiple dynamic images that use the same attribute elements or metric values, give each dynamic image a different name that contains the attribute element or metric value.

To insert an image in a document

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. From the **Insert** menu, select **Image**.
3. Click and drag in the location where you want to insert the image. The Properties and Formatting dialog box opens.
4. In the **Source** field, type in the path for the image file. In general, you can type the file path in a C:/My_Images/logo.gif format, with the following important exceptions:
   - If the document will be opened in Flash Mode, use an HTTP-based image path. Do not use a network image path (for example, \\corporate-administrator\Shared\image.jpg) or a local image path (for example, C:\My_Images\image.jpg). Images that use a non HTTP-based path are not displayed in Flash Mode.
   - If the document will be exported to Excel, use an absolute image path. Do not use a relative image path. Images that use a relative image path are not displayed in Excel.
   - If you are inserting a dynamic image, type the folder path to the image files, then the name of one of the dynamic image's files. Replace the attribute element or metric value with the attribute or metric's name in braces { }. Use brackets [ ] if the attribute or metric name contains spaces.

     For example: the following image sources point to the Revenue Trend metric: \\my_computer\shared\{[Revenue Trend]}.jpg and \\my_computer\shared\Plot_{[Revenue Trend]}.jpg.

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5 To have the size of the image adjust automatically, right-click the image and select **Size** and then select **To Grid**.

6 If you want users to be able to click the image and go to a web page, you can define the image as a hyperlink. From the Properties and Formatting dialog box, click **General**, select the **Is Hyperlink** check box, and type the URL in the **Hyperlink** field.

For information about changing image formatting, such as borders, see *Formatting images, page 297*.

Arranging controls on a document

Once you have added data and other controls to a document, you can arrange them on the document to determine their layout when viewed as a PDF. This section explains the ways in which you can move and arrange controls.

- *Moving controls, page 158*
- *Snapping controls to the alignment grid, page 160*
- *Distributing controls evenly, page 162*
- *Sizing controls, page 163*
- *Locking and unlocking controls, page 164*
- *Ordering controls, page 165*

Moving controls

You can modify the look of your PDF document by specifying the positions of the controls. You can move controls in relationship to each other, by aligning them.

If multiple controls are selected and moved, they move as a block. The selected controls do not have to be in the same document section; you can select controls that are in different document sections.

You can evenly distribute controls automatically; for steps, see *Distributing controls evenly, page 162*.

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If a selected control does not move, it may be locked. A locked control cannot be resized or moved on the Layout area. For steps to unlock it, see *Locking and unlocking controls, page 164*.

To move a control

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

2 Click a control to select it. To select multiple controls, press and hold CTRL while selecting controls.

3 Do any of the following:

- Drag and drop the control(s) at the new location, which can be in the same document section or a different one.
- Use the arrow keys on your keyboard to reposition a control within the document section. To move in smaller increments, press and hold CTRL while using the arrow keys. If you have Snap to grid enabled, it is temporarily disabled.
- To specify an exact location within the document section, right-click a control and select **Properties and Formatting**. On the **Layout** tab, specify the new position for the control in the **Position** area.
- To align controls in the same document section or a different one, select multiple controls, right-click a control, point to **Align**, then select one of the following options:
  - **Align Left**: Horizontally aligns all selected controls with the left-most control.
  - **Align Center**: Horizontally centers all selected controls.
  - **Align Right**: Horizontally aligns all selected controls with the right-most control.
  - **Align Top**: Vertically aligns all selected controls with the topmost control.
  - **Align Middle**: Vertically centers all selected controls.
  - **Align Bottom**: Vertically aligns all selected controls with the lowest control.
  - **To Grid**: Aligns the upper left corner of all selected controls to the closest grid point.

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Snapping controls to the alignment grid

Snap to grid means that controls are automatically aligned to grid points. If this feature is enabled, the top left corner of the control automatically moves from one grid point to another grid point when you move or resize the control. When you create a new control, the top left corner of the control is aligned to a grid point. If you drag a control while creating it, all corners of the control are aligned to the grid.

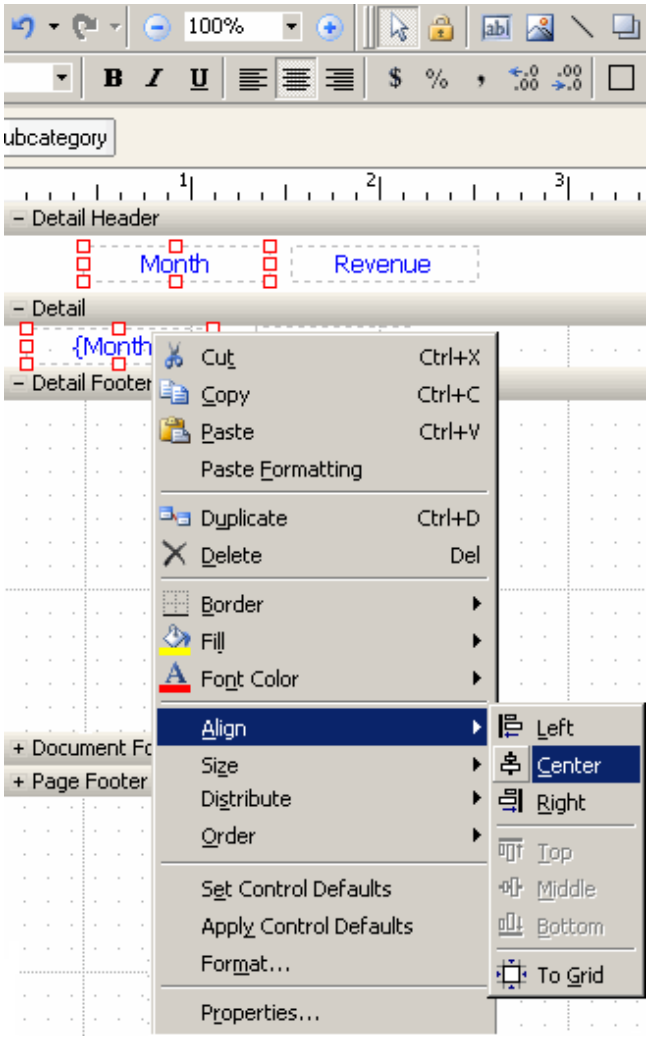
If snap to grid is disabled, you can add, move, or resize controls freely without reference to the alignment grid. The corners do not automatically move to grid points.

To temporarily disable snap to grid, press the **CTRL** key while moving or sizing controls.

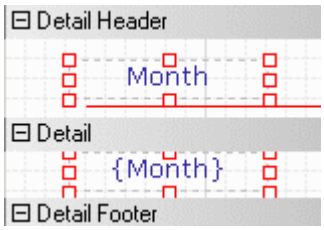
For example, you can align a heading in the Detail Header above its data column in the Detail section. This is shown in the following MicroStrategy

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Developer image in which two Month controls, in different document sections, are aligned.



The resulting aligned controls are shown in the following image:



To enable or disable the Snap to Grid feature

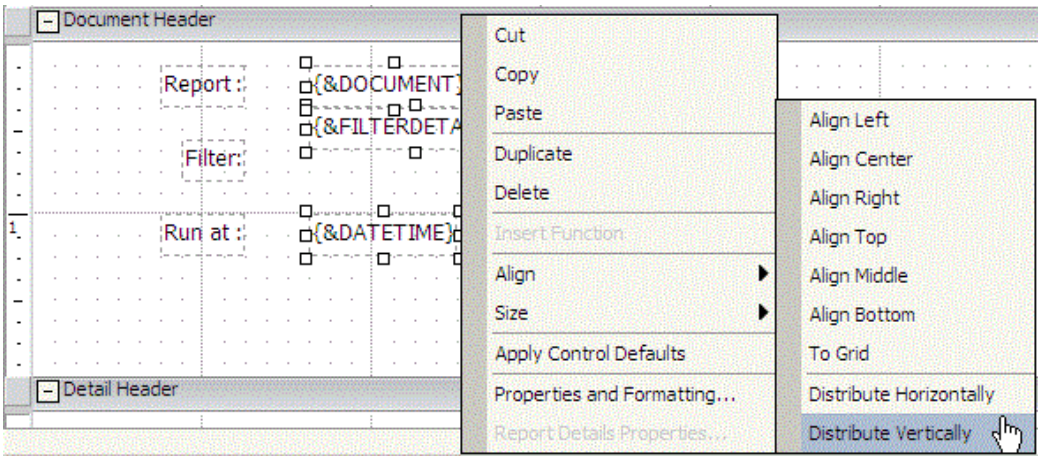
1 In MicroStrategy Web, open the document in **Design Mode**.

2 From the **Tools** menu, select **Snap to Grid**. If Snap to Grid was enabled, it is now disabled. Snap to Grid is enabled by default.

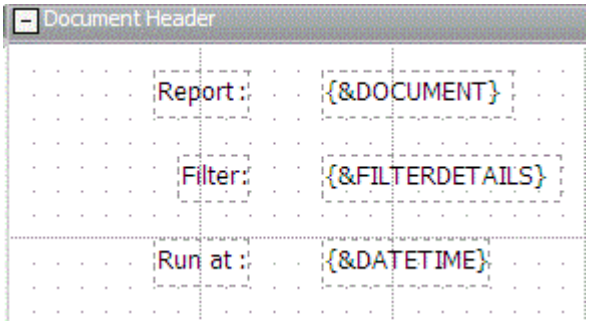
If the alignment grid is not visible when you enable Snap to Grid, you can display it by selecting **Alignment Grid** from the **Tools** menu.

Distributing controls evenly

You can evenly distribute controls that are not well-spaced. For example, the image below shows three controls in a document. Note the difference in vertical gaps between the selected controls (`{&DOCUMENT}`, `{&FILTERDETAILS}`, `{&DATETIME}`).



The result after the vertical distribution is shown in the following image, where the controls are distributed relative to each other:



To distribute controls relative to the layout, instead of relative to other controls, use MicroStrategy Developer. For steps, see the *MicroStrategy Developer help* (formerly the *MicroStrategy Desktop help*).

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To distribute controls evenly

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

2 Press and hold **CTRL**, then select at least three controls.

3 Right-click one selected control and choose **Align**.

4 Select one of the following options:

- **Distribute Horizontally**: Evenly spaces the selected controls across the width of the page.
- **Distribute Vertically**: Evenly spaces the selected controls across the height of the section.

Sizing controls

You can size text fields, images, rectangles, and other controls. You can resize by dragging the edges of a control or by specifying a control's height and width. If you resize multiple controls at one time, they can be uniformly sized. Steps to size a single control and multiple controls are below.

If a selected control does not resize, it may be locked. A locked control cannot be resized or moved until it is unlocked. For steps to unlock it, see *Locking and unlocking controls, page 164*.

To size a single control

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

2 Select a control and do one of the following:

- Drag any of its sizing handles to its new size.
- Press and hold **SHIFT** while pressing the **up**, **down**, **left**, or **right** arrow keys on the keyboard.
- Right-click the control and select **Properties and Formatting**. From the left, select **Layout**. Then define the sizing options for the control:
  - **Width**: Sets the width of the control. This option is not available for section headers or footers.

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  - **Fixed at**: The width does not change from the set size. This option is not available for sections, panel stacks, or selectors.
  - **100%**: Sets the item's width to that of the section. This option is used for lines and rectangles only; it is not available for sections, panel stacks, or selectors.
  - **Fit to contents**: The width expands to the width of the item. This option is not available for sections, panel stacks, text fields, or selectors.
- **Height**: Sets the height of the control.
  - **Fixed at**: The height does not change from the set size.
  - **100%**: Sets the item's height to that of the section. This option is used for lines and rectangles only; it is not available for sections or panel stacks.
  - **Fit to contents**: The height expands to the height of the item. This option is used for text fields and Grid/Graphs displayed as grids, and only affects display in Express Mode. This option is not available for sections or panel stacks.
- Length: These options are available for lines; they determine whether the length of a line adjusts dynamically.
  - Fixed at: The length does not change from the set size.
  - 100%: The line's length changes automatically to remain the length of the section.

3. Display the document in Interactive Mode, Express Mode, or Flash Mode to see your resizing results.
4. Save the document.

Locking and unlocking controls

A control can be locked, so that it cannot be resized or moved. This is useful when a document template contains an object that should not be moved or resized inadvertently when multiple objects are selected at the same time. It also avoids a control being accidentally moved or resized using the sizing handles.

The following options are affected when a control is locked: height, left, top, and width.

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To lock a control

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Add a control to the document, if it does not already contain one.
3. Right-click the control and select the **Properties and Formatting** option. The Properties and Formatting dialog box opens.
4. In the Layout area of the dialog box, select the **Locked** check box and then click **OK**. The control is locked.

To unlock a locked control

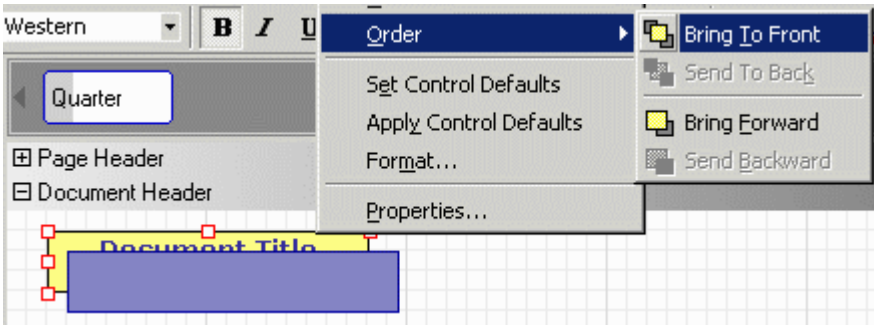
1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Add a control to the document, if it does not already contain one.
3. Right-click the control and select the **Properties and Formatting** option. The Properties and Formatting dialog box opens.
4. In the Layout area of the dialog box, clear the **Locked** check box and then click **OK**. The control can now be moved.

Ordering controls

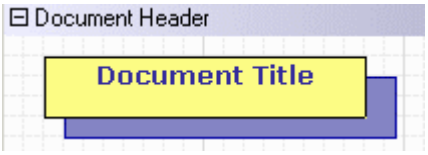
You may have controls that you want to overlap, with one control on top of the another that is in the background. You can change the order of a control and display it in front of or behind another control.

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The example below, created in MicroStrategy Developer, shows a rectangle that needs to be placed behind the Document Title (to create a drop shadow).



The result, with the title in front, is shown below:



To order controls

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

2 Right-click a control, highlight **Order**, and select one of the following options:

- **Send to Back**: Moves the control behind the other control(s).
- **Bring to Front**: Moves the control in front of the other control(s).
- **Send Backward**: When three or more controls overlap and you want to incrementally send one control back, but not all the way to the back.
- **Bring Forward**: When three or more controls overlap and you want to incrementally bring one control forward, but not all the way to the front.

In MicroStrategy Web, you can also access these ordering options from the Align and Order toolbar. To show the Align and Order toolbar, from the menu, select **Align and Order**.

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Restoring images to their default size

If you change the size of an image but are not satisfied with the results, you can restore the image to its original, or default, size.

To restore the default size of an image

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

2 Right-click the image and select **Restore Default Size**.

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3

DISPLAYING REPORTS IN DOCUMENTS: GRID/GRAPHS

Introduction

In a document, you can display a report by adding a Grid/Graph to the document. A Grid/Graph acts as a standard MicroStrategy report.

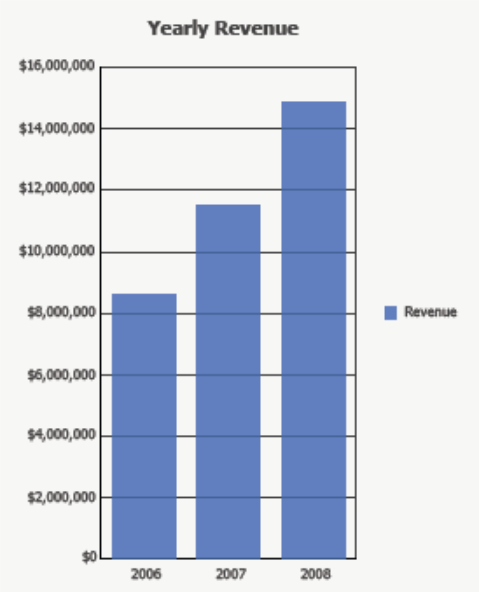
Once a Grid/Graph is in the document, you can display it in several ways:

- **Grid**: Displays the Grid/Graph as a standard MicroStrategy grid report with rows and columns of attributes and metrics, as shown below. For details, see *Viewing a Grid/Graph displayed as a grid, page 199*.

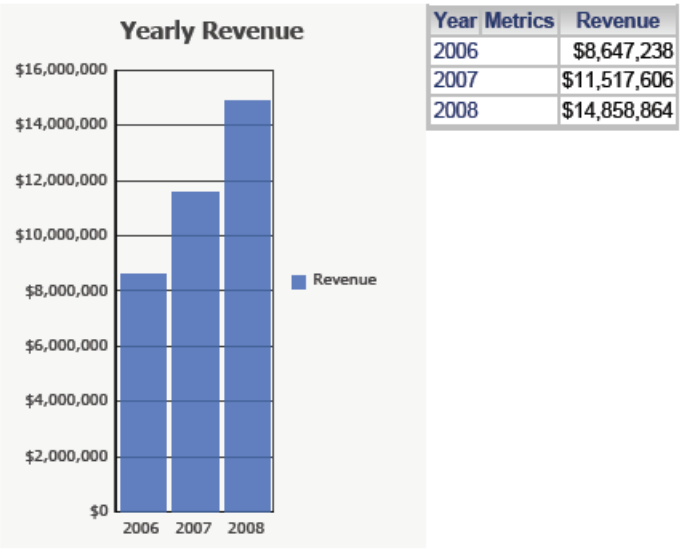
Year Metrics	Revenue
2006	$8,647,238
2007	$11,517,606
2008	$14,858,864

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- **Graph**: Displays the data visually like a standard MicroStrategy graph report, as shown below. For details, see *Viewing a Grid/Graph displayed as a graph, page 200*.



- **Grid and Graph**: Displays both grid and graph reports simultaneously, as shown below. For details, see *Viewing a Grid/Graph as a grid and a graph at the same time, page 200*.



You can use a Grid/Graph as a type of summary for a group or the entire document, because the data displayed in it is aggregated to the level of the document section in which the Grid/Graph is placed. If the Grid/Graph is in one of the Group Header or Group Footer sections, it limits the data displayed in it to only that which is included in that group.

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For example, a document is grouped by Region, and you place a Grid/Graph in the Region Header section. If Region contains three values (Midwest, Northeast, and Northwest), the Grid/Graph aggregates and displays only Midwest data in the Midwest Region Header, only Northeast data in the Northeast Region Header, and only Northwest data in the Northwest Region Header. The following sample Grid/Graph is for the Northeast region.

Employee		Region	Metrics	Revenue	Profit	Cost
De Le Torre	Sandra	Northeast		$607,895	$93,100	$514,795
Kelly	Laura	Northeast		$2,350,720	$357,994	$1,992,726
Kieferson	Jack	Northeast		$584,933	$87,470	$497,463
Sawyer	Leanne	Northeast		$2,411,912	$368,219	$2,043,693
Sonder	Melanie	Northeast		$295,108	$43,925	$251,183
Yager	Beth	Northeast		$2,303,847	$350,024	$1,953,823

You can use a Grid/Graph to display a subset or view report, which is a report containing objects that are part of the report's definition but are not displayed on the grid or graph. For details, see *Using a view report or base report as a dataset, page 74*.

This chapter describes how to add Grid/Graphs to documents and how to work with them:

- *Adding a Grid/Graph to a document, page 172*
- *Selecting and viewing a Grid/Graph, page 198*
- *Editing data in a Grid/Graph, page 203*
- *Formatting Grid/Graph containers, page 209*
- *Adding title bars to Grid/Graphs, page 213*
- *Quick switch for Grid/Graphs, page 217*
- *Using view filters on Grid/Graphs, page 219*
- *Linking a Grid/Graph to its underlying report, page 238*
- *Merging column and row headers in a grid, page 242*
- *Displaying attribute and attribute form headers in a grid, page 243*
- *Drilling in Grid/Graphs, page 248*
- *Enabling interactive Grid/Graphs for MicroStrategy Web, page 254*

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Adding a Grid/Graph to a document

A Grid/Graph is a container that is placed in a document and which displays a standard MicroStrategy grid or graph report. A Grid/Graph can be directly associated with one dataset or with multiple datasets. The data from the datasets is used to populate the Grid/Graph. (A dataset is a set of data that can be displayed on a document; it can be a MicroStrategy report, a MicroStrategy Intelligent Cube, or data imported directly from an external data source. For background information on datasets, see *Using datasets in documents, page 45*.)

Before you can place objects from multiple datasets on a single Grid/Graph, you must have the Import Table from Multiple Data Sources privilege.

A Grid/Graph can be placed anywhere in a document except the Detail section. (Since controls in the Detail section are repeated once per row of the dataset, the Grid/Graph would be repeated on each row.)

You can add a Grid/Graph to a document in any of the following ways:

- If the document already contains the dataset that will populate the Grid/Graph with data, then do one of the following:
  - Create a Grid/Graph that includes all the objects of the report, whether they appear on the report grid or in the Report Objects pane. Any view filters on the report are not applied to the Grid/Graph.
  - Create a Grid/Graph that looks like the report itself—the report formatting is copied and only those objects displayed on the report grid are copied onto the Grid/Graph. Any view filters on the report are applied to the Grid/Graph.

    If the report formatting changes or objects are added to or deleted from the report, the Grid/Graph in the document does not change. To link the Grid/Graph to the report, create the Grid/Graph as a shortcut (see below).

  Both of these procedures are included in *To add a Grid/Graph, page 174*.
- If the document does not contain the dataset, then you can add a dataset and a Grid/Graph simultaneously. For steps, see *Adding a Grid/Graph and a new dataset simultaneously, page 177*.
- You can create a Grid/Graph that contains objects from multiple datasets. For steps and information on how the datasets are joined, see *Adding a Grid/Graph that uses multiple datasets, page 180*.

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- You can create an empty Grid/Graph, or placeholder, which you then populate with data from a dataset. The placeholder can display as a grid or as a graph, and you can select the type of graph to display. For more information and steps to add placeholders and datasets, see *Adding an empty Grid/Graph, page 178* and *Adding a dataset to an empty Grid/Graph, page 179*.

  You can use Grid/Graph placeholders to create document templates with formatted Grid/Graphs that do not contain any data.

- You can create a Grid/Graph as a shortcut. A shortcut is linked to the dataset itself, which means that any changes (such as formatting) made to the dataset are passed to the Grid/Graph in the document. You cannot edit a Grid/Graph shortcut. For information on what you can do with shortcuts, including formatting and unlinking, and steps, see *Adding a Grid/Graph as a shortcut, page 193*.

  If a Grid/Graph is not linked to the dataset as a shortcut, changes made to the dataset are not passed to the Grid/Graph. For example, the Revenue metric values on a report are displayed in blue font. That report is used as the dataset for a Grid/Graph in a document. Later, the font of the Revenue metric values on the report is changed to green. The color of the Revenue values on the Grid/Graph in the document does not change. If the Grid/Graph is linked as a shortcut, the color of the Revenue values would change when the Revenue values on the report were changed.

  If an object is removed from the dataset, that object is also automatically removed from the Grid/Graph in the document, regardless of whether or not the Grid/Graph is linked as a shortcut.

Grid/Graphs and automatic target maintenance for selectors

Selectors allow a user to display different metrics or different elements of attributes, custom groups, or consolidations in a Grid/Graph (the target of the selector). Targets can be automatically maintained in a layout. This means that when you add a Grid/Graph, the Grid/Graph is the target of all selectors in the same panel or document section as the Grid/Graph. For more information about automatically maintaining targets for selectors, including steps to enable and disable the functionality, see the *Dashboards and Widgets Creation Guide*.

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Prerequisites

- This procedure assumes that the document contains the dataset that will populate the Grid/Graph with data.

To add a Grid/Graph

1 In MicroStrategy Web, open the document in **Design Mode**.

2 Do one of the following:

To Create	Follow These Steps
An empty Grid/Graph that is not displayed in the PDF or in Express Mode	From the **Insert** menu, select one of the following, and then click and drag in the section where you want to place the Grid/Graph: • To create an empty grid, select **Grid**. • To create an empty graph, point to **Graph**, and then select the graph type. An empty Grid/Graph is a placeholder; you can populate it later with data from a dataset. For steps, see *Editing data in a Grid/Graph, page 203*.
A Grid/Graph containing all the objects on a dataset	**1** Click in the document section where you want to add the Grid/Graph. **2** Right-click the dataset in the Dataset Objects panel and select **Add to Section without formatting**. Any view filters are ignored and all objects on the report, whether they are on the grid or only in the Report Objects pane of the report, are displayed on the Grid/Graph.
A Grid/Graph with several dataset objects on it	**1** Add an empty Grid/Graph, as described above. **2** Select an object in the Dataset Objects panel, and then drag and drop it in the empty Grid/Graph. Repeat for each dataset object.
A Grid/Graph containing objects from multiple datasets	**1** Add an empty Grid/Graph, as described above. **2** Select an object in the Dataset Objects panel, and then drag and drop it in the empty Grid/Graph. Repeat for each dataset object. The dataset source for the Grid/Graph is determined by the last object added to the Grid/Graph. For more detailed steps, and information on how the datasets are joined, see *Adding a Grid/Graph that uses multiple datasets, page 180*.

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To Create	Follow These Steps
A Grid/Graph that: • Copies the formatting of the report • Contains only those objects displayed on the report grid (versus those in Report Objects but not on the report grid)	**1** Click in the document section where you want to add the Grid/Graph. **2** Right-click the dataset in the Dataset Objects panel and select **Add to Section with formatting**. Any view filters on the dataset are applied to the Grid/Graph. Only the objects on the report grid are displayed on the Grid/Graph. If the formatting of the report used as a dataset changes, the formatting of the Grid/Graph does not change. If you want the formatting to change, use a shortcut instead. **Note**: This method allows you to use a subset or view report as a dataset. For background information on subset reports, see *Using a view report or base report as a dataset, page 74*.
A Grid/Graph linked to the dataset as a shortcut	**1** Click in the document section where you want to add the Grid/Graph shortcut. **2** Right-click the dataset in the Dataset Objects panel and select **Add to Section as Shortcut**. The resulting Grid/Graph is linked to the source report, so that any changes made to the source report are passed to the Grid/Graph in the document. To edit the dataset in the Grid/Graph, you must first unlink the Grid/Graph shortcut; for steps, see *To unlink a linked Grid/Graph shortcut, page 196*.

You can place a Grid/Graph anywhere in a document except the Detail section. Since controls in the Detail section are repeated once per row of the dataset, the Grid/Graph would be repeated on each row.

3 The Grid/Graph is added. Its default display is as a grid (a standard MicroStrategy grid report with rows and columns of attributes and metrics), unless you added an empty graph or a graph report with formatting. You can change the display by selecting one of the following view options:

- Graph: Right-click the Grid/Graph, point to **View Mode**, and select **Graph View**. The width and height are automatically set to fixed.
- Grid: Right-click the Grid/Graph, point to **View Mode**, and select **Grid View**. The width is set to fit to contents and the height is fixed.
- Grid and graph: Right-click the Grid/Graph, point to **View Mode**, and select **Grid and Graph View**. To control the placement of the grid relative to the graph, select the **Layout** category from the **Properties**

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and Formatting dialog box, then select an option from the **Grid Position** drop-down list.

After a Grid/Graph has been added to the document, you can:

- Add additional objects to the Grid/Graph. See *Editing data in a Grid/Graph, page 203* for steps.
- Enable quick switch between graph view and grid view for end users. For a description of quick switch and steps, see *Quick switch for Grid/Graphs, page 217*.
- Display a title bar, which allows MicroStrategy Web users to minimize and maximize the Grid/Graph. It also helps identify the Grid/Graph in all views. For examples and steps, see *Adding title bars to Grid/Graphs, page 213*.
- Resize the Grid/Graph. For steps, see *Selecting and viewing a Grid/Graph, page 198*.
- Create a view filter to filter the data that is displayed in the Grid/Graph. For examples and steps, see *Using view filters on Grid/Graphs, page 219*.
- Change the dataset, which provides the data displayed on the Grid/Graph. For steps, see *Changing datasets in Grid/Graphs, page 197*.
- Enable drilling on the data in the Grid/Graph. For information on drilling and steps, see *Drilling in Grid/Graphs, page 248*.
- Format different parts of the Grid/Graph:
  - Format the Grid/Graph container (the object that displays the grid or graph report within the document) to change settings such as name, position, size, borders, and background of the object displaying the report grid or graph. See *Formatting Grid/Graph containers, page 209* for steps.
  - Edit the Grid/Graph, to change settings on the grid or graph report, such as row and column formatting, graph style, and sorting. See *Selecting and viewing a Grid/Graph, page 198* for steps.
  - Format the title bar to affect how the title bar is displayed, such as the font, background, and border. See *Formatting Grid/Graph containers, page 209* for a comparison of formatting the container and the title bar, and steps.

  Formatting affects the Grid/Graph on the document; it does not change the original report. Similarly, any changes made to the original report,

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such as formatting a metric or changing the graph type, are not propagated to the Grid/Graph, unless the Grid/Graph is a shortcut. If an object is removed from the original report, that object is also removed from the Grid/Graph in the document, regardless of whether or not the Grid/Graph is linked as a shortcut. For more information on linking Grid/Graphs as shortcuts, see *Adding a Grid/Graph as a shortcut, page 193*.

Adding a Grid/Graph and a new dataset simultaneously

If the report that will populate the Grid/Graph with data has not been added to the document yet, you can add a new dataset and a Grid/Graph to the document at the same time.

To add a dataset and a Grid/Graph simultaneously

1. In MicroStrategy Web, open the document in **Design Mode**.
2. From the **Insert** menu, select **Report**.
3. Click and drag in the section where you want the Grid/Graph. The Select Dataset dialog box opens.

   You can place a Grid/Graph anywhere in a document except in the Detail section. Since controls in the Detail section are repeated once per row of the dataset, the Grid/Graph would be repeated on each row.

4. Locate and select the dataset to add to the document. This dataset also provides the data for the new Grid/Graph.
5. Select whether or not to use the formatting of the report:
   - To create a Grid/Graph that includes all the objects of the report, whether they appear on the report grid or in the Report Objects pane, clear the **Add with formatting** check box. Any view filters on the report are not applied to the Grid/Graph. The default Grid/Graph formatting is applied to the Grid/Graph.
   - To create a Grid/Graph that looks like the report itself (the report formatting is copied and only those objects displayed on the report grid are copied onto the Grid/Graph), select the **Add with formatting**

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check box. Any view filters on the report are applied to the Grid/Graph.

6 Click **OK** to return to the document.

A new Grid/Graph is displayed in the document, and the dataset is displayed in the Dataset Objects pane.

Adding an empty Grid/Graph

An empty Grid/Graph is a Grid/Graph without a dataset to populate the Grid/Graph with data. An empty Grid/Graph serves as a placeholder. The Grid/Graph placeholder is not displayed when the document is viewed as a PDF or in Express Mode, until you add a dataset to it. For steps to add datasets to empty Grid/Graphs, see *Adding a dataset to an empty Grid/Graph, page 179*.

Empty Grid/Graphs can save time by allowing you to create a document template containing Grid/Graph placeholders but no datasets. You can then use the template to create several different documents, each with specific datasets and Grid/Graphs populated by those datasets.

The formatting of the empty Grid/Graph is retained when you add a dataset to the Grid/Graph. This allows you to format all Grid/Graphs identically in documents that are created based on a template, regardless of the formatting on the underlying datasets.

To format a Grid/Graph placeholder, populate it with data, format it, and then remove the data. The formatting is retained on the placeholder. To format the rows and columns of a Grid/Graph, edit the Grid/Graph and then format it. For steps, see *Selecting and viewing a Grid/Graph, page 198*.

You can also copy the formatting from the report. If you are creating a template, each Grid/Graph can be formatted differently, depending on the formatting in the original reports.

To add an empty Grid/Graph to a document

1 In MicroStrategy Web, open the document in **Design Mode**.

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2 Do one of the following:

- To add a placeholder that displays as a grid, select **Grid** from the **Insert** menu.
- To add a placeholder that displays as a graph, point to **Graph** on the **Insert** menu, and select the graph style. For descriptions of the various graph styles, see the *Advanced Reporting Guide*.

3 Click and drag in the section where you want the Grid/Graph placeholder.

You can place a Grid/Graph placeholder anywhere in a document except in the Detail section. Since controls in the Detail section are repeated once per row of the dataset, the Grid/Graph would be repeated on each row.

A new Grid/Graph placeholder is displayed as an empty Grid/Graph in the document. You need to add a dataset to the Grid/Graph placeholder to populate it with data, as described below.

Adding a dataset to an empty Grid/Graph

You can add a dataset to an empty Grid/Graph by either dragging an existing dataset to the Grid/Graph placeholder, or by adding a new dataset to the Grid/Graph placeholder.

The data on the selected dataset (either new or existing) is used to populate the Grid/Graph placeholder.

To add an existing dataset to an empty Grid/Graph

1 In MicroStrategy Web, open the document in **Design Mode**.

2 Do one of the following:

- To retain the formatting of the report, drag and drop the name of the dataset from the Dataset Objects pane to the Grid/Graph placeholder.
- To use the formatting of the Grid/Graph placeholder, hold down the **SHIFT** key while dragging and dropping the dataset's name from the Dataset Objects pane to the Grid/Graph placeholder.

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When the document is executed, the Grid/Graph is populated with data from the selected dataset. For details on formatting the Grid/Graph, see *Adding an empty Grid/Graph, page 178*.

To add a new dataset to an empty Grid/Graph

1. In MicroStrategy Web, open the document in **Design Mode**.
2. Click the **Add Dataset** icon on the Grid/Graph placeholder (an empty Grid/Graph). The Select Dataset dialog box opens.
3. Locate and select the dataset to provide the data for the Grid/Graph.

   You can select a dataset that is already used as a dataset on the document, or you can select a dataset that is not included on the document.
4. Select whether or not to use the formatting of the report:
   - To include all the objects of the report, whether they appear on the report grid or in the Report Objects pane, clear the **Add with formatting** check box. Any view filters on the report are not applied to the Grid/Graph. The default Grid/Graph formatting is applied to the Grid/Graph.
   - To copy the report formatting and include only those objects displayed on the report grid, select the **Add with formatting** check box. Any view filters on the report are applied to the Grid/Graph.
5. Click **OK** to return to the document.

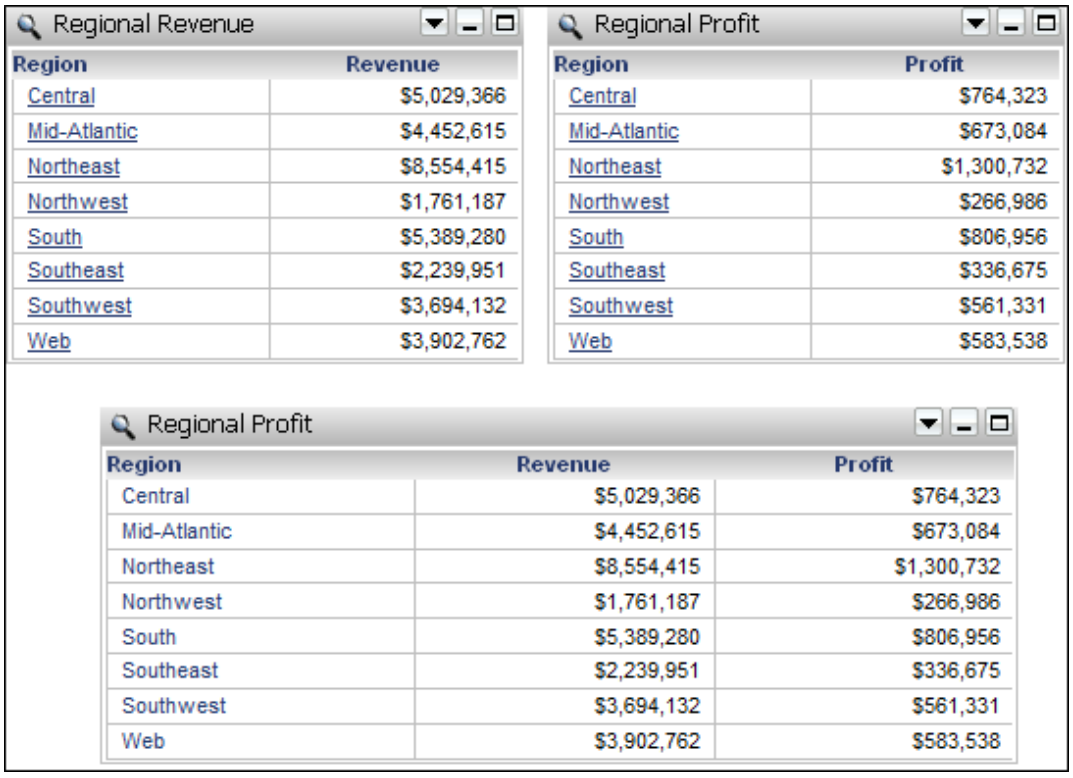
The dataset is added to the Dataset Objects pane. When the document is executed, the Grid/Graph is populated with data from the selected dataset. For details on formatting the Grid/Graph, see *Formatting Grid/Graph containers, page 209*.

Adding a Grid/Graph that uses multiple datasets

Objects from multiple datasets can be displayed in a single Grid/Graph. For example, a document contains two datasets. The Regional Revenue dataset contains Region and Revenue, while the Regional Profit dataset contains Region and Profit. The original datasets are displayed in the two Grid/

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Graphs on the top, with their dataset names displayed in the title bar. The Grid/Graph on the bottom contains data from both datasets.



Regional Revenue

Region	Revenue
Central	$5,029,366
Mid-Atlantic	$4,452,615
Northeast	$8,554,415
Northwest	$1,761,187
South	$5,389,280
Southeast	$2,239,951
Southwest	$3,694,132
Web	$3,902,762

Regional Profit

Region	Profit
Central	$764,323
Mid-Atlantic	$673,084
Northeast	$1,300,732
Northwest	$266,986
South	$806,956
Southeast	$336,675
Southwest	$561,331
Web	$583,538

Regional Profit

Region	Revenue	Profit
Central	$5,029,366	$764,323
Mid-Atlantic	$4,452,615	$673,084
Northeast	$8,554,415	$1,300,732
Northwest	$1,761,187	$266,986
South	$5,389,280	$806,956
Southeast	$2,239,951	$336,675
Southwest	$3,694,132	$561,331
Web	$3,902,762	$583,538

The title bar on the bottom Grid/Graph also displays its dataset name—Regional Profit. Although the data comes from both datasets, Profit, which comes from the Regional Profit dataset, was added to the Grid/Graph last. If Revenue, from the Regional Revenue dataset, was added after Profit, the Grid/Graph's dataset would be set to Regional Revenue.

To show the dataset name in the Grid/Graph title bar, display the title bar but do not add a name for the Grid/Graph. For detailed steps, see *Adding title bars to Grid/Graphs, page 213*.

The dataset (or data source) of a Grid/Graph that uses multiple datasets is determined by the last object added to the Grid/Graph. For example, the Category attribute and Revenue metric from Dataset1 are dragged onto a blank Grid/Graph. The Grid/Graph's data source is therefore defined as Dataset1. If you place the Region attribute from Dataset2 on the Grid/Graph, the data source changes to Dataset2. If you delete an object from the Grid/Graph, the data source does not change. Only the addition of an object updates the source for the Grid/Graph; removing or deleting an object does not. You can also change the data source; see *Changing datasets in Grid/Graphs, page 197* for steps.

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To allow a single Grid/Graph to contain objects from multiple datasets, you must have the Import Table from Multiple Data Sources privilege. For steps to create a Grid/Graph that uses multiple datasets, see *Adding a Grid/Graph with multiple datasets, page 192*.

By default, a project allows Grid/Graphs to contain objects from multiple datasets. However, you can change the project configuration settings to require that all objects in a single Grid/Graph come from a single dataset. For steps, see *Determining whether Grid/Graphs can use multiple datasets, page 58*.

Primary and secondary datasets: Same attributes, different metrics

Because the two datasets in the example above contain data for the same attributes, the data can be joined and information for all metrics and all attribute elements can be displayed.

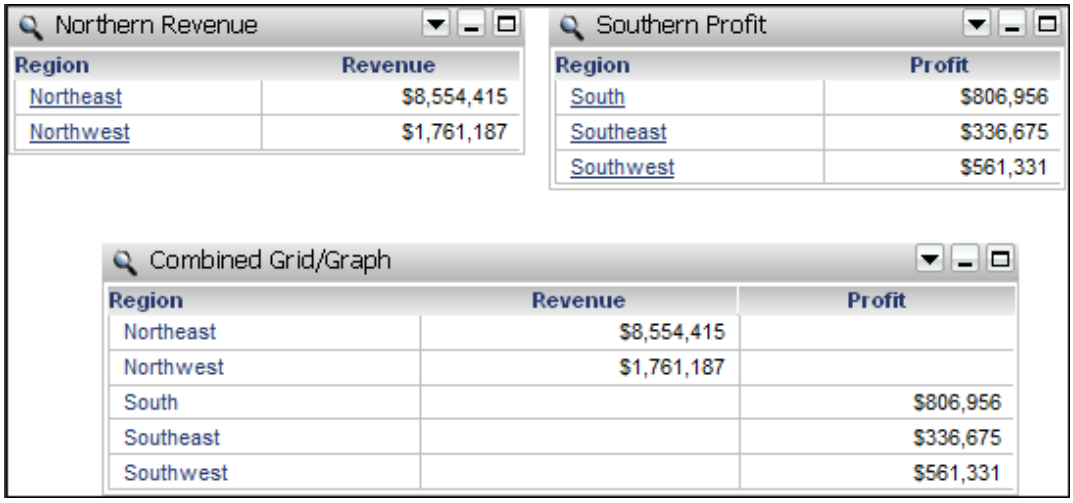
The Regional Revenue dataset is replaced on the document by the Northern Revenue dataset, which is filtered to include only the Northeast and Northwest regions. The new document is shown below. Notice that all the regions are still included in the Grid/Graph that uses both datasets (renamed

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to Combined Grid/Graph), but revenue amounts are available only for Northeast and Northwest.



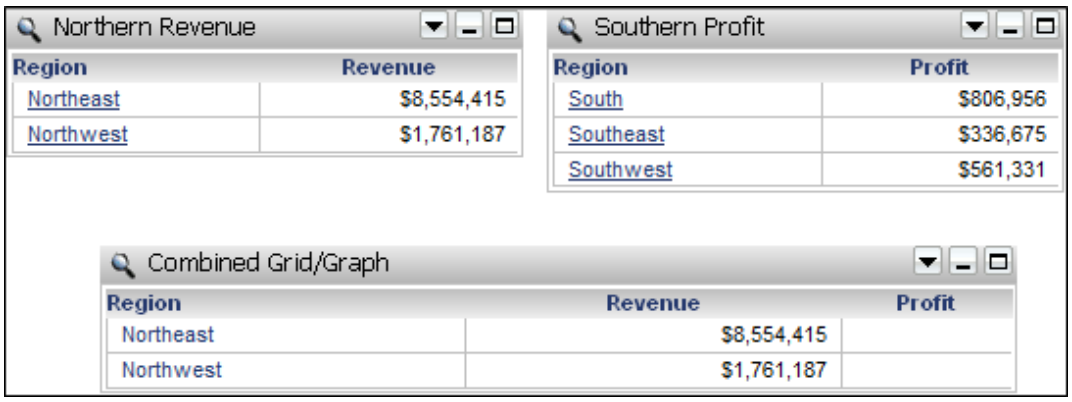
The Regional Profit dataset is replaced on the document by the Southern Profit dataset, which is filtered to include only the South, Southeast, and Southwest regions. Because the datasets do not contain the same attributes, the Combined Grid/Graph has holes in its data, as shown below:



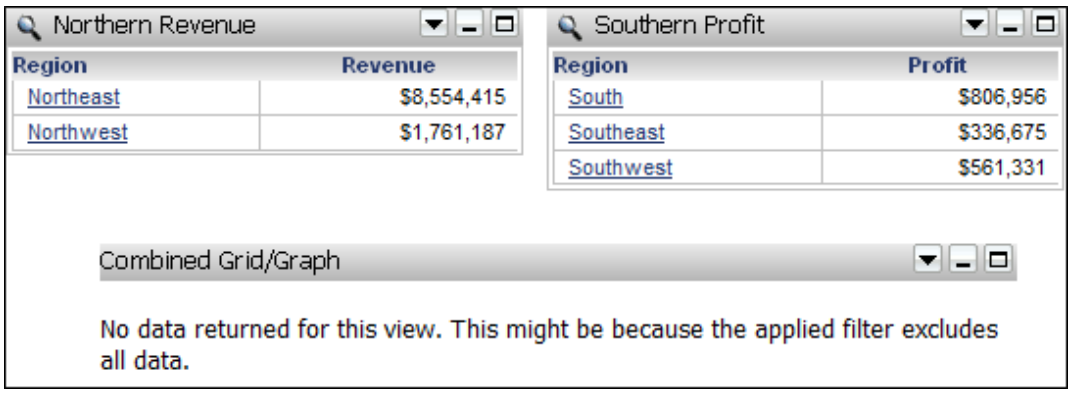
By default, both datasets are primary datasets. All of the elements from a primary dataset are displayed, as shown in the example above. Specifying the

join behavior of a dataset as either primary or secondary specifies which datasets determine the attribute elements that appear in the results.

Southern Profit is changed to a secondary dataset. Elements from a secondary dataset is displayed only if they also appear in a primary dataset. Because the southern regions are not in the Northern Revenue dataset, they are not displayed in the Combined Grid/Graph, as shown below. Profit is not displayed for the northern regions because that data does not exist in either dataset.



If both datasets are changed to be secondary datasets, the Combined Grid/Graph is blank because none of the attribute elements appear in a primary dataset. This scenario is shown below:

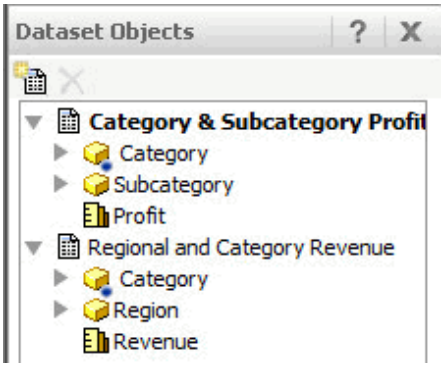


Having the same attributes in multiple datasets can result in blank data or an entirely blank Grid/Graph. This especially occurs if different filters on the same attribute are applied to the datasets. If you add a selector on the shared attribute, end users can be confused about which attribute elements are displayed in the selector and which in the target Grid/Graph. A slicing selector shows only the items available in the target, while a filtering selector shows all the items available in all the datasets. While you design your document and datasets, keep these differences in mind. For examples of

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selectors on an document that contains multiple datasets, see the *Dashboards and Widgets Creation Guide*.

In the Dataset Objects pane, any attributes common to multiple datasets are displayed with a blue icon, as Category is in the example shown below:



For a more detailed explanation of primary and secondary datasets, see *Working with multiple datasets, page 52* and *Defining a dataset as primary or secondary, page 60*. Although the examples in that section use text fields, the same principles apply to Grid/Graphs.

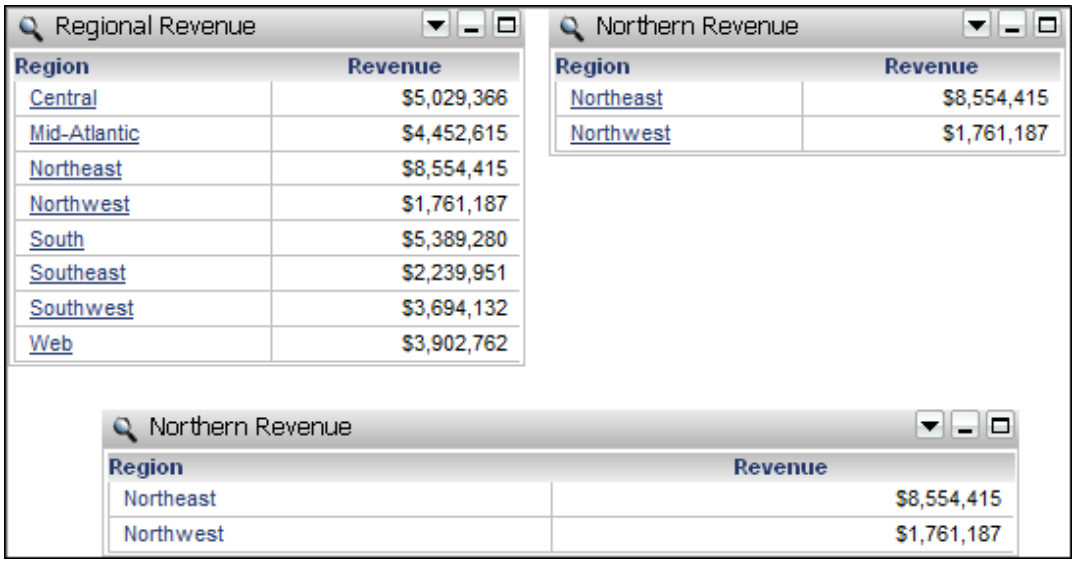
Resolving metrics used in multiple datasets: Same attributes, different metrics

In the examples above, the datasets used different metrics. If the same metric exists in more than one dataset, the Grid/Graph's data source determines which metric is used.

For example, the Regional Revenue report contains Region and Revenue. The Northern Revenue report also contains Region and Revenue, filtered for Northeast and Northwest. Both reports are used as datasets on a document. Region from the Regional Revenue dataset and Revenue from the Northern Revenue dataset are placed into a single Grid/Graph, as shown below. The data source of the combined Grid/Graph is set to the Northern Revenue dataset automatically, based on the metric, and indicated by the title bar,

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which displays the data source automatically. The combined Grid/Graph displays only Northeast and Northwest.

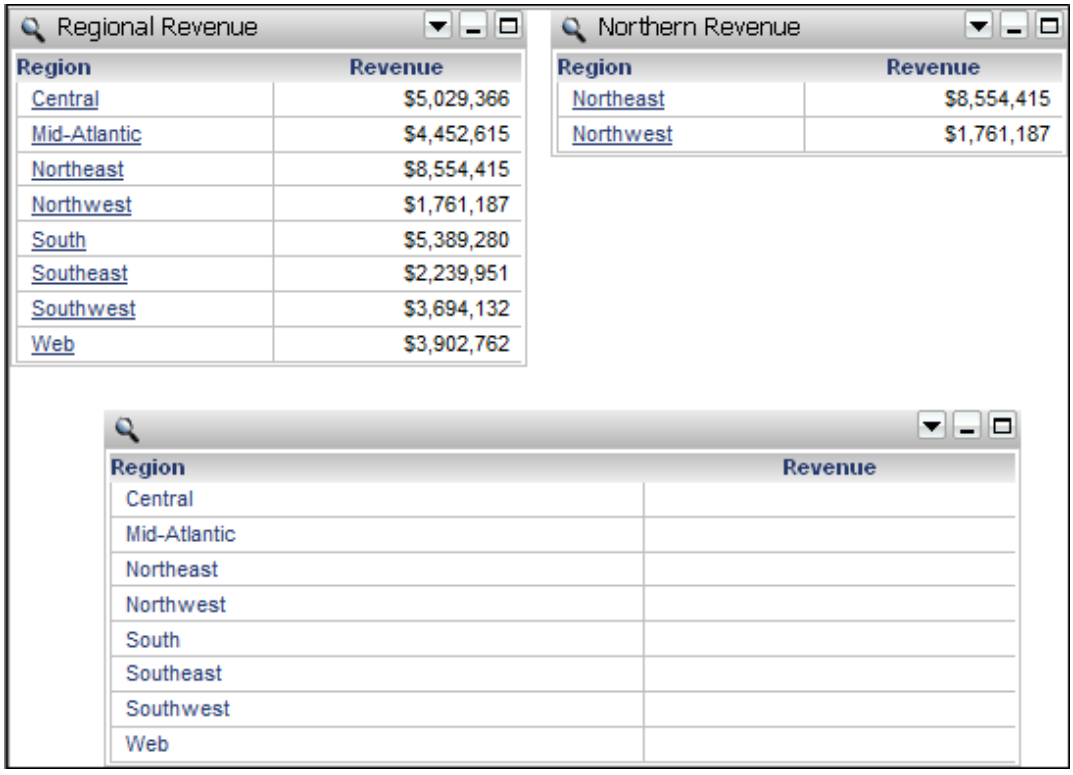


Change the data source of the combined Grid/Graph to Regional Revenue, and all the regions, with their metric values, are displayed. The Grid/Graph's data source is determining which metric and attribute is being used.

Change the data source of the combined Grid/Graph to none. Without a data source, the Grid/Graph cannot determine which metric to use, so no metric

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values are displayed. Because Region initially came from the Regional Revenue dataset, all the regions are displayed, as shown below:



Setting the data source of the combined Grid/Graph to none allows you to see the elements from all the datasets.

Joining multiple datasets in a Grid/Graph: Different attributes, different metrics

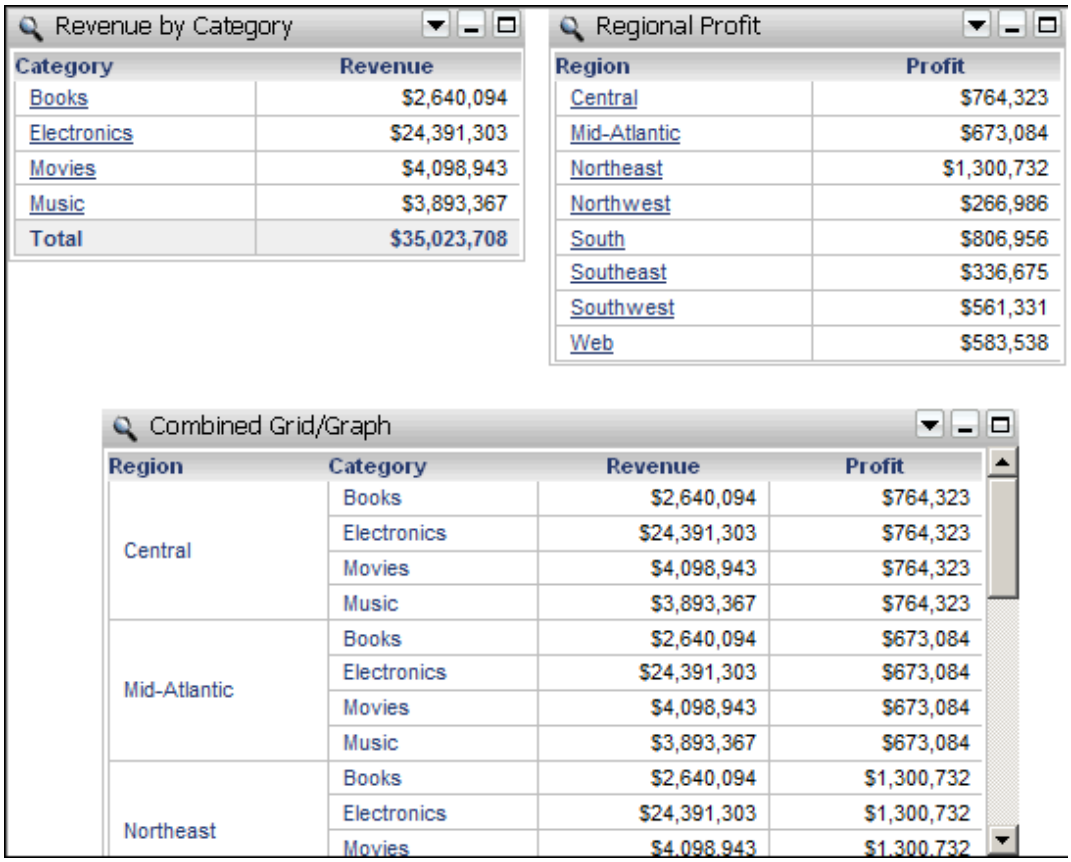
A document contains the following datasets:

- Revenue by Category: Category attribute and Revenue metric
- Regional Profit: Region attribute and Profit metric

These datasets do not have any attributes or metrics in common. The Combined Grid/Graph combines Category and Revenue from the Revenue by Category dataset with Region and Profit from the Regional Profit dataset, as shown below. The Revenue amounts can be calculated at the Category level, since the data exists in the Revenue by Category dataset. The Profit amounts cannot be calculated at the Category level, because the data exists only at the Region level. However, the Profit amounts can be calculated and

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displayed at the Region level in the Combined Grid/Graph—they are repeated for each Category in a particular Region.



Revenue by Category

Category	Revenue
Books	$2,640,094
Electronics	$24,391,303
Movies	$4,098,943
Music	$3,893,367
Total	$35,023,708

Regional Profit

Region	Profit
Central	$764,323
Mid-Atlantic	$673,084
Northeast	$1,300,732
Northwest	$266,986
South	$806,956
Southeast	$336,675
Southwest	$561,331
Web	$583,538

Combined Grid/Graph

Region	Category	Revenue	Profit
Central	Books	$2,640,094	$764,323
	Electronics	$24,391,303	$764,323
	Movies	$4,098,943	$764,323
	Music	$3,893,367	$764,323
Mid-Atlantic	Books	$2,640,094	$673,084
	Electronics	$24,391,303	$673,084
	Movies	$4,098,943	$673,084
	Music	$3,893,367	$673,084
Northeast	Books	$2,640,094	$1,300,732
	Electronics	$24,391,303	$1,300,732
	Movies	$4,098,943	$1,300,732

If you switch the positions of the attributes on the Combined Grid/Graph, at first glance it appears that the metric calculations have changed. The order in which they are presented has changed, but not the actual calculations. The revenue for Books - Central is still $2,640,094, while the profit is still

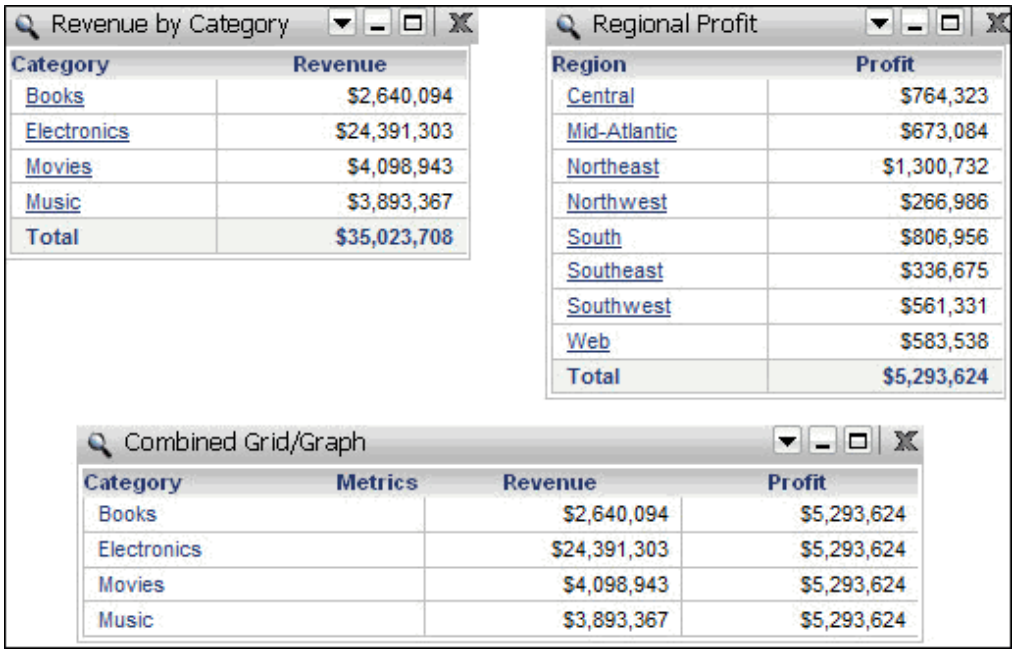
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$764,323. Now, all the same Revenue amounts are grouped together, instead of the same Profit amounts as in the previous example.



If you remove Region from the Combined Grid/Graph, the Profit amounts are all the same—the total profit. (Totals were added to the individual Grid/Graphs for comparison.) This occurs because the Profit data exists only at the

Region level. Revenue amounts are calculated for each category, since the Revenue data exists at the Category level.



Revenue by Category

Category	Revenue
Books	$2,640,094
Electronics	$24,391,303
Movies	$4,098,943
Music	$3,893,367
Total	$35,023,708

Regional Profit

Region	Profit
Central	$764,323
Mid-Atlantic	$673,084
Northeast	$1,300,732
Northwest	$266,986
South	$806,956
Southeast	$336,675
Southwest	$561,331
Web	$583,538
Total	$5,293,624

Combined Grid/Graph

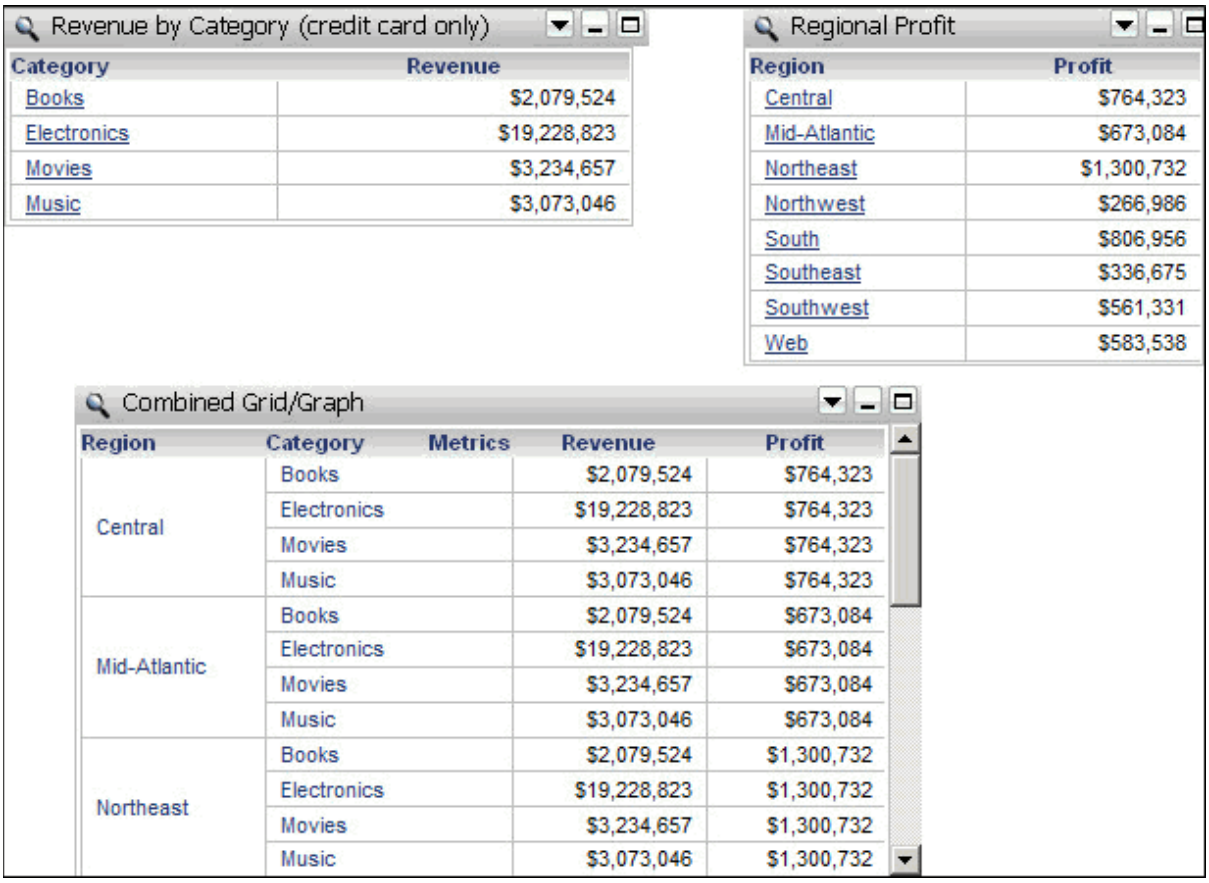
Category	Metrics	Revenue	Profit
Books		$2,640,094	$5,293,624
Electronics		$24,391,303	$5,293,624
Movies		$4,098,943	$5,293,624
Music		$3,893,367	$5,293,624

Similarly, if Category had been removed instead of Region, the Profit amounts would be calculated for each region, while the Revenue amounts would all display as the total shown on the Revenue by Category Grid/Graph.

The Revenue by Category dataset is replaced by the same dataset filtered for payments made with Visa and Mastercard only. Notice that the Revenue amount has decreased in the Revenue by Category Grid/Graph, as well as the

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Combined Grid/Graph. Profit is unaffected, since the filter has not been applied to the Regional Profit dataset.



Revenue by Category (credit card only)

Category	Revenue
Books	$2,079,524
Electronics	$19,228,823
Movies	$3,234,657
Music	$3,073,046

Regional Profit

Region	Profit
Central	$764,323
Mid-Atlantic	$673,084
Northeast	$1,300,732
Northwest	$266,986
South	$806,956
Southeast	$336,675
Southwest	$561,331
Web	$583,538

Combined Grid/Graph

Region	Category	Metrics	Revenue	Profit
Central	Books		$2,079,524	$764,323
	Electronics		$19,228,823	$764,323
	Movies		$3,234,657	$764,323
	Music		$3,073,046	$764,323
Mid-Atlantic	Books		$2,079,524	$673,084
	Electronics		$19,228,823	$673,084
	Movies		$3,234,657	$673,084
	Music		$3,073,046	$673,084
Northeast	Books		$2,079,524	$1,300,732
	Electronics		$19,228,823	$1,300,732
	Movies		$3,234,657	$1,300,732
	Music		$3,073,046	$1,300,732

Notice that, unlike a Grid/Graph that uses datasets with the same attribute, this Grid/Graph can calculate metric data for all the attributes and metrics, in multiple combinations, in the datasets.

For more examples of how datasets are joined, see *Joining multiple datasets: Examples, page 65*. Although text fields are used in the examples, the same join behavior applies to Grid/Graphs.

View filters on a Grid/Graph with multiple datasets

A view filter on a Grid/Graph places conditions on attributes and metrics which restrict the amount of data displayed on the Grid/Graph. A view filter on a Grid/Graph with multiple datasets can include any objects on the Grid/Graph, regardless of the Grid/Graph's data source.

For background information on view filters, including steps to create them, see *Using view filters on Grid/Graphs, page 219*. For an example of a view

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filter on a Grid/Graph with multiple datasets, see *View filters in documents with multiple datasets, page 222*.

Thresholds on a Grid/Graph with multiple datasets

Thresholds are special formatting that is automatically applied to data in a Grid/Graph, when the data meets a specified value. The special formatting means that document recipients can easily see which data is likely to be important for making business decisions.

A threshold on a Grid/Graph with multiple datasets can include any objects on the Grid/Graph, regardless of the Grid/Graph's data source.

For background information on thresholds, including steps to create them, see *Formatting conditional data in documents, page 317*. For an example of thresholds on a Grid/Graph with multiple datasets, see *Conditional formatting on a document with multiple datasets, page 323*.

Adding a Grid/Graph with multiple datasets

Prerequisites

- You must have the correct privileges:
  - To view Grid/Graphs that use objects from multiple datasets, you must have the Execute Report that Uses Multiple Data Sources privilege.
  - To create Grid/Graphs that use objects from multiple datasets, you must have the Import Table from Multiple Data Sources privilege.
- The project must allow Grid/Graphs to use multiple datasets, as explained in *Determining whether Grid/Graphs can use multiple datasets, page 58*.
- The document must contain the datasets to be used in the Grid/Graph.

To add a Grid/Graph that uses multiple datasets

1 In MicroStrategy Web, open the document in **Design Mode**.

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Add an empty Grid/Graph

2 Do one of the following:

- To add a placeholder that displays as a grid, select **Grid** from the **Insert** menu.
- To add a placeholder that displays as a graph, point to **Graph** on the **Insert** menu, and select the graph style. For descriptions of the various graph styles, see the *Advanced Reporting Guide*.

3 Click and drag in the section where you want the Grid/Graph placeholder. A new Grid/Graph placeholder is displayed as an empty Grid/Graph in the document.

You can place a Grid/Graph placeholder anywhere in a document except in the Detail section. Since controls in the Detail section are repeated once per row of the dataset, the Grid/Graph would be repeated on each row.

Add objects to the Grid/Graph

4 Select an object in the Dataset Objects panel, and then drag and drop it in the empty Grid/Graph. Repeat for each dataset object needed on the Grid/Graph.

The dataset (or data source) of the Grid/Graph that uses multiple datasets is determined by the last object added to the Grid/Graph.

Adding a Grid/Graph as a shortcut

If you add a Grid/Graph to a document as a shortcut, the Grid/Graph is linked to the original report. Any changes made to that report, such as formatting a metric or changing the graph type, are automatically passed to the Grid/Graph in the document. You cannot edit the Grid/Graph in the document unless you unlink it by removing the shortcut. Editing options include adding a view filter, formatting rows and columns, sorting, changing the graph style, modifying graph titles, and so on. (For a complete list of editing options, see *Selecting and viewing a Grid/Graph, page 198*.)

In a Grid/Graph added as a shortcut, you can:

- Add a title bar (for steps, see *Adding title bars to Grid/Graphs, page 213*)
- Format the Grid/Graph container and the title bar (for instructions, see *Formatting Grid/Graph containers, page 209*)

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- View the Grid/Graph as a grid, a graph, or both a grid and a graph (for instructions, see *Viewing a Grid/Graph displayed as a grid, page 199*, *Viewing a Grid/Graph displayed as a graph, page 200*, and *Viewing a Grid/Graph as a grid and a graph at the same time, page 200*)
- Specify Grid/Graph settings, such as position, size, grid overflow, and quick switch (for instructions, see *Formatting Grid/Graph containers, page 209*)

The **Shortcut** option in the Property List is a quick indicator of whether a Grid/Graph is a shortcut.

You can unlink a Grid/Graph shortcut, if you no longer want changes made to the original report to be passed to the Grid/Graph in the document. Unlinking removes the shortcut and creates a Grid/Graph in its place. For the procedure, see *To unlink a linked Grid/Graph shortcut, page 196*.

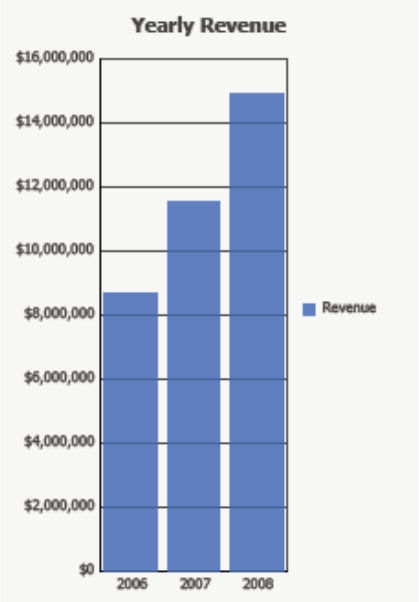
If you want to replace the shortcut with data from a different dataset, you can replace the dataset in the document. The formatting, filter, and report objects of the shortcut are automatically changed. For instructions and a description of the effect that replacing the dataset has on the document, see the *MicroStrategy Developer help* (formerly the *MicroStrategy Desktop help*).

You do not have to create a new Grid/Graph to use shortcuts; you can instead link an existing Grid/Graph to a dataset. For instructions, see *To link an existing Grid/Graph as a shortcut, page 197*.

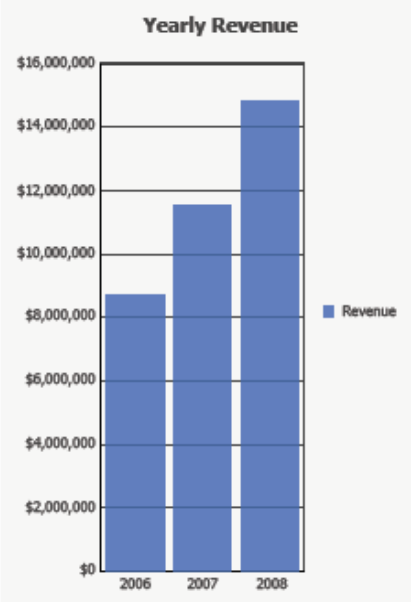
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Both Grid/Graphs shown below use the same dataset, Yearly Revenue. The one on the right (Grid/Graph 2) is linked to the original report as a shortcut, while the one on the left (Grid/Graph 1) is not.

Grid/Graph 1: Not linked

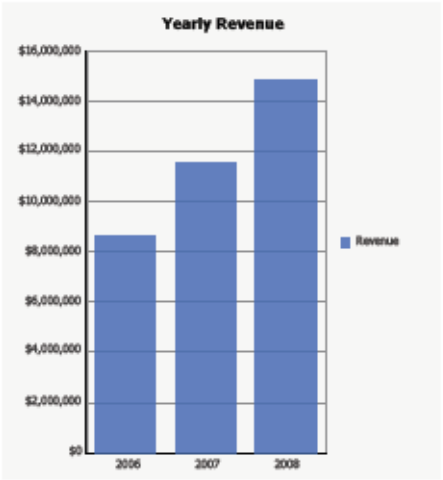


Grid/Graph 2: Linked with a shortcut

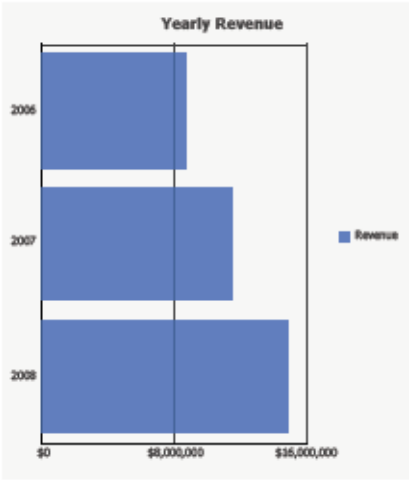


Change the graph type of the Yearly Revenue report from vertical bar to horizontal bar. Save the report. When you execute the document again, as shown below, Grid/Graph 1 still displays as a vertical bar graph, but Grid/Graph 2 is now a horizontal bar graph, because it is a shortcut Grid/Graph and therefore changes to the dataset are automatically passed to the shortcut Grid/Graph in the document.

Grid/Graph 1: Not linked



Grid/Graph 2: Linked as a shortcut



A Grid/Graph added as a shortcut allows a document to contain an object prompt in a Grid/Graph. An object prompt on the template of a dataset allows users to select which objects to include in the report. Grid/Graphs cannot use object prompts, unless you add the Grid/Graph as a shortcut.

Even when a shortcut is used, the object prompt does not appear in the Dataset Objects pane; you cannot add it to the document as a separate object. When the document is executed, the object prompt is displayed and its answers are shown in the document results. This occurs just as if you had executed the dataset as a stand-alone report. For more details on prompts in documents, see *Using prompts in documents, page 524*.

To add a Grid/Graph as a shortcut

1 In MicroStrategy Web, open the document in **Design Mode**.

2 In the Layout area, click in the section where you want to place the Grid/Graph.

You can place a Grid/Graph anywhere in a document except in the Detail section. This is because controls in the Detail section are repeated once per row of the dataset, and the Grid/Graph would be repeated on each row.

3 Right-click the dataset in the Dataset Objects pane and select **Add to Section as Shortcut**.

If the dataset uses an Intelligent Cube, this option is unavailable.

To unlink a linked Grid/Graph shortcut

1 In MicroStrategy Web, open the document in **Design Mode**.

2 Right-click the Grid/Graph shortcut to unlink, and select **Properties and Formatting**. The Properties and Formatting dialog box opens.

3 From the left, click **Layout**.

4 In the Grid area, clear the **Shortcut** check box. The Grid/Graph shortcut is unlinked.

5 Click **OK** to return to the document.

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To link an existing Grid/Graph as a shortcut

1. In MicroStrategy Web, open the document in **Design Mode**.
2. Right-click the Grid/Graph, and select **Properties and Formatting**. The Properties and Formatting dialog box opens.
3. From the left, click **Layout**.
4. In the Grid area, select the **Shortcut** check box. The Grid/Graph is linked to the report listed in the Data Source field.
5. Click **OK** to return to the document.

Changing datasets in Grid/Graphs

You can change the dataset displayed in a Grid/Graph at any time.

Prerequisite

This procedure assumes that:

- You have added a Grid/Graph to the document. See *To add a Grid/Graph, page 174*.
- The document contains multiple datasets. See *Adding, changing, or removing a dataset, page 48*.

To change the dataset of a Grid/Graph

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Right-click the Grid/Graph to modify, and select **Properties and Formatting**. The Properties and Formatting dialog box opens.
3. From the list on the left, select **Layout**.
4. To change the dataset used to populate the Grid/Graph, select a different dataset from the **Data source** drop-down list in the Grid area.

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5 Click **OK** to apply the changes.

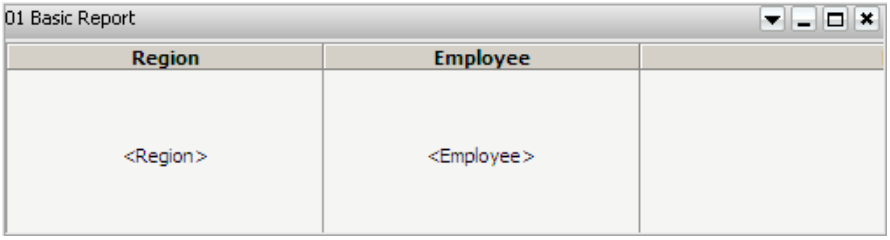
Selecting and viewing a Grid/Graph

Selecting a Grid/Graph

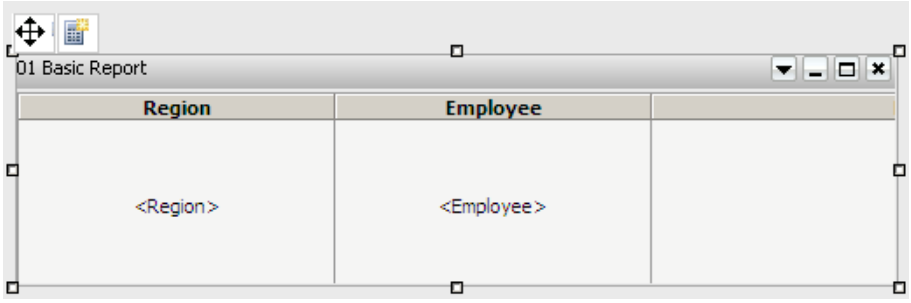
A Grid/Graph has several modes or states of selection.

To select and edit a Grid/Graph

When the Grid/Graph is not selected and your cursor is not over it, it displays without handles or the Select/Move and Add Dataset icons. This normal view is shown below.



When you click the Grid/Graph, the Grid/Graph container is selected. The Select/Move and Add Dataset icons display in its top-left corner, as shown below.



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You can resize the Grid/Graph by dragging the resizing handles. You can also move the Grid/Graph by clicking the Select/Move icon and dragging the Grid/Graph.

If a selected Grid/Graph does not resize, it may be locked. A locked Grid/Graph cannot be resized or moved. To unlock it, see *Locking and unlocking controls, page 164*.

When you edit the Grid/Graph, you can add objects to it, format rows and columns, sort, add totals or subtotals, select a different autostyle for the grid, format the graph, assign thresholds, and change various column settings. For details, see *Editing data in a Grid/Graph, page 203*.

Editing changes the grid report or graph report as displayed in the Grid/Graph in the document; it does not change the original report. For this reason, if the Grid/Graph is linked to the original report as a shortcut, you cannot edit the Grid/Graph. You can format the Grid/Graph control within the document, whether it is a shortcut or not. For steps, see *Formatting Grid/Graph containers, page 209*, which discusses borders, title bars, and quick switch, among other options. For steps to unlink a Grid/Graph shortcut so that it is converted to standard Grid/Graph, and more information on shortcuts in general, see *Adding a Grid/Graph as a shortcut, page 193*.

Viewing a Grid/Graph displayed as a grid

When you add a Grid/Graph to a document, it is displayed as a grid (a standard MicroStrategy grid report with rows and columns of attributes and metrics) by default. If the display mode is changed, you can set it to display as a grid again.

To view a Grid/Graph as a grid

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Right-click the Grid/Graph, point to **View Mode**, and select **Grid View**.
3. Click anywhere outside of the Grid/Graph so that the Grid/Graph is no longer selected.

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Viewing a Grid/Graph displayed as a graph

When you insert a Grid/Graph into a document, it is displayed as a grid (a standard MicroStrategy grid report with rows and columns of attributes and metrics) by default. You can choose to display it as a graph, which shows the data visually as in a standard MicroStrategy graph report.

To view a Grid/Graph as a graph

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Right-click the Grid/Graph, point to **View Mode**, and select **Graph View**.
3. Click anywhere outside of the Grid/Graph so that the grid is no longer selected.

Viewing a Grid/Graph as a grid and a graph at the same time

When you insert a Grid/Graph into a document, it is displayed as a grid (a standard MicroStrategy grid report with rows and columns of attributes and metrics) by default. You can choose to display the Grid/Graph as both a grid and a graph (which displays the data visually as in a standard MicroStrategy graph report) at the same time.

You can also specify how the grid and graph reports are laid out in the document, including what percentage of space each report takes up. For steps, see *Specifying the layout for a Grid/Graph displayed as both a grid and a graph, page 201*.

To view a Grid/Graph as a grid and a graph simultaneously

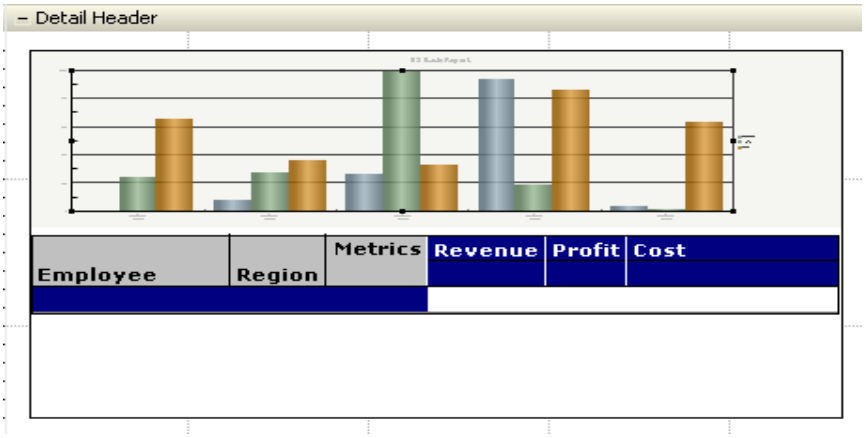
1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Right-click the Grid/Graph, point to **View Mode**, and select **Grid and Graph View**.
3. Click anywhere outside of the Grid/Graph so that it is no longer selected.

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Specifying the layout for a Grid/Graph displayed as both a grid and a graph

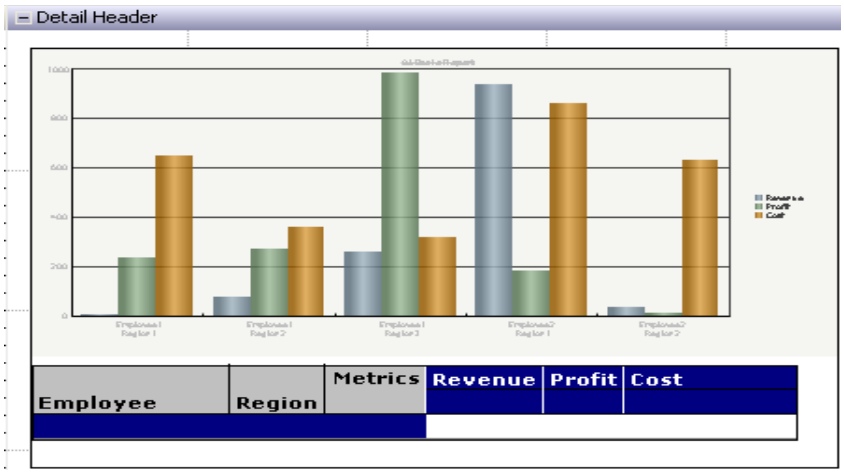
You can specify the layout for a Grid/Graph displayed as both a grid and graph. That means that you can determine how the grid and the graph share the space available in the Grid/Graph. The grid and graph can be placed either side by side, or above and below each other by specifying the grid's location relative to the graph. You can also control the relative sizes of the grid and the graph, by specifying the ratio of the size of the grid to the size of the graph.

For example, the following Grid/Graph is displayed as both a grid and a graph. It is shown in Design View, so that you can focus on the grid and graph objects, rather than the data. The default settings were not altered, so the grid is placed below the graph, and each occupies half the space of the Grid/Graph.

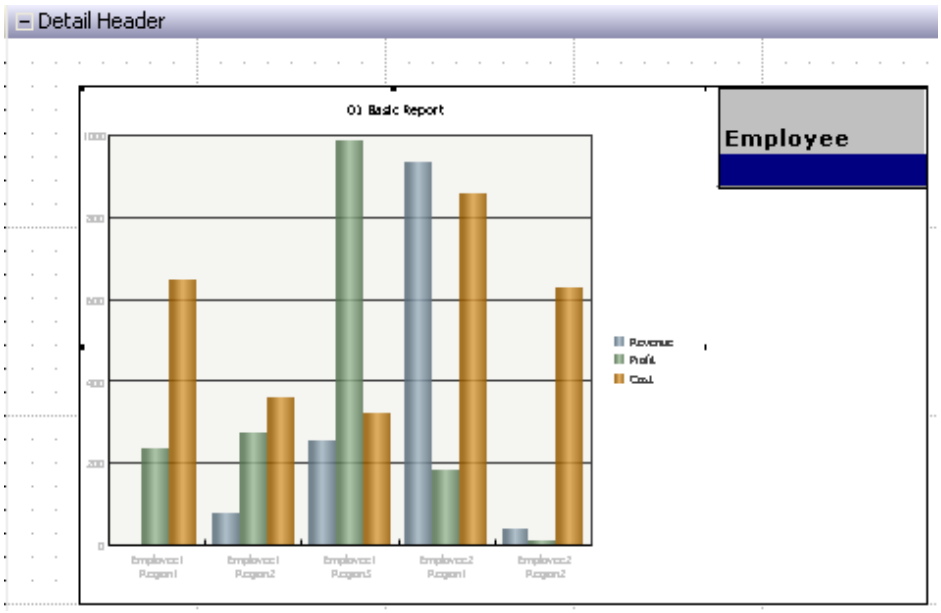


Since the Grid position is set to Bottom, the Grid area percent setting, which is set to 50 by default, specifies the height ratio. Change the Grid area percent to 25. Now the graph occupies 75% of the height of the Grid/Graph container while the grid only uses 25%, as shown below.

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If you change the Grid position to Left or Right, the Grid area percent setting represents the width percentage. If you specify the Grid position as Right, without adjusting the Grid area percent, the Grid/Graph displays as shown below.



The grid uses 25% of the width of the window and is placed to the right of the graph.

The following procedure re-creates the last sample shown above, with the grid to the right, at 25%.

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To specify the layout for a Grid/Graph displayed as both a grid and a graph

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Right-click the Grid/Graph and select **Properties and Formatting**. The Properties and Formatting dialog box opens.
3. On the left, select **Layout**.
4. From the **View** drop-down list, select **Graph and Grid View**.
5. From the **Grid position** drop-down list, select **Right**, to display the grid to the right of the graph.
6. By default, the grid and graph share the control's window equally. Change **Grid Area** to **25**, so that the grid uses 25% of the width of the Grid/Graph window.
7. Click **OK** to save your changes and return to the document.

Editing data in a Grid/Graph

You can add dataset objects to an empty Grid/Graph container, and you can edit the data that is displayed in the Grid/Graph container, such as formatting rows and columns of a grid report, sorting data, formatting the legends or axis titles of a graph report, and so on.

Editing a dataset on a document changes only the grid or graph dataset in the document; it does not change the original report. To format the Grid/Graph container that the dataset is placed in, see *Formatting Grid/Graph containers, page 209*, which discusses borders, title bars, backstyle, and quick switch, among other formatting options.

Because editing changes the grid or graph in the document, not the original report, then if the Grid/Graph is linked to the original report as a shortcut, you cannot edit the Grid/Graph data. You can format the Grid/Graph container, whether it is a shortcut or not. For steps, see *Formatting Grid/Graph containers, page 209*, which discusses borders, title bars, and quick switch, among other formatting options. For steps to unlink a Grid/Graph shortcut, and more information on shortcuts in general, see *Adding a Grid/Graph as a shortcut, page 193*.

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Adding objects to a Grid/Graph

If you create an empty Grid/Graph in the document, you need to populate it with objects. These objects are the attributes, consolidations, custom groups, hierarchies, and metrics in a dataset. The easiest method to add objects is if the Grid/Graph is in grid mode and the document is in Design or Editable Mode.

You can add additional objects to a Grid/Graph that already contains objects. By default, a Grid/Graph can contain objects from a single dataset. If you have the Import Table from Multiple Data Sources privilege and your project allows it, you can combine objects from different datasets in the same Grid/Graph. For steps, see *Adding a Grid/Graph that uses multiple datasets, page 180*.

You can select which attribute forms to add to the Grid/Graph. If you use an attribute form that is later removed from the original report, that attribute form is no longer displayed on the Grid/Graph in the document. If all the attribute forms used on the Grid/Graph are removed from the original report, the Grid/Graph displays the attribute ID. If the attribute itself is removed from the original report, it is also removed from the Grid/Graph.

To add attributes, metrics, and other objects to a Grid/Graph

1. In MicroStrategy Web, open the document in **Design Mode**.
2. Drag objects from the Dataset Objects panel to the Grid/Graph and drop them as required. Use the following guidelines:
   - You can combine objects from different datasets in the same Grid/Graph if your project is configured to allow multiple datasets in a single Grid/Graph.
   - If the object creates a text field on top of the Grid/Graph, the object was not added to the Grid/Graph correctly. Undo the addition by pressing CTRL+Z and try again.
   - You can select which attribute forms to add to the Grid/Graph.

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Editing data in a Grid/Graph displayed as a grid

When you edit the data inside a Grid/Graph displayed as a grid, you can:

- Change the formatting of various rows and columns, such as hiding or displaying the column or row headings
- Change the sorting, as well as define totals or subtotals
- Select a different autostyle for the grid, assign thresholds, apply banding to rows or columns, and change various column settings (such as removing the word “Metrics” from the Grid/Graph)
- Create derived metrics
- Create shortcut metrics

These options also apply to the grid part of a Grid/Graph that is displayed as a grid and a graph.

To edit data in a Grid/Graph displayed as a grid

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

2 Select the Grid/Graph to edit.

If the Grid/Graph is a shortcut, you cannot edit it because it is linked to the dataset. (For details, see *Editing data in a Grid/Graph, page 203*.) A message appears, allowing you to choose whether to unlink the shortcut. If you click **OK**, changes made to the dataset are no longer passed to the dataset in the Grid/Graph you selected.

3 To change the Autostyle for the whole grid, select a new **Autostyle** from the **Grid** toolbar.

4 To format a part of the data in the Grid/Graph, right-click the object in the grid and select **Properties and Formatting**. The Properties and Formatting dialog box opens. For details, see *Formatting Grid/Graph containers, page 209*. To save your changes and return to the document, click **OK**.

5 To move an object, right-click the object in the grid, select **Move**, and then choose the direction to move.

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6 To insert a derived metric:

a From the **Data** menu, select **Insert New Metric**. The Insert New Metric dialog box opens.

b Create the derived metric, as described in *Creating, editing, and deleting derived metrics, page 134*.

c Click **OK** to return to the document.

7 To create a shortcut metric:

a Right-click the column(s) or row(s) for which to create a new metric, select **Insert Metric**, and then select one of the following:

- Percent-to-total
- Transformation
- Rank

b Create the shortcut metric. For steps, see the *MicroStrategy Web Help*.

8 To sort the data in the grid:

a Right-click the object to sort the Grid/Graph by, point to **Sort**, and select either **Ascending** or **Descending**.

b For advanced sorting, right-click the object to sort by and select **Sort Grid**. The Sort dialog box opens. For details, see *Sorting records in a document, page 424*. Click **OK** to save your changes and return to the document.

9 To add subtotals, right-click the Grid/Graph and select **Edit Totals**. The Subtotals dialog box opens. Select the subtotal function, position, and whether to total by position or across level. For instructions, see the *MicroStrategy Web Help*. Click **OK** to save your changes and return to the document.

10 To change the width of a column, switch to **Editable Mode** if you are in Design Mode. Resize the column by dragging and dropping the column's handle.

11 To hide column and/or row headings:

a Right-click the Grid/Graph and select **Properties and Formatting**. The Properties and Formatting dialog box opens.

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b From the left, select **Grid**.

c To hide row headings, clear the **Show** check box under Rows.

d To hide column headings, clear the **Show** check box under Columns.

e Click **OK** to return to the document.

12 The grid can be displayed in a static version of outline mode, which displays the rows and columns in a summarized, high-level outline. Users cannot collapse or expand any of the rows. To display the grid in outline mode:

a Right-click the Grid/Graph and select **Properties and Formatting**. The Properties and Formatting dialog box opens.

b On the left, select **Grid**.

c Select the **Outline** check box in the View area.

d Click **OK** to return to the document.

13 Banding groups rows or columns by color to enhance readability and, in some cases, identify attributes or attribute elements meeting certain criteria. To display banding, do the following:

a Right-click the Grid/Graph and select **Properties and Formatting**. The Properties and Formatting dialog box opens.

b From the left, select **Grid**.

c Select the **Show Banding** check box.

d Click **OK** to return to the document.

Editing data in a Grid/Graph displayed as a graph

Editing a Grid/Graph displayed as a graph provides many of the same options that editing a graph report does. When you edit a Grid/Graph displayed as a graph, the menus and toolbar change to reflect report options rather than document options. For example, you can change:

- Graph style
- Color palette
- Legends

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- Graph options such as riser shape, layout type, and location of data labels
- Axis formatting
- Titles

These options also apply to the graph part of a Grid/Graph viewed as both a grid and a graph.

To edit data in a Grid/Graph displayed as a graph

1 In MicroStrategy Web, open the document in **Editable Mode**.

2 Select the Grid/Graph to edit.

If the Grid/Graph is a shortcut, you cannot edit it because it is linked to the dataset. (For details, see *Editing data in a Grid/Graph, page 203*.) A message appears, allowing you to choose whether to unlink the shortcut. If you click **OK**, changes made to the dataset are no longer passed to the dataset in the Grid/Graph you selected.

3 To change the graph type and sub-type, select them from the two drop-down lists on the **Graph** toolbar.

4 To format a part of the Grid/Graph, right-click the Grid/Graph and select **Format**. The Format: Graph dialog box opens.

- To apply a rounded effect, use font anti-aliasing, and adjust the maximum categories and series, select **General** on the left.
- To change graph options such as titles and series colors, select **Format** on the left.
  - You can select whether to hide or display legends by selecting **Format** from the first drop-down list and **Legend** from the second drop-down list. Select the **Show** check box to display the legend. From the **Position** drop-down list, select where to display the legend.
- To customize the format of each axis in the graph, select **Axes** on the left.
- To save your changes and return to the document, click **OK**.

For details on each option in the dialog box, see the *MicroStrategy Web Help*.

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Editing data in a Grid/Graph displayed as a grid and a graph

When you edit a Grid/Graph, you can modify both the grid portion and the graph portion. For information on editing the grid, see *Editing data in a Grid/Graph displayed as a grid, page 205*. For information on editing the graph, see *Editing data in a Grid/Graph displayed as a graph, page 207*.

Formatting Grid/Graph containers

Formatting a Grid/Graph changes the formatting of the Grid/Graph container, not the data displayed in it. To change the formatting of the data displayed in the Grid/Graph, such as bolding attribute names or changing the color of bar graph risers, you must edit the Grid/Graph. For steps to edit a Grid/Graph, see *Selecting and viewing a Grid/Graph, page 198*.

To format a Grid/Graph container, for example, you can format the border around the Grid/Graph to change its color or make it appear three-dimensional. Border options include 3D borders and drop shadows. Background formatting options include transparent backgrounds and gradient colors. You can also add tooltips or a title bar, determine grid overflow, and set up quick switching between grid view and graph view.

When you add a new Grid/Graph container, the initial formatting of the Grid/Graph is determined by the control default, but you can change any of the formatting options. A control default specifies the default formatting for a particular type of control. For more information on control defaults, see *Defining default formatting for control types: control defaults, page 265*.

Formatting suggestions for a Grid/Graph container

The following list provides some useful formatting suggestions for Grid/Graphs.

- Make the Grid/Graph appear three-dimensional, like a button, with the 3D effect. For examples and steps, see *Applying a 3D effect, page 273*.
- Let the content behind the Grid/Graph show through by setting the backstyle to transparent. You can also allow a fill color to cover what is behind the Grid/Graph by setting the backstyle to opaque. For examples and steps, see *Using a transparent or opaque backstyle, page 271*.

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- In a Grid/Graph that is used as a selector to control other Grid/Graphs, the background for items selected in the Grid/Graph is automatically chosen to provide contrast with the Grid/Graph's background, by default. You can specify the background color for the selected items. The color is displayed in Flash Mode and Express Mode in MicroStrategy Web. For examples and steps, see *Formatting the background of selected items in Grid/Graphs used as selectors, page 210*.
- "Float" the Grid/Graph over the background by using a drop shadow. For examples and steps, see *Applying a drop shadow, page 275*.
- Create a gradual color change by blending two colors using gradient colors on the Grid/Graph. For examples and steps, see *Using gradient colors, page 277*.
- Display pop-up text with a tooltip when a user positions the cursor over the Grid/Graph in MicroStrategy Web. The tooltip can provide extra information, such as an expanded description of the dataset. For examples and steps, see *Creating a pop-up tooltip, page 280*.
- Display a Grid/Graph to other document designers in Design Mode while hiding it from users viewing the document in other modes. For examples and steps, see *Hiding a control, page 282*.
- Allow users to minimize and maximize the Grid/Graph in Web, or view the Grid/Graph's underlying dataset, with a title bar. The title bar also displays a title, which helps identify the Grid/Graph. Title bars provide documents with a portal grid mode and help you create a dashboard look and feel. For examples and steps, see *Adding title bars to Grid/Graphs, page 213*.
- Quickly change the display of a Grid/Graph from graph to grid and back with the Quick switch button. For examples and steps, see *Quick switch for Grid/Graphs, page 217*.
- Enable a transition animation for Flash Mode in MicroStrategy Web. A transition animation is a visual transition that occurs when a Grid/Graph is first displayed in Flash Mode. Examples are Blur, Fade, and Iris. For more information, see the *Dashboards and Widgets Creation Guide*.

Formatting the background of selected items in Grid/Graphs used as selectors

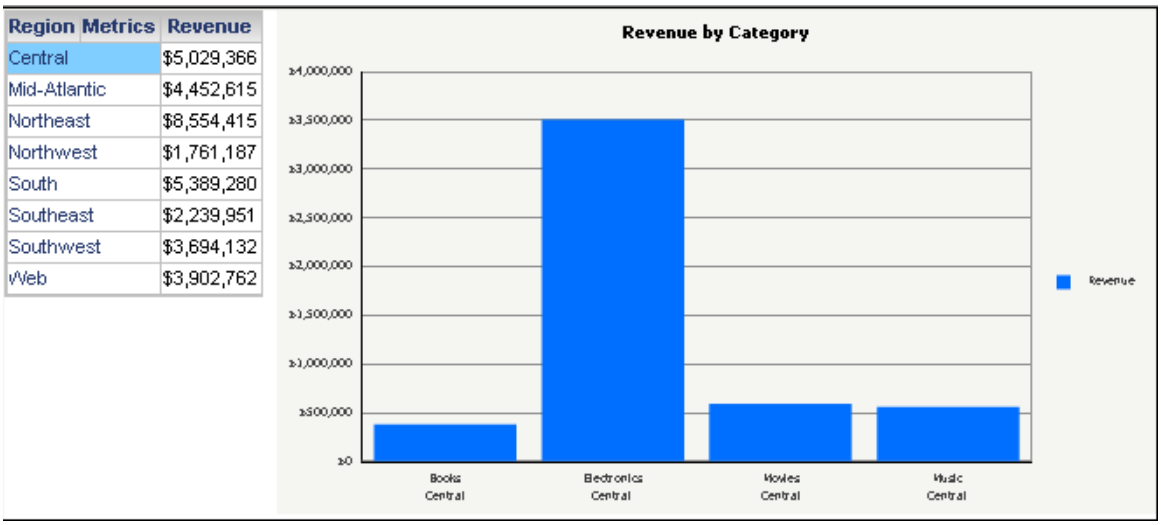
A Grid/Graph can be used as a selector to control other Grid/Graphs. (For an introduction to selectors, see the *Dashboards and Widgets Creation Guide*.)

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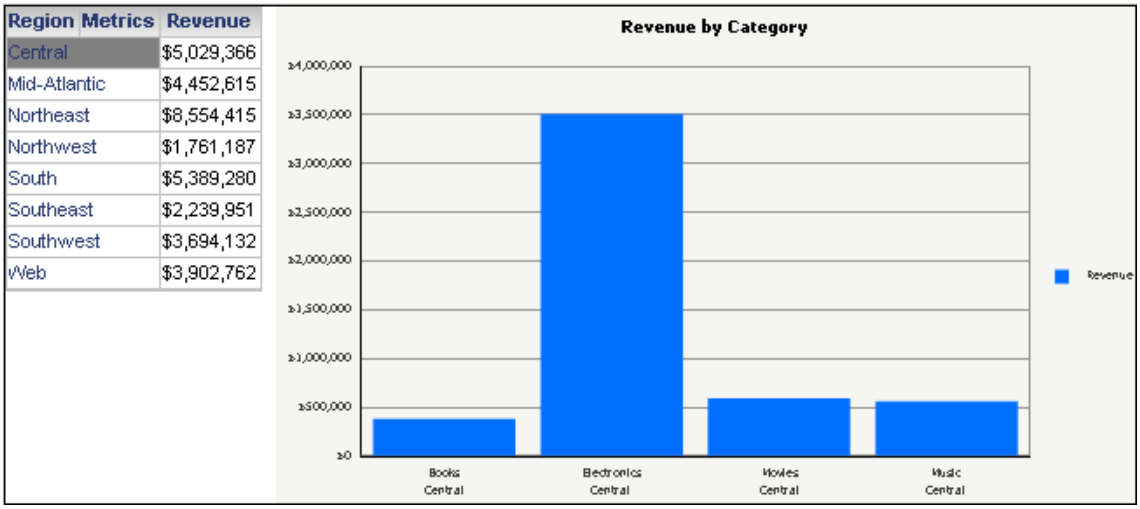
By default, the background for items selected in the Grid/Graph is automatically chosen to provide contrast with the Grid/Graph's background, but you can specify the color for the selected items. The color is displayed in Flash Mode and Express Mode in MicroStrategy Web.

For example, a document contains two Grid/Graphs. The one on the left, which is displayed as a grid, shows revenue by region. Region is used as a selector, targeting the Grid/Graph on the right, which is displayed as a graph. The graph shows revenue by category and region. When a region is selected in the grid, the graph is updated to display data for that region only.

By default, the grid's background is set to transparent, and the background for selected items is set to automatic. In Flash Mode, the grid is displayed automatically with a white background (transparent to the section's background, which is white). The selected item (Central) is displayed in blue to provide contrast, as shown below:



If you change the grid's background for selected items to dark gray, the selected item's background is dark gray in Flash Mode, as specified, and the grid's background is still automatically displayed in white, as shown below:



In all other modes except Express Mode, the background of the selected item is automatically defined to provide contrast with the Grid/Graph's background. This example appears in blue in all other modes, as shown in the first example above.

Prerequisite

- The following steps assume that the document contains a Grid/Graph used as a selector. For steps to create it, see the *Dashboards and Widgets Creation Guide*.

Formatting the background of selected items in a Grid/Graph used as a selector

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Right-click the Grid/Graph container and select **Properties and Formatting**. The Properties and Formatting dialog box opens.
3. From the left, select **Color and Lines**.
4. From the **Color** palette, select the background color of the Grid/Graph by doing one of the following:
   - To apply the default background color (transparent), click **No Fill**.

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- To apply a solid background color, select the background color from the palette. You can access additional colors by clicking **More Colors**.
- To apply a color gradient, click **Gradients**. The Gradients dialog box opens. For images that show gradients, see *Using gradient colors, page 277*.

  a From the **Color 1** palette, select the first color to use for the gradient.

  b From the **Color 2** palette, select the second color to use for the gradient.

  c Select the **Horizontal** or **Vertical** option to determine the direction in which two colors are blended together, then select a shading style.

  d Click **OK** to return to the Properties and Formatting dialog box.

5 When the Grid/Graph is used as a selector to control other Grid/Graphs, you can specify the background color used to display selected items in the Grid/Graph. From the **Selection Color** palette, select the background color for items that are selected by the user by doing one of the following:

- To apply the default selection color, click **Automatic**.
- To apply a solid selection color, select the color from the palette. You can access additional colors by clicking **More Colors**.

6 Click **OK** to apply your changes.

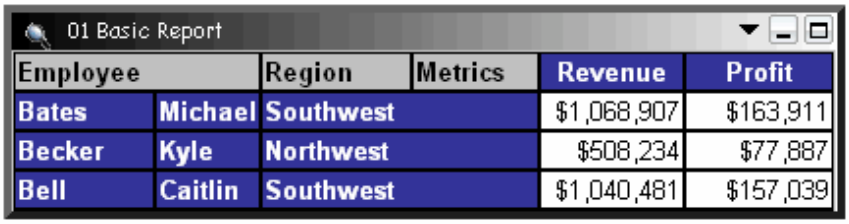
Adding title bars to Grid/Graphs

A title bar on a Grid/Graph displays the title of the report associated with the Grid/Graph. A title bar allows users to better identify an object on the document, for example, a Grid/Graph focused on regional marketing efforts. Icons in the title bar allow the user to minimize and maximize the window containing the Grid/Graph. The title bar appears at the very top of the Grid/Graph, as shown in the example below.

You can format the title bar independently of the Grid/Graph itself. You can format the font and background of the title bar, including transparent backgrounds and gradient colors.

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The following sample shows a Grid/Graph with a title bar showing the name of the report. The font of the title bar has been set to Comic, size 9. The background of the title bar is shaded from black to white, using gradient colors. The Grid/Graph has a 3D border, which makes the Grid/Graph appear three-dimensional, like a button.



Title bars allow you to quickly achieve a dashboard look in your documents. If you include several Grid/Graphs with title bars in a document, you can create the feel of a portal. The Grid/Graphs can all be displayed, or a user can minimize the ones that are not relevant at the moment to focus on a particular Grid/Graph.

A title bar:

- Displays the title of the report by default, although you can replace it with your own text. For a Grid/Graph that uses multiple datasets, displaying the report title can help identify which dataset is used as the data source of the Grid/Graph.
- Is displayed in all views/modes for both MicroStrategy Developer and Web.
- Lets users minimize and maximize the Grid/Graph.
- Lets users quickly access menu options to format and edit the Grid/Graph (in Editable Mode and Interactive Mode). Menu options include sorting and adding subtotals, among others.
- Lets users open the dataset used in the Grid/Graph using **Zoom In** (in Editable Mode and Interactive Mode).
- Lets users export the Grid/Graph to an Excel spreadsheet or a PDF file (in Express Mode).
- Lets the designer determine the initial display of the window: normal, minimized, or maximized.

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To add a title bar to a Grid/Graph

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

2 Right-click the Grid/Graph and select **Properties and Formatting**. The Properties and Formatting dialog box opens.

3 From the left, select **General**.

4 Select the **Show Title Bar** check box.

5 The **Title** field is blank by default. If you leave it blank, the name of the dataset will automatically be displayed in the title bar when the end user executes the document. To display a different title, type the new text in the **Title** field.

For a Grid/Graph that uses multiple datasets, displaying the report title can help identify which dataset is used as the data source of the Grid/Graph.

6 To change the initial display height and width of the Grid/Graph, select one of the following from the **Display State** drop-down list:

- **Minimized**: Only the title bar is initially displayed when the document is first opened. The user can maximize the Grid/Graph, and can also restore it to its original size or position.
- **Maximized**: When the document is first opened, the size of the Grid/Graph is initially displayed spanning the entire document section in which it is located. The user can minimize the Grid/Graph, and can also restore it to its original size or position.

7 To specify the height of the title bar itself, from the left, select **Layout**. Type the height in the **Title Height** field.

8 To format the background fill of the title bar:

a Select **Colors and Lines** from the left. The Colors and Lines options are displayed.

b Select **Grid Container** in the drop-down list on the left.

c Select **Title** in the drop-down list on the right.

d From the **Color** drop-down list, do one of the following:

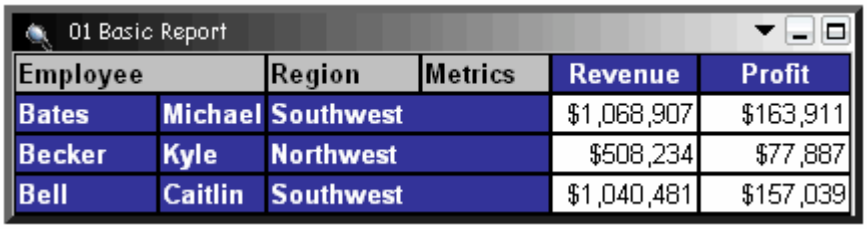
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- To shade the title bar with a solid fill color, select the desired color.
- To shade the title bar with a color gradient, select **Gradient**. For images that show gradients, see *Using gradient colors, page 277*.
- To allow what is behind the title bar to show through, select **No Color**.

9 Click **OK** to apply the changes and close the dialog box.

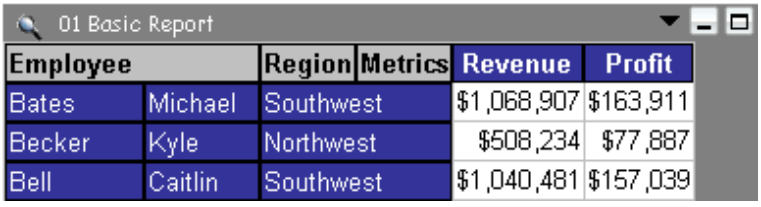
Allowing the background of the Grid/Graph to show through a transparent title bar

If you set the background of the title bar to transparent, the background fill of the Grid/Graph shows through. For example, note that the title bar in the following Grid/Graph is shaded, left to right, from black to white.



Employee		Region	Metrics	Revenue	Profit
Bates	Michael	Southwest		$1,068,907	$163,911
Becker	Kyle	Northwest		$508,234	$77,887
Bell	Caitlin	Southwest		$1,040,481	$157,039

If you change the background of the title bar to Transparent and select a dark gray for the background of the Grid/Graph container, you can see the dark grey of the container at the right of the Grid/Graph, as well as in the title bar, in the sample below.



Employee		Region	Metrics	Revenue	Profit
Bates	Michael	Southwest		$1,068,907	$163,911
Becker	Kyle	Northwest		$508,234	$77,887
Bell	Caitlin	Southwest		$1,040,481	$157,039

To use a transparent title bar for a Grid/Graph

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

2 Right-click the Grid/Graph and select **Properties and Formatting**. The Properties and Formatting dialog box opens.

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3 If the title bar is not displayed on the Grid/Graph:

   a From the left, select **General**.

   b Select the **Show Title Bar** check box.

   c Click **Apply**.

4 From the left, click **Colors and Lines**.

5 In the list on the right, select **Title**.

6 From the **Color** drop-down list, select **No Fill**.

7 Click **OK** to return to the document.

Quick switch for Grid/Graphs

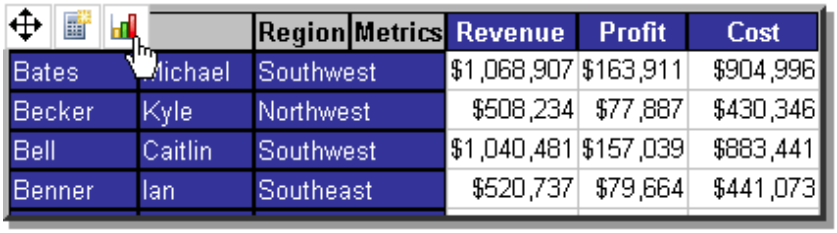
In MicroStrategy Web, a user can quickly switch a Grid/Graph between Graph view and Grid view with the click of a button, when the Quick switch option is enabled. The Graph view and Grid view are both loaded when the document is initially viewed. The document may initially load more slowly, but it switches between the views quickly since a request to the Web server does not occur.

This quick switch option is ideal for Report Services (RS) dashboards, which are generally smaller and less data-intense than standard documents. For more information on RS dashboards, see the *Dashboards and Widgets Creation Guide*.

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Quick switch in MicroStrategy Web

The Quick switch button is displayed in MicroStrategy Web only, in both Interactive Mode and Editable Mode. The button to perform the switch is located at the top of the Grid/Graph, as shown below.



		Region	Metrics	Revenue	Profit	Cost
Bates	Michael	Southwest		$1,068,907	$163,911	$904,996
Becker	Kyle	Northwest		$508,234	$77,887	$430,346
Bell	Caitlin	Southwest		$1,040,481	$157,039	$883,441
Benner	Ian	Southeast		$520,737	$79,664	$441,073

Quick switch in MicroStrategy Developer

The Quick switch button is available in MicroStrategy Web only; you cannot use it in MicroStrategy Developer. In PDF View in MicroStrategy Developer, the Grid/Graph is displayed as either a grid or a graph, depending on the View mode option. When you export a document to Excel or view it as a PDF, the last view displayed (Grid or Graph) is used.

Enabling quick switch

To enable quick switch, the Grid/Graph must be displayed as either a grid or a graph. If the Grid/Graph displays as both a grid and a graph, quick switch is not available.

If you enable quick switch, the Height mode and Width mode settings are automatically set to Fixed; the Fit to contents option is disabled. This ensures that the graph or grid will fill 100% of the size specified for the Grid/Graph container. The Grid/Graph container is the object that holds the actual Grid/Graph, as opposed to the optional title bar. (For an example of a title bar, see *Adding title bars to Grid/Graphs, page 213*.) Therefore, you should check that the height and width are correct when you enable quick switch.

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To enable quick switch for a Grid/Graph

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Right-click Grid/Graph and select **Properties and Formatting**. The Properties and Formatting dialog box opens.
3. From the left, click **Layout**.
4. Ensure that View is either Graph or Grid. If View is set to Grid and graph, the Quick Switch check box is not available.
5. Select the **Quick Switch** check box.
6. Click **OK** to return to the document.

Using view filters on Grid/Graphs

A view filter on a Grid/Graph in a document consists of conditions on attributes and metrics which restrict the amount of data displayed on the Grid/Graph. You can use view filters to help reduce the number of datasets used to build a document that contains multiple Grid/Graphs, when all of the Grid/Graphs could share a single dataset with the use of multiple filters.

These view filters are local to the document. This means that a view filter does not affect the report results, only the Grid/Graph displayed on the document. A view filter created on a report is ignored in the document, so that all the data from the report is used in the document. For more information, see *Using a view report or base report as a dataset, page 74*.

For example, a document contains revenue and profit information for different regions. You can create a report with revenue and profit metrics, then create copies of it, applying a different regional filter to each copy. If you have 10 regions, then 10 reports must be created and maintained. Each report must be added to the document as a dataset.

In contrast, view filters allow you to create one report and add it once to the document as a dataset. Next, add multiple Grid/Graphs using the same dataset. Apply a different view filter, for each region, to the various Grid/Graphs. Now all the Grid/Graphs share a single dataset. This reduces maintenance and execution time, since only one dataset has to be created

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and maintained, and only one dataset has to be executed when the document is viewed.

You can also use view filters for custom sorting, formatting for individual rows, and custom subtotals. To continue with the regional revenue example above, you might need to see the regions in the following order: Northeast, Southeast, Northwest, Southwest, and Mid-Atlantic. To do this, create five Grid/Graphs on a document. Apply a view filter for Northeast to the first Grid/Graph, for Southeast to the second, and so on.

Similarly, to apply a different format to each row (for each region) in the document, add one Grid/Graph for each region, apply a view filter on region to the Grid/Graphs as described above, and then format each Grid/Graph as needed. For example, the Northeast region can be displayed in red while Southeast appears in blue. This process can be used to create custom banding on a document.

Information on editing the dataset information in a Grid/Graph can be found in *Editing data in a Grid/Graph, page 203*.

You can also use view filters to create custom subtotals, such as an Eastern region subtotal and a Western region subtotal, for example. Add a Grid/Graph, apply a view filter for Northeast and Southeast, and enable subtotals for the Grid/Graph. Repeat the process with another Grid/Graph, setting the view filter to Northwest and Southwest. To enable subtotals, edit the Grid/Graph by double-clicking it, then select **Show Totals** from the **Data** menu.

The resulting custom subtotal document is shown below, with column headers turned off for the second Grid/Graph. To do this, right-click the Grid/Graph, then select **Properties and Formatting**. In the Properties and Formatting dialog box, click **Grid**. Under Columns, clear the **Show** check box and click **OK**.

Region Metrics	Revenue	Profit
Northeast	$8,554,415	$1,300,732
Southeast	$2,239,951	$336,675
Total	$10,794,366	$1,637,407
Northwest	$1,761,187	$266,986
Southwest	$3,694,132	$561,331
Total	$5,455,319	$828,317

If a Grid/Graph is a shortcut, you cannot create a view filter because the Grid/Graph is linked to the original report. The view filter option is not available until you unlink the report (see *To unlink a linked Grid/Graph shortcut, page 196* for instructions). If you unlink the report, the Grid/Graph is converted from a shortcut to a standard

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Grid/Graph, and any changes made to the original report are no longer passed to the Grid/Graph in the document. For information on what actions are allowed in shortcuts, see *Adding a Grid/Graph as a shortcut, page 193*.

View filters can filter the Grid/Graph based on metric qualifications as well as attribute qualifications. For example, the following Grid/Graph displays Revenue, Cost, and Profit values for all regions:

Region	Metrics	Revenue	Cost	Profit
Central		$5,029,366	$4,265,043	$764,323
Mid-Atlantic		$4,452,615	$3,779,531	$673,084
Northeast		$8,554,415	$7,253,683	$1,300,732
Northwest		$1,761,187	$1,494,202	$266,986
South		$5,389,280	$4,582,324	$806,956
Southeast		$2,239,951	$1,903,276	$336,675
Southwest		$3,694,132	$3,132,800	$561,331
Web		$3,902,762	$3,319,225	$583,538

Create a view filter that contains two qualifications:

- Revenue > $5,000,000
- Profit < $1,000,000

When the view filter is applied to the Grid/Graph, only two regions, Central and South, met the qualifications and are displayed, as shown below.

Region	Metrics	Revenue	Cost	Profit
Central		$5,029,366	$4,265,043	$764,323
South		$5,389,280	$4,582,324	$806,956

Multiple qualifications in view filters

To create more sophisticated filters, you can add multiple qualifications to the same Grid/Graph. For example, if your dataset contains customer information, you can create qualifications on region and age to display only those customers in the Northeast and Southeast who are older than 73 or younger than 19.

By default, multiple qualifications are joined with the AND operator, but you can change the operator to AND NOT, OR, or OR NOT. You cannot change

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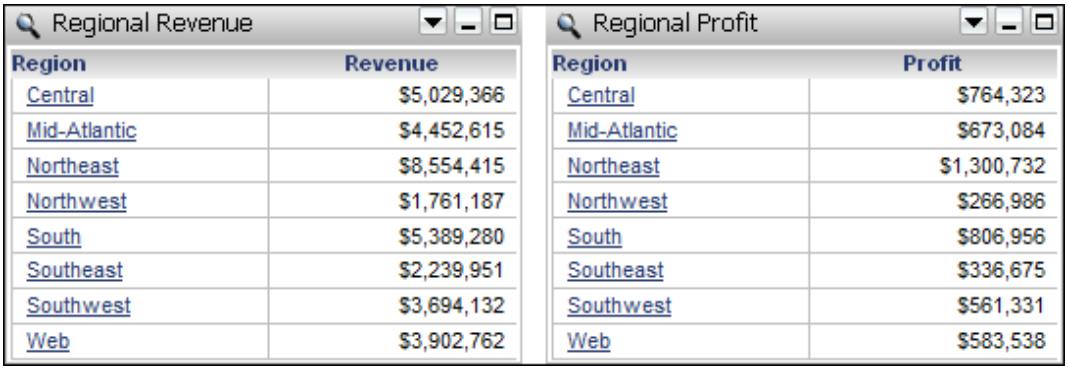
the logical operator between two metric qualifications if all of the following are true:

- Both qualifications are metric qualifications.
- The metric qualifications use two different metrics (for example, Revenue in Qualification 1 and Profit in Qualification 2).
- The metric qualifications are not metric-to-metric qualifications, but instead compare the metrics to numeric values.

View filters in documents with multiple datasets

If a document contains multiple datasets, a view filter on a Grid/Graph can include any objects from any of the datasets, regardless of whether the Grid/Graph uses that dataset.

For example, a document contains two datasets, Regional Revenue and Regional Profit. A Grid/Graph is displayed for each dataset, with the data source displayed in the title bar, as shown below:



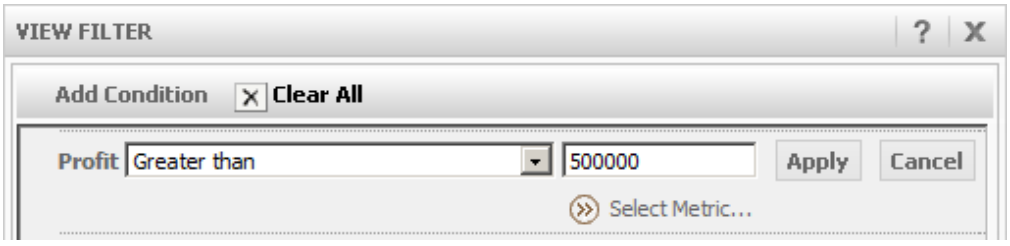
Regional Revenue

Region	Revenue
Central	$5,029,366
Mid-Atlantic	$4,452,615
Northeast	$8,554,415
Northwest	$1,761,187
South	$5,389,280
Southeast	$2,239,951
Southwest	$3,694,132
Web	$3,902,762

Regional Profit

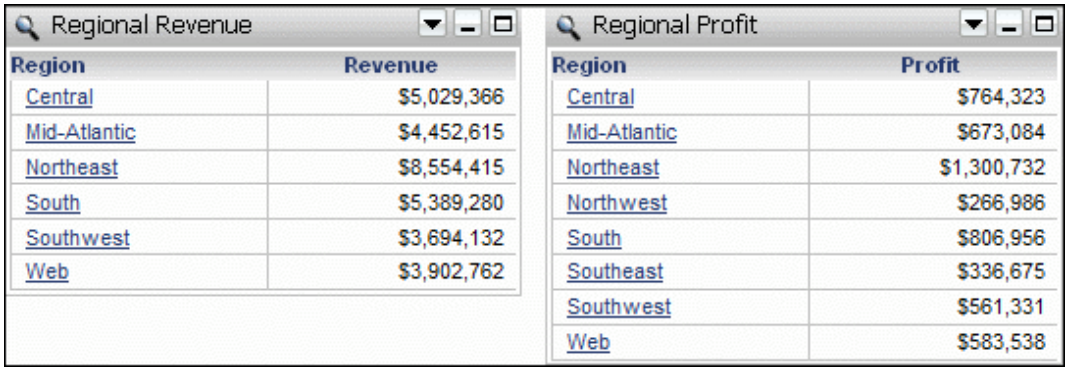
Region	Profit
Central	$764,323
Mid-Atlantic	$673,084
Northeast	$1,300,732
Northwest	$266,986
South	$806,956
Southeast	$336,675
Southwest	$561,331
Web	$583,538

Create a view filter on the Regional Revenue Grid/Graph. Filter on the Profit metric greater than 500,000, as shown below:



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The results are shown below. Notice that Northwest and Southeast are no longer included in the Regional Revenue Grid/Graph, since their profit amounts are below $500,000.



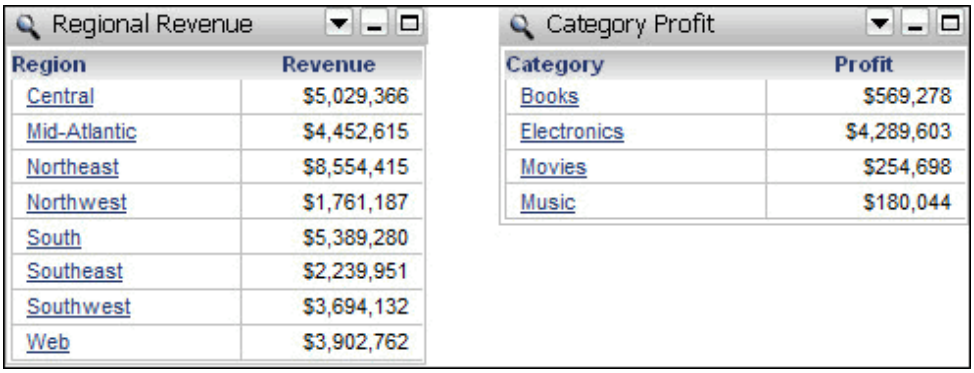
Regional Revenue

Region	Revenue
Central	$5,029,366
Mid-Atlantic	$4,452,615
Northeast	$8,554,415
South	$5,389,280
Southwest	$3,694,132
Web	$3,902,762

Regional Profit

Region	Profit
Central	$764,323
Mid-Atlantic	$673,084
Northeast	$1,300,732
Northwest	$266,986
South	$806,956
Southeast	$336,675
Southwest	$561,331
Web	$583,538

If the datasets do not contain the same attributes, you can still create a view filter that includes any object from any dataset on the document. For example, a document contains two datasets, Regional Revenue and Category Profit. Create a Grid/Graph for each dataset, as shown below:



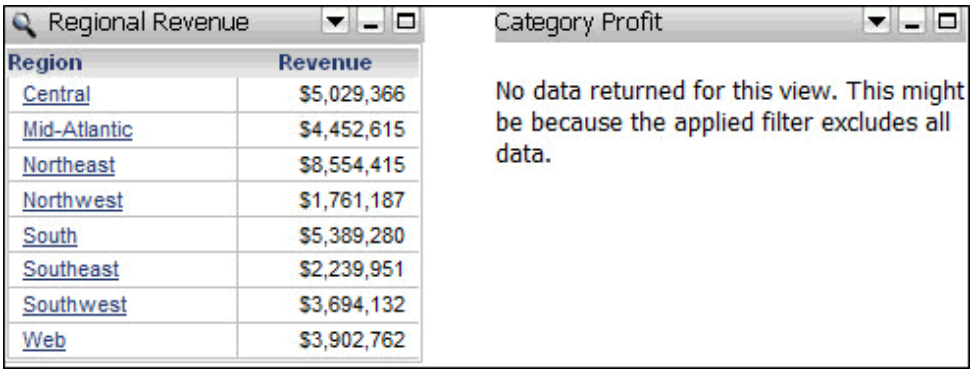
Regional Revenue

Region	Revenue
Central	$5,029,366
Mid-Atlantic	$4,452,615
Northeast	$8,554,415
Northwest	$1,761,187
South	$5,389,280
Southeast	$2,239,951
Southwest	$3,694,132
Web	$3,902,762

Category Profit

Category	Profit
Books	$569,278
Electronics	$4,289,603
Movies	$254,698
Music	$180,044

Create a view filter on the Category Profit Grid/Graph, for Revenue less than $5,000,000. When the view filter is applied, Category Profit no longer contains any data, as shown below:



Regional Revenue

Region	Revenue
Central	$5,029,366
Mid-Atlantic	$4,452,615
Northeast	$8,554,415
Northwest	$1,761,187
South	$5,389,280
Southeast	$2,239,951
Southwest	$3,694,132
Web	$3,902,762

Category Profit

No data returned for this view. This might be because the applied filter excludes all data.

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To process the view filter, Revenue is aggregated on the Category Profit Grid/Graph. Revenue is available on the document only at the level of Region, which is not available on the Category Profit dataset. Therefore, Revenue aggregates to the level of all regions, calculating the same value for each row of the Category Profit Grid/Graph. This value is $35,023,708, which exceeds the view filter, and therefore no data is returned. Adding the Revenue metric to the Category Profit Grid/Graph displays the aggregated Revenue amount, to help explain how the view filter is calculated, as shown below:

Category Profit

Category	Profit	Revenue
Books	$569,278	$35,023,708
Electronics	$4,289,603	$35,023,708
Movies	$254,698	$35,023,708
Music	$180,044	$35,023,708

If you add a view filter on Profit greater than $500,000 to the Regional Revenue Grid/Graph, the Regional Revenue Grid/Graph does not change, as shown below:

Regional Revenue

Region	Revenue
Central	$5,029,366
Mid-Atlantic	$4,452,615
Northeast	$8,554,415
Northwest	$1,761,187
South	$5,389,280
Southeast	$2,239,951
Southwest	$3,694,132
Web	$3,902,762

Category Profit

Category	Profit
Books	$569,278
Electronics	$4,289,603
Movies	$254,698
Music	$180,044

The view filter works the same way. Profit is aggregated on the Regional Revenue Grid/Graph at the level of all categories. This value is $5,293,624, as shown below, which meets the view filter limit, so all rows are displayed.

Regional Revenue

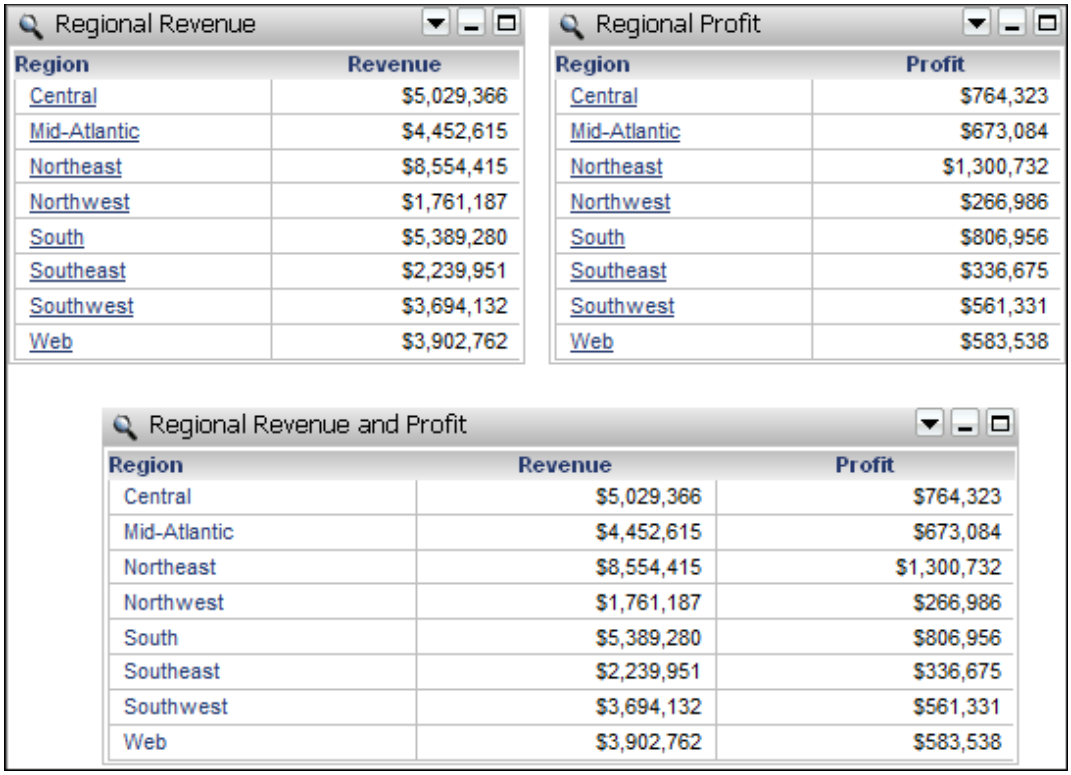
Region	Revenue	Profit
Central	$5,029,366	$5,293,624
Mid-Atlantic	$4,452,615	$5,293,624
Northeast	$8,554,415	$5,293,624
Northwest	$1,761,187	$5,293,624
South	$5,389,280	$5,293,624
Southeast	$2,239,951	$5,293,624
Southwest	$3,694,132	$5,293,624
Web	$3,902,762	$5,293,624

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View filters in Grid/Graphs that use multiple datasets

A Grid/Graph can display data from more than one dataset. The view filter on this type of Grid/Graph can also include any objects on the Grid/Graph.

For example, a document contains two datasets, Regional Revenue and Regional Profit. A Grid/Graph is displayed for each dataset, with the data source displayed in the title bar. Another Grid/Graph, named Regional Revenue and Profit, combines the data from both datasets, as shown below:



Regional Revenue

Region	Revenue
Central	$5,029,366
Mid-Atlantic	$4,452,615
Northeast	$8,554,415
Northwest	$1,761,187
South	$5,389,280
Southeast	$2,239,951
Southwest	$3,694,132
Web	$3,902,762

Regional Profit

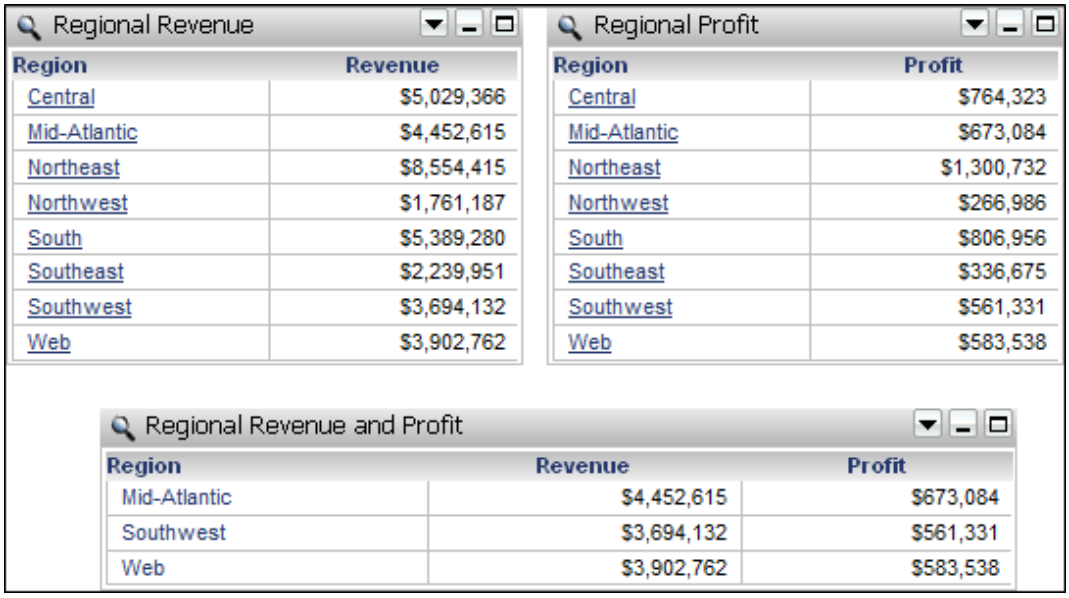
Region	Profit
Central	$764,323
Mid-Atlantic	$673,084
Northeast	$1,300,732
Northwest	$266,986
South	$806,956
Southeast	$336,675
Southwest	$561,331
Web	$583,538

Regional Revenue and Profit

Region	Revenue	Profit
Central	$5,029,366	$764,323
Mid-Atlantic	$4,452,615	$673,084
Northeast	$8,554,415	$1,300,732
Northwest	$1,761,187	$266,986
South	$5,389,280	$806,956
Southeast	$2,239,951	$336,675
Southwest	$3,694,132	$561,331
Web	$3,902,762	$583,538

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Create a view filter on the Regional Revenue and Profit Grid/Graph for Revenue less than $5,000,000 and Profit greater than $500,000. The results are shown below:



Regional Revenue

Region	Revenue
Central	$5,029,366
Mid-Atlantic	$4,452,615
Northeast	$8,554,415
Northwest	$1,761,187
South	$5,389,280
Southeast	$2,239,951
Southwest	$3,694,132
Web	$3,902,762

Regional Profit

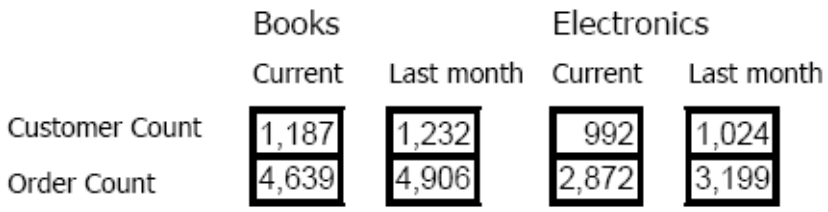
Region	Profit
Central	$764,323
Mid-Atlantic	$673,084
Northeast	$1,300,732
Northwest	$266,986
South	$806,956
Southeast	$336,675
Southwest	$561,331
Web	$583,538

Regional Revenue and Profit

Region	Revenue	Profit
Mid-Atlantic	$4,452,615	$673,084
Southwest	$3,694,132	$561,331
Web	$3,902,762	$583,538

Metrics in rows and columns

A report cannot contain metrics in both the rows and the columns, but you can simulate this scenario using view filters on multiple Grid/Graphs in a single document. The document shown below uses the Customer Count and Order Count metrics on the rows, while the Current and Last Month columns calculate the counts for the current month and the previous month. View filters on the Grid/Graphs filter for the Books category in the first set of data and Electronics in the second set.



	Books		Electronics	
	Current	Last month	Current	Last month
Customer Count	1,187	1,232	992	1,024
Order Count	4,639	4,906	2,872	3,199

The datasets for this document are shown below. The metrics are on the rows and the Category attribute is on the column. The data of the first dataset is in

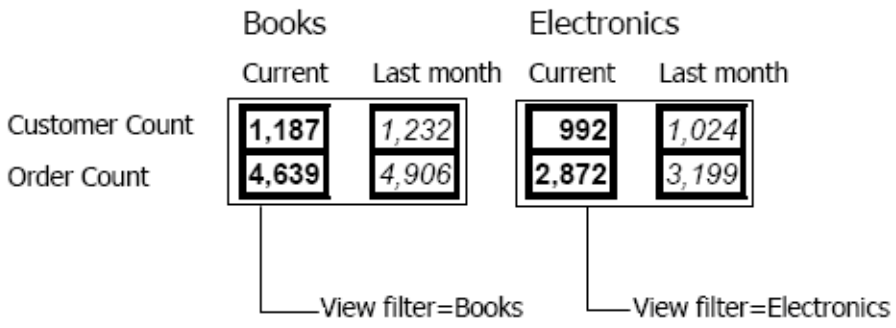
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bold font while that of the second dataset is italicized to help you distinguish the source of the data when it is combined in the document.

Metrics \ Category	Books	Electronics
Customer Count	1,187	992
Order Count	4,639	2,872

Metrics \ Category	Books	Electronics
Last Month's Customer Count	*1,232*	*1,024*
Last Month's Order Count	*4,906*	*3,199*

Create a document with the two datasets and combine their data with text fields, as shown in the following diagram, which is a representation of the actual document. The data in bold font is from the first dataset, italicized data is from the second dataset, and plain text is static text fields created on the document. The boxes represent the different view filters applied to the data.



Creating, editing, and deleting view filters

You can create and add the following types of qualifications to a view filter:

- Attribute qualifications, which include the following:
  - An attribute form qualification filters data based on an attribute form. For example, you can display data for only those customers whose last names start with the letter H.
  - An attribute element list qualification filters data based on a list of attribute elements belonging to an attribute. For example, the attribute Customer has elements which are individual customer

names. You can choose to display income data for only those customers that you select.

- A metric qualification filters data based on the value of a metric. For example, you can choose to display data only for employees whose tenure is longer than ten years.
- Set qualifications, which include the following:
  - A metric set qualification restricts data based on the value, rank, or rank percentage of a metric associated with attributes. For example, you can display sales numbers only for products whose current inventory count falls below a certain level.
  - A relationship set qualification restricts data based on relationships between attributes. For example, you can display stores selling Nike shoes in the Washington, DC area, or customers from the same region as a specific customer, Hugh Abarca.
- Dynamic conditions dynamically update the qualifications in a view filter when a user chooses items in a selector. For example, a user can select the Books and Music categories in a selector. The grid is then filtered to display data only for Books and Movies. You can combine dynamic conditions with other qualifications to create more complex filtering than is possible with selectors alone.

For a detailed description of view filters, including examples, see *Using view filters on Grid/Graphs, page 219*. For detailed descriptions of each type of qualification listed above, including examples, see the *Basic Reporting Guide*.

You can group qualifications, change the order in which qualifications are evaluated, determine how qualifications are combined, and so on. You can also determine the level at which a metric qualification is applied to the data.

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For example, you create a document with a dataset that contains Region, Call Center, and Profit, as shown in the image below.

Region	Call Center	Metrics	Profit
Central	Milwaukee		$637,545
	Fargo		$126,778
Mid-Atlantic	Washington, DC		$473,200
	Charleston		$199,884
Northeast	Boston		$224,495
	New York		$1,076,237
Northwest	San Francisco		$156,330
	Seattle		$110,655
South	New Orleans		$504,990
	Memphis		$301,966
Southeast	Atlanta		$157,963
	Miami		$178,713
Southwest	San Diego		$449,553
	Salt Lake City		$111,779
Web	Web		$583,538

Create a grid that contains Region and Profit, as shown below. Data in the grid is displayed at the Region level. The grid contains eight rows, one for each region.

Region	Profit
Central	$764,323
Mid-Atlantic	$673,084
Northeast	$1,300,732
Northwest	$266,986
South	$806,956
Southeast	$336,675
Southwest	$561,331
Web	$583,538

Create a view filter on the grid, with a metric qualification for profit values greater than $500,000. You can apply the metric qualification to the grid at one of the following levels:

- Template level: The metric qualification is applied to the data at the level of the grid or graph.

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Because the data in the grid is displayed at the Region level, the metric qualification filters the grid to display only the regions with profits greater than $500,000, as shown in the image below.

Region	Profit
Central	$764,323
Mid-Atlantic	$673,084
Northeast	$1,300,732
South	$806,956
Southwest	$561,331
Web	$583,538

- Dataset level: The metric qualification is applied at the level of the dataset that is used to provide data for the grid or graph.

  Because the level of the dataset in the example document is Call Center, the metric qualification filters the grid to display only the regions that contain call centers with profits greater than $500,000. The metric qualification is evaluated at the Call Center level, even though Call Center is not included in the grid.

Region	Profit
Central	$637,545
Northeast	$1,076,237
South	$504,990
Web	$583,538

Prerequisites

- You must have MicroStrategy OLAP Services to use a view filter. To evaluate OLAP Services, contact your MicroStrategy Account Executive or email MicroStrategy directly at `info@microstrategy.com`.
- The document contains the grid or graph to add a view filter to.

To create, modify, or delete a view filter

1. Open the document in **Design** or **Editable Mode**.
2. Right-click the Grid/Graph and select **Edit View Filter**. The View Filter Editor opens.

   If the Grid/Graph is a shortcut, you cannot create a view filter because the Grid/Graph is linked to the dataset. The Edit View Filter option is not available. You can unlink the report (for instructions, see *To unlink a linked Grid/Graph shortcut,*

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page 196), but then changes made to the dataset are no longer passed to the Grid/Graph in the document.

To add qualifications to the view filter

3 Select the appropriate options to define each qualification to add to the view filter, as described in the links below:

- To create a condition based on an attribute, see *To add an attribute qualification to a view filter, page 232*.
- To create a condition based on a metric, see *To add a metric qualification to a view filter, page 233*.
- To create a condition to restrict attributes based on the value, rank, or percentage of a metric, see *To add a metric set qualification to a view filter, page 234*.
- To create a condition to restrict data based on the relationships between attributes, see *To add a relationship set qualification to a view filter, page 236*.
- To allow users to change qualifications in a view filter by choosing items in a selector, see *To add a dynamic condition to a view filter, page 238*.

4 If you have created at least two qualifications, you can change the operator used to combine the qualifications. Click the operator displayed between the qualifications, then select an operator, such as **AND** or **AND NOT**.

5 If you have created at least two qualifications, you can rearrange the order in which the qualifications are evaluated. Conditions displayed at the top of the view filter are evaluated before qualifications displayed at the bottom of the view filter. Click and drag a qualification to its new location in the view filter.

6 If you have created at least three qualifications, you can group qualifications together. Grouped qualifications are evaluated together when the view filter is applied to the data.

- To group qualifications, hover the cursor over the space between two qualifications, then click **Group Conditions**. The qualifications are grouped together and shifted to the right.
- To ungroup qualifications, hover the cursor over the space between the grouped qualifications, then click **Ungroup Conditions**. The qualifications are ungrouped and shifted to the left.

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7 To delete a qualification, hover the cursor over the qualification, then click **X**. The qualification is deleted.

8 To delete the entire view filter, delete all the qualifications.

9 When finished, click **Save** to save your changes.

To add an attribute qualification to a view filter

Prerequisite

- This procedure assumes that you are already editing the view filter to add the qualification to. For steps, see *Creating, editing, and deleting view filters, page 227*.

1 In the View Filter Editor, if the Add Condition option is not displayed, click the arrow icon next to Add Dynamic Condition, then select **Add Condition** from the drop-down list.

2 At the top of the View Filter Editor, click **Add Condition**. The options to create a new qualification are displayed.

3 In the **Based On** list, select the attribute to filter.

4 Define the qualification by doing one of the following:

- To create a qualification based on attribute elements in a list:

  a Under Select, do one of the following:

  – To include data only for elements that you select, click **In List**. For example, you can format data for Books and Movies only.

  – To include data for all elements except those that you select, click **Not in List**. For example, you can format data for all product categories except Books and Movies.

  b Select each attribute element to include in the qualification.

- To create a qualification based on attribute form values:

  a Under Qualification, select the attribute form to filter. For example, you can filter based on the attribute element's ID form, one of its description forms, or the DATE form if the attribute is time-based.

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b From the list of operators to the right, select a comparison operator, such as **Greater Than** or **Less Than**.

c Do one of the following:

- To compare the attribute form to a specific value, type the value in the field.
- To compare the attribute form to another attribute form, select the attribute that contains the second form. Select the second attribute form from the list.

5 Click the **Apply** icon to create the qualification. The qualification is created and displayed in the View Filter Editor.

6 To edit an attribute qualification once you have created it, click the qualification, then select the appropriate options to define the qualification, as described in the steps above.

7 To finish defining the view filter, see *To add qualifications to the view filter, page 231*.

To add a metric qualification to a view filter

Prerequisite

- This procedure assumes that you are already editing the view filter to add the qualification to. For steps, see *Creating, editing, and deleting view filters, page 227*.

1 In the View Filter Editor, if the Add Condition option is not displayed, click the arrow icon next to Add Dynamic Condition, then select **Add Condition**.

2 At the top of the View Filter Editor, click **Add Condition**. The options to create a new qualification are displayed.

3 In the **Based On** list, select the metric to filter.

4 Select a comparison operator, such as **Greater Than** or **Less Than**.

5 Do one of the following:

- To compare the metric to a specified value, type the value in the field.

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- To compare the metric to the value of another metric, select the metric in the list.

6 If the Break By column is displayed, select the attribute level at which to restart counting metric values.

7 From the **Calculate on** drop-down list, do one of the following:

- To evaluate the qualification at the level of the grid or graph, select **Template Level** (default).
- To evaluate the qualification at the dataset level, select **Dataset Level**.

For an example of the difference between template level and dataset level, see *Creating, editing, and deleting view filters, page 227*.

8 You can determine whether to apply the view filter's attribute qualifications when the metric qualification is evaluated. Do one of the following:

- To apply the attribute qualifications, select the **Include existing attribute conditions when evaluating this metric condition** check box.
- To evaluate the metric qualification without taking the attribute qualifications into account, clear the **Include existing attribute conditions when evaluating this metric condition** check box.

9 Click the **Apply** icon to create the qualification. The qualification is created and displayed in the View Filter Editor.

10 To edit a metric qualification once you have created it, click the qualification, then select the appropriate options to define the qualification, as described in the steps above.

11 To finish defining the view filter, see *To add qualifications to the view filter, page 231*.

To add a metric set qualification to a view filter

Prerequisites

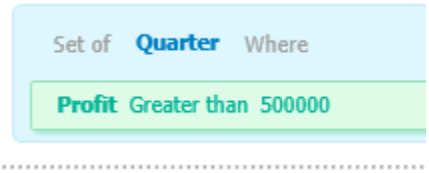
- You have already created a metric qualification on which to base your new metric set qualification. The metric qualification must be applied at

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the dataset level. For steps, see *To add a metric qualification to a view filter, page 233*.

- This procedure assumes that you are already editing the view filter to add the qualification to. For steps, see *Creating, editing, and deleting view filters, page 227*.

1. In the View Filter Editor, hover the cursor over the metric qualification, then click **Create a Set**. The Create a Set dialog box opens.
2. Under **Select attributes to create the set**, select one or more attributes to filter.
3. Click **OK** to apply your changes. The new metric set qualification is created and displayed in the View Filter Editor, as shown in the image below.



4. To edit the attributes included in the qualification, click the list of attributes that you selected when creating the qualification. For example, in the image above, click **Quarter**. The Create a Set dialog box opens. Select each attribute to include in the qualification, then click **OK**.
5. To edit the qualification that your metric set qualification is based on, you must first convert the metric set qualification back into the original metric qualification. Complete the following steps:
   a. Hover the cursor over the metric set qualification, then click **Convert to Condition**.
   b. Click the qualification to edit, then select the appropriate options to edit it, as described in *To add a metric qualification to a view filter, page 233*.
   c. Repeat the appropriate steps above to redefine your metric set qualification using the edited qualification.
6. To finish defining the view filter, see *To add qualifications to the view filter, page 231*.

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To add a relationship set qualification to a view filter

Prerequisites

- You have already created the qualification or group of qualifications to create the relationship set qualification based on. For steps, see *To add an attribute qualification to a view filter, page 232* or *To add a metric qualification to a view filter, page 233*.
- This procedure assumes that you are already editing the view filter to add the qualification to. For steps, see *Creating, editing, and deleting view filters, page 227*.

1. In the View Filter Editor, do one of the following:
   - To filter based on a single qualification, hover the cursor over the qualification, then click **Create a Set**. The Create a Set dialog box opens.
   - To filter based on grouped qualifications, hover the cursor over the space between the qualifications, then click **Create a Set**. The Create a Set dialog box opens.
2. Under **Select attributes to create the set**, select the check box next to the name of each attribute to include in the relationship set qualification. The selected attributes define the output level at which the qualification is calculated. For example, if a metric set qualification is Sales > 1000, Sales could mean sales per day, month, category, or region.
3. You can determine how the attributes in the output level relate to the filter qualifications that the relationship set qualification is based on. From the **Related by** drop-down list, select one of the following:
   - To define a specific logical table that establishes the relationship, from the drop-down list, select the metric that belongs to the table.
   - To have MicroStrategy determine how to relate the output level and the filter qualifications, select **System Default** (default).
4. You can determine whether or not to apply the conditions that the relationship set qualification is based on to the Grid/Graph filtered by the qualification. For example, a grid must list customers from the same region as a specific customer, Hugh Abarca. To achieve this, you create a relationship set qualification based on the qualification Customer = Hugh Abarca. If you apply the qualification to the grid as well as the

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relationship set qualification, only Hugh Abarca is displayed in the grid. If you apply the qualification only to the relationship set qualification, the qualification is used only in the context of the filter, and the grid displays all customers in the selected customer region, not just Abarca.

Do one of the following:

- To apply the filter qualification to both the relationship set qualification and the Grid/Graph, select the **Apply this qualification independently of the relationship filter** check box.
- To apply the filter qualification only to the relationship set qualification and not to the Grid/Graph, clear the **Apply this qualification independently of the relationship filter** check box (default).

5 Click **OK** to apply your changes. The new relationship set qualification is created and displayed in the View Filter Editor, as shown below:



6 To edit the attributes included in the qualification, to edit the table to use to establish the relationship between attributes, or to change whether to apply the qualification to the grid or graph as well as the view filter, click the name of the attributes that you selected for the qualification. For example, in the image above, click **Region**. The Create a Set dialog box opens. Select the appropriate options to define the relationship set qualification, then click **OK**.

7 To edit one of the qualifications that you created the relationship set qualification based on, you must first convert the relationship set qualification back into individual qualifications. Complete the following steps:

a Hover the cursor over the relationship set qualification, then click **Convert to Condition**.

b Click the qualification to edit, then select the appropriate options to edit it. For steps, see the appropriate link below:

- *To add an attribute qualification to a view filter, page 232*

- *To add a metric qualification to a view filter, page 233*

c Repeat the appropriate steps above to redefine your relationship set qualification using the edited qualification.

8 To finish defining the view filter, see *To add qualifications to the view filter, page 231*.

To add a dynamic condition to a view filter

Prerequisite

- This procedure assumes that you are already editing the view filter to add the qualification to. For steps, see *Creating, editing, and deleting view filters, page 227*.

1 In the View Filter Editor, if the Add Dynamic Condition option is not displayed, click the arrow icon next to Add Condition, then select **Add Dynamic Condition** from the drop-down list.

2 At the top of the View Filter Editor, click **Add Dynamic Condition**. A new dynamic condition is created and displayed in the View Filter Editor.

3 To rename the dynamic condition, hover the cursor over the condition and click **Rename**. Type a new name and press ENTER.

4 To finish defining the view filter, see *To add qualifications to the view filter, page 231*.

5 After you define the view filter and save it, create an attribute element selector with the dynamic condition that you just created as the target of the selector. For steps, see the *Dashboards and Widgets Creation Guide*.

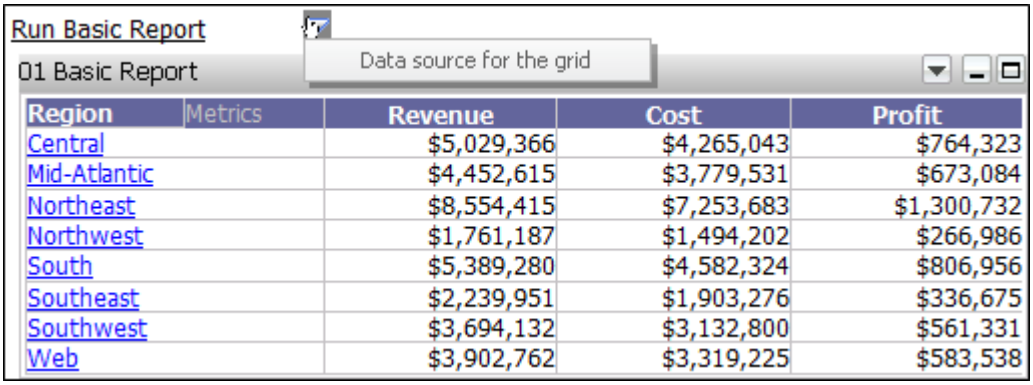
Linking a Grid/Graph to its underlying report

In Interactive Mode and Editable Mode, a user can execute a Grid/Graph's data source report by clicking the Zoom In icon. (The data source provides the data for the Grid/Graph; it is the report on which the Grid/Graph is based.)

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You can mimic this behavior for Express Mode and Flash Mode, by linking a text field to the data source.

The following document sample shows a Grid/Graph and its associated link in Express Mode. The text field is underlined, indicating that the text is clickable. You can click the text to run the linked report. When you hover your cursor over the link, a drop-down icon is displayed. Click the icon to display all the links for the text field. In this case, there is only one link. When you create a link, the text that you put into the **URL display text** field is displayed in the list of links.



Region	Metrics	Revenue	Cost	Profit
Central		$5,029,366	$4,265,043	$764,323
Mid-Atlantic		$4,452,615	$3,779,531	$673,084
Northeast		$8,554,415	$7,253,683	$1,300,732
Northwest		$1,761,187	$1,494,202	$266,986
South		$5,389,280	$4,582,324	$806,956
Southeast		$2,239,951	$1,903,276	$336,675
Southwest		$3,694,132	$3,132,800	$561,331
Web		$3,902,762	$3,319,225	$583,538

When the link is clicked, the dataset for the Grid/Graph is executed. A portion of the resulting displayed report is shown below.

Region	Employee	Metrics	Revenue	Cost	Profit
Central	Ellerkamp	Nancy	$847,227	$720,449	$126,778
	Gale	Loren	$1,669,290	$1,416,036	$253,254
	Torrison	Mary	$1,690,350	$1,430,865	$259,485
	Zemlicka	George	$822,500	$697,693	$124,807
Mid-Atlantic	Bernstein	Lawrence	$1,060,632	$901,702	$158,930
	Brown	Vernon	$331,735	$280,504	$51,231
	Corcoran	Peter	$325,147	$275,752	$49,395
	Folks	Adrienne	$1,047,776	$888,702	$159,074
	Hollywood	Robert	$1,026,874	$871,679	$155,195
	Ingles	Walter	$229,439	$194,851	$34,588
	Smith	Thomas	$221,379	$188,010	$33,368
	Young	Sarah	$209,634	$178,331	$31,303

Steps are below to create a link to a Grid/Graph's data source.

If you change the Grid/Graph's data source, you must change the link as well. The data source link in Interactive Mode and Editable Mode is changed automatically when the Grid/Graph's data source changes.

For information on linking images, text fields, or objects in a Grid/Graph to a different report or document, or linking an image or text field to a web page, see *Chapter 6, Linking from Documents*.

Prerequisites

- The document contains a Grid/Graph. For steps, see *Adding a Grid/Graph to a document, page 172*.
- You know the name of the Grid/Graph's data source. To identify it, complete the following steps:

  a Right-click the Grid/Graph and select **Properties and Formatting**. The Properties and Formatting dialog box opens.

  b Click **Layout** in the list of categories on the left.

  c The name of the report is displayed in the **Data source** field.

To add a link from a Grid/Graph to its dataset

1 In MicroStrategy Web, open the document in **Design Mode**.

2 From the **Insert** menu, select **Text**.

3 In the Layout area, click in the section where you want to place the link.

4 Type the name of the Grid/Graph's underlying dataset in the text field to help the user identify the target of the link.

5 Right-click the text field and select **Edit Links**.

To define the link

6 Type a name for the link in the **URL display text** field. The name should be descriptive as it is displayed when the user right-clicks the text field to choose from a list of links.

7 Select **Run this report or document** and click the browse button (**...**) to find and select the underlying dataset.

To apply prompt answers for a target report that contains prompts

8 The box below Run this report or document contains a list of the prompts included in the target report (the underlying dataset). Select a prompt from the box.

9 Select one of the following prompt answer methods from the drop-down list. For examples of each prompt answer method, see *Specifying how prompts are answered in the target, page 443*.

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- **Answer with the same prompt from the source**: Select this option if you want to use the same prompt answers for both the source report and the target report. This option requires that both the source and target document use the same prompt.
- **Prompt user**: Select this option if you want the user to type prompt answers after he clicks the link to run the target report.
- **Answer with an empty answer**: Select this option if you want to ignore the prompt in the target report. The prompt is not answered. This option requires that the prompt in the target is not required. If the prompt in the target is required, the user is prompted to provide an answer.
- **Use default answer**: Select this option if you want the prompt in the target to use the default answer provided by the prompt's designer. This option requires that a default answer is defined for the prompt in the target.
- **Answer dynamically**: Select this option if you want to answer the prompt using the object selected in the source. This option is only available for attribute element prompts and value prompts.
- **Answer using current unit**: Select this option if you want to answer the prompt using the object selected in the source. This option is only available for hierarchy prompts.
- **Answer using all valid units**: Select this option if you want to answer the prompt in the target with any object to the left of or above the object that the user selects in the source document. This method passes all pertinent selections in the source, rather than just the selection made for the link. This option is available only for hierarchy prompts.

10 Repeat the step above for each prompt in the target report.

To specify the prompt answer method for prompts not in the list

11 Any other prompts are those prompts that are not in the target report when you are creating the link. For example, these prompts can include prompts added to the target at a later time. By default, the **Prompt user** answer method is selected for these prompts, but you can change the method. To do this, select **Any other prompts** in the list.

12 Select a prompt answer method from the list; these are the only methods available for the **Any other prompts** option. For examples of each answer method, see *Specifying prompt answers for any other prompts not listed, page 451*.

- Answer with the same prompt from the source
- Prompt user (default)
- Answer with an empty answer
- Use default answer

13 Select the **Open in new window** check box to have the target report open in a new window. This allows the target and the source documents to be visible simultaneously. If this check box is cleared, the target report opens and replaces the source document.

14 Click **OK** to save your link and return to the source document.

To unlink a Grid/Graph from its underlying report

1 In MicroStrategy Web, open the document in **Design Mode**.

2 Right-click the text field that contains the link from the Grid/Graph to its underlying dataset, and click **Delete**. The link is removed.

Merging column and row headers in a grid

You can merge row headers or column headers in the following ways:

- Merge any row headers that are repeated. All headers displaying the same value are automatically merged into one header. For example, a grid displays sales by merchandise type, payment method, and total amount sold. If there is a row for each merchandise type for each method of payment, all headers corresponding to a merchandise type can be merged into one.
- Merge any column headers that are repeated. For example, if three metrics on the grid are related to Sales, do you want all three columns to have Sales in the header, or do you want to merge these column headers into a single header? If merged, Sales appears only once for the three related columns.

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To merge or unmerge the column or row headers of a grid

1. In MicroStrategy Web, open the document that contains the grid in **Design** or **Editable Mode**.
2. Right-click the grid, then select **Properties and Formatting**.
3. From the left, select **Grid**. Under Headers, choose from the following:
   - To merge row or column headers, select the **Merge** check box in either or both the Rows and Columns areas.
   - To unmerge row or column headers, clear the **Merge** check box in either or both the Rows and Columns areas.
4. Click **OK** to apply the changes.

Displaying attribute and attribute form headers in a grid

You can format the display of column or row headings (headers) for attributes and attribute forms in a grid. For example, you can choose to have a header containing the attribute form name automatically displayed above each attribute form shown in the grid, or have a single header automatically displayed for each attribute in the grid, with each header containing only the attribute name. The following images depict examples of each way in which you can choose to have attribute and attribute form headers displayed.

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You can have a header containing the attribute name automatically displayed for each attribute in the grid.

Customer			Revenue
Aaby	Alen	7796	$3,104
Aadland	Miko	1874	$3,814
Aadland	Warner	3771	$2,378
Aadland	Constant	4432	$4,508
Aafedt	Wendy	7923	$1,064
Aagesen	Bink	1930	$2,580
Aalgaard	Kenney	3345	$1,551
Aamodt	Stacy	7632	$786
Aarestad	Benjamine	2306	$1,857
Aarnink	Marlan	7570	$1,657

You can have a header containing the attribute name and attribute form name automatically displayed above each attribute form shown in the grid.

Customer Last Name	Customer First Name	Customer ID	Revenue
Aaby	Alen	7796	$3,104
Aadland	Miko	1874	$3,814
Aadland	Warner	3771	$2,378
Aadland	Constant	4432	$4,508
Aafedt	Wendy	7923	$1,064
Aagesen	Bink	1930	$2,580
Aalgaard	Kenney	3345	$1,551
Aamodt	Stacy	7632	$786
Aarestad	Benjamine	2306	$1,857
Aarnink	Marlan	7570	$1,657

You can have a header containing the attribute form name automatically displayed above each attribute form shown in the grid.

Last Name	First Name	ID	Revenue
Aaby	Alen	7796	$3,104
Aadland	Miko	1874	$3,814
Aadland	Warner	3771	$2,378
Aadland	Constant	4432	$4,508
Aafedt	Wendy	7923	$1,064
Aagesen	Bink	1930	$2,580
Aalgaard	Kenney	3345	$1,551
Aamodt	Stacy	7632	$786
Aarestad	Benjamine	2306	$1,857
Aarnink	Marlan	7570	$1,657

You can choose to have a header automatically displayed for each attribute form in the grid. Only the header for the first attribute form for each attribute

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includes the attribute name. All other headers contain the attribute form name only.

Customer Last Name	First Name	ID	Revenue
Aaby	Alen	7796	$3,104
Aadland	Miko	1874	$3,814
Aadland	Warner	3771	$2,378
Aadland	Constant	4432	$4,508
Aafedt	Wendy	7923	$1,064
Aagesen	Bink	1930	$2,580
Aalgaard	Kenney	3345	$1,551
Aamodt	Stacy	7632	$786
Aarestad	Benjamine	2306	$1,857
Aarnink	Marlan	7570	$1,657

You can choose to automatically display either headers for each attribute or each attribute form depending on the number of attribute forms visible in the grid for each attribute.

Region	Customer Last Name	Customer First Name	Customer ID	Revenue
Central	Aadland	Warner	3771	$2,317
	Aadland	Constant	4432	$4,033
	Aagesen	Bink	1930	$2,580
	Aamodt	Stacy	7632	$710
	Aaron	Ferrell	7455	$4,695
Mid-Atlantic	Aalgaard	Kenney	3345	$1,416
	Aarestad	Benjamine	2306	$1,857
Northeast	Aadland	Miko	1874	$3,747
	Aaronson	Maxwell	1	$1,162

Detailed descriptions of each scenario are below, as well as steps to have attribute and attribute form headers automatically displayed in a grid in each of the ways described above.

- You can have a single header automatically displayed for each attribute in the grid, with each header containing only the attribute name. The grid in the first image above contains the Customer attribute, for which the Last Name, First Name, and ID attribute forms are each shown in a separate column. In this example, the designer of the grid has chosen to have the attribute name automatically displayed in the header of each attribute in the grid, so the header for the Customer attribute is displayed as Customer.
- You can have a header automatically displayed for each attribute form in the grid, with each header consisting of the attribute name followed by the attribute form name. For example, in the second image above, the headers for the Last Name, First Name, and ID attribute forms are

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displayed as Customer Last Name, Customer First Name, and Customer ID, respectively.

- You can have a header automatically displayed for each attribute form in the grid, with each header consisting of only the attribute form name. In the third image above, the headers for the Last Name, First Name, and ID attribute forms are displayed as Last Name, First Name, and ID, respectively.
- You can have a header automatically displayed for each attribute form in the grid and include the attribute name only in the header for the first attribute form for each attribute. In the fourth image above, the Last Name attribute form is the first attribute form displayed for the Customer attribute, and its header is therefore displayed as Customer Last Name. The remaining attribute forms are displayed using the attribute form name only: First Name and ID, respectively.
- You can choose to automatically display either headers for each attribute or each attribute form depending on the number of attribute forms visible in the grid for each attribute. If only one attribute form is shown in the grid for an attribute, the attribute is displayed with a header containing the attribute's name. If more than one of the attribute's forms are visible in the grid, each attribute form is displayed with a header containing the attribute name followed by the attribute form name.

  In the fifth image above, both the Region and Customer attributes have been added to the grid. Because the Region attribute is displayed using a single attribute form, it is displayed with a header containing the attribute name, Region. On the other hand, three attribute forms are displayed for the Customer attribute, so a header is displayed for each attribute form: Customer Last Name, Customer First Name, and Customer ID, respectively.

Prerequisites

- This procedure assumes that you have already created a document containing the grid whose attributes and attribute form headers you want to display.
- The Show Attribute Form Names option in the Grid Display preferences in Web must be set to Read from Report. For steps to modify user preferences in Web, see the *MicroStrategy Web Help*.

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To display attribute and attribute form headers in a grid

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Right-click the grid, then select **Properties and Formatting**. The Properties and Formatting dialog box opens.
3. From the left, click **Grid**.
4. From the **Show attribute form names** drop-down list, select one of the following (images and detailed descriptions of each option are above):
   - To have the attribute name automatically displayed in the header of each attribute in the grid, select **Off** (default). No attribute form names are included in the grid, as shown in the first example image above.
   - To have a header automatically displayed for each attribute form in the grid, with each header consisting of the attribute name followed by the attribute form name, select **On**. For an example, see the second image in the section above.
   - To have a header automatically displayed for each attribute form in the grid, with each header consisting of only the attribute form name, select **Form name only**. For an example, see the third image in the section above.
   - To have a header automatically displayed for each attribute form in the grid and have the attribute name included only in the header for the first attribute form for each attribute, select **Show attribute name once**. The remaining attribute forms are displayed using the attribute form name only, as shown in the fourth example image above.
   - To automatically display either headers for each attribute or each attribute form depending on the number of attribute forms visible in the grid for each attribute, select **Automatic**. If only one attribute form is shown in the grid for an attribute, the attribute is displayed with a header containing the attribute's name. If more than one of the attribute's forms are visible in the grid, each attribute form is displayed with a header containing the attribute name followed by the attribute form name. See the fifth image above for an example.
5. Click **OK** to apply your changes.

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Drilling in Grid/Graphs

Drilling on a Grid/Graph in a document is similar to drilling on a report. Drilling allows users to look at specific data at levels other than that of the originally displayed Grid/Graph. It allows users to retrieve more information after the document has been executed. The new data is obtained by requerying the database at a different attribute or fact level. For an introduction to drilling, see the *Basic Reporting Guide*.

Before a user can drill on a Grid/Graph in a document, you must enable drilling for the Grid/Graph. Steps to enable or disable drilling for a Grid/Graph are below.

When you enable drilling, you can define whether users can only drill within the dataset or drill anywhere. You can also define whether subtotals on the parent report are also displayed on the drilled-to report. And you can define the join type of the drill attributes to determine how the data is calculated on the drilled-to report. For details on these two options, see *Inheriting subtotals and defining join type, page 251*.

For information on how drilling works with links and selectors in Grid/Graphs, see *How links, drilling, and selectors work together, page 462*.

Drill maps determine what happens when an object is drilled on. You can create and edit the drill maps for a Grid/Graph. For more information on drill maps, see the *Advanced Reporting Guide*.

You can determine drilling behavior by clicking **Preferences** at the top of any page in MicroStrategy Web, then clicking **Drill mode** on the left. You can set such preferences as whether the drilled-to report/document opens in a new window or replaces the drilled-from report/document in the old window. For details on all options, click **Help**.

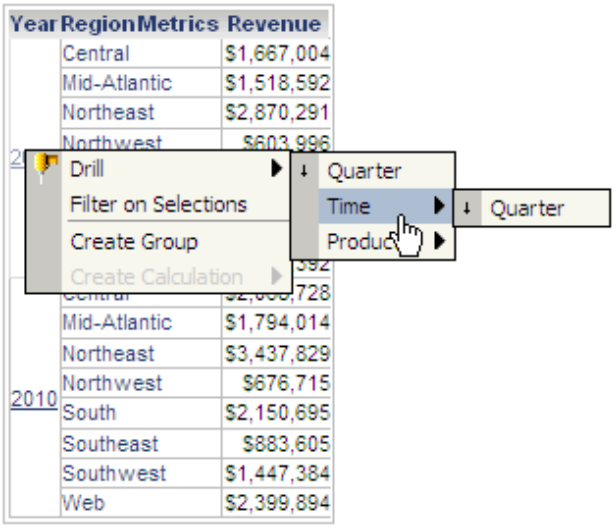
To enable or disable drilling in a Grid/Graph

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Right-click the Grid/Graph and select **Properties and Formatting**. The Properties and Formatting dialog box opens.
3. From the left, select **Grid**.

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4 In the Drilling area, select one of the following from the **Drill options** drop-down list:

- To disable drilling, select **No drilling**.
- To allow users to only drill using objects that are within the dataset, select **Drill within**. Only the drill paths from the drill maps that are included in the dataset but not already on the report grid are shown to the user. For example, you can drill from Year only down to Quarter in the example shown below. You cannot drill further down to Day because Day is not included in the dataset.

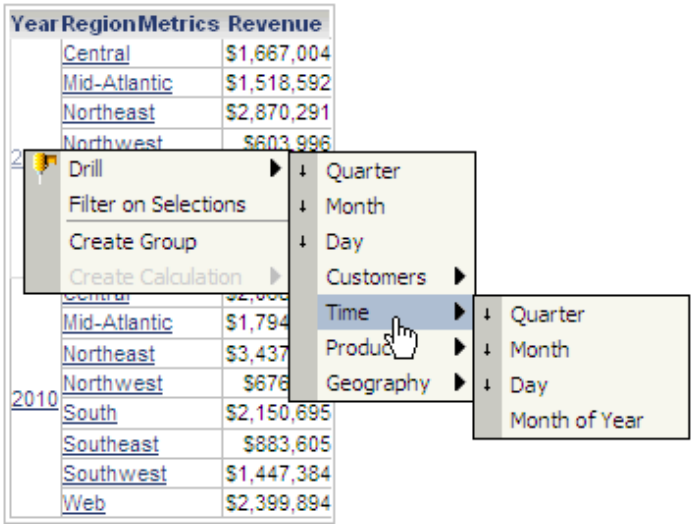


Drilling within the dataset can be used to reduce the paths from those that are defined in the drill map. It does not include paths that are not defined in the drill map, even if an attribute in the dataset does not have a drill path.

- To allow users to drill on attributes other than those available in the dataset, select **Drill anywhere**. By default, when you enable drilling in a Grid/Graph, users can drill anywhere. If the dataset does not have a custom drill map, the drill paths in the project drill map are used. Drilling anywhere allows the user to view associated data within the same attribute or across attributes, whether at the same level, a higher level, or a lower level. For example, even though only Year and Quarter are included in the dataset, the other attributes in the Time

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hierarchy can be drilled to because the Grid/Graph allows drilling anywhere, as shown below.



5 You can enable users to automatically drill on another grid or graph (the target) when they drill on the grid or graph that is currently selected (the source). This is called synchronized drilling. For example, a grid containing profit data across several product categories targets a graph displaying inventory data. If a user drills to Subcategory in the grid, the graph will automatically be updated to display inventory data drilled to the Subcategory level.

Select grids or graphs from the Available list and click **>** to add them to the Selected list. When users drill on the source grid or graph, each of the grids or graphs added to the Selected list will also be updated. The Drill Options setting must be set to Drill Within.

6 The **Keep parent while drilling** option determines whether the original object (the object that the user drills on) appears in the destination report. For example, if a user drills from State to City when **Keep parent** is selected, State remains on the destination report. If the **Keep parent** option is not selected, the parent attribute is removed. The same drill would result in a destination report with City but not State.

By default, whether or not the parent attribute is retained in the drilled-to report, is determined by the setting in the report definition. To override this setting, click **Preferences** at the top of any page, click **Drill Mode** on the left, and select **Yes** or **No** from the **Keep parent while drilling** drop-down list.

7 The **Keep thresholds while drilling** option determines whether a threshold set in the original report is still displayed in the destination

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report (after the drill). For example, a threshold is defined to bold revenue values greater than $1 million. If a user drills from Store to Employee when the **Keep thresholds** option is selected, any revenue value over $1 million is shown in bold font. If the option is not selected, none of the revenue values are bolded.

By default, whether or not thresholds are retained in the drilled-to report, is determined by the setting in the report definition. To override this setting, click **Preferences** at the top of any page, click **Drill Mode** on the left, and select **Yes** or **No** from the **Keep thresholds while drilling** drop-down list.

8 Click **OK** to save the changes and return to the document.

If you have enabled drilling, consider the display modes that are available for users of the document. A user can drill on a Grid/Graph in the following display modes in MicroStrategy Web:

- Flash Mode: In Flash Mode, users can drill only to report objects within the dataset that are not included in the Grid/Graph. If all objects within the dataset are displayed in the Grid/Graph, no drilling options are displayed. If drilling is disabled in Flash Mode, you can enable it by allowing data manipulations, as described in *Enabling filtering, drilling, and moving objects for Grid/Graphs in Flash Mode, page 257*. Whether drilling in Flash Mode is disabled or enabled by default depends on the document template that the document was created with.
- Express Mode: In Express Mode, users can drill only on the default drill path of an attribute. This is defined when a drill map is created. For instructions to create a drill map, see the *Advanced Reporting Guide*.

You can enable or disable specific display modes for end users; see *Determining display for end users, page 350*.

Inheriting subtotals and defining join type

You can determine whether a subtotal in the original report is displayed in the destination report (after the drill). By default, whether the subtotal is kept is determined by the drill path.

You can select the attributes that appear in the destination reports while drilling, as well as specify the join types for these attributes. The join type defines how the attributes in the destination reports are joined, and thus it affects how data is calculated on the drilled-to report. For details and

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examples showing how attribute joins affect report results, see the *Advanced Reporting Guide*.

These options must be set using MicroStrategy Developer.

To inherit subtotals and define join type when drilling

1. In MicroStrategy Developer, open the document in the Document Editor.
2. Double-click the Grid/Graph to enter Edit mode.
3. From the **Data** menu, select **Grid Data Options**.
4. On the left, expand **General** and select **Drilling**.
5. Select the **Enable report drilling** check box.
6. The **Inherit subtotals from parent** option determines whether the subtotal is inherited from the original report. Select one of the following:
   - **Default**: Whether the subtotal is inherited from the parent is determined by the drill path.
   - **Yes**: Inherits the subtotal from the parent report unless all of the following are true:
     - The subtotals are calculated by group.
     - The object being drilled from is the same as the group being subtotaled.
     - The **Keep parent while drilling** option is not selected.
7. Setting the join type allows you to place conditions on the data selected for display in the report. An inner join includes only the data common to all the elements in the join, whether that data is tables or metrics. An outer join includes all of the data in all of the elements.

   To select the attributes that appear in the destination reports while drilling, and to specify the join types for these attributes, click **Drill Attributes Join Type**. For details, click **Help**.
8. Click **OK** to save your changes and return to the document.

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Determining how null and zero metric values are displayed

You can determine how to display or hide rows and columns in a grid that consist only of null or zero metric values. You can have MicroStrategy hide the rows and columns in the following ways:

- Hide rows and columns that consist only of null metric values
- Hide rows and columns that consist only of zero metric values
- Hide rows and columns that consist only of null or zero metric values (default)

Once you have defined how MicroStrategy hides null and zero metric values in the grid, you can quickly show or hide rows or columns in the grid using the Hide Nulls/Zeros option in the Data menu, as described below, or by clicking the **Hide Nulls/Zeros** icon in the Data toolbar.

Prerequisite

- The following procedure assumes that you have already created a grid in a document.

To determine how null and zero metric values are displayed or hidden in a grid

1. Open the document in **Editable Mode**.
2. Right-click the grid, then select **Properties and Formatting**. The Properties and Formatting dialog box opens. From the left, click **Grid**.
3. To determine how MicroStrategy hides null and zero metric values in the grid, select the **Hide Null/Zero Toggle Behavior** check box. From the drop-down list, select one of the following:
   - To hide rows and columns that consist only of null or zero metric values, select **Hide Nulls or Zeroes** (default).
   - To hide rows and columns that consist only of null metric values, select **Hide Nulls Only**.

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- To hide rows and columns that consist only of zero metric values, select **Hide Zeros Only**.

4 Click **OK** to apply your changes, then click the grid to select it.

5 To determine whether null and zero metric values are displayed or hidden in the grid, from the **Data** menu, select one of the following:

- To hide rows and columns containing null metric values, zero metric values, or both as defined in the steps above, select the **Hide Nulls/Zeros** option.
- To display all rows and columns in the grid, including those that consist only of null or zero metric values, clear the **Hide Nulls/Zeros** option.

Enabling interactive Grid/Graphs for MicroStrategy Web

You can specify how a MicroStrategy Web user interacts with Grid/Graphs in Flash Mode and Express Mode in MicroStrategy Web.

- A user can sort and pivot data in Grid/Graphs, as described in *Sorting and pivoting in Grid/Graphs in Flash Mode and Express Mode, page 255*. A user can also drill to the default drill path in Express Mode.
  - You can disable sorting and pivoting in all the Grid/Graphs of a specific document; for instructions, see *Disabling sorting and pivoting for Grid/Graphs in Flash Mode and Express Mode, page 256*. This also disables drilling in Express Mode.
- In Flash Mode, a user can manipulate data in Grid/Graphs, such as clicking links to other documents or reports, filtering by attribute elements or metrics, and grouping by attributes. For instructions, and a complete list of data manipulations, see *Enabling filtering, drilling, and moving objects for Grid/Graphs in Flash Mode, page 257*.

  These data manipulations are available in Flash Mode only; in Express Mode, the user can sort, pivot, drill, and use links.

Whether sorting/pivoting and the pop-up menu are enabled or disabled by default depends on the document template that the document was created with.

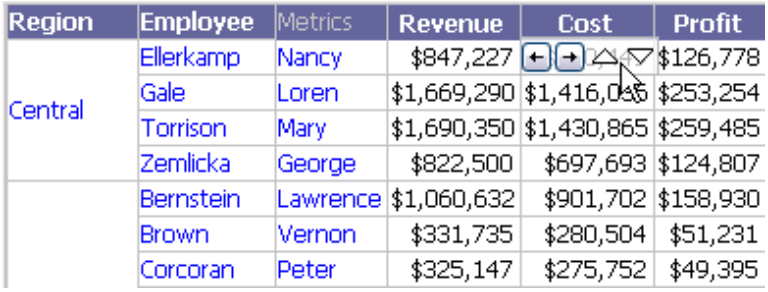
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Sorting and pivoting in Grid/Graphs in Flash Mode and Express Mode

In Flash Mode and Express Mode, users can sort and pivot data in a Grid/Graph displayed as a grid or as both a grid and a graph. A user can:

- Sort data in ascending or descending order
- Pivot data to change:
  - The relative position of a row or column
  - A row into a column
  - A column into a row

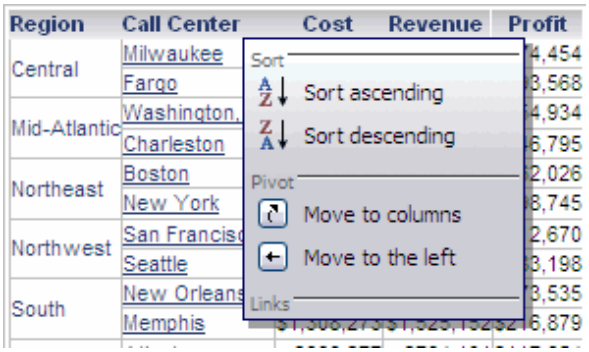
In Flash Mode, users sort or pivot data using a floating toolbar. This floating toolbar is displayed when a user hovers the cursor over the columns of a Grid/Graph, as shown in the image below:



Region	Employee	Metrics	Revenue	Cost	Profit
Central	Ellerkamp	Nancy	$847,227		$126,778
	Gale	Loren	$1,669,290	$1,416,036	$253,254
	Torrison	Mary	$1,690,350	$1,430,865	$259,485
	Zemlicka	George	$822,500	$697,693	$124,807
	Bernstein	Lawrence	$1,060,632	$901,702	$158,930
	Brown	Vernon	$331,735	$280,504	$51,231
	Corcoran	Peter	$325,147	$275,752	$49,395

The △ icon in the toolbar sorts the data in ascending order, while the ▽ icon sorts in descending order. These arrows pivot the data.

In Express Mode, users sort or pivot data using a pop-up menu, as shown below:



For more detailed instructions to sort and pivot, see the *Document and Dashboard Analysis Guide* or the *MicroStrategy Web Help*.

Whether sorting/pivoting is enabled or disabled by default depends on the document template that the document was created with. For instructions, see *Enabling interactive Grid/Graphs for MicroStrategy Web, page 254* and *Disabling sorting and pivoting for Grid/Graphs in Flash Mode and Express Mode, page 256*. Disabling sorting and pivoting also disables drilling in Express Mode.

You can also enable additional interactive data manipulations to be performed in Flash Mode, such as filtering or grouping data in a grid. For more information, see *Enabling filtering, drilling, and moving objects for Grid/Graphs in Flash Mode, page 257*.

Disabling sorting and pivoting for Grid/Graphs in Flash Mode and Express Mode

In Flash Mode and Express Mode, users can sort and pivot data in Grid/Graphs using a toolbar (Flash Mode) or pop-up menu (Express Mode). You disable this functionality by hiding the toolbar and pop-up menu. Whether sorting/pivoting and the pop-up menu are enabled or disabled by default depends on the document template that the document was created with.

Disabling sorting and pivoting also disables drilling in Express Mode.

To disable sorting and pivoting for Grid/Graphs in Flash Mode and Express Mode

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. From the **Tools** menu, select **Document Properties**. The Properties dialog box opens.
3. From the left, select **Document**.
4. Clear the **Enable sorting and pivoting on grids in Express and Flash Modes** check box.
5. Click **OK** to return to the document.

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Enabling filtering, drilling, and moving objects for Grid/Graphs in Flash Mode

In Flash Mode, a user can sort and pivot data on a Grid/Graph by default. You can enable a pop-up menu so that users can quickly access the additional data manipulations listed below:

- Sorting data in a row or column
- Sorting data using multiple conditions (advanced sorting)
- Pivoting a row or column
- Filtering data:
  - Based on the value of a metric
  - Based on a list of attribute elements
  - To include only the data for a selected attribute element
  - By excluding data for a selected attribute element
- Clearing filtering conditions to display all data
- Moving an attribute to the first row or the first column

  The attribute is moved to the far left of the rows or the top of the columns on the Grid/Graph, the data is sorted by the attribute, and the row/column header cells are merged.
- Adding or removing report objects to display in the Grid/Graph

  Only objects in the Grid/Graph's dataset can be added to the Grid/Graph.
- Drilling within the Grid/Graph's dataset

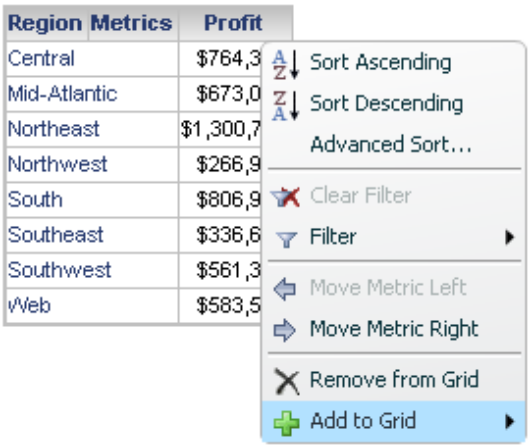
  Drilling lets users view report data at levels other than that displayed in the Grid/Graph. A user can only drill to report objects within the dataset that are not included in the Grid/Graph. If all objects within the dataset are displayed in the Grid/Graph, no drilling options are displayed. For background information on drilling, see *Drilling in Grid/Graphs, page 248*.
- Opening a linked report or document

  A link is a connection in a document to another document or report. For background information on links and steps to add a link to a document, see *Chapter 6, Linking from Documents*.

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These manipulations are performed directly in Flash Mode and applied to Grid/Graphs displayed as grids or as both grids and graphs.

If this additional interactivity is enabled, MicroStrategy Web users can access a pop-up menu when they hover the cursor over a Grid/Graph in Flash Mode. The pop-up menu, shown below, displays the various data manipulation options.



This pop-up menu is available in Flash Mode in MicroStrategy Web only; you cannot access it in MicroStrategy Developer. For instructions on using it in MicroStrategy Web, see the *MicroStrategy Web Help* or the *Document and Dashboard Analysis Guide*. Whether sorting/pivoting and the pop-up menu are enabled or disabled by default depends on the document template that the document was created with.

To enable data manipulations for Grid/Graphs in Flash Mode

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. From the **Tools** menu, select **Document Properties**. The Properties dialog box opens.
3. From the left, select **Document**.
4. Select the **Enable sorting and pivoting on grids in Express and Flash Modes** check box.

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5 Select the **Enable additional interactivity on grids in Flash Mode** check box.

This check box is available only if **Enable sorting and pivoting on grids in Express and Flash Modes** is selected. When **Enable additional interactivity on grids in Flash Mode** is selected, the pop-up menu replaces the sorting and pivoting toolbar in Flash Mode.

6 Click **OK** to return to the document.

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4

FORMATTING DOCUMENTS

Introduction

When you add a new control to a document, its initial formatting is determined by the default formatting for that type of control. Each control type (text field, image, rectangle, and so on) has a default set of formatting (called a control default). For information on control defaults, including how to apply them and how to change them, see *Defining default formatting for control types: control defaults, page 265*.

You can change the formatting of each control as desired. You can determine a document's appearance by formatting either its controls (text fields, lines, sections, and so on) or the entire document. Another method to format all controls of the same type in a single way, or to format all documents in a single way, is to use an Autostyle, which is a saved set of formatting that can be applied to all controls of a given type or to a set of documents so that they all have the same look and feel.

For formatting ideas, see *Formatting suggestions, page 262*.

Different types of controls have different formatting options. For example, you can set the font color and size for a text field, but those options are not

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relevant to a rectangle or line. The formatting options available for each control type, and for the document as a whole, include the following:

- *Formatting using predefined formats (Autostyles), page 268*
- *Formatting text fields, page 283*
- *Formatting HTML containers, page 291*
- *Formatting lines and rectangles, page 294*
- *Formatting images, page 297*
- *Formatting document sections, page 298*
- *Adding watermarks to documents, page 339*. Watermarks are faint designs or text appearing in the background of the document, typically to identify or decorate pages.
- *Formatting the border or background of a document or layout, page 337*
- *Formatting Grid/Graph containers, page 209*
- *Formatting conditional data in documents, page 317*
- *Determining display for end users, page 350*
- *Formatting a document for exporting or printing, page 356*

Formatting suggestions

The following list provides some useful formatting suggestions:

- The transparent backstyle lets you see what is behind a control. The opaque backstyle covers what is behind a control or colors a control.

  For examples and steps, see *Using a transparent or opaque backstyle, page 271*.

- Borders, including 3D effect and drop shadows, set off or define a control. Use a 3D effect to make a control appear three-dimensional, like a button. Use a drop shadow to “float” a control on top of the background.

  For examples and steps, see *Applying a 3D effect, page 273* and *Applying a drop shadow, page 275*.

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- Gradient colors allow you to blend two colors in a gradual color change in the background of a control.

  For examples and steps, see *Using gradient colors, page 277*.

- Create and use custom colors.
- Tooltips display pop-up text when a user positions the cursor over a control in MicroStrategy Web. Tooltips can provide extra information, such as the full company name in the tooltip of the company logo.

  For examples and steps, see *Creating a pop-up tooltip, page 280*.

- You can display text in a text field vertically (up and down the page) rather than horizontally. Vertical text is displayed in all MicroStrategy Web display modes and when the document is exported to Excel.

  For examples and steps, see *Displaying text vertically, page 289*.

- You can designate a control to be hidden when the document is viewed as a PDF. This allows the information to be visible to other document designers but not to users viewing the document as a PDF (for example, in Interactive Mode, Editable Mode, and Express Mode in MicroStrategy Web). For instance, you could include a note in a hidden text field about the source of data.

  For examples and steps, see *Hiding a control, page 282*.

Methods for formatting a control

When you add a new control, its formatting is determined by the control default for that type of control. Each control type (text field, image, rectangle, and so on) has a control default, which contains a full set of formatting options to specify the default format. You can also change the default formatting.

Two interfaces are available to use to define formatting. Which interface you use depends on your personal preference and what options you want to change. The Properties and Formatting dialog box is generally the easiest method to start with, as it contains all the options of the other interfaces and it appears on the same screen as the document's Layout area, where most formatting is performed.

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Formatting interfaces are listed in the table below.

Interface	Available Options	How to Access
Formatting toolbar	Easy access to basic formatting options such as: • Font, alignment, colors, borders, currency type and decimal places, background fill, font color	1 In MicroStrategy Web, open the document in **Design Mode**. 2 Select the control to be formatted. 3 Click **Format** on the menu bar. The Formatting toolbar appears below the menu tabs.
Properties and Formatting dialog box	• General settings of the control, such as its name • Layout settings, such as position, title height, and grid options • Flash • Font • Color and lines • Effects, including 3D borders and drop shadows	1 In MicroStrategy Web, open the document in **Design Mode**. 2 To format an individual control on a document, right-click the control to be formatted and select **Properties and Formatting**. 3 To format document-wide settings, from the **Format** menu, select **Properties and Formatting**.

For descriptions of each option on each interface, see the *MicroStrategy Web Help*.

Copying and pasting formatting

One way to format a control is to copy and paste the formatting. After you have formatted a control in a particular way, you can copy that formatting to other controls of the same type. You cannot copy formatting between objects of different types. For example, you cannot paste a rectangle's formatting onto a text field, because the two types do not have the same formatting settings.

You cannot copy formatting between two Grid/Graph containers. You can create an Autostyle and apply it to multiple Grid/Graphs to apply the same formatting to all of them. For steps to create and use Autostyles, see *Formatting using predefined formats (Autostyles), page 268*.

To copy and paste formatting

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

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2 Select the control with the desired formatting and click the **Copy** icon on the Standard toolbar.

3 Select the control(s) to copy the formatting to.

The selected controls must be the same type as the control that you copied the formatting from.

4 Right-click the selected control(s) and choose **Paste Format**.

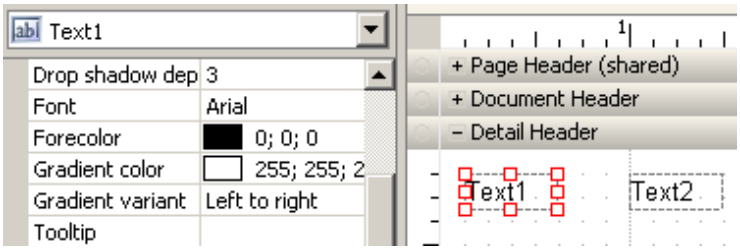
Defining default formatting for control types: control defaults

A control default is a set of formats that is applied to a specific type of control (text fields, HTML containers, and so on). There is one control default for each control type. All controls of that type therefore display uniform formatting.

When you create a new object, the object is automatically formatted by the control default for its control type. You can then change the formatting of that object to suit your needs. You can also change the default formatting for a control type by changing the control default.

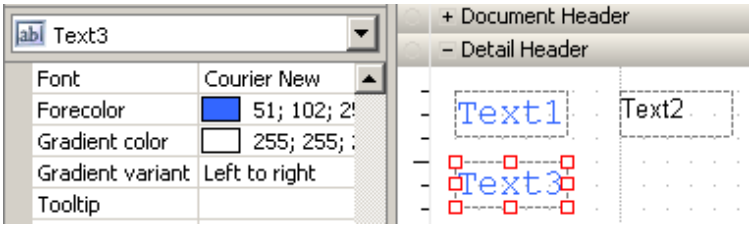
A control default exists for document sections, but is applied only when a new group header or group footer is created, not when additional sections are added. For details, see *Control defaults for document sections, page 267*.

For example, the control default for text fields specifies that the font of all new text fields is Arial size 10 and black. Create two new text fields, Text1 and Text2, as shown below:



The text in both controls is displayed according to the control default, with Arial size 10 and black formatting. Format Text1 as Courier New size 14 and light blue. Set the control default to use Text1's format. Create a third text field, Text3. It is automatically formatted like Text1 (Courier New size 14 and

light blue), as shown below, because you have defined the new formatting to be the new default formatting for the text field type of control:



Notice that the format of Text2 did not change. When you change the control default, existing controls are not affected, because the control default is not linked to any existing controls in the document. Only controls created after the control default formatting is changed will reflect the new default formatting. If you want an existing control to be formatted in the same way as the control default, you can manually apply the control default to an existing control.

For example, select Text2 and apply the control default. It is now formatted like Text1 and Text3, with Courier New size 14 and light blue.

Control defaults are not used when you copy and paste a control or when you duplicate a control. The formatting of the copied or duplicated control is copied or duplicated along with the control itself.

Control defaults can include any formatting setting, such as font color, background color, borders, and so on, that applies to the control type.

For Grid/Graphs, the control default affects only the report Autostyle. (A report Autostyle is a set of predefined formats used for reports and for Grid/Graphs in documents; a report Autostyle is different than a document Autostyle, discussed in *Formatting using predefined formats (Autostyles), page 268*. For information on report Autostyles, see the *Basic Reporting Guide*.)

Default grid Autostyles are another way to define the control default for Grid/Graphs. A default grid Autostyle applies to all layouts of a multi-layout document.

To define the default formatting for a control type

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Format a control as you want the default formatting for this control type to look.

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3 Right-click it and select **Set Control Defaults**. All new controls of that control type are formatted using the control default formatting.

You can apply the control default to existing controls of the same control type. For steps, see *Applying default formatting to a control or document section, page 267*.

Control defaults for document sections

Document sections, although not a control type, have a control default. The control default includes all the settings of the document section, such as background color, height, and page breaks.

You can format a document section, set it as the control default for sections, and apply the control default to any existing section. The control default is automatically applied to new group sections, but not when you insert additional sections, as described below:

- When you create a new group, a Group Header section and a Group Footer section are created. These sections are formatted according to the control default for document sections.
- When you insert a new document section, the new section is formatted the same as the section to which it is added. For example, if you add a section below the Detail Header, the new section is formatted like the Detail Header.

For steps to group a document, see *Grouping records in a document, page 388*. For steps to add sections, see *Adding sections in documents, page 39*.

Applying default formatting to a control or document section

If you change the control default formatting, existing controls are not affected, because the control default is not linked to any existing controls in the document. If you want the format of an existing control to be consistent with new controls, you can apply the control default to the existing control to change its formatting. You can also use a control default for document sections in the same way, by setting the control default and then applying it to an existing document section.

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This is also helpful when you create a number of controls of the same type, format one as desired, and want to apply the same formatting to existing controls as well as to any new ones that you create later.

You can also use copy and paste formatting to copy formatting between existing objects. For information and instructions, see *Copying and pasting formatting, page 264*.

To apply default formatting to a control or document section

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

2 Right-click the control or document section and select **Apply Control Default**.

- If you are applying the control default to a grid report, select **Apply Control Default** from the **Format** menu.

The control or section is formatted with the control default formats.

Formatting using predefined formats (Autostyles)

An Autostyle is a collection of formatting settings. The settings are saved based on each control type. You can apply an Autostyle to a document or control to change its formatting or appearance. If you have a document with a look or style that you want other documents to have, you can create an Autostyle for the document, or for specific controls on the document, and then efficiently apply the same look or style to other documents by applying the Autostyle to the other documents/controls.

When you apply an Autostyle to another document, the system copies formatting information from the Autostyle onto the target document. It replaces formatting settings for all document sections and controls (including Grid/Graphs) on the target document with the corresponding settings in the Autostyle. If the target document has a section or control for which there is no corresponding document section or control on the original document, it applies the default format for the control type. If an Autostyle has multiple controls of the same type in one section, the format of the first control of this type in that section is used.

You can create your own Autostyles or use the Autostyles provided by MicroStrategy. A document Autostyle is different from a report Autostyle. A document Autostyle is a document object and can only be

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applied to documents. A report Autostyle is an Autostyle object and can be applied to reports and to grids within documents. Both types of Autostyles contain formatting information. For each preconfigured report Autostyle, a matching document Autostyle exists.

For a multi-layout document, an Autostyle is applied only to the current layout, not the entire document. For background information on multi-layout documents, including which settings apply to the document as a whole or to individual layouts, see *Creating multi-layout documents, page 512*. If the Page Header and Page Footer are shared among layouts, any formatting changes applied to those sections are applied throughout the document. Page Headers and Page Footers are shared by default (for steps to change that, see *Using a separate Page Header and Page Footer for a layout, page 520*). For descriptions and examples of the Page Header and Footer, see *Page Header, page 31* and *Page Footer, page 36*.

Creating and saving a document Autostyle

To create a document Autostyle, apply the formatting that you want to a document's controls and sections, then save the document in the AutoStyles folder whose path is as follows:

```
project name\Public Objects\AutoStyles
```

Documents saved in the AutoStyles folder are still documents, and not Autostyle objects.

Saving the Autostyle document in the AutoStyles folder allows you to select the Autostyle document when you create a document using the Document Wizard. An Autostyle document saved elsewhere is not available to the Document Wizard.

If you save documents in any other location, such as the `My Objects` folder, for example, you can still apply them as Autostyles to other documents through the Document Editor.

Applying an Autostyle

The following steps show you how to apply an Autostyle to a document, how to apply an Autostyle to a Grid/Graph control, and how to assign a default Autostyle to all Grid/Graph controls within a document. When you assign a default Autostyle to all controls in a document, all Grid/Graphs you insert into the document are automatically formatted according to the default Autostyle.

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You can use an Autostyle provided by MicroStrategy or one that you created yourself. Applying an Autostyle pastes the formatting information from one document to another. It changes the formatting of all the sections and controls of the target document in one action. For a multi-layout document, an Autostyle is applied only to the current layout, not the entire document, as described in *Formatting using predefined formats (Autostyles), page 268*.

Use MicroStrategy Developer to apply a document Autostyle; use either MicroStrategy Developer or Web to apply a Grid/Graph Autostyle.

To apply an Autostyle to a document

1 Open the target document using the Document Editor in Design View.

2 If the document contains multiple layouts, click the tab of the layout to modify.

3 From the **Format** menu, select **Apply Autostyle**. The Select Autostyle dialog box opens.

4 Locate and select the Autostyle to apply to the document.

Autostyle documents created by MicroStrategy are available in the `Public Objects\AutoStyles` directory. User-created Autostyle documents may be located in this folder as well, but could have been saved in another folder instead.

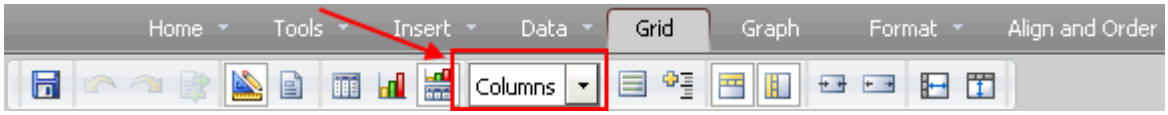
5 Click **OK**. The formatting is applied to the document.

To apply an Autostyle to a Grid/Graph

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

2 Select a Grid/graph in the document.

3 From the **Autostyles** drop-down list on the Grid/Graph toolbar, select an autostyle. The formatting from the autostyle is applied to the selected grid. The Autostyles drop-down is shown below:



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To assign a default autostyle to all Grid/Graph controls in a document

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. From the **Tools** menu, select **Document Properties**. The Properties and Formatting dialog box opens.
3. From the left, under Document Properties select **Document**.
4. Select an Autostyle from the **Default Grid Autostyle** drop-down list.
5. Click **OK** to apply the changes.

Using a transparent or opaque backstyle

The backstyle governs whether the background of the control is transparent or opaque.

- A transparent backstyle allows you to see what is behind the control.
- An opaque backstyle covers what is behind the control. It also allows the fill color of the control to be seen.

In the document sample below, the text field labeled Transparent has the backstyle set to transparent, while the other two text fields use the opaque backstyle. As described above, the transparent backstyle allows the gray background to show through, while opaque covers up the background with the fill color of the text field.

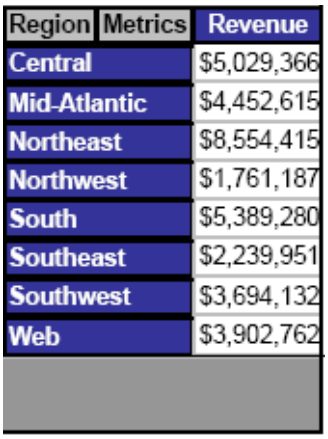


The difference between the two text fields that use the opaque backstyle lies in the way the backstyle setting is changed. For the text field labeled Opaque, the backstyle setting was set to opaque, so the default background color (white) displays. For the “Fill” text field, the background color was changed from the default of white. This automatically changes the backstyle to opaque.

You can apply a backstyle to the following types of controls:

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- Grid/Graphs: The backstyle applies to any part of the Grid/Graph container that is not covered by the grid or graph report displayed inside the Grid/Graph container. For example, the background of the Grid/Graph container in the following sample is a dark gray. Because the Grid/Graph container is longer than the grid report inside it, the bottom of the Grid/Graph is dark gray.



Region	Metrics	Revenue
Central		$5,029,366
Mid-Atlantic		$4,452,615
Northeast		$8,554,415
Northwest		$1,761,187
South		$5,389,280
Southeast		$2,239,951
Southwest		$3,694,132
Web		$3,902,762

  The background of a Grid/Graph is visible when the Grid/Graph container is larger than the report displayed inside it. This occurs when all of the following conditions are met:

  - The Grid/Graph is displayed as a grid report.
  - The **Height mode** and **Width mode** are set to **Fixed**, not **Fit to contents**. This allows the specified **Height** and **Width** settings to be used. (For steps to size a Grid/Graph, see *Sizing controls, page 163*.)

  The background of a Grid/Graph can be formatted as a single color, a gradient, or as transparent, to allow what is behind the selector to show through.

- HTML containers using HTML tags: For an HTML container using a URL (iFrame), the backstyle is overwritten by the website displayed by the URL.
- Panel stacks, title bars, and panels
- Rectangles and rounded rectangles
- Selectors
- Text fields

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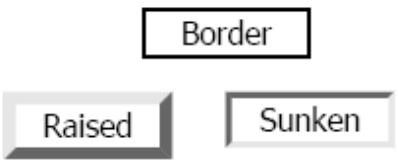
To apply a transparent or opaque backstyle

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Add one of the controls listed above.
3. Right-click the control and select **Properties and Formatting**. The Properties and Formatting dialog box opens.
4. From the left, select **Color and Lines**.
5. In the object list at the top of the dialog box, select the part of the control to format.
6. In the **Fill** area, from the **Color** drop-down list, select **No Color**.
7. Click **OK** to apply your changes and return to the document.

Applying a 3D effect

You can make most types of controls appear three-dimensional, with a raised or sunken border around the control. For example, you can make a text field look like a button.

In the document sample below, the text field at the top has a regular border around it, without a 3D effect. The text field on the lower left is outset, and looks like a button. This is the raised 3D effect. In contrast, the text field on the lower right is inset, and looks like a pushed button. This is the sunken 3D effect.



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You can also determine the thickness of the 3D border around the control. In the sample above, the 3D border is set to 4 points for the text field on the left. The one on the right is set to 2 points.

The 3D effect border settings take precedence over any existing border. If you later disable the 3D effect, the original border settings are restored.

You can use the 3D effect on the following types of controls:

- Grid/Graph containers (except the title)
- HTML containers
- Images
- Panel stacks (except the title. All panels in the stack use the same 3D effect.)
- Rectangles (for rounded rectangles, they appear only in Flash Mode in MicroStrategy Web)
- Selectors
- Text fields

To apply a 3D effect to a control

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Add one of the controls listed above.
3. Right-click the control and select **Properties and Formatting**. The Properties and Formatting dialog box opens.
4. From the left, select **Effects**.
5. Select the **Enable 3D Borders** check box.
6. From the **Effect** drop-down list, select one of the following to determine the type of 3D effect to apply:
   - **Raised**, to outset the text like a button.
   - **Sunken**, to inset the control like a pushed button.

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7 In the **Weight** field, type a number to determine the thickness to which the 3D effect is applied to the borders. Enter larger numbers to apply a thicker and more noticeable border. In general, numbers between 1-20 should accommodate your design requirements.

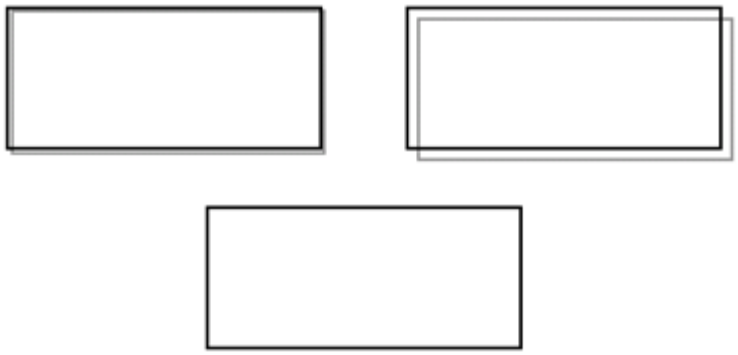
8 Select the **Enable Drop Shadows** check box to apply a shadow to the control.

9 Use the **Distance** slider to adjust the distance of the drop shadow from the control.

10 Click **OK** to apply your changes to the control and return to the document.

Applying a drop shadow

You can apply a drop shadow to a rectangle, which causes the rectangle to appear to float above the background. In the document sample below, the rectangles on the top use drop shadows, while the rectangle on the bottom does not.



You can adjust the offset of the drop shadow to make the rectangle appear deeper. For example, the rectangle on the top left has a depth of two points, while the top right rectangle is set to five points. Acceptable values for the offset range from 1 to 20.

You can use the transparent format along with the drop shadow format. (For steps to apply the transparent format, see *Using a transparent or opaque backstyle, page 271*.) The rectangles in the sample above are transparent, so the content behind the rectangles shows through. The lines of the drop shadows are behind the rectangles, so they show through the rectangle. The drop shadows are displayed as rings, because only the border of a rectangle

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can cast a shadow; the body of a rectangle is transparent and does not cast shadows.

In contrast, the grey rectangle shown below is opaque; the drop shadow does not show through the rectangle itself. It is displayed below and to the right of the rectangle. Also, the drop shadow is a solid rectangle, not a ring as displayed above. Since the rectangle itself is opaque, it casts a full shadow.



You can use drop shadows on the following types of controls:

- Grid/Graph containers
- HTML containers
- Images
- Lines
- Panel stacks (all panels in the stack use the same drop shadow settings)
- Rectangles and rounded rectangles
- Selectors
- Text fields

To apply a drop shadow to a control

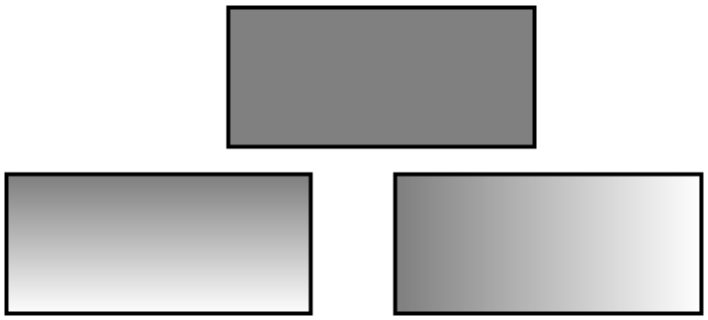
1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Add one of the controls listed above.
3. Right-click the control and select **Properties and Formatting**. The Properties and Formatting dialog box opens.
4. From the left, select **Effects**.
5. Select the **Enable Drop Shadows** check box.
6. Use the slider to adjust the thickness of the drop shadow.

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7 Click **OK** to apply the changes to the control and return to the document.

Using gradient colors

Gradient colors blend two colors to create a gradual color change in the background of a control. You can select the two colors, as well as the direction of the blending. In the document sample below, the rectangles on the bottom use gradient colors, while the rectangle on the top uses a single, solid color.



Notice that the direction of the color change is different in the two rectangles with gradient colors. The left rectangle blends grey into white from top to bottom, while the right rectangle blends left to right (the default).

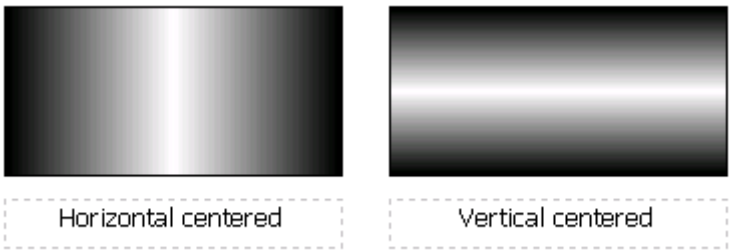
The direction is called the Gradient Variant, and you can choose from the following directions:

- Left to right
- Right to left
- Top to bottom
- Bottom to top

Three-way or mirror gradients blend the colors from the middle of the control out to the edges. One color is applied in the center of the control and the other to the edges of the control, then the two colors are blended. The two halves of the control are identical, as though a mirror was placed along the

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center of the control. You can blend colors horizontally or vertically, as shown in the rectangles below, by specifying the Gradient Variant:



Three-way gradients are displayed only in Flash Mode. They are displayed as non-mirrored gradients in other Web display modes and in MicroStrategy Developer. In non-Flash modes, a horizontally centered gradient is displayed as a Left to right variant, and a vertically centered gradient is displayed as a Top to bottom variant.

You can use gradient colors on the following types of controls:

- Grid/Graphs
- HTML containers using HTML tags

  For an HTML container using a URL (iFrame), the gradient color is overwritten by the website displayed by the URL.
- Panel stacks (each panel in a panel stack can have an individual color scheme)
- Rectangles and rounded rectangles
- Selectors and title bars
- Sections
- Text fields
- Graph reports (see the *Graphing* chapter in the *Advanced Reporting Guide*)

To apply gradient colors to a control

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Add one of the controls listed above.

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3 Right-click the control and select **Properties and Formatting**. The Properties and Formatting dialog box opens.

4 From the left, select **Color and Lines**.

5 In the **Fill** area, from the **Color** drop-down list, select **Gradients**. The Gradients dialog box is displayed.

6 Select the two colors in which to create a gradient from the **Color 1** and **Color 2** drop-down lists.

7 In the **Shading Styles** area, select the direction of the shading and then select a variant.

- You can select a mirror-like gradient to apply to objects displayed in Flash Mode. To do so, select the **Flash-only** variant.

8 Click **OK** to apply the changes and return to the document.

Creating and using custom colors

Any custom colors you create are saved in the User Palette at the bottom of the Advanced Color Picker, so you can share and re-use the new colors across different documents or across reports.

The user palette holds up to eight colors. If you add a ninth color, it replaces the first color added to the palette. The user palette does not display until you add a custom color.

To create and save a custom color

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

2 Select a control and then open the color picker in any of the following ways:

- On the **Format** toolbar, click the drop-down arrow next to the **Fill Color**, **Line Color**, or **Text Color** icons.
- In the Properties and Formatting dialog box, select **Color and Lines** on the left. Click the drop-down arrow next to the **Color** option.

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- In the Properties and Formatting dialog box, select **Font** on the left. Click the drop-down arrow next to the **Color** option.

3 In the color picker, select **More Colors**. The Advanced Color Picker dialog box opens.

4 Define the custom color:

a Click the color matrix on the right or enter the hexadecimal codes for **Hue**, **Saturation**, and **Brightness**. You can also define the color by typing the hexadecimal code for the required color in the **Hex** field.

b Click **Apply**. The color is added to the User Palette area of the dialog box.

c Click **OK**. Depending on how you accessed the Advanced Color Picker, you may need to click **OK** again to return to the document.

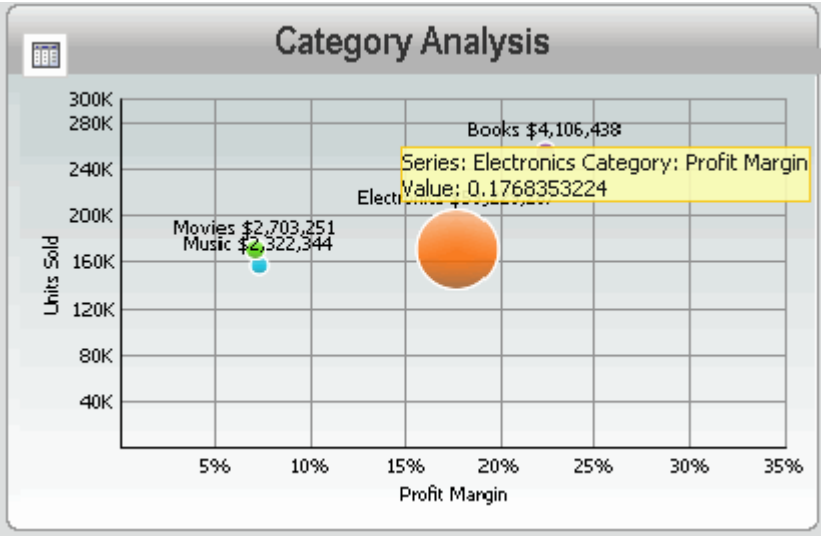
Creating a pop-up tooltip

A tooltip is pop-up text that is displayed when a user positions the cursor over a control in MicroStrategy Web. You can use tooltips to provide extra information, such as the full company name in the tooltip of the company logo, or to provide a fuller, descriptive name of a metric when space in the report requires a shortened version. Tooltips are displayed only when a document is viewed in Flash mode.

For example, in the grid report below, a tooltip is displayed when you pass your cursor over a bubble in the graph. In this case, the tooltip lets a document analyst know that he or she is looking at the data bubble for the

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Electronics product category. It also lists the exact profit margin value for that category.



You can use tooltips on the following types of controls:

- Grid/Graphs
- HTML containers
- Images
- Lines
- Panel stacks (all panels in the panel stack display the same tooltip)
- Rectangles and rounded rectangles
- Selectors
- Text fields

To add a tooltip to a control

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Add one of the controls listed above.
3. Right-click the control and select **Properties and Formatting**. The Properties and Formatting dialog box opens.
4. From the left, select **General**.

5 Type the pop-up text in the **Tooltip** field. You can type any of the following:

- Static text, such as The Company, Inc.
- Data fields from the datasets, such as the Region attribute. Type the object name inside braces { } to indicate that it is a data field rather than static text.
- Auto text codes, such as the document name or the dataset name. Type the auto text code within braces { }. For lists of the auto text codes, see *Auto text codes for document information, page 90* and *Auto text codes for dataset information, page 91*.

6 Click **OK** to apply the changes and return to the document.

To view the tooltip, open the document in Flash Mode and position the cursor over the text.

Hiding a control

You can display information to other document designers in Design Mode, while hiding it from users viewing the document in all other views and modes. For instance, you can include a note in a text field about the source of data. You then hide the text field.

You achieve this by placing the content that you want to hide into a control, and then hiding that control. You can hide entire sections of a document.

You can hide the following types of controls:

- Grid/Graphs
- Images
- Lines
- Panel stacks
- Rectangles and rounded rectangles
- Selectors
- Text fields

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The steps in the following procedure create the sample shown above. You can adapt these steps to hide other control types. In addition, the *MicroStrategy Developer help* (formerly the *MicroStrategy Desktop help*) contains instructions for hiding each control type, as well as by using a specific interface.

To hide a control for all modes except Design Mode

1. In MicroStrategy Web, open the document in **Design Mode**.
2. Add one of the controls listed above.
3. Right-click the control that you want to hide and select **Properties and Formatting**. The Properties and Formatting dialog box opens.
4. From the left, select **General**.
5. Clear the **Visible** check box. This control will not be displayed in Interactive Mode, Editable Mode, Express Mode, or Flash Mode, although it will continue to be visible in Design Mode.
6. To view the results, switch out of Design Mode to a different mode.

Formatting text fields

Text fields in a document can contain static text, data fields, auto text codes, or combinations of these text types. When you add a new text field, its formatting is determined by the control defaults, but you can change any of the formatting options. The following list provides some useful formatting suggestions:

- Make the text field appear three-dimensional, like a button, with the 3D effect. For an example and steps, see *Applying a 3D effect, page 273*.
- Let the content behind the text field show through by setting the backstyle to transparent. You can also allow a fill color to cover what is behind the text field by setting the backstyle to opaque. For steps and an example, see *Using a transparent or opaque backstyle, page 271*.
- "Float" the text field above the background by using a drop shadow. For an example and steps, see *Applying a drop shadow, page 275*.

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- Create a gradual color change by blending two colors using gradient colors. For an example and steps, see *Using gradient colors, page 277*.
- Display pop-up text when a user positions the cursor over the control in MicroStrategy Web with a tooltip. The tooltip can provide extra information, such as an expanded description of a metric. For an example and steps, see *Creating a pop-up tooltip, page 280*.
- Set Number formatting options such as decimal spaces, currency symbols, time formats, zip code formats, and so on, as described in *Formatting numbers, page 287*.
- Display information to other document designers in Design Mode while hiding it from users viewing the document in all other modes. For instance, you can include a note in a text field about the source of data. For an example and steps, see *Hiding a control, page 282*.
- Change text layout options such as word wrap and padding to control how the text is displayed within the borders of the text field. For a list of the available options, see *Formatting text position in a text field, page 288*.
- You can display text vertically (up and down the page) rather than horizontally. Vertical text is displayed in all MicroStrategy Web display modes and when the document is exported to Excel. For an example of vertical text and steps, see *Displaying text vertically, page 289*.
- Determine how to display the text when it is larger than the dimensions of the text field. A scroll bar can be provided. Scroll bars are displayed in Express Mode and Interactive Mode in MicroStrategy Web, and when a document is exported to HTML. For examples and steps, see *Displaying scroll bars in text fields, page 286*.

To edit the text inside a text field, see *Editing the text in a text field, page 87*.

Formatting text field options

Text field options define the text field. Examples of these options include name of the text field control, position, and size.

To format text field options

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

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2 Right-click the text field to be formatted, and select **Properties and Formatting**. The Properties and Formatting dialog box opens.

3 From the left, select **General**.

4 Type a **Name**, which is used to identify the text field.

5 In the **Tooltip** field, type the text to display when a user positions the cursor over the text field in MicroStrategy Web. You can use tooltips to provide extra information about the text field. See *Creating a pop-up tooltip, page 280* for details.

6 Determine whether or not the text field is visible when a user views the document, by selecting or clearing the **Visible** check box. The text field always remains visible in Design Mode, regardless of this setting. For details, see *Hiding a control, page 282*.

7 To specify that the text field is a hyperlink, complete the following steps:

   a Select the **Is hyperlink** check box.

   b Type the destination of the hyperlink in the **Hyperlink** field. This field is only available when the **Is hyperlink** check box is selected.

   c Determine where the hyperlink destination opens, by choosing one of the following:

   - To open the destination in a new window, select the **Open in new window** check box.
   - To open the destination in the same window, replacing the document, clear the **Open in new window** check box.

8 From the left, select **Layout**, to change the position and size of the text field.

9 In the **Left** field, type the amount of distance between the left edge of the text field and the left border of the section.

10 In the **Top** field, type the amount of distance between the top edge of the text field and the top of the section.

11 To determine whether or not the control is locked in its current position in the document, select or clear the **Locked** check box. If this option is selected, the control cannot be moved or resized.

12 In the **Width** field, type the width of the text field.

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13 To determine the height of the text field, do one of the following:

- To specify a static height that does not change, select **Fixed** and type the height in the field.
- To allow the height to dynamically expand to the height of the contents of the text field, select **Fit to contents**.

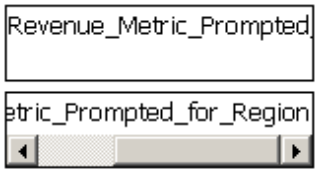
14 To determine how to display the text when it is larger than the dimensions of the text field, select one of the following **Text overflow (HTML)** options:

- To display only the text that can fit within the size of the text field, select **Clip**.
- To display a scroll bar to allow a user to view all of the text, select **Scroll**. The scroll bar is displayed for Express Mode and Interactive Mode. The scroll bar is most useful with fixed heights.

15 Click **OK** to save your changes and return to the document.

Displaying scroll bars in text fields

A scroll bar can be displayed for a text field, if the text does not fit in within the size of the text field. For example, if the height of a text field is fixed, the text field does not expand to fit the contents. Only the text that can fit within the size of the text field is displayed; in other words, the text is clipped. Clipped text is shown in the text field at the top of the document sample below.



Alternatively, a scroll bar can be displayed, so that a user can scroll through all of the text. This option is shown in the text field at the bottom of the document sample above. Notice that the scroll bar has been moved to the right, to show the end of the text.

Scroll bars are displayed in Express Mode and Interactive Mode in MicroStrategy Web, and when the document is exported to HTML.

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Use the **Text overflow (HTML)** setting to determine how to display the text when it is larger than the dimensions of the text field, as described below.

To clip text or display scroll bars in text fields

1. Open a document using the Document Editor in Design View.
2. Right-click the text field to display scroll bars for, and select **Properties**. The Properties dialog box opens.
3. Click the **Layout** tab.
4. Select one of the following from the **Text overflow (HTML)** drop-down list:
   - To display only the text that can fit within the size of the text field, select **Clip**.
   - To display a scroll bar to allow a user to view all of the text, select **Scroll**.

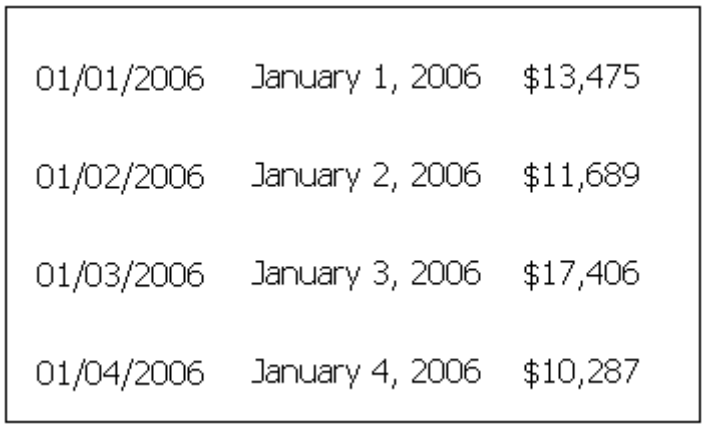
   The scroll bar is most useful when the **Height mode** is set to **Fixed**.
5. Click **OK** to return to the document.

Formatting numbers

Number formatting options include decimal spaces, currency symbols, time formats, zip code formats, and so on. For example, the text fields in the following document sample have different number formats applied to them. The one on the left is a date in the MM/DD/YYYY format, while the one in

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the middle, another date, is in the Month Date, Year format. The text field on the right is a number formatted as currency, with no decimal.



Text fields are the only control type to allow number formatting.

To set number formatting for a text field

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Right-click a text field and select **Properties and Formatting**. The Properties and Formatting dialog box opens.
3. On the left, under Format, select **Number**.
4. Select a number format option, such as Currency or Date. An example of the number category and additional options are displayed on the right.
5. Specify the options, such as the number of decimal places for the Currency format or the date format type.
6. Click **OK** to return to the document.

Formatting text position in a text field

Text display settings control how the text is displayed within the borders of the text field. They include the following options:

- **Horizontal alignment**: Controls how the text is aligned horizontally within the control boundaries. The options are centered, left-aligned, right-aligned, or justified. By default, text fields are left-aligned.

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- **Word wrap**: Determines whether the text is displayed on a single line or multiple lines within the control boundaries. By default, the text field wraps words to multiple lines.
- **Text direction**: Controls the orientation of the text within the text field. The options are horizontal, 90 degrees (text is displayed from bottom to top), and -90 degrees (text is displayed from top to bottom). By default, text fields are horizontally oriented. For examples of text direction, see *Displaying text vertically, page 289*.
- **Padding**: Defines the space between the text and the borders of the text field. You can specify different amounts of padding between the text and each side of the text field (top, bottom, left, and right). For an example of padding, see *Text padding, page 290*.

Text fields are the only control type that let you specify word wrap and text direction. For the title bars of panel stacks and Grid/Graphs, you can specify padding and both horizontal and vertical alignment. For steps to format a Grid/Graph, see *Formatting Grid/Graph containers, page 209*; for steps to format a panel stack, see the *Dashboards and Widgets Creation Guide*.

Displaying text vertically

Text is usually displayed horizontally so that it runs across the page. You can change the orientation of the text fields so that the text can be displayed vertically, or up and down the page, as shown below:



A text field can be turned:

- 90 degrees, which displays the text from bottom to top, as shown above by the text “Vertical: 90 degrees”
- -90 degrees, which displays the text from top to bottom, as shown above by the text “Vertical: -90 degrees”

Vertical text is displayed in all MicroStrategy Web display modes and when the document is exported to Excel. To display vertical text in Flash Mode in

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MicroStrategy Web, the fonts must be embedded and SWF files must be included in the document, as described in *Embedding fonts for Flash Mode, page 355*.

The Firefox browser does not display vertical text.

To display text vertically

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

2 Select the text field to be formatted.

3 From the **Format** menu, select **Properties and Formatting**. The Properties and Formatting dialog box opens.

4 From the left, click **Alignment**.

5 Set **Text Direction** to either:

- **90 degrees**, to display the text from bottom to top
- **-90 degrees**, to display the text from top to bottom

The Alignment category also allows you to specify padding (the space between the text and the borders of the text field) and alignment within the text field. For examples of padding, see *Text padding, page 290*; for a description of the text display settings, see *Formatting text position in a text field, page 288*.

6 Click **Apply**.

7 Click **OK** to return to the document.

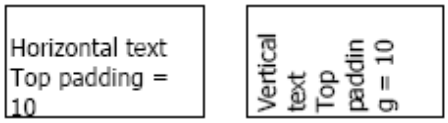
Text padding

Padding defines the space between the text and the borders of the text field (left, right, top, and bottom).

For example, the **Top padding** setting defines the space between the text and the top border of the text field. For the horizontal text field shown below, it is set to 10. All other padding values remain at the default of one. The height mode is set to fixed, so that the text field does not expand or contract to fit the contents.

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In the vertical text field on the right, the **Text direction** is set to **90 Degrees** to display the text field vertically. **Top padding** still defines the space between the text and the top border of the text field.



To pad text

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Create a text field (from the **Insert** menu, select **Text**). Add the text field to any section of the document.
3. Right-click in the text field and select **Properties and Formatting**. The Properties and Formatting dialog box opens.
4. On the left, expand **Format** and select **Alignment**.
5. In the **Padding** area, type a measurement value in the **Left**, **Top**, **Right**, and **Bottom** fields.
6. Click **OK** to return to the document.

Formatting HTML containers

You can display real-time information from the web within your document. For example, you can display a stock ticker running in real time, or your favorite financial page from the web that is updated in real time.

You achieve this real-time display by creating an HTML container and adding it to your document. The real-time information is displayed within the HTML container. An HTML container can contain either of the following:

- The URL of a website (known as an iFrame) to display the website within the document
- Text and HTML tags to display formatted content in the document

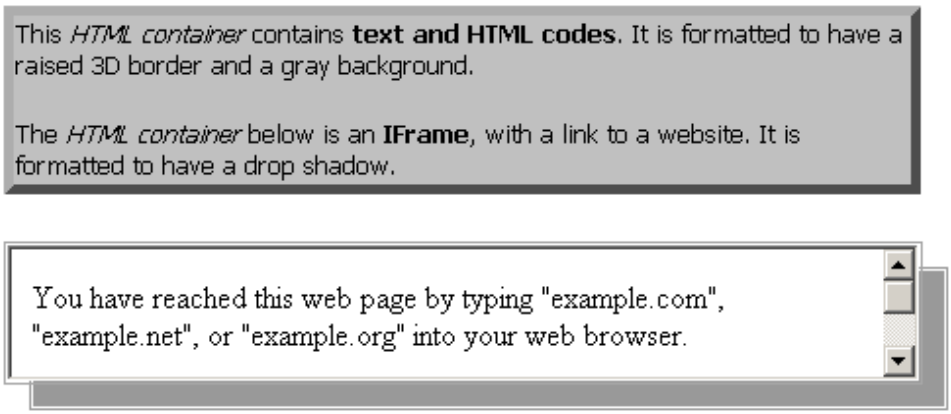
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For examples and steps to create HTML containers, see *Displaying real-time web and other HTML content: HTML containers, page 143*.

HTML containers can be displayed in the following modes in MicroStrategy Web: Express Mode, Editable Mode, and Interactive Mode.

When you insert an HTML container into a document, its formatting is initially determined by the control defaults. You can change any of the formatting options for the new HTML container.

Formatting options, such as borders and background colors, apply to the HTML container itself, not to anything placed inside the container. Examples for formatting the HTML container include 3D borders and background colors, as shown in the first sample below, and drop shadows, as shown in the second sample.



The formatting of actual content inside the HTML container is determined by either the HTML tags or the website displayed by the URL.

The following list provides some useful formatting suggestions for all HTML containers.

- Make an HTML container appear three-dimensional, like a button, with the 3D effect. For steps, see *Applying a 3D effect, page 273*.
- "Float" the HTML container above the background by using a drop shadow. For steps, see *Applying a drop shadow, page 275*.
- Display pop-up text when a user positions the cursor over the HTML container in MicroStrategy Web. The pop-up text is called a tooltip, and can provide extra information, such as a description of a website. For an example of a tooltip and steps to create them, see *Creating a pop-up tooltip, page 280*.

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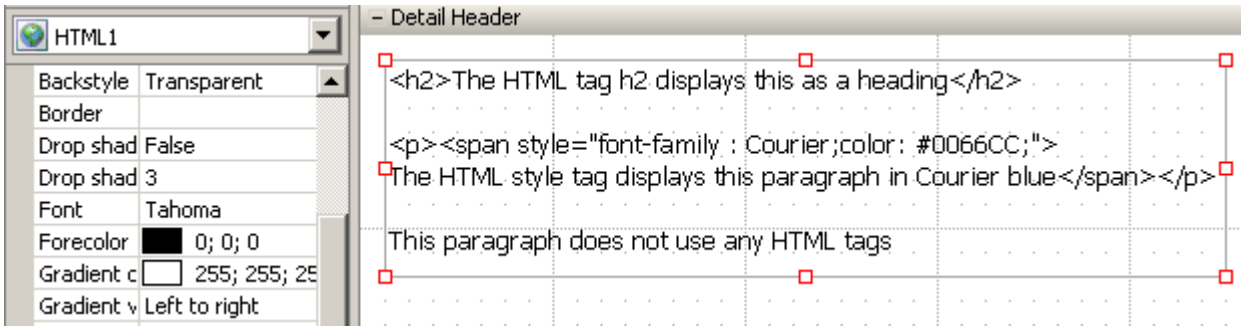
The following list provides formatting suggestions for the HTML text type of HTML container:

- Allow the content behind the HTML container to show through by setting the backstyle of the HTML container to transparent. You can also allow a fill color to cover what is behind the HTML container by setting the backstyle to opaque. For an example and steps, see *Using a transparent or opaque backstyle, page 271*.
- Create a gradual color change by blending two colors using gradient colors. For an example and steps, see *Using gradient colors, page 277*.
- Format the font of the text displayed by the HTML container. Font format options include the font type, size, and color, as well as whether it is bolded or italicized. For steps, see *Formatting text fields, page 283*.

  This font formatting is overwritten by any font formatting provided by the HTML tags, as explained below.

The formatting of the content inside the HTML container is determined by either the HTML tags or the website displayed by the URL. For an HTML container that contains HTML tags, any font formatting not specified in the HTML tags is provided by the MicroStrategy formatting options.

For example, the following HTML container contains HTML tags. The HTML tags do not apply to the text until the document is displayed in MicroStrategy Web. The HTML tags format the first line as a heading 2. The second line is displayed in a blue Courier font by the HTML tags. The third line does not use any HTML tags. The object uses a black Tahoma font and the Forecolor option is the color of the font.



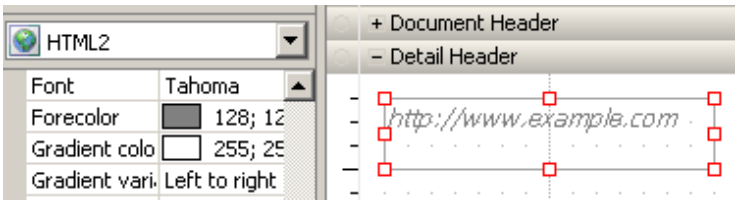
The same HTML container is displayed below (as seen in Express Mode in MicroStrategy Web). The second line is displayed in a blue Courier font (as defined by the HTML tag), unlike the black Tahoma font of the other lines (which use the font settings defined for the HTML container). The first line is bolded and displayed in a larger font than the other lines because of the h2

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HTML tag. The other lines display in the font size indicated for the HTML container.



The font formatting for an HTML container applies only to HTML containers that use HTML tags. For example, the following HTML container is an iFrame, using a URL to display a website. The font is defined to display as an italicized gray.



The same HTML container is displayed below in Express Mode in MicroStrategy Web. The website determines how the text is displayed. In this case, it is black and not italicized.



Formatting lines and rectangles

When you insert a shape into a document, its initial formatting is determined by the control defaults. You can change any of the formatting options.

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The following list provides some useful formatting suggestions:

- Make a rectangle appear three-dimensional, like a button, with the 3D effect. For rounded rectangles, 3D effects appear in Flash Mode in MicroStrategy Web. For an example and steps, see *Applying a 3D effect, page 273*.
- Allow the content behind the rectangle to show through by setting the backstyle to transparent. You can also allow a fill color to cover what is behind the rectangle by setting the **backstyle** to opaque. For an example and steps, see *Using a transparent or opaque backstyle, page 271*.
- "Float" the rectangle or rounded rectangle above the background by using a drop shadow. Lines do not use drop shadows. For an example and steps, see *Applying a drop shadow, page 275*.
- Create a gradual color change by blending two colors using gradient colors. You can apply gradient colors to rectangles and rounded rectangles. For an example and steps, see *Using gradient colors, page 277*.
- Display pop-up text when a user positions the cursor over the shape in MicroStrategy Web with a tooltip. The tooltip can provide extra information, such as an expanded description of a metric. You can use tooltips on rectangles, rounded rectangles, and lines. For an example and steps, see *Creating a pop-up tooltip, page 280*.
- Display a shape to other document designers while hiding it from users viewing the document in Interactive Mode, Editable Mode, and Express Mode in MicroStrategy Web. For an example and steps, see *Hiding a control, page 282*.
- Control how rounded corners are displayed for rounded rectangles in Flash Mode. You can define the radius and select whether rounded corners are displayed for the top corners or all four corners. For an example, see *Controlling the display of rounded corners in Flash Mode, page 295*.

Controlling the display of rounded corners in Flash Mode

Rounded corners are used on rounded rectangles and panel stacks in documents. This section focuses on rounded rectangles, although the settings are the same for panel stacks. For specific information on rounded corners on panel stacks, including examples and a procedure, see the *Dashboards and Widgets Creation Guide*.

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The rounded rectangles shown below are displayed in Flash Mode in MicroStrategy Web.



The rounded corners settings apply to Flash Mode only. In PDF View or other Web display modes, rounded corners display as square, right-angle corners. That is, rounded rectangles and rectangles look the same in PDF View and in all Web display modes except Flash Mode.

You can control how rounded corners are displayed for rounded rectangles in Flash Mode by:

- Defining the radius, which sets how round the corners are. A larger radius produces a more rounded corner. The range is 1-20.
- Selecting whether rounded corners are displayed for the top corners only or all four corners.

In the document sample above, the corners of the left rectangle are more rounded than those on the right rectangle. The corner radius of the left rectangle is set to 10, while the right rectangle has a corner radius of four (the default). Notice also that the right rectangle has rounded corners on the top only, while all four corners of the left rectangle are rounded.

The following procedure re-creates the sample. See the *MicroStrategy Developer help* (formerly the *MicroStrategy Desktop help*) for steps to perform all types of formatting for rectangles and rounded rectangles.

To control the display of rounded corners in Flash Mode

1. Open a document using the Document Editor in Design View.
2. Add two rounded rectangles, as shown in the sample above. To add a rectangle:
   a. Click the arrow next to the **Rectangle** icon in the toolbar, and select **Rounded Rectangle**.
   b. Click and drag in the desired section of the Layout area to create the rectangle.
3. Select the rectangle on the left.

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4 In the **Property List: Appearance** section, set **Rounded corner radius** to **10**.

   The range for the corner radius is 1 to 20. Higher numbers produce a more rounded corner, while lower numbers produce a straighter corner.

5 Select the rectangle on the right.

6 In the **Property List: Appearance** section, set **Top corners only** to **True**.

To view the effect, open the document in Flash Mode in MicroStrategy Web.

Formatting images

When you insert an image into a document, its formatting is initially determined by the control default. You can change the formatting.

The following list provides some formatting suggestions:

- Make an image appear three-dimensional, like a button, with the 3D effect. For an example and steps, see *Applying a 3D effect, page 273*.
- "Float" the image above the background by using a drop shadow. For an example and steps, see *Applying a drop shadow, page 275*.
- Display pop-up text when a user positions the cursor over the image in MicroStrategy Web with a tooltip. The tooltip can provide extra information, such as an expanded description of a metric. For an example and steps, see *Creating a pop-up tooltip, page 280*.
- Display an image to other document designers while hiding it from users viewing the document in Interactive Mode, Editable Mode, and Express Mode in MicroStrategy Web. For an example and steps, see *Hiding a control, page 282*.

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Formatting document sections

You can format each document section individually. Your formatting choices include:

- Whether to hide or display document sections. For examples and steps, see *Hiding or displaying sections for a finished document, page 299*.
- Formatting the background color of each document section. For steps, see *Formatting the background color of document sections, page 303*.
- Displaying the detail sections horizontally across the page. Detail sections include the Detail Header, Detail Footer, and Detail. You can display all three sections horizontally or just the Detail section horizontally. For examples and steps, see *Displaying sections horizontally, page 303*.
- Changing the size of document sections. You can define a document section as a set size that does not vary, or as a variable size that grows or shrinks within set limits. For examples and steps, see *Changing the size of a section, page 306*.
- Specifying whether the entire contents of a document section are repeated on the next horizontal page when a section spans multiple pages. This is generally used with Grid/Graphs, particularly those with uncertain widths, so that the grid or graph report is labeled on every page that it stretches to. For examples and steps, see *Repeating information horizontally, page 312*.
- Specifying whether a header or footer section is repeated on each page of a document. By default, the controls in any repeating section are displayed on each page of the document, but you can specify that a control is not displayed the last time that the document section is displayed. Use this feature to display text such as "Continued on next page" on every page except the last page. For steps and an example, see *Repeating information on each page, page 313*.
- Specifying how page breaks within document sections are handled. If a document section begins in the middle of a page and spans multiple pages, the remainder of the section can be printed on the same page, or the section can start on the next page. This can help keep column labels with the data they identify. For examples and steps, see *Keeping the contents of a section together, page 316*.
- Specifying how row heights are determined when the document is exported to Excel. You can choose to have all the rows be the same height or to allow Excel to automatically adjust the row height to fit the data. For

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steps and an example, see *Allowing Excel to automatically change row height, page 384*.

Hiding or displaying sections for a finished document

By default, all the sections of a document are displayed to users in all views in MicroStrategy Developer and in all modes in MicroStrategy Web. However, if a document section is empty and does not contain any controls, that section is not displayed to users.

You may not want an end user, or a certain group of end users, to be able to view particular document sections. For example:

- As a designer, you want to work only in a single large section, such as in a Report Services (RS) dashboard, thus using all the available space in the Document Editor. This one section is displayed to all users in all views. For more details and steps, see *Hiding a section from users and designers, page 300*.
- You create a number of documents that should have specific sections hidden. To simplify and standardize the documents, you can create a template that hides those sections. You can then use the template to create the documents, and by default only the selected sections are displayed. For more details and steps, see *Hiding a section from users and designers, page 300*.
- A section contains information that makes sense in a printed document but not in one displayed in MicroStrategy Web. For example, the Page Footer section in a document contains page numbers. You can hide the Page Footer in all MicroStrategy Web modes but display it in the resulting PDF. The section is still displayed in Design Mode. For more details and steps, see *Displaying a section in the PDF only, page 301*.
- A section contains data that is displayed only when a specific condition is met. This scenario uses conditional formatting, which is described in *Formatting conditional data in documents, page 317*, and the Visible option, which is described in *Hiding a control, page 282*.
- A section contains internal notes about the source of the data and when to run the document. You do not want users to see this information; only document designers should be able to view it. The section must be hidden when the document is viewed as a PDF and in all MicroStrategy Web modes except Design Mode. For an example and steps, see *Hiding a control, page 282*. Although the example discusses controls specifically, hiding a section works the same way.

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Hiding a section from users and designers

As a designer, you may want to work in a single large section, such as in a Report Services (RS) dashboard, thereby optimizing your workspace by using all the available space in the Document Editor. This one section is displayed to all users in all views. All other sections are hidden from users in the finished document and from you in Design View/Mode.

Displaying a single section can be practical when designing RS dashboards (an RS dashboard is a visually intuitive and interactive display of data that summarizes key business indicators for a status check), since RS dashboards are typically only one page long.

A quick way to create a document with only one section displayed is to use the Blank Dashboard template as the starting point for your RS dashboard. The single section on the template is defined as being 6.5 inches high. For details of the Blank Dashboard template and information on RS dashboards in general, see the *Dashboards and Widgets Creation Guide*.

You can select which sections to display and which to hide. For example, you need to create a number of documents that should have specific sections hidden. To simplify and standardize the documents, create a template that hides those sections. You can then use the template to create the documents, and by default only the selected sections are displayed. For steps to create and use templates, see *Creating a document using another document as a template, page 20*.

As a designer, you may want to temporarily display only the specific sections that you are editing right now. Rather than hide sections from users, you should expand and collapse sections as described in *Collapsing and expanding document sections for design purposes, page 37*.

Note the following:

- You cannot hide all the sections; at least one section must be displayed.
- For a multi-layout document, a section that is hidden in all views in one layout is not automatically hidden in the other layouts. You can hide and display different sections for different layouts. Use the steps below to hide or display sections in different layouts. For background information on multi-layout documents, see *Creating multi-layout documents, page 512*.

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To hide or display sections to users and designers

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. From the **Tools** menu, select **Document Properties**. The Properties dialog box opens.
3. Choose **Sections** from the **Layout Properties** area.
4. Clear the check box for any section that you want to hide.

   You cannot hide all the sections; at least one section must be displayed.
5. If a section is hidden but should be displayed, select its check box.
6. Click **OK** to return to the document. Only the selected sections are displayed.

Displaying a section in the PDF only

A document section can contain information that makes sense in a printed document but not in one displayed in MicroStrategy Web. For example, the Page Footer section in a document contains page numbers. You can hide the Page Footer in all MicroStrategy Web modes but display it when the document is viewed as a PDF. The section is still displayed in Design View in both MicroStrategy Developer and MicroStrategy Web, as well as in Flash Mode in Web.

The following image shows a document in PDF View in MicroStrategy Developer, displaying page numbers at the top of the page.



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The next image shows the same document in Express Mode in Web. Notice that the page numbers are not displayed.



Region	Employee	Revenue
Northeast	De Le Torre:Sandra	$607,895
Northeast	Kelly:Laura	$2,350,720
Northeast	Kieferson:Jack	$584,933

The **Visible in Web View Mode** option, which controls this behavior, is available only for the Document Header/Footer, Layout Header/Footer, and Page Header/Footer sections.

To determine whether or not a section displays in the PDF only

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. If the document contains multiple layouts, click the tab of the layout to change.
3. Right-click any blank area of the document section to hide in Web, then select **Properties and Formatting**. The Properties and Formatting dialog box opens.

   Only the Document Header/Footer, Layout Header/Footer, and Page Header/Footer sections can be displayed in the PDF while hidden in MicroStrategy Web.
4. From the left, select **General**.
5. Do one of the following:
   - To display the document section in the PDF only, clear the **Visible in Web View mode** check box.
   - To display the document section in all modes in Web as well as in the PDF, select the **Visible in Web View mode** check box.
6. Click **OK** to save your changes and return to the document.

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Formatting the background color of document sections

You can format the background color of each section in a document.

To apply a background color to a section

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Right-click any blank area of the section, then select **Properties and Formatting**. The Properties and Formatting dialog box opens.
3. From the left, select **Color and Lines**.
4. From the **Color** palette, select a color to apply to the section by doing one of the following:
   - To select a solid color, click the color in the palette.
   - To access additional color options, select **More Colors**.
   - To apply gradient colors to the section, select **Gradients**. Gradients blend two colors to create a gradual color change in the background of the section. For examples and images, see *Using gradient colors, page 277*.
5. Click **OK** to save your changes.

Displaying sections horizontally

By default, all sections are displayed and printed vertically in a document. The Detail Header is displayed below the Document Header, the Detail is displayed below the Detail Header, and so on, as described in *Understanding and working with document sections, page 28*.

The detail sections can be displayed horizontally across the page. The Detail Header is displayed next to the Detail, followed by the Detail Footer, in a horizontal row across the page. Detail sections include the Detail Header, Detail Footer, and Detail. You can display all three sections horizontally or just the Detail section horizontally.

For example, the following document presents the monthly revenue for 2006 in two columns down the page, showing the default vertical display. Notice

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the extra white space on the right side of the paper. The title Monthly Revenue is displayed in the Detail Header, while Month and Revenue are placed in the Detail section.

Monthly Revenue

Jan 2006	$502,224
Feb 2006	$610,056
Mar 2006	$570,376
Apr 2006	$599,718
May 2006	$667,888
Jun 2006	$718,181
Jul 2006	$694,057
Aug 2006	$748,848
Sep 2006	$871,390
Oct 2006	$800,501
Nov 2006	$855,618
Dec 2006	$1,008,381

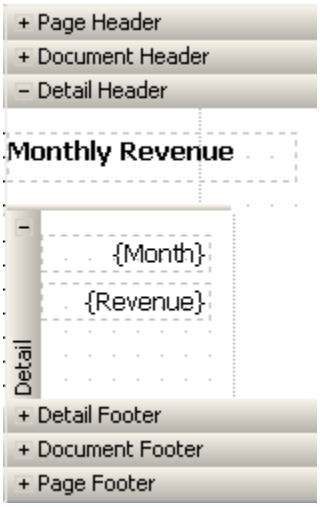
Displaying the Detail section horizontally displays the monthly revenue across the page, as shown in the document sample below. The Revenue metric was moved below Month, to present a half year of data across a single sheet of paper.

Monthly Revenue

Jan 2006	Feb 2006	Mar 2006	Apr 2006
$502,224	$610,056	$570,376	$599,718
Jul 2006	Aug 2006	Sep 2006	Oct 2006
$694,057	$748,848	$871,390	$800,501

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The following image shows the same document in Design View/Mode. The Detail Header contains the title, while the Detail section contains Month and Revenue. The Detail section is displayed horizontally.



You can also display a group horizontally, as described in *Displaying a group horizontally, page 403*.

Horizontally displayed sections have additional options to control the horizontal width. For a list of settings and a width sizing example, see *Changing the horizontal width of a section, page 309*.

To display and print detail sections horizontally

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Right-click the Detail Header, Detail, or Detail Footer section and select **Grouping Properties**. The Detail Grouping Properties dialog box opens.
3. To horizontally render only the Detail section, select the **Render Detail Horizontally** check box.
4. To horizontally render all the detail sections, select the **Render Detail Header and Footer Horizontally** check box. The **Render Detail Horizontally** check box is automatically selected as well.
5. Click **OK**.

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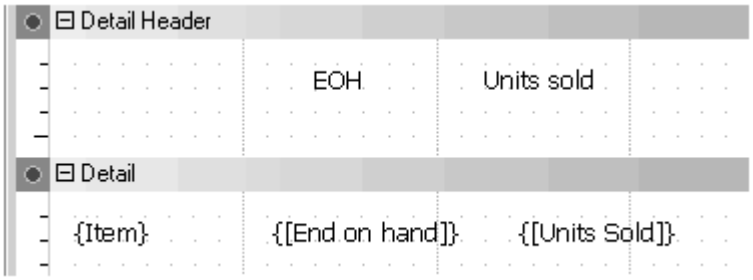
Changing the size of a section

While designing a document, you can drag the lower boundary of a section to make it larger or smaller. By default, when you view a document as a PDF, its sections expand to fit the controls that they contain. They do not shrink when the controls are smaller than the section size. You can change this default behavior, so that the section is only as big as necessary to display all the information in the section.

You can define a section as a set size that does not vary, or as a variable size that grows or shrinks within set limits. For steps to change the size of a section, see *To change the size of a section, page 308*.

For example, the Detail Header section of a document contains column header labels. You want to provide white space as part of this section, so that it does not shrink beyond a minimum size. You can make the section half an inch tall by dragging the section's border, or by setting the **Height** option to **.5**, and then clearing the **Height can shrink** option.

An example of this is shown below.



Notice that the labels are less than half an inch from the top of the Detail Header. If the **Can shrink** option was selected, the labels would print right above the Detail. Instead, there is a buffer of white space between the labels and the data of the document:

	EOH	Units Sold
GPX 5" AM/FM Portable TV	23	1,582
RCA 32" Stereo TV	61	749
RCA Indoor TV Antenna	22	2,248

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Use the following settings with the steps below to achieve some common goals:

- Fit to size: Use the following settings to have the size of the section adjust automatically to the contents, without waste of space:
  - Height can grow: Selected
  - Height can shrink: Selected
  - Max height: 0 (zero)
- Fixed height: Use the following settings to have the height of the section remain the same, regardless of its contents:
  - Height: Desired size of the section
  - Height can grow: Cleared
  - Height can shrink: Cleared
- Grow to a defined maximum height: Use the following settings to have the height of the section adjust automatically to its contents but not exceed the set maximum:
  - Height can grow: Selected
  - Height can shrink: Selected
  - Max height: Maximum size of the section
- Shrink to a minimum height: Use the following settings to have the height of the section adjust automatically to its contents but not shrink below the set minimum:
  - Height: Minimum size of the section
  - Height can grow: Selected
  - Height can shrink: Cleared
  - Max height: 0 (zero)
- Vary within a set range: Use the following settings to have the height of the section adjust automatically to its contents but not exceed the set maximum nor shrink below the set minimum:
  - Height: Minimum size of the section
  - Height can grow: Selected
  - Height can shrink: Cleared

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- Max height: Maximum size of the section

To change the size of a section

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Select the section to resize. To do this, select either the bar containing the section's name, or click inside the section in a blank area (not on a control).
3. From the **Format** menu, select **Properties and Formatting**. The Properties and Formatting dialog box opens.
4. From the left, select **Layout**.
5. Set the **Height** of the section in inches.

   When exported to HTML, a document section uses the **Height** setting, regardless of other settings. For example, the height of a document section is defined as 1.5 inches, the maximum height as 10, and **Can grow** is selected. The data in the document section is longer than 1.5 inches. When exported to HTML, the document section is only 1.5 inches high, and the data is cut off. This occurs because the exact height cannot be determined during HTML rendering. To allow all the data to be displayed, specify a more accurate **Height** setting.

6. Set any of the following options. Examples are provided above to achieve specific design goals.

   - **Height can grow**: Determines whether the section height can expand to fit its contents. Affects all display modes and PDF export. Clear this check box to decrease the time it takes to execute the document.
   - **Height can shrink**: Determines whether the section height can shrink to fit its contents. Affects all display modes and PDF export. Clear this check box to decrease the time it takes to execute the document.
   - **Max height**: Maximum size of the section. The height of the section adjusts automatically to its contents, but it will not exceed the set maximum. If Maximum Height is less than Height, the section is displayed with a fixed height equal to the Height setting. Zero (0) indicates that there is no height limit.
   - **Hide if empty**: Determine whether the section is displayed if it has no content, regardless of how the Can Shrink option is set. By default,

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this check box is selected. If the check box is cleared, the section displays according to the size settings, even if the section does not contain any data.

7 Click **OK** to save your changes and return to the document.

Changing the horizontal width of a section

A horizontally displayed section prints horizontally across a page and therefore needs additional **Size** settings to control the horizontal size. These settings are:

- **Width**
- **Width can grow**
- **Width can shrink**
- **Maximum width**

You can define a horizontally displayed section as a set width that does not vary, or as a variable width that grows or shrinks within set limits according to the size of its content.

For example, to use a specific width, type the size in the **Width** option. Set the **Width can grow** and **Width can shrink** options to **False**.

The width should not be smaller than the right-most edge of the controls in the section. This ensures that controls are displayed regardless of their position.

To adjust the width to the contents automatically, without wasting space, set **Max width** to zero. Set the **Width can grow** and **Width can shrink** settings to **True**.

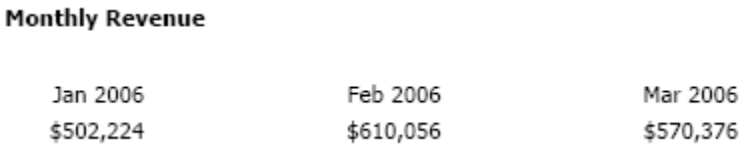
For general information on horizontally displayed sections, including examples and instructions, see *Displaying sections horizontally, page 303*.

Section width sizing example

The document shown below contains the text field “Monthly Revenue” in the Detail Header, with the Month attribute and the Revenue metric in the Detail

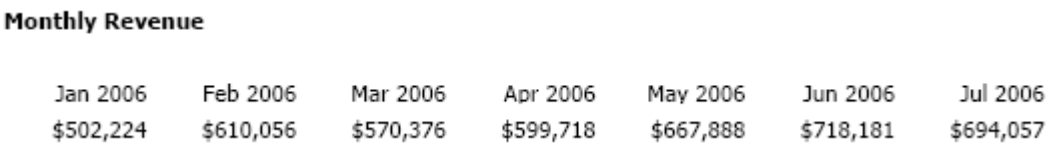
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section. The Detail section is displayed horizontally and is set to a width of 1.8.



Only a portion of the document is displayed above.

The amount of space between the months is too large, so you want to reduce the space between them. You could adjust the size of the Detail section until you find the correct fit, or you can adjust the width to the contents automatically. To do the latter, set **Max width** to zero, and select both **Width can grow** and **Width can shrink**. The columns of months and revenue amounts are now close together, and more data fits across the page, as shown below.



To change the size of a horizontally displayed section in a document

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Select the horizontal section to resize. To do this, select either the bar containing the section's name, or click inside the section in a blank area (not on a control).
3. From the **Format** menu, select **Properties and Formatting**. The Properties and Formatting dialog box opens.
4. From the left, select **Layout**.
5. Set the **Height** of the section in inches.

When exported to HTML, a document section uses the **Height** setting, regardless of other settings. For example, the height of a document section is defined as 1.5 inches, the maximum height as 10, and **Can grow** is selected. The data in the document section is longer than 1.5 inches. When exported to HTML, the document section is only 1.5 inches high, and the data is cut off. This occurs

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because the exact height cannot be determined during HTML rendering. To allow all the data to be displayed, specify a more accurate **Height** setting.

6 Set any of the following options. Examples are provided in *Changing the size of a section, page 306* to achieve specific design goals.

- **Height can grow**: Determines whether the section height can expand to fit its contents. Affects all display modes and PDF export. Clear this check box to decrease the time it takes to execute the document.
- **Height can shrink**: Determines whether the section height can shrink to fit its contents. Affects all display modes and PDF export. Clear this check box to decrease the time it takes to execute the document.
- **Max height**: Maximum size of the section. The height of the section adjusts automatically to its contents, but it will not exceed the set maximum. If Maximum Height is less than Height, the section is displayed with a fixed height equal to the Height setting. Zero (0) indicates that there is no height limit.
- **Hide if empty**: Determine whether the section is displayed if it has no content, regardless of how the Can Shrink option is set. By default, this check box is selected. If the check box is cleared, the section displays according to the size settings, even if the section does not contain any data.

7 Set the **Width** of the section in inches.

8 Set any of the following options:

- **Width can grow**: determines whether the section width can expand to fit its contents. Affects all display modes and PDF export.
- **Width can shrink**: determines whether the section width can shrink to fit its contents. The section width does not change in Design Mode.
- **Max width**: defines the maximum width for the section. Zero (0) indicates that there is no width limit.

9 If you are working in the Properties dialog box, click **OK** to return to the document.

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Repeating information horizontally

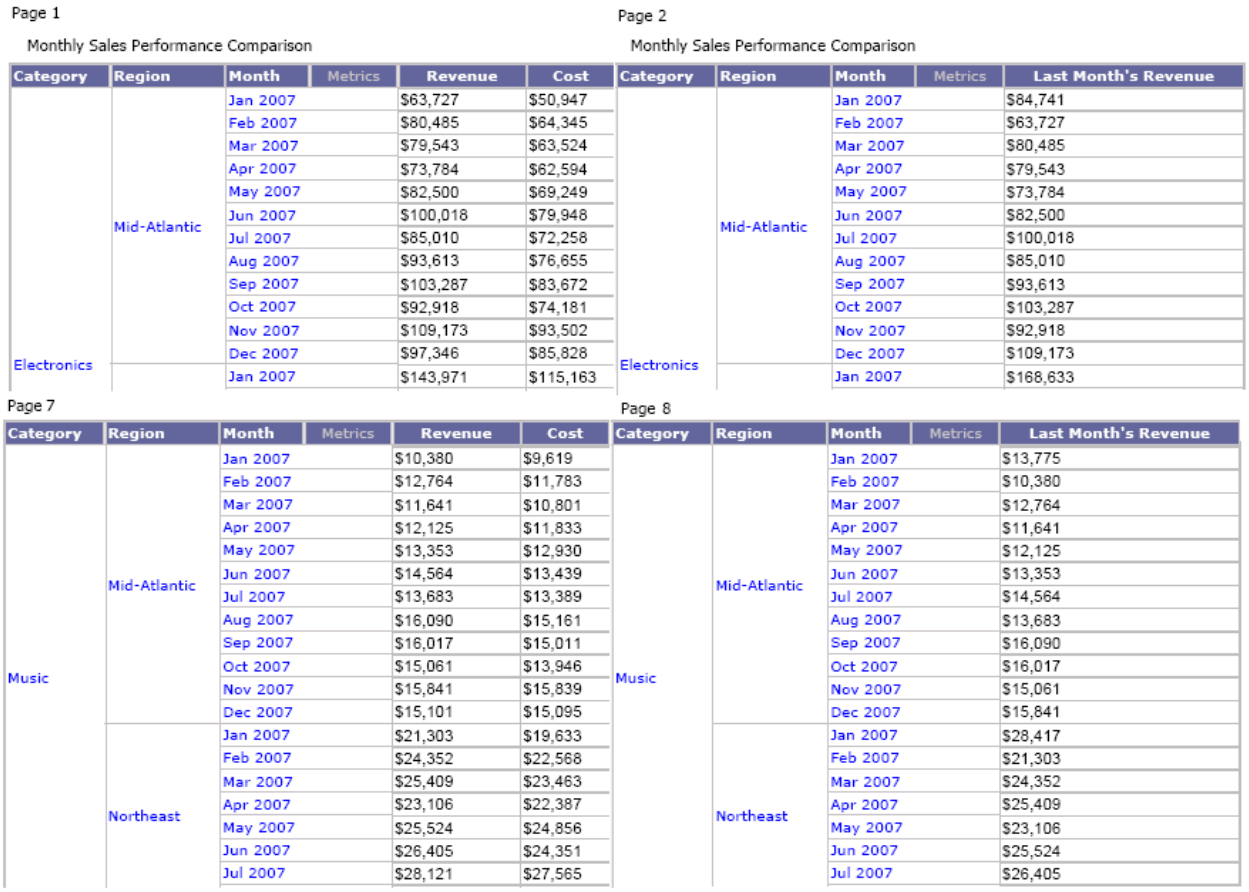
When a section spans multiple pages, you can specify whether or not the entire contents of the section are repeated on the next horizontal page. This setting is generally used with Grid/Graphs displayed as grid reports, particularly those with uncertain widths, so that you are not sure of the number of pages that the Grid/Graph will extend to.

You can also repeat information on each page of a document; for instructions, see *Repeating information on each page, page 313*.

For example, a document contains a Grid/Graph, and you want to be sure that the data on it is labelled, even if it wraps to the next page. Enable the **Repeat horizontally** option so that the Grid/Graph will be labeled on every page that it stretches to. If multiple Grid/Graphs are placed on the same document, this setting can help a user easily identify which Grid/Graph is which.

To create the sample document below, an additional section is added within the Detail Header section. (For information on adding sections, see *Adding sections in documents, page 39*.) Label text is placed in the first section and the **Repeat horizontally** check box is selected for that section. A Grid/Graph displayed as a grid is placed in the second section. When the Grid/Graph wraps to the second page, the label text is repeated to identify the Grid/Graph. In this case, the Grid/Graph is so wide that it extends six pages horizontally. The bottom part of the Grid/Graph begins on page seven, as shown in the following sample pages.

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Page 1

Monthly Sales Performance Comparison

Category	Region	Month	Metrics	Revenue	Cost
Electronics	Mid-Atlantic	Jan 2007		$63,727	$50,947
		Feb 2007		$80,485	$64,345
		Mar 2007		$79,543	$63,524
		Apr 2007		$73,784	$62,594
		May 2007		$82,500	$69,249
		Jun 2007		$100,018	$79,948
		Jul 2007		$85,010	$72,258
		Aug 2007		$93,613	$76,655
		Sep 2007		$103,287	$83,672
		Oct 2007		$92,918	$74,181
		Nov 2007		$109,173	$93,502
		Dec 2007		$97,346	$85,828
	Northeast	Jan 2007		$143,971	$115,163

Page 2

Monthly Sales Performance Comparison

Category	Region	Month	Metrics	Last Month's Revenue
Electronics	Mid-Atlantic	Jan 2007		$84,741
		Feb 2007		$63,727
		Mar 2007		$80,485
		Apr 2007		$79,543
		May 2007		$73,784
		Jun 2007		$82,500
		Jul 2007		$100,018
		Aug 2007		$85,010
		Sep 2007		$93,613
		Oct 2007		$103,287
		Nov 2007		$92,918
		Dec 2007		$109,173
	Northeast	Jan 2007		$168,633

Page 7

Category	Region	Month	Metrics	Revenue	Cost
Music	Mid-Atlantic	Jan 2007		$10,380	$9,619
		Feb 2007		$12,764	$11,783
		Mar 2007		$11,641	$10,801
		Apr 2007		$12,125	$11,833
		May 2007		$13,353	$12,930
		Jun 2007		$14,564	$13,439
		Jul 2007		$13,683	$13,389
		Aug 2007		$16,090	$15,161
		Sep 2007		$16,017	$15,011
		Oct 2007		$15,061	$13,946
		Nov 2007		$15,841	$15,839
		Dec 2007		$15,101	$15,095
	Northeast	Jan 2007		$21,303	$19,633
		Feb 2007		$24,352	$22,568
		Mar 2007		$25,409	$23,463
		Apr 2007		$23,106	$22,387
		May 2007		$25,524	$24,856
		Jun 2007		$26,405	$24,351
		Jul 2007		$28,121	$27,565

Page 8

Category	Region	Month	Metrics	Last Month's Revenue
Music	Mid-Atlantic	Jan 2007		$13,775
		Feb 2007		$10,380
		Mar 2007		$12,764
		Apr 2007		$11,641
		May 2007		$12,125
		Jun 2007		$13,353
		Jul 2007		$14,564
		Aug 2007		$13,683
		Sep 2007		$16,090
		Oct 2007		$16,017
		Nov 2007		$15,061
		Dec 2007		$15,841
	Northeast	Jan 2007		$28,417
		Feb 2007		$21,303
		Mar 2007		$24,352
		Apr 2007		$25,409
		May 2007		$23,106
		Jun 2007		$25,524
		Jul 2007		$26,405

To repeat information horizontally

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Right-click the section to repeat and select **Properties and Formatting**. The Properties and Formatting dialog box opens.
3. From the left, select **Layout**.
4. In the **Page Break** area, select the **Repeat horizontally** check box.

Repeating information on each page

You can specify that a header or footer section repeats on each page of a document, to include information that needs to be displayed on every page.

This setting is available for all header and footer sections, except the Page Header and Page Footer.

By default, the controls in any repeating section are displayed on each page of the document, but you can specify that a control is not displayed the last time that the document section is displayed. Use this scenario to display text such as "Continued on next page" on every page except the last page.

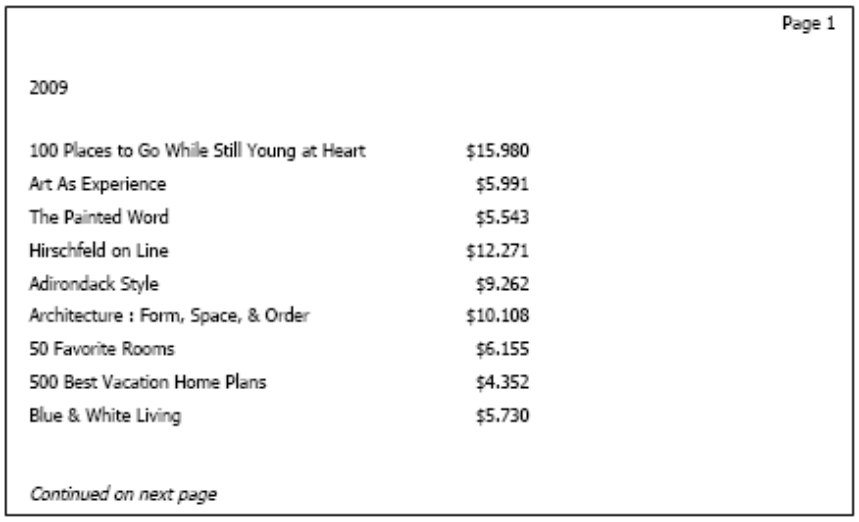
Repeating on every page applies when the document is exported to a PDF.

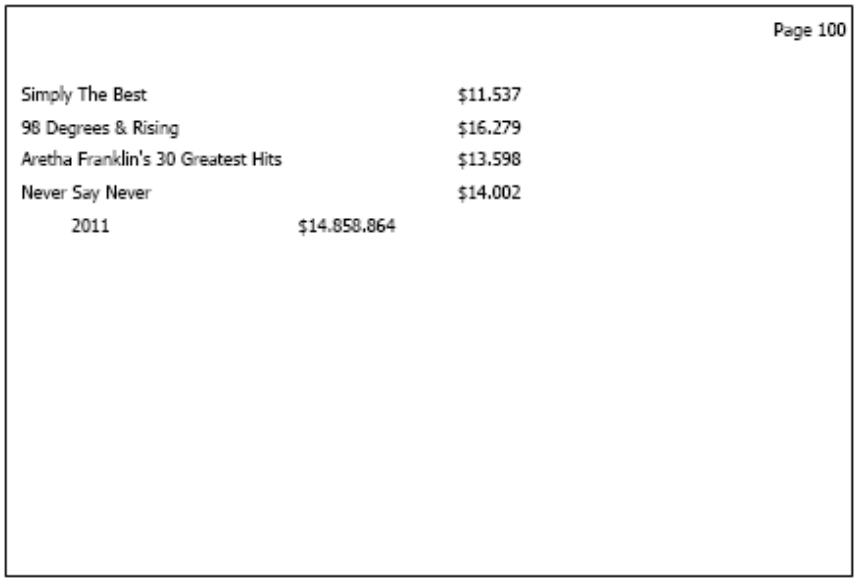
You can also repeat information horizontally, which specifies whether the entire contents of the selected section are repeated on the next horizontal page when a section spans multiple pages. The setting is generally used with Grid/Graphs displayed as grid reports, particularly those with uncertain widths - that is, when you are not sure of the number of pages that the grid report will extend to. For instructions, see *Repeating information horizontally, page 312*.

For example, a document grouped by year displays revenue data for every item. When printed, the document is 100 pages long. You want to ensure that users reading the document know that the information is continued on the next page. To do this, add a text field in the Document Footer. (Use the Document Footer because the document is grouped by year and a yearly subtotal is displayed in the Year Group Footer. The Document Footer displays after the group footers.) Specify that the Document Footer repeats on each page, but set the text field to print only in repeating sections. This

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ensures that the text is printed on every page except the last. The first and last page of the document are shown below:





To repeat information on every page

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

2 Right-click the footer section to modify and select **Properties and Formatting**. The Properties and Formatting dialog box opens.

3 From the left, select **Layout**.

4 In the PDF area, select the **Repeat on each page** check box.

5 Click **OK** to return to the document.

6 By default, each control in a repeated section is displayed on every page. To display a control on every page except the last page, do the following:

a Right-click the control to modify and select **Properties and Formatting**. The Properties and Formatting dialog box opens.

b From the left, select **Layout**.

c In the Position area, select the **Show only in repeated sections** check box.

d Click **OK** to return to the document.

Keeping the contents of a section together

When a page break occurs within a document section, the remainder of the section is printed on the next page. To print the section on a single page, use the **Keep together** setting. If the section cannot fit on one page, it starts on a new page and continues printing on the following pages.

You can use this option to keep column labels in text fields with the data fields that they identify. If the column labels of a section are stranded at the bottom of a page, with the corresponding data at the top of the next page, apply the **Keep together** setting to that section.

You can also keep data for a group together. For steps, see *Keeping the data in a group together on a page, page 412*.

To keep the contents of a section together on a page

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

2 Right-click the section you want to modify and select **Properties and Formatting**. The Properties and Formatting dialog box opens.

3 From the left, select **Layout**.

4 In the **Page Break** area, select the **Keep together** check box.

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Formatting conditional data in documents

Thresholds and conditional formatting are special formatting that is applied to data automatically, when the data meets a specified value. The special formatting means that document recipients can easily see which data is likely to be important for making business decisions. You can have specific controls in your document formatted depending on predefined criteria that you specify. You can use:

- Thresholds to change the format of data cells in your report or Grid/ Graph.
- Conditional formatting to change the format of controls such as text fields, images, sections, and so on in your document.

For example, a document contains customer order information. Any customers with an order over $100 in the past three months can be displayed in italicized blue font, to ensure that they receive special promotions. Any customers who live in a particular city can be displayed in a bold red font, so that they can receive a notice about a new store opening there.

You can use conditional formatting to format a control in the following ways:

- Hide the control
- Format the control in a particular way, for example, display profit values greater than $1,000,000 in bold text
- Replace the control with text, such as Goal Met for units sold greater than 50,000
- Replace the control with a symbol, such as a diamond for sales above $100,000
- Replace the control with an image, such as a corporate logo for costs below $50,000

Whether you can replace data with text, an image, a quick symbol, or by hiding the control, depends on the type of control that is selected when you

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begin to create your conditional format. The following table lists the control types and the types of conditional formatting available for each.

Control Type	Conditional Formatting
Image	• Hide object • Formatting: Borders
Line	• Hide object • Formatting: Line style, color, and weight
Rectangle	• Hide object • Formatting: Background color; Line style, color, and weight
Text field	• Hide object • Replacement text and symbols • Formatting: All formatting settings
Section	• Hide object • Formatting: Background color
Grid/Graph	• Replacement text, symbols, and images • Formatting: All formatting settings You can apply conditional formatting (or thresholds) to an object in a Grid/Graph, but the method is slightly different. For information on creating thresholds in reports, see the *Basic Reporting Guide*.

You can create alerts to notify users when a metric or attribute on a report meets a specific threshold condition. For information to create mobile or email alerts, see the *Basic Reporting Guide*.

When you create conditional formatting, you define two parts: the condition, and the formatting that will be applied to the control when the conditions are met. The data that meets the condition is considered to be data that has passed the threshold of the condition. Once the data passes the threshold, formatting is automatically applied to the control, or the control can be hidden, or replaced by text, symbols, an image, and so on.

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For example, the following document contains cost, profit, and revenue by region and employee, and is grouped by region.

Region: Northeast

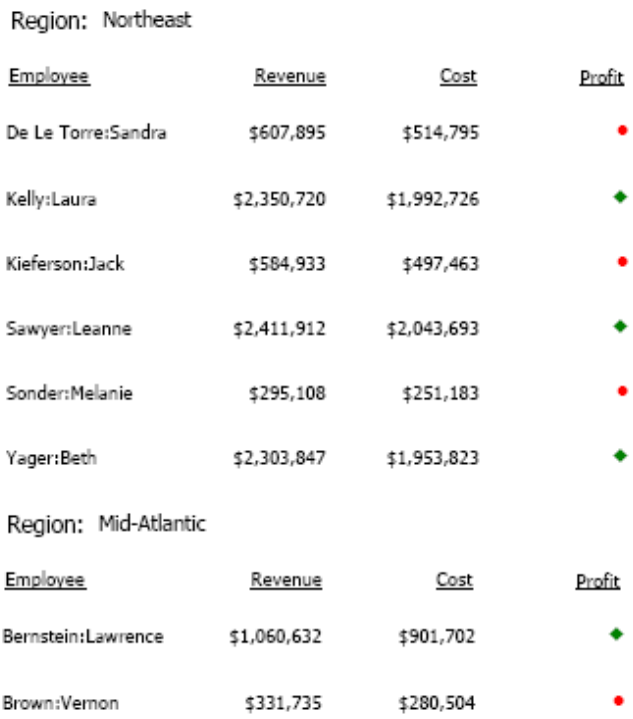
Employee	Revenue	Cost	Profit
De Le Torre:Sandra	$607,895	$514,795	$93,100
Kelly:Laura	$2,350,720	$1,992,726	$357,994
Kieferson:Jack	$584,933	$497,463	$87,470
Sawyer:Leanne	$2,411,912	$2,043,693	$368,219
Sonder:Melanie	$295,108	$251,183	$43,925
Yager:Beth	$2,303,847	$1,953,823	$350,024

Region: Mid-Atlantic

Employee	Revenue	Cost	Profit
Bernstein:Lawrence	$1,060,632	$901,702	$158,930
Brown:Vernon	$331,735	$280,504	$51,231

The document needs to provide a quick summary of the profit information, so the profit data must be replaced with a green diamond if the profit is

$100,000 or greater, and a red hexagon if it is less. The final document looks like the following:



Region: Northeast

Employee	Revenue	Cost	Profit
De Le Torre:Sandra	$607,895	$514,795	
Kelly:Laura	$2,350,720	$1,992,726	
Kieferson:Jack	$584,933	$497,463	
Sawyer:Leanne	$2,411,912	$2,043,693	
Sonder:Melanie	$295,108	$251,183	
Yager:Beth	$2,303,847	$1,953,823	

Region: Mid-Atlantic

Employee	Revenue	Cost	Profit
Bernstein:Lawrence	$1,060,632	$901,702	
Brown:Vernon	$331,735	$280,504	

This example uses a metric from the dataset in the condition. You can also use derived metrics, summary metrics, and attributes in the condition. For examples, see *Derived metrics, summary metrics, and attributes in conditional formatting, page 320*.

You can create criteria for conditional formatting by qualifying data based on a metric or an attribute. Derived metrics and summary metrics can be used to create conditional formatting; calculated expressions cannot.

Derived metrics, summary metrics, and attributes in conditional formatting

Conditional formatting can use derived metrics and summary metrics in the condition definition. For example, the following document contains cost, profit, and revenue by region and employee, and is grouped by region. A summary metric for the average profit is displayed in the Region Header. For

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regions with an average profit less than $100,000, the region name appears in a box.

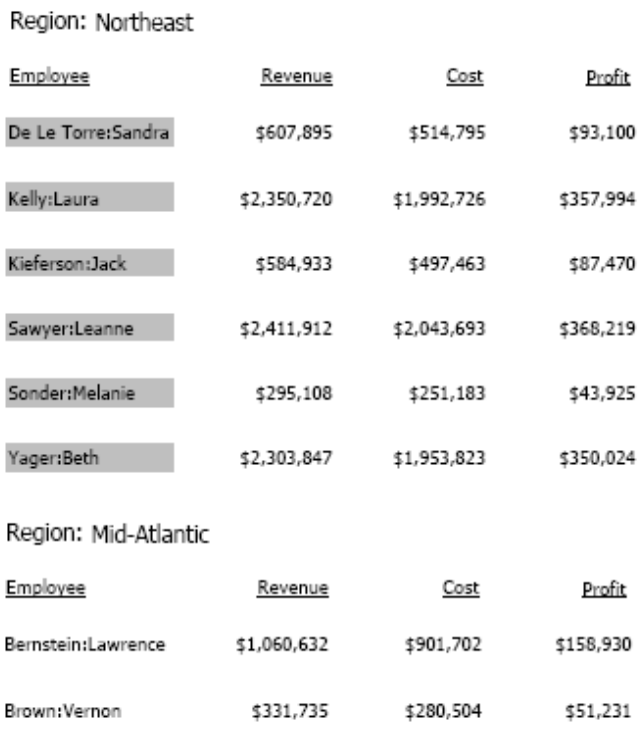
Region: Central		Average Profit:	$191,081
Employee	Revenue	Cost	Profit
Ellerkamp:Nancy	$847,227	$720,449	$126,778
Gale:Loren	$1,669,290	$1,416,036	$253,254
Torrison:Mary	$1,690,350	$1,430,865	$259,485
Zemlicka:George	$822,500	$697,693	$124,807

Region: Mid-Atlantic		Average Profit:	$84,135
Employee	Revenue	Cost	Profit
Bernstein:Lawrence	$1,060,632	$901,702	$158,930
Brown:Vernon	$331,735	$280,504	$51,231
Corcoran:Peter	$325,147	$275,752	$49,395
Folks:Adrienne	$1,047,776	$888,702	$159,074
Hollywood:Robert	$1,026,874	$871,679	$155,195
Ingles:Walter	$229,439	$194,851	$34,588
Smith:Thomas	$221,379	$188,010	$33,368
Young:Sarah	$209,634	$178,331	$31,303

You can also use attributes as the condition. For example, you want to identify employees who work in the North (that is, either the Northeast or Northwest region). The condition definition is Region In list {Northeast, Northwest}.

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In the following sample, the Northeast employees are highlighted, but not the Mid-Atlantic employees. If any Northwest employees were displayed in the sample, their names would be highlighted as well.



Region: Northeast

Employee	Revenue	Cost	Profit
De Le Torre:Sandra	$607,895	$514,795	$93,100
Kelly:Laura	$2,350,720	$1,992,726	$357,994
Kieferson:Jack	$584,933	$497,463	$87,470
Sawyer:Leanne	$2,411,912	$2,043,693	$368,219
Sonder:Melanie	$295,108	$251,183	$43,925
Yager:Beth	$2,303,847	$1,953,823	$350,024

Region: Mid-Atlantic

Employee	Revenue	Cost	Profit
Bernstein:Lawrence	$1,060,632	$901,702	$158,930
Brown:Vernon	$331,735	$280,504	$51,231

Conditional formatting on selector totals

Selectors provide Report Services (RS) dashboards with interactivity, allowing each user to change how he sees the data. A selector can change several things in a panel stack, including panels, the focus of a Grid/Graph, or dynamic text fields when the text field is a reference to an object on a report. Selectors that contain attribute elements, custom group elements, or consolidation elements as selector items can also include an option to display totals. The total is calculated for all the selector items. A user can choose whether to display specific elements at the same time, or the totals.

If the control you are formatting is the target of a selector, you can specify whether to apply conditional formatting to the control only when metrics are selected in the selector, or for both metrics and totals. For example, a document contains the Region attribute and the Revenue metric on a panel stack. The panel stack is targeted by a selector, which allows a user to choose the region to display in the panel stack. The selector includes the option to display the total, which is calculated for all the regions. The conditional

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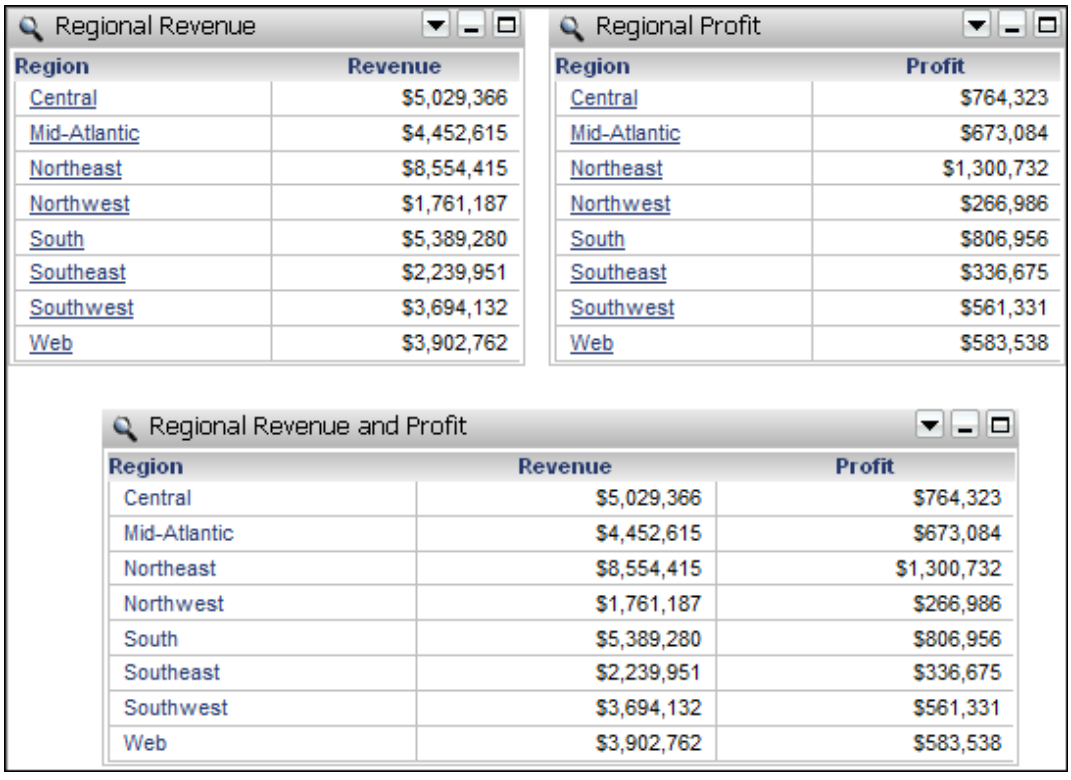
formatting on the Revenue metric displays low revenue in red and high revenue in green. The conditional formatting can be applied to either the regional revenue values only by applying it to the metric, or to both the regional revenue values and the total value. You can select these options in the Advanced Thresholds Editor; for steps, see *Creating a conditional format or threshold based on multiple metrics or attributes, page 329*.

For steps to show totals in a selector, see the *Dashboards and Widgets Creation Guide*.

Conditional formatting on a document with multiple datasets

If a document contains multiple datasets, a threshold on a Grid/Graph can include any objects from any of the datasets, regardless of whether the Grid/Graph uses that dataset. (Conditional formatting on a Grid/Graph is referred to as a threshold.)

For example, a document contains two datasets, Regional Revenue and Regional Profit. A Grid/Graph is displayed for each dataset. Another Grid/Graph, named Regional Revenue and Profit, combines the data from both datasets, as shown below. Region and Revenue come from the Regional Revenue dataset, and Profit from the Regional Profit dataset.



Regional Revenue

Region	Revenue
Central	$5,029,366
Mid-Atlantic	$4,452,615
Northeast	$8,554,415
Northwest	$1,761,187
South	$5,389,280
Southeast	$2,239,951
Southwest	$3,694,132
Web	$3,902,762

Regional Profit

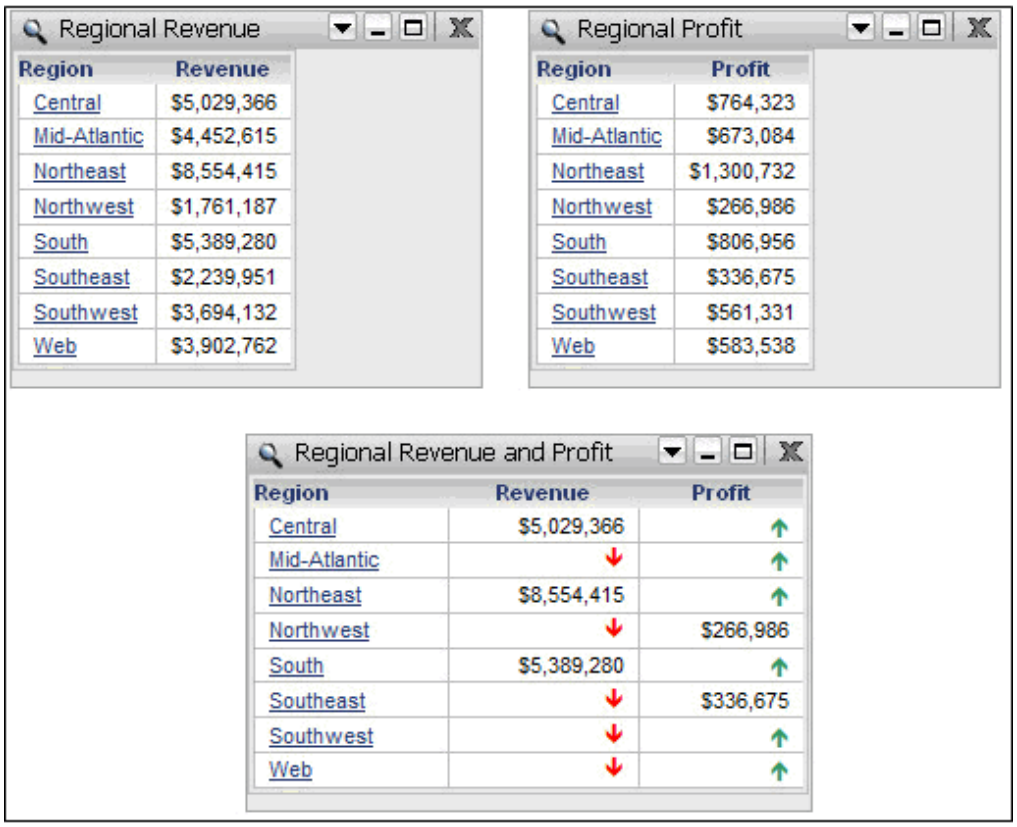
Region	Profit
Central	$764,323
Mid-Atlantic	$673,084
Northeast	$1,300,732
Northwest	$266,986
South	$806,956
Southeast	$336,675
Southwest	$561,331
Web	$583,538

Regional Revenue and Profit

Region	Revenue	Profit
Central	$5,029,366	$764,323
Mid-Atlantic	$4,452,615	$673,084
Northeast	$8,554,415	$1,300,732
Northwest	$1,761,187	$266,986
South	$5,389,280	$806,956
Southeast	$2,239,951	$336,675
Southwest	$3,694,132	$561,331
Web	$3,902,762	$583,538

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Create a threshold on the Regional Revenue and Profit Grid/Graph that replaces Revenue amounts less than $5,000,000 with a red arrow. Create another threshold that replaces Profit amounts greater than $500,000 with a green arrow. The results are shown below:



Regional Revenue

Region	Revenue
Central	$5,029,366
Mid-Atlantic	$4,452,615
Northeast	$8,554,415
Northwest	$1,761,187
South	$5,389,280
Southeast	$2,239,951
Southwest	$3,694,132
Web	$3,902,762

Regional Profit

Region	Profit
Central	$764,323
Mid-Atlantic	$673,084
Northeast	$1,300,732
Northwest	$266,986
South	$806,956
Southeast	$336,675
Southwest	$561,331
Web	$583,538

Regional Revenue and Profit

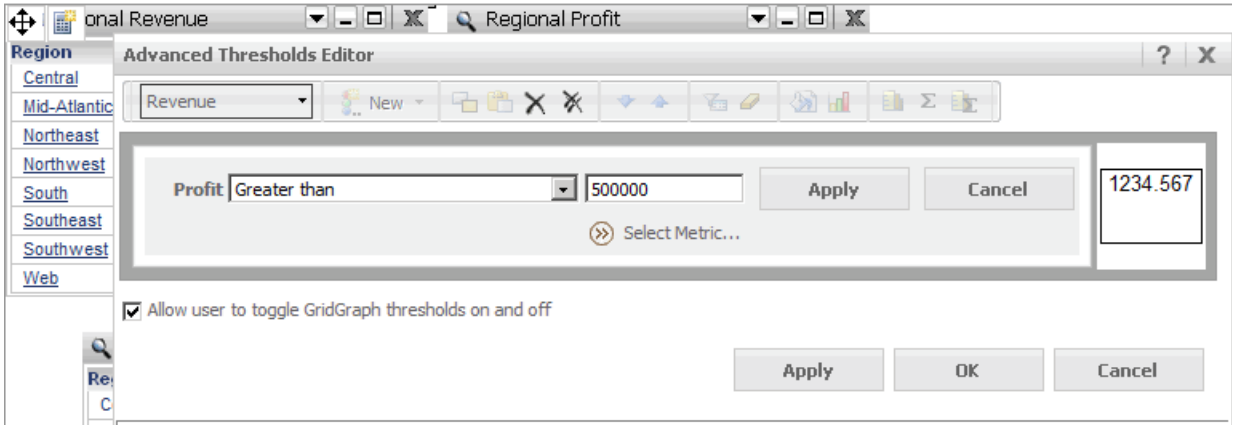
Region	Revenue	Profit
Central	$5,029,366	↑
Mid-Atlantic	↓	↑
Northeast	$8,554,415	↑
Northwest	↓	$266,986
South	$5,389,280	↑
Southeast	↓	$336,675
Southwest	↓	↑
Web	↓	↑

For steps to create a Grid/Graph that uses multiple datasets, see *Adding a Grid/Graph that uses multiple datasets, page 180*.

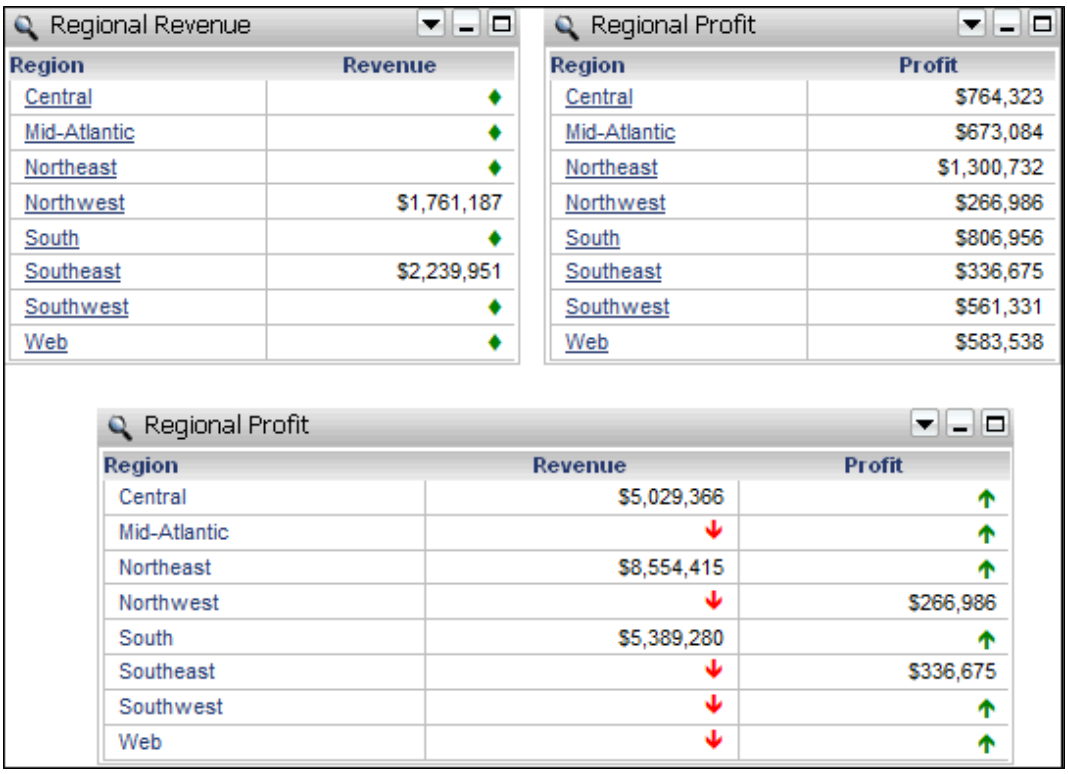
If a Grid/Graph uses data from a single dataset, you can create a threshold using a metric from another dataset. To continue with the previous example, create a threshold on the Regional Revenue Grid/Graph. This threshold uses

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the Profit metric from the Regional Profit dataset, although the Grid/Graph uses the Regional Revenue dataset as its data source.



The results are shown below. The Revenue amount is replaced with a green diamond if the region's Profit is greater than $500,000.



For steps to add multiple datasets to a document, see *Adding, changing, or removing a dataset, page 48*.

Creating a conditional format or threshold based on a single metric

You can easily define conditional formats and thresholds based on a single metric. You can use the thumb in the horizontal slider bar to specify range-based conditions for your data such as greater than, less than, between, and so on.

For example, if you want all revenue values over $40,000 formatted in red, with an Arial font, you can create and format a simple threshold for that range. On the same report, you can have all revenue values below $10,000 appear as an image of an arrow pointing down.

Note the following:

- To create a conditional format or threshold based on an attribute, see *Creating a conditional format or threshold based on multiple metrics or attributes, page 329*.
- You can create alerts to have the software notify users with an email or text message when a metric or attribute on a report meets a specific threshold condition. For information to create mobile or email alerts, see the *Basic Reporting Guide*.

You can also create a conditional metric or threshold based on multiple metrics or attributes. For details, see *Creating a conditional format or threshold based on multiple metrics or attributes, page 329*.

To create a conditional format or threshold based on a single metric

1. In MicroStrategy Web, open a document in **Design** or **Editable Mode**.
2. Right-click the control to format in the document layout area. Depending on the type of control you select, proceed as follows:
   - A report or Grid/Graph: Point to **Thresholds** and then select **Visual**. The Visual Threshold Editor opens.
   - A text field, image, section, and so on: Point to **Conditional Formatting** and then select **Visual**. The Visual Conditional Formatting Editor opens.

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To specify the qualifications

3 Depending on the type of control that you selected above, follow the appropriate steps below:

- For a report or Grid/Graph:

  a From the **Thresholds for** drop-down list, select the metric for which to create the threshold. The list includes all the metrics defined for the report.

  b Click **Type**, and from the **Type** drop-down list, select the type of condition you want to use for the threshold. For example, if you want to define Daily Revenue greater than $40,000, select **Value** from the drop-down list. This ensures that the threshold is based on an actual value, in this case $40,000. If you want to define a threshold for the Top 5% of Daily Revenue, select **Highest %**.

  c From the **Based on** drop-down list, select the metric on which to base the qualification. For example, to ensure that the conditional format highlights Daily Revenue values over $40,000, select Daily Revenue from the drop-down list.

  d Click the **Apply** check mark.

- For a text field, image, section, and so on:

  a From the **Based on** drop-down list, select the metric on which to base the qualification. For example, to ensure that the threshold highlights Daily Revenue values over $40,000, select Daily Revenue from the drop-down list.

4 In the **Enter Value** field, type the number for which you want to define the threshold or conditional format, then click the **Apply** check mark. Drag the thumb over the horizontal slider bar to adjust the value as necessary.

5 To add a new condition, click the **Add Threshold** icon. A thumb is added to the horizontal slider bar. Add a new value in the **Enter Value** field, or move the thumb to define a value for the condition.

Add and shift additional thumbs as necessary. For example, if you want a threshold to display blue font for all values above one million, and green font for all values below 20,000, you must have two thumbs on the horizontal slider bar, one representing data greater than one million and another representing data less than 20,000.

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To specify the formatting

6 Do one of the following:

- Drag the cursor over the thumb to format. In the pop-up menu that opens, select the **Format** icon. The Format dialog box opens.
- Double-click a specific area of the horizontal bar to format that range of values. The Format dialog box opens.

7 Specify a name for the threshold or conditional format in the **Name** field.

8 Depending on the control type you are applying the conditional formatting to, you can replace data with text, an image, a symbol, or hide the control. For a table that lists the conditional formatting available for all control types, see *Formatting conditional data in documents, page 317*. Select the **Replace Data** check box and select one of the following from the drop-down list:

- **Replace text**: Replace the normally displayed data with any text you specify. For example, a document shows the financial values of various sales opportunities. For those sales opportunities that have been lost, you might display the word LOST in red, rather than displaying the financial value.

  If you select this option, type the text with which to replace the values in the corresponding text field.

- **Quick symbol**: Replace the normally displayed data with a common symbol. For example, a document shows the financial contribution of various sales groups to overall sales office activity. For the monthly trend column, you can show either a green plus (+) or a red minus (-) symbol to represent positive or negative contribution trends.

  If you select this option, select the symbol with which to replace the values from the corresponding drop-down menu.

- **Image**: Replace the normally displayed data with an image, such as an arrow or a green dot. You can specify the path to the image by typing the address using one of the following:

  - Absolute path: The default, for example, `C:/images/img.jpg`
  - Relative to HTML Document directory: A relative path from the document directory where the image is stored, for example, `images/img.jpg`

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  - On the network: A path on your local area network, which is in a UNC (Universal Naming Convention) format, for example, `//machine_name/shared_folder/img.jpg`
  - On the web: A URL to an image file, for example, `http://www.microstrategy.com/images/img.jpg`

- **Hide**: Hide the control. For example, a document shows an image if the number of units sold is less than a specified value. You can hide this image if the units sold is greater than or equal to the target value.

9 Make selections in the Font, Number, Alignment, and Color and Lines tabs to change the font, color, alignment, and other options to apply to data that meets the defined condition. Click **Help** for details on all the options. The text sample on the left of the threshold pop-up menu shows an example of the formatting you specified for the threshold or conditional format.

10 Click **OK** to apply changes and return to the document. If the **Auto-Apply changes** check box is selected, your formatted data or control is already visible on your document.

Creating a conditional format or threshold based on multiple metrics or attributes

You can create a conditional format or threshold based on multiple metrics or attributes. Each conditional format or threshold can contain multiple conditions, and each condition is based on a metric or attribute. This allows you to define very specific conditions.

For example, you can format the font color of Cost values of employees based on the geographical region they belong to. The threshold contains multiple conditions, where each condition specifies a font color for a particular region.

You can create alerts to notify users when a metric or attribute on a report meets a specific threshold condition. For information to create mobile or email alerts, see the *Basic Reporting Guide*.

To create a conditional format or threshold based on multiple metrics or attributes

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

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2 Right-click the control you want to format in the document layout area. Depending on the type of control you select, proceed as follows:

- For a report or Grid/Graph:

  a Point to **Conditional Formatting**, then select **Advanced**. The Visual Conditional Formatting Editor opens.

  b From the drop-down list at the top left, select the metric that you want to apply the formatting to.

- For a text field, image, section, and so on: Point to **Conditional Formatting**, then select **Advanced**. The Conditional Formatting dialog box opens.

To specify the qualifications

3 From the Filter On drop-down list, select the attribute or metric on which to base the threshold or conditional format.

4 Follow the appropriate steps below depending on whether you are basing the condition on a metric or an attribute:

- If you are creating a condition based on a metric:

  a Select a comparison operator such as Greater Than or Less Than.

  b Type a value in the field on the right, or click **Select Metric** to choose another metric to compare the original metric to.

  c Click the **Apply** check mark to create the new threshold or conditional format.

- If you are creating a condition based on an attribute, do one of the following:

  - To define your condition by typing specific attribute form values:

    a Select the **Qualify** option.

    b From the drop-down list on the left, select the attribute form on which to base the condition. For example, you can qualify the condition based on the attribute element's ID form, one of its description forms, or the DATE if the attribute is time-based.

    c From the next drop-down list, select a comparison operator such as Greater Than or Less Than. The operators available for a selection depend on the attribute form you chose above.

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d Do one of the following:

- To compare the attribute form to a specified value, type the value in the field.
- To compare the first attribute form to a second attribute form, click **Select Attribute**, then select the second attribute form from the drop-down list.

e Click the **Apply** check mark to create the new threshold or conditional format.

- To define your condition by selecting attribute elements from a list:

a Choose the **Select** option.

b From the drop-down list on the left, select **In List** or **Not In List**. If you select Not In List, then the attribute elements in the Selected list will not be included in the condition.

c Move attribute elements from the **Available** list to the **Selected** list. Elements in the Selected list are included in the condition.

To search for a specific element, use the **Search for** field. Select the **Match case** check box to return only items that match the upper and lower cases you typed in the Search for field. For examples of searches, click **Help**.

d Click the **Apply** check mark to create the new threshold or conditional format.

5 To add more conditions to a threshold or conditional format, select the threshold or conditional format, click the **Add Condition** icon on the toolbar, and repeat the appropriate steps above to define each condition. For example, you can change the formatting of the names of employees who belong to the Northeast region and have a revenue of more than $30,000. You must create a threshold with two conditions, one condition for selecting employees from the Northeast region and another for selecting employees with revenue greater than $30,000.

6 It can be convenient to make a copy of a threshold or conditional format if you plan to create similar thresholds in the document. To copy a threshold or conditional format, select the threshold or conditional format and click the **Copy** icon on the toolbar. Then click the **Paste** icon on the toolbar.

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To specify the formatting

7 To specify how data that meets the defined condition is formatted, click the threshold or conditional format, then click the **Cell Formatting** icon on the toolbar. The Format dialog box opens.

8 Specify a name for the threshold or conditional format in the **Name** field.

9 Depending on the control type you are applying the conditional formatting to, you can replace data with text, an image, a symbol, or hide the control. For a table that lists the conditional formatting available for all control types, see *Formatting conditional data in documents, page 317*. Select the **Replace Data** check box and select one of the following from the drop-down list:

- **Replace Text**: Replace data with any text you specify. For example, a document shows the financial values of various sales opportunities. For those sales opportunities that have been lost, you can display the word LOST in red, rather than displaying the financial value. A common use of this option is to display the word EMPTY when a data value is null. If you select this option, type the text with which to replace the values in the corresponding text field.
- **Quick Symbol**: Replace the normally displayed data with a common symbol. For example, a document shows the financial contribution of various sales groups to overall sales office activity. For the monthly trend column, you might show a green plus + and a red minus - symbol to represent positive and negative contribution trends.

  If you select this option, select the symbol with which to replace the values from the corresponding drop-down list.
- **Image**: Replace the normally displayed data with an image, such as an arrow or a green dot. You can specify the path to the image by typing the address using one of the following:
  - Absolute path: The default, for example, `C:\images\img.jpg`
  - Relative to HTML Document directory: A relative path from the document directory where the image is stored, for example, `images\img.jpg`
  - On the network: A path on your local area network, which is in a UNC (Universal Naming Convention) format, for example, `//machine_name/shared_folder/img.jpg`
  - On the web: A URL to an image file, for example, `http://www.microstrategy.com/images/img.jpg`

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- **Hide**: Hide the control. For example, a document shows an image if the number of units sold is less than a specified value. You can hide this image when the units sold is greater than or equal to the target value.

10 Make selections in the Font, Number, Alignment, and Color and Lines tabs to change the font, color, alignment, and other options for data the meets the defined condition. Click **Help** for details on each option.

11 Click **OK** to apply the changes.

12 To determine whether a background color is applied to graphs in which thresholds are met, select the **Enable Thresholds on Graph** icon.

13 To determine how to apply conditional formatting if the control you are formatting is the target of a selector, select one of the following options on the toolbar:

- To apply conditional formatting only when metrics are selected in the selector, click the **Format metrics only** icon.
- To apply conditional formatting for both metrics and the Total option, click the **Format metrics and subtotals** icon.

14 To add additional conditions to a threshold or conditional format, click the **Add Threshold** icon, then follow the appropriate steps above to define each threshold or conditional format.

15 Click **OK** to apply the new threshold or conditional format to the document.

Once you create a conditional threshold, you can allow users to decide whether or not to display conditional formats. See *Displaying or hiding conditional formatting, page 336*.

Conditional formatting based on the contents of a text field

You can format a text field based on what the text field contains, such as static text, auto text codes (which display information about the document), or dynamic text (such as dataset objects). For example, you can:

- Display or hide a text field based on the prompt answers for a document. To do so, you create a text field containing the auto text code `{&PromptN&}`, as described in *Auto text codes for document information, page 90*. You then define a conditional format to hide the

text field if the text field is empty. When the document is run and the user selects prompt answers, each prompt answer is displayed in the text field. If the user does not select any prompt answers, the text field is hidden.

- Display the value of a metric in a text field, and replace that value with a message such as "Revenue target met" when that value is greater than or equal to $5,000,000. To do this, you add dynamic text to a document to display the value of the metric, as described in *Adding dynamic data to a document, page 83*. You then define a conditional format to replace the contents of the text field when the metric value is greater than or equal to $5,000,000. When the document is run, the text field displays the value of the metric for any values under $5,000,000, and displays your customized message for any values greater than or equal to $5,000,000.

Prerequisite

- This procedure assumes that you have already created a document that contains the text field to apply conditional formatting to.

To create a conditional format based on the contents of a text field

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. In the document layout area, right-click the text field that you want to format. Point to **Conditional Formatting**, then select **Advanced**. The Conditional Formatting dialog box opens.

   #### To define the condition to test

3. From the **Filter On** drop-down list, click **Selected Text Field**.
4. From the next drop-down list, select a comparison operator such as Greater Than or Less Than. To format the text field when no prompt answers are selected, select **Equals** from the drop-down list.
5. In the field on the right, type the value to compare the contents of the text field to. For example, to format the text field when it contains a value greater than $50,000, select **Greater Than** from the drop-down list and type `50000`. To format the text field when no prompt answers are selected, leave this field empty.
6. Click **Apply** to create the new conditional format.

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7 To add more conditions to a conditional format, select the conditional format, click the **Add Condition** icon on the toolbar, and repeat the steps above to define each condition, starting at *To define the condition to test, page 334*.

8 If you plan to create similar conditional formats in the document, it can be convenient to make a copy of a conditional format. To copy a conditional format, select the conditional format and click the **Copy** icon on the toolbar. Then click the **Paste** icon on the toolbar.

To specify the formatting

9 To specify how data that meets the defined condition is formatted, click the conditional format, then click the **Cell Formatting** icon on the toolbar. The Format dialog box opens.

10 Specify a name for the conditional format in the **Name** field.

11 You can replace data with text or a symbol, or hide the object. Select the **Replace Data** check box and select one of the following from the drop-down list:

- **Replace Text**: Replace data with any text that you specify. For example, a document shows the financial values of various sales opportunities. For those sales opportunities that have been lost, you can display the word LOST in red, rather than displaying the financial value. A common use of this option is to display the word EMPTY when a data value is null.

  If you select this option, type the replacement text in the field.

- **Quick Symbol**: Replace the data with a common symbol. For example, a document shows the financial contribution of various sales groups to overall sales office activity. For the monthly trend column, you can show a green plus + and a red minus - symbol to represent positive and negative contribution trends.

  If you select this option, select the symbol from the corresponding drop-down list.

- **Hide**: Hide the control. For example, a document displays the names of each sales region for which a user chooses to display data. You can hide the text field containing the region names if the user does not select any sales regions.

12 Make selections in the Font, Number, Alignment, and Color and Lines tabs to change the font, color, alignment, and other options for data the meets the defined condition. Click **Help** for details on each option.

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13 Click **OK** to apply the changes.

14 To determine how to apply conditional formatting if the object that you are formatting is the target of a selector, select one of the following options on the toolbar:

- To apply conditional formatting only when metrics are selected in the selector, click the **Format metrics only** icon.
- To apply conditional formatting for both metrics and the Total option, click the **Format metrics and subtotals** icon.

15 To add additional conditional formats, click the **Add Threshold** icon, then follow the steps above to define each conditional format, beginning at *To define the condition to test, page 334*.

16 Click **OK** to apply the new conditional format to the document.

Once you create a conditional format, you can allow users to decide whether or not to display conditional formats. See *Displaying or hiding conditional formatting, page 336*.

Displaying or hiding conditional formatting

Once you create a conditional format, you can allow users to choose to display it or hide it. A disabled conditional format is replaced by the values.

If the document is a multi-layout document and you hide or display conditional formatting for the entire document, all layouts have conditional formatting displayed or hidden.

To allow users to display or hide all conditional formatting in a document

1 In MicroStrategy Web, open the document in **Design Mode** or **Editable Mode**.

2 Right-click any control that has conditional formatting applied to it, point to **Conditional Formatting**, then select **Advanced**. The Conditional Formatting Editor opens.

3 Select the **Allow user to toggle conditional formatting on and off** check box. This check box is cleared by default.

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4 Click **OK** to apply the changes.

Users can now open the **Data** toolbar and click the **Toggle Conditional Formatting** icon to display or hide all conditional formatting in the document.

Deleting a threshold or its conditions

You can delete conditions within a threshold, and you can delete thresholds. Steps are below to perform all of these tasks.

To delete a condition or a threshold

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

2 Right-click the control you want to format in the document layout area, point to **Conditional Formatting**, then select **Advanced**. The Conditional Formatting dialog box opens.

3 Do any of the following:

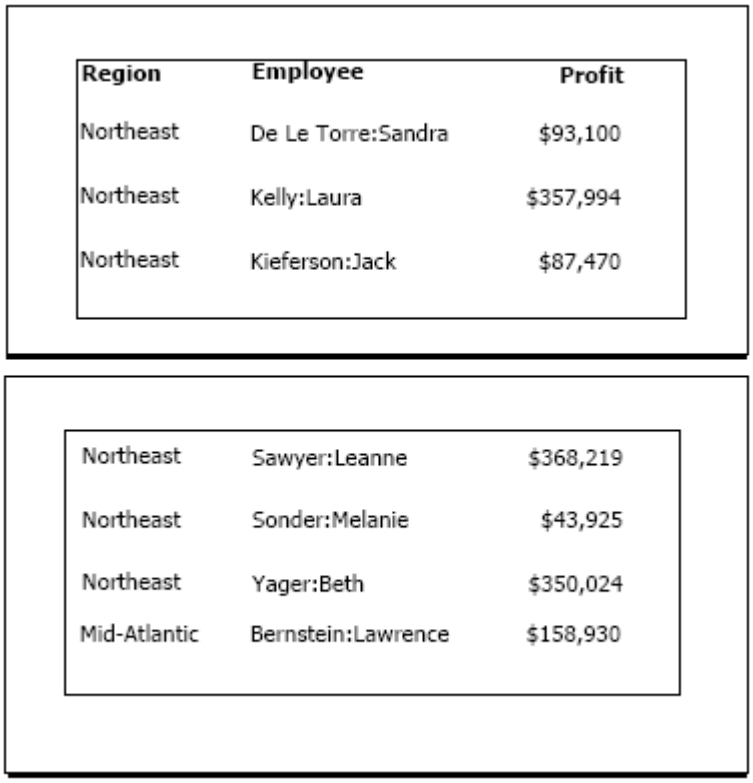
- To delete a threshold, select the threshold and select the **Delete Threshold** icon on the toolbar.
- To delete all thresholds, click the **Delete All Thresholds** icon.
- To add an additional condition to a threshold, select the threshold and select the **Add Condition** icon.
- To clear the conditions from a threshold, select the threshold and select the **Clear Conditions** icon.

4 Click **OK** to save the changes to the document.

Formatting the border or background of a document or layout

You can format the border or background of a document for a more professional-looking presentation. The document's border extends around

the printable area on each page of the document. The two pages of the sample document displayed below show a document border.



Region	Employee	Profit
Northeast	De Le Torre:Sandra	$93,100
Northeast	Kelly:Laura	$357,994
Northeast	Kieferson:Jack	$87,470

Northeast	Sawyer:Leanne	$368,219
Northeast	Sonder:Melanie	$43,925
Northeast	Yager:Beth	$350,024
Mid-Atlantic	Bernstein:Lawrence	$158,930

While the sample document border shown above is a thin black line around the entire border, other border line options include thick, hairline, dotted, dashed, and double. You can change the color of the border. You can also apply the border to one or more sides of the document.

If the document contains multiple layouts, you can format the border and background of each layout.

To format the border and background of a document or layout

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. From the **Tools** menu, select **Document Properties**. The Properties dialog box opens.
3. From the left, select **Color and Borders**.
4. From the **Fill** drop-down list, select a color for the background of the entire document.

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5 To format the borders, select one of the following options from the **Borders** area:

- **None**: Select this to remove the entire border.
- **All**: Select this to display borders for all sections of the document.
- **Custom**: Select this to customize borders using the drop-down lists.

6 Click **OK** to apply the changes and return to the document.

The section color takes precedence over the document/layout color. For steps to define the color of a document section, see *Formatting the background color of document sections, page 303*.

Adding watermarks to documents

A watermark is a faint design appearing in the background of a page. A watermark typically identifies or decorates pages. Examples include the word Confidential stamped on every page or a business logo appearing in the background of every page. If the document contains multiple layouts, the watermark appears in every page of every layout. Watermarks in documents can be either text or an image.

Watermarks are placed within the margins of the document; they do not extend to the edge of the page.

- In a text watermark, the text is automatically cropped if it extends past the document margins.
- For an image watermark, the image is automatically centered on the page. As with images placed elsewhere on a document, the image file must be stored so that it is available to both the Intelligence Server and to the designers of the document. For details, see *Inserting images in a document, page 152*.

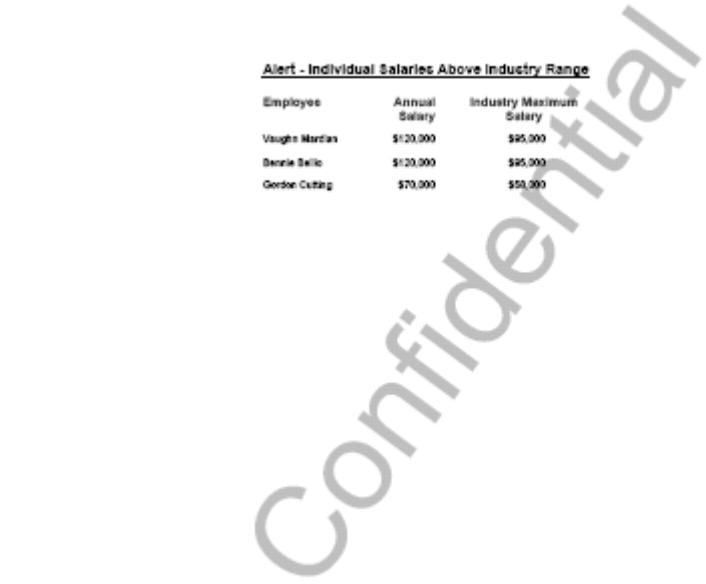
Watermarks are displayed in the exported PDF only; they are not shown in any other views or modes in MicroStrategy Developer and MicroStrategy Web.

A watermark is a document backdrop. Whatever you print on the page appears on top of the watermark. Therefore, any object that is not transparent prints over or hides the watermark. If you want a watermark to show through a grid or graph report in a Grid/Graph container, set the background of the Grid/Graph cells to transparent. The background of a text

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field, rectangle, and so on must be transparent to allow the watermark to show through them.

The Human Resources Analytic Module contains a report on salaries above the industry range. The following document uses that report as its dataset, and includes the word “Confidential” as a watermark across the page. The watermark text is displayed behind the other text.



The following document contains more than one page, and the image watermark is shown on all the pages. The image watermark is centered on the page.



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Project watermarks vs. document watermarks

You can define watermarks at both the project level and document level:

- A project watermark allows you to have the same watermark, such as a business logo, on every document in the project. A project watermark is also applied to reports when they are exported to PDF. You create project watermarks in MicroStrategy Developer. Project watermarks are displayed in both MicroStrategy Developer and MicroStrategy Web.
- A document watermark allows specific documents to have an individual watermark. Document watermarks overwrite project watermarks. You create document watermarks in MicroStrategy Developer and in MicroStrategy Web. Document watermarks are displayed in both MicroStrategy Developer and MicroStrategy Web.

For example, most documents display your business logo; however, internal documents need to be marked “Confidential”. Since a project watermark is overwritten by a document watermark by default, you can create a project watermark that uses the logo, but allow documents to overwrite the project watermark. For each internal document, create a document watermark with the text “Confidential”.

You can also choose to enable or disable document watermarks, to control whether project watermarks can be overwritten. This allows you to create a variety of watermarks for different purposes.

The following table describes how to achieve various results. Project-level settings are defined in MicroStrategy Developer; document-level settings can be defined in either MicroStrategy Developer or MicroStrategy Web.

Document Results	Project-Level Settings	Document-Level Settings
All documents in the project display the same watermark	• In MicroStrategy Developer, define the project watermark by clearing the **Allow documents to overwrite this watermark** check box	Not applicable
• Most documents in the project display the same watermark • All other documents in the project do not display a watermark	• In MicroStrategy Developer, define the project watermark by selecting the **Allow documents to overwrite this watermark** check box	In MicroStrategy Developer or Web, do one of the following: • For documents that display a watermark, select **Use project watermark** • For documents without watermarks, select **No watermark**

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Document Results	Project-Level Settings	Document-Level Settings
• Specific documents in the project have individual watermarks • All other documents in the project display the same watermark	• In MicroStrategy Developer, define the project watermark by selecting the **Allow documents to overwrite this watermark** check box	In MicroStrategy Developer or Web, do one of the following: • For the specific documents, define the document watermark • For other documents, select **Use project watermark**
• Specific documents in the project have individual watermarks • All other documents in the project do not display a watermark	In MicroStrategy Developer, do the following: • Select **No watermark** • Select the **Allow documents to overwrite this watermark** check box	In MicroStrategy Developer or Web, do one of the following: • For the specific documents, define the document watermark • For other documents, select **Use project watermark**
Each document has an individual watermark	In MicroStrategy Developer, do the following: • Select **No watermark** • Select the **Allow documents to overwrite this watermark** check box	In MicroStrategy Developer or Web, define a document watermark for each document
No documents display a watermark	In MicroStrategy Developer, do the following: • Select **No watermark** • Clear the **Allow documents to overwrite this watermark** check box	Not applicable

Reports use the project watermark when they are exported to PDF.

Creating a project watermark

A project watermark is used on all documents in the project, except for any documents that have a document-level watermark. The project watermark is also applied to reports when they are exported to PDF. Project watermarks are created in MicroStrategy Developer.

To ensure that the project watermark is used on all documents in the project, you can disable document watermarks. For steps, see *Disabling document watermarks for all documents in the project, page 349*.

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To create a project watermark for documents and reports

1 In MicroStrategy Developer, right-click your project and select **Project Configuration**. The Project Configuration Editor opens.

2 Expand the **Project Definition** category, then select **Document and Reports**.

3 Click **Watermark**. The Watermark dialog box opens.

4 A watermark can display either text or an image. Perform one of the following sets of steps, depending on whether you want to create a text watermark or an image watermark:

- To create a text watermark:

  a Select **Text watermark**.

  b In the **Text** field, type the text to display as the watermark, up to 255 characters.

  c To change the appearance of the text, click **Format**, which opens the Font tab of the Format Cells dialog box. You can select the font, size, color, and so on. For details on any of the options, click **Help**. Click **OK** when you have made your selections.

  By default, the watermark uses the font size defined in the Format Cells dialog box. To allow the font size to automatically adjust to fill the layout, select the **Size font automatically** check box. This can be useful if the document contains both portrait and landscape pages.

  d To fade the watermark to ensure that the document/report information is legible through the watermark, select the **Washout** check box.

  Any object that has a fill color, including a white fill, covers the watermark. If you want a watermark to show through a grid or graph report on the document, set the background of the Grid/Graph container's cells to transparent. The background of a text field, rectangle, and so on must be transparent to allow the watermark to show through these objects.

  e By default, the text is printed diagonally across the page. To print it horizontally instead, select **Horizontal** in the **Orientation** area.

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- To create an image watermark:

  The image file must be available to both the Intelligence Server and to the designers of the document. For details, see *Inserting images in a document, page 152*.

  a Select **Image watermark**.

  b Click **...** (the **Browse** button) next to the Source field. The Image Source dialog box opens.

  c Do one of the following to select and preview the image file:

  – Type the path and file name of the image in the text field. Click **Preview**.

  – Click **...** (the **Browse** button) and select the image file. The preview area automatically displays the image.

  d Click **OK**.

  e By default, the image is automatically resized to fit within the document/report margins while retaining the image's aspect ratio. To scale the image manually, select a percentage from the **Scale** drop-down list. The image is scaled to the selected percentage of its original size.

5 Click **OK** to return to the Project Configuration Editor.

6 To have all documents display this project watermark, clear the **Allow documents to overwrite this watermark** check box. If it remains selected, documents in this project can have their own watermarks, which overwrite the project watermark.

7 Click **OK** to return to MicroStrategy Developer.

Hiding a project watermark for a specific document

A project may have a watermark that is suitable for most documents. However, you may have a specific document in the project that you do not want to display any watermarks on. To achieve this, use the steps below to set the specific document's watermark to no watermark. Because document watermarks overwrite project watermarks by default, the document setting overrides the project setting and no watermarks are displayed for this document.

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To hide a project watermark for a specific document

Check that document watermarks are enabled

1 In MicroStrategy Developer, right-click your project and select **Project Configuration**. The Project Configuration Editor opens.

2 Expand the **Project Definition** category, then select **Document and Reports**.

3 Ensure that the **Allow documents to overwrite this watermark** check box is selected. This allows you to define document watermarks that overwrite the project watermark.

Create a blank document watermark

4 In MicroStrategy Developer, open the document in Design View.

You can also create a blank document watermark in Web, by selecting **No watermark** for the document watermark.

5 Select **Document Properties** from the **Format** menu. The Document Properties dialog box opens.

6 Select **Document**.

7 Click **Format** in the Watermark area. The Watermark dialog box opens.

8 Select **No watermark**.

9 Click **OK** to return to the document.

Creating document watermarks

By default, document watermarks are enabled and overwrite any project watermark that has been created. If you do not create a document watermark, the project watermark, if any, is used on the document.

This procedure affects the entire document, including all layouts of a multi-layout document.

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You can use either MicroStrategy Developer (see page 347) or MicroStrategy Web (see below) to create a document watermark. Instructions for both follow.

To create a document watermark using MicroStrategy Web

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

2 From the **Tools** menu, select **Document Properties**. The Properties dialog box opens.

3 From the left, select **Watermark**.

4 A watermark can display either text or an image. Perform one of the following sets of steps, depending on whether you want to create a text watermark or an image watermark:

- To create a text watermark:

  a From the **Watermark** drop-down list, select **Text watermark**.

  b In the **Text** field, type the text to display as the watermark, up to 255 characters.

  c To change the appearance of the text, click **Format**, which opens the Font Formatting dialog box. You can select the font, size, color, and so on. Click **OK** when you have made your selections.

  d By default, the watermark uses the font size defined in the Font Formatting dialog box. To allow the font size to automatically adjust to fill the layout, select the **Size font automatically** check box. This can be useful if the document contains both portrait and landscape pages.

  e To fade the watermark to ensure that the document information is legible through the watermark, select the **Washout** check box.

  f By default, the text is printed diagonally across the page. To print it horizontally instead, select **Horizontal** from the **Orientation** drop-down list.

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- To create an image watermark:

  a From the **Watermark** drop-down list, select **Image watermark**.

  The image file must be available to both the Intelligence Server and to the designers of the document. For details, see *Inserting images in a document, page 152*.

  b Type the path and file name of the image in the **Source** field.

  c By default, the image is automatically resized to fit within the document margins while retaining its aspect ratio. To scale the image manually, select a percentage from the **Scale** drop-down list.

5 Click **OK** to return to the document.

To create a document watermark using MicroStrategy Developer

1 In MicroStrategy Developer, open the document in Design View.

2 From the **Format** menu, select **Document Properties**. The Document Properties dialog box opens.

3 Select **Document**.

4 Click **Format** in the Watermark area. The Watermark dialog box opens.

5 Perform one of the following sets of steps, depending on whether you want to create a text watermark or an image watermark:

- To create a text watermark:

  a Select **Text watermark**.

  b In the **Text** field, type the text to display as the watermark, up to 255 characters.

  c To change the appearance of the text, click **Format**, which opens the Font tab of the Format Cells dialog box. You can select the font, size, color, and so on. Click **OK** when you have made your selections.

  d By default, the watermark uses the font size defined in the Format Cells dialog box. To allow the font size to automatically adjust to fill the layout, select the **Size font automatically** check box. This

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can be useful if the document contains both portrait and landscape pages.

e To fade the watermark to ensure that the document information is legible through the watermark, select the **Washout** check box.

Any object that has a fill color, including a white fill, covers the watermark. If you want a watermark to show through a Grid/Graph, set the background of the Grid/Graph's cells to transparent. Similarly, the background of a text field, rectangle, and so on must be transparent to allow the watermark to show through these objects.

f By default, the text is printed diagonally across the page. To print it horizontally instead, select **Horizontal** from the **Orientation** drop-down list.

- To create an image watermark:

The image file must be available to both the Intelligence Server and to the designers of the document. For details, see *Inserting images in a document, page 152*.

a Select **Image watermark**.

b Click **...** (the Browse button) next to the Source field. The Image Source dialog box opens.

c Do one of the following to select and preview the image file:

– Type the path and file name of the image in the text field. Click **Preview**.

– Click **...** (the Browse button) and select the image file. The preview area automatically displays the image.

d By default, the image is automatically resized to fit within the document margins while retaining its aspect ratio. To scale the image manually, select a percentage from the **Scale** drop-down list.

The Washout option is not available for an image watermark, as you can achieve the same result by creating the image using faded or dim colors.

6 Click **OK** to return to the document.

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Disabling document watermarks for all documents in the project

By default, document watermarks are enabled, meaning that they overwrite the project watermark. If you want all documents to use the project watermark and not have their own watermarks, use the steps below to disable document watermarks for all documents in the project.

Document watermarks are disabled using MicroStrategy Developer.

To disable document watermarks

1. In MicroStrategy Developer, right-click your project and select **Project Configuration**. The Project Configuration Editor opens.
2. Expand the **Project Definition** category, then select **Document and Reports**.
3. Clear the **Allow documents to overwrite this watermark** check box.
4. Click **OK** to return to MicroStrategy Developer.

Disabling all watermarks

If you do not want to allow any watermarks on any documents in the project, disable all watermarks. To do this, set the project watermark to no watermark and disable document watermarks, using MicroStrategy Developer. Both steps are included in the following procedure.

Setting the project watermark to no watermark also removes watermarks from reports.

To disable all watermarks (for documents and reports)

1. In MicroStrategy Developer, right-click your project and select **Project Configuration**. The Project Configuration Editor opens.
2. Expand the **Project Definition** category, then select **Document and Reports**.

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3 Click **Watermark**. The Watermark dialog box opens.

4 Select **No watermark**.

5 Click **OK** to return to the Project Configuration Editor.

6 Clear the **Allow documents to overwrite this watermark** check box.

7 Click **OK** to return to MicroStrategy Developer.

Determining display for end users

Designers can control which display modes users can view a document in. You can also define which display mode the document opens in, when it is first executed.

Analysts can run a document in a variety of displays, including Express Mode, Interactive Mode, and Flash Mode. For descriptions of the display modes, see *Display modes in MicroStrategy Web, page 2*. The steps below let you define display modes available to users, and which display mode a document opens in by default.

To enable Flash Mode, a project administrator must ensure that Flash Mode is enabled in the project, as described in the *Web Administrator Help*, under *Project Defaults*. An individual document designer or analyst can disable Flash Mode on his machine if he knows that Flash is not installed or does not want to use Flash. To do this, select **Preferences** at the top of MicroStrategy Web, select **Report Services** on the left, and select to enable or disable Flash Mode.

To select document display modes available to users and determine a default

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

2 From the **Tools** menu, select **Document Properties**. The Properties dialog box opens.

3 From the left, select **Document**.

4 To make a mode available in the document, in the Run Modes area, select the check box in the **Available display modes** column for that display

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mode. Options are described below, from allowing users the least control over changing the document to giving them the most control over changing the document:

- **Express**: Express Mode allows you to view the results of the document without allowing formatting or manipulating the data; this view is similar to a static PDF file. This mode provides better performance than all other modes, but the document is not interactive.
- **Flash**: Flash Mode allows you to view the results of the document and access features provided by Adobe Flash, such as interacting with widgets, using selectors to flip through the panels in a panel stack or display different attribute elements or metrics in a Grid/Graph, and sorting grid reports and pivoting report objects on them.
- **Interactive**: Interactive Mode allows you to view the results of the document, format the grids and graphs, sort grid reports and pivot report objects on them. You can resize rows and columns, add totals, and use selectors to flip through panels in a panel stack or display different attribute elements or metrics in a grid or graph report. This mode is optimized for Report Services (RS) dashboard viewing.

5 Clear the check boxes for any display modes that you do not want users to have access to. For a table comparing all display modes (including display modes intended for document designers), see *Display modes in MicroStrategy Web, page 2*.

6 Save a display mode as the default by selecting it from the **Run by default as** drop-down list.

7 Click **OK** to apply the changes and return to the document. The next time the document is executed, only the display modes you selected are available.

Letting users switch between grid and graph: Quick Switch

You can determine whether users can quickly switch (using a single click) between the grid view and graph view of a report in a document. (A report in a document is displayed in a Grid/Graph.)

If you enable Quick Switch, the Height and Width options for the Grid/Graph are automatically set to Fixed. The Fit to Contents option is disabled. This ensures that the graph or the grid will fill 100% of the size specified for

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the Grid/Graph. Therefore, you should view the final document to check that the height and width are correct after you enable Quick Switch.

Prerequisite

- The display mode of the Grid/Graph must be set to either **Graph** or to **Grid** before Quick Switch can be enabled. If the View option on the Layout tab of the Properties dialog box is set to **Grid and Graph**, the Quick Switch option is not available.
- If the Grid/Graph was originally designed to display as a grid report, ensure that the report meets the minimum object requirements to be successfully displayed as a graph. For requirements for all graph types, see the *Advanced Reporting Guide*. This will prevent formatting issues when users switch between grids and graphs.

To enable Quick Switch for a Grid/Graph

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Click the Grid/Graph to select it.
3. From the **Format** menu, select **Properties and Formatting**. The Properties and Formatting dialog box opens.
4. On the left, select **Layout**.
5. In the **Grid** area, select the **Quick Switch** check box. This ensures that a Quick Switch button appears at the top of the selected Grid/Graph and users can click it to quickly change between the grid and graph version of a report.

Hiding the floating grid toolbars in Flash Mode

When you hover the cursor over the column headings of a grid report in Flash Mode, a small floating toolbar is displayed.



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The toolbar allows users to sort or pivot a column of data. By default, this toolbar is displayed in documents in Flash Mode, but you can ensure that this toolbar will not display in a document.

To hide the floating grid toolbar in Flash Mode

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. From the **Tools** menu, select **Document Properties**. The Properties dialog box opens.
3. From the left, select **Document**.
4. Clear the **Show floating grid toolbars in Flash** check box.
5. Click **OK** to apply the changes and return to the document.

Allowing a document to be refreshed automatically in Express Mode

You can allow a document to be refreshed automatically, and select the length of time between refreshes. Refreshing a document provides real-time monitoring to ensure that the document cache is still valid. Automatic refresh is helpful if the document's data is frequently updated.

Document refresh applies to documents displayed in Express Mode and on iPhone, iPad, and Android devices. When document refresh is enabled, a user can pause and resume automatic document refreshing in Express Mode.

To enable automatic document refreshing

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. From the **Tools** menu, select **Document Properties**. The Properties dialog box opens.
3. From the left, under the Document Properties section, click **Advanced**.
4. Select the **Automatically Refresh** check box. In the field, type the amount of time, in seconds, to wait before each refresh.

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5 Click **OK**. The Properties dialog box closes.

Automatically resizing documents in Express Mode

You can allow a document to automatically resize itself each time that the document is run or the browser window that displays the document is resized. This is especially useful for optimizing the display of documents designed to be viewed on devices with different screen resolutions. This option applies to documents displayed in Express Mode in MicroStrategy Web.

You can have the document resize itself in one of the following ways:

- Have the document stretch or shrink to fit horizontally between the left-most and right-most edges of the browser window.
- Have the document stretch or shrink so that the entire page fits within the working space available in Web.

To allow a document to automatically resize itself in Express Mode

1 In Web, open the document in Express Mode.

2 From the drop-down list in the document's toolbar, select one of the following:

- To stretch or shrink the document so that it fits horizontally between the left-most and right-most edges of the browser window, select **Fit Width**.

  The document maintains the same aspect ratio when stretched or shrunk. If the document's height when stretched or shrunk exceeds the height of the browser window, you can use the scroll bars to view the rest of the document.

- To size the document so that the entire page fits within the working space available in Web, select **Fit Page**. The document maintains the same aspect ratio when stretched or shrunk.

3 Save the document. When the document is run or the browser window is resized in Express Mode, the document automatically resizes itself.

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Embedding fonts for Flash Mode

Before you view the document in Flash Mode in MicroStrategy Web, fonts must be embedded if the document contains any of the following:

- Anti-alias support
- Vertical text
- Graph labels rotated 45, 90, or 180°

If the font used for one of these features is not embedded, anti-alias is not used or the text is displayed horizontally.

The font definitions, such as Tahoma and ComicSans, are contained in SWF files. For example, these files can include the font types that support vertical text and font anti-aliasing in Flash Mode. For examples of vertical text, see *Displaying text vertically, page 289*.

To embed fonts for Flash Mode

Before you begin, save the SWF files in `C:\Program Files\MicroStrategy\Web ASPx\swf` or the directory in which the dashboardviewer.swf file is located.

1. Open the document in Design View in the Document Editor in MicroStrategy Developer.
2. From the **Format** menu, select **Document Properties**. The Document Properties dialog box opens.
3. Select **Flash** from the list of categories on the left.
4. In the **Embed the following fonts** field, enter the relative path and the name of the SWF file, such as `../swf/Tahoma.swf`. Separate multiple files with a comma.
5. Click **OK** to return to the document.

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Formatting a document for exporting or printing

You can control how the document is displayed and printed. This ensures that the end result (the printed document) appears as you want it to. These settings include:

- **Pagination**: You can control when a new page should start and when page numbering restarts. For details and steps, see *Adding page breaks and numbering pages, page 357*.
- **Page setup options**: You can control the display and printing of page margins, paper size, orientation (landscape or portrait), and scaling. For details and steps, see *Modifying page setup options, page 360*.
- **Horizontal overflow**: You can specify whether controls that extend beyond the width of a single page are printed on the next sheet of paper (the default setting) or on the same page. For examples and steps, see *Controlling horizontal overflow, page 364*.
- **Font embedding**: You can ensure that the fonts selected in the Document Editor are used to display and print the PDF, even on machines that do not have the original fonts installed. For more details and steps, see *Embedding fonts in PDFs, page 367*.
- **Graph resolution**: You can use bitmaps or vector graphs. Vector graphs are smaller than bitmaps and therefore reduce the size of the PDF, while still providing good quality printed graphs. Bitmaps allow background patterns, rectangular gradients, texture backgrounds, and picture backgrounds. If the PDF uses bitmaps, you can also select whether to use draft quality, which uses a lower resolution to reduce the size of the PDF. For details and steps, see *Changing graph resolution in PDFs, page 369*.
- **Bookmarks**: You can create bookmarks in the PDF, to allow quick access to specific areas of the file. You can specify that the bookmarks are hidden when the PDF opens, to maximize the amount of space for the document. The user can then display and use the bookmarks. For examples and steps, see *Including or hiding bookmarks in PDFs, page 370*.

  Bookmarks cannot be created if the document is not grouped. For information on grouping a document, see *Grouping records in a document, page 388*.

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- **Table of contents**: You can create an interactive table of contents as the first page of the PDF. For examples and steps, see *Including interactive tables of contents in PDFs, page 372*.

  A table of contents can be created only if a document has multiple layouts and/or is grouped. For more information on multi-layout documents, see *Creating multi-layout documents, page 512*. For information on grouping a document, see *Grouping records in a document, page 388*.

After you set up a document to be exported or printed successfully as a PDF, you can then refine the location or size of controls on the document to ensure that it looks exactly the way that you want it. For steps, see *Arranging controls on a document, page 158*.

Adding page breaks and numbering pages

In a document, you can determine when a new page should start and how the page numbers print. For example, you can have a page break before each new section and have page numbering restart at 1 for each section. This section provides steps for:

- *Adding a page break to a document, page 357*
- *Adding page numbers to a document, page 358*

Adding a page break to a document

You can add page breaks to a document to signify the beginning of a new document section.

For example, to create a cover page, use the Document Header section to display the title and author, inserting a page break after the Document Header. To print each Detail section on a separate page, add page breaks after each section. To print the Detail Header and Detail Footer separately from the Detail section, use the **Before and after section** setting.

You can also add page breaks between groups. For more information, see *Adding a page break for a group, page 410*.

To add a page break to a document

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Select the section to print or display on a new page. To do this, click in a blank area in the section.
3. Right-click the section and select **Properties and Formatting**. The Properties and Formatting dialog box opens.
4. On the left, select **Layout**.
5. From the **Force New Page** drop-down list in the PDF area, select how you want the page break to occur:
   - **None**: Does not insert a page break. The section continues immediately after the previous section.
   - **Before section**: Causes the page break to occur before the section begins.
   - **After section**: Causes the page break to occur at the end of the section.
   - **Before and after section**: Inserts the break both before the section and after it.
6. Click **OK** to save your changes and return to the document.

Adding page numbers to a document

By default, a document does not have any page numbers printed on it. You can add them anywhere you want in the document, although page numbers are typically placed in the Page Header or Page Footer sections.

Auto text codes related to pagination, such as Page Number and Total Page, apply when the document is viewed in PDF or printed. For more information on auto text codes, see *Displaying document and dataset information: Auto text codes, page 88*.

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To add page numbers to a document

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Expand the document section where you want the page number, by clicking the plus sign next to the section name.
3. From the **Insert** menu, select **Auto Text**, and then select **Page Number**. The text field is inserted at the top left corner of the selected section, but you can reposition it.
4. You can add the total number of pages in the document. From the **Insert** menu, select **Auto Text**, and then select **Total Pages**. The text field is inserted at the top left corner of the selected section, but you can reposition it.
5. Click the **Apply** icon.
6. To print a label such as "Page 1 of 8", do the following:
   a. Click **Text** on the toolbar.
   b. In the section you expanded above, click where you want the label. A blank text field is inserted.
   c. In the text field, type `Page`, followed by a space.
   d. From the **Insert** menu, select **Auto Text**, and then select **Page Number**.
   e. Type a space, then type `of`, then type another space.
   f. From the **Insert** menu, select **Auto Text**, and then select **Total Pages**.
   g. Click anywhere outside of the text field to stop editing it.
   h. Click **Text** on the toolbar.
   i. In the section you expanded, click where you want the page number to be located. The new text field is inserted.
   j. Type any text and/or codes in the text field. The code for page number is {&PAGE}. The code for the total number of pages in the document is {&NPAGES}.

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Modifying page setup options

You can modify the document's appearance before printing to ensure that the end result (the printed document) appears as desired. You can modify options such as paper size, borders, section display, and horizontal overflow.

Horizontal overflow specifies whether controls that extend beyond the width of a single page are printed on the next sheet of paper (the default setting) or on the same page. For examples and steps, see *Controlling horizontal overflow, page 364*.

For a multi-layout document, each layout can have different page setup options. For more information on multi-layout documents, including which options apply to the document as a whole or to individual layouts, see *Creating multi-layout documents, page 512*.

To modify the page setup options

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. If the document contains multiple layouts, click the tab of the layout whose printing options you want to modify.
3. From the **Home** menu, select **Page Setup**. The Properties dialog box opens.
4. On the left, select **Page**.
5. To change the paper size, select the new size, such as **Letter** or **Legal**, from the **Paper Size** drop-down list. This option alters the values for both **Width** and **Height**.
6. You can change the **Width** or **Height** of the page. These settings take priority over the Paper Size and Orientation settings. If you increase Width or Height beyond the Paper Size setting, then Paper Size and Orientation automatically adjust accordingly.
7. You can change the paper orientation to either **Portrait** (default) or **Landscape**. This option alters the values for both **Width** and **Height**.
8. By default, the document is scaled to 100% (full size). You can change this by doing one of the following:

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- To increase or decrease the scale of the document, select **Adjust to** and then enter the scale percentage.
- To scale the document to a specific number of pages, select the **Fit to** option. You can then set both the number of pages wide, for horizontal scaling, and tall, for vertical scaling. The Fit to option ensures that the document fits within the parameters, but it does not increase the size of the document. If the document is already smaller than the set width and height, it will not be expanded.

9 To apply the scaling to the Page Header and Footer sections, select the **Scale page header/footer** check box. If the check box is cleared (default), the contents of the Page Header and Footer sections are printed at the size specified in the Property List, regardless of the scaling percentage applied to the rest of the document.

10 **Horizontal fit** specifies how to handle overflow content that does not fit on a single horizontal page. Horizontal fit specifies whether controls that extend beyond the width of a single page are printed on the next sheet of paper or on the same page. This option determines whether controls are printed left to right on multiple pages or immediately below each other on the same page.

By default, the overflow is printed on the next page. To print the overflow on the same page, select **Below** from the **Overflow** drop-down list. For examples of horizontal fit, see *Controlling horizontal overflow, page 364*.

11 To define page margins, do the following:

a On the left, click **Margins**.

b To change the distance between the top of the page and the top of the document or the top of the border, enter the new measurement in **Top**.

c To change the distance between the bottom of the page and the bottom of the document or the bottom of the border, enter the new measurement in **Bottom**.

d To change the distance between the left side of the page and the left side of the document or the left edge of the border, enter the new measurement in **Left**.

e To change the distance between the right side of the page and the right side of the document or the right edge of the border, enter the new measurement in **Right**.

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12 When all changes are complete, click **OK** to apply the changes and return to the document.

Printing a document on a single page

You may have a document that contains so many columns and/or rows that it prints on multiple pages, but the document needs to fit on a single page. Depending on the content, you can try any of these solutions:

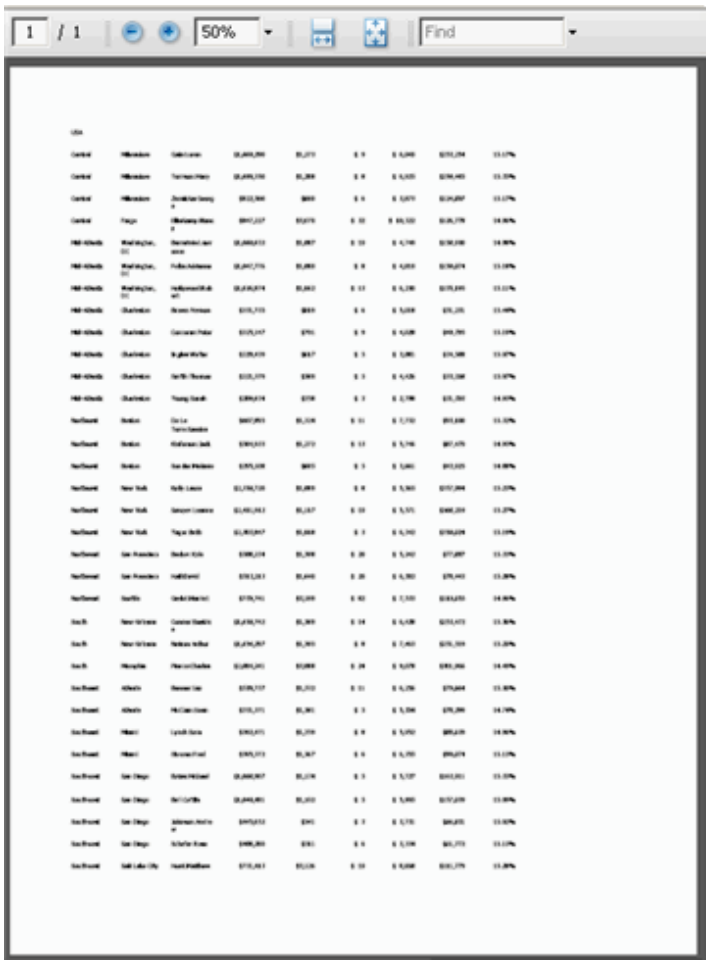
- Decreasing the font size of the text, by right-clicking the control and selecting **Properties and Formatting**. Select **Font** from the list on the left, and select a smaller font in the **Size** field.
- Scaling the document to fit on a single page, by selecting **Document Properties** from the **Format** menu. Select **Page** from the list on the left. Click **Fit to**, and then type **1** in the next two fields, to fit the document to one page wide by one page tall.

  If the document is grouped, you can combine scaling with the **Page break between groups** option in the Grouping Properties dialog box. This option fits each group onto a single page, and helps when the document is too big to fit on a single page.

For example, a document contains nine columns of data and is grouped by Country. Printed at full size, the document is two pages across and two pages

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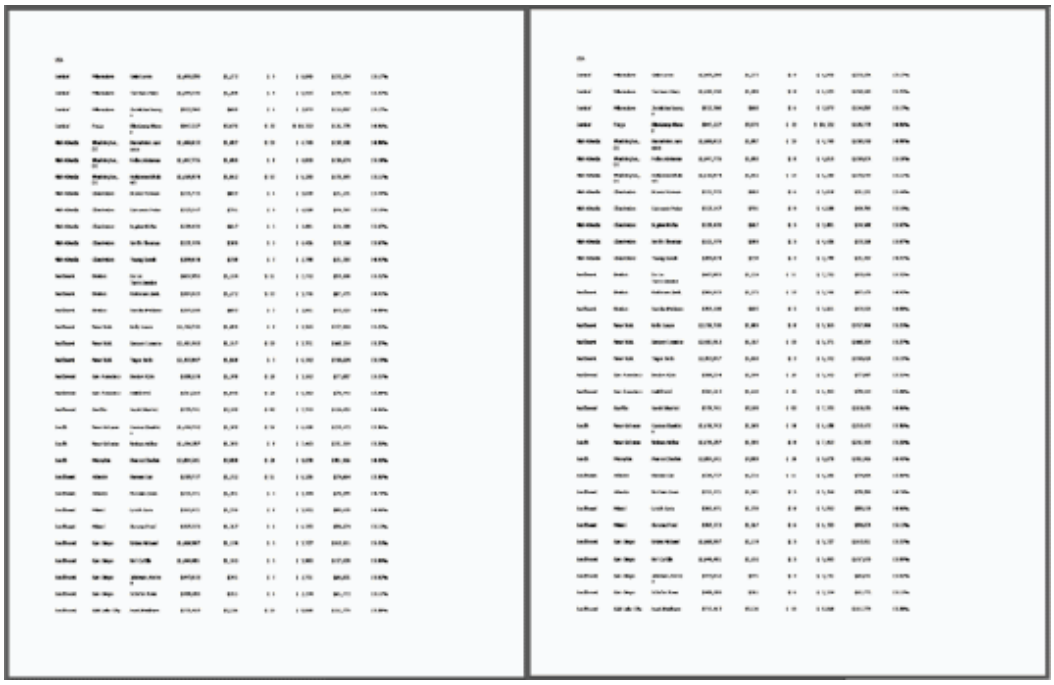
long, for a total of four pages. The document can be scaled to fit on a single page, as shown below:



You can also use the **Page break between groups** option to apply **Fit to Page** scaling to separate groups instead of applying it to the whole document. For example, a document grouped by region contains nine columns. Each region is two pages in width and two pages in length, but should print on a single page. The **Page break between groups** option forces a page break between each region. Since the document cannot then be

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fit on a single page, the page scaling is applied to each group. Shown below are the first two pages of the document.

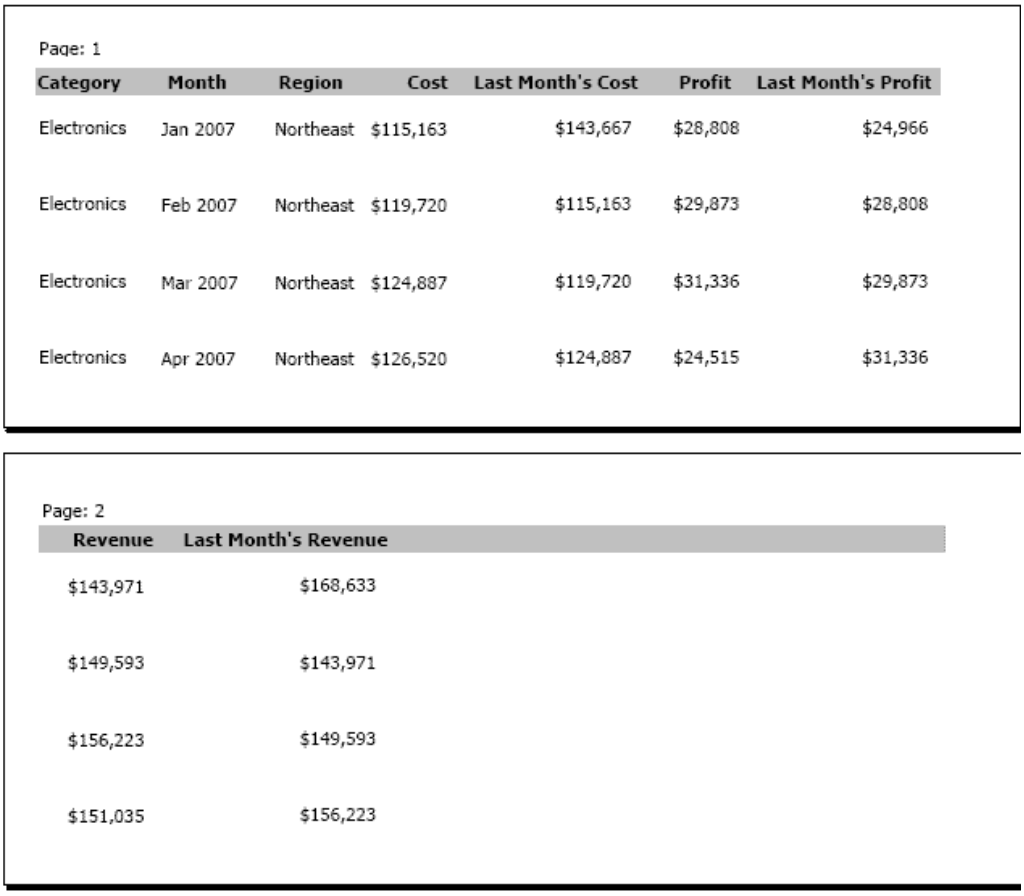


Controlling horizontal overflow

If the controls on a document extend beyond the width of a single page, the controls that overflow are printed on the next page. You can change this default setting to allow the overflow to print on the same page. Instead of printing the controls left to right on multiple pages, the controls are printed immediately below each other on the same page.

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For example, the following document is wider than the page size, so by default it is split onto two pages, as shown below:



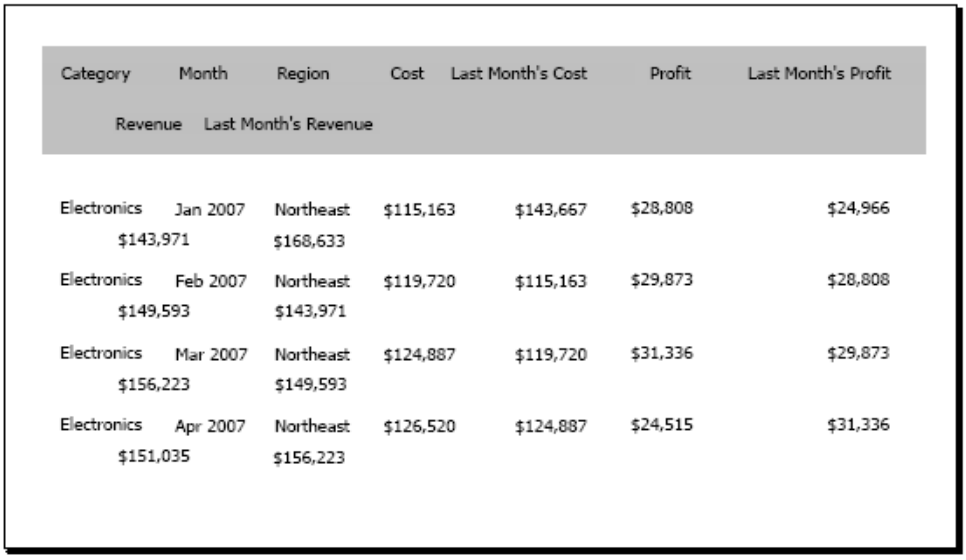
Page: 1

Category	Month	Region	Cost	Last Month's Cost	Profit	Last Month's Profit
Electronics	Jan 2007	Northeast	$115,163	$143,667	$28,808	$24,966
Electronics	Feb 2007	Northeast	$119,720	$115,163	$29,873	$28,808
Electronics	Mar 2007	Northeast	$124,887	$119,720	$31,336	$29,873
Electronics	Apr 2007	Northeast	$126,520	$124,887	$24,515	$31,336

Page: 2

Revenue	Last Month's Revenue
$143,971	$168,633
$149,593	$143,971
$156,223	$149,593
$151,035	$156,223

If you want to see the figures for each row on the same page, change the overflow setting to **Below**. The part of the section that would have printed on page two is now printed on page one, directly beneath the first part:



Category	Month	Region	Cost	Last Month's Cost	Profit	Last Month's Profit	Revenue	Last Month's Revenue
Electronics	Jan 2007	Northeast	$115,163	$143,667	$28,808	$24,966	$143,971	$168,633
Electronics	Feb 2007	Northeast	$119,720	$115,163	$29,873	$28,808	$149,593	$143,971
Electronics	Mar 2007	Northeast	$124,887	$119,720	$31,336	$29,873	$156,223	$149,593
Electronics	Apr 2007	Northeast	$126,520	$124,887	$24,515	$31,336	$151,035	$156,223

The Horizontal overflow setting applies to all sections of the document because it is set at the document level.

You can designate a different horizontal overflow for each layout of a multi-layout document. For details on multi-layout documents, see *Creating multi-layout documents, page 512*.

To control horizontal overflow

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

2 From the **Home** menu, select **Page Setup**. The Properties dialog box opens to the Page section.

3 From the **Overflow** drop-down list, select one of the following:

- **Next Page**: Horizontal overflow is printed on the next page.
- **Below**: Horizontal overflow is printed on the next page.

4 Click **OK** to apply the changes.

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Embedding fonts in PDFs

Embedding fonts ensures that the original fonts selected in the Document Editor are used to display and print the PDF, even on machines that do not have the original fonts installed. No font substitutions are made.

Embedding fonts allows you to:

- Use language fonts other than Simplified Chinese, Traditional Chinese, English, Japanese, Korean, and Western European in PDFs
- Provide a true Unicode environment, where one document contains different languages

  Font embedding is not required if the only languages used are Simplified Chinese, Traditional Chinese, Japanese, or Korean, and the matching language fonts are used instead of a Unicode font.

- Create PDFs containing Simplified Chinese, Traditional Chinese, Japanese, or Korean characters for any machine, even one without the corresponding Acrobat Reader language pack

  Acrobat Reader cannot display bookmarks in the correct language font unless the corresponding language pack is installed on the user's machine. The remainder of the PDF will display and print the languages correctly. This Acrobat Reader requirement applies to all languages other than English and Western European.

- Create truly portable PDFs to email and to publish on the web, even if you do not have control over the machines that will display and print the PDFs

  For a MicroStrategy Web user to view the embedded fonts, the fonts must be installed on the Intelligence Server machine.

- Bullets, thresholds, and any other objects that require special fonts are displayed correctly if the PDF is displayed on a Kindle or Nook. For more best practices on designing documents for the Kindle or Nook, see *Best practices: Designing documents for Kindle and Nook, page 16*.

Considerations before you embed fonts include:

- Embedded fonts may create a larger PDF, because the file now includes extra font data and encoding tables. Additionally, single-byte languages use two bytes.
- Embedded fonts require a longer generation time for the PDF, since the file is larger and extra processing is needed to embed the fonts.

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- Embedded fonts create a larger memory footprint due to the number of fonts, the number of embedded characters, and the size of the PDF output.

The **Embed fonts in PDF** setting in the steps below ensures that if the fonts used in the document are available on the machine that generates the PDF, the fonts are embedded in the PDF. When you execute a document in MicroStrategy Developer, the PDF is generated by that client machine. When you execute a document in MicroStrategy Web, the PDF is generated by the Intelligence Server machine.

If you edit a document containing embedded fonts on a machine that does not have those fonts installed, a Windows default font is displayed instead. For example, this scenario can occur when you create a document and embed fonts for Japanese. In this case, the Japanese fonts are installed on that machine and the Intelligence Server used for the project. Another user views the document on a different machine that does not have Japanese fonts. The document displays correctly because you embedded the fonts. If that user edits the document, the Japanese characters are displayed in the font that Windows selects as the closest match to the missing font. If this occurs, do not change the font selections, which are set to blank automatically, so that they will continue to display correctly in the PDF.

The solution is to install the font on any machine that is used to edit the document.

This procedure affects the entire document, including all layouts of a multi-layout document. For more information on multi-layout documents, see *Creating multi-layout documents, page 512*.

To embed fonts in a PDF

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. From the **Tools** menu, select **Document Properties**. The Properties dialog box opens.
3. On the left, select **Export**.
4. In the PDF area, select the **Embed fonts in PDF** check box.
5. Click **OK** to return to the document.

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Changing graph resolution in PDFs

By default, graphs are generated using vector graphs, which are much smaller than bitmaps and reduce the size of the PDF. They also provide good quality resolution for printed graphs.

You can use bitmaps (.bmp) if you want to use any of the following, which are not supported by vector graphs:

- Background patterns (only the background color of the pattern is used)
- Rectangular gradients (linear and circular gradients are supported; rectangular gradients are converted to circular gradients)
- Texture and picture backgrounds (a solid white background is applied)

If bitmaps are generated instead of vector graphs, you can generate them using a lower resolution, or draft quality. This reduces the size of the PDF and impacts the printed quality of the graphs, but generally not the quality of the on-screen graph images.

This procedure affects the entire document, including all layouts of a multi-layout document. For more information on multi-layout documents, see *Creating multi-layout documents, page 512*.

To change the graph resolution in PDFs

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. From the **Tools** menu, select **Document Properties**. The Properties dialog box opens.
3. On the left, select **Export**.
4. In the **PDF** area, select the **Use bitmaps for graphs** check box.
5. To use a lower resolution for bitmap graphs and reduce the size of the PDF, select the **Use draft quality for graphs** check box.
6. Click **OK** to return to the document.
7. To view the PDF, click the **PDF** icon on the Standard toolbar.

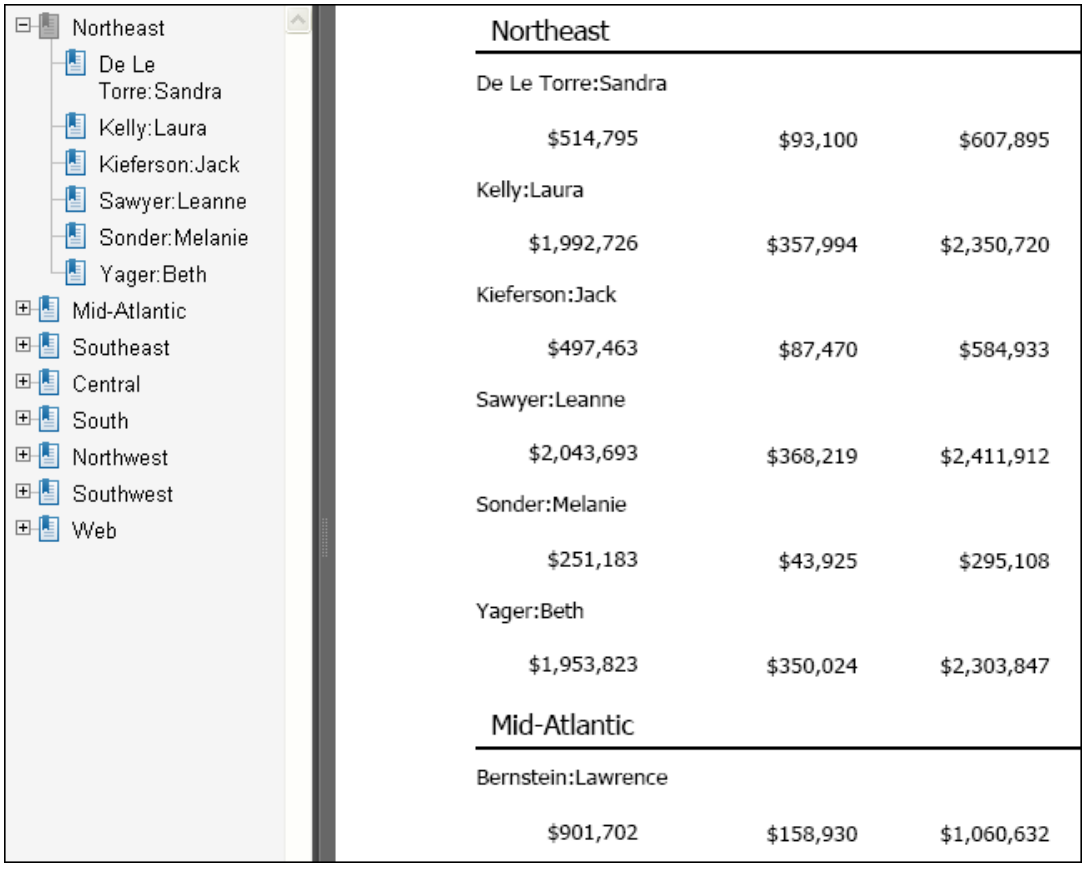
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Including or hiding bookmarks in PDFs

Bookmarks identify parts of a PDF, allowing quick access to specific areas of the file. Bookmarks are displayed in the PDF in a tree format, creating a table of contents as a navigation aid. A link is included for each element of each grouping field in the document.

Bookmarks are automatically created when a document is grouped or contains multiple layouts. For steps to group a document, see *Grouping records in a document, page 388*. For steps to create a multi-layout document, see *Creating multi-layout documents, page 512*.

For example, a document is grouped by Region and then Employee. The PDF is created with bookmarks, as shown in the following sample.



When bookmarks are created, the bookmark panel is automatically shown when the PDF is viewed. You can choose to hide the bookmark panel initially to maximize the amount of space for the document. Users can display bookmarks at any time. You can also choose to not generate the bookmarks if, for example, the PDF includes an interactive table of contents (see *Including interactive tables of contents in PDFs, page 372*).

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If the document will be viewed on a Nook, include bookmarks so that a user can quickly access a specific section of the document. On the Nook, bookmarks are displayed in the PDF in a tree format, creating a table of contents as a navigation aid.

For more information on using bookmarks in PDFs, consult the product documentation for Acrobat Reader.

These procedures affect the entire document, including all layouts of a multi-layout document. For examples and steps, see *Creating multi-layout documents, page 512*.

To include bookmarks in PDFs

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. From the **Tools** menu, select **Document Properties**. The Properties dialog box opens.
3. On the left, select **Export**.
4. In the **PDF** area, select the **Include bookmarks in PDF** check box.
5. Ensure that the **Show bookmarks in PDF** check box is selected, so that the bookmarks are displayed.
6. Click **OK** to return to the document.
7. To view the PDF, click the **PDF** icon on the Standard toolbar. The PDF displays bookmarks.

To hide bookmarks in a PDF

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. From the **Tools** menu, select **Document Properties**. The Properties dialog box opens.
3. On the left, select **Export**.
4. In the **PDF** area, clear the **Show bookmarks in PDF** check box. This option is unavailable if the **Include bookmarks in PDF** check box is cleared.

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5 Click **OK** to return to the document.

6 To view the PDF, click the **PDF** icon on the Standard toolbar. The bookmark panel is not automatically displayed.

To specify that bookmarks are not generated

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

2 From the **Tools** menu, select **Document Properties**. The Properties dialog box opens.

3 On the left, select **Export**.

4 In the **PDF** area, clear the **Include bookmarks in PDF** check box.

5 Click **OK** to return to the document.

6 To view the PDF, click the **PDF** icon on the Standard toolbar. The PDF does not display bookmarks.

Including interactive tables of contents in PDFs

A table of contents allows a user to quickly access specific areas of the PDF. In the exported PDF, users can click a label or page number to jump to that area. An entry is created in the table of contents for each element of each grouping field and, if the document contains multiple layouts, each layout.

You can create a table of contents only if a document has multiple layouts and/or is grouped. For steps to group a document, see *Grouping records in a document, page 388*. For details on multi-layout documents, see *Creating multi-layout documents, page 512*.

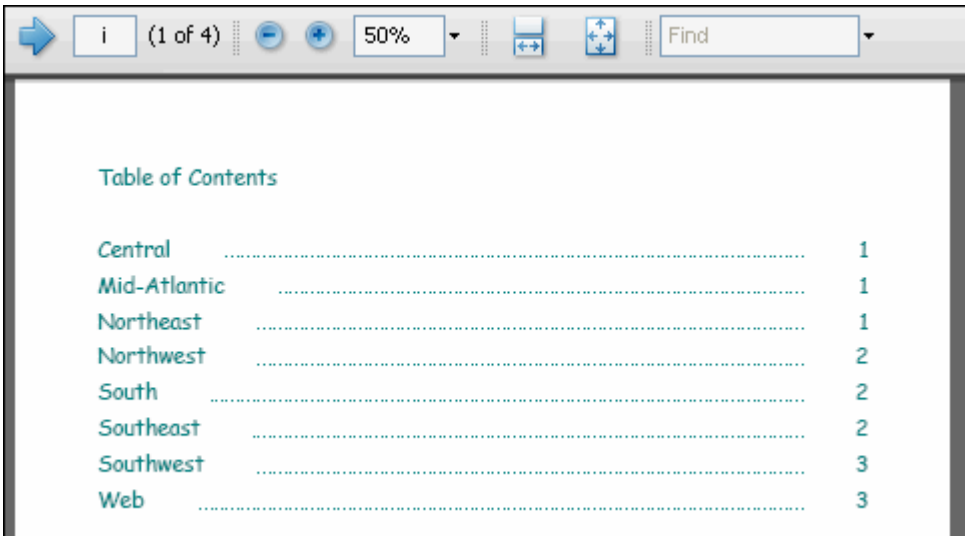
Tables of contents are displayed in exported PDFs in MicroStrategy Web and in PDF View in MicroStrategy Developer.

Examples are provided below for a table of contents in a grouped document, in a multi-layout document, and in a grouped multi-layout document.

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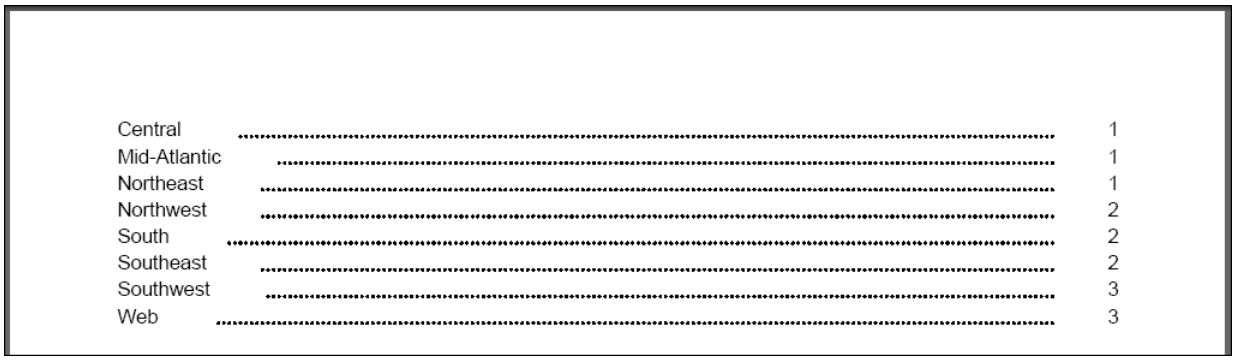
The table of contents in a grouped document: Example

For example, a document is grouped by region and includes a table of contents. When you view the document as a PDF, the first page of the PDF is the table of contents. The entries in the table of contents are the regions, as shown below. A user can click a region (such as Central) or a page number to jump to that region in the PDF.



The page number is displayed as the Roman numeral i (in the toolbar at the top of the image), while the data begins on page 1. The table of contents is inserted at the beginning of the document and is not included in the page numbering of the document itself.

In the above example, the title “Table of contents” was added and the font was formatted. (Steps to add a title and change the font are included below.) The example below shows the default appearance of the table of contents:



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The table of contents in a multi-layout document: Example

For example, a document contains the following three layouts, listed in order:

- Revenue by Category (1)
- Regional Revenue (2)
- Yearly Revenue (3)

This document contains a table of contents. By default, it is displayed on the first page of the PDF, as shown below:



Each of the three layouts is listed in the table of contents. Change the table of contents to display before the second layout, Regional Revenue (2). Now the PDF displays the Revenue by Category (1) layout, followed by the table of contents shown below, which contains information for the last two layouts only:

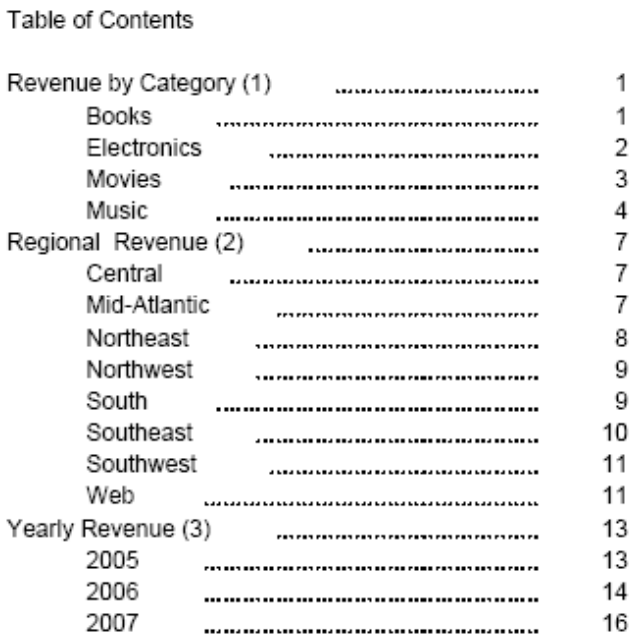


Changing the location of the table of contents is useful when you want to include a cover page before the table of contents.

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The table of contents in a grouped multi-layout document: Example

If your document contains layouts and groups, the table of contents displays both, as shown in the PDF below. The layouts are the top level entries, while the groups are shown within each layout.



Creating a table of contents

To include an interactive table of contents in a PDF

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. From the **Tools** menu, select **Document Properties**. The Properties dialog box opens.
3. On the left, select **Table of Contents**.
4. Select the **Include Table of Contents** check box.
5. To display a title for the table of contents, enter the text in the **Title** field. If the **Title** field is blank, the title will be displayed as Table of Contents.
6. From the **Align** drop-down list, specify the text alignment to use to display the title. The options are **Left** (default), **Center**, and **Right**.

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7 To format the title of the table of contents using the formatting options selected for the entries in the table of contents, select the **Inherit Formatting From Body** check box.

8 To format the font that is used to display the title, in the Font section, click the **Format** icon. The Font Formatting dialog box opens. Select the appropriate font formatting options such as the font type, font size, color, and so on. A preview of your selected font formatting is shown in the Sample area. Click **OK** when you have made your selections. This option is only available if the Inherit Formatting From Body option is selected.

9 From the **Fill Color** palette, select a color to apply to the background of the title. To access additional colors, click **More Colors**. This option is only available if the Inherit Formatting From Body option is selected.

10 To format the font used to display the entries in the table of contents, in the Body section, click the **Format** icon. The Font Formatting dialog box opens. Select the appropriate font formatting options such as the font type, font size, color, and so on. A preview of your selected font formatting is shown in the Sample area. Click **OK** when you have made your selections.

11 From the **Fill Color** palette, select a color to apply to the background of the entries. To access additional colors, click **More Colors**.

12 You can specify the amount of indentation to apply to entries in the table of contents. In the **Left** and **Right** fields, type the amount of space to display between the left and right borders of the table of contents and the entries.

13 From the **Style** drop-down list, select the line style to use to display the border around the table of contents.

14 From the **Color** palette, select the line color to use to display the border around the table of contents. To access additional colors, click **More Colors**.

15 In the **Weight** field, type the line thickness to use to display the border.

16 By default, tab leaders are shown. Tab leaders are a series of dots connecting the item with the page number. To disable them, clear the **Show tab leader** check box.

17 To include the page header and footer on the table of contents page in the exported PDF, select the **Include Page Header/Footer** check box. This check box is cleared by default.

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18 If the document contains multiple layouts, the **Before layout** drop-down list is available. By default, the table of contents is displayed before the first layout, but you can select a different layout from the list.

19 Click **OK** to return to the document.

20 To view the PDF, click the **PDF** icon on the Standard toolbar.

Formatting a document for export

Exporting allows you to send data to other applications such as Microsoft Excel or Adobe Flash. You can:

- Export data to a Microsoft Excel spreadsheet for further manipulation and use.

  Before you export to Excel, see *Best practices: Designing documents for Excel, page 14* for tips to create a document that will display correctly when it is exported to Excel.

  For steps to export documents to Excel, see the *Document and Dashboard Analysis Guide*.

- Export a Report Services (RS) dashboard to a Flash file, so that users can view the Flash content and interact with it off-line, without using MicroStrategy. The Flash file is a fully interactive, stand-alone Flash RS dashboard.

  For more information and steps to export documents to Flash files, see the *Document and Dashboard Analysis Guide*.

- Export the document to a PDF file, and keep the file open in a separate window outside of the Document Editor. You can then return to the Document Editor, switch to Design View, and edit the document, while keeping a copy of the PDF open to refer to.

  For steps to open the PDF in a separate window, see the *Document and Dashboard Analysis Guide*.

Before you can export a document, you must select the formats that the document can be exported to. For steps, see *Selecting available export formats, page 378*.

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For export to Excel, HTML, and PDF, you can specify default exporting options, or you can allow users to be prompted to make these choices. These options are described below:

- If your document is grouped, you can choose to export the entire document or only the selected group element. Page-by allows you to view the document by a selected group element. For information on grouping, including examples, see *Grouping records in a document, page 388*; for more information on page-by, including examples, see *Using page-by on a document, page 418*.
- If your document contains multiple layouts, you can choose to export the entire document or only the current layout. For more information on how layouts are exported to Excel, see *Exporting multi-layout documents, page 522*.

For detailed instructions, see *Specifying default export options, page 379*.

Before you export a document that contains multi-code page translations, such as English and Japanese, to PDF, the fonts for labels, Grid/Graph objects, and so on should be set to a Unicode font such as Arial Unicode MS. This allows all characters to be shown by default when a user changes the metadata language.

Selecting available export formats

Before you can export a document, you must select the formats the document can be exported to.

This procedure affects the entire document, including all layouts of a multi-layout document. For more information on multi-layout documents, see *Creating multi-layout documents, page 512*.

To select the available export formats

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. From the **Tools** menu, select **Document Properties**. The Properties dialog box opens.
3. On the left, select **Document**.
4. In the **Run Modes** area, select the format(s) in which the document can be exported:

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- **Excel**: This allows the user to export the document to Microsoft Excel in .xls format. After the document is exported, the content of the document is displayed using the default settings in Microsoft Excel. The document does not retain the structure and format as it appears in MicroStrategy Web.
- **HTML**: This allows the user to export the document to an HTML editor or browser in .html format. After the document is exported, it is displayed in an HTML page. The document retains its structure and format as it appears in MicroStrategy Web.
- **Flash**: This allows the user to export the document to an Adobe Flash file in .mht or .pdf format. After the document is exported, it retains its structure and format as it appears in MicroStrategy Web. Users must have Adobe Flash installed on their machine to view the exported file in Flash.
- **PDF**: This allows the user to export the document to an Adobe PDF viewer in .pdf format. After the document is exported, it retains its structure and format as it appears in MicroStrategy Web.

5 You can save any of these export formats as the default export format, by selecting the format in the **Run by default as** drop-down list.

6 Click **OK** to apply your selections.

Specifying default export options

You can set default export options:

- That apply to Excel only

  These options affect images that are displayed in Excel. They include the graph format and whether to embed images.

  A document section setting also affects the row height of the Excel spreadsheet. You can choose to have all the rows be the same height or to allow Excel to automatically adjust the row height to fit the data. For instructions and an example, see *Allowing Excel to automatically change row height, page 384*.

- That apply to PDF only

  These options include graph resolution, embedded fonts, bookmarks, and interactive tables of contents.

- That apply to Excel, HTML, and PDF

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These include how to export grouped documents and multi-layout documents, and whether to prompt users who export documents.

Instructions follow for all of the default export options.

To set default export options

This procedure affects the entire document, including all layouts of a multi-layout document. For more information on multi-layout documents, see *Creating multi-layout documents, page 512*.

1. Open the document in Design View in the Document Editor.
2. From the **Format** menu, select **Document Properties**. The Document Properties dialog box opens.
3. Select **Export**.
4. For a multi-layout document, select whether to **Export:**
   - **All layouts**, which exports all the layouts in the document (If the document will be viewed on a Kindle or Nook, select **All layouts** so that the Kindle or Nook user can see all the data.)
   - **Current layout**, which exports only the layout being viewed
5. For a grouped document, select whether to export the entire document or only the selected group element:
   - To export the entire document, select the **Expand page-by** check box. (If the document will be viewed on a Kindle, select **Expand page-by** so that the Kindle user can see all the data.)
   - To export only the selected group element, clear the **Expand page-by** check box.
6. Select whether to prompt the user to choose what to export.
   - To prompt the user, select the **Prompt user on export** check box. The prompts allow the user to select whether to export all layouts or just the current layout of a multi-layout document, and whether to export

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the entire document or only the selected group element of a grouped document.

If **Prompt user on export** is selected, but either of the following is true, the user is not prompted, and the **Export** and **Expand page-by** settings set above are used:

- The document has one layout and no grouping.
- The document has one layout, is grouped, and the page-by selections are set to all.

- To disable prompting, clear the **Prompt user on export** check box. The **Export** and **Expand page-by** options set above are used when the document is exported.
- To prompt the user, select the **Prompt user on export** check box.

Specifying Excel export options

The following steps apply to documents exported to Excel only.

7 To embed images so that a user can see the image when he opens the Excel file on another computer that does not have a network connection, select the **Embed images** check box.

Image embedding is available only in Excel 2003 or later.

8 Select whether to **Use live Excel charts** or **Use embedded bitmaps** as the **Graph format**.

For a description of how these settings interact to display images, see *Displaying images in Excel, page 382*.

Specifying PDF export options

The following steps apply to documents exported to PDF only.

9 Select whether to **Include bookmarks in the PDF**. Bookmarks are generated for each element of each grouping field in the document, creating a table of contents for the PDF. If the document is not grouped, no bookmarks are generated. For more information on bookmarks, including examples, see *Including or hiding bookmarks in PDFs, page 370*.

10 If you include bookmarks, select the **Show bookmarks in PDF** check box, so that the bookmarks are displayed when the PDF is viewed. If the

check box is cleared, the bookmarks can still be generated but they are not displayed automatically when the PDF opens.

11 Select whether to **Embed fonts in the PDF**, which determines whether the original fonts chosen in the Document Editor are used to display and print the PDF, even on machines that do not have those fonts installed. This ensures the portability of the PDF. For more information on this setting, including advantages and disadvantages, *Embedding fonts in PDFs, page 367*.

The fonts must be installed on the MicroStrategy Developer machine to ensure that the document is rendered correctly when creating and editing the document. The setting above ensures that if the fonts used in the document are available on the machine that generates the PDF, the fonts are embedded in the PDF. When you execute a document on MicroStrategy Developer, the PDF is generated by that client machine. When you execute a document in MicroStrategy Web, the PDF is generated by the Intelligence Server machine.

12 By default, graphs are generated using vector graphs, which are smaller than bitmaps and reduce the size of the PDF. They also improve the quality of printed graphs. Select the **Use bitmaps for graphs** check box to generate graphs using bitmaps instead. For more information, including when to use bitmaps or vector graphs, see *Changing graph resolution in PDFs, page 369*.

13 If you use bitmaps, you can select whether to **Use draft quality**, which determines whether bitmap graphs are generated using a lower resolution, thus reducing the size of the PDF. The quality of the graph images on the screen is generally not affected, but the quality of the printed graphs is impacted.

14 Click **OK** to save your selections and return to the document.

If the document is grouped, you can specify how to break between groups. For example, you can place each page in a separate Excel worksheet in the same Excel workbook. For instructions and samples, see *Specifying that groups are exported to separate Excel worksheets, page 415*.

Displaying images in Excel

Before you export a document to an Excel spreadsheet, you can select whether to:

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- **Embed images**. If you embed images, a user can see the image when he opens the Excel file on another computer that does not have a network connection.

  Image embedding is available only in Excel 2003 or later.

- **Use live Excel charts** or **Use embedded bitmaps** for the graph format. Live Excel charts ensure a smaller export size and integrate fully with Excel. However, they support fewer graph settings than MicroStrategy does. The following graphs appear differently in Excel than in MicroStrategy:
  - All 3D graphs
  - Box Plot
  - Bubble
  - Funnel
  - Gantt
  - Gauge
  - Hi Low
  - Histogram
  - Horizontal Area
  - Horizontal Bar
  - Horizontal Line

These settings work together to determine how images are displayed in Excel.

- To display embedded graphs:
  - Set **Graph format** to **Use embedded bitmaps**. The **Embed images** check box does not affect whether embedded graphs are displayed.
- To display live charts:
  - Set **Graph format** to **Use live Excel charts** and clear the **Embed images** check box.
- To embed images other than graphs:
  - Select the **Embed images** check box.

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For instructions, see *Specifying default export options, page 379*.

Allowing Excel to automatically change row height

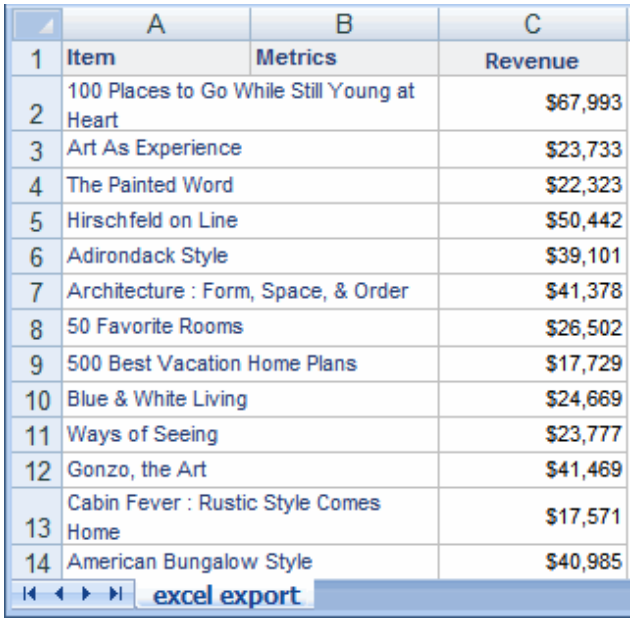
When you export a document that contains a Grid/Graph to Excel, some of the data can be too long to fit inside an Excel cell. For example, the items “100 Places to Go While Still Young at Heart” and “Cabin Fever: Rustic Style Comes Home” are too long for the Item column in the following Excel spreadsheet, which was exported from a document. The text wraps within the cell, but the row is too short and cuts off the text.

	A	B	C
1	Item	Metrics	Revenue
2	100 Places to Go While Still Young at		$67,993
3	Art As Experience		$23,733
4	The Painted Word		$22,323
5	Hirschfeld on Line		$50,442
6	Adirondack Style		$39,101
7	Architecture : Form, Space, & Order		$41,378
8	50 Favorite Rooms		$26,502
9	500 Best Vacation Home Plans		$17,729
10	Blue & White Living		$24,669
11	Ways of Seeing		$23,777
12	Gonzo, the Art		$41,469
13	Cabin Fever : Rustic Style Comes		$17,571
14	American Bungalow Style		$40,985

excel export

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If this occurs, you can allow Excel to dynamically and automatically resize. The result is shown below, where the two rows are now tall enough to display the full text.



	A	B	C
1	Item	Metrics	Revenue
2	100 Places to Go While Still Young at Heart		$67,993
3	Art As Experience		$23,733
4	The Painted Word		$22,323
5	Hirschfeld on Line		$50,442
6	Adirondack Style		$39,101
7	Architecture : Form, Space, & Order		$41,378
8	50 Favorite Rooms		$26,502
9	500 Best Vacation Home Plans		$17,729
10	Blue & White Living		$24,669
11	Ways of Seeing		$23,777
12	Gonzo, the Art		$41,469
13	Cabin Fever : Rustic Style Comes Home		$17,571
14	American Bungalow Style		$40,985

excel export

By default, the height of all rows are the same, to conserve the same layout that you created in the document. To modify the behavior, change the **Automatically fit rows** option to **True**. This option applies to a single document section.

To allow Excel to automatically change row height for a section

1. Open a document in the Document Editor.
2. In the Layout area, select the document section to modify.
3. From the **Format** menu, select **Properties**. The Properties dialog box opens.
4. Click the **Layout** tab.
5. Select the **Automatically fit rows** check box.
6. Click **OK** to return to the document.

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5

GROUPING AND SORTING RECORDS IN A DOCUMENT

Introduction

This section describes procedures for grouping and sorting records in a MicroStrategy Report Services document.

When you group records in a document, you set up the document's hierarchy and therefore its inherent sort order for the data displayed in the document. You can sort a group in either ascending or descending order. You can also choose how to sort the detail records of the document. You can use page-by to interactively display groups on separate pages when the document is viewed as a PDF. This chapter provides examples and steps for these goals.

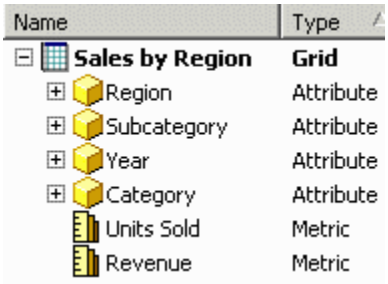
- *Grouping records in a document, page 388*
- *Using page-by on a document, page 418*
- *Sorting records in a document, page 424*

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Grouping records in a document

Grouping records together helps people who read the document to understand the data better. Grouping the data sets up a type of hierarchy within the document, and an inherent or implied sort order for the data. The data is first sorted by the leftmost field in the Grouping panel, then by the next field, and so on. To reorder the grouping, you can move the fields in the Grouping panel.

In the following example, the Sales by Region dataset has Region, Year, Category, and Subcategory attributes, and it has the Units Sold and Revenue metrics in it. This is shown below as it appears in the Dataset Objects panel of the Document Editor.



If you drag and drop all the dataset objects to the document's Layout area in the order they appear, and add headings to label the controls, the document looks like the following:

Category	Region	Subcategory	Year	Revenue	Units Sold
Electronics	Northeast	Audio Equipment	2006	$232,999	994
Electronics	Northeast	Cameras	2006	$330,208	740
Electronics	Northeast	Computers	2006	$129,691	1,120
Electronics	Northeast	Electronics - Miscellaneous	2006	$307,503	871
Electronics	Northeast	TV's	2006	$247,640	1,006
Electronics	Northeast	Video Equipment	2006	$323,496	714

If you want the document to be grouped first by Region, and then by Year within Region, first ensure that the Grouping panel is displayed. Then drag Region from the Dataset Objects panel onto the Grouping panel. Next, drag and drop Year onto the Grouping panel.

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With these changes, the document groups first by Region, and then by Year, as shown in the following image:



Year:	2006		
Category	Subcategory	Revenue	Units Sold
Electronics	Audio Equipment	$232,999	994
Electronics	Cameras	$330,208	740
Electronics	Computers	$129,691	1,120
Electronics	Electronics - Miscellaneous	$307,503	871
Electronics	TV's	$247,640	1,006
Electronics	Video Equipment	$323,496	714
Year:	2007		
Category	Subcategory	Revenue	Units Sold
Electronics	Audio Equipment	$310,924	1,337
Electronics	Cameras	$421,112	942

The ascending sort order of both Region and Year comes from the default sort order of these attributes. You can change the sort order. For steps, see *Sorting records in a document, page 424*.

For more information on the default sort of attributes, see the *Advanced Reporting Guide*.

You can select attributes, consolidations, and custom groups as grouping fields.

You can select which grouping fields to sort, the sorting criteria (what to sort by), and the sorting order (ascending or descending). Any object in the Grouping panel can be sorted. For steps, see *Sorting records in a document, page 424*.

When a user views a grouped document, drop-down lists are displayed to allow the user to select which elements, or subsets of data, to display. You can select which attribute forms are displayed in the list, and the order of the forms, as described in *Displaying forms in a group, page 393*.

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Grouping and PDF bookmarks and table of contents

Each element of each grouping field automatically becomes a bookmark in the PDF. You can disable automatic generation of bookmarks. For steps, see *Including or hiding bookmarks in PDFs, page 370*.

If you choose to include a table of contents in the PDF, each element of each grouping field is listed as an entry in the table of contents.

Grouping and multi-layout documents

You group each layout of a multi-layout document independently of other layouts. By default, a user's grouping selections apply only to the current layout. You can specify that the grouping selection is retained when a user switches layouts in MicroStrategy Web, if the new layout contains the same grouping field as the original layout. For instructions to retain the grouping selection, see *Applying grouping selections to the current layout or all layouts, page 413*. For more information on multi-layout documents, including which settings apply to the document as a whole or to individual layouts, see *Creating multi-layout documents, page 512*.

Grouping and page-by

By default, page-by is enabled for all the grouping fields in the document. Page-by is the ability to select grouping elements for display when the document is viewed as a PDF or in HTML. For more information, see *Using page-by on a document, page 418*.

Determining grouping order

Use these steps to set up a grouping order. To change grouping order, see *Changing the grouping order in a document, page 391*.

To determine grouping order in a document

1. In MicroStrategy Web, open a document in **Design** or **Editable Mode**.
2. If the document contains multiple layouts, click the tab of the layout to modify.

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3 From the **Tools** menu, select **Grouping**. The Grouping panel opens above the Layout area.

4 Right-click the object in the Dataset Objects panel, and select **Add to Grouping**. The object is added to the Grouping panel. Data is first sorted by the leftmost field in the Grouping panel, then by the next field, and so on.

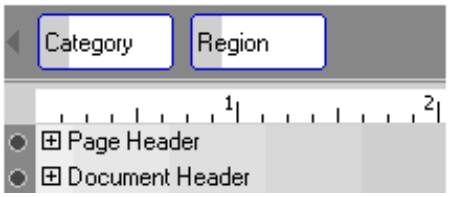
Once document data is grouped, you can set up data display according to several factors:

- When a user views a grouped document, drop-down lists are displayed to allow the user to select which elements, or subsets of data, to display. You can select which attribute forms are displayed in the list, and the order of the forms. For steps, see *Displaying forms in a group, page 393*.
- You can determine how totals are displayed. For steps, see *Showing totals for a group, page 394*.

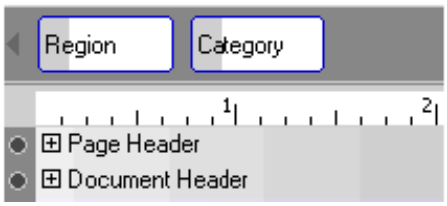
Changing the grouping order in a document

Moving a grouping field can affect whether the group of data is displayed vertically (Detail sections are displayed below the Group Header) or horizontally (Detail sections are displayed next to the Group Header, running horizontally across the page). All groups of data to the right of a horizontally displayed group must be horizontal; a document cannot contain a horizontally displayed group followed by a vertically displayed group. For the rules that govern this behavior, see *Changing the grouping order of horizontally displayed groups, page 407*.

When you change the grouping order, the header and footer sections of the corresponding attribute also change positions. For example, in the following image, the document is grouped by Category, and then Region. The Category Header precedes the Region Header.



When the grouping fields are switched, the Region Header precedes the Category Header, as shown below:



Prerequisite

- You can change the grouping order only when the document is grouped by more than one field.

To change the grouping order

1. In MicroStrategy Web, open a document in **Design** or **Editable Mode**.
2. If the document contains multiple layouts, click the tab of the layout to modify.
3. From the **Tools** menu, select **Grouping**. The Grouping panel opens above the Layout area.
4. In the Grouping panel, do one of the following:
   - Right-click the grouping field to move, point to **Move**, and then select **Right** or **Left**.
   - Drag the grouping field right or left. A placeholder indicates where it will be placed. Drop it in its new location.

Deleting a grouping field in a document

If you no longer want to group data by a particular field, you can delete it. This also removes the corresponding header and footer sections of the document, including their entire contents such as text fields, lines, rectangles, images, and so on.

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To delete a grouping field

1. In MicroStrategy Web, open a document in **Design** or **Editable Mode**.
2. From the **Tools** menu, select **Grouping**. The Grouping panel opens above the Layout area.
3. In the Grouping panel, do one of the following:
   - Drag and drop the grouping item to the Dataset Objects panel or click the **Remove** icon next to the grouping item. To display the **Remove** icon, select the **Pivot Buttons** option from the **Tools** menu.
   - Right-click the grouping item and select **Remove**.

Displaying forms in a group

When a user views a grouped document, drop-down lists are displayed to allow the user to select which elements, or subsets of data, to display. You can select which attribute forms are displayed in the list, and the order of the forms.

For example, a document is grouped by employee. By default, the employee's last name and first name are displayed, separated by a colon. You can re-arrange the attribute forms, to have the first name displayed before the last name. You can display only the ID, or display the ID and then the last name.

To display forms in a group

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. If the document contains multiple layouts, click the tab of the layout to group.
3. If the document is not already grouped, add a group, as described below:
   a. From the **Tools** menu, select **Grouping**. The Grouping panel opens above the Layout area.
   b. Right-click the object in Dataset Objects, and select **Add to Grouping**. The object is added to the Grouping panel.

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4 In the Grouping panel, right-click the group, point to **Attribute Forms**, and select **Custom**. The Attribute Forms dialog box opens.

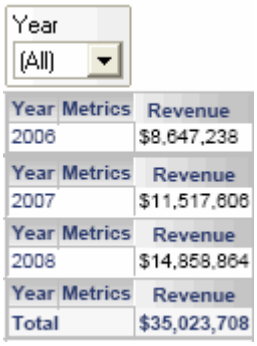
5 From the Available list, select the forms to display, and click the **Add** arrow to move them to the Selected list.

6 To change the order of the forms, select a form and click the **Move down** or **Move up** arrow to position it.

7 Click **OK** to return to the document.

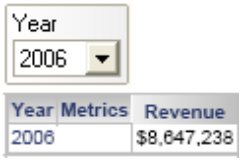
Showing totals for a group

After you add a group to a document, you can allow totals to be displayed for that group. For example, the following document is grouped by Year, with a total displayed for all years:



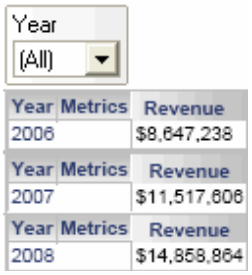
The document above shows the end result of group totals.

Other types of totals can also be displayed for users, including grand totals. For example, a document displays a Grid/Graph containing the Year attribute and Revenue metric. The document is grouped by Year. When the document is viewed as a PDF, a user can select a year and display a Grid/Graph with the data for that year, as shown below:



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Alternatively, the user can display a single Grid/Graph for all the years, by selecting **All**, as shown below:

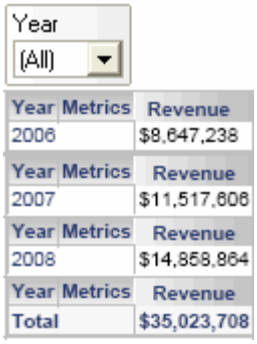


Page-by allows you to display the various years or all years; for more information on page-by, see *Using page-by on a document, page 418*.

If the user needs the total of all the years in the Grid/Graph, you can allow the Year group to show a Total option in the PDF. You do not need to edit the report or the Grid/Graph. When viewed as a PDF, a Total option is added to the page-by. When a user selects it, the total revenue of all the years is displayed, as shown below:



When a user selects **All** in the PDF, all the years and the total are displayed, as shown below:



If you disable page-by, the user cannot change the page-by from the All option in the PDF. The document always displays as shown above, with all the years and the group total. For steps to disable page-by, see *Enabling page-by, page 422*.

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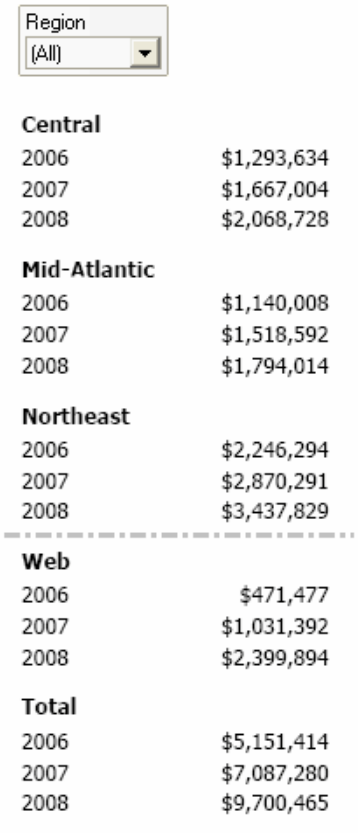
To show totals for a group

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. If the document contains multiple layouts, click the tab of the layout to modify.
3. If the Grouping panel is not displayed, from the **Tools** menu, select **Grouping**. It displays above the Layout area.
4. In the Grouping panel, right-click the grouping field to total, and select **Grouping Properties**. The Grouping Properties dialog box opens.
5. Select the **Show option for Total** check box.
6. Click **OK**.

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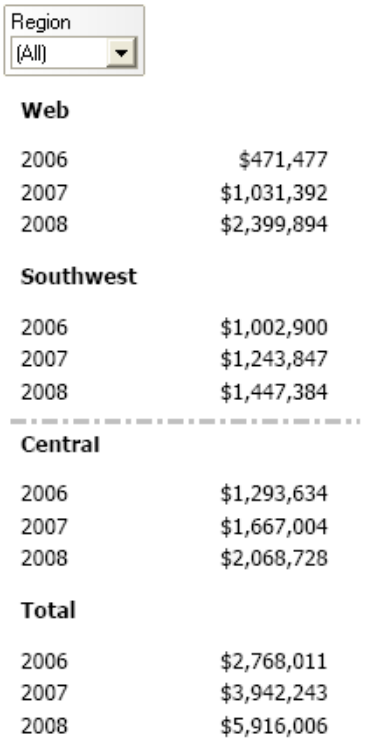
Group totals and sorting

The group total is not affected by sorting. For example, a document contains the Year and Region attributes, as well as the Revenue metric. Group totals are displayed, as shown below:



The middle portion of the document has been removed to conserve space, as indicated by the dotted line.

If you sort region in descending order, Web appears at the top but Total remains at the end of the document, as shown below:



For information on sorting a group, including steps, see *Sorting records in a document, page 424*.

How group totals impact metric calculation on Grid/Graphs

Metric values in a Grid/Graph in the Group Header or Group Footer are calculated at the level of:

- The objects on the Grid/Graph AND
- All higher-level groups in the dataset of the Grid/Graph, not including the current group

Higher-level groups are those groups to the left of the current group. If any of the higher-level groups is set to Total, then that object is excluded from the calculations on the Grid/Graph.

For example, a document is grouped by:

- Year

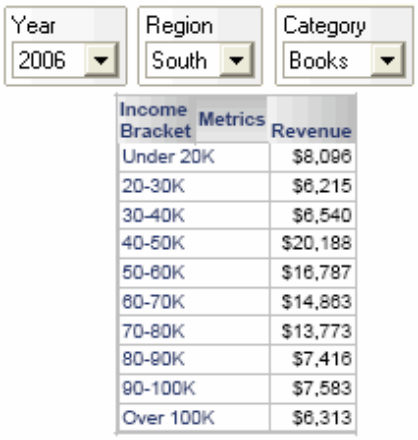
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- Region
- Category

A Grid/Graph containing the Income Bracket attribute and the Revenue metric is placed in the Category Group Header section. All the groups have group totals enabled. The document is set to display the following when viewed as a PDF:

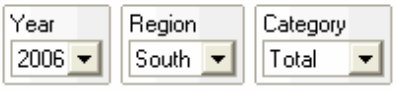
- Year = 2006
- Region = South
- Category = Books

The revenue values in the Grid/Graph are calculated for the various income brackets in the South region in 2006 for books, as shown below.



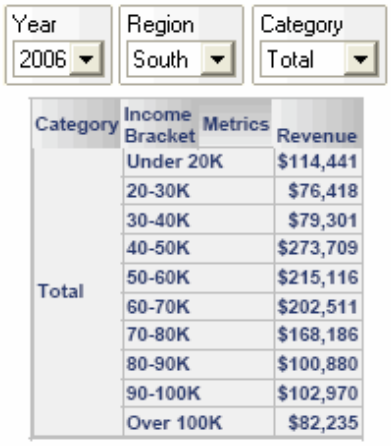
Income Bracket	Metrics	Revenue
Under 20K		$8,096
20-30K		$6,215
30-40K		$6,540
40-50K		$20,188
50-60K		$16,787
60-70K		$14,863
70-80K		$13,773
80-90K		$7,416
90-100K		$7,583
Over 100K		$6,313

Change Category to Total. In the document sample below, the revenue amounts have increased. This is because all categories, not just books, are now included in the revenue calculation.



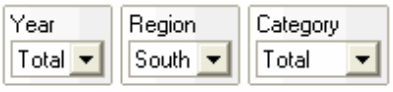
Income Bracket	Metrics	Revenue
Under 20K		$114,441
20-30K		$76,418
30-40K		$79,301
40-50K		$273,709
50-60K		$215,116
60-70K		$202,511
70-80K		$168,186
80-90K		$100,880
90-100K		$102,970
Over 100K		$82,235

If you add Category to the Grid/Graph and re-execute the document, the revenue values are the same as in the previous example, and Category displays as Total in the Grid/Graph, as shown below.



Category	Income Bracket	Metrics	Revenue
Total	Under 20K		$114,441
	20-30K		$76,418
	30-40K		$79,301
	40-50K		$273,709
	50-60K		$215,116
	60-70K		$202,511
	70-80K		$168,186
	80-90K		$100,880
	90-100K		$102,970
	Over 100K		$82,235

If you remove Category from the Grid/Graph and set Year to Total, the revenue values in the Grid/Graph are calculated for the various income brackets in the South region, as shown below. All years and all categories are included in the calculations. If the Grid/Graph displayed Year or Category, their page-by selections would show as Total.



Income Bracket	Metrics	Revenue
Under 20K		$436,959
20-30K		$359,222
30-40K		$276,697
40-50K		$1,043,543
50-60K		$748,614
60-70K		$751,026
70-80K		$646,718
80-90K		$446,900
90-100K		$364,027
Over 100K		$315,574

If the Grid/Graph is moved from the Category Group Header to the Region Header, the metric values are calculated differently. When Region is set to All, you cannot change Category. The revenue values are calculated for the

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various income brackets in 2006, as shown below. All regions and all categories are included in the calculations.



Year: 2006 | Region: (All) | Category: (All)

Region - Central

Income Bracket	Metrics	Revenue
Under 20K		$8,543
20-30K		$7,451
30-40K		$5,121
40-50K		$16,420
50-60K		$14,500
60-70K		$14,793
70-80K		$11,328
80-90K		$7,929
90-100K		$7,023
Over 100K		$5,095

Region - Mid-Atlantic

Income Bracket	Metrics	Revenue
Under 20K		$5,939
20-30K		$7,060
30-40K		$5,603
40-50K		$15,894
50-60K		$11,976
60-70K		$15,164
70-80K		$9,815
80-90K		$5,989
90-100K		$6,012
Over 100K		$2,579

Region - Northeast

Income Bracket	Metrics	Revenue
Under 20K		$11,668
20-30K		$11,955
30-40K		$10,170
40-50K		$32,758
50-60K		$23,406
60-70K		$25,799
70-80K		$17,323
80-90K		$14,594
90-100K		$9,400
Over 100K		$7,928

Region - Northwest

Income Bracket	Metrics	Revenue
Under 20K		$1,621
20-30K		$3,377
30-40K		$2,999
40-50K		$7,158
50-60K		$4,334
60-70K		$4,245
70-80K		$2,707
80-90K		$3,592
90-100K		$1,958
Over 100K		$2,069

The Region has been added to help identify the different Grid/Graphs.

How group totals impact metric calculation in text fields

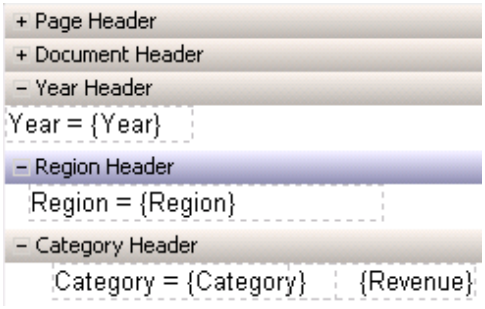
Metric values in a Group Header or Group Footer are calculated at the level of all higher-level groups. Higher-level groups are those groups to the left of the current group (the group creating the grouping section).

The document in this example contains text fields and metrics, and is grouped by Year, Region, and Category.

All the groups have group totals enabled. The Year Header section displays the year selected in the page-by, the Region Header section displays the

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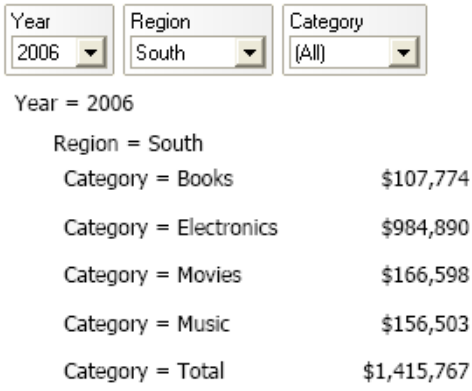
region, and the Category Header displays the category and the Revenue metric. The image below shows the document in MicroStrategy Developer.



The document is set to the following for viewing as a PDF:

- Year = 2006
- Region = South
- Category = All

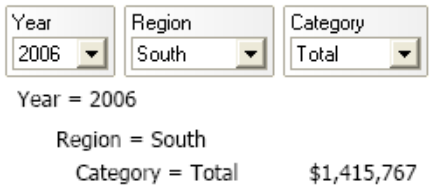
The document, as shown below, now displays the revenue for each category, as well as a total (because group totals are enabled). For the group total, the dynamic text field for Category is replaced by the word Total. For each category, the revenue is calculated for the selected year and selected region. For the category total, the revenue is calculated at the region level, for the selected year (that is, all categories for South in 2006).



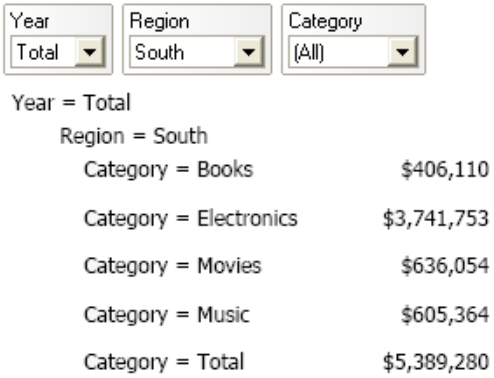
If you switch Category to Total, only one line item, the category total, is displayed. The revenue includes all categories for only the South region and

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2006. The total shown below is the same as the total in the previous document sample.



If you change Year to Total and Category to All, the revenue calculated is for the South, for all years, and for each category. The revenue amount for category total is much higher than the previous sample, because it contains all years, not just 2006.



These examples demonstrate that metric values in a Group Header or Group Footer are calculated at the level of all higher-level groups. Higher-level groups are those groups to the left of the current group (the group creating the grouping section).

Displaying a group horizontally

By default, groups are displayed vertically in a document. This means that the detail sections are displayed below the Group Header. For example, a document is grouped by Year. The Detail section includes revenue and profit

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information by region. Displaying the group vertically yields the following document:

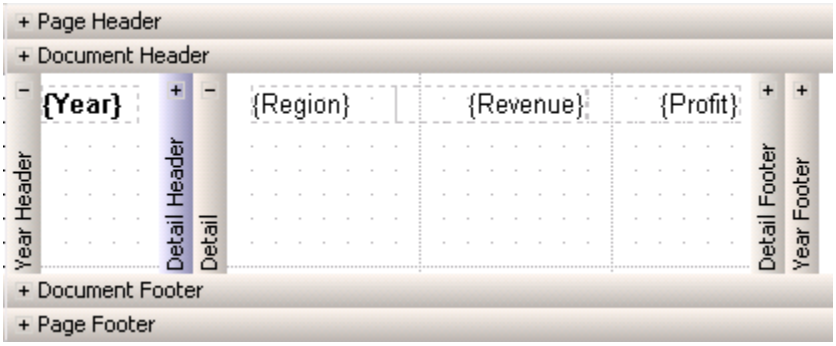
2006		
Central	$1,293,634	$196,301
Mid-Atlantic	$1,140,008	$171,354
Northeast	$2,246,294	$339,961
Northwest	$480,476	$71,118
South	$1,415,767	$216,542
Southeast	$596,681	$89,567
Southwest	$1,002,900	$149,996
Web	$471,477	$69,301

For certain documents, displaying and printing the group horizontally is desired. When displayed horizontally, the detail sections are displayed next to the Group Header, running horizontally across the page.

The example given above, if displayed horizontally, shows a row containing the year, and then, for each region, the Region, Revenue, and Profit. When the document is viewed as a PDF, it displays as shown below:

2006 Central $1,293,634 $196,301 Mid-Atlantic $1,140,008 $171,354 Northeast $2,246,294 $339,961

When being designed, the document with horizontal display looks like the following in MicroStrategy Developer:

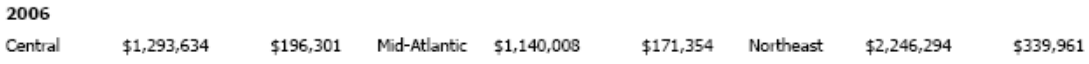


The sections within the group are turned sideways and listed horizontally, across the page. These horizontally rendered sections are the Group Header and Footer (in this case, Year), the Detail Header, the Detail, and the Detail Footer. They are displayed in the same order as when shown vertically. The Page and Document sections are still listed vertically.

You can also change the orientation of only the lower level detail sections. In the following sample, the Detail Header, Detail, and Detail Footer are

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displayed horizontally while the Group Header and Group Footer are displayed vertically:



You can also display the Detail Header and Detail Footer vertically while keeping the Detail section horizontal. A document does not have to be grouped to allow these sections to be displayed horizontally. For information on displaying sections horizontally without groups, see *Displaying sections horizontally, page 303*.

Horizontally displayed sections have additional options to control the horizontal width. For more information, see *Changing the horizontal width of a section, page 309*.

Prerequisite

- This procedure assumes that the document is already grouped.

To display a group horizontally

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. From the **Tools** menu, select **Grouping**. The Grouping panel is displayed.
3. In the Grouping panel, right-click the grouping field to display horizontally, and select **Grouping Properties**. The Grouping Properties dialog box opens.
4. Select the **Render *object name* horizontally** check box.
5. Click **OK** to apply the changes and return to the document.

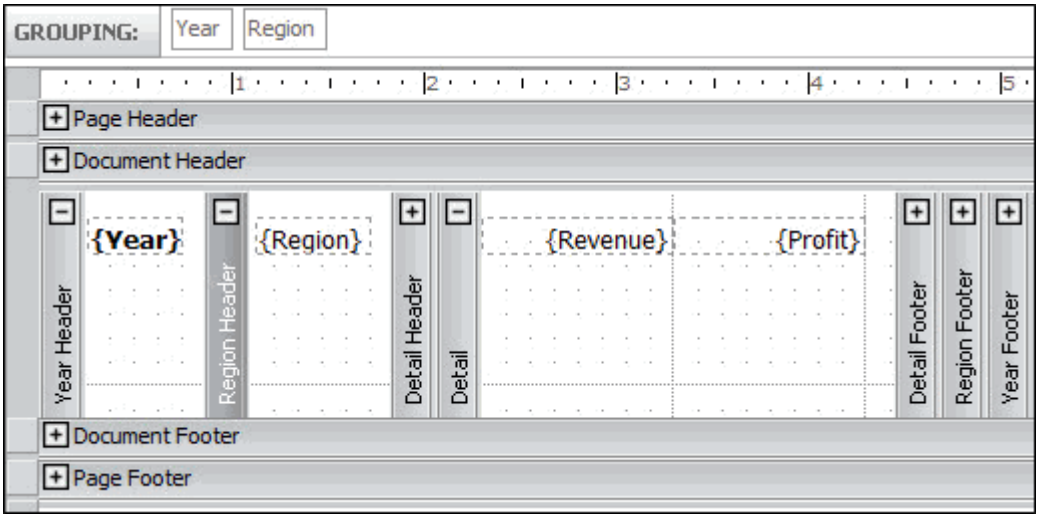
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Adding more grouping fields to horizontally displayed groups

When you add another grouping field, its location in the Grouping panel controls whether it is displayed and printed horizontally or vertically, as described below:

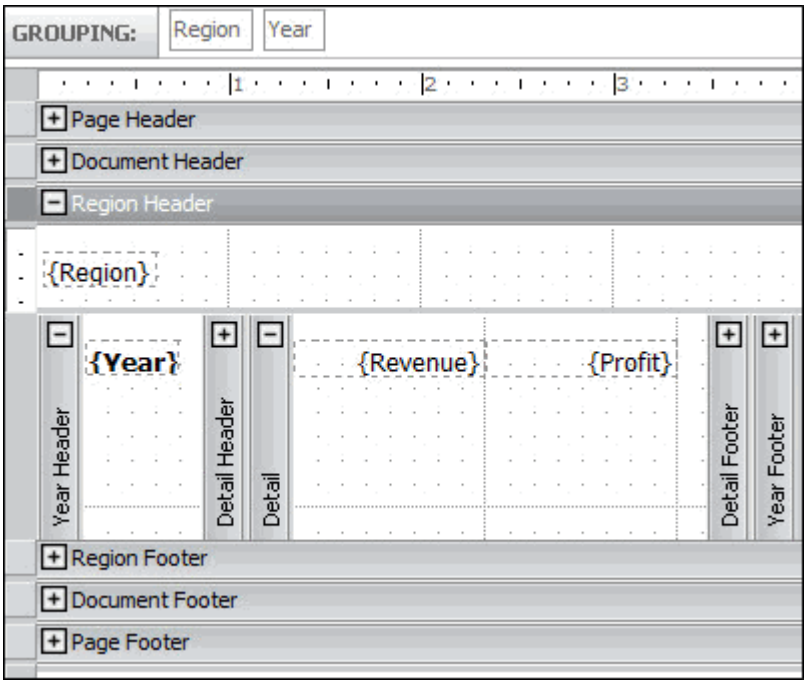
- All groups to the right of a horizontally displayed group display horizontally. Therefore, if you add the field to the right of a horizontally repeating group, the new group is displayed horizontally.
- If you add the field to the left of all horizontally displayed groups, the new group is displayed vertically.

For example, continuing with the previous example, add Region to the right of Year in the Grouping panel. The Region Header and Region Footer sections are displayed horizontally, as shown below. (The Region text field has been moved from the Detail section to the Region Header section, to help differentiate the sections.)



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If you add Region to the left of Year instead, the Region Header and Region Footer are displayed vertically, as shown below:



If you then add Category between Region and Year in the Grouping panel, Category is displayed vertically. This occurs because Category is to the left of the horizontally displayed group.

Changing the grouping order of horizontally displayed groups

If you move a group on the Grouping panel, thereby changing the grouping order, only the moved group changes its orientation. This means that, if you move a horizontally displayed group, that group can become vertically displayed, if necessary, but the orientation of no other groups change. If you move a vertically displayed group, that group can become horizontally displayed, if necessary, but no other orientation changes.

All groups to the right of a horizontally displayed group must be horizontal; a document cannot contain a horizontally displayed group followed by a vertically displayed group.

If you move a horizontally displayed group, its orientation depends on the orientation of the groups to its right. The following rules determine whether it remains horizontal or changes to vertical:

- If you move a **horizontally** displayed group to the **left**,

    - And if **all groups to the right are horizontal**,

      Then the moved group remains **horizontal**

    - And if at least **one group to the right is vertical**,

      Then the moved group is rendered **vertically**

- If you move a **horizontally** displayed group to the **right**,
    - All groups to the right must be horizontal by definition,

      So the moved group remains **horizontal**

If you move a vertically displayed group, its orientation depends on the orientation of the groups to its left. The following rules determine whether it remains vertical or changes to horizontal:

- If you move a **vertically** displayed group to the **right**,
    - And if **all groups to the left are vertical**,

      Then the moved group remains **vertical**

    - And if at least **one group to the left is horizontal**,

      Then the moved group is displayed **horizontally**

- If you move a **vertically** displayed group to the **left**,
    - All groups to the left must be vertical by definition,

      So the moved group is displayed **vertically**

For example, a document is grouped by Year, Region, and Category, left to right. Year is displayed vertically; Region and Category are displayed horizontally, as depicted in the following table:

Year	Region	Category
Year		
	Region	Category

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You move Category all the way to the left, past Year. Category becomes vertical, because a group to the right (Year) is vertical. The result is shown below.

Category	Year	Region
Category		
Year		
	Region	

You move Year to the right, after Region. Year becomes horizontal, because all groups to the right of a horizontal group must be horizontal.

Category	Region	Year
Category		
	Region	Year

You move Region to the left, before Category. Region becomes vertical, because a group to the right (Category) is vertical.

Region	Category	Year
Region		
Category		
	Year	

For steps to change the grouping order, see *Changing the grouping order in a document, page 391*.

Hiding Group Header and Group Footer sections

For each grouping field, you can specify whether the Group Header and/or Group Footer sections are displayed. For example, a document is grouped by Region and State. You want to display a header for each state, to identify the state. You also want a footer for each state, with various metrics totaled at the state level. You want to display a header for each region to identify the region, but you do not need a footer related to Region. To do this, you can hide the footer section for Region.

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By default, a Group Header section and a Group Footer section are displayed for each grouping item.

To hide a Group Header or Group Footer section

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. In the Grouping panel, right-click the grouping field for which you want to hide the header or footer and select **Grouping Properties**. The Grouping Properties dialog box opens.
3. To hide the header section, clear the **Show name of *object* header** check box.
4. To hide the footer section, clear the **Show name of *object* footer** check box.
5. Click **OK** to apply the changes.

Adding a page break for a group

You can add page breaks whenever a new group begins. For example, if your document is grouped by Region, you may want each region to start printing on a new page. Add a page break for the Region Header section in the Layout area of the document.

You can use page breaks between groups and fit to page scaling to print each group on a single page. For more information on print scaling, see *Modifying page setup options, page 360*. For examples of these settings in use, see *Printing a document on a single page, page 362*. You can also add page breaks between sections. For more information, see *Adding a page break to a document, page 357*.

Options related to pagination apply when the document is viewed as a PDF.

To add a page break for a group

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

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2 In the Grouping panel, right-click the grouping field for which you want the page break, and select **Grouping Properties**. The Grouping Properties dialog box opens.

3 Select the **Page break between groups** check box.

4 Click **OK** to apply the changes and return to the document.

Resetting page numbers for each group

If you intend to restart page numbering for a group's new section, use the Restart page numbering and Page break between groups settings.

This also changes the value of the auto text code for total page numbers `{&NPAGES}`, which is normally the total number of pages in the document, to the number of pages in that group's section. (For details on auto text code, see *Adding dynamic data to a document, page 83*.)

For example, if you have an eight-page document with no grouping, the `{&NPAGES}` code resolves to 8 (page 1 of 8, 2 of 8 ... 8 of 8). But if you group the document by Region, then add a page break and restart numbering for it, the `{&NPAGES}` code resolves to the number of pages in each Region's individual section. So, if the Region has the following sections, the pages in each section are numbered as follows:

Southeast 2 (page 1 of 2, 2 of 2)

Mid-Atlantic 2 (1 of 2, 2 of 2)

Northwest 3 (1 of 3, 2 of 3, 3 of 3)

Northeast 1 (1 of 1)

Properties related to pagination apply when the document is viewed as a PDF.

To reset page numbering for a group

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

2 In the Grouping panel, right-click the grouping item and select **Grouping Properties**. The Grouping Properties dialog box opens.

3 Select the **Page break between groups** check box.

4 Select the **Restart page numbering** check box.

5 Click **OK** to apply the changes and return to the document.

Repeating a Group Header section on another page

If all of the data within a group cannot fit on one page and you want the group's header information to print on all overflow pages, use the Repeat on each page setting.

To repeat a Group Header section on each page

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

2 From the **Format** menu, select **Properties and Formatting**. The Properties and Formatting dialog box opens.

3 On the **Layout** tab, in the **PDF** area, select the **Repeat on each page** check box.

4 Click **OK** to apply the changes and return to the document.

Keeping the data in a group together on a page

You may want to keep a page break from occurring within a group, which includes everything from its Group Header to its Group Footer and all the content in between. To do this, define that the group is kept together. If the group does not fit entirely on a page, it starts on a new page and any overflow prints on successive pages.

You can also keep data for a section together in a similar manner. For more information, see *Keeping the contents of a section together, page 316*.

To keep a group together on a page

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

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2 In the Grouping panel, right-click the grouping field for the group that you want to keep together and select **Grouping Properties**. The Grouping Properties dialog box opens.

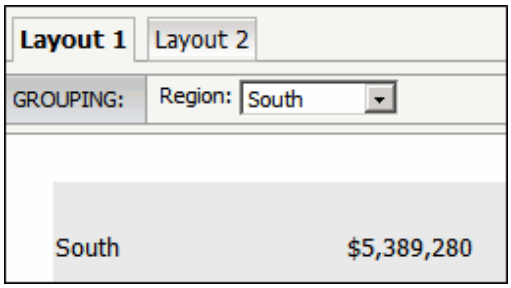
3 In the **PDF** area, select the **Keep group together** check box.

4 Click **OK** to apply the changes and return to the document.

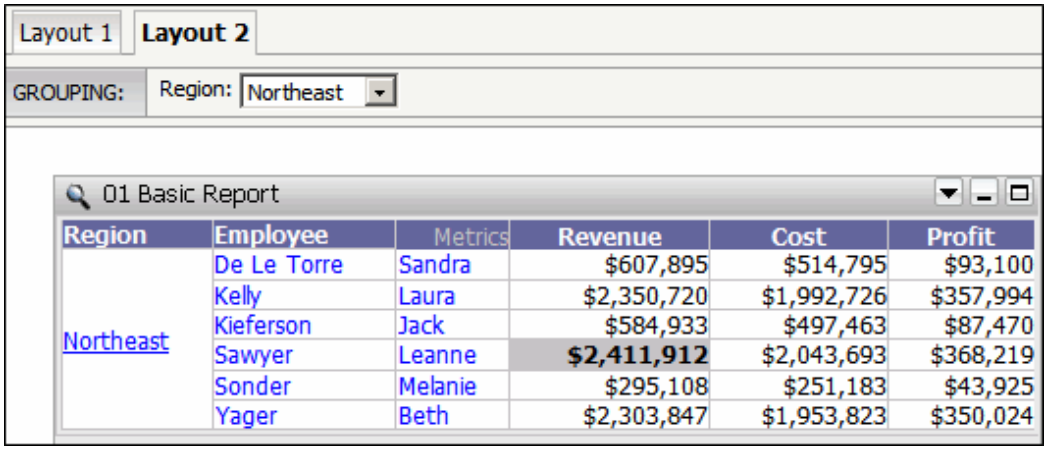
Applying grouping selections to the current layout or all layouts

By default, a user's grouping selections apply only to the current layout. You can specify that the grouping selection is retained when a user switches layouts in MicroStrategy Web, if the new layout contains the same grouping field as the original layout.

For example, a document contains two layouts. Both are grouped by Region. When a user opens the document in Interactive Mode, Layout 1 is displayed, showing only Northeast's revenue. The user selects South in the page-by drop-down list. Layout 1 now displays South's revenue, as shown below:

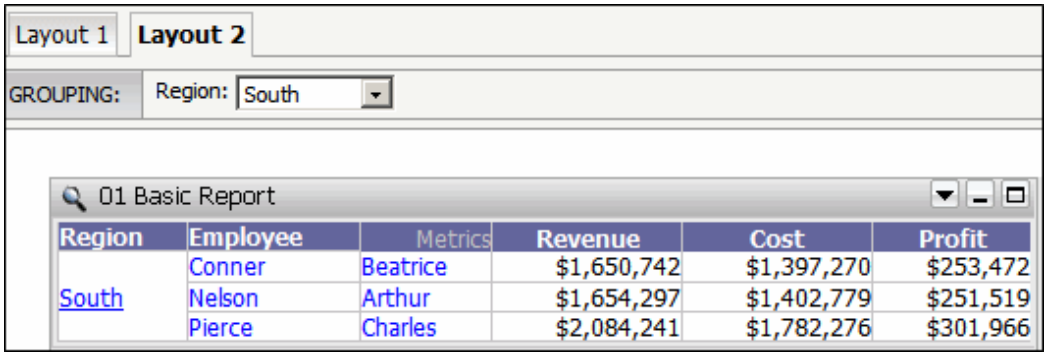


When the user switches to Layout 2, the page-by is set to Northeast, the same as the initial view of the original layout, Layout 1. The grid report on Layout 2 displays all the employees for the Northeast, as shown below:



Region	Employee	Metrics	Revenue	Cost	Profit
Northeast	De Le Torre	Sandra	$607,895	$514,795	$93,100
	Kelly	Laura	$2,350,720	$1,992,726	$357,994
	Kieferson	Jack	$584,933	$497,463	$87,470
	Sawyer	Leanne	**$2,411,912**	$2,043,693	$368,219
	Sonder	Melanie	$295,108	$251,183	$43,925
	Yager	Beth	$2,303,847	$1,953,823	$350,024

You can change the document to apply the grouping selection to all layouts. In Layout 1, the user again selects South in the page-by list, before switching to Layout 2. Layout 2 now displays all the employees for the South in the graph report, as shown below:



Region	Employee	Metrics	Revenue	Cost	Profit
South	Conner	Beatrice	$1,650,742	$1,397,270	$253,472
	Nelson	Arthur	$1,654,297	$1,402,779	$251,519
	Pierce	Charles	$2,084,241	$1,782,276	$301,966

Prerequisites

- The following procedure assumes that the document:
  - Contains multiple layouts. For steps, see *Creating a multi-layout document, page 518*.
  - The multiple layouts are grouped by the same grouping field. (Only layouts with the same grouping field are affected by this setting.) For steps, see *Grouping records in a document, page 388*.

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To apply grouping selections to all layouts in a document

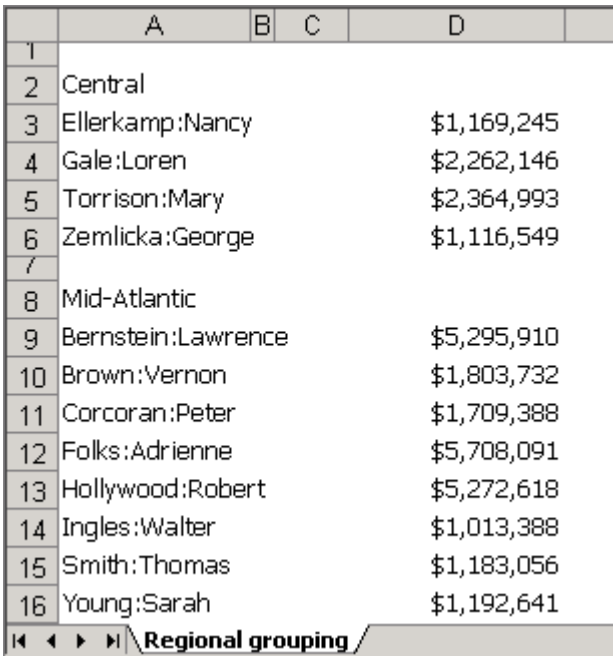
1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. From the **Tools** menu, select **Document Properties**. The Properties dialog box opens.
3. On the left, under Document Properties, click **Advanced**.
4. By default, grouping selections apply only to the current layout. To apply grouping selections to all layouts that contain the same grouping field, select the **Apply grouping selection to all layouts** check box.
5. Click **OK** to apply the changes and return to the document.

Specifying that groups are exported to separate Excel worksheets

When you export a grouped document to Excel, you may want to place each element (or page) of a grouping field in its own worksheet, in the same Excel workbook. By default, all elements/pages are exported to the same Excel worksheet.

For example, a document is grouped by Region. When it is exported to Excel, all the regions are included in the same worksheet, as shown below. The

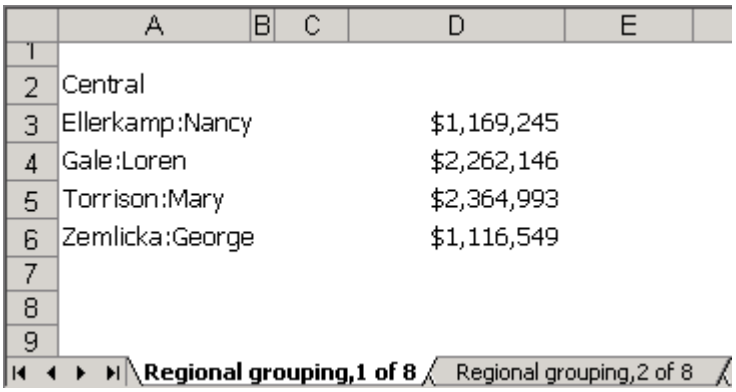
Excel workbook contains only one tab, named Regional grouping (the document name).



	A	D
2	Central	
3	Ellerkamp:Nancy	$1,169,245
4	Gale:Loren	$2,262,146
5	Torrison:Mary	$2,364,993
6	Zemlicka:George	$1,116,549
8	Mid-Atlantic	
9	Bernstein:Lawrence	$5,295,910
10	Brown:Vernon	$1,803,732
11	Corcoran:Peter	$1,709,388
12	Folks:Adrienne	$5,708,091
13	Hollywood:Robert	$5,272,618
14	Ingles:Walter	$1,013,388
15	Smith:Thomas	$1,183,056
16	Young:Sarah	$1,192,641

Regional grouping

If you specify instead that each group is exported to a separate worksheet, the same document looks like the following after being exported to Excel:



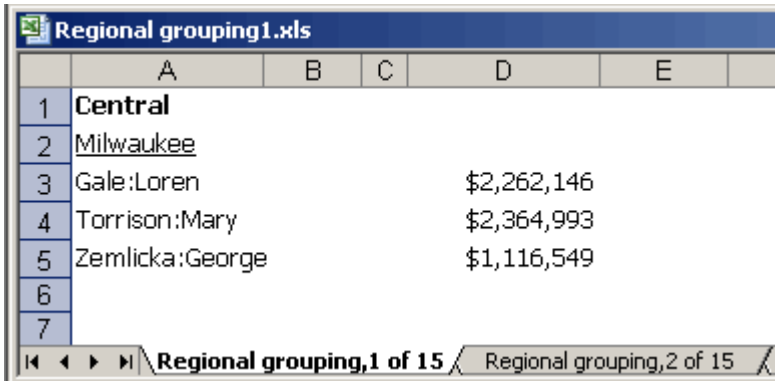
	A	D	E
2	Central		
3	Ellerkamp:Nancy	$1,169,245	
4	Gale:Loren	$2,262,146	
5	Torrison:Mary	$2,364,993	
6	Zemlicka:George	$1,116,549	
7			
8			
9			

Regional grouping,1 of 8 | Regional grouping,2 of 8

The displayed worksheet lists only those employees in the Central region. Each region has its own tab, labeled with the document name and a number (1 of 8, 2 of 8, and so on).

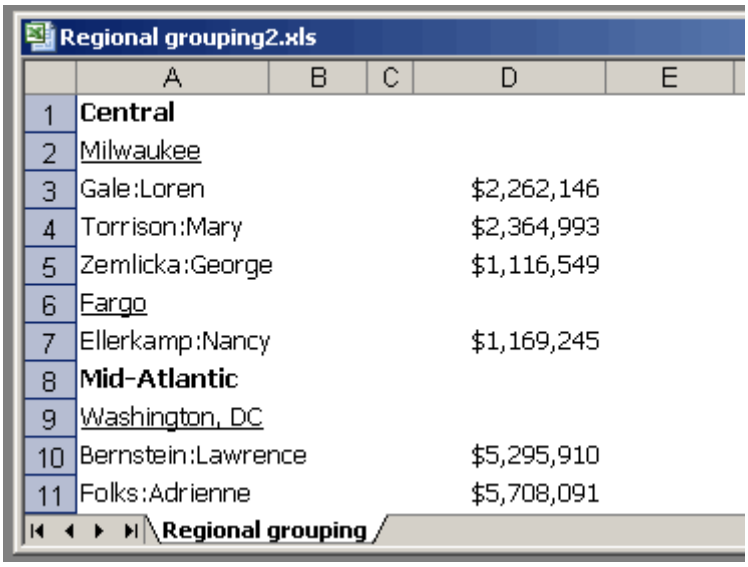
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If you add Call Center to the grouping panel, to the right of Region, when you export the document to Excel, each Call Center is placed in its own worksheet, as shown below:



The Excel file contains 15 tabs now, one for each Call Center.

If you change the grouping settings of Region so that regions are not exported to separate worksheets, the exported file looks like the following:



Now only one worksheet is created. When a group is exported to a single worksheet, any of its sub-groups (which are groups to the right of it in the Grouping panel) must also be exported to a single worksheet.

To export a group to separate Excel worksheets

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

2 If the document contains multiple layouts, click the tab of the layout that you want to modify.

3 In the Grouping panel, right-click the grouping item and select **Grouping Properties**. The Grouping Properties dialog box opens.

4 Select the **Sheet break between groups** check box.

This option is not available if there is a group to the left of the selected group and either of the following is true:

- The group to the left of the selected group is not defined to export to separate Excel worksheets.
- The group to the left of the selected group is defined to display horizontally.

5 Click **OK** to apply changes and return to the document.

To export the document to Excel, click the **PDF** icon in the toolbar to view the PDF, and then select **Export to Excel** from the **File** menu.

For detailed steps to export to Excel, see the *Document and Dashboard Analysis Guide*.

Using page-by on a document

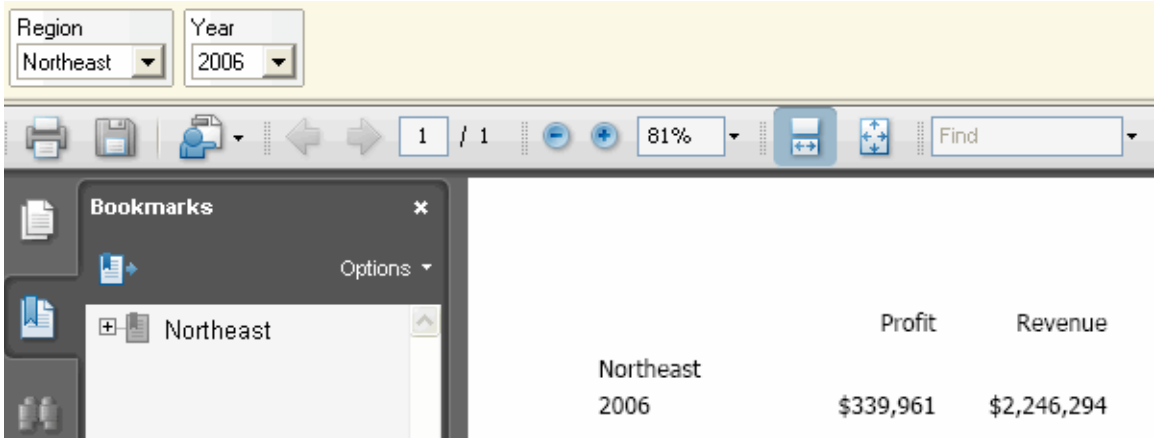
You can use page-by to interactively display groups on separate pages of the document. This is useful when a document returns a very large set of data in its results. Analysts can use page-by when viewing the document in MicroStrategy Web or when viewing the PDF version of the document.

Page-by allows the end user to select and dynamically display elements from a grouping field as criteria for analysis. The PDF that results from this selection is called a page of the original document. By displaying different criteria for analysis, pages provide an added level of data manipulation and display.

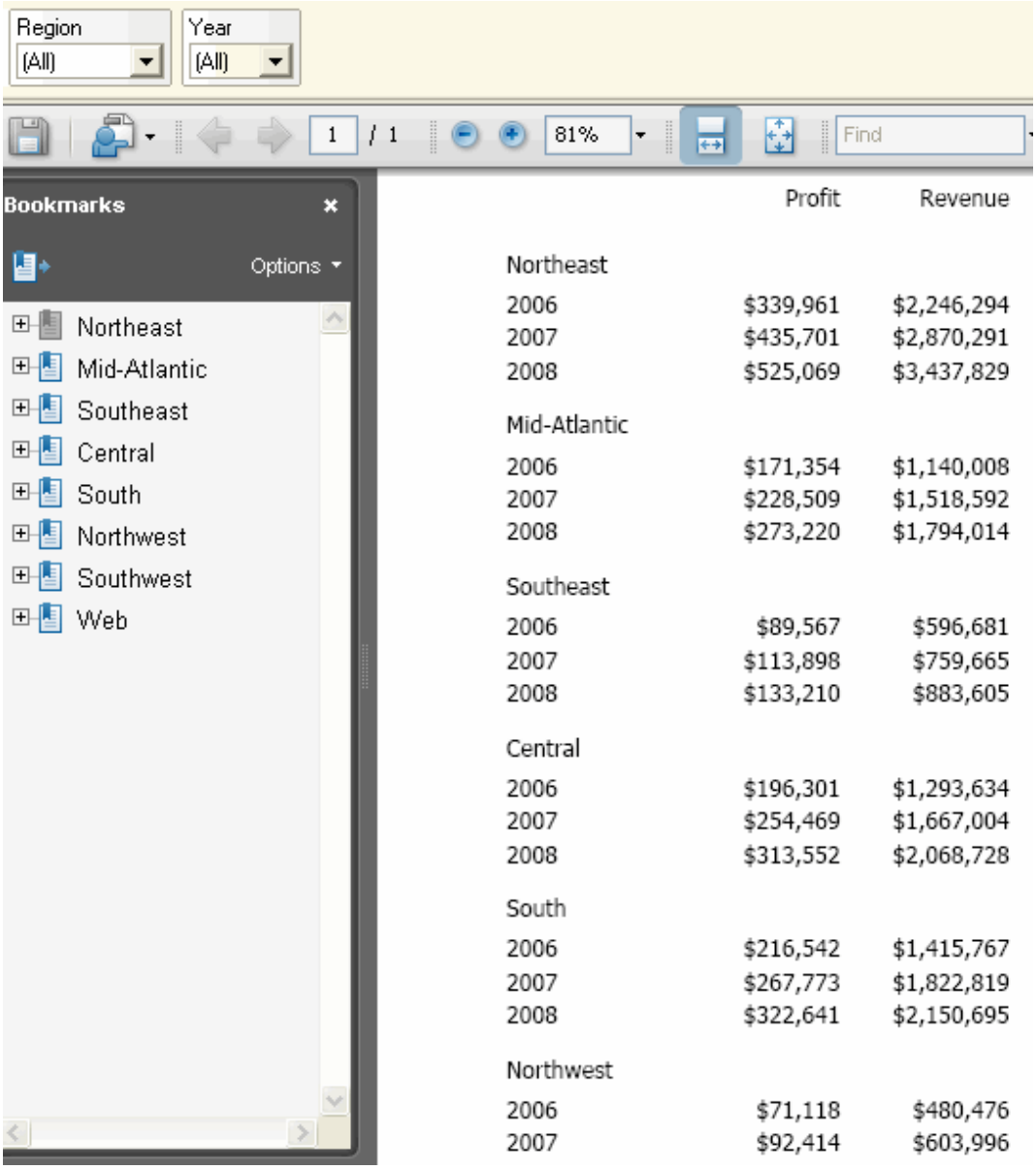
For example, a document displays revenue and profit data and is grouped by Region and then Year. By default, both Region and Year are included in the page-by field at the top of the document. Analysts can select a specific region and year from the page-by field, to display the data for the selected region

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and year combination. The following sample shows the data for the Northeast region in 2006.



You can also see the data for all years for a particular region or all data in the document, regardless of region or year. The following sample shows all the data in the document.



Page-by is automatically enabled when you use grouping fields as part of your organization of a document's data. You can group data based on attributes, consolidations, and custom groups. You cannot page by metrics.

If you display totals for a group, an option named Total is displayed in the drop-down menu for that group when the document is viewed as a PDF. For examples of group totals and steps to display them, see *Showing totals for a group, page 394*.

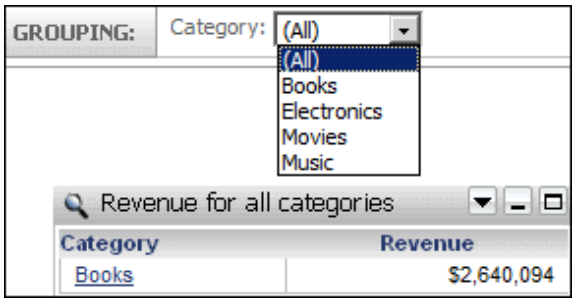
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You can control how the page-by is exported to Excel or PDF, by choosing whether to export only the current page-by selection or the whole document. For more information, see *Formatting a document for export, page 377*.

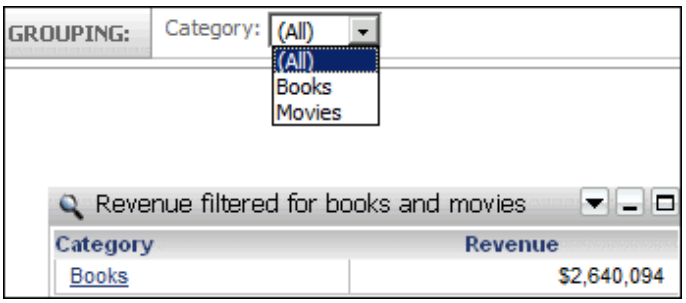
Page-by on a document with multiple datasets

If a document has multiple datasets, the elements available in the grouping fields are the elements available in the target (what is being grouped). If the target is filtered, the grouping elements are also filtered.

For example, a document uses two datasets. Both datasets contain Category and Revenue, but one is filtered to include only the Books and Movies categories. The unfiltered dataset is used to create a Grid/Graph (the title bar contains the name of the report). The filtered dataset is the grouping and sorting dataset. The document is grouped by Category. As shown in the example below, you can select any of the categories in the page-by:

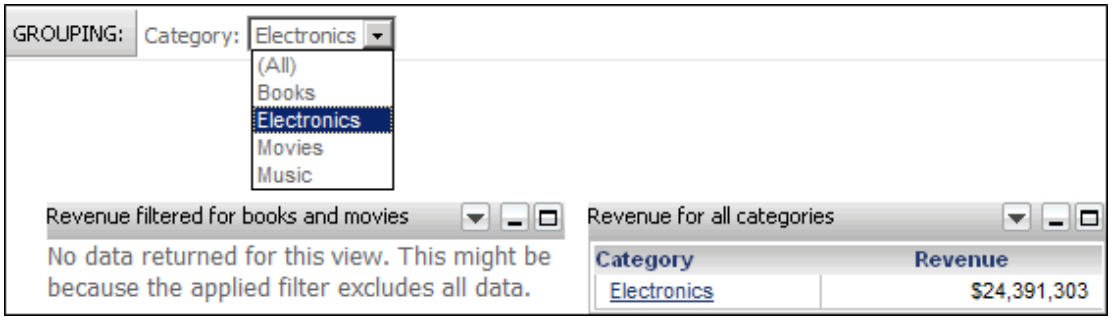


If the filtered dataset is used to create a Grid/Graph (notice that the name of the Grid/Graph has changed in the title bar), you can select only Books and Movies, as shown below:



If a Grid/Graph for each dataset is added to the document, you can select any of the categories in the page-by, because the grouping elements come from all of the targets. In this case, the targets are the two Grid/Graphs, which contain all categories. If you select a category that is not included in the

filtered dataset, the corresponding Grid/Graph cannot display the data, as shown below:



Enabling page-by

If you have used grouping fields to organize data in the document, then by default page-by is enabled for all grouping fields. For steps to use grouping fields, see *Grouping records in a document, page 388*.

The steps below show you how to enable page-by on a grouping field if page-by has previously been disabled.

To enable page-by

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. From the **Tools** menu, select **Grouping**.
3. In the Grouping panel, right-click the grouping field on which to enable page-by and select **Grouping Properties**. The Grouping Properties dialog box opens.
4. From the **Page-by Mode** drop-down list, select one of the following options:
   - **Page-By (Single Element Only)**: Enables page-by for this group, but you cannot display all the elements of the group simultaneously when the document is viewed as a PDF or in HTML. This option is useful for

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groups with many elements, when you do not want to display all the elements at one time.

When a document contains multiple groups, this option is unavailable for the group farthest to the right in the Grouping panel.

- **Page-By (Single Element or All)**: Enables page-by for this group and allows all elements of the group to be displayed simultaneously.

5 Click **Apply** to apply your selections.

Disabling page-by

By default, page-by is enabled for all the grouping fields in a document. If you disable page-by for a particular grouping field, any fields to the right of it in the Grouping panel are also disabled. You can also leave page-by enabled but prevent the simultaneous display of all the elements. This can be useful for grouping fields that have many elements. For steps, see *Enabling page-by, page 422*.

If you disable page-by for a group that has totals, the group total is still shown but you cannot display totals only. See *Showing totals for a group, page 394* for an example of group totals.

To disable page-by or disable display of all elements

1 In MicroStrategy Web, open the document in **Design** or **Editable Mode**.

2 From the **Tools** menu, select **Grouping**. The Grouping panel is displayed.

3 In the Grouping panel, right-click the grouping field on which to disable page-by, and select **Grouping Properties**. The Grouping Properties dialog box for that grouping field opens.

4 To disable page-by, from the **Page-By Mode** drop-down list, select **No Page-By (All Only)**. Disabling this causes the All option to be disabled when the document is viewed as a PDF.

Page-by for any grouping fields to the right of the selected field in the Grouping panel is also disabled.

5 Click **Apply** to apply your changes.

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Sorting records in a document

A document's data is sorted according to its group settings, such as whether page-by is enabled. You may want to control its sorting further. The order of the sort keys (the sort-by fields) is defined by the order of the groupings, as described in *Grouping records in a document, page 388*.

For example, you may want to sort the information in the document's Detail section. If you have a document grouped by Region and Year in the Detail section, you may want to sort the records by Revenue in descending order.

For a document with multiple datasets, you can sort based on objects from the grouping and sorting dataset only.

You can sort each layout of a multi-layout document independently. For more information on multi-layout documents, including which options apply to the document as a whole or to individual layouts, see *Creating multi-layout documents, page 512*.

You can sort consolidations. If the object is a consolidation, an ascending sort displays the elements in the order in which they were defined. Descending order reverses that order.

To sort based on a custom group or consolidation, you must use MicroStrategy Developer. For details, see the *MicroStrategy Developer help* (formerly the *MicroStrategy Desktop help*).

To sort records and grouping fields in a document

1. In MicroStrategy Web, open a document in **Design** or **Editable Mode**.
2. If the document contains multiple layouts, click the tab of the layout to modify.
3. From the **Data** menu, select **Sort Document**. The Sort Document dialog box opens.
4. Perform the appropriate steps below, depending on whether you are sorting records or sorting grouping fields:

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- To sort records in a document:

  a In the **Detail** area, from the **Sort By** drop-down list, select the object to sort. If the Sort By object is an attribute, select the attribute form (such as ID or description) to sort on.

  The list contains all attributes and metrics in the grouping and sorting dataset, regardless of where or whether they are placed on the document.

  b Select the order in which you want to sort the object.

  c From the **Then By** drop-down lists, specify additional sort objects as necessary. These objects are sorted after the Sort By object.

- To sort grouping fields:

  - In the Grouping area, select **Ascending** or **Descending** from the drop-down list adjacent to each grouping field to sort it in that order.

    You cannot change the sorting order of an attribute if it is set to Default. To change the order, select the attribute form (such as the ID or DESC) from the drop-down list adjacent to the attribute you want to sort.

5 Click **OK** to apply the changes and return to the document.

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6

LINKING FROM DOCUMENTS

Introduction

A link is a connection in a document to another document, a report, or a web page. A link lets an analyst execute another document or report (the target) from a link in the document (the source).

- The link can automatically pass parameters to answer any prompts that are in the target. For example, if a user is viewing a document containing regional sales, he can click a particular region to execute another document that displays sales for the stores in that region.
- The link can automatically pass values chosen in a selector in the source to a selector in the target. A selector allows each user to interact with a Report Services (RS) dashboard to display only the subset of data he is interested in or only specific attribute elements or metrics. For example, the regional sales document also contains a selector for year. The user chooses a specific year in the selector, and then clicks a link to execute another document that displays sales for the months in that year.

For information on selectors, including a more detailed description, examples, and steps to create them, see the *Selectors* chapter of the *Dashboards and Widgets Creation Guide*.

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- The source document can link to its underlying dataset, to display profit and cost values as well as sales data.
- The source document can link to a web page that contains economic information about the region.

This chapter explains how to create new opportunities for guided analysis using links.

Creating links in a document

Linking documents is a tool to provide investigative workflows. You can use links to let users navigate from data at one level to different levels of aggregation. For example, a document contains data about salaries and bonuses at the departmental level. One link on department can display a document with information about individual employees, while a second link displays information for the various business units. Another link executes a breakdown by the projects that the department is currently working on. Or you can use an object (such as an attribute element) on a document to trigger the execution of another document or a report that is substantially different from the original document. For example, a user viewing an Employee detail document can click a link to execute a Regional Sales Breakdown document, or click a link on a Profit and Loss report to view a Departmental Summary document.

A link is a connection in a document to another document, a report, or a web page. A link lets an analyst execute another document or report (the target) from a document (the source). The link can pass parameters to answer any prompts that are in the target. The link can also pass selector values from the source to the target.

Compare a link to a hyperlink, which is a connection in a document to a web page. A hyperlink is functional in PDF View in MicroStrategy Developer and in Express Mode in MicroStrategy Web. (A hyperlink is also functional in Interactive Mode and Editable Mode in Web.) For details on hyperlinks, see *Defining hyperlinks in documents, page 455*.

Different objects on a document can have different links. For example, the Region attribute in a regional revenue document can link to a yearly revenue document, while the Revenue metric can link to a document with revenue forecasts and other key performance indicators.

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A link can also connect a text field or an image to a web page. When the document is viewed as a PDF or in MicroStrategy Web, a user can click the link to navigate to the link's target, which can open in a new window or open in the same window as the document.

Links can be created and used in the following ways:

- Link from a text field or image to a web page, report, or another document
- Link from an attribute, metric, hierarchy, or object prompt on a Grid/Graph to a report or another document
- Link from a Grid/Graph to its underlying dataset
- Link from a button to a web page, report, or another document
- For widgets, link from an attribute on the widget to a report or another document
- A link can automatically answer prompts in the target in a variety of ways, including using existing prompt answers from the source dataset, using the objects selected in the source dataset, running the prompts, sending a list of elements, and others
- A link can automatically pass the source's selector choices to the selectors in the target

The following table describes options that allow a user to interact with a document using links. The table helps you to decide what link to create to achieve your goals.

Goal	What To Create
Link to a web page for a document viewed in Express Mode (as well as Interactive Mode and Editable Mode)	A text field or image that is defined as a hyperlink. A user can click a hyperlink on an image or a text field to open a web page. Hyperlinks work in Express Mode, Interactive Mode, and Editable Mode in MicroStrategy Web. See *Defining hyperlinks in documents, page 455*.
Link to a web page for a document viewed in any mode except PDF View	A link in a text field, a button, or an image. A user can click a link on an image, a button, or a text field to open a web page. Links work in all modes except PDF View in MicroStrategy Developer; for viewing in PDF View, use a hyperlink instead. See *Linking to a web page, page 431*.
Link to a report or a document with no prompts	A link in an image, a text field, a button, or an object in a Grid/Graph. See *Specifying how prompts are answered in the target, page 443*.

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Goal	What To Create
Link to a report or document that requires prompts to be answered	A link in a text field, an image, a button, or an object on a Grid/Graph. The link contains prompt information. The target document/report contains a prompt and the link contains information to answer that prompt. Information to answer the prompt can therefore be passed from the source document to the target. See *Specifying how prompts are answered in the target, page 443*.
Link to a document that contains selectors	A link in a text field, an image, a button, or an object on a Grid/Graph. The link contains selector values. Both the target and source documents contain the same selector, and the link contains the values chosen in the source's selector. The source's selector values are applied to the target's selectors. See *Passing selector values from the source to the target, page 454*.
Link a Grid/Graph (not an object on a Grid/Graph) to its underlying dataset	A link in the Grid/Graph to its dataset. In Interactive and Editable Mode, this link is provided automatically. You can use a text field to link a Grid/Graph to its related dataset for Express and Flash Mode. The text field contains the link that executes the dataset. See *Linking a Grid/Graph to its underlying report, page 238*.
Drill down, up, or across attributes, custom groups, or consolidations in a Grid/Graph	Enable drilling in the Grid/Graph. (A link does not have to be created.) You can drill on a Grid/Graph in Interactive Mode and Editable Mode in MicroStrategy Web. You can drill down, up, or across attributes, custom groups, and consolidations displayed in a Grid/Graph, if drilling is enabled. See *Drilling in Grid/Graphs, page 248*.
Interact with panel stacks	Selector. A selector allows the user to: • Change panels in a panel stack • Display different elements of attributes, custom groups, or consolidations in a panel stack using dynamic text fields Selectors are functional in Interactive Mode, Editable Mode, and Flash Mode in MicroStrategy Web. See the *Dashboards and Widgets Creation Guide* for steps to create panel stacks and selectors.

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Goal	What To Create
Display different objects on a Grid/Graph	Selector. A selector allows a user to display different metrics or different elements of attributes, custom groups, or consolidations in a Grid/Graph. Selectors are functional in Interactive Mode, Editable Mode, and Flash Mode in MicroStrategy Web. See the *Dashboards and Widgets Creation Guide* for steps to create selectors.
Email, export, or subscribe to a document or report	A link with a URL made up of the object ID and specific link syntax. You type the link URL. The user can click the link to email, export, or subscribe to the target. You need to know the link syntax and find the object ID. See *Defining hyperlinks in documents, page 455*.

For steps to add a link to a document, see *Adding a link to a document, page 440*.

For information on how these options work together, see *How links, drilling, and selectors work together, page 462*.

For documents displayed on mobile devices, you can create links to reports and other documents. You can also create links that interact with applications installed with the mobile device, such as email or text messaging. For examples and steps, see the *Mobile Design and Administration Guide*.

For steps to add a link to a widget, see the *Dashboards and Widgets Creation Guide*.

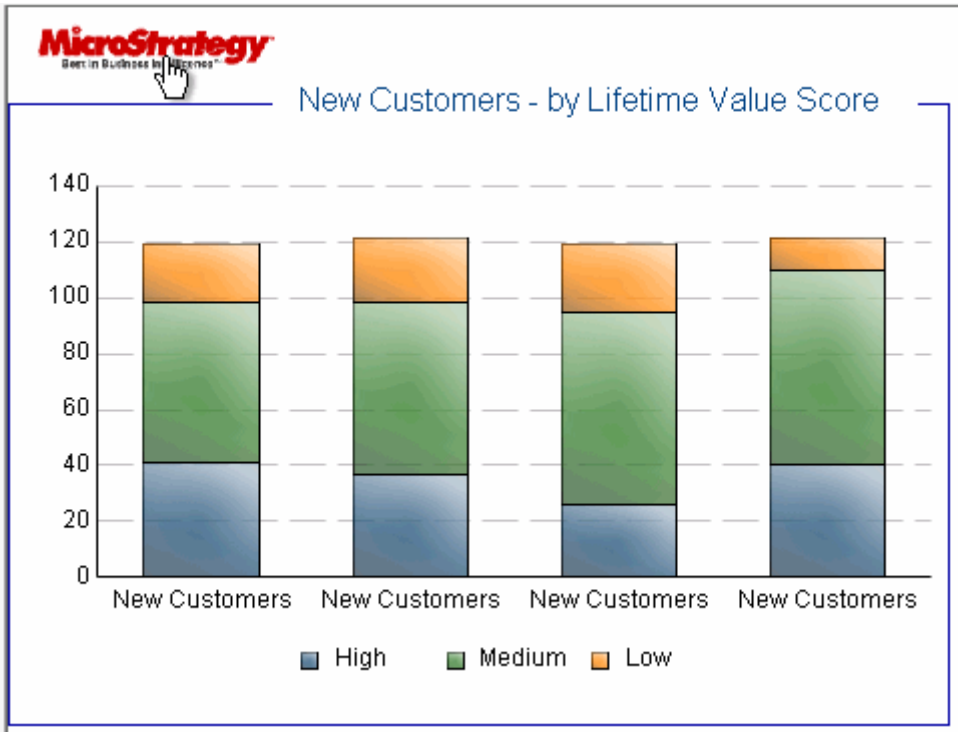
Linking to a web page

You can link a text field or an image in a document to a web page. When the document is viewed in MicroStrategy Web, a user can click the link to navigate to the link's target web page.

If you intend the document to be viewed by users in PDF View in MicroStrategy Developer, use a hyperlink instead of a link. For steps, see *Defining hyperlinks in documents, page 455*.

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For example, you can define a link on a logo. When a user hovers the pointer over the logo, it changes to a hand to indicate the link, as shown below:



When a user clicks the logo, your home page is displayed.

You can also link a text field to a web page. In the following example, Region is linked to a dummy web site, `www.example.com`. The various regions are underlined, indicating that a link exists. When a user hovers the cursor over a region, the pointer changes to a hand, also indicating a link. This is shown below, in Interactive Mode in MicroStrategy Web.

Region	Employee	Revenue
Central	Ellerkamp:Nancy	$847,227
Central	Gale:Loren	$1,669,290
Central	Torrison:Mary	$1,690,350
Central	Zemlicka:George	$822,500
Mid-Atlantic	Bernstein:Lawrence	$1,060,632

When a user clicks a region, the `www.example.com` website is displayed.

You can add pop-up text to display information about the link. In the above examples, the pop-up text can display the URL or a description of the website. For steps, see *Creating a pop-up tooltip, page 280*.

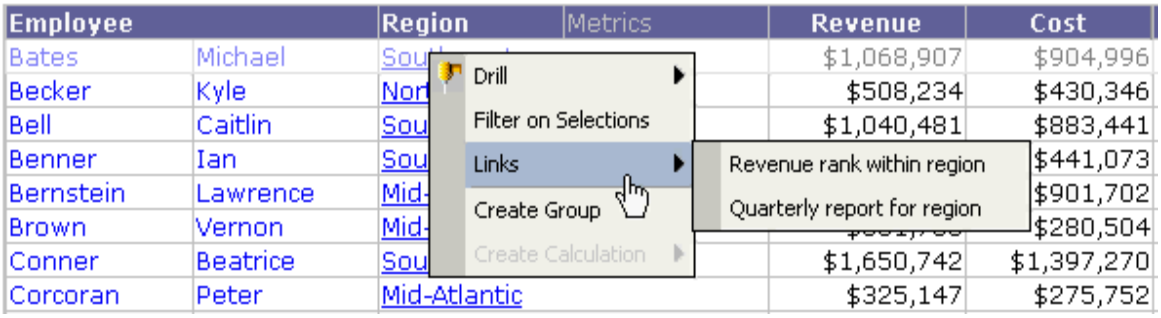
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Multiple links on the same object

An object in the source document can have more than one link. The same object can be linked to different web pages, or even to reports and documents. One of the links is designated as the default; when a user clicks the object, the default link is used. To access other links, the user right-clicks the object to choose from a list of links. The list of links is available in Interactive Mode and Editable Mode. The default link works in Interactive, Editable, and Flash modes.

You can allow users to view the list of links for Grid/Graphs in Flash Mode by enabling data manipulations. For steps, see *Enabling filtering, drilling, and moving objects for Grid/Graphs in Flash Mode, page 257*.

For example, in the report below, if the user clicks directly on a region, the default link is executed. But if the user right-clicks a region and points to **Links**, a list of all the links for that object is displayed and the user can select which link they want to execute.



Dynamic text in links

The target URL can include dynamic text, which changes the URL depending on the data in the document. For example, your company has a website with pages for each region. The link can access the specific page for each region. To do this, include the Region attribute in the URL, as in `http://www.example.com/{Region}.htm`. Dynamic text must be typed within braces { }.

Dynamic text can be either:

- A data field (a metric, attribute, and so on) providing data from the dataset

- An auto text code providing information on a setting of the document or dataset, such as the document name or a prompt answer

For more information on the syntax of dynamic data fields, see *Adding dynamic data to a document, page 83*. For more information on the syntax of auto text codes, see *Displaying document and dataset information: Auto text codes, page 88*.

Linking to other documents and to reports

You can link to other documents and reports from a text field in a document, from an image in a document, or from objects on a Grid/Graph or widget in a document.

The link connects an object in one document (the source) to another document or a report (the target). You can have the link answer prompts in the target document/report. Answering prompts allows the link to pass information from the source document to the target. For details on how prompts can be answered by a link, with examples, see *Specifying how prompts are answered in the target, page 443*.

You can have the link specify selector values in the target document. Specifying selector values allows the link to pass information from the source to the target. For details on how selector values can be passed in a link, with examples, see *Passing selector values from the source to the target, page 454*.

Links can connect to reports and documents on any level. A regional document can contain a link to its underlying dataset, which displays profit and cost values as well sales, all at the regional level. Another link in the same document can execute a document with additional information about the selected region, such as employees, market saturation, and so on.

Using links as a form of drilling

You do not need to use links to provide drilling from a document's Grid/Graph. You can enable drilling for a Grid/Graph, which allows users to drill up, down, or across attributes, custom groups, and consolidations displayed in the Grid/Graph; for steps, see *Drilling in Grid/Graphs, page 248*. Links are one way to simulate drilling in a document.

Links can provide drilling in documents, when you define the links to navigate from data at one level to different levels of aggregation. For

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example, if a user is viewing a document containing regional revenue, he can click a link on a particular region to execute another document that displays sales for the call centers in that region. Essentially, the user has drilled down from Region to Call Center. The original document is shown below, in Interactive Mode in MicroStrategy Web.

Region	Revenue
Central	$5,029,366
Mid-Atlantic	$4,452,615
Northeast	$8,554,415
Northwest	$1,761,187

After the user clicks the link on Central, this document is executed:

Call Center	Revenue
Milwaukee	$4,182,139
Fargo	$847,227

The drilling is accomplished by linking to a prompted document and passing prompt answers in the link. For details on passing prompt information, see *Specifying how prompts are answered in the target, page 443*.

A second link on region in the source document can take the user from the regional sales document to another document that displays sales by country. The user has then drilled up from Region to Country. In the following sample, the user has drilled from Central to all countries.

Country	Revenue
USA	$31,120,946
Web	$3,902,762

In previous versions, linking or drilling to reports and documents was accomplished with drill links.

Linking from a text field

A text field can be linked to a web page, a report, or another document.

The underlined text in the following document, which is shown in Editable Mode in MicroStrategy Web, indicates the links. Note that both the revenue

data (indicated by the hand pointer in the image) and the metric headers (the text 2005 Revenue, 2006 Revenue, and 2007 Revenue) are linked.

Region	Category	2005 Revenue	2006 Revenue	2007 Revenue
Central	Books	$64,368	$83,697	$103,215
Central	Electronics	$1,393,794	$1,665,919	$2,247,755
Central	Movies	$65,247	$76,243	$99,915
Central	Music	$300,306	$356,773	$455,703
Mid-Atlantic	Books	$54,763	$70,210	$85,347
Mid-Atlantic	Electronics	$5,971,153	$7,460,047	$9,134,630

If you click the link indicated by the hand pointer, the following report is executed. It provides data for the selected Region (Central), Category (Books), and Year (2006).

REPORT DETAILS

Report Description:

Prompt Details:
Prompt 1: Year
2006
Prompt 2: Region
Central
Prompt 3: Category
Books

Report Filter:
(Year = 2006) And (Region = Central) And (Category = Books)

Data rows: 1

Region Category Metrics	Revenue	Units Sold	Last Year's Revenue	Last Year's Units Sold
Central Books	$83,697	5,176	$64,368	4,138

If you click the link on the text 2006 Revenue instead, the following report is executed. It is the same report as the previous report, but contains all regions

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and all categories, but only 2006 data. (Only a portion of the report is shown below.)

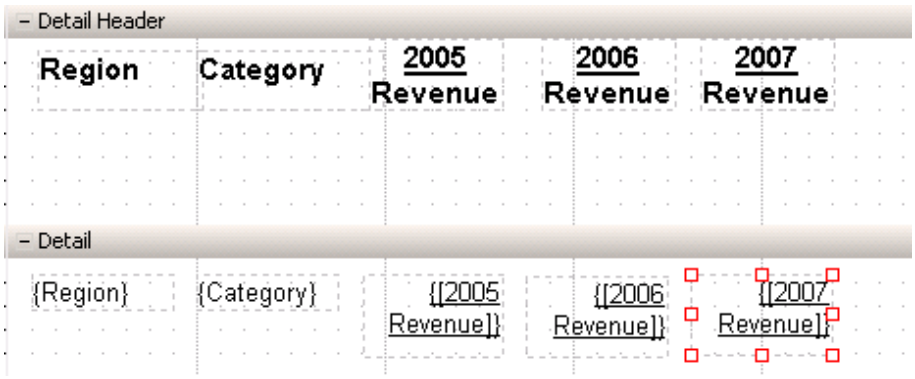
REPORT DETAILS
Report Description:

Prompt Details:
Prompt 1: Year
2006

Report Filter:
Year = 2006

Region	Category Metrics	Revenue	Units Sold	Last Year's Revenue	Last Year's Units Sold
Central	Books	$83,697	5,176	$64,368	4,138
Central	Electronics	$1,665,919	4,880	$1,393,794	4,023
Central	Movies	$76,243	4,947	$65,247	4,159
Central	Music	$356,773	24,253	$300,306	20,416
Mid-Atlantic	Books	$70,210	4,295	$54,763	3,459
Mid-Atlantic	Electronics	$7,460,047	21,431	$5,971,153	17,351
Mid-Atlantic	Movies	$67,772	4,395	$53,926	3,425
Mid-Atlantic	Music	$64,756	4,285	$51,983	3,518
Northeast	Books	$666,781	41,212	$529,702	32,993

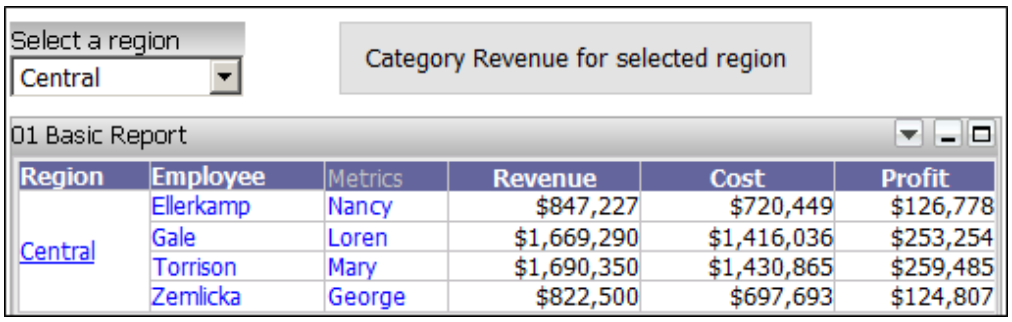
The source document is shown below in Design View. Text fields on the source document provide the metric data and the header labels. They are underlined to indicate the links.



Linking from a button

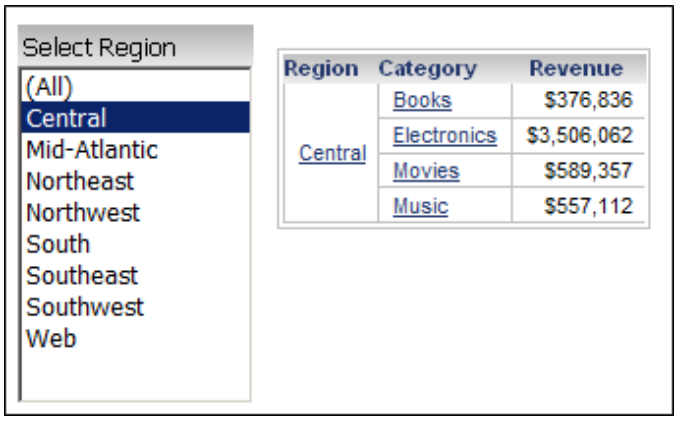
A button can be linked to a web page, a report, or another document.

The following document, shown in Express Mode in MicroStrategy Web, contains a region selector that targets the Grid/Graph. Central is selected in the selector, so the Grid/Graph displays data for the Central region only.



Region	Employee	Metrics	Revenue	Cost	Profit
Central	Ellerkamp	Nancy	$847,227	$720,449	$126,778
	Gale	Loren	$1,669,290	$1,416,036	$253,254
	Torrison	Mary	$1,690,350	$1,430,865	$259,485
	Zemlicka	George	$822,500	$697,693	$124,807

The document also contains a button to link to the Category Revenue document. The Category Revenue document also contains a region selector that targets a Grid/Graph. When the button is clicked, the selector value (in this case, Central) is passed to the target document, as shown below:



Region	Category	Revenue
Central	Books	$376,836
	Electronics	$3,506,062
	Movies	$589,357
	Music	$557,112

Notice that Central is selected in the selector, and the Grid/Graph displays data only for the Central region, just as in the source document.

For steps to create a button, see the *Using Links in Mobile Documents* chapter of the *Mobile Design and Administration Guide*.

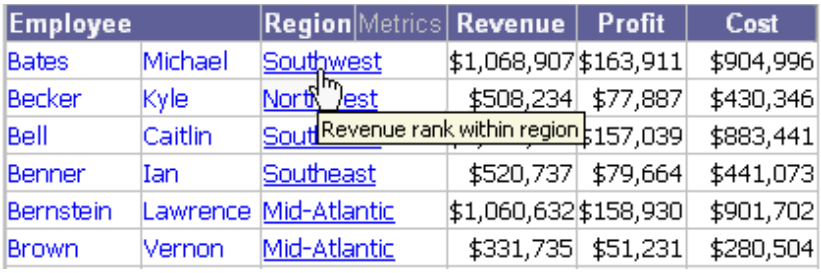
Linking from an attribute in a Grid/Graph

An object in a Grid/Graph can be linked to either a report or to another document.

The following document, which is shown in Interactive Mode in MicroStrategy Web, links the Region attribute in the Grid/Graph to a report

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called **Revenue Rank with Region prompt**. The links are indicated by the underlined region names. When you hover over a region, the hand pointer appears and the name of the link is displayed in a pop-up, as shown below.



Employee		Region	Metrics	Revenue	Profit	Cost
Bates	Michael	Southwest		$1,068,907	$163,911	$904,996
Becker	Kyle	North West		$508,234	$77,887	$430,346
Bell	Caitlin	South			$157,039	$883,441
Benner	Ian	Southeast		$520,737	$79,664	$441,073
Bernstein	Lawrence	Mid-Atlantic		$1,060,632	$158,930	$901,702
Brown	Vernon	Mid-Atlantic		$331,735	$51,231	$280,504

When you click Southwest, the **Revenue Rank with Region prompt** report is executed, as shown below. Notice that only employees in the Southwest are included in the report.

Region	Employee	Metrics	Revenue	Revenue Rank
	Bates	Michael	$1,068,907	1
	Bell	Caitlin	$1,040,481	2
Southwest	Hunt	Matthew	$731,413	3
	Johnson	Andrew	$445,052	5
	Schafer	Rose	$408,280	4

This is because the **Revenue Rank with Region prompt** report includes a prompt on Region. The link answers the prompt dynamically, meaning that the object selected in the source (Southwest in this case) is passed to the target report as the prompt answer. Steps to determine how a prompt in the target report/document will be answered, are included in the steps below.

Linking from an attribute in a widget

A widget is a Flash-based display of the results of a dataset, providing Report Services (RS) dashboard analysts with a visual and interactive look into their data. The objects on a widget can be linked to either a report or to another document.

For steps to link from widgets, including examples, see the *Dashboards and Widgets Creation Guide*.

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Adding a link to a document

Prerequisites

- The source document and any target reports/documents must be created. The source document must contain the object to link from.
- If the target report/document contains prompts, you must know what types of prompts the targets require and how they will be answered by the link (or by the user). For details on each prompt answer method, see *Specifying how prompts are answered in the target, page 443*.
- If you want to pass selector values from the source document to the target document, both the source and the target must contain the same selector. This means that either both documents must contain a selector with the same name (such as Region Selector), or both documents must contain a selector that uses the same source object (such as Region).
- If you are linking from an object on a Grid/Graph, the Grid/Graph must be displayed as a grid.

To add a link to a document

1 In MicroStrategy Web, open the document in Design Mode.

2 Open the Link Editor in one of the following ways, depending on what type of object you intend to create the link in:

- To create a link from a text field, a button, or an image, right-click the object and select **Edit Links**.
  - You can create links to reports, documents, and web pages from text fields, images, and buttons.
- To create a link from an object on a Grid/Graph or widget, right-click the attribute or metric header in the Grid/Graph and select **Edit Links**.
  - To link from a Grid/Graph, you can create links on attributes, hierarchies, metrics, and object prompts.
  - To link from a widget, you can create links on attributes.
  - You can create links to reports and documents from Grid/Graph objects and widgets.

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3 If other links already exist on this document, click the **New** icon to create a new link.

4 Type a name for the link in the **URL display text** field. Since the name appears in the link, it should be descriptive and informative to help users identify the target of the link.

To define the link

5 Perform the appropriate steps below, depending on whether you are linking to a web page or to a report/document:

- To link to a web page:

  If you intend the document to be viewed by users in PDF View in MicroStrategy Developer, use a hyperlink instead of a link. For steps, see *Defining hyperlinks in documents, page 455*.

  a Select **Navigate to this URL**. This option is available only if you selected to create a link from a text field or image.

  b Type the target URL in the field below **Navigate to this URL**.

- To link to a report or document:

  a Select **Run this report or document**.

  b Click the browse button (...) below **Run this report or document** to find and select the target report or document.

To apply prompt answers to target reports that contain prompts

6 The box below **Run this report or document** contains a list of any prompts included in the target report/document. Select a target prompt from the box.

7 Select a prompt answer method from the drop-down list. For examples of each prompt answer method, see *Specifying how prompts are answered in the target, page 443*.

- **Answer with the same prompt from the source**: Select this option if you want to use the same prompt answers for both the source report and the target report/document. This option requires that both the source and target documents use the same prompt.
- **Prompt user**: Select this option if you want the user to type prompt answers after he clicks the link to run the target report/document.

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- **Answer with an empty answer**: Select this option if you want to ignore the prompt in the target report/document. The prompt is not answered. This option requires that the prompt in the target is not required. If the prompt in the target is required, the user is prompted to provide an answer.
- **Use default answer**: Select this option if you want the prompt in the target to use the default answer defined by the prompt's designer. This option requires that a default answer is defined for the prompt in the target.
- **Answer dynamically**: Select this option if you want to answer the prompt using the object selected in the source. This option is only available for attribute element prompts and value prompts.
- **Answer using current unit**: Select this option if you want to answer the prompt using the object selected in the source. This option is only available for hierarchy prompts.
- **Answer using all valid units**: Select this option if you want to answer the prompt in the target with any object to the left of or above the object that the user selects in the source document. This method passes all pertinent selections in the source, rather than just the selection made for the link. This option is available only for hierarchy prompts.

8 For each prompt in the target report/document, repeat the step above.

To specify the prompt answer method for prompts not in the list

9 Any other prompts are those prompts that are not in the target report/document when you are creating the link. For example, these prompts can include prompts added to the target later. By default, the **Prompt user** answer method is selected for these prompts, but you can change the method. To do this, select **Any other prompts** in the list.

10 Select a prompt answer method from the list; these are the only methods available for the Any other prompts option. For examples of each answer method, see *Specifying prompt answers for any other prompts not listed, page 451*.

- **Answer with the same prompt from the source**
- **Prompt user** (default)
- **Answer with an empty answer**
- **Use default answer**

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To apply selector values to a target document that contains selectors

11 Choose a selector value method from the **Pass all selector values** drop-down list. For an example of passing selector values, see *Passing selector values from the source to the target, page 454*.

- To match selector values by the selector's source attribute (that is, the object displayed in the selector), select **Match Selectors by Source Attribute**.
- To match selector values by the name of the selector, select **Match Selectors by Control Name**.

To define additional links and determine link behavior

12 Repeat the steps above if you want to create additional links. You can create multiple links on the same object.

13 Select the **Open in new window** check box to have the target report/document open in a new window. This allows the target and the source documents to be visible simultaneously. If this check box is cleared, the target report/document or web page opens and replaces the source document.

14 If the object has more than one link, select the link that you want to make the default link, and click the **Set as Default** icon . For details on setting a default link, see *Multiple links on the same object, page 433*.

15 Click **OK** to return to the source document and to save your link.

Specifying how prompts are answered in the target

For background information on prompts, see the description of prompt types in *Building Query Objects and Queries* chapter in the *Basic Reporting Guide*. For a more extensive description of each prompt type from an analyst's perspective, with images of each prompt as it appears to users, see the *Answering Prompts and Refreshing Data* chapter of the *Basic Reporting Guide*.

This section describes each prompt answer option for links, with an example. Information is also provided to achieve certain behaviors by combining prompts with specific answer options.

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- **Answer with the same prompt from the source**. The same prompt answers that were used to execute the source are used in the target. This option requires that the source and target use the same prompt. If the same prompt does not exist in the source and in the target, the user is prompted to provide an answer when the target is executed.

  For example, the Regional Revenue document links regions to another document called Yearly Revenue. The datasets of both documents contain the same prompt, which prompts the user to select the regions to display. If you execute the Regional Revenue document and select Mid-Atlantic, Northeast, and Southeast when prompted, you see the results shown below. When you hover the cursor over a region, the link name is displayed.



  Click Mid-Atlantic to run the link. The Yearly Revenue document displays data for all three regions, as shown below, although you clicked only one region.

Region	Year Metrics	Revenue
Mid-Atlantic	2007	$1,140,008
Mid-Atlantic	2008	$1,518,592
Mid-Atlantic	2009	$1,794,014
Northeast	2007	$2,246,294
Northeast	2008	$2,870,291
Northeast	2009	$3,437,829
Southeast	2007	$596,681
Southeast	2008	$759,665
Southeast	2009	$883,605

- **Prompt user**. When the target is executed, the user is prompted to provide answers manually.

  For example, the Regional Revenue document links regions to a report called Yearly Revenue, which is prompted for regions. Click Mid-Atlantic on the Regional Revenue document to execute the link to the Yearly Revenue report. The regional prompt is displayed, although a region was selected on the source document. The **Prompt user** prompt method does not pass information to the target, so the user must answer the prompts manually.

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- **Answer with an empty answer**. The prompt in the target is ignored, which means that the prompt is not answered. No prompt answer is provided from the source and the user is not prompted to provide answers.

  The prompt must not be required, because if the prompt is required, the user is prompted to provide an answer when the target report is executed by clicking the link.

The **Answer with an empty answer** method, when used in conjunction with the dynamic prompt answer method, allows a source document to answer one prompt in a target with the user selection, while ignoring any other prompts.

For example, the following document contains a Grid/Graph. The Grid/Graph has Region on the rows, and Category and Revenue in the columns. Region contains a link, as shown in the following image:

Region / Metrics / Category	Revenue			
	Books	Electronics	Movies	Music
Central	$376,836	$3,506,062	$589,357	$557,112
Mid-Atlantic			$518,969	$489,049
Northeast	$646,421	$5,962,709	$1,001,561	$943,724
Northwest	$129,175	$1,234,850	$200,894	$196,269
South	$406,110	$3,741,753	$636,054	$605,364
Southeast	$170,445	$1,552,007	$264,286	$253,213
Southwest	$280,796	$2,562,060	$435,871	$415,404
Web	$292,655	$2,724,922	$451,952	$433,233

When you click Central, the following report is displayed:

Region	Category	Metrics	Revenue	Revenue per Employee
Central	Books		$376,836	$94,209
Central	Electronics		$3,506,062	$876,516
Central	Movies		$589,357	$147,339
Central	Music		$557,112	$139,278

Only the selected region (Central) is displayed in the target. All categories are also displayed. The document is linked to a report, rather than another document.

Return to the source document, which contains a link on Category as well, as shown in the following image:

Region	Metrics / Category	Revenue			
		Books	Electronics	Movies	Music
Central		$376,836	$2,506,062	$690,357	$557,112
Mid-Atlantic		$337,656	$3,106,940	$518,969	$489,049
Northeast		$646,421	$5,962,709	$1,001,561	$943,724
Northwest		$129,175	$1,234,850	$200,894	$196,269
South		$406,110	$3,741,753	$636,054	$605,364
Southeast		$170,445	$1,552,007	$264,286	$253,213
Southwest		$280,796	$2,562,060	$435,871	$415,404
Web		$292,655	$2,724,922	$451,952	$433,233

Selected category, all regions

When the selected link is run, the following report is displayed:

Region	Category	Metrics	Revenue	Revenue per Employee
Central	Books		$376,836	$94,209
Mid-Atlantic	Books		$337,656	$42,207
Northeast	Books		$646,421	$107,737
Northwest	Books		$129,175	$43,058
South	Books		$406,110	$135,370
Southeast	Books		$170,445	$42,611
Southwest	Books		$280,796	$56,159
Web	Books		$292,655	$292,655

This is the same target report as the other link, but only the selected category (Books) is displayed. All the regions are displayed.

This behavior is possible because the target report contains two prompts, one for Region and one for Category, but the user makes only one selection (a region or a category), yet is not prompted for the other. This is because the prompts in the link definition use different prompt answer methods. The link on region uses the following prompt answer methods:

- Region prompt: Answer dynamically
- Category prompt: Answer with an empty answer

This passes the selected region to the target, to answer the region prompt, and ignores the category prompt. The link on category uses the following prompt answer methods:

- Region prompt: Answer with an empty answer
- Category prompt: Answer dynamically

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This passes the selected category to the target, to answer the category prompt, and ignores the region prompt.

- **Use default answer**. The prompt is answered by the default prompt answer for the prompt in the target. If the target prompt does not have a default answer, the **Answer with an empty answer** method is used. In this case, the prompt is not answered, unless it is required, in which case the user is prompted to provide an answer.

  For example, continue with the same Regional Revenue document and Yearly Revenue report described above. This time, the **Use default answer** prompt method is used in the link, and the regional prompt has a default answer of Central. When you click Mid-Atlantic on the Regional Revenue document, the Yearly Revenue report displays data for Central.

- **Answer dynamically**. The object selected in the source is passed to the prompt in the target. If this object does not answer the target prompt, the **Answer with an empty answer** method is used. In this case, the prompt is not answered, unless it is required, in which case the user is prompted to provide an answer.

  Available only for attribute element prompts and value prompts.

  For example, a document contains Employee, Region, and various metrics. Region is linked to a report called Revenue Rank with Prompt on Region. If a user clicks the Southwest region to run the link, Southwest is passed to the target to answer the prompt on region. The report displays data for the Southwest region only. If the user clicks Northwest instead, Northwest is passed to the target and the report displays data for the Northwest region only.

- A hierarchy prompt allows users to select prompt answers from one or more attribute elements from one or more attributes. This prompt gives users the largest number of attribute elements to choose from when they answer the prompt to define their filtering criteria. The **Answer using all valid units** prompt answer method passes selections made on the source document, rather than just the selection made for the link, to the target. To restrict the prompt answer to just the selected attribute element, use the **Answer using current unit** prompt answer method. Like the Answer dynamically method, only the attribute element that is selected is passed to the target.

  These two prompt answer methods are available only for hierarchy prompts.

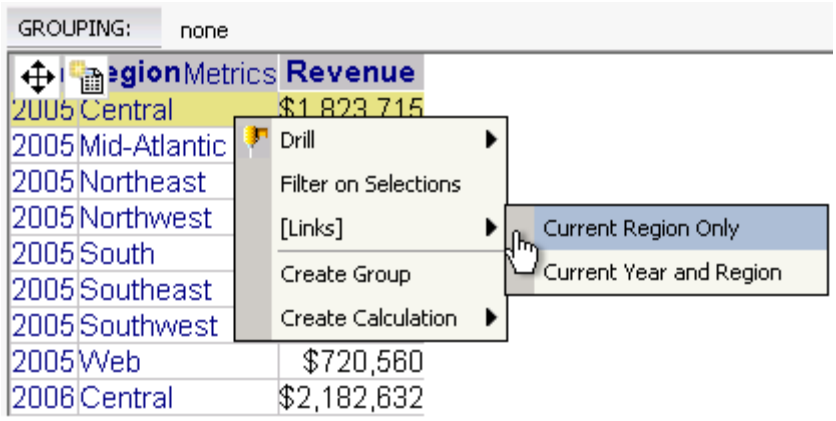
  An example using both answer methods is below.

  - **Answer using current unit**. The prompt is answered using the object selected in the source. If the user selects an attribute header rather

than a specific attribute element, the **Answer with an empty answer** method is used. In this case, the prompt is not answered, unless it is required, in which case the user is prompted to provide an answer.

- **Answer using all valid units**. Any object to the left of or above the user selection in the source is used as the prompt answer for the target. In other words, this method passes all the selections made on the source, rather than just the selection made for the link. If the user does not select any valid objects (for example, the user selects an attribute header rather than a specific attribute element), the **Empty answer** method is used. That is, the prompt is not answered, unless it is required, in which case the user is prompted.

For example, the following document is used as the source. It contains Year, Region, and Revenue. As shown below, Region contains two links, one that passes the current region only (using the **Answer using current unit** prompt answer method) and another that passes the selected year and region (using the **Answer using all valid units** prompt answer method).



The source report contains the Geography hierarchy and the Revenue metric. It is filtered by a hierarchy prompt on Geography.

Notice that 2005 and Central are selected in the image above. If you select the Current Year and Region link, 2005 and Central are passed to the target as the prompt answers. This is confirmed in the report filter details, as shown in the report sample below. Only Central is returned,

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with a revenue amount ($1,823,715) that matches the revenue amount in the source report.

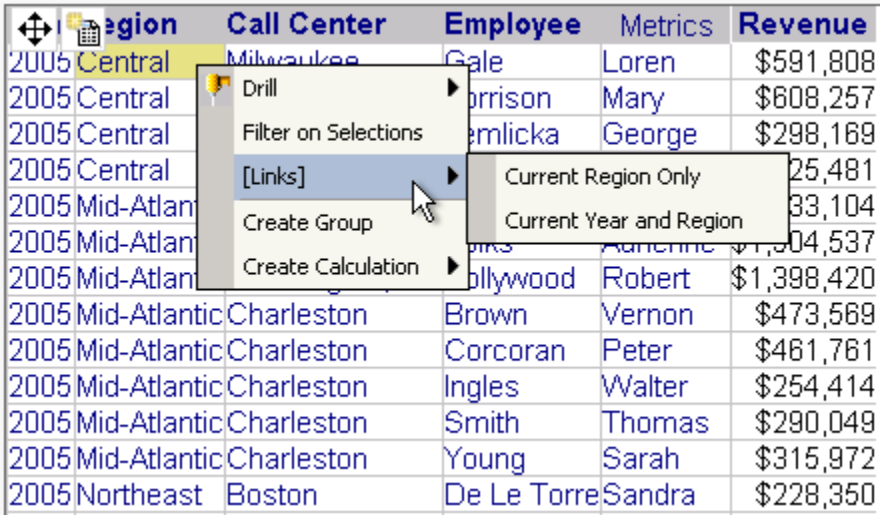


If you click the Current Region Only link instead, although 2005 and Central are still selected, only Central is passed as a prompt answer to the target report. The report is filtered by Central only; all years are included. The revenue amount is therefore much higher ($6,912,934 instead of $1,823,715), as shown below.



The valid units for the **Answer using all valid units** answer method are any elements that are to the left of or above the user selection in the

source. For example, add Call Center and Employee to the right of Region in the source report, as shown below.



If you select the Current Region Only link, only Central is displayed on the target report, with the same revenue amount ($6,912,934) as in the previous scenario.

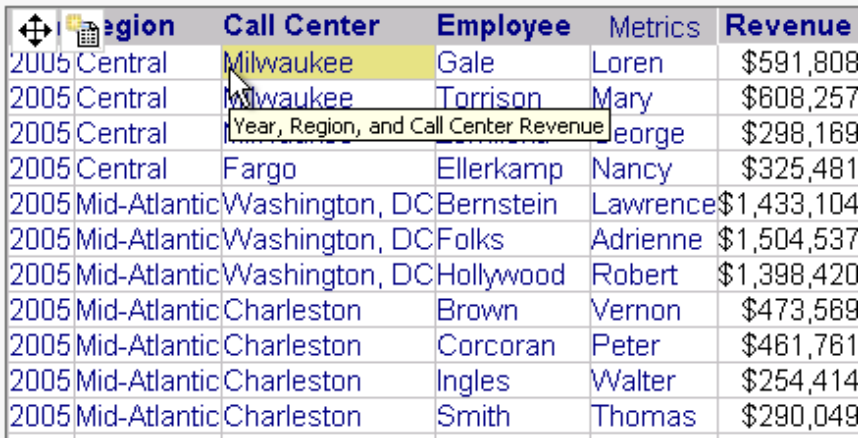


If you select the Current Year and Region link instead, Central is returned, with 2005 revenue only (again, the same as in the previous scenario), as shown below.



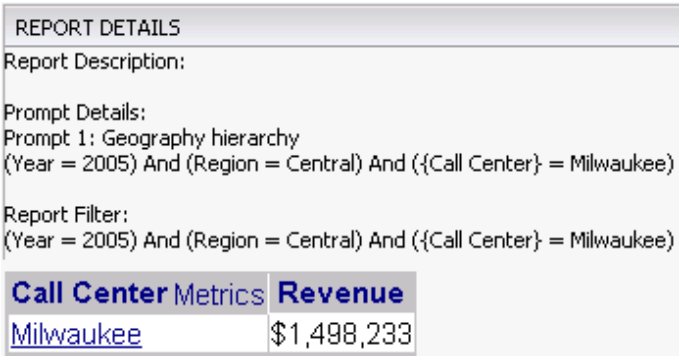
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The link could be on Call Center instead, as shown in the source report below.



egion	Call Center	Employee	Metrics	Revenue
2005 Central	Milwaukee	Gale	Loren	$591,808
2005 Central	Milwaukee	Torrison	Mary	$608,257
2005 Central			eorge	$298,169
2005 Central	Fargo	Ellerkamp	Nancy	$325,481
2005 Mid-Atlantic	Washington, DC	Bernstein	Lawrence	$1,433,104
2005 Mid-Atlantic	Washington, DC	Folks	Adrienne	$1,504,537
2005 Mid-Atlantic	Washington, DC	Hollywood	Robert	$1,398,420
2005 Mid-Atlantic	Charleston	Brown	Vernon	$473,569
2005 Mid-Atlantic	Charleston	Corcoran	Peter	$461,761
2005 Mid-Atlantic	Charleston	Ingles	Walter	$254,414
2005 Mid-Atlantic	Charleston	Smith	Thomas	$290,049

If you click the Year, Region, and Call Center Revenue link, the target report is filtered by these attributes (the selection and the attributes to the left of it), as shown below. Note that the revenue amount ($1,498,233) is less than the amount ($1,823,715) displayed in the previous report that filtered for 2005 and Central. The difference of $325,481 is Call Center Fargo's 2005 revenue contribution, as shown in the document above.



Call Center	Metrics	Revenue
Milwaukee		$1,498,233

Specifying prompt answers for any other prompts not listed

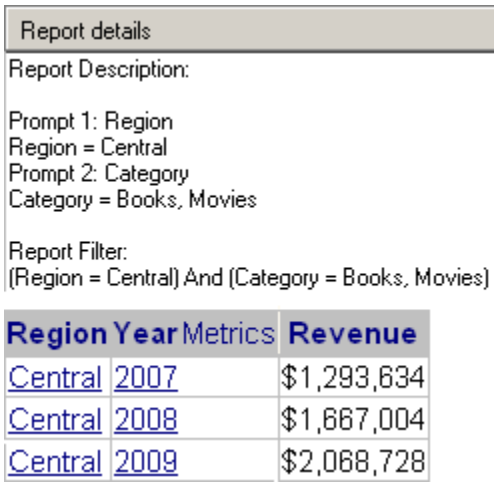
Any other prompts are those prompts that are not in the target when you are creating the link. These can be either:

- Prompts added to the target after the link is created
- Prompts that are created as the result of an answer to one of the original prompts in the target, such as a prompt-in-prompt answer

These prompts are listed as the **Any other prompt** option in the list of prompts in the Link Editor.

For example, a Regional Revenue document contains a link to another report called Yearly Revenue. When the link was created, Yearly Revenue contained only a prompt for Region. The link uses the Answer dynamically prompt answer mode to answer that prompt, so the region that the user selects to access the link answers the prompt. The user is not prompted when the target is executed. However, after the link was created, a second prompt, for Category, is added to the Yearly Revenue report.

Now a user selects Central in the Regional Revenue document, and clicks the link for Yearly Revenue. The report does not execute immediately, but instead the Category prompt appears. The user must select a category to continue or, since the prompt is not required, can include all categories by clicking Finish. In the sample shown below, the user answered the prompt with the Book and Movie categories.



Because the Category prompt was added after the link was created, the prompt uses the prompt answer method assigned to Any other prompt. Since the creator of the link did not change that method, it is still defined as the default of **Prompt user**.

If you edit the Yearly Revenue link in the Regional Revenue document now, the Category prompt is displayed in the list of prompts. Its prompt answer mode is defined as **Prompt user**, although you can change it. You can also select a different prompt answer mode for Any other prompt.

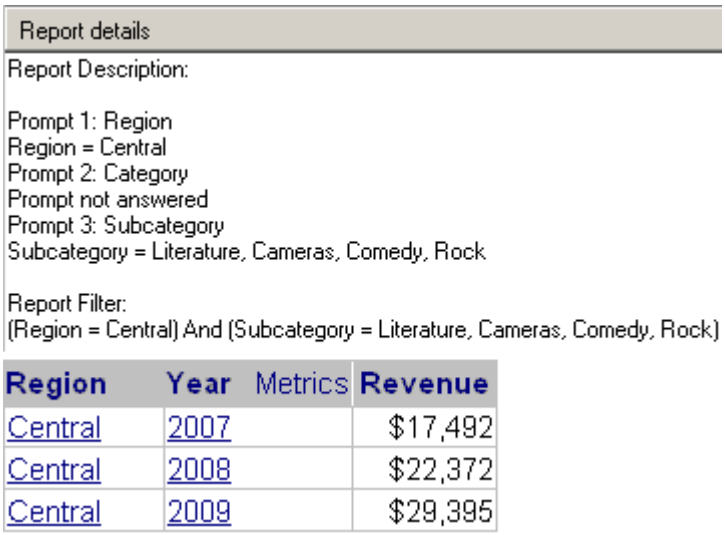
Change the Category prompt to **Answer with an empty answer**. Change the Any other prompt option to **Use default answer**. Create a prompt on Subcategory, and add the following as default answers:

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- Literature
- Cameras
- Comedy
- Rock

Add the new Subcategory prompt to the Yearly Revenue report.

If you re-execute the Regional Revenue document, right-click **Central**, point to **Link**, and then select **Yearly Revenue**, you are not prompted at all. The target is filtered by Region and Subcategory, but not Category, as shown below.



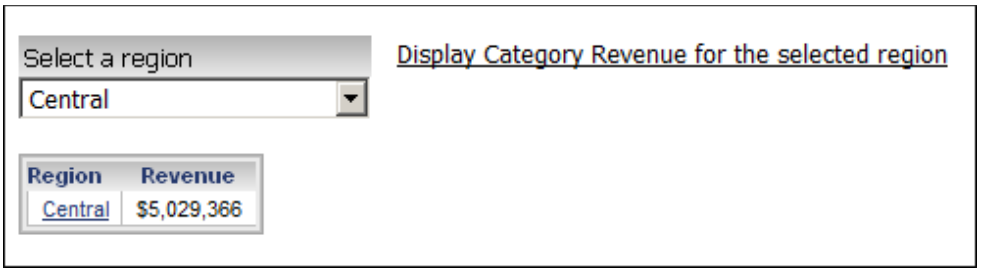
- The Region prompt is answered dynamically (by your selection of Central).
- The Category prompt is ignored and therefore does not show up in the report filter.
- The Subcategory prompt uses the default answers defined in the prompt (Literature, Cameras, Comedy, and Rock).

Passing selector values from the source to the target

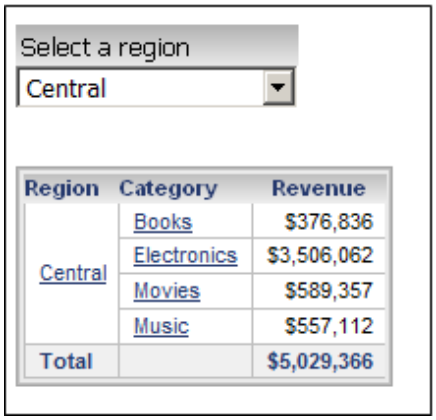
A selector allows each user to interact with a Report Services (RS) dashboard to display only the subset of data that he is interested in or only specific attribute elements or metrics. For background information on selectors, see the description of selector types, including examples and steps to create them, in the *Selectors* chapter in the *Dashboards and Widgets Creation Guide*.

The selector values that the user chooses in the source document can be passed to the selectors in the target document. For example, the Regional Revenue document contains a selector for Region, so that the user can view revenue for a specific region. The document contains a link to the Category Revenue by Region document, which also contains a Region selector.

Execute the Regional Revenue document and select Central in the selector. Only the Central region, with its revenue, is displayed, as shown below:



Click the Display Category Revenue for the selected region link. The Category Revenue by Region document is displayed, as shown below.



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The selector is set to Central, the same as the selector in the Regional Revenue document. Only Central's data is displayed, by category. Notice that the total matches the revenue in the Regional Revenue document.

To pass selector values from the source document to the target document, both the source and the target must contain the same selector. This means that either both documents must contain a selector with the same name (such as Region Selector), or both documents must contain a selector that uses the same source object (the object displayed in the selector, such as Region). When you create a link that passes selector values, you can choose to match the selector values either by the selector name or the source object.

Defining hyperlinks in documents

A hyperlink connects a text field or an image (the source) to a web page (the target). Hyperlinks are functional in Express Mode in MicroStrategy Web and in PDF View in MicroStrategy Developer. (They are also functional in Interactive Mode and Editable Mode in Web.)

Compare a hyperlink to a link, which is a connection in a document to another document, a report, or a web page. A link can pass parameters to answer any prompts that are in the target. Links are functional in all modes except Express Mode in Web and PDF View in MicroStrategy Developer. For details on links, see *Creating links in a document, page 428*.

For example, you can define a hyperlink on a logo in the Document Header. When a user clicks the logo, your home page is displayed. In PDF View, with the cursor over the logo, the link displays as pop-up text to show the URL, as shown below.



This pop-up text does not display in MicroStrategy Web, but in MicroStrategy Web you can add a tooltip to display the URL or any other information. For more information, see *Creating a pop-up tooltip, page 280*.

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Dynamic data fields in hyperlinks

You can insert dynamic data fields in the hyperlink. These data fields are interpreted when the document is run. With dynamic data fields, you can create URLs that are dynamic according to the data in the dataset.

For example, if you have an intranet website with pages for each region, add a data field for the region name. Define the hyperlink by typing braces { } and the name or alias of an object in the dataset. In this example, you type `{Region}`. For more information on the syntax of dynamic data fields, see *Adding dynamic data to a document, page 83*.

Users viewing the PDF can click the link and view the intranet page for that region. In the Northeast region on the document it could display as “Region: Northeast” and link to that URL, and for Mid-Atlantic, it could display as “Region: Mid-Atlantic” and link to that URL. A sample is shown below:



Emailing, exporting, and subscribing to documents and reports via links

A user can click a link on a document in MicroStrategy Web and, rather than executing the target of the link, the target can be emailed, exported, or subscribed to. You can create a link URL that performs any of the following actions: subscribe to a report or document; email a report or document; export a report or document.

To create a link to email, export, or subscribe to a report or document

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. From the **Insert** menu, select **Text**, and click and drag in the location where you want to insert the link.

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3 Type descriptive and informative text for the link in the text field so that the user knows what action is performed when the link is clicked.

4 Right-click the text field and select **Properties and Formatting**. The Properties and Formatting dialog box opens.

5 Make sure **General** is selected on the left.

6 Under **Navigation**, select the **Is Hyperlink** check box.

7 Type the target URL in the **Hyperlink** field. Use one of the syntaxes from the following table, depending on what action you want to execute when the link is clicked:

Action	Syntax
To export a report or document	For reports: http://*MSTRWebURL*?evt=3067&reportID=*objectID&promptinfo* For documents: http://*MSTRWebURL*?evt=3067&documentID=*objectID&promptinfo*
To export a report or document to PDF	For reports: http://*MSTRWebURL*?evt=3069&reportID=*objectID&promptinfo* For documents: http://*MSTRWebURL*?evt=3069&documentID=*objectID&promptinfo*
To email a report or document now	For reports: http://*MSTRWebURL*?evt=3037&objectID=*objectID*&objectType=3&*promptinfo* For documents: http://*MSTRWebURL*?evt=3037&objectID=*objectID*&objectType=55&*promptinfo*
To email a report or document based on a schedule	For reports: http://*MSTRWebURL*?evt=3036&objectID=*objectID*&objectType=3&*promptinfo* For documents: http://*MSTRWebURL*?evt=3036&objectID=*objectID*&objectType=55&*promptinfo*
To subscribe to a report or document to be delivered to your History List folder	For reports: http://*MSTRWebURL*?evt=3034&objectID=*objectID*&objectType=3&*promptinfo* For documents: http://*MSTRWebURL*?evt=3034&objectID=*objectID*&objectType=55&*promptinfo*
To subscribe to a report or document to be delivered to a mobile device	For reports: http://*MSTRWebURL*?evt=3134&objectID=*objectID*&objectType=3&*promptinfo* For documents: http://*MSTRWebURL*?evt=3134&objectID=*objectID*&objectType=55&*promptinfo*

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Action	Syntax
To subscribe to a report or document to be delivered to a network folder	For reports: http://*MSTRWebURL*?evt=3174&objectID=*objectID*&objectType=3&*promptinfo* For documents: http://*MSTRWebURL*?evt=3174&objectID=*objectID*&objectType=55&*promptinfo*
To subscribe to a report or document to be delivered to a printer	For reports: http://*MSTRWebURL*?evt=3076&objectID=*objectID*&objectType=3&*promptinfo* For documents: http://*MSTRWebURL*?evt=3076&objectID=*objectID*&objectType=55&*promptinfo*

8 Replace italicized text in the link URL with the information for your report or document, using the following guidelines:

- *MSTRWebURL* represents the correct base URL syntax for your Web environment. This is the URL path to the Web application's main controller. Depending on the environment in which Web is deployed, replace this part of the URL syntax with one of the following:
  - for .NET: Webserver/MicroStrategy/asp/Main.aspx
  - for J2EE: Webserver/WebMstr7/servlet/mstrWeb
- *objectID* represents the ID of the document or report to be executed. To obtain the object ID of a report or document, right-click the report or document and select **Properties**. The object ID is displayed in the Properties dialog box.
- *promptinfo* represents any of the optional prompt information parameters. To automatically answer any prompts in the target report or document, you need to include prompt information parameters at the end of the URL. The *promptinfo* parameter passes information that is used to answer prompts in the target. If you do not include prompt information, the user who clicks the link must answer the prompts in the target report/document. For details to specify prompt information parameters, see *Specifying prompt information parameters in manually created link URLs, page 459*.

9 To have the target report or document open in a new window, select the **Open in new window** check box. This allows the target and the source to be visible simultaneously. If this check box is cleared, the target report/document opens and replaces the source document.

10 Click **OK** to save your changes and return to the source document.

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Specifying prompt information parameters in manually created link URLs

Prompt information parameters are added to manually created link URLs. They are used to pass information to answer prompts in the target report or document. Any prompt not answered by the passed information is displayed for the user to answer manually.

If you do not include any prompt information in the link URL, the target report or document is executed normally. If it contains prompts, the user is prompted to answer them.

The prompt information in a link URL can be in any of the following forms:

- List of attribute elements, to pass attribute elements as answers to an element prompt
- Prompt XML, to pass a collection of specific prompt answers from the source to the target
- Message ID of the source document, to pass the prompt answers from the source document

Each is described below.

List of attribute elements

The list of attribute elements allows attribute elements to be passed to the target to answer prompts. For example, a document contains a list of regions and their yearly revenues. Each region is a link that passes the region's name to a target document. When a user clicks a particular region in the document, another document is executed which displays quarterly revenue and profit values for that region. You can use the following syntax to pass the attribute elements to the target by using auto text codes:

```
elementsPromptAnswers=
{&AttributeName@GUID};{&AttributeName@ElementID}
```

where *AttributeName* is the name of the attribute element, such as Region in the above example.

The auto text codes {&*AttributeName*@GUID} and {&*AttributeName*@ElementID} supply the appropriate attribute ID and the attribute element ID of the element clicked. You can either use the auto text codes to supply the IDs at run time or you can manually enter the attribute

ID and attribute element ID. Manually entered codes are processed faster by the system. The syntax for manually entering the IDs is:

```
elementsPromptAnswers=AttributeID;AttributeElementID
```

A useful method to determine the attribute ID and element ID is to create a document with the desired attribute elements and type the auto text codes in a text field. You can then copy the IDs displayed in the text field into the link of your source document.

Element IDs are generated by the Intelligence Server to uniquely identify each attribute element.

To pass multiple elements from the same attribute

To pass multiple elements from the same attribute, list the element IDs separated by a comma, as shown in the following sample. You must enter the element IDs (represented by *AttributeElementID*) manually; the element ID auto text code can only generate one element ID at a time.

```
elementsPromptAnswers=
AttributeID;AttributeElement1ID,AttributeElement2ID
```

To pass elements from multiple attributes

You can pass elements from multiple attributes by using separate parameters for each attribute, joined with an ampersand. An example using Region and Year is shown below:

```
elementsPromptAnswers=
{&Region@GUID};{&Region@ElementID}&elementsPromptAnsw
ers={&Year@ElementID};{&Year@ElementID}
```

Prompt XML

Prompt XML represents prompt answers in an XML format. It incorporates dynamic information from the executed source document into the XML string. Prompt XML is useful because it enables prompt answers to be

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maintained from the source to the target even when the message ID no longer exists, which can occur if the session is lost.

The XML cannot be applied unless the prompts in the target are the same physical prompt objects with the same IDs as the prompts in the source document.

Prompt XML can create a long URL, which shows up in the document when a user hovers over the link. A lengthy URL can be truncated and can produce errors. To avoid this issue, use the document message ID described below if the MicroStrategy session remains open.

The format for prompt XML is:

```
promptsAnswerXML={&PROMPTXML}
```

The auto text code {&PROMPTXML} generates the appropriate XML string at run time. You can also manually code the prompt XML, but the format and usage of prompt XML is beyond the scope of this guide. For details, see the *Web Software Development Kit*, available in the MicroStrategy Developer Library, which is part of the MicroStrategy SDK.

Message ID

The message ID uniquely identifies an instance of a report, document, or HTML document. If different users execute the same report, different instances and therefore different message IDs are produced. The message ID allows you to pass the prompt answers from the source document to the target. The format is:

```
originMessageID={&DOCUMENTMESSAGEID}
```

The auto text code {&DOCUMENTMESSAGEID} supplies the correct message ID at run time.

You can combine prompt XML and message ID, as long as the destination does not contain nested prompts. If both parameters answer the same prompt, the prompt XML parameter takes precedence over the message ID.

A nested prompt is where the definition of one prompt depends on the answer to another prompt. For example, the first prompt is for category, and the second is for subcategory. The list of subcategories for the second prompt depends on the answer to the first, category prompt. If you use both prompt XML and message ID, when you click the link, the answer to the subcategory prompt is not passed to the destination. Instead, the user is reprompted for subcategory.

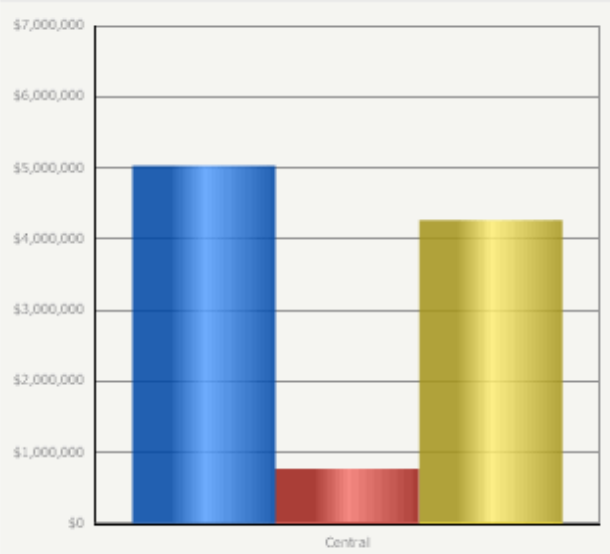
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How links, drilling, and selectors work together

When an attribute element in a Grid/Graph is underlined, such as Northeast in the example below, a user can click it.

Region / Metrics	Revenue	Profit	Cost
Central	$5,029,366	$764,323	$4,265,043
Mid-Atlantic	$4,452,615	$673,084	$3,779,531
Northeast	$8,554,415	$1,300,732	$7,253,683
Northwest	$1,761,187	$266,986	$1,494,202
South			,582,324
Southeast	$2,239,951	$336,675	$1,903,276
Southwest	$3,694,132	$561,331	$3,132,800
Web	$3,902,762	$583,538	$3,319,225

Employee and Region document



Northeast can be underlined because it is any of the following:

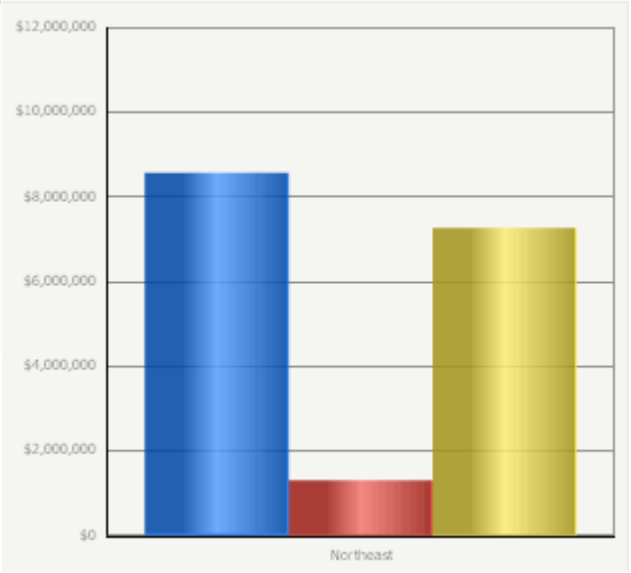
- A link (to another document or a report)
- A selector (that displays a different attribute element in a Grid/Graph)
- A drill (to another level of aggregation, as defined by a drill path)
- Any combination of these possibilities

If Northeast is all three (a link, a selector, and a drill), when the user clicks Northeast, it functions as a selector, because you can access the link and the drill from the right-click menu, unlike selectors. When a user clicks Northeast in the example shown above, the graph on the right is updated to

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display the values for Northeast, as shown below, because the behavior for clicking Northeast defaulted to selector:

Region Metrics	Revenue	Profit	Cost
Central	$5,029,366	$764,323	$4,265,043
Mid-Atlantic	$4,452,615	$673,084	$3,779,531
Northeast	$8,554,415	$1,300,732	$7,253,683
Northwest	$1,761,187	$266,986	$1,494,202
South	$5,389,280	$806,956	$4,582,324
Southeast	$2,239,951	$336,675	$1,903,276
Southwest	$3,694,132	$561,331	$3,132,800
Web	$3,902,762	$583,538	$3,319,225



If Northeast has a default link and a drill, the link is executed when Northeast is clicked, as shown below. By definition, a default link is the action that occurs when the link is clicked, so it takes precedence over the drill. In this case, the target document is executed, displaying information about employees in the Northeast region.

Employee		Region	Metrics	Revenue	Profit	Cost
De Le Torre	Sandra	Northeast		$607,895	$93,100	$514,795
Kelly	Laura	Northeast		$2,350,720	$357,994	$1,992,726
Kieferson	Jack	Northeast		$584,933	$87,470	$497,463
Sawyer	Leanne	Northeast		$2,411,912	$368,219	$2,043,693
Sonder	Melanie	Northeast		$295,108	$43,925	$251,183
Yager	Beth	Northeast		$2,303,847	$350,024	$1,953,823

For more information, including steps and examples, on each of these, see:

- *Specifying how prompts are answered in the target, page 443*
- The *Selectors* chapter in the *Dashboards and Widgets Creation Guide*
- *Drilling in Grid/Graphs, page 248*

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7

TRANSACTION-ENABLED DOCUMENTS

Interacting with data sources

Introduction

MicroStrategy Transaction Services lets you embed write-back functionality into documents for the purposes of decision-making or initiating a transaction. A document designer can create a Transaction Services-enabled document to allow analysts to approve requests, track business activity, and execute business decisions by editing their business data in the document and sending those interactions back to the data sources.

For example, an analyst can view a list of employees with time off requests, choose to accept or reject each request, then update their data to display the new status of each request. In a document displaying a list of products that need to be restocked for a store, an analyst can change the quantity to reorder for each product, then submit their changes.

Analysts can use Transaction Services-enabled documents to interact with the data in Express Mode in MicroStrategy Web, and when viewed on an iPhone, iPad, or Android device with MicroStrategy Mobile.

You must have Transaction Services to create and use Transaction Services-enabled documents. Detailed steps to create a transaction-enabled document in MicroStrategy Web are below.

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Creating a transaction-enabled document

You create a transaction-enabled document by performing the following high-level steps in MicroStrategy Web:

1. Link a Grid/Graph or the text fields on a panel stack (called a field group) to a Transaction Services-enabled report. Data from the input objects defined in the Transaction Services report is displayed in the Grid/Graph or text fields for users to edit.

   For a transaction-enabled document displayed in MicroStrategy Mobile on an iOS device, you can create a transaction table to group and organize the transaction controls. You then link the transaction table to the Transaction Services-enabled report. For steps to create a transaction table for iOS devices, see the *MicroStrategy Mobile Design and Administration Guide*.

2. Link each input object on the Transaction Services report to one of the following:

   - An attribute form or metric (for Grid/Graphs)
   - A text field (for text fields on a panel stack)
   - A cell (for a transaction table for iOS devices)

3. Determine what type of input object control is displayed to users when they view the Transaction Services-enabled document. Analysts use these input object controls to edit the data displayed in a document. For example, users can type text in a text field, turn a switch on and off to specify a numeric value, select a value from a list, and so on.

4. Add an action selector button or link as you design the document. The button or link targets the Grid/Graph or panel stack. When the document is viewed, users can click the button or link to submit, update, or discard their changes to the data. Action selector buttons and links are only displayed in Design, Editable, and Express Mode.

   A transaction table displays its own buttons to submit, update, or discard changes, so additional buttons or links are not needed.

Detailed steps to create a Transaction Services-enabled document are below.

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Prerequisites

- You must have Transaction Services.
- You must have the Web Configure Transaction privilege.
- This procedure assumes that the Transaction Services report that you want to link to the Grid/Graph, text fields, or transaction table has already been created. This report must contain the input object for each value that you want to allow users to change. For steps to create a Transaction Services report, see the *Advanced Reporting Guide*.
- This procedure assumes that you have already created a document with one of the following:
  - A Grid/Graph that contains a separate attribute form or metric to link to each input object on the Transaction Services report. Each attribute form that you want to link to an input object must be visible in the Grid/Graph. To choose the attribute forms displayed for an attribute in the Grid/Graph, right-click the header of the attribute, point to **Attribute Forms**, then select the attribute forms to display. For steps to add a Grid/Graph to a document, see *Adding a Grid/Graph to a document, page 172*.

    To allow users to edit the values of attribute forms in a grid, you must place only attributes on the grid's rows, and only metrics on the grid's columns.
  - Text fields on a panel stack (called a field group). Each input object on the Transaction Services report needs a separate text field. The text fields can contain data, or can be filled in from the input object. For steps to create a panel stack, see the *Dashboards and Widgets Creation Guide*. For steps to create text fields, see *Adding text and data to a document: Text fields, page 81*.
  - A transaction table for display on iOS devices with MicroStrategy Mobile. For steps to create a transaction table, see the *MicroStrategy Mobile Design and Administration Guide*.

To enable transactions for a document

1 In MicroStrategy Web, open the document in Design or Editable Mode.

2. Do one of the following, depending on which type of control that you want to use in the document:
   - To link a Grid/Graph to the Transaction Services report, right-click the Grid/Graph, then select **Configure Transaction**. The Configure Transactions Editor opens.
   - To link the text fields on a panel stack (called a field group) to the Transaction Services report, right-click any text field in the panel stack, then select **Configure Transaction**. The Configure Transactions Editor opens.
   - To link the cells on a transaction table to the Transaction Services report, right-click the transaction table, then select **Configure Transaction**. The Configure Transactions Editor opens.
3. Select a Transaction Services report. To do this, click **...** (the browse button). Navigate to and select the Transaction Services report to link to.
4. You can choose to automatically recalculate subtotals and derived metrics when a user edits a value in the document, or refresh the values only when the user manually chooses to recalculate the data. This option is available for Grid/Graphs linked to a Transaction Services report. Do one of the following:
   - To automatically recalculate the subtotals and derived metrics, select the **Automatically recalculate values after data change** check box.
   - To recalculate the subtotals and derived metrics manually, clear the **Automatically recalculate values after data change** check box.
5. You can display a row of check boxes beside each row of data in a grid, to allow the user to choose which rows of data to update using the Transaction Services report. This option is available for grids. This option is only applied to grids in which all attributes are on the rows and all metrics are on the columns. Do one of the following:
   - To allow users to select rows of data using the check boxes, select the **Mark rows for selection (tabular grids only)** check box.
   - To display data in the grid without the check boxes, clear the **Mark rows for selection (tabular grids only)** check box.

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6 You can choose to display an indicator next to grid cells, text fields, or transaction table cells displayed in the document, to mark the values that the user has changed. Do one of the following:

- To display an indicator next to the changed values, select the **Flag cells/fields with modified data** check box.
- To display the changed values without an indicator, clear the **Flag cells/fields with modified data** check box.

7 When a user chooses to submit his changes to the data, there may be input object controls in which he has made no changes. You can determine whether to submit the contents of all input object controls when the user clicks submit, including those in which the user has made no changes. For example, you can allow users to review content and accept it without making any changes, or check in at a specific time without making any additional comments. To do so, do one of the following:

- To allow users to submit their data without making changes in input objects linked to a grid, select the **Submit unchanged records** check box.
- To allow users to submit their data without making changes in input objects linked to a field group or transaction table cells, select the **Allow submission without modification** check box.

8 A list of each input object in the Transaction Services report is displayed in the Transaction Input column. Perform the following steps for each input object:

a Do one of the following, depending on which control type to link the report to:

- To link a Grid/Graph to the Transaction Services report, from the **Grid Object** drop-down list, select the attribute form or metric to link to the input object.
- To link a text field in a panel stack to the Transaction Services report, from the **Field** drop-down list, select the text field that you want to link to the input object.
- To link a cell of a transaction table to the Transaction Services report, from the **Field** drop-down list, select the cell that you want to link to the input object.

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b Choose whether users can edit the value of each input object. Do one of the following:

- To allow the user to edit the value of the input object, select the **Editable** check box.
- To prevent the user from editing the value of the input object, clear the **Editable** check box.

c From the **Control Style** drop-down list, select the type of control to use to display and edit the value of the input object. Select one of the following:

The available options may vary depending on the data type of the input object. For information on how each control is displayed in Web or on a mobile device, see *Input object controls that support transactions, page 474*.

- To allow users to type a single line of text in a text box, select **Text Field**.
- To allow users to type multiple lines of text in a text box, select **Text Area**.
- To allow users to turn a switch on or off to specify a numeric value, select **Switch**.
- To allow users to choose a specific time, select **Time Picker**.
- To allow users to select a date from a calendar, select **Calendar**.
- To allow users to rate an item on a numeric scale, select **Likert Scale**.
- To allow users to choose a value from a list or a group of radio buttons, select **List**.
- To allow users to choose a value on a slider, select **Slider**.
- To allow users to click a button to choose an image, select **Toggle**.
- To allow users to provide an electronic signature, select **Signature Capture**.
- To allow users to select data by incrementing or decrementing a numeric value, select **Stepper**.
- To allow users to scan or manually input a barcode, select **Barcode**.

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- To allow users to rate an item using a star rating (for example, rating an item four out of five stars), select **Star Rating**.

d To specify the display options for the input object control, click the **Control Properties** icon next to the Control Style drop-down list to expand the Control Properties, then select the appropriate options to format the control. For a list of the options available for each type of control, and steps to format them, see *Input object controls that support transactions, page 474*.

9 Repeat the appropriate steps above to define and format the control that you want to display for each input object.

10 Click **OK** to save your changes and return to the document.

If you have defined input object controls based on text fields in a document, each text field is displayed with a gear icon in the bottom right of the field, to signify that it displays as an input object control.

To create the action selector button or link

If you are working with a transaction table, you have completed enabling transactions, because the action selector buttons are included on the transaction table. Steps to configure the buttons are included in the procedure to create a table, described in the *MicroStrategy Mobile Design and Administration Guide*.

11 From the **Insert** menu, point to **Selector**, then select one of the following:

- To allow users to click a button to recalculate, discard, or submit their changes, select **Action Selector Button**.
- To allow users to click a link to recalculate, discard, or submit their changes, select **Action Selector Link**.
- You can create a custom selector button by using the link option above, and then placing the link text over an image. For steps to add an image, see the *MicroStrategy Web Help*.

12 Click the section of the Layout area in which you want to place the selector. Right-click the selector, then select **Properties and Formatting**. The Properties and Formatting dialog box opens.

13 From the left, click **General**, then type the text you want to display on the button or link in the **Display Text** field.

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14 By default, a descriptive title bar is displayed for the selector. You can determine whether or not to display the title bar. Do one of the following:

- To display the title bar, select the **Show Title Bar** check box and type the title to display in the field.
- To display the selector button or link without the title bar, clear the **Show Title Bar** check box.

15 From the left, click **Selector**. From the **Action Type** drop-down list, select one of the following:

- To allow the user to submit the changes that they have made to the data in the document, select **Submit**.
- To allow the user to recalculate the values of derived metrics and subtotals, reapply number and date formatting, and update other values calculated by the Analytical Engine, select **Recalculate**.

  MicroStrategy Web does not support using a button or link to recalculate derived metrics displayed in text fields. To allow users to recalculate the values of derived metrics in your Transaction Services-enabled documents, consider displaying your data in a Grid/Graph.

- To allow the user to discard their changes and display the values of the input objects from when they were last submitted, select **Discard Changes**.

16 You can choose to display a message asking for confirmation when a user clicks the action selector button or link. This option is only available if the Action Type is set to **Submit** or **Discard Changes**. Do one of the following:

- To display the confirmation message, select the **Require confirmation** check box.
- To submit or discard changes without displaying a confirmation message, clear the **Require confirmation** check box.

17 You can determine which action MicroStrategy Web performs after a user submits his changes. This option is only available if the Action Type is set to **Submit**. Select one of the following under **Subsequent Actions**:

- To return to the document without performing any additional actions, select the **No subsequent action** option.
- To refresh the display of the document, select the **Refresh the current document** option.

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- To run a specific report or document, select the **Run a new report or document** option. Click **...** (the browse button), navigate to and select the report or document you want to run, and click **OK**.

18 If you have chosen to have a report or document automatically run after the user submits his changes, you can choose to use the same prompt answers that were chosen in the source document to answer the prompts in the target report/document. To use the same prompt answers, select the **Answer prompts with the same answers as the source** check box. This option requires that both the source and target report/document use the same prompts. The user will still be prompted for any prompts that exist in the target but that do not exist in the source.

19 If you have chosen to have a report or document automatically run after the user submits his changes, you can specify whether the report or document will be executed using data cached on the mobile device. If you choose to have the report or document run without using data cached on the mobile device, the report or document is automatically executed using data cached on the Intelligence Server, if available. If no cached data is available on the mobile device or Intelligence Server, the report or document is executed against the data source. This option is only available if the **Action Type** is set to **Submit** and the **Run a new report or document** option is selected. Do one of the following:

You can choose to have the report or document automatically executed against the data source each time it is run, ensuring that the report or document displays the most recent data. To do so, you must disable caching for the report or document. For steps, as well as background information on caching reports and documents displayed on mobile devices, see the *Mobile Design and Administration Guide*.

- To run the report or document without using data cached on the mobile device, select the **Force Live Execution** check box.
- To run the report or document using data cached on the mobile device, clear the **Force Live Execution** check box.

20 You can display a custom confirmation message to the user after his changes are submitted. This option is only available if the Action Type is set to **Submit**. Do one of the following:

- To display a custom message, select the **Display message after submit** check box, then type a confirmation message in the field.
- To apply the user's changes without displaying a custom message, clear the **Display message after submit** check box.

21 A Transaction Services-enabled document that is pre-cached is run in the background, and its results are stored on the mobile device on which it is executed, improving the speed with which the document is run. You can choose to update document results cached on a mobile device after the user submits his changes, by using the Invalidate Mobile Device Cache setting to mark a document's results as in need of updating.

If the document is defined to be pre-cached, the document will be automatically pre-cached each time the user submits his changes. If the document is not defined to be pre-cached, the document will be automatically executed using data cached on the Intelligence Server the next time the document is run, or executed against the data source if no cached data is available. For background information on pre-caching, see the *Mobile Design and Administration Guide*. This option is only available if the Action Type is set to **Submit**. Do one of the following:

- To have document pre-cached each time the user submits their changes, select the **Invalidate Mobile Device Cache** check box.
- To allow the user to submit their changes without marking the data cached on the mobile device as in need of updating, clear the **Invalidate Mobile Device Cache** check box.

22 By default, the selector button or link automatically targets (updates) each Grid/Graph and panel stack in the section in which the button or link is placed. You can choose the targets of the selector manually instead. To do so, select **Click here**, then use the right arrow to move the Grid/Graph or panel stack to target from the **Available** list to the **Selected** list. For detailed steps, see the *MicroStrategy Web Help*.

23 Click **OK** to save your changes and return to the document.

24 Repeat the appropriate steps above to define each action selector button or link that you want to add to the document.

Input object controls that support transactions

You can add the following input object controls to a document, and then format them:

- Barcode Scanner (see *Formatting a Barcode Scanner control, page 475*)
- Calendar (see *Formatting a Calendar control, page 476*)
- Likert Scale (see *Formatting a Likert Scale control, page 476*)

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- List (see *Formatting a List control, page 477*)
- Radio List (see *Formatting a Radio List control, page 480*)
- Signature Capture (see *Formatting a Signature Capture control, page 481*)
- Slider (see *Formatting a Slider control, page 481*)
- Star Rating (see *Formatting a Star Rating Control, page 483*)
- Stepper (see *Formatting a Stepper control, page 484*)
- Switch (see *Formatting a Switch control, page 484*)
- Text Area (see *Formatting a Text Area control, page 485*)
- Text Field (see *Formatting a Text Field control, page 486*)
- Time Picker (see *Formatting a Time Picker control, page 489*)
- Toggle (see *Formatting a Toggle control, page 490*)

Formatting a Barcode Scanner control

The Barcode Scanner style displays as a barcode scanner or numeric keypad on a mobile device. Users can point the mobile device at a barcode to scan it, or enter the barcode number manually using the numeric keypad.

The barcode input control supports barcodes beginning with zero (0) using the text/string data type. Barcodes that begin with a number other than zero are supported as numeric data types.

For steps to navigate to where you can select the following options, see *Creating a transaction-enabled document, page 466*.

To format a Barcode Scanner control

1 You can require that users scan or enter a barcode before submitting their changes. Do one of the following:

- To require users to scan or enter a barcode before submitting their changes, select the **Input is required** check box.
- To allow users to submit their changes without scanning or entering a barcode, clear the **Input is required** check box.

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2 You can match the barcodes against attribute elements. To do so, select the **Match barcode against attribute elements** check box.

Formatting a Calendar control

The Calendar style displays as:

- A calendar in Web
- Dates on a selectable wheel on a mobile device

For steps to navigate to where you can select the following options, see *Creating a transaction-enabled document, page 466*.

Users must have a browser with HTML5 support to view the Time Picker control as an interactive analog clock display. On browsers without HTML5 support, the control is displayed as a digital clock.

To format a Calendar control

1 You can require that users specify a value using the input object control before submitting their changes. Do one of the following:

   - To require users to specify a value for the control before submitting their changes, select the **Input is required** check box.
   - To allow users to submit their changes without specifying a value, clear the **Input is required** check box.

2 To specify the earliest date a user can choose in the calendar, select the **Minimum value** check box, click the calendar, and then select the date.

3 To specify the latest date a user can choose in the calendar, select the **Maximum value** check box, click the calendar, and then select the date.

4 You can allow users to specify a time as well as a date using the Calendar control. To do so, select the **Include time** check box.

Formatting a Likert Scale control

The Likert Scale style displays as a series of radio buttons in Web or on a mobile device. Users can select a radio button to rate an item on a numeric

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scale. For example, they can specify how satisfied they were with service they received as a value from 1 to 10.

When displayed in a transaction table on an iOS device, the Likert Scale displays as a list.

For steps to navigate to where you can select the following options, see *Creating a transaction-enabled document, page 466*.

To format a Likert Scale control

1 You can require that users select a radio button before submitting their changes. Do one of the following:

- To require users to select a radio button before submitting their changes, select the **Input is required** check box.
- To allow users to submit their changes without selecting a radio button, clear the **Input is required** check box.

2 You can determine whether users rate an item on a scale of 1 to 5, 1 to 7, or 1 to 10. From the Rating Scale area, select one of the following:

- To have users select from a scale of 1 to 5, select the **5-level** option.
- To have users select from a scale of 1 to 7, select the **7-level** option.
- To have users select from a scale of 1 to 10, select the **10-level** option.

3 In the **Label for Lowest Rating** field, type the explanatory text to display next to the lowest ratings. This text should describe the significance of selecting a low numeric value (for example, “Strongly Disagree”).

4 In the **Label for Highest Rating** field, type the explanatory text to display next to the highest ratings. This text should describe the significance of selecting a high numeric value (for example, “Strongly Agree”).

Formatting a List control

The List style displays as:

- A drop-down list in Web

- A wheel on an iPhone
- A list on an iPad or Android device

For steps to navigate to where you can select the following options, see *Creating a transaction-enabled document, page 466*.

To format a List control

1 You can require that users specify a value using the input object control before submitting their changes. Do one of the following:

- To require users to specify a value for the control before submitting their changes, select the **Input is required** check box.
- To allow users to submit their changes without specifying a value, clear the **Input is required** check box.

2 You can display the list automatically when the document is viewed, or display the list only when a user selects its grid cell or text field. Do one of the following:

- To display the list automatically, select the **Show by default** check box.
- To display the list when its grid cell or text field is selected, clear the **Show by default** check box.

3 To specify a width for the list, type the value (in inches) in the **Width** field.

4 You can automatically generate the values displayed in the list, or manually determine the values. If determined manually, you can specify the text displayed for each choice that is presented to the user, and the value to use to update, insert, or delete data. Select one of the following under **Input type**:

- To display automatically generated values, select **Calculated**.

  a Specify the lowest and highest selectable values in the list by typing values in the **Minimum value** field and the **Maximum value** field.

  b To specify the interval displayed between each value in the list, type a value in the **Interval** field. For example, if the minimum value is 0 and the interval is 10, users can specify 0, 10, 20, 30, and so on.

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- To use manually entered values, select **Manual**.

  a In the **Value** field, type the value to use when the choice is selected.

  b In the **Label** field, type the text to display for the choice.

  c To add another choice to the list, hover the cursor over a choice and click the **Add** icon. A new choice is added below the selected choice.

  d To delete a choice from the list, hover the cursor over the choice and click the **Delete** icon.

  e Repeat the appropriate steps above for each value that you want to display.

  f By default, when the text field or grid cell of the list is set to a value for which no label is defined in the Control Properties, the list is displayed as blank and no value is selected. You can specify text to display in the list instead. To do so, type the text to display in the first field in the **Label** column, next to the **Unset** field.

- To display a list of attribute elements from a selected dataset, select **Dataset**. Perform the following steps:

  a From the **Source** drop-down list, select the dataset that contains the attribute that you want to use to display the list control.

  b From the **Attribute** drop-down list, select the attribute whose elements you want to use as options in the list.

  c You can specify the attribute form MicroStrategy will use to display each attribute element as an option in the list. For example, you can choose to display the ID of each attribute element as an option in the List control. From the **Displayed Forms** drop-down list, select one of the following:

  – To allow MicroStrategy to automatically determine which attribute form to display, select **Automatic**.

  – To manually specify the attribute form you want to use to display options in the list, select the name of the attribute form.

  d From the **Writeback Form** drop-down list, select the attribute form to use to update your data. The value of this form will be supplied to the Transaction Services report when a user selects an attribute element from the list control.

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Formatting a Radio List control

The Radio List style displays as a group of radio buttons in Web or on a mobile device. When displayed in a transaction table on an iOS device, the Radio List displays as a list.

For steps to navigate to where you can select the following options, see *Creating a transaction-enabled document, page 466*.

To format a Radio List control

To display the Radio List, select **List** for the **Control Style** option in the Configure Transactions Editor.

1 From the **Display Style** drop-down list, select **Radio List**.

2 You can require that users select a radio button before submitting their changes. Do one of the following:

- To require users to select a radio button before submitting their changes, select the **Input is required** check box.
- To allow users to submit their changes without selecting a radio button, clear the **Input is required** check box.

3 You can determine whether the radio buttons are displayed in a horizontal or a vertical layout. From the **Display Layout** drop-down list, select one of the following:

- To display the radio buttons in a horizontal layout, select **Horizontal**.
- To display the radio buttons in a vertical layout, select **Vertical** (default).

4 You can choose to display a specific number of radio buttons per row or column in the control, or display all the radio buttons in a single row or column. Do one of the following:

- To display a specific number of radio buttons in each row or column, type the number of radio buttons in the **Items Per Row** field.
- To display all the items in a single row or column, leave the **Items Per Row** field blank.

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Formatting a Signature Capture control

The Signature Capture style displays as a field in which a user can sign their name on a mobile device.

The Signature Capture input object control stores the user's signature as an image in the `savedImages` folder. For steps to change the location in which images are stored, see the *Administering MicroStrategy Mobile* chapter in the *Mobile Design and Administration Guide*.

For steps to navigate to where you can select the following options, see *Creating a transaction-enabled document, page 466*.

To format a Signature Capture control

1 You can require that users provide a signature using the input object control before submitting their changes. Do one of the following:

- To require users to provide a signature for the control before submitting their changes, select the **Input is required** check box.
- To allow users to submit their changes without providing a signature, clear the **Input is required** check box.

2 You can display a horizontal line in the input control, to show the user where to sign their name. Do one of the following:

- To display the horizontal line, select the **Show Guidelines** check box.
- To hide the horizontal line, clear the **Show Guidelines** check box.

Formatting a Slider control

The Slider style displays as a slider in Web or on a mobile device.

For steps to navigate to where you can select the following options, see *Creating a transaction-enabled document, page 466*.

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To format a Slider control

1 You can require that users specify a value using the input object control before submitting their changes. Do one of the following:

- To require users to specify a value for the control before submitting their changes, select the **User must enter a value** check box.
- To allow users to submit their changes without specifying a value, clear the **User must enter a value** check box.

2 You can display the slider automatically when the document is viewed, or display the slider only when a user selects its grid cell or text field. Do one of the following:

- To display the slider automatically, select the **Show by default** check box.
- To display the slider when its grid cell or text field is selected, clear the **Show by default** check box.

3 To specify a width for the slider in inches, type the width in the **Width** field. This option is only available if the **Show by default** check box is cleared.

4 To specify a width for the slider as a percentage of the text box or grid cell it is defined on, type the percentage in the **Label Width** field. This option is only available if the **Show by default** check box is cleared.

5 You can automatically generate the values displayed in the slider, or manually determine which values are displayed. If determined manually, you can specify each value displayed. Select one of the following under **Input type**:

- To display automatically generated values, select **Calculated**.
  a To specify the lowest and highest selectable values, type a value in the **Minimum value** field and in the **Maximum value** field.
  b To specify the interval displayed between each value in the slider, type a value in the **Interval** field. For example, if the minimum value is 0 and the interval is 10, users can specify 0, 10, 20, 30, and so on.
- To use manually entered values, select **Manual**.
  a In the **Values** field, type the value to display on the slider.

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b To add another value to the slider, hover the cursor over a value and click the **Add** icon. A new value is added below the selected value.

c To delete a value from the slider, hover the cursor over the value and click the **Delete** icon.

d Repeat the appropriate steps above for each value that you want to display.

Formatting a Star Rating Control

The Star Rating style displays as a row of stars in Web or on a mobile device. Users can click or tap a point on the row to gave an item a specific star rating. For example, they can rate an item as four out of five stars.

For steps to navigate to where you can select the following options, see *Creating a transaction-enabled document, page 466*.

To format a Star Rating control

1 You can require that users click or tap the control before submitting their changes. Do one of the following:

- To require users to click or tap the control before submitting their changes, select the **Input is required** check box.
- To allow users to submit their changes without clicking or tapping the control, clear the **Input is required** check box.

2 You can determine the maximum number of stars that users can select when rating an item. Select one of the following next to **Maximum Rating Value**:

- To allow users to select a maximum of three stars, select the **3-star** option.
- To allow users to select a maximum of five stars, select the **5-star** option.
- To allow users to select a maximum of ten stars, select the **10-star** option.

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3 From the **Display Style** drop-down list, select the style to display the control in. A preview of each style is displayed in the drop-down list.

Formatting a Stepper control

In Web or on a mobile device, the Stepper style displays as a numeric value placed between an increment icon on the right and a decrement icon on the left. Users can select the increment icon to increase the value displayed or select the decrement icon to decrease the value displayed.

For steps to navigate to where you can select the following options, see *Creating a transaction-enabled document, page 466*.

To format a Stepper control

1 You can require that users click or tap the control before submitting their changes. Do one of the following:

- To require users to click or tap the control before submitting their changes, select the **Input is required** check box.
- To allow users to submit their changes without clicking or tapping the control, clear the **Input is required** check box.

2 To specify the smallest number that a user can select in the Stepper control, type the number in the **Minimum Value** field.

3 To specify the largest number that a user can select in the Stepper control, type the number in the **Maximum Value** field.

4 To specify the interval displayed between each value in the Stepper control, type a value in the **Interval** field. For example, if the minimum value is 0 and the interval is 10, users can specify 0, 10, 20, 30, and so on.

Formatting a Switch control

The Switch style displays as:

- A check box in Web
- An on/off switch or a check box on an iPhone, iPad, or Android device

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For steps to navigate to where you can select the following options, see *Creating a transaction-enabled document, page 466*.

To format a Switch control

1. You can require that users select or toggle the input object control before submitting their changes. Do one of the following:
   - To require users to select or toggle the control before submitting their changes, select the **User must enter a value** check box.
   - To allow users to submit their changes without selecting or toggling, clear the **User must enter a value** check box.
2. To specify the value used for the input object when the switch or check box is in its off position, type the value in the **Off Value** field.
3. To specify the value used for the input object when the switch or check box is in its on position, type the value in the **On Value** field.
4. You can determine whether the control is displayed as a check box or as an on/off switch on mobile devices. Select one of the following:
   - To display the control as a check box on mobile devices, select the **Display as a checkbox on mobile devices** check box.
   - To display the control as an on/off switch on mobile devices, clear the **Display as a checkbox on mobile devices** check box.

Formatting a Text Area control

The Text Area control displays as a text field that provides space for multiple rows of text in Web or on a mobile device.

For steps to navigate to where you can select the following options, see *Creating a transaction-enabled document, page 466*.

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To format a Text Area control

1 You can require that users specify a value using the input object control before submitting their changes. Do one of the following:

- To require users to specify a value for the control before submitting their changes, select the **User must enter a value** check box.
- To allow users to submit their changes without specifying a value, clear the **User must enter a value** check box.

2 You can choose to replace the control with an image and display the control only when the user clicks the image. Select the **Show icon when collapsed** check box. This option is only available when the **Show by default** check box is cleared.

3 To display a preview of the text in the Text Area control, select the **Preview** check box, then type the number of characters to display in the field. This option is only available when the **Show icon when collapsed** check box is selected.

4 To specify a width for the control, type the width in inches in the **Width** field.

5 To specify the maximum number of characters that can be typed into the text field, type the number of characters in the **Maximum Length** field.

Formatting a Text Field control

The Text Field control displays as a text field consisting of a single row in Web or on a mobile device.

For steps to navigate to where you can select the following options, see *Creating a transaction-enabled document, page 466*.

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To format a Text Field control

1 You can require that users specify a value using the input object control before submitting their changes. Do one of the following:

- To require users to specify a value for the control before submitting their changes, select the **User must enter a value** check box.
- To allow users to submit their changes without specifying a value, clear the **User must enter a value** check box.

2 For text fields based on an input object that contains text, specify the following:

- To specify the minimum number of characters that can be typed into the text field, type the number of characters in the **Minimum Length** field.
- To specify the maximum number of characters that can be typed into the text field, type the number of characters in the **Maximum Length** field.

3 For text fields based on an input object that contains numeric data, specify the following:

- To specify the smallest number a user can type in the text field, select the **Minimum Value** check box, then type the number in the field.
- To specify the largest number a user can type in the text field, select the **Maximum Value** check box, then type the number in the field.

4 You can choose to have Web automatically verify that the value entered in the text field is in the correct format when a user tries to submit the data. To do so, from the **Validation** drop-down list, select the type of format you want users to use when entering data in the text field. The options available may vary depending on the data type of the input object you are using to create the text field. Select one of the following:

The available options can vary depending on the data type of the input object you are using to create the text field.

- To allow users to enter text in any format, select **No Validation**.
- To have users enter a phone number in the field, select **Phone Number**.
- To have users enter a zip code in the field, select **US Zip Code**.

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- To have users enter a social security number in the field, select **Social Security Number**.
- To have users enter text in a custom format, select **Regular Expression**. In the **Expression** field, type the regular expression you want to use to determine whether the text is in the correct format, using the JavaScript version of the regular expression syntax. For examples, see the table below.

5 You can prevent the password from being displayed on the screen by displaying placeholder characters in place of the password when the user inputs the password into the text field. Do one of the following:

- To use placeholder characters to display the password, select the **Mask text (password)** check box.
- To display the password as the user inputs characters, clear the **Mask text (password)** check box.

The table below contains examples of regular expression syntax you can use to ensure users enter data in the correct format.

Type of Format	Regular Expression	Examples of Format
US or Canadian postal code	`^((\d{5}-\d{4})|(\d{5})|([AaBbCcEeGgHhJjKkLlMmNnPpRrSsTtVvXxYy]\d[A-Za-z]\s?\d[A-Za-z]\d))$`	• 22182 • 22182-6230 • K8N 5W6
UK postal code	`^[A-Za-z]{1,2}[\d]{1,2}([A-Za-z])?\s?[\d][A-Za-z]{2}$`	• CG1 2AB • cf564aa
Indian postal code	`^[1-9]{3}\s{0,1}[0-9]{3}$`	• 234675 • 456001
International phone number consisting of a plus sign, country code, and national number	`^\+(?:[0-9] ?){6,14}[0-9]$`	• +31 20 794 8425 • +32 2792 0436
Swedish phone number (SIS standard)	`^(([+]\d{2}[ ][1-9]\d{0,2}[ ])|([0]\d{1,3}[-]))((\d{2}([ ]\d{2}){2})|(\d{3}([ ]\d{3})*([ ]\d{2})+))$`	• +46 8 555 123 45 • 08-777 123 78 • 0123-456 78
Italian phone number consisting of prefix, a dash (-), forward slash (/), or space, and number	`^([0-9]*\-?\ ?\/?[0-9]*)$`	• 02-123456 • 02/123456 • 02 555426

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Type of Format	Regular Expression	Examples of Format
Email address	`^[\w-\.]+@([\w-]+\.)+[\w-]{2,4}$`	• johndoe@address.com • janedoe@mail.org
URLs, include http, https, ftp, and mailto addresses	`((mailto\:|(news|(ht|f)tp(s?))\://){1}\S+)`	• http://www.mstr.com • mailto:jsmith@address.com • ftp://ftp.testserver.com
ISBN 10 and ISBN 13 numbers	`^(97(8|9))?\d{9}(\d|X)$`	• 0224536779 • 9780552317248
Time specified in a twelve-hour format, followed by AM or PM	`^ *(1[0-2]|[1-9]):[0-5][0-9] *(a|p|A|P)(m|M) *$`	• 11:00am • 9:00 PM • 11:59 pm
Sixteen-digit credit card number	`\d{4}-?\d{4}-?\d{4}-?\d{4}`	• 1234-1234-1234-1234 • 1234567890123456

Formatting a Time Picker control

The Time Picker style displays as:

- An interactive clock in Web
- A wheel-style prompt on a mobile device

Users must have a browser with HTML5 support to view the Time Picker control as an interactive analog clock display. On browsers without HTML5 support, the control is displayed as a digital clock.

For steps to navigate to where you can select the following options, see *Creating a transaction-enabled document, page 466*.

To format a Time Picker control

1 You can require that users specify a time using the input object control before submitting their changes. Do one of the following:

   - To require users to specify a time for the control before submitting their changes, select the **User must enter a value** check box.
   - To allow users to submit their changes without specifying a time, clear the **User must enter a value** check box.

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2 Type the time interval to display between each value in the **Interval** field, in minutes. For example, if the interval is 5, users can select 2:00, 2:05, 2:10, and so on.

Formatting a Toggle control

The Toggle style displays as a button in Web or on a mobile device. Users can click (in Web) or tap (on a mobile device) the button to change its display. For example, in a mobile document designed to allow supervisors to accept or reject time-off requests, you can choose to display a toggle button next to each request. Each toggle button can be displayed as one of three different images:

- An empty circle for requests that have not yet been reviewed
- A check mark for requests that have been approved
- An X mark for requests that have been rejected

Users can then tap the toggle button next to each request until the toggle button is displayed as the image that indicates the correct status of the request.

Continuing with the example above, the toggle button next to a request is first displayed as an empty circle on the mobile device. Tapping the button changes the display of the button to a check mark. Tapping the button again displays the button as an X mark. Tapping the button a third time displays the button as an empty circle, and so on.

When displayed in a transaction table on an iOS device, the Toggle style displays as a list.

Steps to format a Toggle control are below. For steps to navigate to where you can select the following options, see *Creating a transaction-enabled document, page 466*.

To format a Toggle control

1 You can require that users click or tap the input object control before submitting their changes. Do one of the following:

   - To require users to click or tap the control before submitting their changes, select the **Input is required** check box.

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- To allow users to submit their changes without clicking or tapping the control, clear the **Input is required** check box.

2 You must define each image that can be used to display the toggle button by specifying the address of the image and the value to assign to each image. This value will be used to represent the image when the user submits their changes. Perform the following steps:

a In the **Value** field, type the value to use when the image is selected.

b Type the location of the image to display in the **Image Source** field. You can specify the location as:

- An http reference to a central web server machine, such as `http://microstrategy/Test/myimage.jpg`. Intelligence Server and MicroStrategy Developer must both be able to access the machine.
- A full path to the image on a shared network drive, such as `\\my_computer\shared\myimage.jpg`. All users, Intelligence Server, MicroStrategy Developer, and the web server must be able to access the drive.
- A partial path, such as `Images\myimage.jpg`. The image must be copied in all of the following folders: `Desktop\Images`, `Intelligence Server\Images`, and `Web\Images`.

c To add another value to the toggle button, hover the cursor over a value and click the **Add** icon. A new value is added below the selected value.

d To delete a value from the toggle button, hover the cursor over the value and click the **Delete** icon.

e Repeat the appropriate steps above for each value that you want to add to the toggle button.

3 By default, when the text field or grid cell on which the toggle button is defined is set to a value for which no image is specified in the Control Properties, the toggle button is displayed as a blank space and no value is selected. You can specify an image to display for the toggle button instead. To do so, type the location of the image (as described above) in the first field in the **Image Source** column, next to the word **Unset**.

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Creating documents that adapt to user input: Transaction conditions

You can create interactive, adaptable documents that respond to user input. To do this, you can hide, disable, or require users to select a value for controls in a Transaction Services-enabled document. To do so, you select a control, then assign an action (hiding, disabling, or having the control require user input) to the control, as well as the conditions under which to perform the action.

For example, you can make an option available only if the user has already entered a value in a related text field, disable a submission button until the user has entered all the required information in a form, and so on.

The image below displays a request form in which the Category option is greyed out and unavailable.



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When the user enters a request type, the Category field becomes available.



The table below lists the types of controls that you can assign an action to and the actions supported by each type.

Type of Control	Available Actions
Text field	Hide
Input object control based on a text field	Hide, Disable, Require
Input object control based on a dataset object in a grid	Disable, Require
Action selector button or link	Hide, Disable

You can assign multiple actions to a control, and combine multiple conditions that must be met before a specific action is performed. For example, you can disable submitting a transaction until the user has provided contact information in the form of either a valid phone number or an email address.

For steps to hide, disable, or require users to select values for a specific type of control, see the appropriate link below:

- *Hiding, disabling, or requiring user input for a text field, page 494*
- *Disabling or requiring user input for an input object control in a grid, page 496*
- *Hiding or disabling an action selector button or link, page 503*

Hiding, disabling, or requiring user input for a text field

You can hide or disable a text field on a panel stack in a Transaction Services-enabled document. You can also require users to select a value for a text field on a panel stack. This includes input object controls based on text fields. To do so, you define each condition on the text field using one of the following:

- The value of an input object control based on a text field. The input object control must be editable.
- An expression. You can use arithmetic operators to combine the values of the following controls in an expression:
  - Input object controls based on text fields
  - Input object controls based on metrics in grids

  Each input object control must be editable.

You must also define a comparison value for each condition using one of the following:

- The value of any text field in the document.
- An expression. You can use arithmetic operators to combine the values of any text fields and metrics on a grid, regardless of whether they are configured as transaction controls.

Prerequisites

- The Transaction Services-enabled document contains the text field or input object control based on a text field. For steps, see *Creating a transaction-enabled document, page 466*. For steps to create text fields, see *Adding text and data to a document: Text fields, page 81*. For steps to create input object controls, see *Input object controls that support transactions, page 474*.
- The text field must be displayed on a panel stack. For steps to create a panel stack, see the *Dashboards and Widgets Creation Guide*.

To hide, disable, or require user input for a text field or input object control based on a text field

1 Open the document in **Design** or **Editable Mode**.

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2. Right-click the text field, then select **Transaction Conditions**. The Transaction Conditions Editor opens.

3. From the **Action** drop-down list, select the action to perform when the condition is met, such as **Disable**, **Hide**, or **Require**. The actions available vary depending on the type of control that you are modifying.

4. Click the plus icon to the left. A new condition is created and displayed in the Transaction Conditions Editor. The selected action will be performed when this condition is met.

To define the condition

5. From the **Filter On** list, select one of the following:

   - To base the condition on the value of an input object control, select the control. To view a list of all available controls in the document, click **See More**.
   - To base the condition on the value of an expression, select **Advanced Expression**. The advanced expression options are displayed. Define the condition as follows:
     - To add the value of an input object control to the expression, from the **Available** list, double-click the control. The control is added to the expression and displayed in the editor pane to the right.
     - To add operators to the expression, click the addition (**+**), subtraction (**-**), multiplication (*****), or division (*/*) operators above the editor pane.
     - When finished, click the check mark to apply your changes.

6. From the next list, select an operator to use to compare the values in the condition, such as **Equals** or **Greater Than**.

7. Define the value to compare to by doing one of the following:

   - To use a static value, type the value in the field.
   - To use the value of a text field, select the control. By default, the text fields in the same field group as the text field that the condition is based on are displayed. To see a full list of all text fields in the document, click **See More**.

- To use the value of an expression, select **Advanced Expression**. The advanced expression options are displayed. Define the condition as follows:
  - To add the value of an input object control to the expression, from the **Available** list, double-click the control. The control is added to the expression and displayed in the editor pane to the right.
  - To add operators to the expression, click the addition (**+**), subtraction (**-**), multiplication (*****), or division (*/*) operators above the editor pane.
  - When finished, click the check mark to apply your changes.

8 Click **Apply** to create the condition. Your new condition is created and displayed in the Transaction Conditions Editor.

9 To add another condition to the action, hover the cursor over the action and click the arrow icon on the right. From the menu, select **New Condition**. Repeat the steps above to the additional condition, beginning at *To define the condition, page 495*.

10 To create a copy of a condition, hover the cursor over the condition and click the arrow icon on the right. From the menu, select **Duplicate**.

11 If you have defined multiple conditions for a single action, you can change the operator used to combine the conditions. Right-click the **AND** operator displayed between the conditions. From the menu, select a new operator.

12 To edit a condition, click the condition, then repeat the steps above to modify the condition, beginning at *To define the condition, page 495*.

Disabling or requiring user input for an input object control in a grid

You can:

- Require users to select values for the input object control when a condition that you define is met. For steps, see *Requiring users to select values for an input object control in a grid, page 497*.
- Disable the input object control based on a condition. For steps, see *Disabling an input object control in a grid, page 499*.

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- If the condition is based on an attribute or metric on the grid, each row in the grid that meets the condition is disabled.
- If the condition is based on the value of an input object control defined on a text field, or the value of an expression, all instances of the input object control in the grid are disabled.

Requiring users to select values for an input object control in a grid

You can require users to select values for an input object control based on an object in a grid, if the defined conditions are met. You define each condition using one of the following:

- The value of an input object control based on a text field. The input object control must be editable.
- An expression. You can use arithmetic operators to combine the values of the following controls in an expression:
  - Input object controls based on text fields
  - Input object controls based on metrics in grids

  Each input object control must be editable.

You must also define a comparison value for each condition using one of the following:

- The value of any text field in the document.
- An expression. You can use arithmetic operators to combine the values of any fields and metrics on a grid, regardless of whether they are configured as transaction controls.

Prerequisite

- The Transaction Services-enabled document contains the input object control to make required. For steps, see *Creating a transaction-enabled document, page 466*. For steps to create input object controls, see *Input object controls that support transactions, page 474*.

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To require users to select values for an input object control in a grid

1. Open the document in **Design** or **Editable Mode**.
2. Right-click the input object control, then select **Transaction Conditions**. The Transaction Conditions Editor opens.
3. From the **Action** drop-down list, select **Require**.
4. Click the plus icon to the left. A new condition is created and displayed in the Transaction Conditions Editor. The selected action will be performed when this condition is met.

   #### To define the condition

5. From the **Filter On** list, select one of the following:
   - To base the condition on the value of an input object control, select the control.
   - To base the condition on the value of an expression, select **Advanced Expression**. The advanced expression options are displayed. Define the condition as follows:
     - To add the value of an input object control to the expression, from the **Available** list, double-click the control. The control is added to the expression and displayed in the editor pane to the right.
     - To add operators to the expression, click the addition (**+**), subtraction (**-**), multiplication (*****), or division (*/*) operators above the editor pane.
     - When finished, click the check mark to apply your changes.
6. From the next list, select an operator to use to create the comparison, such as **Equals** or **Greater Than**.
7. Define the value to compare to by doing one of the following:
   - To use a static value, type the value in the field.
   - To use the value of an input object control, select the control.

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- To use the value of an expression, select **Advanced Expression**. The advanced expression options are displayed. Define the condition as follows:
  - To add the value of an input object control to the expression, from the **Available** list, double-click the control. The control is added to the expression and displayed in the editor pane to the right.
  - To add operators to the expression, click the addition (**+**), subtraction (**-**), multiplication (*****), or division (*/*) operators above the editor pane.
  - When finished, click the check mark to apply your changes.

8 Click **Apply** to create the condition. Your new condition is created and displayed in the Transaction Conditions Editor.

9 To add another condition to the action, hover the cursor over the action and click the arrow icon on the right. From the menu, select **New Condition**. Repeat the steps above to define the condition, beginning at *To define the condition, page 498*.

10 To create a copy of a condition, hover the cursor over the condition and click the arrow icon on the right. From the menu, select **Duplicate**.

11 If you have defined multiple conditions for a single action, you can change the operator used to combine the conditions. Right-click the AND operator displayed between the conditions. From the menu, select a new operator.

12 To edit a condition, click the condition, then repeat the steps above to define the condition, beginning at *To define the condition, page 498*.

Disabling an input object control in a grid

You can disable an input object control in a grid based on a condition. Depending on the value that the condition is based on, the input object control can be disabled for the entire grid, or disabled only for those rows in the grid for which the condition is met.

- To have the input object control disabled for the entire grid, base the condition on an input object control based on a text field or on an expression's value.

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- To have the input object control disabled for the rows for which the condition is met, base the condition on an input object control based on an attribute or metric.

You define each condition using one of the following:

- The value of an input object control based on an attribute or metric on the grid. The input object control must be editable.
- The value of an input object control based on a text field. The input object control must be editable.
- An expression. You can use arithmetic operators to combine the values of the following controls in an expression:
  - Input object controls based on text fields
  - Input object controls based on metrics on grids

  Each input object control must be editable.

You must also define a comparison value for each condition using one of the following:

- If the condition is based on an input object control based on a text field or based on an expression's value:
  - The value of any text field in the document.
  - An expression. You can use arithmetic operators to combine the values of any fields and attributes and metrics on a grid in the document, regardless of whether they are configured as transaction controls.
- If the condition is based on an input object control based on an attribute or metric, define an attribute or metric qualification based on attributes or metrics in the template.

Prerequisite

- This procedure assumes that you have already created a Transaction Services-enabled document that contains the input object control to disable. The control must be editable. For steps, see *Creating a transaction-enabled document, page 466*. For steps to create input object controls, see *Input object controls that support transactions, page 474*.

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To disable an input object control in a grid

1 Open the document in **Design** or **Editable Mode**.

2 Right-click the grid, then select **Transaction Conditions**. The Transaction Conditions Editor opens.

3 From the **Target** drop-down list, select the input object control to disable.

4 Click the plus icon to the left. A new condition is created and displayed in the Transaction Conditions Editor. The selected input object control will be disabled when this condition is met.

To define the condition

5 From the **Filter On** list, select one of the following:

- To base the condition on the value of an input object control, select the control. By default, input object controls based on attributes or metrics in the selected grid are displayed. To display additional input object controls from the document, click **See More**.
- To base the condition on the value of an expression, select **Advanced Expression**. The advanced expression options are displayed. Define the condition as follows:
  - To add the value of an input object control to the expression, from the **Available** list, double-click the control. The control is added to the expression and displayed in the editor pane to the right.
  - To add operators to the expression, click the addition (**+**), subtraction (**-**), multiplication (*****), or division (*/*) operators above the editor pane.
  - When finished, click the check mark to apply your changes.

6 If you are creating the condition based on an attribute in the grid, complete the condition by doing one of the following:

- To create a condition based on attribute elements in a list:

  a Under Select, do one of the following:

  – To disable the input object control in the grid only if its value is included in a list of elements that you select, click **In List**. For example, you can format data for Books and Movies only.

- To disable all input object controls except those whose values are included in a list of elements that you select, click **Not in List**. For example, you can format data for all product categories except Books and Movies.

b Select each attribute element to include in the condition.

- To create a condition based on attribute form values:

a Under Qualification, select the attribute form to compare to. For example, you can filter based on the attribute element's ID form, one of its description forms, or the DATE form (if the attribute is time-based).

b From the list of operators to the right, select a comparison operator, such as **Greater Than** or **Less Than**. Do one of the following:

- To compare the attribute form to a specific value, type the value in the field.
- To compare the attribute form to the form of another attribute, select the attribute that contains the second form. Select the second attribute form from the list.

7 If you are creating the condition based on a metric in a grid, perform the following steps:

a From the list of operators to the right, select a comparison operator, such as **Greater Than** or **Less Than**. Do one of the following:

- To compare the value of the input object control to a static value, type the value in the field.
- To compare the value of the input object control to the value of a metric, select the metric from the list.

8 If you are creating the condition on either an input object control based on a text field, or on an expression value, perform the following steps:

a From the list of operators to the right, select a comparison operator, such as **Equals** or **Greater Than**.

b Define the value to use to complete the comparison by doing one of the following:

- To use a static value, type the value in the field.
- To use the value of an input object control, select the control.

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- To use the value of an expression, select **Advanced Expression**. The advanced expression options are displayed. Define the condition as follows:
  - To add the value of an input object control to the expression, from the **Available** list, double-click the control. The control is added to the expression and displayed in the editor pane to the right.
  - To add operators to the expression, click the addition (**+**), subtraction (**-**), multiplication (*****), or division (*/*) operators above the editor pane.
  - When finished, click the check mark to apply your changes.

9 Click **Apply** to create the condition. Your new condition is created and displayed in the Transaction Conditions Editor.

10 To add another condition to the action, hover the cursor over the action and click the arrow icon on the right. From the menu, select **New Condition**. Repeat the steps above to define the condition, beginning at *To define the condition, page 501*.

11 To create a copy of a condition, hover the cursor over the condition and click the arrow icon on the right. From the menu, select **Duplicate**.

12 If you have defined multiple conditions for a single action, you can change the operator used to combine the conditions. Right-click the AND operator displayed between the conditions. From the menu, select a new operator.

13 To edit a condition, click the condition, then repeat the steps above to modify the condition, beginning at *To define the condition, page 501*.

Hiding or disabling an action selector button or link

You can hide or disable an action selector button or link based on one or more conditions. You define each condition using one of the following:

- The value of an input object control based on a text field. The input object control must be editable.
- An expression. You can use arithmetic operators to combine the values of the following controls in an expression:
  - Input object controls based on text fields

- Input object controls based on metrics on grids

Each input object control must be editable.

You must also define a comparison value for each condition by using one of the following:

- The value of any text field in the document.
- An expression. You can use arithmetic operators to combine the values of any text fields and metrics on a grid, regardless of whether they are configured as transaction controls.

Prerequisite

- This procedure assumes that you have already created a Transaction Services-enabled document. The document must contain the action selector button or link to hide or disable. For steps, see *Creating a transaction-enabled document, page 466*.

To hide or disable an action selector button or link

1. Open the document in **Design** or **Editable Mode**.
2. Right-click the action selector button or link, then select **Transaction Conditions**. The Transaction Conditions Editor opens.
3. From the **Action** drop-down list, select the action to perform. The options are **Disable** and **Hide**.
4. Click the plus icon to the left. A new condition is created and displayed in the Transaction Conditions Editor. The selected action will be performed when this condition is met.

To define the condition

5. From the **Filter On** list, select one of the following:
   - To base the condition on the value of an input object control, select the control.

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- To base the condition on the value of an expression, select **Advanced Expression**. The advanced expression options are displayed. Define the condition as follows:
  - To add the value of an input object control to the expression, from the **Available** list, double-click the control. The control is added to the expression and displayed in the editor pane to the right.
  - To add operators to the expression, click the addition (**+**), subtraction (**-**), multiplication (*****), or division (*/*) operators above the editor pane.
  - When finished, click the check mark to apply your changes.

6 From the next list, select a comparison operator, such as **Equals** or **Greater Than**.

7 Define the value to compare to by doing one of the following:

- To use a static value, type the value in the field.
- To use the value of an input object control, select the control.
- To use the value of an expression, select **Advanced Expression**. The advanced expression options are displayed. Define the condition as follows:
  - To add the value of an input object control to the expression, from the **Available** list, double-click the control. The control is added to the expression and displayed in the editor pane to the right.
  - To add operators to the expression, click the addition (**+**), subtraction (**-**), multiplication (*****), or division (*/*) operators above the editor pane.
  - When finished, click the check mark to apply your changes.

8 Click **Apply** to create the condition. Your new condition is created and displayed in the Transaction Conditions Editor.

9 To add another condition to the action, hover the cursor over the action and click the arrow icon on the right. From the menu, select **New Condition**. Repeat the steps above to define the condition, beginning at *To define the condition, page 504*.

10 To create a copy of a condition, hover the cursor over the condition and click the arrow icon on the right. From the menu, select **Duplicate**.

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11 If you have defined multiple conditions for a single action, you can change the operator used to combine the conditions. Right-click the AND operator displayed between the conditions. From the menu, select a new operator.

12 To edit a condition, click the condition, then repeat the steps above to modify the condition, beginning at *To define the condition, page 504*.

Using List controls as selectors

You can enable a List control as a selector. When a user selects items in the List control, data in the control's target is updated.

For example, you create a document that allows users to sign up for a corporate event. You can add two List controls to the document, one for the user's country and another for the user's state or province. When the user selects his country in the first control, the second control is updated to display only states or provinces for the selected country.

The List control must display attribute elements from a selected dataset as choices in the control (this is called a data-driven input control). For steps to define options for a List control, see *Formatting a List control, page 477*.

List controls can update:

- Grid/Graphs
- Selectors
- Panel stacks
- Other data-driven input controls. This includes List controls created based on a field group or based on a dataset object in a Grid/Graph.

You can also have a selector update the items displayed in a List control. Users can select items in the selector to filter the choices in the List control. For a detailed introduction to selectors, including examples and steps to create them, see the *Dashboards and Widgets Creation Guide*.

Prerequisites

- You have created a Transaction Services-enabled document that contains a List control to enable as a selector. The List control must display

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attribute elements from a selected dataset as items in the control. For steps to create a Transaction Services-enabled document, as well as steps to create a List control, see *Creating a transaction-enabled document, page 466*.

- You have added the objects (such as Grid/Graphs, selectors, and other List controls) to update when items are selected in the List control.

To enable an List control as a selector

1. In MicroStrategy Web, open the document in Design or Editable Mode.
2. Do one of the following, depending on whether the List control is based on a text field or a Grid/Graph:
   - If the List control is based on a text field, complete the following steps:
     a. Right-click the text field used to display the List control, then select **Properties and Formatting**. The Properties and Formatting dialog box opens.

     If you have defined input object controls based on text fields in a document, each text field is displayed with a gear icon in the bottom right of the field, to signify that it displays as an input object control.

     b. From the left, click **Selector**.
   - If the List control is displayed in a Grid/Graph, on the Grid/Graph, right-click the header of the dataset object used to display the List control, and choose **Use as Selector**.
3. From the list of **Available** targets on the right, choose the target(s) to update when users select items in the List control and click **>** to add it to the list of **Selected** target.

   The name used to identify List controls in the Available targets list varies depending on whether the List control was created based on a text field or dataset object on a Grid/Graph:

   - If the List control was created based on a text field, it is listed using the name of the text field.
   - If the List control was created based on a metric in a Grid/Graph, it is listed as `GridGraph:Metric`, where `GridGraph` is the name of the Grid/Graph and `Metric` is the name of the metric.

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- If the List control was created based on an attribute in a Grid/Graph, it is listed as `GridGraph:Attribute@AttributeForm`, where `GridGraph` is the name of the Grid/Graph, `Attribute` is the name of the attribute, and `AttributeForm` is the name of the attribute form.

4 For a List control based on a text field, determine whether the List control filters or slices the data, by selecting or clearing the **Apply selections as a filter** check box. The difference is briefly described below; for more details on the differences, including examples, see the *Dashboards and Widgets Creation Guide*.

- The selections made in a filtering control are used to filter the underlying dataset before the metric values are aggregated at the level of the Grid/Graph that is displayed in the document.
- The selections made in a slicing control are used to determine which slices of data are combined and shown in the Grid/Graph.

The Apply selections as a filter check box is unavailable and cleared if you selected the Metrics column to use as the selector.

5 For a List control displayed in a Grid/Graph, the All option allows the user to display all the elements in the target at one time. To enable the All option, select the **Show option for All** check box in the Configure Selector dialog box.

6 Click **OK** to apply your changes.

Creating a transaction-enabled document to update a selected dataset

You can create a Transaction Services-enabled document that allows analysts to update a selected dataset report.

To enable dataset transactions

1 In MicroStrategy Web, open the document in Design or Editable Mode.

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2 From the **Tools** menu, select **Document Properties**. The Properties dialog box opens.

3 From the left, under Document Properties, click **Mobile**. Select one of the following:

- To enable dataset transactions, select the **Enable local transaction** check box.
- To disable dataset transactions, clear the **Enable local transaction** check box.

4 Click **OK** to apply your changes.

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8

ADDING ADDITIONAL USABILITY FEATURES TO DOCUMENTS

Introduction

This section describes features you can take advantage of to add usability to MicroStrategy Report Services documents, such as adding multiple "pages" of content to a multi-layout document or defining default prompt answers. See the appropriate link below for details:

- *Creating multi-layout documents, page 512*
- *Using prompts in documents, page 524*
- *Specifying the delivery options available to users subscribing to a document, page 529*
- *Exporting documents to Flash, page 530*
- *Portable documents: Reusing documents across projects, page 532*

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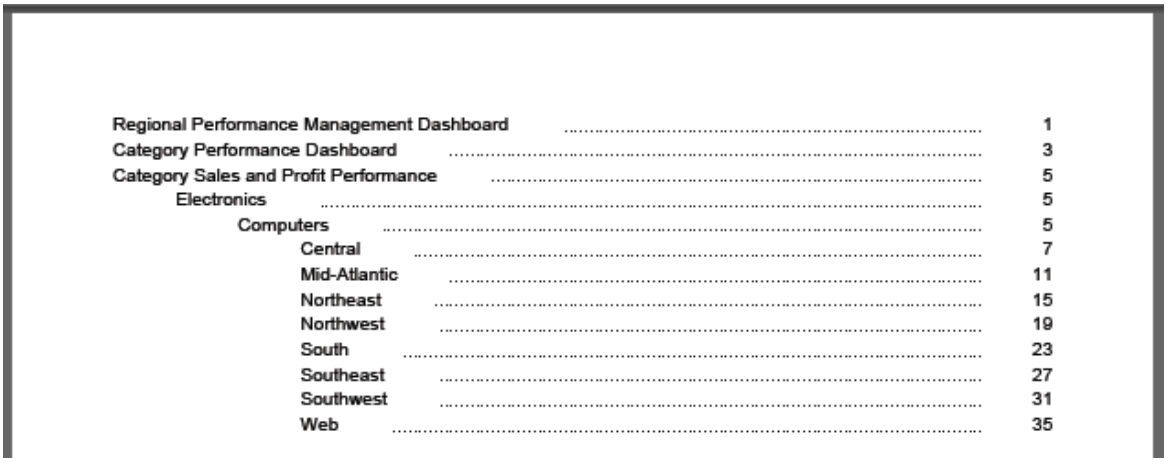
Creating multi-layout documents

A multi-layout document contains multiple documents, each in its own layout, creating a “book” of documents.

For example, each member of a team of document designers creates complex documents for his own department, such as human resources or finance. The documents must be worked on simultaneously, so that they are finished at the same time. But the documents must be presented as a single document.

The solution is to create a multi-layout document, which means that each document is placed into its own layout within the same document. This creates a “book” of documents. Each layout functions as a separate document, with its own grouping, page setup, and so on, but the layouts are generated into a single PDF document. The pages can be sequentially numbered through all the layouts, and the table of contents shows all the layouts.

In the table of contents shown below, the first-level headings are the different layouts. Each was a separate document that was imported into a single multi-layout document. Note that the pages are numbered sequentially, from the beginning of the document to the end. For steps to import existing documents into a multi-layout document, see *Importing layouts into a document, page 519*.

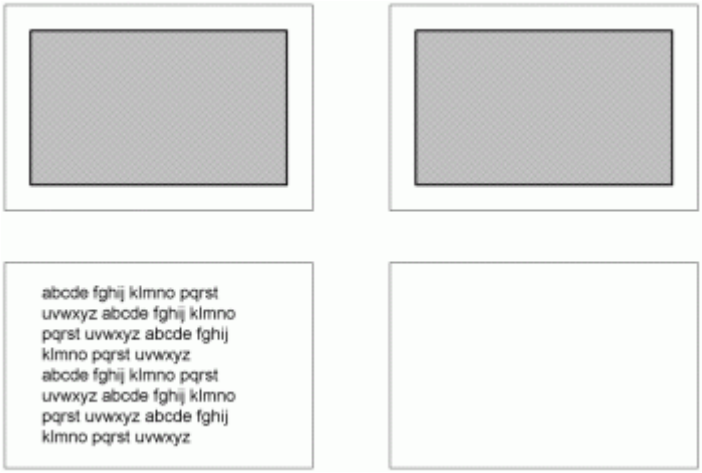


Regional Performance Management Dashboard 1
Category Performance Dashboard 3
Category Sales and Profit Performance 5
Electronics 5
Computers 5
Central 7
Mid-Atlantic 11
Northeast 15
Northwest 19
South 23
Southeast 27
Southwest 31
Web 35

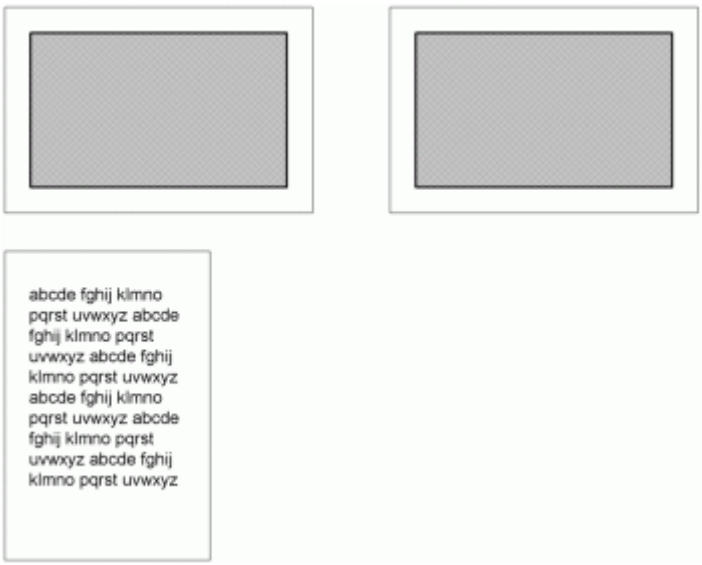
In another example, two documents must be sent as one PDF. The first document contains a wide Grid/Graph that must be printed in landscape view. The second document, which uses a different dataset, is a narrower document that should be printed in portrait view. If you put them into the

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same document, extra blank pages are printed, as shown in the diagram below.



A multi-layout document solves this problem, by combining the two documents into a single document. Each layout has a separate orientation, so that the wider layout can be set to display in landscape, while the narrower layout can be set to display in portrait.



The layouts are displayed as tabs so that users can easily switch between layouts. Tabs are displayed in all modes in MicroStrategy Web.

You can create a cover page for a multi-layout document. The cover page is in its own layout, so that it does not display a page number or any of the information from the rest of the document. The rest of the document is contained in a separate layout from the cover page. The cover page can

display the title of the document, print date, and other information. To print the page numbers and document title on the remaining pages, place the information in the second layout's Layout Footer or Layout Header.

Layout components that can be edited independently

You can edit the contents of each layout separately, without affecting the contents on other layouts in the document. For each layout, the following options can be set independently of other layouts in the document:

- Grouping and sorting dataset

  If you add more than one dataset to a document, the first dataset you add to the document is automatically defined as the grouping and sorting dataset. You can group and sort only by this dataset. Each layout can have its own grouping and sorting dataset. For steps to change the grouping and sorting dataset, see *Changing the grouping and sorting dataset for a document, page 51*.

- Grouping

  Grouping the data sets up a type of hierarchy within the document, and an inherent or implied sort order for the data. Each layout can be grouped differently. For steps to group data, see *Grouping records in a document, page 388*.

  By default, a user's grouping selections apply only to the current layout, but you can specify that the grouping selection is retained when a user switches layouts in MicroStrategy Web. This setting is applied to all layouts that contain the same grouping fields. For instructions and an example, see *Applying grouping selections to the current layout or all layouts, page 413*.

- Sorting

  A document's data is first sorted according to its groupings, but you can control how the records in the Detail section, for example, are sorted. For steps to determine sorting, see *Sorting records in a document, page 424*.

- Layout tab

  Each layout has its own tab. Use them to switch between layouts, rename layouts, and change the order of the layouts. For instructions on each of these tasks, see *Renaming and formatting layout tabs, page 520*.

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- Document Headers and Footers

  When you add a layout, the Document Header and Document Footer sections are replaced by the Layout Header and Layout Footer. The Layout Header/Footer prints at the beginning/end of the layout. For an introduction to document sections, see *Understanding and working with document sections, page 28*.

- Which sections are displayed and which are hidden in MicroStrategy Developer and in MicroStrategy Web

  You can hide or display sections in different views or in all views for a specific layout. The same section in other layouts is not changed, allowing you to hide and display different document sections for different layouts. For details, see *Hiding or displaying sections for a finished document, page 299*.

- Border and background color

  You can choose the border and background color for each layout. If the document contains only one layout, the border and background is applied to the entire document. For steps, see *Formatting the border or background of a document or layout, page 337*.

- Incremental fetch

  Incremental fetch divides large layouts into pages, thereby loading the data in batches (or blocks) rather than all at the same time. This improves the usability and performance of a large document or layout, by reducing the load and overall memory usage on the web server. If the document contains only one layout, the incremental fetch settings are applied to the entire document. For examples and steps, see *Introduction, page 539*.

- Paper size, margins, page orientation, scaling, and horizontal fit/overflow

  You can modify a document's appearance before printing to ensure that the printed document appears as desired. Each layout can have different settings; for example, one layout can print landscape while another prints portrait. For steps, see *Modifying page setup options, page 360*.

- Autostyles

  An Autostyle is a collection of formatting settings saved for each control type (text fields, lines, and so on). It is applied to individual layouts, not the entire document. If the Page Header/Footer is shared among layouts, any formatting changes applied to those sections are applied throughout the document. See *Formatting using predefined formats (Autostyles), page 268* for details on Autostyles; see *Applying an Autostyle, page 269* for steps to apply an Autostyle to a document.

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- Automatic maintenance of selector targets

  When targets are automatically maintained, all attribute and metric selectors in the layout automatically target all Grid/Graphs and panel stacks that are in the same panel or document section as the selector. Any new Grid/Graph or panel stack added to the layout is automatically defined as the target of all attribute and metric selectors in the same panel or document section. You cannot change the target of an any attribute or metric selector in the layout. For instructions to enable and disable automatic target maintenance, as well as background information about selectors in general, see the *Dashboards and Widgets Creation Guide*.

Document components that are shared across all layouts

A multi-layout document shares the following with all the layouts it contains:

- Document name
- PDF settings, which include graph resolution, whether to show bookmarks, embedded fonts, and interactive tables of contents

  For steps, see *Changing graph resolution in PDFs, page 369*, *Embedding fonts in PDFs, page 367*, *Including or hiding bookmarks in PDFs, page 370*, and *Including interactive tables of contents in PDFs, page 372*.

  Bookmarks, which are links to areas of the PDF, are created by default for a multi-layout document.

- Excel exporting options, such as how to display images in Excel

  For instructions on defining the Excel exporting options, see *Specifying default export options, page 379*.

- General exporting options, such as whether to export all layouts or only the current layout

  For information on how multi-layout documents are exported, see *Exporting multi-layout documents, page 522*. For steps to define export options, see *Specifying default export options, page 379*.

- Datasets

  All the datasets used in any layout in the document are displayed in the Dataset Objects panel, allowing you to use objects from any dataset in any layout. If you delete a dataset, it is deleted from the entire document, not

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just the current layout. For information about datasets, see *Using datasets in documents, page 45*.

- Watermarks

  A watermark is text or an image that typically identifies or decorates pages. It is a faint design appearing in the background of all pages of all layouts in a document. For steps and examples, see *Adding watermarks to documents, page 339*.

- Default grid Autostyle

  A default grid Autostyle defines the default formatting for new Grid/Graphs added to a document. The grid Autostyle is a pre-defined report style and applies to all layouts in the document. For steps, see *Defining default formatting for control types: control defaults, page 265*.

- Whether conditional formatting is displayed

  Conditional formatting, which is similar to thresholds in reports, formats specific controls automatically depending on when data fits predefined criteria. A user can show or hide all of a document's conditional formatting. This applies to all layouts in the document. For steps, see *Displaying or hiding conditional formatting, page 336*. For an introduction to conditional formatting, see *Formatting conditional data in documents, page 317*.

- Whether users' grouping selections apply to the current layout or to all layouts in MicroStrategy Web.

  When a user switches layouts in MicroStrategy web, the current layout's grouping selection can be applied to the new layout, if the layouts contain the same grouping field. For instructions and an example, see *Applying grouping selections to the current layout or all layouts, page 413*.

- Page Headers and Footers

  By default, Page Headers and Page Footers are shared for all layouts, although you can change this setting to have separate page sections for each layout. For details, see *Using a separate Page Header and Page Footer for a layout, page 520*.

This section includes examples of multi-layout documents and steps to perform the following:

- *Creating a multi-layout document, page 518*
- *Importing layouts into a document, page 519*
- *Renaming and formatting layout tabs, page 520*

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- *Exporting multi-layout documents, page 522*

Creating a multi-layout document

To create a multi-layout document, you add a layout to a document. The steps below describe how to do this.

You can also import an existing document's layouts into another document; for more information, see *Importing layouts into a document, page 519*.

To create a multi-layout document

1. In MicroStrategy Web, navigate to a document which will become a layout within the multi-layout document you are creating.
2. Open the document in **Design** or **Editable Mode**.
3. From the **Insert** menu, select **Layout**. The Insert Layout dialog box opens.
4. Do one of the following to create a new layout:
   - To create a new layout using a Report Services (RS) dashboard template, click the **Dashboard Layouts** tab, then select a template.
   - To create a new layout using a document template, click the **Document Layouts** tab, then select a template.
     - You can select the **iPhone Map Information Window** template to quickly create a blank layout designed for use as an Information Window. (For details on Information Windows, see the *Mobile Design and Administration Guide*.)
   - To create a new layout using a saved document, click the **Browse Documents** tab, then select a previously saved document.
5. Click **OK**. The new layout is added and thus a multi-layout document is created.

   For information on renaming the tabs, see *Renaming and formatting layout tabs, page 520*.

Repeat the appropriate steps above to add as many layouts as desired to the new multi-layout document.

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Changing the order of layouts in a document

These steps assume you have already created a multi-layout document.

To change the order of the layouts in a document

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Right-click a layout tab and select **Move Left** or **Move Right**. The tabs are ordered accordingly.

Importing layouts into a document

You can import the layouts of one document into another document. The layouts of the imported document are added to the other document, and datasets that are part of the imported document are copied into the other document.

To import layouts into a document

1. In MicroStrategy Web, open the document into which you want to import layouts, in **Design** or **Editable Mode**.
2. From the **Insert** menu, select **Import Layout**. The Select a Document dialog box opens.
3. Select the document whose layouts you want to import, then click **Open**. The Document Editor opens.

The layouts of the selected document are added to the document you started with. If a newly imported layout uses the same name as an existing layout, a number is added to the end of the name, for example, Document (2).

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Using a separate Page Header and Page Footer for a layout

By default, the Page Header and Page Footer sections are shared for all layouts in a multi-layout document. This is indicated in the name of the Page Header, as shown below.



You can use different page sections for each layout. When page sections are no longer shared, any edits you make in a particular Page Header or Page Footer affect only the current layout. Also, the word **(shared)** does not appear in the name of the document section, as shown below:



If you use a separate Page Header and Page Footer for one layout, other layouts can still use a shared Page Header and Page Footer, or they can have their own separate Page Headers and Page Footers.

To use a separate Page Header and Page Footer for a layout

1. In MicroStrategy Web, open the multi-layout document in **Design** or **Editable Mode**.
2. From the **Home** menu, select **Page Setup**. The Page Setup dialog box opens.
3. Select **Layout**.
4. Clear the **Use shared page header/footer** check box.
5. Click **OK** to return to the Document Editor.

Renaming and formatting layout tabs

You can rename the layouts (and therefore the tabs). You can also format the background color of the layout tabs.

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To rename a layout

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Right-click a layout tab and select **Rename**.
3. Type the new name and press **Enter**.

To change the background color of a layout tab

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. In the layout, from the **Home** menu, select **Page Setup**. The Page Setup dialog box opens.
3. Select **Layout**.
4. From the **Tab color** drop-down list, select a background color for the tab.
5. Click **OK**.

Deleting a layout

When you delete a layout, it is removed from the document. After the layout is removed, the dataset that the layout used remains in the Dataset Objects pane for the multi-layout document. If only one layout remains, the Document Header/Footer replaces the Layout Header/Footer.

To delete a layout from a multi-layout document

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. Right-click the appropriate layout tab and select Delete. The layout is removed.

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Exporting multi-layout documents

When you export a document, you send its data to an external software application such as an Excel spreadsheet or to Adobe as a PDF displayed outside of the MicroStrategy Document Editor.

When a multi-layout document is exported to PDF, each layout starts on a new page. When exported to an Excel file, each layout is placed into a separate worksheet. If the PDF will be viewed on a Kindle or Nook, you should expand all layouts so that the user can view all the data.

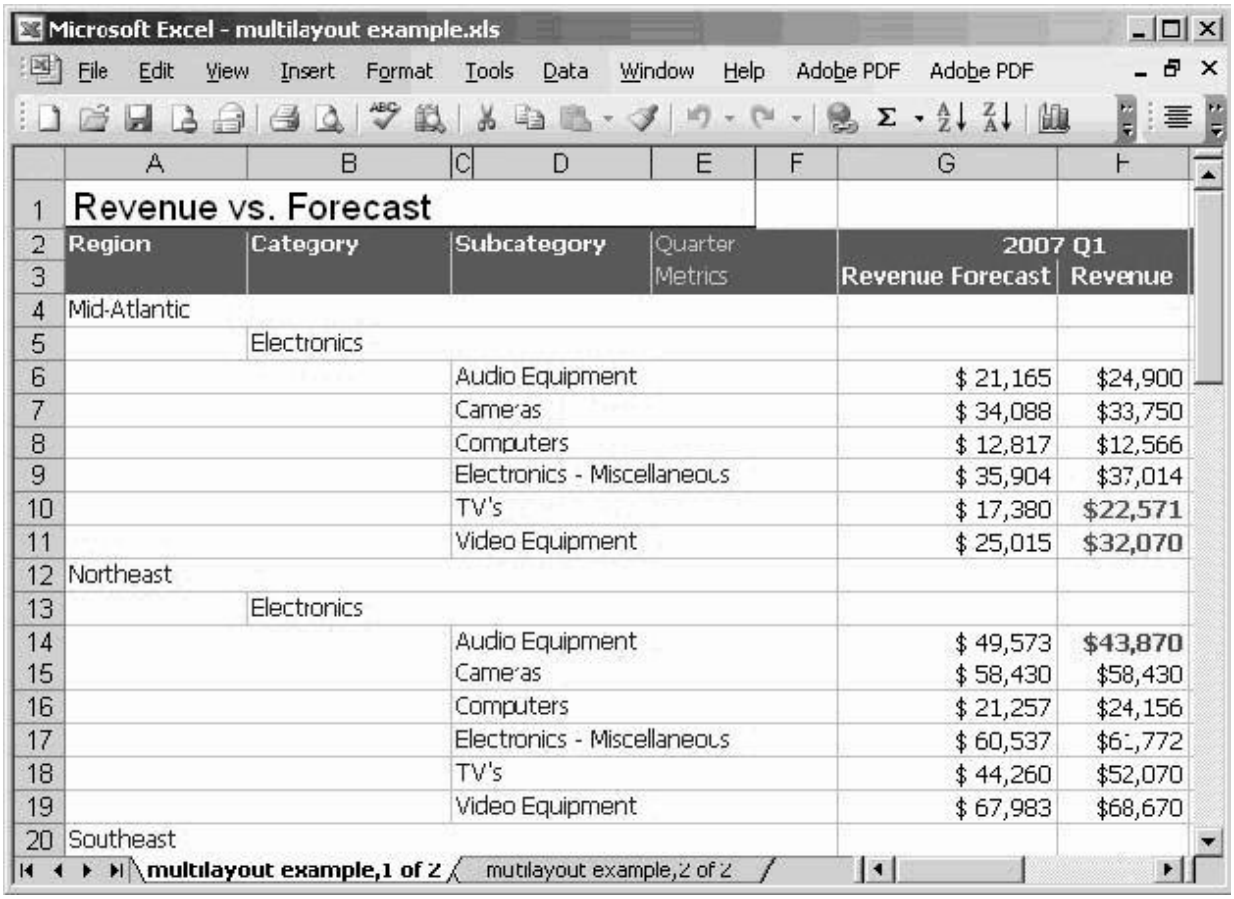
In Excel 2000, all layouts are exported into one worksheet. Use Excel 2003, Excel XP, and newer versions to export layouts to separate worksheets. If you are exporting layouts in MicroStrategy Web, change the User Preference for Excel Options to Excel XP, Excel 2003, and newer versions. For more information and detailed instructions, see the MicroStrategy Web Help.

Before you export, set the export options to control how the document is exported. You can specify whether to export only the current layout or all the layouts in the document. If you allow users to be prompted when they export a document, they can choose to export all layouts or only the current layout.

All export options, including whether to export all layouts, apply to all layouts in the document. For detailed descriptions of those options, see *Specifying default export options, page 379*.

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Exporting to Excel all the layouts of a sample multi-layout document creates the following Excel spreadsheet:



	A	B	C	D	E	F	G	H
1	Revenue vs. Forecast							
2	Region	Category	Subcategory	Quarter			2007 Q1	
3				Metrics			Revenue Forecast	Revenue
4	Mid-Atlantic							
5		Electronics						
6			Audio Equipment				$ 21,165	$24,900
7			Cameras				$ 34,088	$33,750
8			Computers				$ 12,817	$12,566
9			Electronics - Miscellaneous				$ 35,904	$37,014
10			TV's				$ 17,380	$22,571
11			Video Equipment				$ 25,015	$32,070
12	Northeast							
13		Electronics						
14			Audio Equipment				$ 49,573	$43,870
15			Cameras				$ 58,430	$58,430
16			Computers				$ 21,257	$24,156
17			Electronics - Miscellaneous				$ 60,537	$6:,772
18			TV's				$ 44,260	$52,070
19			Video Equipment				$ 67,983	$68,670
20	Southeast							

The worksheets are named for the document, not the layouts. The name of the document and the Excel spreadsheet (shown at the top of the image) is multilayout example.xls; the names of the worksheets are “multilayout example, 1 of 2” and “multilayout example, 2 of 2”, as shown in the tabs at the bottom of the image.

If you export only the current layout to Excel, the name of the single worksheet is the name of the document.

When exporting a multi-layout document to PDF, the layouts are displayed as bookmarks by default, whether you export all layouts or only the current layout. You can choose whether or not to include bookmarks in the PDF (see *Including or hiding bookmarks in PDFs, page 370*).

You can create a table of contents for a multi-layout document that displays an accurate total number of pages. For examples, see *The table of contents in a multi-layout document: Example, page 374* and *The table of contents in a grouped multi-layout document: Example, page 375*.

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The following procedure specifies the export options so that all the layouts are exported. For steps to set default export options for Excel, see *Specifying default export options, page 379*.

To export a multi-layout document to Excel

1. In MicroStrategy Web, open the document in **Design** or **Editable Mode**.
2. From the **Format** menu, select **Document Properties**. The Properties dialog box opens.
3. Click **Export**.
4. Select **Export All Layouts**.

   For details on the other export options, see *Formatting a document for export, page 377*.
5. Click **OK** to return to the document.
6. From the **File** menu, select **Export to Excel**.
7. Click **OK**. The document opens as an Excel spreadsheet. Be sure to save it before exiting Excel.

Using prompts in documents

If the dataset in a document has a prompt in it, such as Region or Year, you are prompted for an answer when you view the PDF document for the first time. The prompts, which contain the default answers, are displayed as in any standard MicroStrategy report. After the prompts are answered, the document executes and displays the information according to the answers. Prompts in a document provide rich interactivity, allowing each user to display the data relevant to him.

Even if the same prompt object is used in multiple datasets on a document, you are prompted only once. For example, if you use the prompt named **Select Region** in both Dataset1 and Dataset2, you can see the prompt only once. However, if the prompt Select Region is used in Dataset1 and "Copy of Select Region" (an identical copy, except for the name) is used in Dataset2, you see two prompts.

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Prompts in documents act as filters and limit the data that is displayed. These value prompts affect the number of rows of data that are displayed but they do not determine which objects are returned from the data warehouse. This is because the prompt answers are not available in the Design View—that is, the creator of the document does not know the objects that the user will select.

You must perform the following general steps to add a prompt to a document:

- Create and save the prompt. For steps, see the *Basic Reporting Guide*.
- Add the prompt to a report. For steps, see the *Basic Reporting Guide*.
- Add the prompted report to the document as a dataset. For steps, see *Adding, changing, or removing a dataset, page 48*.

You cannot use a prompt directly on a document or put a prompt into a Grid/Graph on a document—only attributes, consolidations, custom groups, and metrics can be used as data fields from the dataset. Object prompts on templates, which allow a user to select which objects to include in a dataset, are not supported, unless you add the Grid/Graph as a shortcut.

Even when a shortcut is used, the object prompt does not appear in the Dataset Objects panel; you cannot add it to the document as a separate object. When the document is executed, the object prompt is displayed and its answers are shown in the document results. This occurs just as if you had executed the dataset as a stand-alone report.

For instructions to add a Grid/Graph as a shortcut, see *Adding a Grid/Graph as a shortcut, page 193*.

Specifying whether a document uses default prompt answers when the document is run

You can specify whether to have prompts in a document automatically answered using default prompt answers when the document is run. Providing default answers allows users to execute prompted documents more quickly, because they can simply accept the defaults with a single click and run the document. If default answers are not provided for prompts, users must take the time to answer each prompt question individually, unless answers are not required. The default prompt answer is always displayed when a value prompt is used, even if the default prompt answer was cleared and the document is then reprompted.

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Default answers are particularly useful if a large percentage of your users will answer the prompt the same way. A common example is a document with a prompt on the Year attribute, from which users can choose the attribute element (for example, 1998, 2005, or 2006) they want to see data for. If many users will choose the current year every time they run the document, then providing the current year as the default answer can save users time.

When you save a document after answering prompts, you can set whether your current prompt answers are saved as part of the document definition. The prompt answers are saved in the document definition and not in the report definition, so the prompt answers used in the document do not affect the report when the report is executed.

When the document is re-executed, one of the following scenarios occurs, depending on which option was selected:

- Prompts are displayed with the saved answers shown as the defaults.
- Prompts are displayed and the user is required to answer them.
- Prompts are not displayed and the saved answers are automatically used to answer the prompts.

Steps are below to define how prompts are answered in a document.

Prerequisite

- This procedure assumes that you have already created a prompted document.

To specify whether a document uses default prompt answers

1. Click the name of the document to run it. The prompt selection page is displayed.
2. Answer the prompts on the prompt selection page. If you want the document to use default prompt answers, select the answers to save as default prompt answers. For detailed steps to answer each type of prompt available, see the *MicroStrategy Web Help*.
3. Click **Run Document**.
4. From the **Home** menu, select **Save As**. The Save As dialog box is displayed.

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5 From the Advanced section, select one of the following:

- To use the prompt answers that you selected above as the default prompt answers, select the **Display prompt and use the current answers as the default answers** option. The next time that the document is run, the prompt selection page will be displayed with the default prompt answers automatically selected.
- To save the document without default prompt answers, select the **Display prompt but discard the current answers** option. The prompt selection page will be displayed the next time the document is run, with no default prompt answers automatically selected.
- To use the prompt answers you specified as the default prompt answers and automatically skip the prompt selection page, select the **Do not display prompt and use the current answers as the default answers** option. The next time the document is run, the default prompt answers will automatically be used to answer the prompts and run the document. The prompt selection page will not be displayed to users.

6 Click **OK** to save the document.

Prompt order in documents

By default, if multiple datasets are used on the document:

1 The prompts in the first dataset are displayed to the user, then the second, and so on.

2 If a prompt is contained in more than one report, the prompt is displayed on the first dataset only.

Within each dataset, an ordered list of prompts is constructed using the following rules:

1 All non-prompt application objects (attributes, metrics, and so on) are ordered so that each object appears before its dependents.

2 Each object is replaced with any prompts that it contains.

3 If a prompt contains prompts, those prompts are added to the list immediately above the original prompt. (Prompts within another prompt must be answered before the original prompt can be answered.)

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4 The previous step is repeated until each prompt in the report is listed.

5 Any duplicated prompts are eliminated. Each prompt is displayed only one time, and when it first occurs on this list of prompt.

Note the following:

- If prompts are moved within the report filter after the report is first saved, the prompt order is not changed. The order that the prompts are initially saved is used for the default prompt order.
- If the order of the reports in a document is changed, even after the document is first saved, the prompt order is affected. The prompts in the first dataset are displayed to the user, and then the second, and so on.

Changing the prompt order

You can change the order that prompts are presented when the document is executed. For example, your document contains datasets with Region and Call Center prompts, and you want to answer the prompts in that order. Use the Prompt Ordering dialog box in MicroStrategy Developer to specify that order.

To re-create this example, create the following before beginning the procedure:

- A filter definition prompt on Region
- A filter definition prompt on Call Center
- A report with Region and the Revenue metric, filtered by the Region prompt
- A report with Call Center and the Revenue metric, filtered by the Call Center prompt
- A document including both reports as datasets, with Region, Call Center, and the Revenue metric in the Layout area

To order prompts in a document

1 In MicroStrategy Developer, open the document in Design View in the Document Editor.

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To re-create the example, open the document including both reports as datasets.

2 From the **Data** menu, choose **Prompt Ordering**. The Prompt Ordering dialog box opens.

3 Select the prompt to modify and click the up or down arrows to change its order.

4 Once the prompts are in the correct order (for the example, the order is Region and Call Center), click **OK** to return to the Document Editor.

When you execute the document, the prompts are displayed in the order selected.

Specifying the delivery options available to users subscribing to a document

You can determine which delivery options are available to users subscribing to a specific document. For example, you can specify which delivery schedules can be used to subscribe to the document, or prevent users from subscribing to the document altogether.

If an existing document subscription uses a schedule or document that has been made unavailable for subscriptions, the document will not be delivered.

For general information on subscribing to reports and documents, see the *MicroStrategy Web Help*. For steps to specify the delivery options available to users subscribing to a report, see the *Building Query Objects and Queries, for Designers* chapter in the *Basic Reporting Guide*. Restricting the delivery schedules available when subscribing to a report does not affect the delivery schedules available for documents that use the report as a dataset.

You can create new schedules in the MicroStrategy Developer Schedule Manager. For steps, see the *Scheduling Jobs and Administrative Tasks* chapter in the *System Administration Guide*.

To specify the delivery options available to users subscribing to a document

1 In MicroStrategy Web, open the document in Design or Editable Mode.

2 From the **Tools** menu, select **Document Properties**. The Properties dialog box opens.

3 From the left, under Document Properties, select **Advanced**. Select one of the following options under Schedules for Subscriptions:

- To prevent users from subscribing to the document, select the **Do not allow this document to be scheduled** option.
- To allow users to subscribe to the document using any schedule associated with the MicroStrategy project in which the document is stored, select the **Allow users to subscribe to all schedules** option.
- To specify the list of schedules users can select from when subscribing to the document, select the **Only allow users to subscribe to schedules in the list below** option. Schedules in the Selected list are available to users. Select a schedule from the Available list and click the **Add** icon to move it to the Selected list.

  Administrators can determine which schedules are included in the Available list. For more information, see the *Web Administrator Help*.

4 Click **OK** to apply your changes.

Exporting documents to Flash

You can define options for documents exported to Flash, as follows:.

- You can determine whether documents are exported as MHT or PDF files. See *Determining whether to export documents in MHT or PDF format, page 531* for a comparison of the file formats and instructions.
- You can enable links for exported documents. See *Enabling links for documents exported to Flash, page 531* for instructions.

By exporting a document to Flash, users can view and interact with the document offline, without using MicroStrategy. The Flash file is a fully interactive, stand-alone document, that works similar to the document in Flash Mode in MicroStrategy Web. The Flash file allows HTML content, images, Flash content, and other types of information to be exported in a single file that can be opened in an Internet browser or Adobe Reader.

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Determining whether to export documents in MHT or PDF format

You can determine whether the documents in a project are exported to Flash using the MHT or PDF file format.

- MHT file format: Can be opened in Internet Explorer, and in Firefox with a third-party plug-in. For detailed steps to view an MHT file in Firefox, see the *Document and Dashboard Analysis Guide*.
- PDF file format: Can be opened in Adobe Reader 9.

To select MHT or PDF file format for all documents exported to Flash

1. In MicroStrategy Developer, right-click the project that you want to work with, and select **Project Configuration**. The Project Configuration Editor opens.
2. Under Categories, expand **Project definition**, and select **Export Settings**.
3. Under Export to Flash file format, select either **MHT** or **PDF**.
4. Click **OK** to save your changes and return to MicroStrategy Developer.
5. Before you export a document from MicroStrategy Web, restart your web server. This allows the web server to read the new format.

Enabling links for documents exported to Flash

By default, when a user exports a document to Flash, any links to web pages, reports, or other documents are disabled. You must enable links in the Project Configuration Editor, as described below.

Additionally, if the documents are being exported to MHT files, end users must activate the links in the document, by adding the folder containing the stand-alone Flash document to the list of Trusted locations in the Adobe Flash Player Settings Manager.

If the documents are being exported to PDF files, Adobe Reader will prompt the user, when he clicks a link, to verify that the link is trusted.

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For detailed steps to export and view Flash documents, see the *Document and Dashboard Analysis Guide*. For background information on links, see *Chapter 6, Linking from Documents*.

To enable links for documents exported to Flash

1. In MicroStrategy Developer, right-click the project that you want to work with, and select **Project Configuration**. The Project Configuration Editor opens.
2. Under Categories, expand **Project definition**, and select **Document and Reports**.
3. Select the **Enable links in exported Flash documents (.mht files)** check box.
4. Click **OK** to save your changes and return to MicroStrategy Developer.

Portable documents: Reusing documents across projects

A portable document contains all the design of the document without the data, allowing you to copy documents between projects, even when the projects do not have the same metadata. When you import the document into the replacement project, you map the document to the new project (referred to as reconciling the document).

A Report Services (RS) dashboard (a type of document optimized for viewing online and for user interactivity) can also be made portable; for simplicity, the term document is used throughout this section to refer to documents and RS dashboards. For instructions to create RS dashboards, see the *Dashboards and Widgets Creation Guide*.

Portable documents separate document definition from the datasets that provide the data, allowing:

- Documents to be reused across projects, creating a library of reusable documents.
- The document designer and the data architect to work simultaneously, rather than sequentially. That is, the document designer can work on

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polishing the design of a document (the layouts, panel stacks, and other non-data objects) at the same time that the data architect is preparing the data (the metrics, reports, and other MicroStrategy objects) that will populate the document. When both are finished, the document is reconciled with the datasets.

- Out-of-the-box documents can be deployed to your project by reconciling the documents' content to your own project objects. For example, you can use a document from the MicroStrategy Tutorial project or the Human Resources Analytical Module in your own project.

Use the Document Editor to create the document to be reused across projects. For instructions to create a document, see *Creating documents, page 17*.

How the document reconciliation process works

All the parts of a document whose definition explicitly references a dataset need reconciliation. These include the datasets and the dataset objects on those datasets. Dataset objects include metrics, attributes, consolidations, and custom groups.

The original project is the project that you export the document from; the replacement project is the project that you import the document into.

Document reconciliation has the following stages:

- Stage 1 reconciliation: datasets

  You map each original dataset to a replacement dataset.

- Stage 2 reconciliation: dataset objects

  For each dataset, you map each dataset object on the original report to a replacement dataset object on the replacement dataset. An original dataset object that exists in the replacement report is automatically mapped, but you can select another replacement object. Objects are matched by GUID, then by name.

- Stage 3 reconciliation: attribute forms

  (Attribute form reconciliation occurs only in certain cases, depending on the document's design.)

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For each attribute, you map each attribute form (such as Region Name and Region ID for the Region attribute) from the original dataset to the attribute form on the replacement dataset. An ID or DESC attribute form in the original is automatically mapped to an ID or DESC form in the replacement, but you can select another replacement attribute form, as long as it is an ID or DESC form. A custom attribute form in the original can be mapped to any custom attribute form in the replacement.

Reviewing after reconciliation

After reconciliation, you should review the resulting document to ensure that it works as you expect it to. Potential additional work that you may need to perform includes:

- For Interactive Grid widgets and Time Series widgets for mobile devices, settings that refer to dataset objects in the underlying Grid/Graphs are not updated. An example is the interval settings of the Time Series widget.
- Images are not included in the portable document. You must copy any image files to the following folders:
  - `Intelligence Server`
  - `Web ASPx\asp`
  - `Desktop`
- The original attribute in attribute element qualifications in thresholds and view filters is replaced by the replacement attribute, but attribute elements are not updated. After reconciliation, edit the threshold or view filter to ensure that the correct attribute form is used.

Copying documents between projects

To copy a document between projects, follow the high-level steps below. See *To copy a document between projects, page 535* for a detailed procedure.

1. In the original project, create the document to be used as a portable document.
2. Export the document from the original project. Exporting creates a package file with the extension .pkg.

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3 Import the document into the replacement project.

The document is automatically checked to see if it needs to be reconciled. If it does, you are guided through the reconciliation process.

Prerequisites

- You have created the document that will be used as the original document, following these requirements:
  - The document must be created in a project that was created with MicroStrategy version 8.0.1 or later.
  - The document cannot contain derived metrics, derived elements, or drill maps.
- To export the document, you must have browse and read access to the document.
- To import the document, you must have the Use Document Editor privilege, and browse and use access on all replacement objects.

To copy a document between projects

Export the portable document from the original project

1 In MicroStrategy Developer, log in to the original project (the project that contains the document to export).

2 Select the document to use as the original document.

3 From the **Tools** menu, select **Export Document Template**. The Browse for Folder dialog box opens.

4 Navigate to the folder to save the file in, name the file, and then click **OK**. Integrity checks are run to ensure that the document meets the prerequisite requirements.

- If the integrity checks fail, a message appears. Click **OK** to return to MicroStrategy Developer. The document is not exported. Review the prerequisite requirements listed above and edit the document so that it meets those requirements.
- If the document passes the integrity checks, the document, named *document_name*.pkg, is saved in the selected folder.

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5 Log out of the project.

Import the portable document into the replacement project

6 In MicroStrategy Developer, log in to the replacement project (the project that you want to import the document to).

7 From the **Tools** menu, select **Import Document Template**. The Select a Package dialog box opens.

8 Navigate to and select the portable document to import.

9 Click **Open**.

10 The document is automatically reviewed to see if it needs reconciliation.

- If the document needs reconciliation, the Document Reconciliation Editor opens. A status message indicating how many replacement reports or objects need to be reconciled is displayed. Follow the *Reconcile* steps on page 536.
- If the document does not need reconciliation, the Document Reconciliation Editor opens with blank fields and a blank status message. One way that this can happen is if the document does not contain any datasets. Skip to the *Save* steps on page 538.

Reconcile

The Document Reconciliation Editor lists:

- The datasets in the original document
- The dataset objects on those datasets
- How many replacement datasets or objects need to be reconciled (the status message)

11 Map an original dataset to a replacement dataset by following these steps:

a Click **Select** in the **Replacement Report** column of the original dataset row. The Select a Report dialog box opens.

b Navigate to and select the replacement dataset.

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c Click **Open**. If the replacement dataset does not match the original dataset (for example, the original report contains two attributes but the replacement has only one), a message is displayed. Click **OK**, and select a different dataset.

The **Replacement Report** column now displays the name of the replacement dataset to map to, and the **Replacement Objects** column displays the objects on the replacement dataset.

If a suitable replacement report does not exist, you can create a new report to use, without closing the Document Reconciliation Editor. If the Select a Report dialog box is open, click **Cancel** to close it. Return to MicroStrategy Developer without closing the editor (for example, you can use **ALT+TAB** to select MicroStrategy Developer), and then create the report and save the report. Return to the Document Reconciliation Editor (for example, using **ALT+TAB**), and then begin mapping the replacement report again, at this step.

12 If an original dataset object exists in the replacement report, it is automatically mapped to that object. Objects are matched by GUID, then by name. If you want to change an automatic mapping or an object is not mapped, follow the steps below:

a Select the replacement dataset object in the **Replacement Objects** column. Cells in the **Replace With** column that can be mapped to the replacement object are highlighted. (For example, if you select an attribute, all attribute cells are highlighted.)

b Drag the replacement dataset object to the matching **Replace With** cell. For example, if Employee in the original and EE in the replacement are equivalent, drag Employee to EE.

c Repeat these steps for each dataset object on the original dataset.

13 ID and DESC attribute forms in the original are automatically mapped to ID or DESC forms in the replacement, but you can select another replacement attribute form, as long as it is an ID or DESC form. You can map a custom attribute form in the original to any custom attribute form in the replacement. If you want to change an automatic mapping or an attribute form is not mapped, follow the steps below:

a Select the replacement attribute form in the **Replacement Objects** column.

b Drag the replacement attribute to the matching **Replace With** cell. For example, if Employee Number in the original and EE# in the replacement are equivalent, drag Employee Number to EE#.

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c Repeat these steps for each attribute form on the original dataset.

Attribute form reconciliation occurs only in certain cases, depending on the document's design, so this step may not be required.

14 Repeat these *Reconcile* steps until all original datasets, original dataset objects, and original attribute forms are mapped to the replacement. Once this is complete, the status message, which displays the number of reports or objects to be reconciled, disappears.

Save

15 Select **Save** from the **File** menu.

16 Navigate to the folder to save the document in, and then click **OK**. A message appears indicating the document was saved.

17 Click **OK**. The Document Reconciliation Editor closes, and you are returned to MicroStrategy Developer.

Review

18 After importing the document, review the resulting document to ensure that it works correctly. Follow the suggestions in *Reviewing after reconciliation, page 534*.

19 Save any changes to the document.

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9

IMPROVING DOCUMENT PERFORMANCE

Introduction

This section describes ways to improve document execution performance. For example, you can have documents load and display content in batches as needed rather than all at once (called incremental fetch). You can have documents cached to improve single-user response time. See the appropriate link below for details:

- *Automatic resizing of documents, page 540*
- *Limiting shrinking, growing, and empty sections, page 541*
- *Incremental fetch, page 541*
- *Incremental fetch on Grid/Graphs, page 544*
- *Caching documents, page 547*

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Automatic resizing of documents

By default, MicroStrategy Web automatically calculates the width of your document and height of your document's sections when the document is executed. This ensures that the document is automatically resized to display all of its content.

If you disable this automatic size adjusting, you can improve the speed at which the document is executed.

This change applies to documents executed in MicroStrategy Web in Editable Mode, Interactive Mode, and Express Mode. Enabling or disabling automatic resizing does not affect how a document is exported to Excel or PDF. When a document is exported to Excel or PDF, it is automatically positioned as far to the right as necessary to effectively display the document.

An administrator can enable or disable automatic resizing on a project-wide basis, using Report Services preferences in the Project Defaults page.

To ensure that document width and height are not resized automatically

1. In MicroStrategy Web, click the MicroStrategy icon  at the top of any page and select **Preferences**. The User Preferences page opens.
2. From the left, select **Report Services**. The Report Services user preferences are displayed.
3. To ensure that the width of your document is not resized automatically, from the **Document Width Mode Calculation** drop-down list, select **Off**.
4. To ensure that the height of sections in your document is not resized automatically, from the **Document Section Height Mode Calculation** drop-down list, select **Off**.
5. Click **Apply** to save your changes.

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Limiting shrinking, growing, and empty sections

You can improve the speed at which a document is executed by not allowing document sections to automatically shrink and grow, and by hiding empty document sections.

A document can automatically shrink or grow a given section depending on how much data is returned from the data warehouse. A document will also display all sections of a document, even sections that are empty, unless empty sections are hidden. Both of these processes take time for the system to perform during document execution.

To disable shrinking and growing, edit a document. In the Properties dialog box, on the Layout tab, clear the **Can Shrink** and **Can Grow** check boxes.

To hide empty document sections, edit a document. In the Properties dialog box, on the Layout tab, select the **Hide if Empty** check box.

Incremental fetch

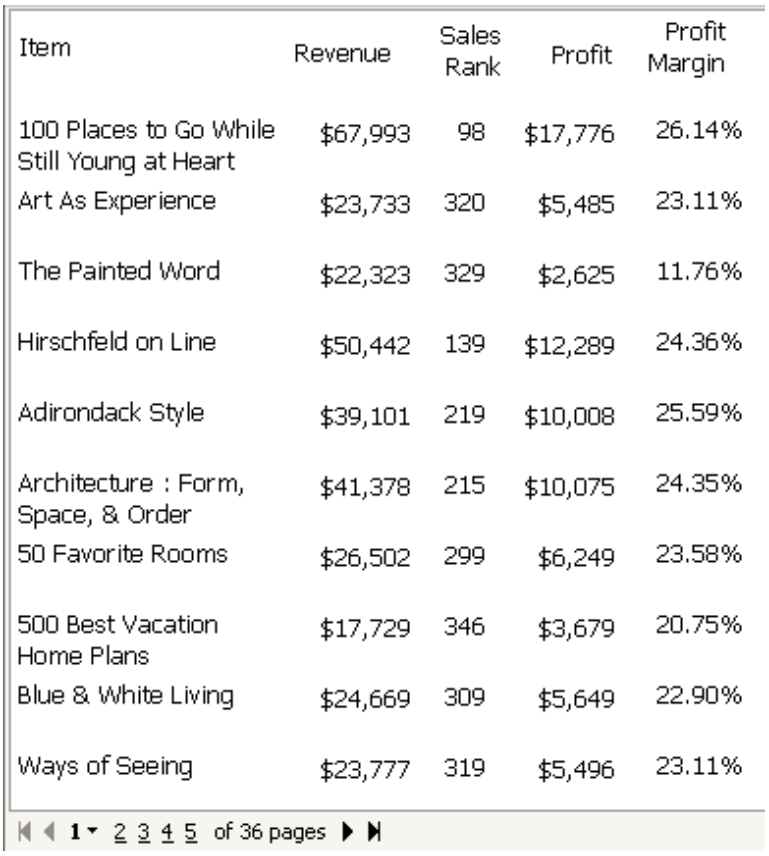
Incremental fetch divides large documents or layouts into pages, thereby loading the data in batches (or blocks) rather than all at the same time. This improves the usability and performance of a large document or layout, by reducing the load and overall memory usage on the web server.

You can define the incremental fetch options in both MicroStrategy Web and in MicroStrategy Developer. Incremental fetch is applied when the document is executed in Editable Mode, Interactive Mode, or Express Mode in MicroStrategy Web. MicroStrategy Developer does not apply incremental fetch to documents.

The blocks of data are defined by the number of objects (the block size) to return at a certain level. If the document or layout is grouped, you can select any group as the level. If it is not, then the block size is applied to the Detail section.

For example, each row in the Detail section of a document contains the Item attribute and several metrics. Incremental fetch is applied, with a block size

of ten. In MicroStrategy Web, only ten rows of items are displayed on a single page, as shown in the document sample below:



Item	Revenue	Sales Rank	Profit	Profit Margin
100 Places to Go While Still Young at Heart	$67,993	98	$17,776	26.14%
Art As Experience	$23,733	320	$5,485	23.11%
The Painted Word	$22,323	329	$2,625	11.76%
Hirschfeld on Line	$50,442	139	$12,289	24.36%
Adirondack Style	$39,101	219	$10,008	25.59%
Architecture : Form, Space, & Order	$41,378	215	$10,075	24.35%
50 Favorite Rooms	$26,502	299	$6,249	23.58%
500 Best Vacation Home Plans	$17,729	346	$3,679	20.75%
Blue & White Living	$24,669	309	$5,649	22.90%
Ways of Seeing	$23,777	319	$5,496	23.11%

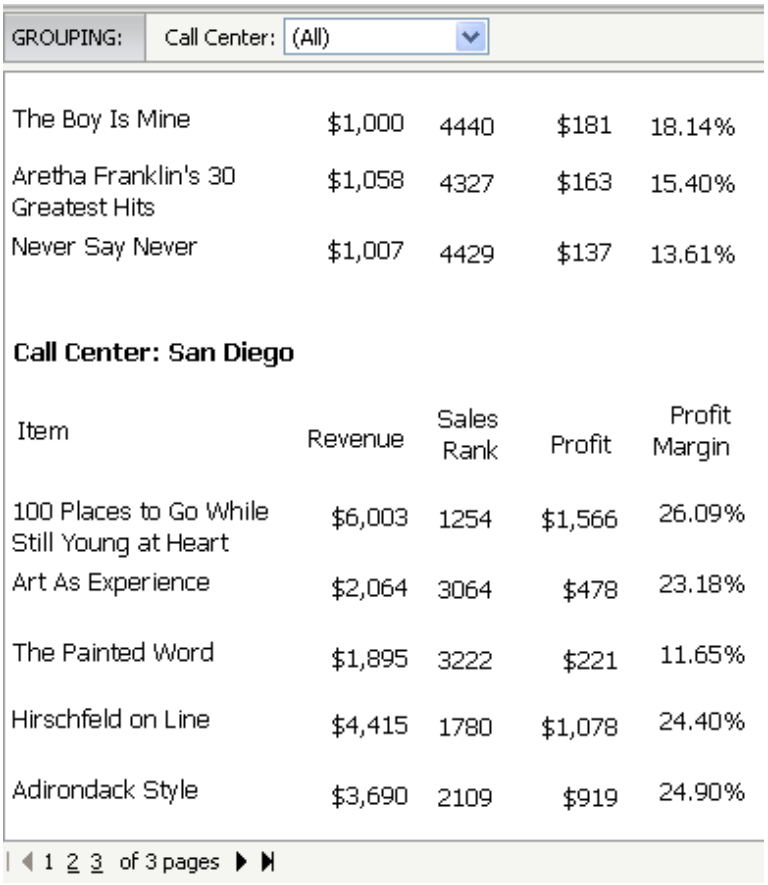
1 2 3 4 5 of 36 pages

The bottom of the document contains page numbers, so that you can navigate to another page to display more information. The document has 36 pages in all.

If the same document is grouped by Call Center, incremental fetch can be applied at the level of Call Center. This time, define the block size as five. Select **All** for the grouping, and then the incremental fetch is employed. Data for five Call Centers is displayed on a single page. The following image shows a portion of the first page of the document, including the end of the first call

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center and the beginning of the next. The document now contains only three pages, not 36.



If the group is displayed as a single element only, that group cannot be used as the fetch level, since the document must be displayed with all the grouping elements. You can still apply incremental fetch to the document, but only to the detail section, not to the group. If the document contains another group, which does allow all elements to be displayed, you can apply incremental fetch using that other group. For more information about grouping options, see *Grouping records in a document, page 388*.

If the document or layout is not grouped, incremental fetch can be applied only to the Detail section.

You can also apply incremental fetch to a specific Grid/Graph. For more information, see *Incremental fetch on Grid/Graphs, page 544*.

For steps to apply incremental fetch to a document in MicroStrategy Developer, see the *MicroStrategy Developer help* (formerly the *MicroStrategy Desktop help*).

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To apply incremental fetch to a document

1. In MicroStrategy Web, open the document in the Document Editor.
2. If the document contains multiple layouts, select the layout to apply incremental fetch to.
3. From the **Tools** menu, choose **Document Properties**. The Document Properties dialog box opens.
4. On the left, under Layout Properties, select **Advanced**.
5. Select the **Enable Incremental Fetch** check box.
6. From the **Fetch Level** drop-down list, select the object to be counted for the incremental fetch level.
   - If the document or layout is grouped, the groups are displayed in the drop-down list. Groups that are displayed as a single element only are not shown on this list.
   - If the document or layout is not grouped or all the groups are displayed as single elements only, the only option is the Detail section.
7. Enter the **Block Size**, which is the number of objects (of the **Fetch Level**) that are returned in each block.
8. Click **OK** to return to the document.

Incremental fetch on Grid/Graphs

Incremental fetch divides large Grid/Graphs into pages, thereby loading the data in batches rather than all at the same time. This improves the usability and performance of a large Grid/Graph, by reducing the load and overall memory usage on the web server. Only a Grid/Graph displayed as a grid can be split into rows or blocks, and therefore incrementally fetched. This includes the grid portion of a Grid/Graph displayed as both a grid and a graph simultaneously.

This setting applies only to the rows, not the columns, of the Grid/Graph.

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The batches of data are defined by the number of rows or blocks to return at a time. For example, a Grid/Graph on a document contains 360 rows. Incremental fetch is applied, with the number of rows per page set to 25. Only 25 rows are displayed on a single page of the Grid/Graph. Users can click the page numbers at the bottom of the screen to display more information. The document is shown below in Interactive Mode in MicroStrategy Web:

Category	Item	Metrics	Revenue
Books	100 Places to Go While Still Young at Heart		$67,993
	Art As Experience		$23,733
	The Painted Word		$22,323
	Hirschfeld on Line		$50,442
	Adirondack Style		$39,101
	Architecture : Form, Space, & Order		$41,378
	50 Favorite Rooms		$26,502
	500 Best Vacation Home Plans		$17,729
	Blue & White Living		$24,669
	Ways of Seeing		$23,777
	Gonzo, the Art		$41,469
	Cabin Fever : Rustic Style Comes Home		$17,571
	American Bungalow Style		$40,985
	Building With Stone		$22,673
	Voyaging Under Power		$19,827
	Working With Emotional Intelligence		$26,733
	Attention to Detail		$24,062
	The 48 Laws of Power		$26,513
	Don't Step in the Leadership		$17,711
	Topgrading		$28,071
	Career Intelligence		$29,257
	Cubicle Warfare		$28,062
	The Wisdom of Teams		$18,668
	The Power to Get in		$26,527
	Don't Sweat the Small Stuff		$22,354

1 2 3 4 5 of 15 pages

You can also apply incremental fetch to the entire document. For more information, see *Introduction, page 539*.

You can define the incremental fetch options for Grid/Graphs in either MicroStrategy Web or in MicroStrategy Developer, but incremental fetch is applied only when the document is executed in Editable Mode, Interactive Mode, or Express Mode in MicroStrategy Web. MicroStrategy Developer does not apply incremental fetch to Grid/Graphs.

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Incremental fetch in repeating document sections

Whether the group and detail sections repeat in a document affects how incremental fetch is applied to Grid/Graphs in that section, as described below:

- If all the elements of a grouping field are displayed simultaneously, the Group Header, Group Footer, Detail Header, and Detail Footer sections repeat, once for each element in the group. Only the first page of data from the Grid/Graph is displayed. Users cannot navigate to another page.
- If only one element is displayed at a time, these sections appear only once. A Grid/Graph placed in one of these document sections does not repeat, and users can navigate to other pages.
- If the document is not grouped, the Detail Header and Detail Footer sections appear only one time. A Grid/Graph placed in one of these document sections does not repeat, and users can navigate to other pages. If the document is not grouped, the Group Header and Group Footer are not displayed.
- Although the Detail section repeats, a Grid/Graph cannot be placed in it, so the Grid/Graph incremental fetch setting does not apply.

For background information on document sections, see *Understanding and working with document sections, page 28*. For steps to group the document, see *Grouping records in a document, page 388*. For steps to display individual grouping elements or all the elements, see *Using page-by on a document, page 418* (page-by interactively displays groups on separate pages).

To apply incremental fetch to a Grid/Graph

1. In MicroStrategy Web, open a document in the Document Editor.
2. Right-click the Grid/Graph to apply incremental fetch to, and select **Properties and Formatting**. The Properties and Formatting dialog box opens.
3. On the left, under Properties, click **Grid**.
4. Select the **Enable Incremental Fetch in Grid** check box.

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5 Select one of the following **Count By** options:

- To divide the Grid/Graph by rows, select **Individual rows**. In the **Maximum number of rows per page** field, type the maximum number of rows to include on each page.
- To divide the Grid/Graph by blocks, select **Blocks**. In the **Blocks per page** field, type the number of blocks to include on each page.

6 Click **OK** to return to the document.

Caching documents

A cache is the stored results of a document query that has already been executed. When the document is executed again, the system can quickly access the cache to display the data, rather than putting a load on the system to re-run the request to the data source.

Enable document caching to generate the document only once—the first time that you execute a document in a specific mode (such as Express Mode or Interactive Mode) in MicroStrategy Web. Subsequent document executions in the same mode use the cache. Disable document caching to submit the document query to your data warehouse every time that you execute the document in a different mode.

You define the document caching options in MicroStrategy Developer, but documents are cached only when they are executed or exported in MicroStrategy Web. MicroStrategy Developer does not cache documents.

The benefits of document caching include:

- Faster single-user response times.
- The ability to support more concurrent users accessing complex documents.
- Lower total memory and CPU consumption for the same workload.

You can use the default project-level behavior instead, which is set in the Project Configuration Editor. For information and instructions, see the *Project Design Guide*.

You can select which formats to cache. Formats include:

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- Excel (when the document is exported to Excel in MicroStrategy Web)
- HTML (when the document is exported to HTML View in MicroStrategy Web)
- PDF (when the document is exported to PDF in MicroStrategy Web)
- XML (when the document's mode is changed, as from Express Mode to Interactive Mode, in MicroStrategy Web)

By default, a cache is not created for every page-by combination that can be run, since that can use much of the memory allocated to caches. For more information, see *Caching and page-by, selectors, and widgets, page 548*.

To enable document caching

1. Open the document in Design View in the Document Editor.
2. From the **Format** menu, select **Document Properties**. The Document Properties dialog box opens.
3. Select **Caching**.
4. Select **Enable document caching**.
5. Select the formats to cache.
6. Choose whether to **Create cache when page-by selections are modified**. If this check box is selected, a new cache is created each time a user selects a different page, chooses a different selector item, or interacts with a widget. For more details on this type of caching, see *Caching and page-by, selectors, and widgets, page 548*.
7. Click **OK** to save your changes.

Caching and page-by, selectors, and widgets

By default, a cache is not created for every page-by combination that can be run, since that can use much of the memory allocated to caches. For example, for a document paged by Region, a separate cache would be created for each region.

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You may want to create a cache for the region that is used most frequently, or for the default region. The **Create cache when page-by selections are modified** setting allows you to do this. When this check box is selected, caches are also created when a different item is chosen in a selector or when a user interacts with a widget. For instructions to page a document, and the effects of paging a document, see *Using page-by on a document, page 418*. For general information about selectors and widgets, including instructions and examples, see the *Dashboards and Widgets Creation Guide*.

To use document caching in this way, you:

1 Enable page-by caching before executing the document.

2 Select the page, item, or widget view that you want to cache.

3 Disable page-by caching.

Detailed instructions follow.

To enable document caching for page-by

Enable document caching

1 Open the document in Design View in the Document Editor.

2 From the **Format** menu, select **Document Properties**. The Document Properties dialog box opens.

3 Select **Caching**.

4 Select **Enable document caching**.

5 Select the formats to cache.

6 Select the **Create cache when page-by selections are modified** check box.

7 Click **OK** to return to the document.

8 Save the document.

Cache the information

9 Open the document in **Interactive** or **Express Mode** in MicroStrategy Web.

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10 Select the page, item, or widget view that you want to cache.

11 Save the document.

Disable page-by caching

12 Open the document in Design View in the Document Editor.

13 From the **Format** menu, select **Document Properties**. The Document Properties dialog box opens.

14 Select **Caching**.

15 Clear the **Create cache when page-by selections are modified** check box.

16 Click **OK** to return to the document.

17 Save the document.

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A

DOCUMENT INTERFACES IN MICROSTRATEGY

Introduction

If you are new to MicroStrategy Report Services, use this appendix to help you become familiar with the Document Editor interface. The Document Editor allows you to create, customize, and save documents to be used across the MicroStrategy platform. The Document Editor opens when you view a document in Design Mode in MicroStrategy Web and Design View in MicroStrategy Developer.

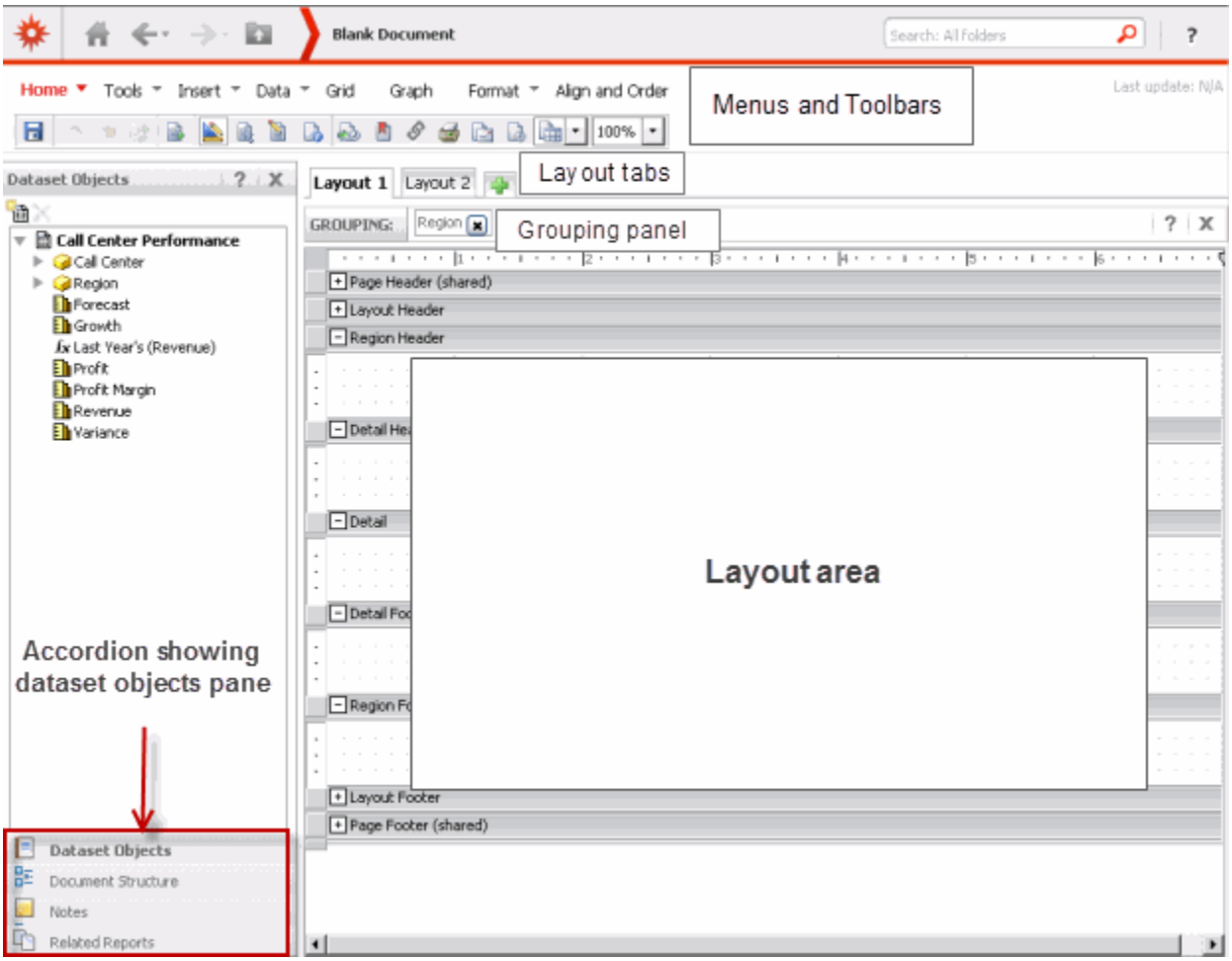
If you are already familiar with MicroStrategy, use this appendix to identify icons and other features you can take advantage of to quickly access commonly used functions.

- For an introduction to the Document Editor in Web, see *Document Editor Layout in MicroStrategy Web, page 552*.
- For an introduction to the Document Editor in Developer, see *Document Editor layout in MicroStrategy Developer, page 573*.

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Document Editor Layout in MicroStrategy Web

The following image shows the Document Editor in MicroStrategy Web, with the sample Call Center Performance report added as the dataset. The image highlights the Document Editor's main sections and toolbars. Steps to complete tasks are available in the *Dashboards and Widgets Creation Guide*. To access the Web Help, click **?** in the top right of the editor.



Each of the major sections of the editor is listed below:

- *Toolbar options, page 553*
- *Layout tabs, page 565*
- *Grouping panel, page 566*
- *Layout area, page 567*
- *Dataset Objects panel, page 568*

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- *Document Structure panel, page 570*
- *Notes panel, page 571*
- *Related Reports panel, page 572*

Toolbar options

You can access document features such as inserting a Grid/Graph or formatting a text field using the toolbar options in the Document Editor. The Document Editor has multiple toolbars you can use to access different document features. Toolbars are mostly divided by workflow—the Insert toolbar, for example, lists the different controls you can insert in the document. You display the toolbar you want to use by clicking on the toolbar's name at the top of the Document Editor. One toolbar is displayed at a time.

Refer to the following sections when searching for specific document features:

- To share and customize the presentation of your document, see *Home toolbar, page 555*.
- To display or hide panes in the Document Editor, see *Tools toolbar, page 556*.
- To insert text fields, images, Grid/Graphs, and other controls into a document, see *Insert toolbar, page 556*.
- To define how values in a Grid/Graph are displayed or apply thresholds to a Grid/Graph or other control, see *Data toolbar, page 559*.
- To format the display of a Grid/Graph in Grid view, see *Grid toolbar, page 560*.
- To format the display of a Grid/Graph in Graph view, see *Graph toolbar, page 562*.
- To format text, numbers, and the colors used in a control, see *Format toolbar, page 563*.
- To reposition and reorder controls, see *Align and Order toolbar, page 565*.

The toolbars available may vary depending on your user privileges and the current display mode of the document (Express, Design, Interactive, Editable, or Flash).

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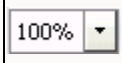
The table below describes features that are included in every toolbar.

Name	Icon	Description
Save		Saves your document.
Undo		The last action you made in the document is undone. This option is available in Design and Editable Modes.
Redo		The last action that was undone is redone. This option is available in Design and Editable Modes.
Apply		Applies the undo/redo changes you have made to the document. After clicking this icon, your changes cannot be undone or redone.
Express		Displays the document in Express Mode, a quick-loading display mode that allows you to view document results, format the look and feel of Grid/Graphs within the document, and manipulate the data in the Grid/Graphs. Express Mode provides better performance than all other modes in most situations.
Design		Displays the document in Design Mode, a high-level view where you can insert and format controls in the document. Design Mode does not display document results and so provides better performance than Editable Mode.
Interactive		Displays the document in Interactive Mode, a dynamic display of document results that allows you to view report results within the document, format the look and feel of controls within the document, and manipulate the data in the reports.
Editable		Displays the document in Editable Mode, a detail-level view where you can insert and format controls in the document. Editable Mode displays all document results.
Flash		Displays the document in Flash Mode, a dynamic, Flash-based display of document results. Some widgets will display differently in Flash Mode than in other display modes.

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Home toolbar

You can share and customize the presentation of your document with the options listed in the Home toolbar. The Home toolbar is available in all modes.

Name	Icon	Description
Add to History List		Adds the document to your History List, which is a folder where you can save report and document results. Document results in the History List do not include the latest data unless you periodically save the document to your History List or create a subscription.
Personal view		Saves a custom view of the document, useful for giving users personalized views of the same document. Personal views save all actions made since opening the document, including sorting, pivoting, and filtering.
Share		Shares your document in an email, as a link, or as an embeddable HTML iFrame. You can also define which users or groups can see and edit the document.
Print		Exports the document to PDF for printing.
Send now		Emails the document to stored email addresses. Email addresses are stored in your project's preferences.
Schedule delivery to History List		Creates a subscription for the document that sends document results to the History List on a specific schedule.
Export		Exports your document to Excel, PDF, HTML, or Flash. Use the drop-down list to select the appropriate export format.
Zoom		Expands or shrinks the display of the document. Use the drop-down list to select the zoom percentage. The default value is 100%.
Full Screen		Expands the layout area to fill the entire screen. This option is available in Express, Interactive, Editable, and Flash Modes.

Tools toolbar

You can display or hide panels in the Document Editor with the options listed in the Tools toolbar. This toolbar is available in Design, Interactive, Editable, and Flash Modes.

Name	Icon	Description
Dataset Objects		Displays or hides the Dataset Objects panel. This option is available in Design and Editable Modes. For information on using the Dataset Objects panel, see *Dataset Objects panel, page 568*
Document Structure		Displays or hides the Document Structure panel. This option is available in Design and Editable Modes. For information on using the Document Structure panel, see *Document Structure panel, page 570*
Notes		Displays or hides the Notes panel. For information on using the Notes panel, see *Notes panel, page 571*.
Related Reports		Displays or hides the Related Reports panel. For information on using the Related Report panel, see *Related Reports panel, page 572*.
Grouping		Displays or hides the Grouping panel. For information on using the Grouping panel, see *Grouping panel, page 566*.
Alignment Grid		Displays or hides a grid of lines and dots in the layout area. In Editable Mode, display of the alignment grid also displays the title bars for separate document sections. This option is available in Design and Editable Modes.
Rulers		Displays or hides a ruler at the top of the layout area. This option is available in Design Mode.

Insert toolbar

You can insert text fields, images, lines, panel stacks, and other controls in a document with the options listed in the Insert toolbar. Select a control from the Insert toolbar or menu, then click an area in the document to place the control.

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This toolbar is available in Design and Editable Modes

Name	Icon	Description
Select Controls		Allows you to select controls instead of inserting them.
Lock Control		Allows you to insert a control that cannot be resized or moved. Select this icon before placing the control you want to insert.
Text		Inserts a rectangular field where you can type and format text.
Image		Inserts an image into the document. The image must be stored in a location that is accessible by the Intelligence Server, the designers of the document, and the document's end-users. For guidelines on using accessible images, see *Ensuring access to images, page 154*.
Line		Inserts a line into the document.
Rectangle or rounded rectangle		Inserts a rectangle into the document. Use the drop-down list to select the type of rectangle.
Report		Adds any report in your project as a Grid/Graph to the document. If the report is not already a dataset for the document, the report is added as a dataset as well. A Grid/Graph acts as a standard MicroStrategy report and displays data in Grid, Graph, or Grid and Graph view. To format and manipulate the data in a Grid/Graph, see *Chapter 3, Displaying Reports in Documents: Grid/Graphs*.
Grid		Inserts a Grid/Graph placeholder that displays as a grid. A Grid/Graph placeholder is an empty Grid/Graph, without a dataset to populate the Grid/Graph with data. For more information, see *Adding an empty Grid/Graph, page 178*.
Graph		Inserts a Grid/Graph placeholder that displays as a graph. A Grid/Graph placeholder is an empty Grid/Graph, without a dataset to populate the Grid/Graph with data. Use the drop-down list to select the graph style. For more information, see *Adding an empty Grid/Graph, page 178*.
Panel Stack		Inserts a panel stack. A panel is an object in a dashboard used to group related data. Panel stacks contain one or more panels, where only one panel is displayed within the panel stack at a time. When you add a panel stack to a document, one panel is automatically added to the panel stack. For background information on panel stacks, including instructions and examples, see the *Dashboards and Widgets Creation Guide*.

Name	Icon	Description
Filter Panel		Inserts a special panel stack, where all panels in the stack must display selectors. For background information on panel stacks and selectors, including instructions and examples, see the *Dashboards and Widgets Creation Guide*.
Table Control (Mobile)		Inserts a form you can use to prompt users for information in a document displayed on a mobile device. You can add multiple text fields for users to fill out and group the text fields by category. For background information on mobile tables, see the *MicroStrategy Mobile Design and Administration Guide*.
HTML Container		Inserts an empty HTML container, which is used to display Flash and AJAX content in the document. The content displays as though it is in an HTML browser within the document. This allows a document to display Flash information when the document itself is not in Flash Mode. See *Displaying real-time web and other HTML content: HTML containers, page 143*.
Selectors		Inserts a selector, which allows a user to flip through the panels in a panel stack or display different attribute elements or metrics in a Grid/Graph. Use the drop-down list to choose the type of selector. Selectors are interactive in Interactive, Flash, and Editable Modes. For background information on selectors, including instructions and examples, see the *Dashboards and Widgets Creation Guide*.
Buttons		Inserts a button, which is a clickable field that redirects the user to a report, document, or outside link. Use the drop-down list to select the button type. For steps to link to a report, dashboard, or URL from a button, see *Linking from a button, page 437*.
Widgets		Inserts a widget, which is a highly visual, Flash-based display of the results of a dataset. Widgets are often interactive. Use the drop-down list to choose the type of widget you want to use. For background information on widgets, including instructions and examples, see the *Dashboards and Widgets Creation Guide*.
Layout		Inserts a layout, which is like adding a document within your document. Layouts can have different primary datasets and document settings. For background information on layouts, see the *Dashboards and Widgets Creation Guide*.
Document		Inserts a previously-saved document as an additional layout to your document. For background information on layouts, see the *Dashboards and Widgets Creation Guide*.

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Data toolbar

You can conditionally format your data or control the display of values in a Grid/Graph with the options listed in the Data toolbar. This toolbar is available in Design, Interactive, Editable, and Flash Modes.

Name	Icon	Description
View: Grid		Displays a selected Grid/Graph in Grid view.
View: Graph		Displays a selected Grid/Graph in Graph view.
View: Grid and Graph		Displays a selected Grid/Graph in Grid and Graph view.
Flash		In Flash Mode, this icon toggles the display of a custom Flash-based widget as a grid, graph, or widget. Available if your Web administrator has enabled the Custom Visualizations Editor. In all other modes, this icon indicates that the selected control is a widget. Since widgets appear as Grid/Graphs in all modes other than Flash and Interactive, this icon is useful for determining whether a Grid/Graph is a widget without having to switch to Flash Mode.
AJAX		In Flash Mode, this icon toggles the display of a custom DHTML-based widget as a grid, graph, or widget while in Flash Mode. Available if your Web administrator has enabled the Custom Visualizations Editor. In all other modes, this icon indicates that the selected control is a DHTML widget. Since widgets appear as Grid/Graphs in all modes other than Flash and Interactive, this icon is useful for determining whether a Grid/Graph is a widget without having to switch to Flash Mode.
Swap rows and columns		Switches the data displayed in the rows with the data in the columns of a selected grid.
Insert new metric		Creates a new metric to add to a grid or dataset.
Rename/Edit Objects		Renames or edits objects.
Toggle Attribute Forms		Displays or hides all attribute forms for an attribute in a Grid/Graph. Available if the attribute has multiple attribute forms that can be displayed.

Name	Icon	Description
Show Totals		Displays subtotals and grand totals on a Grid/Graph.
Edit Totals		Opens the Totals Editor, where you can define the subtotals and grand totals used on a Grid/Graph, such as Sum, Average, and Count. You can define how and where subtotals are displayed.
Quick Thresholds		Applies a predefined threshold to a metric in a grid. Use the drop-down list to select the threshold type. For background information on thresholds, including instructions and examples, see *Formatting conditional data in documents, page 317*
Toggle Thresholds		Displays or hides the thresholds in a grid. Available if a threshold has been defined on the grid. For background information on thresholds, see *Formatting conditional data in documents, page 317*.
Visual Conditional Formatting		Opens the Visual Conditional Formatting Editor, where you can create a simple threshold based on a single metric. For steps to create a simple threshold, see *Creating a conditional format or threshold based on a single metric, page 326*.
Advanced Conditional Formatting		Opens the Advanced Conditional Formatting Editor, where you can create thresholds which can be based on multiple metrics and have more complex expressions than a simple threshold. For steps to create an advanced threshold, see *Creating a conditional format or threshold based on multiple metrics or attributes, page 329*.
Toggle Conditional Formatting		Displays or hides thresholds defined using the Advanced Conditional Formatting Editor on the selected control. For this icon to be available, the **Allow user to toggle conditional formatting on and off** check box in the Advanced Conditional Formatting Editor must be selected while creating the threshold.
Sort		Defines sorting rules for the selected control.
Edit View Filter		Defines conditions for a view filter to exclude data from a grid or graph. For background information on view filters and steps to filter data, see *Using view filters on Grid/Graphs, page 219*.
Hide Nulls/Zeros		Displays or hides null or zero values in a grid. For steps, see *Determining how null and zero metric values are displayed, page 253*.

Grid toolbar

You can format the display of a Grid/Graph in Grid view with features listed in the Grid toolbar. The options available may vary depending on the display

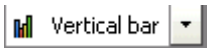
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mode used to view the document. This toolbar is available in Design and Editable Modes.

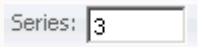
Name	Icon	Description
View: Grid		Displays a selected Grid/Graph in Grid view.
View: Graph		Displays a selected Grid/Graph in Graph view.
View: Grid and Graph		Displays a selected Grid/Graph in Grid and Graph view.
Autostyles		Applies a predefined autostyle to a selected grid. Use the drop-down list to select the autostyle. For background information and instructions on how to create and save an autostyle, see *Formatting using predefined formats (Autostyles), page 268*.
Banding		Displays alternating rows of data in a Grid/Graph with alternating background colors to make rows easier to read.
Outline		Organizes the attributes in a Grid/Graph in a hierarchical display.
Merge Column Headers		Combines columns that are next to each other and have the same header into a single column.
Merge Row Headers		Combines rows that are next to each other and have the same header into a single column.
Auto Fit to Contents		Expands or shrinks the width of each column in a grid to fit the text in the column.
Auto Fit to Window		Expands the width of columns in a grid to fit the window. This option does not reduce the size of columns if the window is not wide enough to fit all text in them.
Lock Row Headers		Always displays row headers to the left of the selected grid when a user scrolls horizontally in the grid.
Lock Column Headers		Always displays column headers at the top of the selected grid when a user scrolls vertically in the grid.

Graph toolbar

You can format the display of a Grid/Graph in graph view with the options listed in the Graph toolbar. The options available may vary depending on the display mode used to view the document. This toolbar is available in Design and Editable Modes.

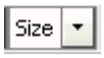
Name	Icon	Description
View: Grid		Displays a selected Grid/Graph in Grid view.
View: Graph		Displays a selected Grid/Graph in Graph view.
View: Grid and Graph		Displays a selected Grid/Graph in Grid and Graph view.
Auto Arrange		Any formatting changes you have applied are undone and the graph reverts to its default formatting. This icon is available if the document was created based off of a graph report with the Manual Layout option enabled. The Manual Layout option is located under Graph Preferences for a report in MicroStrategy Developer.
Graph Type		Defines the graph type of a Grid/Graph in Graph view, such as Vertical Bar or Horizontal Bar. The graph type defines the shape used to represent data values. Use the drop-down list to select the graph type.
Graph Subtype		Defines the graph subtype of a Grid/Graph in Graph view, such as Clustered or Absolute. The graph subtype formats the axes and display of categories and series. Use the drop-down list to select the graph subtype.
Legend		Displays or hides the legend for a Grid/Graph in Graph view.
Data Values		Displays or hides data values near data markers for a Grid/Graph in Graph view.
Series by Row		Displays objects on the Grid/Graph's rows as the series of the graph.

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Name	Icon	Description
Series by Column		Displays objects on the Grid/Graph's columns as the series of the graph.
Categories		Sets a maximum for the number of categories in a graph based on the value typed into the Categories field. The limit must be applied with the **Apply** icon before the graph is updated. The default value is 6.
Series		Sets a maximum for the number of series in a graph based on the value typed into the Series field. The limit must be applied with the **Apply** icon before the graph is updated. The default value is 5.
Apply		Applies the limits defined in the Categories and Series fields to the graph.

Format toolbar

You can access common styling options from the Format toolbar. Many of these features are not available outside of Editable Mode. This toolbar is available in Design and Editable Modes.

Name	Icon	Description
The name of the object you want to format		The object you want to format. Use the drop-down menu to select the correct object. If additional drop-down lists appear, you may select objects, shapes, and text within the initial object. You can then select the appropriate options to format the object, as described below.
Font		Defines the font of the selected text. Use the drop-down menu to change the font.
Font Size		Defines the font size of the selected text. Use the drop-down menu to change the font size.
Bold		Bolds the selected text.
Italic		Italicizes the selected text.
Underline		Underlines the selected text.

Name	Icon	Description
Left		Left-aligns the selected text.
Center		Center-aligns the selected text.
Right		Right-aligns the selected text.
Justify		Justifies the selected text so that each line of text occupies the same width.
Currency Style		Displays the selected number with a US dollar sign in front and two decimal places.
Percent Style		Displays the selected number as a percentage, with no decimal places.
Comma Style		Displays the selected number with a comma every three digits and no decimal places.
Increase Decimal		Increases the number of digits that display after the decimal point.
Decrease Decimal		Decreases the number of digits that display after the decimal point.
Fill		Sets the background color of the control. Use the drop-down list to select from a color palette, define a new color, or create a gradient.
Line		Sets the color of a line or border. Use the drop-down list to select from a color palette or define a new color.
Text		Sets the color of text. Use the drop-down list to select from a color palette or define a new color.
Borders		Defines the borders that display around a control. Use the drop-down list to select the borders that display.
Border Style		Defines the line style of the selected border. Use the drop-down list to select the line style.

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Align and Order toolbar

You can adjust the placement of controls with respect to other controls and the document itself with the options listed in the Align and Order toolbar. This toolbar is available in Design and Editable Modes.

Name	Icon	Description
Align Left		Moves the selected controls to the left edge of the document. The controls' vertical placement does not change. At least two controls must be selected.
Align Center		Moves the selected controls to the horizontal center of the document. The controls' vertical placement does not change. At least two controls must be selected.
Align Right		Moves the selected controls to the right edge of the document. The controls' vertical placement does not change. At least two controls must be selected.
Align Top		Moves the selected controls to the top of the document. The controls' horizontal placement does not change. At least two controls must be selected.
Align Middle		Moves the selected controls to the vertical center of the document. The controls' horizontal placement does not change. At least two controls must be selected.
Align Bottom		Moves the selected controls to the bottom of the document. The controls' horizontal placement does not change. At least two controls must be selected.
Send to Back		Moves the control behind all other controls, so part or all of the control does not display if another control covers it.
Bring to Front		Moves the control in front of all other controls, so the entire control always displays even when other controls are placed in the same area.
Send Backward		Moves the control behind another control it overlaps.
Bring Forward		Moves the control in front of another control that overlaps it.

Layout tabs

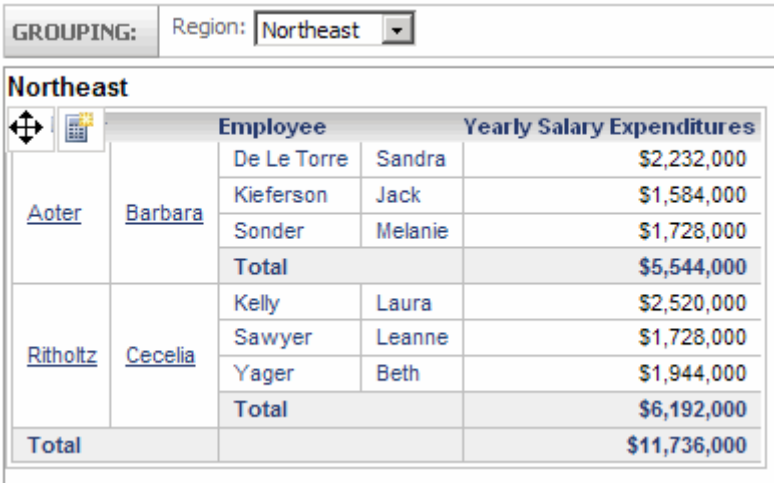
If the document contains multiple layouts, a tab for each layout is displayed at the top of the document. Use the tabs to switch between layouts. Each

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layout acts as a separate document, with its own grouping, page setup, options, and so on. When the document is exported in PDF format, all layouts in the document are included in a single PDF file. For more information, see *Creating multi-layout documents, page 512*.

Grouping panel

You can group information in a document using the Grouping panel, located above the Layout area in the Document Editor interface.



Grouping records together helps users who read the document to understand the data better. Grouping the data sets up a type of hierarchy within the document, and an inherent or implied sort order for the data. The data is first sorted by the leftmost field in the Grouping panel, then by the next field, and so on. To reorder the grouping, you can rearrange the items in the Grouping panel.

To display the grouping panel, select **Grouping** from the **Tools** menu.

To add a group, drag and drop any attribute, consolidation, or custom group from the Dataset Objects panel onto the Grouping panel. This adds a corresponding pair of header and footer sections to the Layout area. For background information on grouping, including examples, steps to change the grouping order in a document, showing totals for a group, and so on, see *Chapter 5, Grouping and Sorting Records in a Document*.

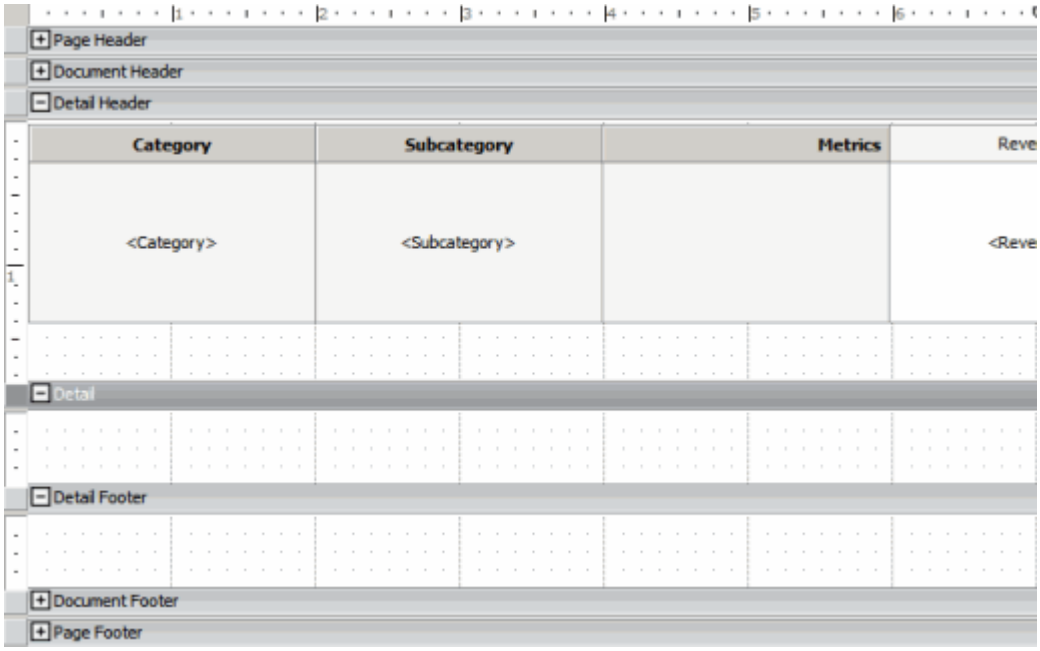
When a user views a grouped document, drop-down lists are displayed to allow the user to select which elements, or subsets of data, to display. You can select which attribute forms are displayed in the list, and the order of the forms. To do this, click the group in the Grouping panel, point to **Attribute**

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Forms, and select **Custom**. The Attribute Forms dialog box opens, displaying a list of available forms to choose from. Select the attribute form you want to use and click **OK**.

Layout area

The Layout area provides the framework for precisely placing where controls are displayed when the document is viewed in different display modes, printed, exported, emailed, and so on.



To add data, drag objects from the Dataset Objects pane and drop them into this area. Depending on the document section that you place controls in, the controls print or display differently.

- Page Header/Footer: prints at the top and bottom of each page.
- Document Header/Footer: prints at the beginning/end of the document.
- Group Header/Footer: for each field in the Grouping panel, prints before and after the Detail Header/Footer.
- Detail Header/Footer: prints immediately before and after each group of Detail sections.
- Detail: repeats for each row in the dataset.

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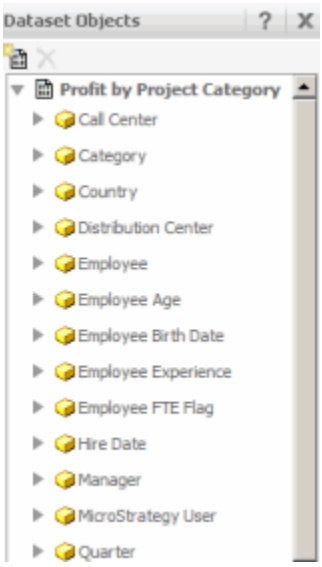
For more information on how data is displayed in each section and steps to hide or change the display of a section, see *Understanding and working with document sections, page 28*

Expand or collapse a section by clicking the plus and minus signs next to its name. Expanding and collapsing a section in this way does not affect the section size in the PDF or whether controls display when the document is viewed as a PDF. It only provides you with more room on the Layout area to design the document.

The Layout area contains an alignment grid to help you control the placement and alignment of controls. You can align the controls automatically with reference to the grid. To toggle the display of the alignment grid, select **Alignment Grid** from the **Tools** menu.

Dataset Objects panel

The Dataset Objects panel contains all of the items that can be placed on the document, organized by dataset.



These items include attributes, metrics, custom groups, and consolidations from any dataset that has been added to the document, regardless of whether or not the items are displayed on the report. For example, if a metric is part of the report's dataset but not displayed on the grid, that metric is still listed as a dataset object.

Standard MicroStrategy reports, freeform SQL reports, Query Builder reports, MDX cube reports, and reports created using the Data Import

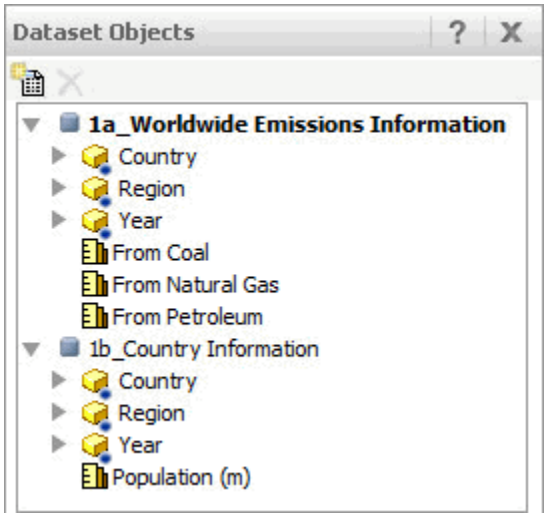
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feature can be used as datasets in documents. You can also directly import data into the document, for example, from an Excel file or a database; the imported data is used as a dataset.

You can link imported data to project attributes. For steps, see the *Dashboards and Widgets Creation Guide*.

To display the Dataset Objects pane, click **Dataset Objects** at the bottom of the accordion pane. If the accordion pane is not displayed, select  from the **Tools** toolbar or **Dataset Objects** from the **Tools** menu.

The Dataset Objects panel first displays the name of each dataset in the document, then lists the objects used in it. If multiple datasets are included on the document, the name of the grouping and sorting dataset is displayed with bold text. Any attribute used in multiple imported datasets is displayed with a blue indicator. In the example below, Worldwide Emissions Information is the grouping and sorting dataset (indicated by the bolded dataset name), and the Country, Region, and Year attributes are used in both imported datasets (designated by the blue indicator). For more information about datasets in a document, see *Using datasets in documents, page 45*.



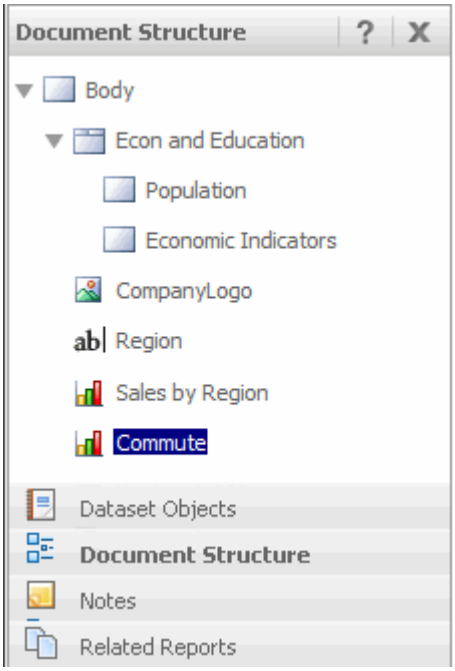
To place an object on a document, drag it from the Dataset Objects panel and drop it onto the Layout area. This creates a text field on the Layout area. For more information on creating text fields, see *Adding text and data to a document: Text fields, page 81*.

To place a dataset on a document, drag and drop a dataset name from the Dataset Objects panel to the Layout area. This creates a Grid/Graph. For more information on Grid/Graphs, see *Chapter 3, Displaying Reports in Documents: Grid/Graphs*.

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Document Structure panel

The Document Structure panel displays the sections and controls in a document as a hierarchical list.



Each entry in the panel corresponds to an item in the Layout area on the right. You can select an object in the Layout area by selecting the name of the object in the Document Structure panel. Use the Document Structure panel to identify and select specific controls in a document that are hidden underneath other controls in the layout area or are difficult to distinguish from other controls.

To display the Document Structure panel, click **Document Structure** at the bottom of the accordion pane. If the accordion pane is not displayed, select **Document Structure** from the **Tools** menu. Note that the Document Structure panel is available only in Design and Editable Modes.

You can expand the name of a document section or panel stack in the Document Structure panel to display the name of each object in the document section or panel stack. For example, in the document represented in the image above, the panel stack Econ and Education contains two panels, Population and Economic Indicators. The document contains a text field (listed as Region) and image (listed as CompanyLogo), as well as two graphs, named Sales By Region and Commute.

A good practice is to name key controls in your document so that they are easily identified in the Document Structure pane. You can then select the

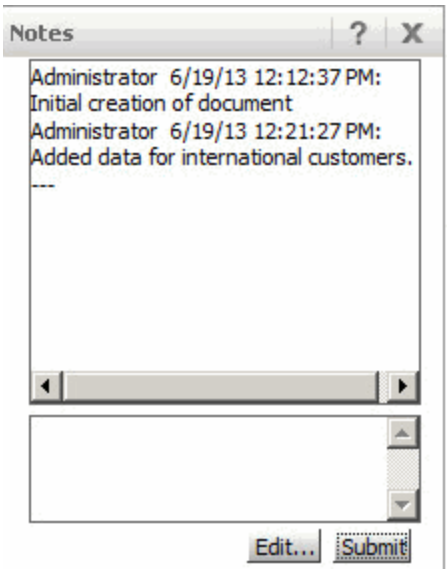
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control's name in the Document Structure panel and perform any operations you want, just as you would if you had selected the control in the layout area.

To name a control, right-click the control and select **Properties and Formatting**. Under **General**, type the name you want in the **Name** field and click **OK**.

Notes panel

The Notes panel displays the notes or comments added to the document, and allows you to add your own notes.



Use this area to communicate with other users about the document. The notes can include details about the document, information on how it was created, reasons to use it, queries about the data displayed, a back-and-forth conversation about designing the document, or anything useful to you and other users.

The Notes panel contains:

- A display of all the notes that have been added to the document. You must have the **View Notes** privilege to see any notes that have been added to the document.
- A text field to type new notes. Click **Submit** to add the new note. You must have the **Add Notes** privilege to add new notes, but you do not need write access control on the document.

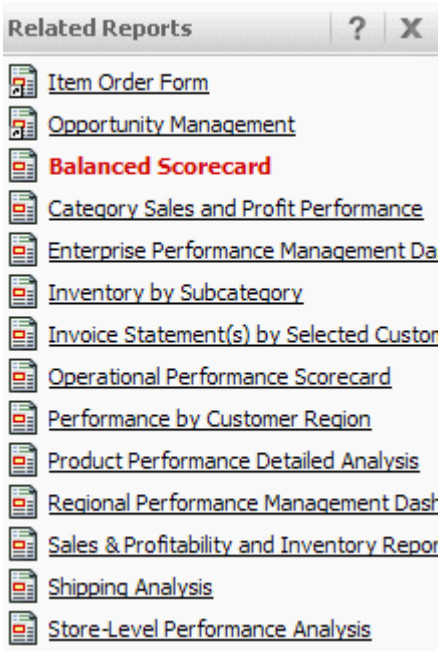
  The **Submit** button becomes available once you type text.

To display the Notes pane, click **Notes** at the bottom of the accordion pane. If the accordion pane is not displayed, select **Notes** from the **Tools** menu.

For steps to add and edit notes, see the *Dashboards and Widgets Creation Guide*.

Related Reports panel

The Related Reports panel displays links to documents, reports, and Intelligent Cubes that are saved in the same folder as the document you are currently viewing. You can click a link to open the corresponding report or document.

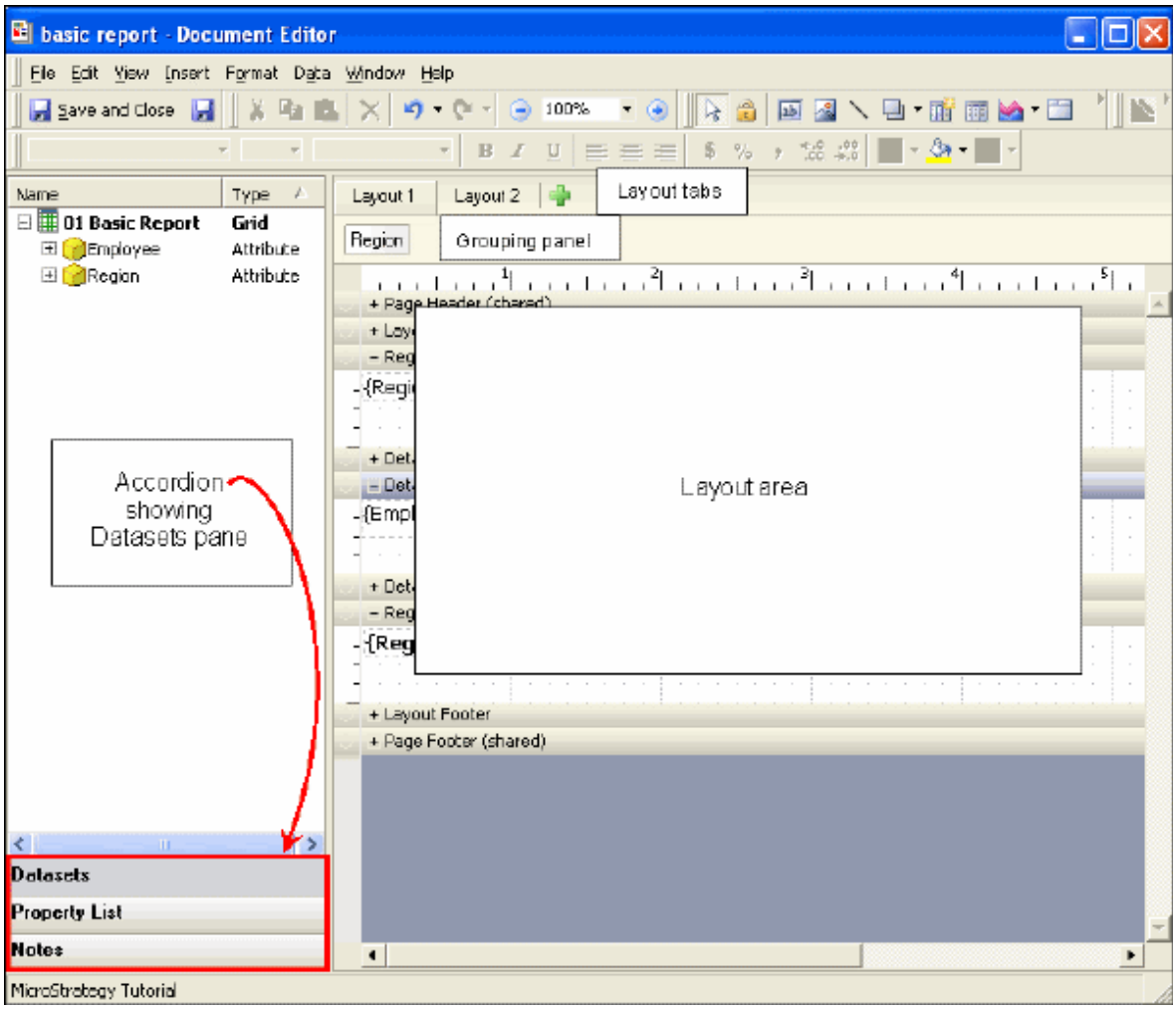


To display the Related Reports pane, click **Related Reports** at the bottom of the accordion pane. If the accordion pane is not displayed, select **Related Reports** from the **Tools** menu.

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Document Editor layout in MicroStrategy Developer

The following image shows the Document Editor in MicroStrategy Developer, with the sample Basic Report added as the dataset. The image highlights the Document Editor's main sections and toolbars. More information about the editor is available in the *MicroStrategy Developer help* (formerly the *MicroStrategy Desktop help*). To access the Developer Help, press **F1** or click **Help** when using the editor.



The Document Editor consists of the following sections, as shown above:

- Menu bar
- Toolbars (position varies according to which toolbars are currently enabled)

- Layout tabs (shaded area below the toolbars), which are displayed when the document contains multiple layouts
- Grouping panel (shaded area directly above the Layout area)
- Layout area (middle)

The accordion pane at the left of the interface displays the Datasets, the Property List, or Notes. Switch between them by clicking the appropriate name at the bottom of the pane.

- Datasets, which contains the datasets selected for the document
- Property List, which displays the formatting settings of the object selected on the layout
- Notes, which displays the notes or comments added to the document

Each of the major sections of the editor is discussed below. For details about the other sections, see the *MicroStrategy Developer help* (formerly the *MicroStrategy Desktop help*).

Controls toolbar

A control is any selectable item in the document's Layout area. This can be a text field, line, rectangle, image, panel stack, selector, HTML container, or Grid/Graph object. For instance, dragging and dropping a dataset object onto the Layout area creates a control. If the dragged object is a dataset, a Grid/Graph is created; otherwise, a text field is added to the Layout area.

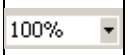
Use the Controls toolbar to insert new controls into the document.

Use the **Lock** button to keep the currently selected control button turned on so that you can insert multiple controls until you unlock it. For example, you can insert three lines without needing to click the **Line** button three times. To do this, click the **Line** button, click **Lock**, then click in the Layout area three times to create three lines. To turn off the lock, click the **Lock** button again.

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Toolbar icons

From the Document Editor toolbars, you can perform the following:

Name	Icon	Description
Save		Saves the document.
Cut		Cuts the currently selected objects. Use this to move or remove controls.
Copy		Copies the currently selected objects. Use this to duplicate controls.
Paste		Pastes whatever you have cut or copied. Use this to move or duplicate controls.
Delete		Deletes the currently selected object.
Undo		The last action performed is undone.
Redo		An action that was undone is redone.
Zoom Out		Zooms out the view to see more of the document.
Zoom Percentage		Sets the zoom percentage.
Zoom In		Zooms in the view to focus on the details of the document.
Select Controls		Allows you to select existing controls rather than insert new controls. After you insert a new control, the Select Controls icon is enabled, unless Lock has been activated.
Lock		Allows you to add the same type of control repeatedly. It keeps the currently selected control button (Text Field, Image, and so on) turned on so you can insert multiple controls. Click Lock again to turn off this feature.
Text		Inserts a text field into the document. Text fields displays text such as data from the datasets, static text for labels, and information about the document or dataset. For more information, see *Adding text and data to a document: Text fields, page 81*.

Name	Icon	Description
Image		Inserts an image into the document. You are prompted for the file location of the image. For requirements to ensure that the image is available when it is needed, see *Inserting images in a document, page 152*.
Line		Inserts a line into the document. For information, see *Adding shapes and lines to a document, page 150*.
Rectangle		Inserts a rectangle into the document. Use the drop-down list to select either Rectangle (with square corners) or Rounded Rectangle (with round corners). Once you select either shape, if you click the icon again, that same shape is added to the document. For more information, see *Adding shapes and lines to a document, page 150*.
Report		Adds a new dataset and a Grid/Graph to the document at the same time. A Grid/Graph acts as a standard MicroStrategy report. For more information, see *Adding a Grid/Graph and a new dataset simultaneously, page 177*.
Grid		Inserts a Grid/Graph placeholder that displays as a grid. A Grid/Graph placeholder is an empty Grid/Graph, without a dataset to populate the Grid/Graph with data. For more information, see *Adding an empty Grid/Graph, page 178*.
Graph		Inserts a Grid/Graph placeholder that displays as a graph. A Grid/Graph placeholder is an empty Grid/Graph, without a dataset to populate the Grid/Graph with data. Use the drop-down list to select the graph style. For more information, see *Adding an empty Grid/Graph, page 178*.
Panel Stack		Inserts a panel stack. A panel is an object in a dashboard used to group related data. Panel stacks contain one or more panels, where only one panel is displayed within the panel stack at a time. When you add a panel stack to a document, one panel is automatically added to the panel stack. For background information on panel stacks, including instructions and examples, see the *Dashboards and Widgets Creation Guide*.
HTML Container		Inserts an empty HTML container, which is used to display Flash and AJAX content in the document. When viewed in MicroStrategy Web, this content displays as though it is in an HTML browser within the document. This allows a document to display Flash information when the document itself is not in Flash Mode. For more information, see *Displaying real-time web and other HTML content: HTML containers, page 143*.
Selector		Inserts a selector, which allows a user, in Interactive Mode, Editable Mode, and Flash Mode in MicroStrategy Web, to flip through the panels in a panel stack or display different attribute elements or metrics in a Grid/Graph. Use the drop-down list to select the type of selector. For background information on selectors, including instructions and examples, see the *Dashboards and Widgets Creation Guide*.
Design View		Switches the document to Design View so you can edit the document. (Disabled in Design View)

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Name	Icon	Description
PDF View		Switches the document to PDF View, which displays the content of the document.
HTML View		Switches to HTML View, which displays a preview of the document as it will appear in MicroStrategy Web. If the icon is disabled, HTML View is not available for the document. You can enable it; see *Selecting available export formats, page 378*.
Flash View		Switches to Flash View, which displays a preview of the document as it will appear in Flash Mode in MicroStrategy Web. If the icon is disabled, Flash View is not available for the document. You can enable it; see *Selecting available export formats, page 378*.
Toggle Conditional Formatting		Shows or hides conditional formatting on the document. For more information on conditional formatting, see *Formatting conditional data in documents, page 317*. This icon can be disabled, to prevent users from toggling conditional formatting off and on. Disabling it can be useful if users should not see certain sections of the document that are displayed or hidden based on conditional formatting. If desired, you can enable it. For instructions, see *Formatting conditional data in documents, page 317*.
Grouping		Displays or hides the Grouping panel, which shows the fields used to group the document. For more information on the Grouping panel, see *Grouping panel, page 578*. For more information on grouping, see *Grouping records in a document, page 388*.
Datasets		Displays the Datasets pane containing the objects that can be placed in the document. For more information, see *Datasets pane, page 579*.
Property List		Displays the Property List, which displays the formatting settings of the control selected in the Layout area. For more information, see *Property List, page 580*.
Notes		Displays the notes or comments added to the document. For more information, see *Notes, page 582*.
Ruler		Displays the ruler to help you position controls.
Alignment Grid		Displays the alignment grid, which helps you control the placement and alignment of controls.

Layout tabs

If the document contains multiple layouts, a tab for each layout is displayed above the Grouping panel. Use the tabs to switch between layouts. Each

layout functions as a separate document, with its own grouping, page setup, and so on, but the layouts are generated into a single PDF document. For more information, see *Creating multi-layout documents, page 512*.

Grouping panel

The Grouping panel lets you group information in the document in a hierarchical structure. To add a group, drag and drop any attribute, consolidation, or custom group from the Datasets pane onto the Grouping panel. This adds a corresponding pair of sections to the Layout area.

To display the Grouping panel, select **Grouping** from the **View** menu.

For more information about grouping documents, see *Grouping records in a document, page 388*.

Layout area

The Layout area provides the framework for precisely controlling the display section of the fields when the document is viewed as a PDF or in MicroStrategy Web. To add data, drag objects from the Datasets pane and drop them into this area. Depending on the document section that you place controls in, the controls print or display differently. For more information about each of these sections, see *Understanding and working with document sections, page 28*.

- Page Header/Footer: prints at the top and bottom of each page.
- Document Header/Footer: prints at the beginning/end of the document.
- Group Header/Footer: for each field in the Grouping panel, prints before and after the Detail Header/Footer.
- Detail Header/Footer: prints immediately before and after each group of Detail sections.
- Detail: repeats for each row in the dataset.

You can expand and collapse a section by clicking the plus and minus signs next to its name. Expanding and collapsing a section in this way does not affect the section size in the PDF or whether controls display when the document is viewed as a PDF. It only provides you with more room on the Layout area to design the document.

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By default, all sections are displayed in all views (Design View, PDF View, and Express Modes in MicroStrategy Web). You can select which sections to hide or display in various views. For more information, see *Hiding or displaying sections for a finished document, page 299*.

Clicking and dragging the lower boundary of the section in the Layout area increases the size of the section in both the Design View and PDF View. For more information on changing the section size, see *Changing the size of a section, page 306*.

If your layout expands past the width of a single page, a dotted line is displayed to show the page break.

- The Layout area contains an alignment grid to help you control the placement and alignment of controls.
- You can align the controls automatically with reference to the grid.
- You can change the settings of the grid, including scale, density, and selection behavior (whether you need to fully enclose or only touch a control to include it in a selection box). For detailed instructions, see the *MicroStrategy Developer help* (formerly the *MicroStrategy Desktop help*).

Datasets pane

This section displays all of the datasets used in the document. It lists all attributes, metrics, custom groups, and consolidations in the existing MicroStrategy report, regardless of whether or not they are displayed on the report. For example, if the Report Objects contains a metric that is not displayed on the grid, that metric will be listed as a dataset object. For more information, see the *Advanced Reporting Guide*.

To place an object on a document, drag it from the Datasets pane and drop it onto the Layout area. This creates a text field on the Layout area. If you drag and drop a dataset name from the Datasets pane to the Layout area, you create a Grid/Graph. For more information on creating text fields, see *Adding text and data to a document: Text fields, page 81*. For more information on Grid/Graphs, see *Chapter 3, Displaying Reports in Documents: Grid/Graphs*.

To display the Datasets pane, click **Datasets** at the bottom of the accordion pane or press **F8**.

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If there are multiple datasets in a document, the dataset that is displayed in bold is the grouping and sorting dataset. For more information about datasets in a document, see *Using prompts in documents, page 524*.

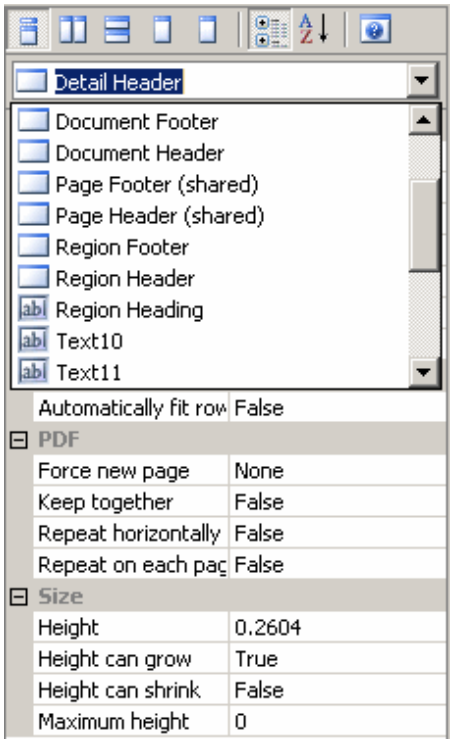
Property List

The Property List displays the settings of the object selected on the Layout area. The settings that are listed vary depending on the type of object (text field, image, line, section, and so on) selected. For more information about the settings in the Property List and how to use them, refer to the *MicroStrategy Developer help* (formerly the *MicroStrategy Desktop help*).

To display the Property List click **Property List** at the bottom of the accordion pane or press **F9**.

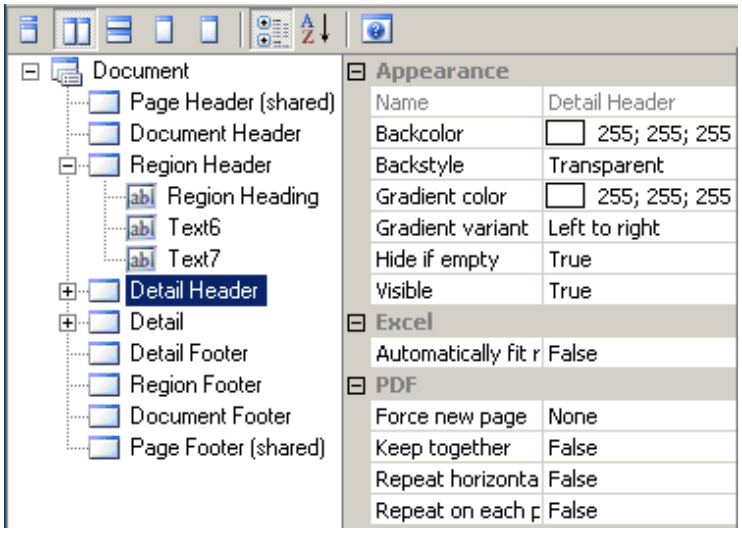
Controlling how the Property List displays

By default, a drop-down object list is displayed at the top of the Property List pane. It contains all the controls and sections in the document or, for multi-layout documents, the selected layout. The Property List, with the drop-down object list displayed, is shown below:



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You can instead choose to display the objects as a hierarchical tree representing the document structure. You can choose whether to display the document structure tree on the left of the Property List or at the top of the Property List.



When you choose an item from the list or the tree, the displayed settings change and the control/section becomes selected in the Layout area. Conversely, if you select an object in the Layout area, the Property List displays the settings for that object, and the object is selected in the tree.

You can also choose to hide the object list or document structure tree, to display the settings only. In this case, to choose a different object, select the object in the Layout area.

To switch between the various displays, click the appropriate button at the top of the Property List pane:

- Object list
- Document structure on left
- Document structure on top
- Properties only

Sorting the Property List

You can display the settings in the Property List sorted by category or alphabetically by option name. Click the **Sort by Category** or **Sort alphabetically** button at the top of the Property List pane.

Displaying information about settings

You can choose whether or not to display information about an option, by selecting an option and clicking the **Help** button at the top of the Property List pane. The information, which displays at the bottom of the Property List pane, provides more detail about the selected option.

Notes

The Notes panel displays the notes or comments added to the document, and allows you to add your own notes. Use this area to communicate with other users about the document. The notes can include details about the document, information on how it was created, reasons to use it, queries about the data displayed, a back-and-forth conversation about designing the document, or anything useful to you and other users. The document cache is not invalidated when notes are added or modified.

The Notes panel contains:

- A display of all the notes that have been added to the document. You must have the **View Notes** privilege to see any notes that have been added to the document.
- A text field to type new notes. Click **Submit** to add the new note. You must have the **Add Notes** privilege to add new notes, but you do not need write access control on the document.

  The **Submit** button becomes available once you type text.

You can type up to 1024 characters in each separate note, to a maximum of 65,535 characters for all the notes in the document.

If you have the Edit Notes privilege, you can change existing notes, as described below:

1. Click **Edit**. The text field for new notes closes, and all the existing notes become active.
2. Type over the existing text or add new text.
3. Click **OK**. The text field for new notes opens.

To display the Notes pane, click **Notes** at the bottom of the pane.

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B

DOCUMENT TUTORIAL

Introduction

This appendix walks you through the process of creating a sample invoice document.

Create a sample invoice document

This section contains step-by-step instructions to walk you through creating a simple invoice with data from the MicroStrategy Tutorial. Because the Tutorial does not contain the precise type of data needed for an invoice, such as Invoice Date and Due Date, we will use data from similar, related attributes as a replacement. You can use this section as a tutorial, bringing together the pieces described in the chapters of this book to create a document.

Dates in the MicroStrategy Tutorial project metadata are updated to reflect the current year. The sample documents and images in this section, as well as the procedures, were created with dates that may no longer be available in the Tutorial project. Replace them with the first year of data in your Tutorial project.

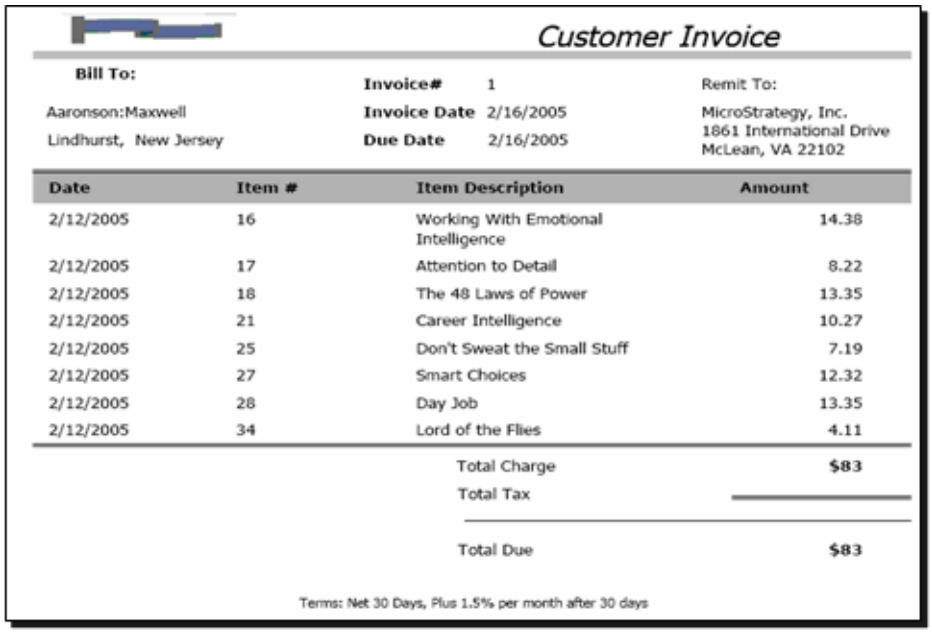
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By following the instructions, you will create a document that provides a separate invoice for each customer. Each invoice will contain the following:

- Company logo
- Customer name, city, and state
- Invoice and due dates
- Purchase date, ID, description, and cost of each item

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The completed invoice looks like the following:



Customer Invoice

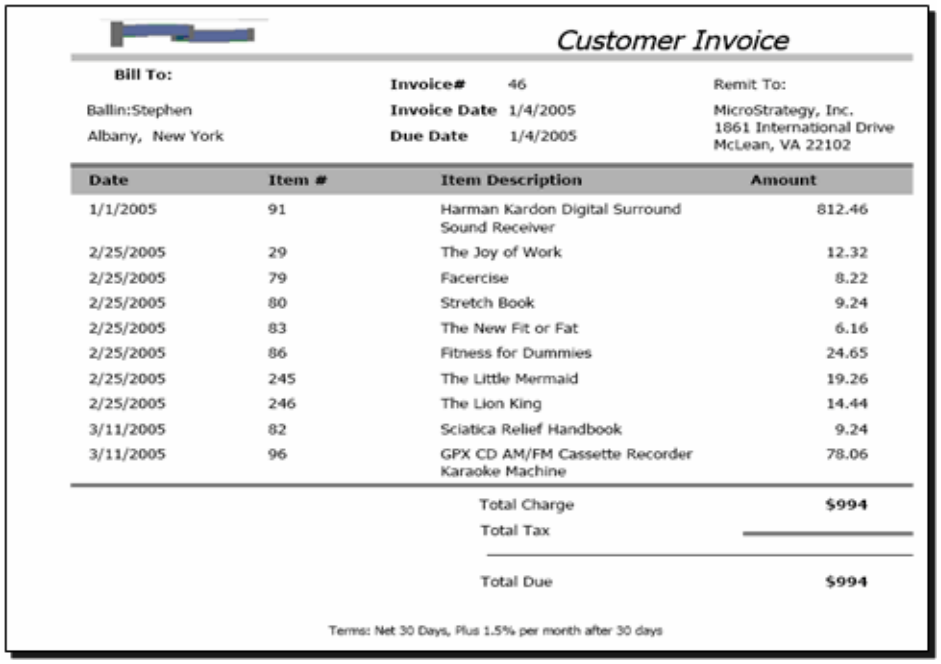
Bill To:
Aaronson:Maxwell
Lindhurst, New Jersey

Invoice# 1
Invoice Date 2/16/2005
Due Date 2/16/2005

Remit To:
MicroStrategy, Inc.
1861 International Drive
McLean, VA 22102

Date	Item #	Item Description	Amount
2/12/2005	16	Working With Emotional Intelligence	14.38
2/12/2005	17	Attention to Detail	8.22
2/12/2005	18	The 48 Laws of Power	13.35
2/12/2005	21	Career Intelligence	10.27
2/12/2005	25	Don't Sweat the Small Stuff	7.19
2/12/2005	27	Smart Choices	12.32
2/12/2005	28	Day Job	13.35
2/12/2005	34	Lord of the Flies	4.11
		Total Charge	$83
		Total Tax	
		Total Due	$83

Terms: Net 30 Days, Plus 1.5% per month after 30 days



Customer Invoice

Bill To:
Ballin:Stephen
Albany, New York

Invoice# 46
Invoice Date 1/4/2005
Due Date 1/4/2005

Remit To:
MicroStrategy, Inc.
1861 International Drive
McLean, VA 22102

Date	Item #	Item Description	Amount
1/1/2005	91	Harman Kardon Digital Surround Sound Receiver	812.46
2/25/2005	29	The Joy of Work	12.32
2/25/2005	79	Facercise	8.22
2/25/2005	80	Stretch Book	9.24
2/25/2005	83	The New Fit or Fat	6.16
2/25/2005	86	Fitness for Dummies	24.65
2/25/2005	245	The Little Mermaid	19.26
2/25/2005	246	The Lion King	14.44
3/11/2005	82	Sciatica Relief Handbook	9.24
3/11/2005	96	GPX CD AM/FM Cassette Recorder Karaoke Machine	78.06
		Total Charge	$994
		Total Tax	
		Total Due	$994

Terms: Net 30 Days, Plus 1.5% per month after 30 days

This sample has been altered to fit within the space limitations of this manual.

It may be helpful to print the document and refer to it as you create your own invoice document.

The high-level steps for this procedure are outlined below. While each step is self-contained, they are meant to be completed in order.

1 *Creating the report to use as the dataset, page 587*

2 *Creating the new document and selecting the dataset, page 588*

3 *Grouping the document by customer, page 589*

4 *Adding the logo image to the document, page 590*

5 *Resizing the image, page 591*

6 *Adding static text to the document, page 591*

7 *Formatting, aligning, and sizing the text field, page 592*

8 *Adding a rectangle to the document, page 592*

9 *Switching to PDF View, page 593*

10 *Adding an attribute to the Customer Header section, page 594*

11 *Combining text fields, page 596*

12 *Adding and formatting additional text fields in the Customer Header section, page 597*

13 *Adding a line to the Customer Header section, page 599*

14 *Creating the column headers in the Detail Header section, page 600*

15 *Ordering the controls, page 601*

16 *Creating the item detail in the Detail section, page 603*

17 *Formatting a text field as currency, page 604*

18 *Adding summary information to the Detail Footer section, page 605*

19 *Adding totals to a document, page 607*

20 *Saving the document, page 608*

21 *Creating the final PDF, page 609*

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Before beginning the instructions, review *Creating a document using another document as a template, page 20* to familiarize yourself with the various components of the Document Editor.

Measurements throughout this tutorial are given in inches.

Creating the report to use as the dataset

The data for a document is derived from a dataset, which can be a MicroStrategy report, a MicroStrategy Intelligent Cube, or data imported directly from an external data source. In this case, a report is used as the dataset, so the preliminary step for creating the document is to create the report. For more information on datasets, see *Using datasets in documents, page 45*.

The dataset for the invoice document needs all of the data for the document, such as customer and order information. The attribute Ship Date will be used to simulate both the invoice and due dates. Only two customers and one quarter are included on the report, since this information is sufficient to demonstrate various document features without creating a large dataset.

Since this example is focused on creating a document, not a report, the following procedure assumes that you are familiar with the steps necessary to create a report. For details, refer to the *MicroStrategy Developer help* (formerly the *MicroStrategy Desktop help*) or the *Basic Reporting Guide*.

To create the report

1. On the MicroStrategy Developer, point to **New** from the File menu, and then select **Report**. The Report Editor opens.

   If the New Grid dialog box opens, select **Blank Report** as the report object template.

2. Add the following objects to the grid:

   - **Customer** (from the Customers hierarchy)
   - **Customer City** (from the Customers hierarchy)
   - **Customer State** (from the Customers hierarchy)

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- **Ship Date** (from the Customers hierarchy)

  Ship Date stands in for the invoice and due dates on the document.

- **Item** (from the Products hierarchy)
- **Day** (from the Time hierarchy)
- **Cost** metric (from the `Public Objects\Metrics\Sales Metrics` folder)

3 Add a report filter for

- Quarter In List (Q1 05)

AND

- Customer In List (Aaronson Maxwell, Ballin Stephen)

4 Save and close the report, naming it Invoice Dataset Report.

Creating the new document and selecting the dataset

Next, create the shell of the new document and select as the dataset the report you just created. Again, the dataset provides the data fields for the document.

To create the new document and select the dataset

1 On the MicroStrategy Developer, point to **New** from the **File** menu, and then select **Document**. The New Document dialog box opens.

2 Select **Empty Document** and click **OK**. The Select a report dialog box opens.

3 Navigate to the Invoice Dataset Report and double-click it. The Document Editor opens.

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The Document Editor contains the Datasets pane on the left, the Layout area in the middle, and the Property List on the right.

If the Datasets pane is not displayed, select **Datasets** from the **View** menu. Similarly, if the Property List is not displayed, select **Property List** from the **View** menu.

Notice that the Layout area is empty except for sections—no objects have been placed on the document yet. You can expand and collapse the sections by clicking the plus sign or double-clicking the grey button next to the section name. You can drag a section's top or bottom border to make the section larger or smaller. Expanding, collapsing, or resizing a section in this way does not affect its size or whether controls in it appear or are hidden when the document is viewed as a PDF.

The Datasets pane contains the Invoice Dataset Report and all the objects on that report. These objects are available for use on the document. The Property List displays the settings of the object selected on the Layout area. The settings vary depending on the type of object selected, but include font, size, alignment, position, and others. For more information, see *Creating a document using another document as a template, page 20* and the *MicroStrategy Developer help* (formerly the *MicroStrategy Desktop help*).

Grouping the document by customer

Grouping by the Customer attribute allows you to create a separate invoice for each customer.

To group the document by Customer

Select **Customer** in the Datasets pane. Drag and drop it into the Grouping panel, which is labeled Drop Grouping Fields Here.

If the Grouping panel is not displayed, select **Grouping** from the **View** menu.

After you add Customer to the grouping, notice that two new sections are created on the Layout area. The new sections are grouping sections and are called Customer Header and Customer Footer. For more information on grouping, see *Grouping records in a document, page 388*; for information on the different sections, see *Understanding and working with document sections, page 28*.

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To print each Customer on a separate page

1. Right-click **Customer** in the Grouping panel and select **Grouping Properties**. The Grouping Properties dialog box opens.
2. Select the **Page break between groups** check box.

   For information on the other settings in the dialog box, see *Resetting page numbers for each group, page 411* and *Keeping the data in a group together on a page, page 412*.
3. Click **OK** to return to the Document Editor.

   Until you create the PDF, you will not see any changes from the page break option.

Adding the logo image to the document

Adding a logo helps to identify the company sending the invoices. The logo must appear on every page, so the appropriate place to put it is in the Page Header section. You can use any image as a logo. The image type must be `.bmp`, `.jpg`, `.jpeg`, or `.gif`. For information on ensuring that the image is accessible, see *Inserting images in a document, page 152*.

To add the image to the document

1. On the Layout area, click the plus sign next to Page Header. This expands the section so that you can work in it.
2. Click **Image** on the toolbar. When you move the cursor to the Layout area, the pointer becomes crosshairs.
3. Click the top left corner of the Page Header section. The Image Source dialog box opens.
4. Navigate to an image file to use as the logo.
5. Select the file and click **Open**. The image appears in the document. You can drag and drop the image to reposition it or resize it using the red handles.

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Resizing the image

The height of the image used in the sample invoice is .3 inches. If your image is larger, it will overlap the rectangle and the text below it. You can adjust the size of your image to fit the space available.

To resize an image

1. Click the image on the Layout area to select it.
2. In the Property List, set the Height to **0.3**.
3. If the image is too distorted, you can also adjust the width. Enter the appropriate number in the Width option in the Property List.

Adding static text to the document

Data and text are displayed in documents in text fields. Static text does not change and serves as a label. For more information on static text and the different types of text fields, see *Adding text and data to a document: Text fields, page 81*.

On the invoice document, add the text field that displays next to the logo. This text field contains the phrase “Customer Invoice”. Again, since this is printed on each page, it should be added to the Page Header section.

To add a text field

1. Click **Text Field** on the toolbar. When you move the cursor to the Layout area, the pointer becomes crosshairs.
2. Click in the Page Header section, next to the logo. A box is placed in the section.
3. Type the following in the text field:

```
Customer Invoice
```

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The text appears in the box, although you will not see it all because the text box is too small. We will fix that problem in the next step, by setting the height and width of the text field.

Formatting, aligning, and sizing the text field

Once you add a text field to a document, you can change its appearance in a variety of ways. The procedure below changes the font of the text, aligns the text field, and resizes it. For more information on arranging and formatting text fields, see *Chapter 1, Designing and Creating Documents*.

To format, align, and size the text field

1. Click the text field on the Layout area to select it. Alternatively, you can select it from the drop-down list at the top of the Property List.
2. To format the text, click the **Bold** and **Italic** icons in the toolbar.
3. To change the font size, select **18** from the Font Size drop-down list on the toolbar.
4. To align the text field, drag and drop it in the correct position or set the **Left** and **Top** settings in the Property List. To re-create the sample invoice exactly, set Left to 4.34 and Top to .03.
5. To size the text field, you can drag the resizing handles or set the Height and Width settings in the Property List. To re-create the sample, set Height to .25 and Width to 2.4.

Adding a rectangle to the document

The final object in the Page Header section is a rectangle or box, which spans the page below the logo and its related text. This divider should be printed on each page, hence it is included in the Page Header.

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To add a rectangle

1. Click the **Rectangle** icon on the toolbar. When you move the cursor to the Layout area, the pointer becomes crosshairs.
2. Click in the Page Header section to add the rectangle.
3. On the Property List, change the color of the rectangle to grey, by clicking **Backcolor** then the **Browse** button. The Color dialog box opens. Click the grey swatch, then click **OK**.
4. To set the rectangle to span the width of the entire page, change the **Width mode** option on the Property List to 100%.
5. While you can change the rectangle size using the resizing handles, set the **Height** and **Top** settings to the following using the Property List. This ensures that your document looks exactly like the sample.
   - **Height**: .06
   - **Top**: .34

For more information on formatting rectangles, see *Formatting lines and rectangles, page 294*.

Your Page Header section should now look like the following:



Switching to PDF View

It can be helpful to occasionally check your progress during the document creation process. Switch to PDF View to see what the document looks like after the PDF is generated.

To switch to PDF View

1. Click **PDF View** on the toolbar.

The PDF is generated and displays like the following:



Notice that the document has only one page, although the report contains two customers and the document is grouped by customer. However, the Customer attribute has not yet been placed on the document, so the document is not really grouping yet. Also, since the only controls on the document are static—a picture and the words “Customer Invoice”—the document in PDF View does not look much different from the document in Design View.

To continue working on the document, click **Design View** on the toolbar.

If you frequently switch between Design View and PDF View, keep an instance of Acrobat Reader open on your machine. This helps speed up the process of switching to PDF View.

Adding an attribute to the Customer Header section

The next section on the Layout area is the Document Header. You can use the Document Header as a cover page, since this section prints once at the beginning of the document. Since this document does not contain anything like a cover page, move to the next document section, which is the Group Header, in this case, the Customer Header.

If you do not need a section, it does not display in the PDF as empty space if controls have not been added to it, since by default the Can Shrink option is set to true. This setting automatically sets the height of an empty section to zero. If you have placed controls in the section, or the Can Shrink option has been changed, set the Visible option to false.

Recall that placing the Customer attribute in the Grouping panel created Customer Header and Customer Footer sections. We will add information specific to each customer to the Customer Header section. This data includes the customer name, address, and invoice information, and will print once for each customer.

First add the Customer attribute, to display the name of the customer being invoiced, and a text field to label and identify the attribute. An attribute on a document is referred to as a data field, which is another type of text field. For

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more details on using data fields in documents, see *Adding dynamic data to a document, page 83*.

To add an attribute and a corresponding label

1. Click **Text Field** on the toolbar. When you move the cursor to the Layout area, the pointer becomes crosshairs.
2. Click at the top of the Customer Header section. A box is placed in the section.
3. Type the following in the text field:

   Bill To:

4. Set the following options in the Property List to position the text field as shown in the example invoices:
   - **Left**: .34
   - **Top**: .03
5. Format the text:
   - **Bold**
   - **Font size**: 10
6. Drag and drop **Customer** from the Datasets pane to the Customer Header. A text field containing the text {Customer} is placed on the Layout area. The text will be replaced with the customer name when the PDF is generated.
7. Set the following options in the Property List to position the data field as shown in the example invoices:
   - **Width**: 2.5
   - **Left**: .11
   - **Top**: .37

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Combining text fields

You can combine different types of text fields, such as static text and data fields, in one text field. For example, to see the customer's city and state separated by a comma, create a text field, insert the Customer City attribute, type a comma and space, and insert the Customer State attribute. For more information, see *Combining different types of text fields in a document, page 86*.

To combine text fields

1. Drag and drop **Customer City** from the Datasets pane to the Customer Header. A text field containing the text {[Customer City]} is placed on the Layout area. The text is replaced with the customer's city when the PDF is generated.
2. Expand the size of the new text field using the resizing handles. This will allow you to more easily see what you are typing in the text field.
3. Select the new text field and press **F2** to edit it.
4. Type a comma.
5. Drag and drop **Customer State** from the Datasets pane into the new text field. Notice that a space is added automatically before Customer State. The text field should now contain the following:

   {[Customer City]}, {[Customer State]}

   When the outline of the text field becomes yellow, drop the object into it.
6. Press **ENTER** to exit edit mode.
7. Set the following options in the Property List to position the text field as shown in the example invoices:
   - **Width**: 2.5
   - **Left**: .11
   - **Top**: .54

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Adding and formatting additional text fields in the Customer Header section

Now, add the remaining text fields to the Customer Header section—invoice number, invoice and due dates, and the remittance address. The invoice number is the Customer ID, which is not the default attribute form. The following procedure shows you how to access a particular attribute form, as well as copy a text field. It also demonstrates selecting, formatting, and aligning multiple fields in different ways. For more information, see *Arranging controls on a document, page 158* and *Formatting text fields, page 283*.

To add and format additional text fields

1 Add the following static text fields to the Customer Header, as shown on the sample invoice. The formatting and alignment will be described later.

- `Invoice #`
- `Invoice Date`
- `Due Date`
- `Remit To:`

2 Add the following lines as one static text field. To insert a break between the lines, press **CTRL+ENTER**.

```
MicroStrategy, Inc.
1861 International Drive
McLean, VA 22102
```

3 Drag and drop **Ship Date** from the Datasets pane to the Customer Header. A text field containing the text {[Ship Date]} is placed on the Layout area.

To copy a control on the Layout area

4 Right-click **Ship Date** on the Layout area and select **Copy**.

5 Right-click below Ship Date on the Layout area and select **Paste**. The document now contains two copies of the control, one for use as the Invoice Date and the other as the Due Date.

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To display a particular attribute form

6 In the Datasets pane, expand **Customer**. From the list of Customer attribute forms, drag and drop **ID** to the Customer Header. A text field containing the text {Customer@ID} is placed on the Layout area.

To select, format, and align multiple controls

7 Hold down the **CTRL** key and click the static fields **Invoice #**, **Invoice Date**, and **Due Date**.

8 Click **Bold** in the Formatting toolbar.

9 Set the Left option in the Property List to **2.63** and press **ENTER**. This will left align the three controls.

10 Click anywhere in the Layout area to deselect the controls.

11 Hold down the **CTRL** key and click **Customer@ID** and the two copies of **Ship Date**.

12 Set Left in the Property List to **3.61**, thereby placing the controls along the same line.

13 In the same manner, select **Invoice #** and **Customer@ID**. Set Top in the Property List to **.2**.

14 Select **Invoice Date** and the first **Ship Date**. Set Top in the Property List to **.37**.

15 Select **Due Date** and the second **Ship Date**. Set Top in the Property List to **.54**.

16 Select the static text fields **Remit To:** and the MicroStrategy address. Set Width to **1.65**.

To align controls using the right-click menu

17 To align Remit To: with Customer@ID, which you have already set with the correct Top position, select **Customer@ID** and **Remit To:**. Right-click, point to **Align**, and then select an option:

- If Customer@ID is higher than Remit To:, select **Top**.
- If Customer@ID is lower than Remit To:, select **Bottom**.

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18 Repeat the process with the first Ship Date and the MicroStrategy address text field.

19 Select **Remit To:** and set Left to **5.32**.

20 To align the MicroStrategy address text field with the Remit To: control, select both controls. Right-click, point to **Align**, and then select an option:

- If Remit To: is to the left of the address, select **Left**.
- If Remit To: is to the right of the address, select **Right**.

Adding a line to the Customer Header section

The final piece of the Customer Header section is a double line at the bottom of the section, to separate the customer information from the invoice details.

To add a line

1 Click the **Line** icon in the toolbar. When you move the cursor to the Layout area, the pointer becomes crosshairs.

2 Click at the bottom of the Customer Header section to add the line.

3 Set the following in the Property List:

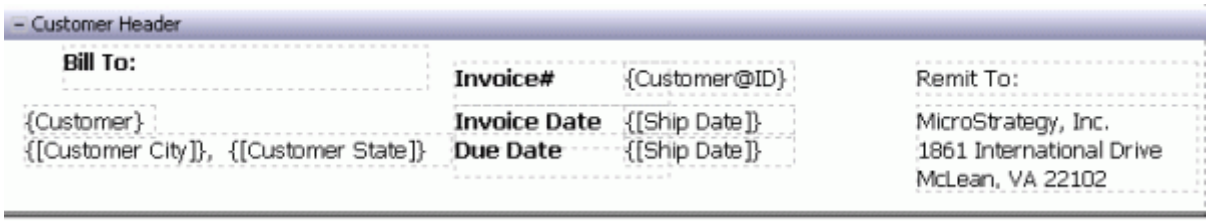
- Line style: Double, to change it to a double line from the default of Solid
- Line weight: 2
- Top: 1, which moves the line to the bottom of the Customer Header section
- Length mode: 100%, which stretches the line across the width of the page

If the line disappears off the Layout area, drag the Detail Header down to show more of the Customer Header section. This does not affect the size of the sections in the PDF, only in Design View.

For more information on formatting lines, see *Formatting lines and rectangles, page 294*.

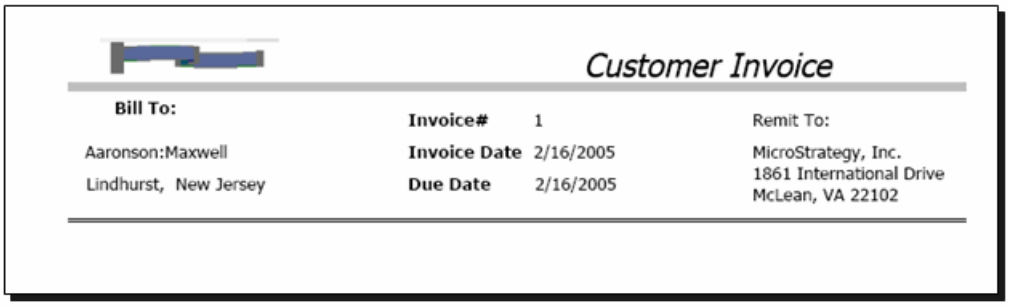
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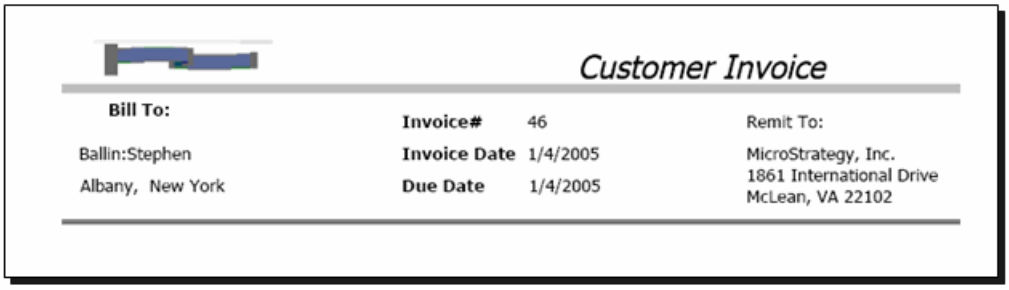
Your Customer Header section should now look like the following:



Previewing the Customer Header

Switch to PDF View, by clicking **PDF View** on the toolbar, to generate the PDF and check your progress. The document, in contrast to the first preview, now looks different in PDF View and Design View. This is because you added attributes to the document, which are replaced with the actual data when the PDF is generated. Notice that the document now contains two pages, grouped by Customer, as shown in the following sample.





To continue working on the document, click **Design View** on the toolbar.

Creating the column headers in the Detail Header section

The next section on the Layout area is the Detail Header, which prints immediately before each group of Detail sections. In our invoice document,

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the Detail Header contains the column headers for the itemized lines of the invoice and prints once for each customer. The controls in this section are static text fields and a rectangle, used to make the text fields stand out.

Since you have added static text fields and a rectangle to the document already, the following procedure is a high-level process only.

To add controls

1. Add the following static text fields to the Detail Header section and set the options as indicated:
   - Date: **Left** = .13, **Top** = .02
   - Item #: **Left** = 1.62, **Top** = .02
   - Item Description: **Left** = 3.05, **Top** = .02
   - Amount: **Left** = 5.69, **Top** = .02
2. Bold all four text fields and set their **Backcolor** to gray.
3. The default text field width is not long enough to display the item description without wrapping to a second line. To fix this, set the **Width for Item Description** to **1.25**.
4. Add a rectangle to the Detail Header section and set the following options:
   - **Backcolor**: Gray
   - **Height**: .25
   - **Width mode**: 100%
   - **Top**: 0

The text fields disappear behind the rectangle, but we will fix that problem in the next section.

Ordering the controls

If controls overlap in a document, as the rectangle and the text fields in the Detail Header do, you can change the order of the controls by moving them

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forward or backward. This displays controls in front of or behind other controls.

To order controls

1 Select the rectangle, being sure not to select any of the text fields.

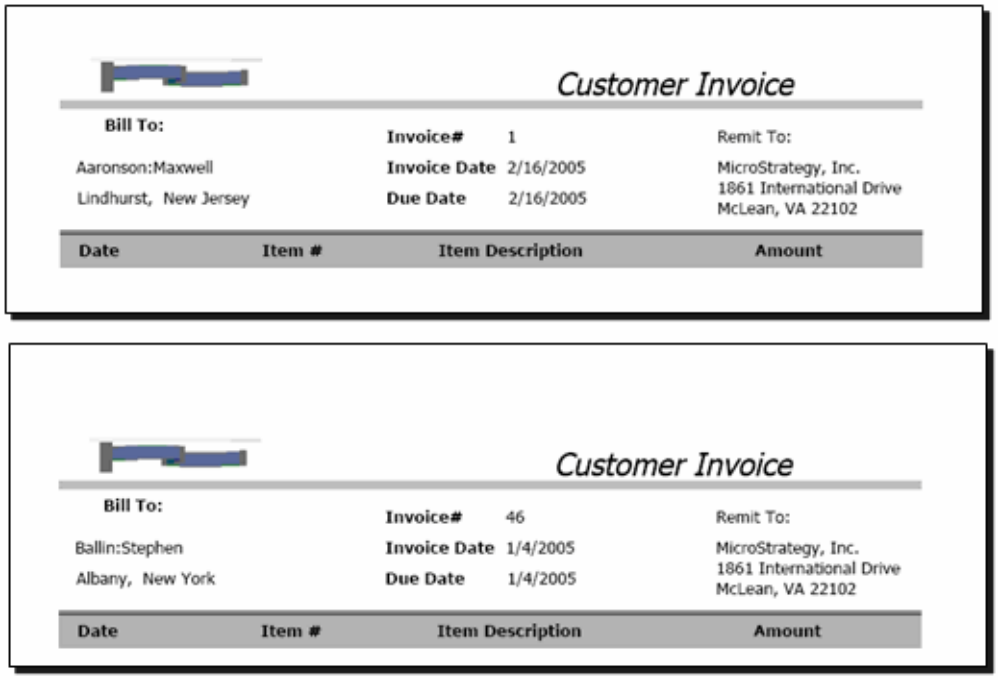
2 Right-click, point to **Order**, and then select **Send to Back**.

Your Detail Header section should now look like the following:



Previewing the Detail Header

Switch to PDF View, by clicking **PDF View** on the toolbar, to generate the PDF and check your progress. Now each of the invoices has the new column headings, as shown in the following sample:



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Creating the item detail in the Detail section

The next section on the Layout area is the Detail section, which prints one row for each row of data in the document's dataset. For the invoice, one row is printed for each item bought by the customer. Therefore, you will add the detailed item information to this section.

Since you have added attributes to the document already, the following procedure is a high-level process only.

To add and format attributes

1 Add the following to the Detail section:

- **Day**
- **Item ID**

  Recall that to add a particular attribute form, you must expand the attribute in the Datasets pane and select the attribute form. The default attribute form for Item is Description, not ID.

- **Item**
- **Cost**

2 Select **Item** and set the **Width** option to **2.25**.

3 Select **Day** and set the **Top** option to **.05**.

4 Align the other controls to Day. To do this, select the controls, right-click, point to **Align**, and select **Top**.

5 Align Day with the Date text field in the Detail Header section. To do this, select the controls, right-click, point to **Align**, and select **Left**.

6 Similarly, align Item@ID with the Item # text field and Item with the Item Description text field.

7 To align Cost with Amount, select both fields. Right-click, point to **Align**, and then select an option:

- If Cost is to the left of Amount, select **Right**.
- If Cost is the right of Amount, select **Left**.

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Formatting a text field as currency

Cost should be formatted as currency to accurately present the values.

To format a text field as currency

1. Right-click **Cost** and select **Format**. The Format Objects dialog box opens.
2. On the Number tab, select **Currency** from the Category list. The default settings use a dollar sign and two decimal places.
3. Click **OK** to return to the document.

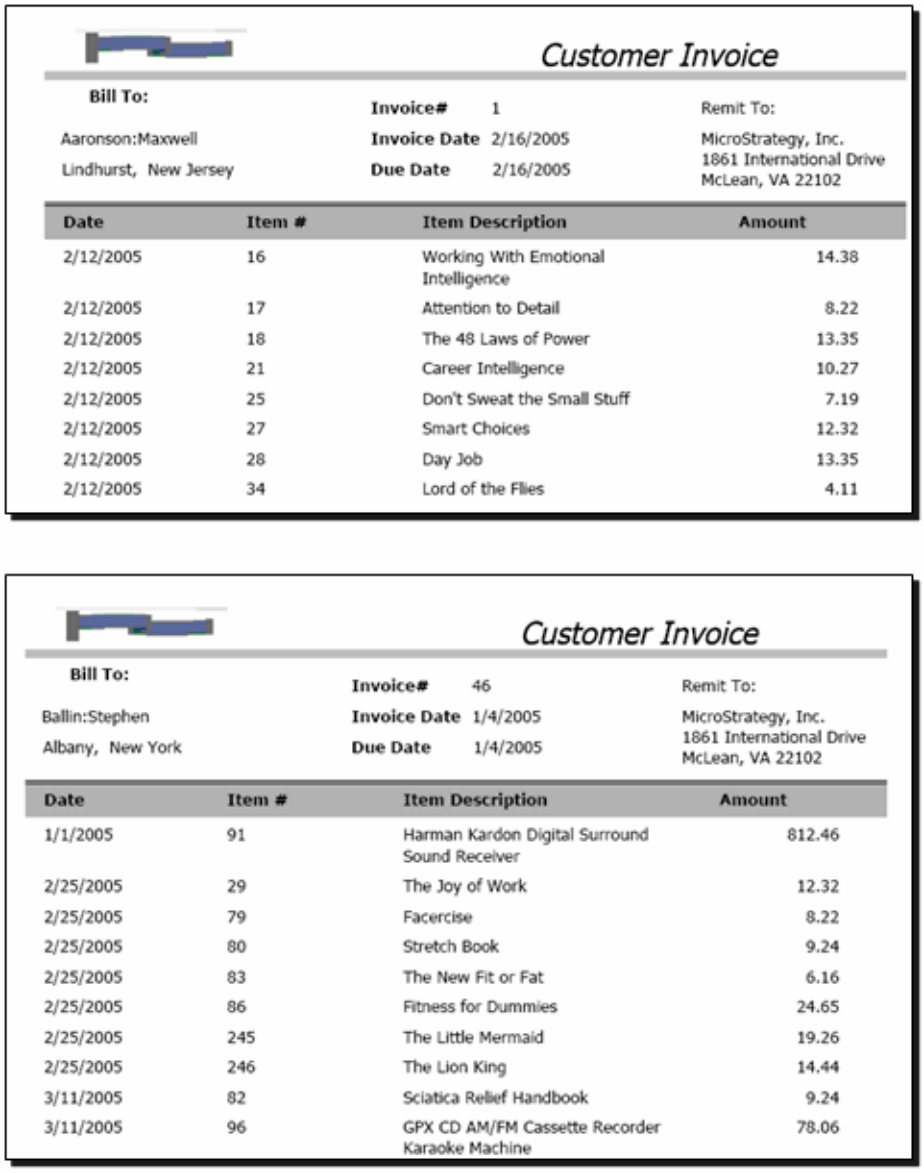
Your Detail section should now look like the following:



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Previewing the Detail section

Switch to PDF View, by clicking **PDF View** on the toolbar, to generate the PDF and check your progress. Each invoice contains detail information on each item bought by the customer, as shown in the following sample:



Customer Invoice

Bill To:
Aaronson:Maxwell
Lindhurst, New Jersey

Invoice# 1
Invoice Date 2/16/2005
Due Date 2/16/2005

Remit To:
MicroStrategy, Inc.
1861 International Drive
McLean, VA 22102

Date	Item #	Item Description	Amount
2/12/2005	16	Working With Emotional Intelligence	14.38
2/12/2005	17	Attention to Detail	8.22
2/12/2005	18	The 48 Laws of Power	13.35
2/12/2005	21	Career Intelligence	10.27
2/12/2005	25	Don't Sweat the Small Stuff	7.19
2/12/2005	27	Smart Choices	12.32
2/12/2005	28	Day Job	13.35
2/12/2005	34	Lord of the Flies	4.11

Customer Invoice

Bill To:
Ballin:Stephen
Albany, New York

Invoice# 46
Invoice Date 1/4/2005
Due Date 1/4/2005

Remit To:
MicroStrategy, Inc.
1861 International Drive
McLean, VA 22102

Date	Item #	Item Description	Amount
1/1/2005	91	Harman Kardon Digital Surround Sound Receiver	812.46
2/25/2005	29	The Joy of Work	12.32
2/25/2005	79	Facercise	8.22
2/25/2005	80	Stretch Book	9.24
2/25/2005	83	The New Fit or Fat	6.16
2/25/2005	86	Fitness for Dummies	24.65
2/25/2005	245	The Little Mermaid	19.26
2/25/2005	246	The Lion King	14.44
3/11/2005	82	Sciatica Relief Handbook	9.24
3/11/2005	96	GPX CD AM/FM Cassette Recorder Karaoke Machine	78.06

Adding summary information to the Detail Footer section

The last part of the invoice contains totals and term information. Since this summary information should appear on each invoice, place it in the Detail

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Footer section. The Detail Footer section prints immediately following the Detail section, and is typically used for totals.

Before creating the totals, add static text fields to label the amounts and lines to separate the sections. Again, since you have added static text fields and lines to the document, this is a high-level process, providing enough information to ensure that your invoices match the sample.

To add summary information

1 Add the following static text fields to the Detail Footer section and set the options as indicated:

- Total Charge: **Left** = 3.51, **Top** = .1
- Total Tax: **Left** = 3.51, **Top** = .32
- Total Due: **Left** = 3.51, **Top** = .54

2 Add a double line at the top of the Detail Footer section. Set its options as listed below:

- **Line style**: Double
- **Line weight**: 2
- **Top**: .03
- **Length mode**: 100%

3 Add another line, between Total Tax and Total Due, and to the far right. Set its options as listed below:

- **Line style**: Double
- **Line weight**: 2
- **Left**: 5.58
- **Top**: .5
- **Length**: 1.42

4 Add another line, underneath Total Due. Set its options as listed below:

- **Left**: 3.45
- **Top**: .71

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- **Length**: 3.55

5 Add the following text field:

Terms: Net 30 Days, Plus 1.5% per month after 30 days

6 Set the following options for the Terms text field:

- **Font**: 8
- **Width**: 3
- **Left**: 2.06
- **Top**: .77

Adding totals to a document

You may notice that all the dataset objects have been used, or placed onto the document. Where do the totals come from? Totals are calculated using metrics. Depending on where a metric is placed in a document, the metric is calculated differently.

In this invoice document, the Cost metric is in a text field in the Detail section, where it is calculated at the level returned by the dataset. In this case, it is calculated at the item level. When the same metric is placed in the Detail Footer, it returns a subtotal for the Detail section. Here, it adds the values from each item to compute the invoice total.

For more information on totals, see *Working with metrics in documents, page 114*.

To add totals

1 Right-click **Cost** in the Detail section and select **Copy**.

2 Right-click next to Total Charge in the Detail Footer section and select **Paste**. Although this field calculates a total, the information displayed on the Layout area is the same: {Cost}.

Copying and pasting the metric from the Layout area also copies the metric's formatting (currency with two decimal places in this case).

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3 Bold the new Cost control.

4 Align it to the top with the Total Charge control.

5 Align it to the left with the Cost metric in the Detail section.

6 Drag and drop **Cost** from the Datasets pane to the Detail Footer, placing it to the right of Total Due.

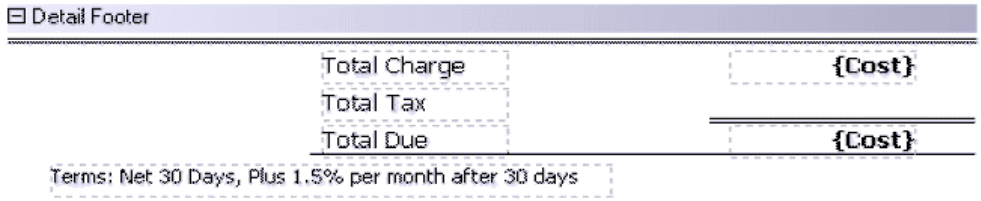
> When you drag a metric from the Datasets pane, the control default formatting is used. You will see the difference when you create the PDF. For more information, see *Defining default formatting for control types: control defaults, page 265*.

7 Bold this second Cost control.

8 Align it to the top with the Total Due control.

9 Align it to the left with the first Cost metric in the Detail Footer.

Your Detail Footer section should now look like the following:



Saving the document

You should save your document, so that you can refer to it later.

To save a document

1 Click the **Save** icon on the toolbar. The Save Document As dialog box opens.

2 Navigate to a directory in which to save the document.

3 Enter a name for the document, such as **Sample Invoice**, in the Object name box.

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4 Click **Save**.

Creating the final PDF

Now when you switch to PDF View, the completed invoices are created. They should look like the samples provided at the beginning of this tutorial section.

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C

TROUBLESHOOTING DOCUMENTS

Introduction

This section provides explanations of some of the most common issues you may encounter when creating Report Services Documents, in a question and answer format. For more detailed discussions, refer to the relevant sections of this guide.

Troubleshooting during document creation

Troubleshooting Grid/Graphs

Can I save a Grid/Graph in a document as a standalone report?

No, Grid/Graphs are embedded objects within the document and they cannot be saved as a standalone report.

My document contains a Grid/Graph displayed as a graph. I set the Width Mode and Height Mode to Fit to contents. After I saved the document, both these options revert to the default setting of Fixed. Why?

Fit to contents is supported only when Grid/Graphs are displayed as grids.

My document contains a Grid/Graph with attributes but only one metric. The metric values do not display completely in PDF View in MicroStrategy Developer. How can I view the full column?

Before switching to PDF View, change the document layout to landscape. From the **File** menu, select **Page Setup**. On the Page tab, select **Landscape** as the Orientation.

When I try to create a view filter on a Grid/Graph, a message appears asking me to convert the shortcut to a local copy of the report. I do not want to convert it.

You cannot create a view filter on a Grid/Graph shortcut because the Grid/Graph is linked to the original report, allowing changes made to the original report to automatically update the Grid/Graph in the document. You have two options:

- If you want to create a view filter on the Grid/Graph, you must convert the Grid/Graph to a local copy. You can then create the view filter. Changes made to the original report will no longer be passed to the Grid/Graph in the document.
- If you want to allow changes to the original report to affect the Grid/Graph in the document, click **Cancel**. You cannot create a view filter.

For information on what actions are allowed in shortcuts, see *Adding a Grid/Graph as a shortcut, page 193*.

I want to format the "No Data Returned" message that appears on a Grid/Graph in MicroStrategy Web.

You can format the message using HTML tags, for display in all Web modes except Flash Mode.

1. In MicroStrategy Developer, right-click the project, and select **Project Configuration**. The Project Configuration Editor opens.

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2 Expand the **Report Definition** category on the left, and select **Advanced**.

3 Type the message into the **No data returned** field, using HTML tags. To change the background color, put the message into a table and set the table's background color.

4 Click **OK** to save the changes and return to MicroStrategy Developer.

If the formatted message does not appear, restart IIS or the web server.

Miscellaneous document creation troubleshooting

If I have multiple datasets with the same attributes, what data is shown in the Grid/Graph and the Detail section?

In general, the following is true:

- If the Grid/Graph uses a single dataset, only data from that dataset is displayed.
- If the Grid/Graph uses multiple datasets, data from the combined datasets is displayed.
- The Detail section displays a join between all the datasets and shows all the data.

Your final results also depend on what attribute elements are present in each dataset. For example, if each dataset contains different elements, some values will be missing in the Grid/Graph and the Detail section. If the datasets contain the same elements but different metrics, the Detail section will display the metrics for each element. The Grid/Graph will display the data from the dataset or datasets that it uses. For examples, see *Joining multiple datasets: Examples, page 65*.

For background information documents with multiple datasets, such as how datasets are joined, see *Working with multiple datasets, page 52*.

The height of a document section is defined to grow, the height is set to 1.5 inches, and the maximum height is set to 10 inches, larger than the expected

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results. When I view the document in HTML View or export it to HTML, the document section is only 1.5 inches long, and therefore the data is cut off.

When exported to HTML or viewed in HTML, a document section uses the **Height** setting, regardless of the **Height can grow** or **Maximum height** settings, because the exact height cannot be determined during HTML rendering. To allow all the data to be displayed, specify a more accurate **Height** setting.

I placed a metric on a grid and in the Document Header. The values are different. Why?

A metric is calculated differently depending on its location in the document. In this case, the value of the metric on the grid depends on the attributes, consolidations, and custom groups in the grid. The metric in the Document Header is a grand total for the document.

For a complete list of how a metric is calculated in various locations within a document, see *Using prompts in documents, page 524*.

I cannot resize or move a control.

The control may be locked. A locked control cannot be resized or moved. You cannot modify the following settings when a control is locked:

- Height
- Left
- Top
- Width

To unlock the control, follow the steps below:

1. Right-click the control and select **Properties and Formatting**. The Properties and Formatting dialog box opens.
2. Select **Layout** from the left.
3. Clear the **Locked** check box.
4. Click **OK** to return to the document.

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Troubleshooting during document execution

I cannot open a document.

If a document has embedded Transaction Services, the document does not open. Instead, a message is displayed, indicating that transaction-enabled documents are not supported in MicroStrategy Developer. Open the document in MicroStrategy Web.

I executed a document and received an error about an incomplete or inconsistent object definition.

The document uses a Freeform SQL report as a dataset. Save this kind of document before you execute it.

I have two lines with the same line weight, but they show different thicknesses in the PDF.

Typically, this viewing problem can be alleviated by using the Zoom In feature (increase the Zoom%) on the PDF. The lines display with the same thickness on the screen. This will not affect the printed output. All lines will print as defined, even if they display differently when viewing an Adobe PDF.

If I see an image in Design View, why doesn't it show up when I view the document as PDF?

Make sure the image is in `.bmp`, `.jpg`, `.jpeg`, or `.gif` format. It must be accessible by both the Intelligence Server machine that runs the document and the user who is designing the document.

For example, use a Web server machine to which designers have access and to which the Intelligence Server machine has access. For more information, see *Inserting images in a document, page 152*.

My PDF has an extra page, with a smudge on the left. What happened?

You moved your controls too far to the right. In Design View or Design Mode, move the controls to the left of the vertical page separator, which is represented by a dashed line.

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My document contains a link to a prompted report. Answers to the prompts are passed using both the `originMessageID` and `promptsAnswerXML` parameters. When I drill on the link, I am prompted, even though the information should have been passed in the link parameters.

Your destination report must contain nested prompts, since the combination of prompt XML and message ID does not work in this case.

A nested prompt is where the definition of one prompt depends on the answer to another prompt. For example, the first prompt is for category, and the second is for subcategory. The list of subcategories for the second prompt depends on the answer to the category prompt. If you use both prompt XML and message ID in this case, when you click the link, the answer to the subcategory prompt is not passed to the destination. You are re-prompted for subcategory.

My document contains 10 reports, and the **Jobs per user** parameter in the Project Configuration Editor is set to 5. The document does not finish executing.

The second five reports on the document do not wait until the first five reports execute, so the document cannot finish executing. To execute a document with ten reports, set the **Jobs per user** and **Jobs per user session** parameters to at least ten. For more information on these Project Configuration Editor parameters, see the *System Administration Guide*.

Be cautious increasing these parameters, as you do not want to have multiple users running many jobs simultaneously, which can overwhelm Intelligence Server or your database.

An image does not display in PDF View, when exported to PDF, or in MicroStrategy Mobile.

Ensure that the image is saved in one of the image types listed below; other image types cannot be displayed in PDF View, when exported to PDF, or in MicroStrategy Mobile.

- `bmp`
- `jpg`
- `jpeg`
- `gif`

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If the image file path is using an http reference to a central Web Server machine, such as `http://microstrategy/Test/myimage.jpg`, ensure that the URL does not contain any spaces. You can remove the space from the image name or replace the space with `%20`.

For more information about inserting images into documents, see *Inserting images in a document, page 152*.

Troubleshooting common Flash Mode issues

This section describes some common issues you may encounter as you use Flash Mode while viewing a document. The issues described in this section are not necessarily issues related to defects in the software itself, but rather notes about how Flash Mode is designed to work.

I cannot switch to Flash Mode in MicroStrategy Web; it is not an option in the View menu.

To display a document in Flash Mode in MicroStrategy Web, Flash Mode must be enabled for the document, the user, and the project, as described below.

- A user with the appropriate privileges can enable Flash Mode for a document using either MicroStrategy Web or MicroStrategy Developer. The steps below are for Web; for steps in MicroStrategy Developer, see the *MicroStrategy Developer help* (formerly the *MicroStrategy Desktop help*).

  a In MicroStrategy, Web, open the document in Design or Editable Mode.

  b From the **Tools** menu, select **Document Properties**. The Properties dialog box opens.

  c From the left, select **Document**.

  d In the **Available Display Modes** list, select the **Flash** check box.

  e You can specify that this document always opens in Flash Mode when it is initially opened in Web. To do this, select **Flash** from the **Run by default as** drop-down list.

  f Click **OK** to apply your changes and return to the document.

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- Enable Flash Mode in your User Preferences in MicroStrategy Web.
  a Click the MicroStrategy icon at the top of any page and select **Preferences**.
  b On the left, click **Report Services**.
  c Select the **Enable Flash Mode** check box.
  d Click **Apply**.
- In MicroStrategy Web, a project administrator can enable Flash Mode for a project, using the project default preference. Contact your project administrator to enable it.

In MicroStrategy Web, a graph displays in Interactive Mode but does not display properly in Flash Mode.

Some graph styles are not supported in Flash Mode. You may also encounter issues with other aspects of graph formatting which are not supported in Flash Mode. If issues such as these occur, you must change the graph style of the report to a supported style.

The following graph styles are the graph styles supported in Flash Mode:

Graph Style	Graph Sub-type
Vertical Bar	• Clustered • Absolute • Percent • Stacked • Dual-axis Clustered • Dual-axis Absolute • Dual-axis Stacked
Horizontal Bar	• Clustered • Absolute • Percent • Stacked • Dual-axis Clustered • Dual-axis Absolute
Vertical Line	• Absolute • Percent • Stacked • Dual-axis Absolute • Dual-axis Stacked
Horizontal Line	• Absolute • Dual-axis Absolute

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Graph Style	Graph Sub-type
Vertical Area	• Absolute • Percent • Stacked • Dual-axis Absolute • Dual-axis Stacked
Horizontal Area	• Absolute • Dual-axis Absolute
Pie	• Pie • Ring Pie • Multiple Proportional Pies • Multiple Proportional Ring Pies **Note**: Pie graphs may appear slightly larger in Flash Mode than they do in other display modes. The Proportional styles are not displayed proportionally in Flash Mode.
Stock	• Hi-Low-Open-Close
Scatter	• X-Y Scatter • Dual-axis X-Y Scatter
Bubble	• Bubble • Dual-axis Bubble **Note**: The minimum, maximum, and interval settings for the Bubble graph may not be displayed in Flash Mode exactly as they do in other display modes.
Combination graphs These graphs use a combination of two graph types	• Bar Area • Bar Line • Area Line • Dual-axis Bar Area • Dual-axis Bar Line • Dual-axis Area Line **Note**: The alignment of the Y-axis labels can appear differently in Flash Mode than they do in other display modes.

Other display issues include the following:

- Nested labels in graphs are not displayed in Flash Mode. If the graph currently uses nested labels, switch to another label type before opening the graph in Flash Mode.
- If a graph legend is positioned manually rather than automatically, the graph legend may not be displayed in exactly the same position in Flash Mode.
- Donut bevel effects for circular data markers in a graph may appear different in Flash mode. For a more consistent look across modes, consider using a different bevel effect, such as Sphere or Smooth Edge.

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For complete details on working with graphs, see the *Advanced Reporting Guide*.

In MicroStrategy Web, an image displays in Interactive Mode but does not display in Flash Mode.

The image file path may be incorrect or unsupported in Flash Mode. The file location of the image must use an HTTP-based path, not a network or local image path. For information about adding images to documents and using the correct image path, see *Inserting images in a document, page 152*.

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D

ADVANCED FUNCTIONS FOR CALCULATED EXPRESSIONS

Introduction

This appendix lists the advanced functions that are supported for calculated expressions in documents. The syntax for each function is included because you must type the syntax into a text field to use an advanced function in a calculated expression.

For detailed information on function syntax and examples of each function, see the *MicroStrategy Functions Reference*. For more information on calculated expressions, see *Creating calculated expressions, page 130*.

Functions are grouped into the following:

- *Internal functions, page 622*
- *Null/Zero functions, page 622*
- *Financial functions, page 622*
- *Math functions, page 624*
- *Statistical functions, page 625*

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Internal functions

Function	Syntax
Banding	`Banding(Argument, StartAt, StopAt, Size)`
BandingC	`BandingC(Argument, StartAt, StopAt, BandCount)`
BandingP	`BandingP (Argument, Boundary1, Boundary2, Boundary3...BoundaryN)`
Case	`Case (Condition1, ReturnValue1, Condition2, ReturnValue2, ..., DefaultValue)`
CaseV	`CaseV (Argument, Value1, Result1, Value2, Result2, ..., DefaultResult)`

Null/Zero functions

Function	Syntax
NullToZero	`NullToZero(Argument)`
ZeroToNull	`ZeroToNull(Argument)`

Financial functions

Function	Syntax
Accrint	`Accrint <Par = 1000, Basis = 0> (Issue, FirstInterest, Settlement, Rate, Frequency)`
Accrintm	`Accrintm <Par = 1000, Basis =0 > (Issue, Maturity, Rate)`
Coupdaybs	`Coupdaybs <Basis = 0> (Settlement, Maturity, Frequency)`
Coupdays	`Coupdays <Basis = 0> (Settlement, Maturity, Frequency)`
Coupdaysnc	`Coupdaysnc <Basis = 0> (Settlement, Maturity, Frequency)`
Coupncd	`Coupncd <Basis = 0> (Settlement, Maturity, Frequency)`
Coupnum	`Coupnum <Basis = 0> (Settlement, Maturity, Frequency)`
Couppcd	`Couppcd <Basis = 0> (Settlement, Maturity, Frequency)`
Cumipmt	`Cumipmt <Type = 0> (Rate, Nper, Pv, Start, End)`
Cumprinc	`Cumprinc <Type = 0> (Rate, Nper, Pv, Start, End)`
Db	`Db <Month = 12> (Cost, Salvage, Life, Period)`

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Function	Syntax
Ddb	`Ddb <Factor = 2> (Cost, Salvage, Life, Period)`
Disc	`Disc <Basis = 0> (Settlement, Maturity, Price, Redemption)`
Dollarde	`Dollarde (FractionalDollar, Decimal)`
Dollarfr	`Dollarfr (DecimalDollar, Fraction)`
Duration	`Duration <Basis = 0> (Settlement, Maturity, CouponRate, YieldRate, Frequency)`
Effect	`Effect(NominalRate, Npery)`
Fv	`Fv <Type = 0> (Rate, Nper, Pmt, Pv)`
Intrate	`Intrate <Basis = 0> (Settlement, Maturity, Investment, Redemption)`
Ipmt	`Ipmt < FV = 0, Type = 0 > (Rate, Period, Nperiod, PV)`
Mduration	`Mduration <Basis = 0> (Settlement, Maturity, CouponRate, YieldRate, Frequency)`
Nominal	`Nominal(EffectiveRate, Npery)`
Nper	`Nper <Type = 0> (Rate, Pmt, PV, FV)`
Oddfprice	`Oddfprice <Basis = 0> (Settlement, Maturity, Issue, FirstCoupon, CouponRate, YieldRate, Redemption, Frequency)`
Oddfyield	`Oddfyield <Basis = 0> (Settlement, Maturity, Issue, FirstCoupon, CouponRate, Price, Redemption, Frequency)`
Oddlprice	`Oddlprice <Basis = 0> (Settlement, Maturity, LastInterest, CouponRate, YieldRate, Redemption, Frequency)`
Oddlyield	`Oddlyield <Basis = 0> (Settlement, Maturity, LastInterest, CouponRate, Price, Redemption, Frequency)`
Pmt	`Pmt <FV = 0, Type = 0> (Rate, Nper, PV)`
Ppmt	`Ppmt <Type = 0> (Rate, Per, Nper, PV, FV)`
Price	`Price <Basis = 0> (Settlement, Maturity, CouponRate, YieldRate, Redemption, Frequency)`
Pricedisc	`Pricedisc <Basis = 0> (Settlement, Maturity, DiscRate, Redemption)`
Pricemat	`Pricemat <Basis = 0> (Settlement, Maturity, Issue, CouponRate, YieldRate)`
Pv	`Pv <Type = 0> (Rate, Nper, Pmt, FV)`
Rate	`Rate <FV = 0, Type = 0, Guess = 0 > (Nperiod, Payment, PV)`
Received	`Received <Basis = 0> (Settlement, Maturity, Investment, Discount)`
Sln	`Sln(Cost, Salvage, Life)`

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Function	Syntax
Syd	`Syd < > (Cost, Salvage, Life, Period)`
Tbilleq	`Tbilleq(Settlement, Maturity, Discount)`
Tbillprice	`Tbillprice(Settlement, Maturity, Discount)`
Tbillyield	`Tbillyield < > (Settlement, Maturity, Price)`
Yield	`Yield <Basis = 0> (Settlement, Maturity, CouponRate, Price, Redemption, Frequency)`
Yielddisc	`Yielddisc <Basis = 0> (Settlement, Maturity, Price, Redemption)`
Yieldmat	`Yieldmat < Basis = 0 > (Settlement, Maturity, Issue, Rate, Price)`
Vdb	`Vdb <Factor = 2> (Cost, Salvage, Life, Period)`

Math functions

Function	Syntax
Abs	`Abs(Argument)`
Acos	`Abs(Argument)`
Acosh	`Acosh(Argument)`
Asin	`Asin(Argument)`
Asinh	`Asinh(Argument)`
Atan	`Atan(Number)`
Atan2	`Atan2(x_num, y_num)`
Banding	`Banding(Argument, StartAt, StopAt, Size)`
BandingC	`BandingC(Argument, StartAt, StopAt, BandCount)`
BandingP	`BandingP (Argument, Boundary1, Boundary2, Boundary3...BoundaryN)`
Ceiling	`Ceiling(Argument)`
Combine	`Combine(Number, Number_Chosen)`
Cos	`Cos(Argument)`
Cosh	`Cosh(Argument)`
Cumipmt	`Cumipmt <Type = 0> (Rate, Nper, Pv, Start, End)`
Cumprinc	`Cumprinc <Type = 0> (Rate, Nper, Pv, Start, End)`
Db	`Db <Month = 12> (Cost, Salvage, Life, Period)`
Ddb	`Ddb <Factor = 2> (Cost, Salvage, Life, Period)`

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Function	Syntax
Degrees	`Degrees(Argument)`
Exp	`Exp(Argument)`
Factorial	`Factorial(Argument)`
Floor	`Floor(Argument)`
Fv	`Fv <Type = 0> (Rate, Nper, Pmt, Pv)`
Int	`Int(Argument)`
Ipmt	`Ipmt < FV = 0, Type = 0 > (Rate, Period, Nperiod, PV)`
Ln	`Ln(Argument)`
Log	`Log(Argument, Base)`
Log10	`Log10(Argument)`
Mod	`Mod(Argument, Divisor)`
Power	`Power(Argument, Power)`
Quotient	`Quotient(numerator, denominator)`
Radians	`Radians(Argument)`
Randbetween	`Randbetween(bottom, top)`
Round	`Round(Argument)`
Round2	`Round2(Argument, Precision)`
Sin	`Sin(Argument)`
Sinh	`Sinh(Argument)`
Sqrt	`Sqrt(Argument)`
Tan	`Tan(Argument)`
Tanh	`Tanh(Argument)`
Trunc	`Trunc(Argument)`

Statistical functions

Function	Syntax
BetaDistribution	`BetaDistribution < Lower Bound = 0, Upper Bound = 1 > (x, alpha, beta)`
BinomialDistribution	`BinomialDistribution <Cumulative = 0> (x, n, p)`
ChiSquareDistribution	`ChiSquareDistribution(x, df)`

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Function	Syntax
Confidence	`Confidence(alpha, stdev, size)`
CritBinomial	`CritBinomial(trials, probability_s, alpha)`
ExponentialDistribution	`ExponentialDistribution <Cumulative = 0> (x, lambda)`
FDistribution	`FDistribution(x, df1, df2)`
Fisher	`Fisher (x)`
GammaDistribution	`GammaDistribution <Cumulative = 0> (x, alpha, beta)`
HypergeometricDistribution	`HypergeometricDistribution(x, n, M, N)`
InverseBetaDistribution	`InverseBetaDistribution < Lower Bound = 0, Upper Bound = 1 > (probability, x, alpha, beta)`
InverseChiDistribution	`InverseChiDistribution(x, df)`
InverseFDistribution	`InverseFDistribution (x, df1, df2)`
InverseFisher	`InverseFisher(x)`
InverseGammaDistribution	`InverseGammaDistribution (x, alpha, beta)`
InverseLognormalDistribution	`InverseLognormalDistribution(x, mean, stdev)`
InverseNormDistribution	`InverseNormDistribution(x, mean, stdev)`
InverseNormSDistribution	`InverseNormSDistribution(x)`
InverseTDistribution	`InverseTDistribution(probability, df)`
LogNormalDistribution	`LognormalDistribution(x, mean, stdev)`
NegativeBinomialDistribution	`NegativeBinomialDistribution(f, s, p)`
NormalDistribution	`NormalDistribution <Cumulative = 0> (x, mean, stdev)`
Permut	`Permut(n, m)`
PoissonDistribution	`PoissonDistribution <Cumulative=0> (x, lambda)`
Standardize	`Standardize(x,mean,stdev)`
StandardNormalDistribution	`StandardNormalDistribution (Argument)`
TDistribution	`TDistribution(x, df)`
WeibullDistribution	`WeibullDistribution <Cumulative = 0> (x, alpha, beta)`

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GLOSSARY

Autostyle A document that stores formatting settings for various control types.

auto text code Dynamic text that is populated by the document or dataset, consisting of the document's or dataset's options rather than data from the data warehouse. Examples of auto text codes, which can be considered as a type of variable, are document name, page number, and execution time. Auto text codes are contained in text field controls on a document.

See also:

- **Data field**
- **Text field**

cache A special data store holding recently accessed information for quick future access. Caching is normally done for frequently requested reports or documents so that they execute faster, because they need not run against the data warehouse. Results from the data warehouse are stored separately and can be used by new job requests that require the same data.

In the MicroStrategy environment, when a user runs a report for the first time, the job is submitted to the database for processing. If the results of that report are cached, the results can be returned immediately without having to wait for the database to process the job the next time the report is run.

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Document caching generates the document only once—the first time that you execute a document in a specific mode (such as Express Mode or Interactive Mode) in MicroStrategy Web. Subsequent document executions in the same mode use the cache. If document caching is disabled, the document query is submitted to your data warehouse every time that you execute the document in a different mode.

calculated expression A metric obtained dynamically, directly from metrics on a document dataset, by using at least one of the metrics in the document. Calculated expressions allow you to use simple arithmetic operators (+, -, *, /) to combine metrics from different datasets in the document.

See also:

- **Derived metric**

compound join A way to join a document's multiple datasets. It matches any common attributes, then creates a virtual dataset by sequentially proceeding through dataset rows to create a complete set of joined rows. A compound join saves memory space and processing time.

conditional formatting Used to format specified controls in a document depending on predefined criteria. It allows certain settings of controls, including sections, to be controlled by data-driven conditions. Conditional formatting in documents is similar to thresholds in reports.

control Any item in the document's Layout area that you can select. This can be a text field, line, rectangle, image, panel stack, selector, Grid/Graph, or HTML container. These different kinds of controls are referred to as control types.

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See also:

- **Grid/Graph**
- **HTML container**
- **Panel stack**
- **Selector**
- **Text field**

control default A set of options that can be set for each type of control and each section in a document. You can set the defaults according to the control that is currently selected; afterward, its format is applied to any object of the same type that you create in the document.

dashboard An interactive, visually intuitive display of data. A dashboard can summarize key business indicators (KPIs) to provide a status check. Users can change how they view the dashboard's data using interactive features, such as selectors, grouping, widgets, and visualizations. Users can explore their data via multiple paths, using text, data filtering, and layers of organization.

MicroStrategy has two kinds of dashboards:

- **Visual Insight (VI) dashboard**: Simple visualizations and pre-defined, presentation-quality formatting allow you to quickly display your data in a visually-striking, interactive dashboard.
- **Report Services (RS) dashboard**: A broad selection of widgets and a wide variety of formatting options allow you to design a customized, interactive dashboard. RS dashboards provide the freedom to design a dashboard pixel-by-pixel in multiple editing and previewing modes. The abundant design options deliver full control over position, formatting, and interactivity.

data field Dynamic text that is populated from a dataset with data that originated in the data warehouse (or an Intelligence Server cache). A data field is only a reference to the metric, attribute,

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consolidation, or custom group on a report. Data fields are contained in text field controls on a document.

See also:

- **Auto text code**
- **Text field**

dataset A set of data that can be displayed on a document, Report Services dashboard, or Visual Insight dashboard. A dataset can be a MicroStrategy report, a MicroStrategy Intelligent Cube, or data imported directly from an external data source. Reports include Freeform SQL reports, Query Builder reports, MDX cube reports, and reports that access Intelligent Cubes. Intelligent Cubes can be based on MicroStrategy data or imported data. The information in a dataset can include MicroStrategy objects such as attributes, custom groups, consolidations, and metrics.

Datasets 1. A pane in the Document Editor that shows all objects (grouped by datasets) that can be used in the document.

2. All objects that can be used in the document as supplied by the datasets. Dataset objects are attributes, consolidations, custom groups, and metrics.

data warehouse 1. A database, typically very large, containing the historical data of an enterprise. Used for decision support or business intelligence, it organizes data and allows coordinated updates and loads.

2. A copy of transaction data specifically structured for query, reporting, and analysis.

derived metric A metric based on data already available from metrics on a document dataset. It is calculated on the Intelligence Server, not in the database. Use a derived metric to perform calculations on other metrics (column math), on data after it has been returned from the database.

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See also:

- **Calculated expression**

drill A link from one document to another document, report, or HTML document. Prompt answers for the destination can be included in the drill.

document 1. A container for objects representing data coming from one or more reports, as well as positioning and formatting information. A document is used to format data from multiple reports in a single display of presentation quality.

2. The MicroStrategy object that supports the functionality defined in (1).

Grid/Graph A control placed in a document that displays information in the same way a MicroStrategy report does.

grouping A way to create a hierarchical structure for a document.

History List A folder where users put report results for future reference.

HTML container A control that either displays real-time information from the web or displays formatted HTML.

Layout area The middle panel of the Document Editor in which you place data or other controls to determine the appearance of the document when it is viewed as a PDF.

link A connection from a document to another document or a report. A link lets an analyst execute another document or report (the target) from a document (the source), and to pass parameters to answer any prompts that are in the target.

page-by Interactively displaying groups on separate pages in PDF View. It allows the end user to dynamically select group

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elements as criteria for analysis. The PDF that results from this selection is called a page of the original document.

panel A way of grouping data in a document so that users can navigate subsets of data as if the subsets were pages in a smaller document. Each “page”, or layer of data, is a panel; a group of panels is called a panel stack.

panel stack The holder for a collection of panels, or layers of data, in a document. A user can navigate or flip through the panels in a panel stack; only one panel is displayed at a time.

project 1. The MicroStrategy object in which you define all of the schema and application objects, which together provide a flexible reporting environment. A project is the highest-level intersection of a data warehouse, metadata repository, and user community, containing reports, filters, metrics, and functions.

2. An object containing the definition of a project, as defined in (1). The project object is specified when requesting the establishment of a session.

Property List The list of settings used to specify the appearance or any other characteristic of a control on a document.

report instance A container for all objects and information needed and produced during report execution including templates, filters, prompt answers, generated SQL, report results, and so on. It is the only object that is referenced when executing a report, being passed from one special server to another as execution progresses.

scheduling A MicroStrategy Intelligence Server feature that is used to automate specific tasks.

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selector A type of control in a document that allows a user to:

- Flip through the panels in a panel stack, to see different predefined layers of data, or "pages," in the same document
- Display different attribute elements or metrics in a Grid/Graph

summary metric A shortcut to a subtotal, or a subtotal metric allowing explicit aggregation in documents. A summary metric allows you to select the function to use to calculate the subtotal (that is, a summary).

text field A type of control in a document that displays text in the document. These different types of text content are:

- Static text, which does not change and serves as a label
- Dynamic text, which is populated by the document or dataset. There are two types of dynamic text:
  - Data field, which is populated from a dataset with data that originated in the data warehouse (or an Intelligence Server cache). A data field is only a reference to an object on a report.
  - Auto text code, which is populated by the document or dataset, consisting of their settings rather than data from the data warehouse
- A combination of any or all of the above types in one text field

See also:

- **Data field**
- **Auto text code**

virtual dataset A dataset held in memory that is the result of a compound join between multiple datasets in a document.

widget A type of control that presents data in a visual and interactive way; an interactive Flash-only graph that dynamically

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updates when a new set of data is selected. Some types include Gauge, Heat Map, and Stacked Area widgets.

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