

Basic Reporting Guide

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Patent Information

This product is patented. One or more of the following patents may apply to the product sold herein: U.S. Patent Nos. 6,154,766, 6,173,310, 6,260,050, 6,263,051, 6,269,393, 6,279,033, 6,567,796, 6,587,547, 6,606,596, 6,658,093, 6,658,432, 6,662,195, 6,671,715, 6,691,100, 6,694,316, 6,697,808, 6,704,723, 6,741,980, 6,765,997, 6,768,788, 6,772,137, 6,788,768, 6,798,867, 6,801,910, 6,820,073, 6,829,334, 6,836,537, 6,850,603, 6,859,798, 6,873,693, 6,885,734, 6,940,953, 6,964,012, 6,977,992, 6,996,568, 6,996,569, 7,003,512, 7,010,518, 7,016,480, 7,020,251, 7,039,165, 7,082,422, 7,113,993, 7,127,403, 7,174,349, 7,181,417, 7,194,457, 7,197,461, 7,228,303, 7,260,577, 7,266,181, 7,272,212, 7,302,639, 7,324,942, 7,330,847, 7,340,040, 7,356,758, 7,356,840, 7,415,438, 7,428,302, 7,430,562, 7,440,898, 7,486,780, 7,509,671, 7,516,181, 7,559,048, 7,574,376, 7,617,201, 7,725,811, 7,801,967, 7,836,178, 7,861,161, 7,861,253, 7,881,443, 7,925,616, 7,945,584, 7,970,782, 8,005,870, 8,051,168, 8,051,369, 8,094,788, 8,130,918, 8,296,287, 8,321,411, 8,452,755, 8,521,733, 8,522,192, 8,577,902, 8,606,813, 8,607,138, 8,645,313, 8,761,659, 8,775,807, 8,782,083, 8,812,490, 8,832,588, 8,943,044, 8,943,187, 8,958,537, 8,966,597, 8,983,440, 8,984,274, 8,984,288, 8,995,628, 9,027,099, 9,027,105, 9,037, 577, 9,038,152, 9,076,006, 9,086,837, 9,116,954, 9,124,630, 9,154,303, 9,154,486, 9,160,727, 9,166,986, 9,171,073, 9,172,699, 9,173,101, 9,183, 317, 9,195,814, 9,208,213, 9,208,444, 9,262,481, 9,264,415, 9,264,480, 9,269,358, 9,275,127, 9,292,571, 9,300,646, 9,311,683, 9,313,206, 9,330,174, 9,338,157, 9,361,392, 9,378,386, 9,386,416, 9,391,782, 9,397,838, 9,397,980, 9,405,804, 9,413,710, 9,413,794, 9,430,629, 9,432,808, 9,438,597, 9,444,805, 9,450,942, 9,450,958, 9,454,594, 9,507,755, 9,513,770, 9,516,018, 9,529,850, 9,563,761, 9,565,175, 9,608,970, 9,640,001, 9,646,165, 9,680,908, 9,697,146, 9,697,350, 9,742,764, 9,742,781, and 9,743,235. Other patent applications are pending.

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BOOK OVERVIEW AND ADDITIONAL RESOURCES

Thank you for using MicroStrategy—Platform for Mobile Intelligence.

The MicroStrategy Basic Reporting Guide describes the steps for a business analyst to execute and analyze a business report in MicroStrategy Developer and MicroStrategy Web. It also provides the information necessary for report designers to design, create, and modify simple business reports and reporting objects using the MicroStrategy platform.

Specifically, this guide provides the following information:

- [Chapter 1, Getting Started with MicroStrategy Reporting](#), shows you how to log in and get started with MicroStrategy Developer and MicroStrategy Web.
- [Chapter 2, Formatting a Report](#), explains how to format a report.
- [Chapter 3, Analyzing Data](#), describes common methods you can use to better understand and present the data that appears in a report.
- [Chapter 4, Answering Questions about Data](#), explains how to expose additional data related to your original report.
- [Chapter 5, Answering Prompts and Refreshing Data](#), shows you how to refresh your report data and how to answer report prompts.
- [Chapter 6, Building a Quick Query for Analysis](#), is for report analysts. It shows you how to create a simple report using MicroStrategy's Report Builder tool.
- [Chapter 7, Building Query Objects and Queries, for Designers](#), is for report designers. It describes MicroStrategy objects and how to use them in creating new reports.
- [Appendix A, Reporting Interfaces in MicroStrategy](#), helps you to become familiar with the MicroStrategy Web and Developer interface.

Technical terms that need more clarification are defined in the glossary section of this guide.

The [Advanced Reporting Guide](#) presents more advanced product functionality and is a logical “next step” when you have mastered the information in this manual. Other MicroStrategy manuals cover installation, system administration, and other topics. Most MicroStrategy manuals assume you have read and mastered all topics covered in this guide.

Detailed steps for all functionality in the MicroStrategy system are available in the Online Help.

About this book

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

This guide provides steps primarily for MicroStrategy Web. Whenever steps are not in this guide for Developer, click **Help** in Developer to see detailed steps to perform tasks in Developer.



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. Many of the examples use the MicroStrategy Tutorial, which is MicroStrategy's sample warehouse and project. Information about the MicroStrategy Tutorial can be found in the *MicroStrategy Basic Reporting Guide*.

Detailed examples of advanced reporting functionality can be found in the [Advanced Reporting Guide](#).

What's new in this guide

Analytics Enterprise

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

MicroStrategy 10.8

You now have the option to use Aggregate from base or Subtotal from base from the Metric Editor in MicroStrategy Developer. For more information on subtotals and aggregation, see the [Analyzing Data](#) and [Answering Questions about Data](#) sections of this guide.

MicroStrategy 9.3

- You can determine which delivery options are available to users subscribing to a specific report. For example, you can specify which delivery schedules can be used to subscribe to the report, or prevent users from subscribing to the report altogether. For steps, see [Specifying the delivery options available to users subscribing to a report, page 290](#).

- The Report Wizard allows you to quickly and easily create a report by selecting an existing template and filter. For steps, and definitions of templates and filters, see [Creating a report by combining a template and a filter: Report Wizard, page 127](#).

MicroStrategy 9.2

Any updates to this guide were minor and not directly related to MicroStrategy 9.2. For a list of new features in MicroStrategy 9.2, see the MicroStrategy Readme for that release.

Who should use this guide

This document is designed for all users who require a basic understanding of how to manipulate the data in a report to analyze business information, as well as how to design, create, and modify simple business reports using MicroStrategy software.

Report design is the process of building reports from basic report components, or objects. To design reports you use the Report Editor in either MicroStrategy Developer or Web. The Report Editor also allows you to create report objects such as templates, metrics, filters, drill maps, and so on. As a report designer, you can set up a controlled, user-friendly environment for report analysts. In general, this role is made available only to a group of advanced users who can design reports. The Developer and Web Professional user roles in MicroStrategy include the set of privileges required to create reports and report objects, for each respective product.

Report designers should review chapters 1 through 5 as an introduction, and should use chapter 6 as their primary reference to begin creating reports.

Report analysis is the process of analyzing business data displayed in existing reports either in MicroStrategy Web or Developer. Report analysts can explore report data with the wide range of powerful reporting functionality that report designers can make available to them. Report analysts can also save new reports that result as they explore and manipulate data, making further analysis quicker and more direct. Finally, report analysts can create quick and easy reports of their own to answer simple business questions, using the Report Builder and Report Wizard tools. The Web Analyst and Analyst user roles in MicroStrategy include the set of privileges required to analyze reports and use related functionality, for each respective product.

Report analysts should use chapters 1 through 5 as their primary reference to begin analyzing report data and working with various report functionality to manipulate that data.

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 xiii*.

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 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 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

- *Installation and Configuration Guide*

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

- *Upgrade Guide*

Steps to upgrade existing MicroStrategy products.

- *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.

- *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.

- *Advanced Reporting Guide*

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.

- *Document Creation Guide*

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

- *Dashboards and Widgets Creation Guide*

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

- *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*

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

- *MicroStrategy Mobile Design and Administration Guide*

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.

- *System Administration Guide*

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

- *Supplemental Admin Guide*

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

- *Functions Reference*

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

- *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 Analysis Module Reference*

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>.

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 xiii](#)
- [To access documentation resources on Windows, page xiv](#)
- [To access documentation resources on UNIX and Linux, page xiv](#)

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.



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	<ul style="list-style-type: none"> • 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 <p>Example: Click Select Warehouse.</p>

Type	Indicates
<i>italic</i>	<ul style="list-style-type: none"> Names of other product manuals and documentation resources When part of a command syntax, indicates variable information to be replaced by the user <p>Example: Type <code>copy c:\filename d:\foldername\filename</code></p>
Courier font	<ul style="list-style-type: none"> Calculations Code samples Registry keys Path and file names URLs Messages displayed in the screen Text to be entered by the user <p>Example: <code>Sum(revenue)/number of months.</code></p> <p>Example: Type <code>cmdmgr -f scriptfile.scp</code> and press Enter.</p>
+	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 Developer: Reporting Essentials
- MicroStrategy Web: Report Analysis
- MicroStrategy Web: Report Design

For a detailed description of education offerings and course curriculums, 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`

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.

GETTING STARTED WITH MICROSTRATEGY REPORTING

This chapter shows you how to log in and get started using MicroStrategy Web and MicroStrategy Developer. It also provides many examples using the sample Tutorial project that comes with MicroStrategy. It gives you an opportunity to familiarize yourself with the Web interface and learn some basic functionality.

MicroStrategy Web is a user-friendly environment for interactive analysis. A full set of data browsing, drilling, and reporting development capabilities enable stream-of-consciousness navigation. Boardroom-quality reports can be generated using a wide range of charting and formatting options.

MicroStrategy Developer is a business intelligence environment designed to meet today's sophisticated business intelligence requirements. It brings integrated query and reporting, powerful collaborative analytics, and investigative workflow to every desktop.

This guide provides steps primarily for MicroStrategy Web. Whenever steps are not in this guide for Developer, click **Help** in Developer to see detailed steps to perform tasks in Developer.

Starting MicroStrategy

Use the appropriate procedure below, depending on whether you are starting MicroStrategy Web or MicroStrategy Developer.

Starting MicroStrategy Web

You can access MicroStrategy Web from any computer that can run a browser.

To start MicroStrategy Web

1. In a browser, enter the URL of your company's MicroStrategy Web site.
MicroStrategy Web opens, displaying the MicroStrategy Tutorial project as well as any

other projects you have permissions to access.

2. Click the project to log in to. (To follow the examples in this guide, click **MicroStrategy Tutorial**.) The Login screen appears.
3. Type your **User name** and **Password**. Depending on how your administrator set up your user account, this may be the same login and password you use to access your computer, or it may be a MicroStrategy-specific login and password.
4. Click **Login**.

The Home page opens, displaying icons to view, work with, and create reports and dashboards. The icons also provide direct access to the most commonly used areas of the project, such as folders containing existing reports and dashboards.

5. Click **Shared Reports**.

To explore the sample project data in MicroStrategy Tutorial, open any of the folders and click on any report name to run the report or dashboard and see the sample data results.

Starting MicroStrategy Developer

You can access MicroStrategy Developer from any computer on which Developer has been installed.

To start MicroStrategy Developer

1. From your computer's **Start** menu, select **Programs** (or **All Programs**), then **MicroStrategy Products**, and select **Developer**.
2. In the User Login window, type your **Login ID** and **Password**. Depending on how your administrator set up your user account, this may be the same login and password you use to access your computer, or it may be a MicroStrategy-specific login and password.
3. Click **OK**.

MicroStrategy Developer opens, displaying the Folder List on the left, where the MicroStrategy Analytics Module project source appears, as well as any project sources that your organization may have created. The MicroStrategy Analytics Module project source includes the MicroStrategy Tutorial project.

4. To explore this sample project data, in the Folder List expand **MicroStrategy Tutorial**, then expand **Public Objects**, then expand **Reports**. Explore the folders and double-click any report or dashboard to run it and see the sample data results.

Security privileges

The data you can view and work with may be controlled by privileges that an administrator has assigned to you. Security settings can limit your data access to specific projects, certain reports within a project, the ability to use specific objects on reports, and even how you can explore some data.

If you have any questions about any data you expect to be able to access but cannot, see your MicroStrategy administrator about having your security role or privileges adjusted.

About sample data and the MicroStrategy Tutorial project

MicroStrategy comes with a sample project called MicroStrategy Tutorial. The theme of the MicroStrategy Tutorial project is activity in a retail store over a three-year time period. The retail store sells electronics, books, movies, and music.

The Tutorial project includes sample data, such as actual customer names and items purchased. It also includes predesigned sample reports. The reporting areas are grouped logically so you can see reports based on business roles, MicroStrategy platform capabilities, or various subject areas such as customer analysis, inventory and supply chain analysis, sales and profitability analysis, and so on. Reports that are useful in more than one area are duplicated in all applicable folders.

The Tutorial project lets you familiarize yourself with MicroStrategy because you can run the sample reports in the Tutorial project and experience various ways to analyze data.

Most of the reports discussed in this chapter exist in the MicroStrategy Tutorial project. These sample reports show you how you can build and generate reports.

To access the Tutorial project, follow the steps in the section above to log in to MicroStrategy Web or MicroStrategy Developer. Once you have logged in, you can access the reports in the Tutorial project.



Warehouse data in the sample MicroStrategy projects is updated regularly, and these changes are reflected in the documentation whenever possible. However, the sample reports, documents, objects, and images in this guide may display warehouse data that no longer appears in the software.

Sample analysis areas

The MicroStrategy Tutorial project comes with the following groups of reports:

- **Business Roles:** This folder contains reports for different types of business intelligence users, such as billing managers, brand managers, company executives, sales managers, and operations managers. For example, brand managers can see a report for Brand Performance by Region. A billing manager can see data in a report called Invoice Statements by Selected Customers, as well as a customer-level transaction detail report.
- **Dashboards and Scorecards:** This folder contains several examples of dashboards. Dashboards provide a distilled view of the business, organized in logical sections, often containing interactive visualizations and other adaptive features.
- **Enterprise Reporting Documents:** This folder contains examples of different types of enterprise reporting documents, such as scorecards and dashboards, managed metrics reports, production and operational reports, invoices and statements, and business reports. The documents and dashboards in this folder are a sample of the types of documents that can be built using MicroStrategy Report Services.

- **MicroStrategy Platform Capabilities:** This folder contains examples of the sophisticated capabilities within the MicroStrategy platform. Use the reports and dashboards to get a better feel for platform functionality. For example, the Graph Styles folder contains examples of most of the graph types that can be created in MicroStrategy. The Ad Hoc Reporting folder shows examples of commonly used features like sorting and thresholds.
- **Subject Areas:** This folder contains reports that cover various topics such as customer analysis, enterprise performance management, human resources analysis, inventory and supply chain analysis, sales and profitability analysis, and supplier analysis.

Opening a report

Reports that display your business data are the focus and goal of business intelligence. Reports allow you to gather business insight through data analysis. The results displayed in any MicroStrategy report are often a starting point for further investigation.

Use the steps below to open a sample report in the Tutorial project, to become familiar with a standard grid report in MicroStrategy.

To open a report

1. Log into MicroStrategy Web. Follow the steps above to log in ([Starting MicroStrategy Web, page 1](#)).
2. In the Tutorial project, click **Shared Reports**.
3. Expand **Subject Areas**, expand **Sales and Profitability Analysis**, and then click **Category Sales Report** to run the report and see the sample data results. This is a MicroStrategy grid report.

Use the rest of this chapter to help you understand how to read a grid report. The information you learn will help you throughout the rest of this guide.

Components of a report

The image below shows a standard grid report in MicroStrategy.

The screenshot shows a software window titled "Revenue Forecast" with a menu bar (File, Edit, View, Insert, Data, Grid, Move, Window, Help) and a toolbar. The main area displays a data grid with the following data:

Category	Subcategory	Quarter Metrics	2004 Q1 Revenue Forecast	2004 Q2 Revenue Forecast	2004 Q3 Revenue Forecast
Books	Art & Architecture		\$ 1,041	\$ 1,887	\$ 1,184
	Business		\$ 1,274	\$ 1,989	\$ 1,217
	Literature		\$ 898	\$ 1,954	\$ 1,148
	Books - Miscellaneous		\$ 178	\$ 222	\$ 189
	Science & Technology		\$ 798	\$ 1,979	\$ 888
	Sports & Health		\$ 740	\$ 805	\$ 712
Electronics	Audio Equipment		\$ 123,727	\$ 214,551	\$ 169,199
	Cameras		\$ 277,429	\$ 563,540	\$ 319,642
	Computers		\$ 33,774	\$ 61,513	\$ 41,221
	Electronics - Miscellaneous		\$ 67,179	\$ 133,609	\$ 89,200
	TV's		\$ 83,239	\$ 197,162	\$ 133,199
	Video Equipment		\$ 179,197	\$ 402,900	\$ 229,914
Movies	Action		\$ 30,898	\$ 78,729	\$ 42,010
	Comedy		\$ 27,067	\$ 58,840	\$ 40,427
	Drama		\$ 43,729	\$ 81,103	\$ 48,571
	Horror		\$ 16,514	\$ 28,557	\$ 21,036
	Kids / Family		\$ 39,442	\$ 76,746	\$ 55,692
	Special Interests		\$ 28,089	\$ 51,601	\$ 31,635
Music	Alternative		\$ 22,451	\$ 41,746	\$ 33,447
	Country		\$ 21,809	\$ 54,628	\$ 33,532
	Music - Miscellaneous		\$ 8,407	\$ 12,141	\$ 9,946
	Pop		\$ 59,276	\$ 103,064	\$ 79,078
	Rock		\$ 55,890	\$ 79,851	\$ 56,953
	Soul / R&B		\$ 28,346	\$ 63,154	\$ 42,593

The status bar at the bottom indicates: Execution complete | Execution Time: 00:00:01 | Rows: 24 | Columns: 4 | Local Template | Standard

Rows and columns

On a typical report, each row represents a business concept, such as products, employees, customers, stores, and so on. MicroStrategy calls these business concepts “attributes,” because they represent the many important attributes of a business.

Attribute: A business concept that provides context in which data is relevant. In the example of a report that shows sales in the Southeast, Southeast is the attribute. An attribute on a report serves as a label for a group of metrics.

While the rows represent business concepts, the columns of a typical report represent financial calculations that are important to the business, such as inventory, sales, costs, profits, salaries, and so on. MicroStrategy calls these calculations “metrics”.

Metric: A calculation that shows the numbers you want to see. In the example of a report that shows sales in the Southeast, sales is the metric. Metric calculations can show information at simple levels as well as at complex levels, such as displaying sales trends, growth patterns, percent-to-total contributions, and profit analysis. A metric on a report shows a list of values used for analytical calculations.

Cells

Each individual cell on a report contains a single value which is produced by calculating data gathered from somewhere in your organization's data source. That data is the focus of business analysis in a reporting environment.

In the report shown above, for example, the revenue forecast for the first quarter of the year (Q1) for your Art & Architecture books (in the first row) is much lower than the revenue forecast for the same books in Q2. This difference may represent a general slump in sales after the US holiday period, or some other customer behavior specific to the retail industry. The analysis of this data might lead to a decision to prepare a sale or other special promotion on Art & Architecture books for Q1, to attempt to counteract the forecasted revenue reduction.

Report types

You can view a MicroStrategy report from different perspectives, depending on the type of work that you want to perform.

Grids

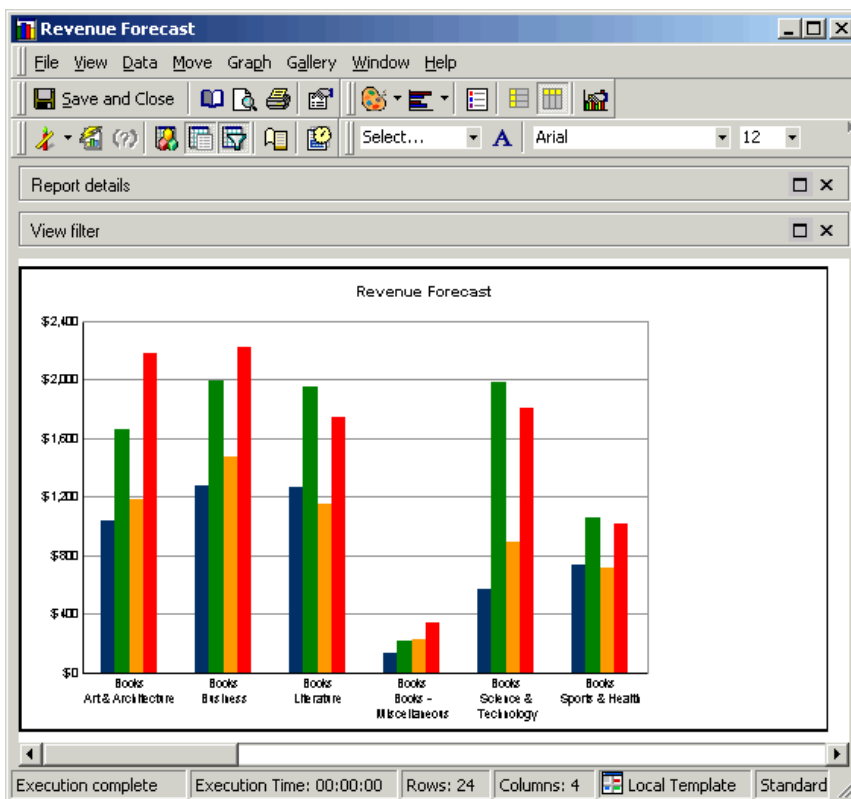
A grid report is the most commonly used type of report. Grid view displays grid reports using a formatted, cross-tabular display of the report data. Most business intelligence analysis is performed using this view. The following figure displays the Grid view of a report.

Revenue Forecast					
File Edit View Insert Data Grid Move Window Help					
Save and Close					
Squares					
Category	Subcategory	Quarter Metrics	2004 Q1 Revenue Forecast	2004 Q2 Revenue Forecast	2004 Q3 Revenue Forecast
Books	Art & Architecture		\$ 1,041	\$ 1,887	\$ 1,184
	Business		\$ 1,274	\$ 1,989	\$ 1,217
	Literature		\$ 898	\$ 1,954	\$ 1,148
	Books - Miscellaneous		\$ 178	\$ 222	\$ 189
	Science & Technology		\$ 798	\$ 1,979	\$ 888
	Sports & Health		\$ 740	\$ 805	\$ 712
Electronics	Audio Equipment		\$ 123,727	\$ 214,551	\$ 169,199
	Cameras		\$ 277,429	\$ 563,540	\$ 319,642
	Computers		\$ 33,774	\$ 61,513	\$ 41,221
	Electronics - Miscellaneous		\$ 67,179	\$ 133,609	\$ 89,200
	TV's		\$ 83,239	\$ 197,162	\$ 133,199
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	Drama		\$ 43,729	\$ 81,103	\$ 48,571
	Horror		\$ 16,514	\$ 28,557	\$ 21,036
	Kids / Family		\$ 39,442	\$ 76,746	\$ 55,692
	Special Interests		\$ 28,089	\$ 51,601	\$ 31,635
Music	Alternative		\$ 22,451	\$ 41,746	\$ 33,447
	Country		\$ 21,809	\$ 54,628	\$ 33,532
	Music - Miscellaneous		\$ 8,407	\$ 12,141	\$ 9,946
	Pop		\$ 59,276	\$ 103,064	\$ 79,078
	Rock		\$ 55,890	\$ 79,851	\$ 56,953
	Soul / R&B		\$ 28,346	\$ 63,154	\$ 42,593
Execution complete Execution Time: 00:00:01 Rows: 24 Columns: 4 Local Template Standard					

To see a report in Grid view in MicroStrategy Web, from the toolbar click the **Grid** icon

Graphs

A graph report is a representation of data in a visual format that can help you see overall trends easily, identify medians and exceptions, and so on. You display report data as a graph using Graph view. There are many different graph styles you can choose from to display your report data most effectively. The following figure displays the Graph view of a report in the bar graph style.



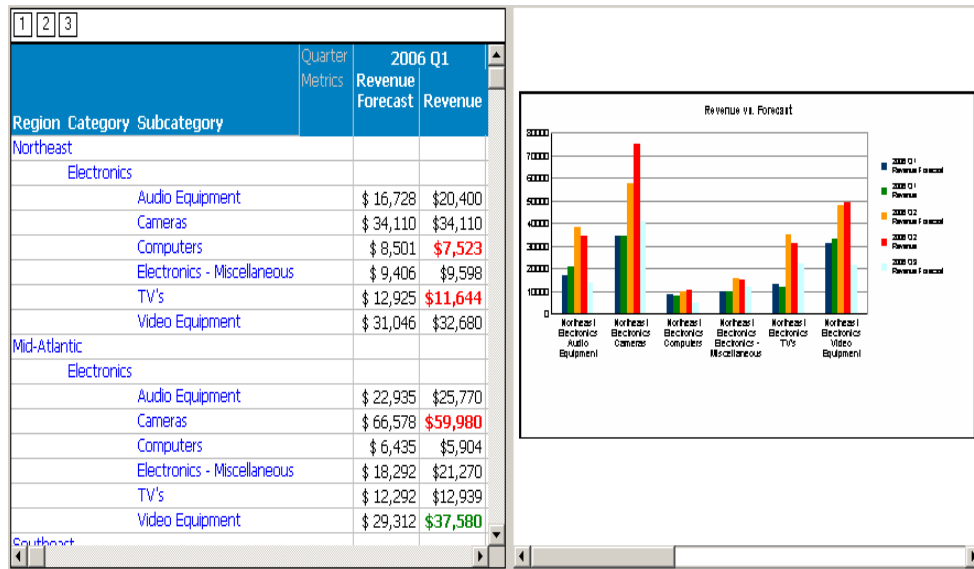
The graph report above and the grid report on the previous page are the same report, seen in two different views. Comparing these two views of the same data helps you see how a graph report can be more useful than a grid report for identifying trends, in this case, trends across certain products. The grid report is generally more useful than a graph report for identifying specific numbers you may need for financial reports and so on.


To see a report in Graph view in MicroStrategy Web, from the toolbar click the **Graph** icon



Grids and graphs combined

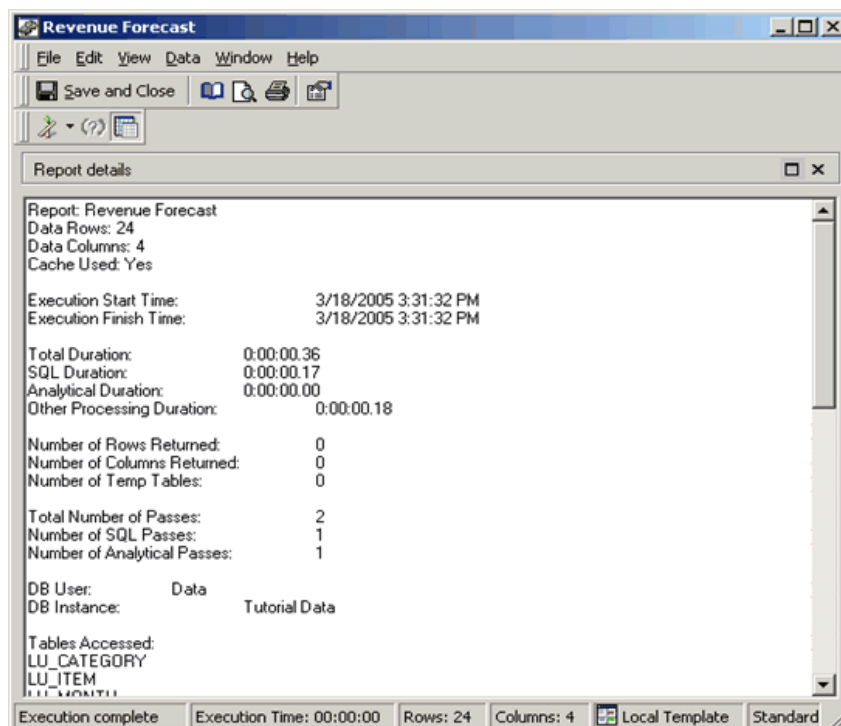
Grid and Graph view is a combination display of the Grid view and the Graph view of a report, side by side. The following figure displays the Grid and Graph view of a report.



To see a report in Grid and Graph view in MicroStrategy Web, from the toolbar click the **Grid and Graph** icon .

SQL view

You can see the SQL used to generate the report. Viewing the SQL provides a good way to troubleshoot and fine-tune the selection of data that is retrieved from your data source and displayed in reports. SQL view also includes various execution statistics for a report, such as the number of rows, number of columns, the time it took to execute, and so on. The following figure displays the SQL view of a report in Developer.



To see the SQL for a report in MicroStrategy Web, from the **Tools** menu select **Report Details Page**. The SQL is displayed in the SQL Statement area. Click **Show Advanced Details** below the SQL Statement area to see execution statistics for the report.

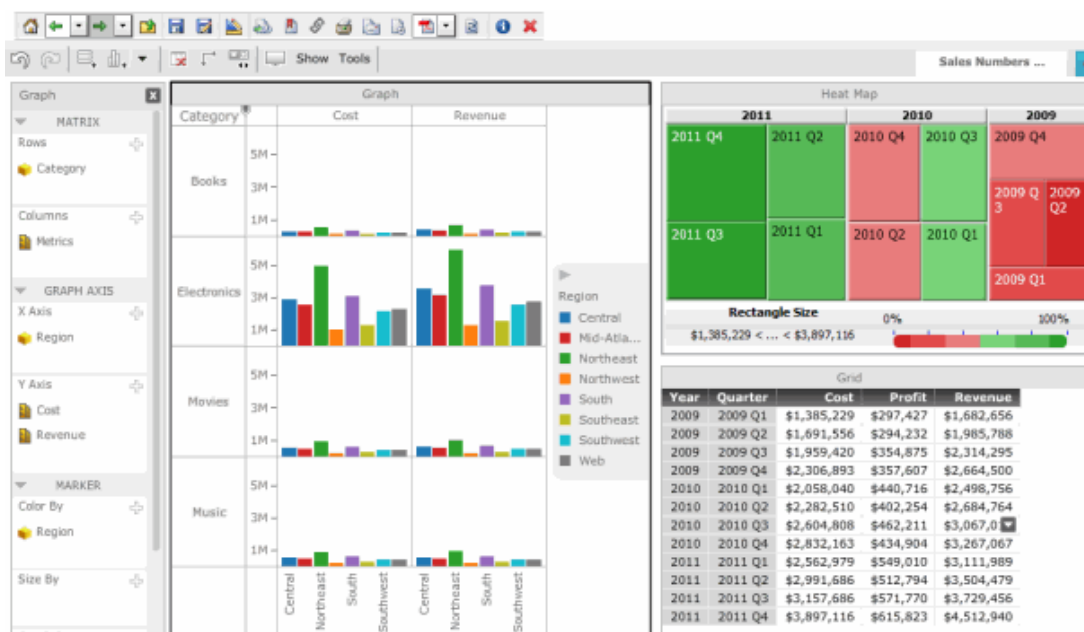
Displaying multiple reports in a single presentation

Reports are a common way to analyze your business data in MicroStrategy. This guide generally uses reports as examples.

MicroStrategy also offers other ways to display data. While working in MicroStrategy Web or Developer you might see boardroom-quality business presentations, invoices that go out to customers, all kinds of management reports and dashboards, and so on. These alternatives are described below.

Visual Insight dashboards

Visual Insight allows you to quickly create a customized, interactive dashboard that can be used to explore business data. You can create a Visual Insight dashboard using data in your organization's data warehouse storage, or by quickly importing data from an Excel or other file. You can perform manipulations on the data to customize the information that is included in the dashboard, and add visual representations of the data (called visualizations) to the dashboard to make the data easier to interpret. Visual Insight dashboards can be viewed in MicroStrategy Web or on an iPad with MicroStrategy Mobile. You can share a dashboard through email, by linking to the dashboard, or by embedding the dashboard in a web page.



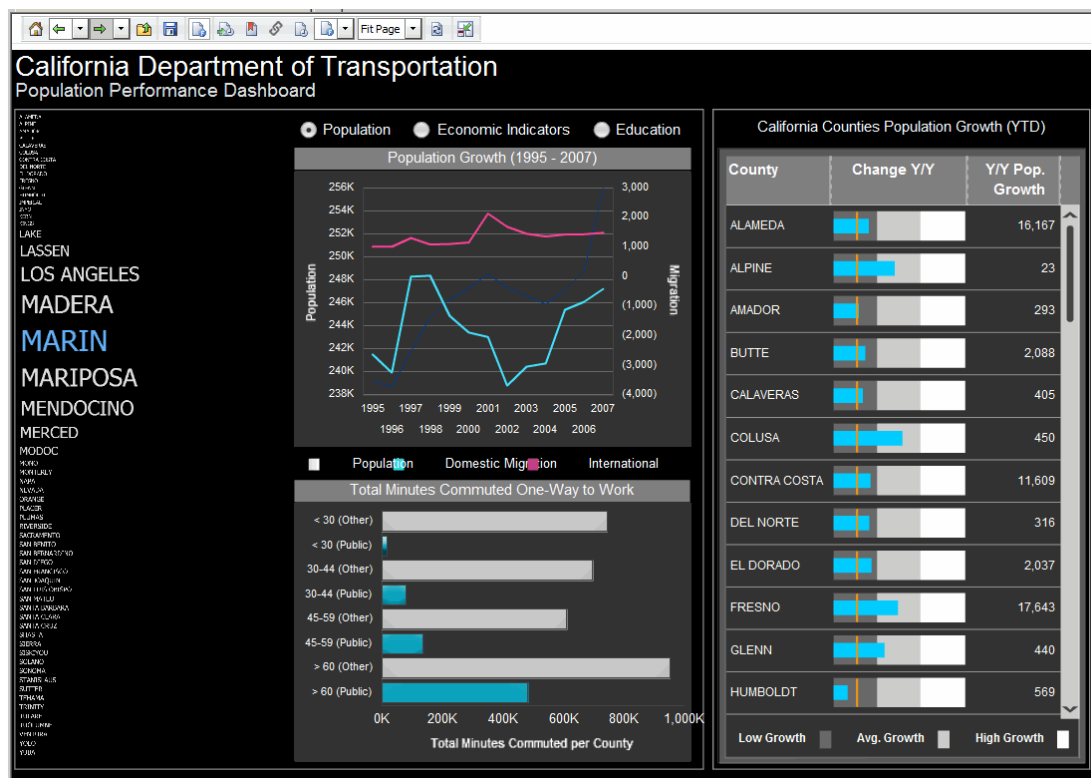
Visual Insight allows you to streamline the tasks required to create a polished dashboard. For example, you can:

- Add, rearrange, or remove report objects quickly from a visualization in a dashboard.
- Create additional visualizations to display the data in multiple ways, then easily modify, rearrange, or resize visualizations in a dashboard.
- Add filtering based on report objects to a dashboard, to allow users to only display the information they are interested in.
- Add thresholds to a dashboard, to change the display of data based on the value of a metric.

Report Services dashboards and documents

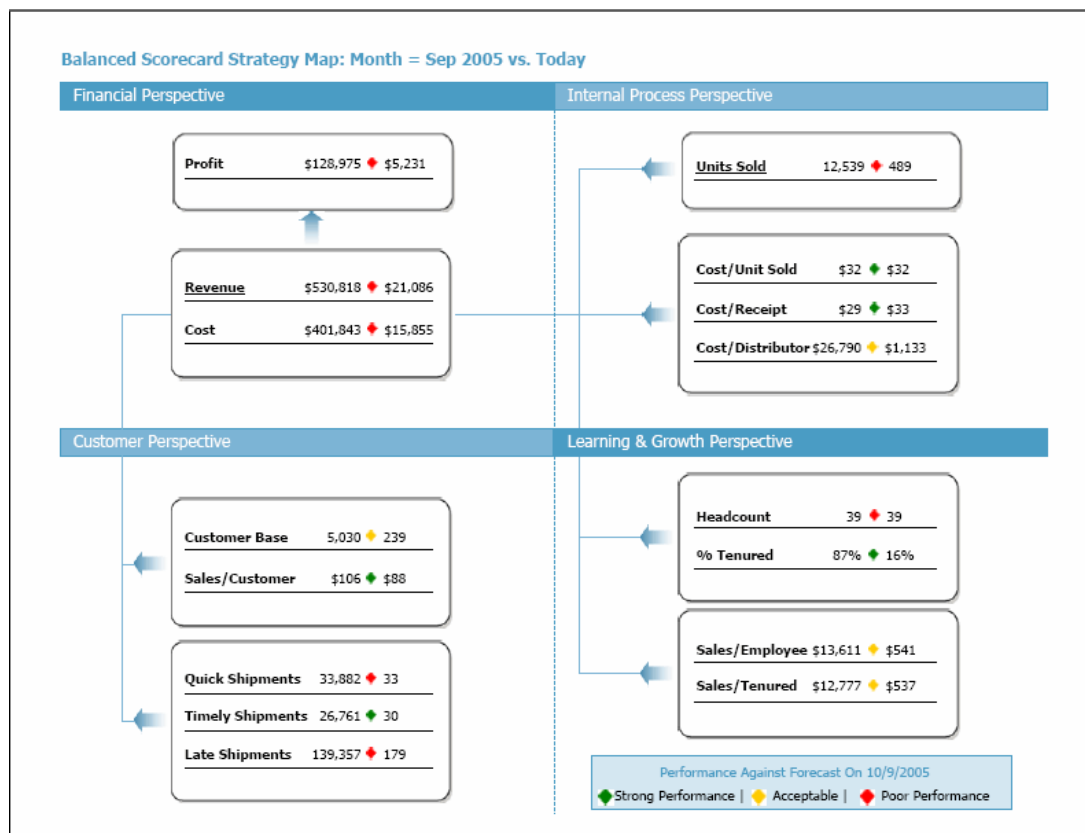
MicroStrategy Report Services dashboards and documents are available with MicroStrategy Report Services. Dashboards are a display of data from multiple reports with special formatting added, with interactive components, and so on.

An example of a Report Services dashboard is shown below:



The example above shows the California Population Analysis dashboard, a sample dashboard in the MicroStrategy Tutorial project.

An example of a simple Report Services document is shown below:



The image above shows the Balanced Scorecard Strategy Map document, a sample document in the MicroStrategy Tutorial project.

A document or dashboard can contain data from one or more MicroStrategy reports. Documents and dashboards 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. Documents and dashboards allow you to display your business data in a user-friendly way that is suitable for presentation to management for boardroom-quality material.

To see sample dashboards in MicroStrategy Web

1. Log in to the MicroStrategy Tutorial sample project. For steps, see [Starting MicroStrategy Web, page 1](#).
2. Click **Shared Reports**.
3. Click the **Enterprise Reporting Documents** folder.
4. Click any of the documents listed on the right side of MicroStrategy Web, to execute it and see the results.

To see sample dashboards in Developer

1. Log in to the MicroStrategy Tutorial sample project. For steps, see [Starting MicroStrategy Developer, page 2](#).
2. Expand the **Public Objects** folder, then expand the **Reports** folder.
3. Click the **Enterprise Reporting Documents** folder.
4. Double-click any of the documents listed on the right side of Developer, to execute it and see the results.

OLAP Services

MicroStrategy OLAP Services lets MicroStrategy Developer, Web, and Office users make use of features that slice and dice data in reports without re-executing SQL against your data source. This improves performance by resulting in quicker data display within a report as users analyze and manipulate the data. Information on OLAP Services is provided in the [In-memory Analytics Guide](#).

Determining whether you have OLAP Services



In MicroStrategy Web, open a report, then click the **Tools** menu to expand it. If **Report Objects** appears as an option, you have access to OLAP Services.

In Developer, open a report, then click the **View** menu. If **Report Objects** appears as an option, you have access to OLAP Services.

View filters

A view filter is different from a report filter, which restricts how much data is retrieved from the data warehouse. A view filter dynamically restricts the data being displayed on the report without re-executing the report against the warehouse. This capability provides improved response time and decreased database load.

You can use a report filter and view filter on the same report. The report filter returns a set of data for the report, which the view filter then further restricts. Therefore, you should avoid defining contradictory filtering criteria in both. Otherwise, you may encounter situations where no data is displayed.

For details on creating view filters and using them to analyze data, see the [In-memory Analytics Guide](#).

Derived metrics

Derived metrics perform calculations on-the-fly with the data available in a report. They are an easy way to present data already available on the report in different ways, providing

further analysis of data. You can use derived metrics to quickly perform on-the-fly analyses such as margins, contributions, and differences between metrics included on the report.

These metrics are created based on existing metrics in the report. Since derived metrics are evaluated in memory, their computation does not require any SQL execution in the database.

Since derived metrics are created within a report, they can only be used for the report in which they are created. Derived metrics cannot be saved as individual objects in the project, and therefore cannot be applied to other reports in the project.

For details on creating derived metrics and using them to analyze data, see the [In-memory Analytics Guide](#).

Derived elements

An attribute is a business concept that reflects your stored data, such as Year or City. The elements of a business attribute are the unique values for that attribute. For example, 2006 and 2007 are elements of the Year attribute, while New York and London are elements of the City attribute. On a report, attributes are chosen to build the report, but once the report is executed, the attribute's elements are displayed in the rows or columns.

A derived element is a grouping of attribute elements on a report. These groups provide a new view of report data for analysis and formatting purposes. For example, you can group data for the months of December, January, and February into a single element that combines and displays the data for the entire winter season.

Rather than having to define consolidations or custom groups, you can use derived elements to create these groups on-the-fly while viewing a report. Derived elements are evaluated in the report without regenerating or re-executing SQL.

Derived elements are defined by using a list, filter, or calculation to combine attribute element data.

For details on creating derived elements and using them to analyze data, see the [In-memory Analytics Guide](#).

Dynamic aggregation

Dynamic aggregation allows you to change the level of report aggregation on-the-fly, while you are reviewing the report results. This feature allows metric values to be aggregated at different levels depending on the attributes included on the report without having to re-execute the report against the data warehouse. Dynamic aggregation occurs when the attributes included on the report layout change. The attributes included on the report layout change when you move an attribute or attribute form off of the report layout to the Report Objects pane, or when you move an attribute or attribute form from the Report Objects pane back onto the report layout. As objects included on the report layout change, metric values are dynamically aggregated to the new level of the report.

For details on using dynamic aggregation to analyze data, see the [In-memory Analytics Guide](#).

Printing a report

To print a report

1. In MicroStrategy Web, click any report to execute it.
2. From the **Home** menu, select the view you want to print: **Grid**, **Graph**, or **Grid and Graph** view.
3. From the **Home** menu, select **Print**. The Print Options page opens. For details to set various print options, click **Help**.
4. Print the file from either the PDF preview or from your browser.

Exporting data

You can export reports in a variety of formats, such as HTML, Microsoft Excel, and plain text. A report's designer determines which export formats are available for a report, based on what makes sense for that report. Each format is described in detail below, to help you decide what format suits your purposes:

- **PDF:** You can export the report to an Adobe PDF viewer, in .pdf format. After the report is exported, the report content is displayed in an Adobe PDF file.
- **Excel with plain text:** You can export the report to Microsoft Excel, in .xls format. After the report is exported, the content of the report is displayed using the default settings in Microsoft Excel. The structure and format of the report as it is displayed in MicroStrategy Web is not retained. For large report results, this export option is recommended over **Excel with formatting**.
- **CSV file format:** You can export the report to a comma-separated values file (CSV). After the report is exported, the report content is displayed in a CSV file as plain text. This format is suitable for Microsoft Access and Lotus 1-2-3. The structure and format of the report as it is displayed in MicroStrategy Web is not retained.
- **Excel with formatting:** You can export the report to Microsoft Excel, in .xls format. After the report is exported, the report displays with the same formatting, color, and structure that appears in MicroStrategy Web.
 - Microsoft Excel does not support all colors that browsers do, so some colors may differ after export.
 - If the report is large, it is recommended that you use the **Excel with plain text** export option.
- **HTML:** You can export the report to an HTML editor or browser, in .html format. After the report is exported, the report is displayed in an HTML page. The structure and format of the report as it appears in MicroStrategy Web is retained.
- **Plain text:** You can export the report to a text editor, in .txt format. After the report is exported, the content of the report displays in a plain text page. The structure and format

of the report as it appears in MicroStrategy Web is not retained. You can choose a comma, tab, semicolon, or space to separate the fields of text.

Before you export, you can adjust several export options that allow you to specify which report details are exported, whether the data should be exported to PDF or another application, and more.



To export a grid report that contains characters in a double-byte language, such as Simplified Chinese or Japanese, to a PDF, your computer should be using that double-byte language (for example, Japanese Windows). If you are using an English environment, to export double-byte characters, a report designer must change the font of the attribute and metric names to the font type that the locale supports. For steps, see [Formatting for easier data analysis, page 276](#) or the MicroStrategy Help.

To configure export settings in MicroStrategy Web

1. Open a report.
2. From the **Home** menu, select **Export**, and then select the required output format.
 - You can modify project-wide graph settings in the User Preferences page. For more information, click **Help** in MicroStrategy Web.
 - You can modify export options in the User Preferences page. For more information, click **Help** in MicroStrategy Web.
3. Make any necessary changes to the export options. Click **Help** for details about each setting.

To export data in MicroStrategy Web

1. From the **Home** menu, select **Export**, and then select the required output format. The Export Options page opens.
2. Make any necessary changes to the export settings and click **Export**. The report automatically displays in the selected application.

Emailing a report

You can send a report to any email address.

Prerequisites

- You must have the Use Send Now privilege.
- You must have the Web Subscribe to History List privilege to send a report or document to the History List.

- You must have the Use Link to History List in Email privilege to send a link to the location of a report or document in the History List via email.

To email a report

1. In MicroStrategy Web, click the name of a report to execute it.
2. From the **Home** menu, select **Send Now**. The Send Now dialog box opens.
3. Click **To** to locate the email address of the recipient. The Recipients Browser opens.
4. Choose an address from the **Available** list. If you do not see the correct email address to use, type the **Address name** and **Physical address** in the respective fields and click **Add to Recipients** to add a new address.
5. Click **OK** to return to the Send Now dialog box.
6. From the **Send** drop-down list, specify where the report is delivered by choosing one of the following options. The options vary depending on the privileges you are assigned, as described in Prerequisites above.
 - **Data in email**: The report or document is displayed in the email.
 - **Data in email and to History List**: The report or document is displayed in the email and is also delivered to the History List.
 - **Data and link to History List in email**: The report or document is displayed in the email, along with a link to the History List location of the report or document.
 - **Link to History List in email**: A link to the History List location of the report or document is provided in the email.
7. From the **Delivery Format** drop-down list, select the format in which to send the report. The options are HTML, Excel, and PDF. When Excel or PDF is chosen, the report is included as an attachment in the email; you can reduce the size of the attachment by selecting the **Compress contents** check box.
8. If the delivery option is **Plain Text**, you can specify the delimiter character to use to separate values in a report, such as a comma or tab. From the **Delimiter** drop-down list, select one of the following:
 - To choose a delimiter from the list, select the delimiter you want to use, such as Comma or Space.
 - To specify your own delimiter, select **Other**, then type the character you want to use as the delimiter in the field.
9. Select the **Expand page-by fields** check box to print all objects in the Page-by drop-down list when the report or document is emailed.
10. In the **Subject** line, type a description for the emailed report.
11. If you want a message to be displayed in the body of the email, type the text in the

Message field.

12. To include the report or document in a zip file:
 - a. Expand **Advanced Options** by clicking the plus sign.
 - b. Select the **Password Protect Zip File** check box if you want to protect the zip file by providing a password. Type a password for the zip file.
 - c. Type the name for the zip file in the **Zip File Name** field.
13. If you have selected a contact group as the recipient of the report or document, by default MicroStrategy uses the security filter of the contact group as a whole when delivering the report or document. To use the separate security filters for each member of the subscribed contact group instead, select the **Use contact security for each group member** check box.
14. Click **OK**. The report is sent to the designated email address.

FORMATTING A REPORT

Formatting a report involves highlighting certain data to enhance analysis, as well as changing the overall display or look and feel of a report. You can:

- Highlight important numbers
- Put the focus on specific sets of data
- Rename an object on the report, such as a business attribute or a metric calculation
- Apply your corporate look to a report for a business presentation

Using the banding option, you can group rows or columns of report data using colors to enhance readability and make it easier to identify business concepts on which you would like to focus.

MicroStrategy's autostyles are collections of formatting choices that can all be applied at the same time with a single click. This chapter tells you how to use autostyles and how to create and save your own.

Report formatting can be performed in Grid view, or it can be performed in Design view (for report designers). Grid view shows you the results of your changes immediately as you format the report. (For an introduction to different views and how to access them, see [Report types, page 6](#).)

You can always click **Help** to find detailed steps to perform all types of formatting.

Ideas for formatting

Formatting can be as fine-grained as you choose and as your needs require. Steps for all of the ideas below are in this chapter.

- Individual cells in grid reports: Format individual cells of data in a grid report when a single data value is important to call attention to or you want it to be easy and quick to locate in a large report. Use thresholds to have values formatted automatically. You can also determine a value to display, such as the word EMPTY, when a cell would otherwise appear empty.
- Rows and columns in grid reports: You can hide a metric column on a report so that it does not display when the report is executed again. You can also apply bands of color to groups of report rows or columns, to make large quantities of data easier to analyze. You can

rename row and column headers so the object names are more meaningful to yourself or other analysts. You can also manually make columns narrower or wider, or adjust row height, to fine-tune your report display.

- Graph reports: You can select an appropriate style for your graph (pie, bar, line, 3D Surface, Gantt, and so on) and format the colors of series (for example, the colors of pie slices in a pie graph). You can also reposition and resize elements such as the graph legend, titles, and axis labels.
- Autostyles: MicroStrategy comes with several presentation styles for displaying reports, called autostyles. Each autostyle automatically applies a set of formatting that includes color scheme, font style, and font type to a report. Autostyles let you standardize formatting across many reports.

Formatting a grid report

This section provides information on the following formatting tasks:

Formatting conditional values on a grid: Thresholds

Individual cell data can be automatically formatted differently than the data in the rest of the report. Data that is formatted differently calls attention to itself, and makes that data easier to locate for analysis.

In a simple example, for the report shown below, you want to highlight the subcategories for which the revenue is greater than \$1,000,000.

Subcategory	Metrics	Revenue
Art & Architecture		\$9,024
Business		\$9,922
Literature		\$8,742
Books - Miscellaneous		\$1,410
Science & Technology		\$7,714
Sports & Health		\$4,813
Audio Equipment		\$1,101,360
Cameras		\$2,603,390
Computers		\$301,140
Electronics - Miscellaneous		\$604,118
TV's		\$832,915
Video Equipment		\$1,800,080
Action		\$345,592
Comedy		\$284,916
Drama		\$422,697
Horror		\$167,693
Kids / Family		\$344,934
Special Interests		\$212,324
Alternative		\$243,526
Country		\$222,318
Music - Miscellaneous		\$68,125
Pop		\$539,939
Rock		\$450,221
Soul / R&B		\$266,335

You can achieve this by applying a threshold to the Revenue metric. The threshold is defined to automatically apply a gray background and bold font whenever values meet the threshold's condition. The resulting report is shown below. Notice that revenue greater than \$1,000,000 is highlighted.

Subcategory	Metrics	Revenue
Art & Architecture		\$9,024
Business		\$9,922
Literature		\$8,742
Books - Miscellaneous		\$1,410
Science & Technology		\$7,714
Sports & Health		\$4,813
Audio Equipment		\$1,101,360
Cameras		\$2,603,390
Computers		\$301,140
Electronics - Miscellaneous		\$604,118
TV's		\$832,915
Video Equipment		\$1,800,080
Action		\$345,592
Comedy		\$284,916
Drama		\$422,697
Horror		\$167,693
Kids / Family		\$344,934
Special Interests		\$212,324
Alternative		\$243,526
Country		\$222,318
Music - Miscellaneous		\$68,125
Pop		\$539,939
Rock		\$450,221
Soul / R&B		\$266,335

A threshold's condition can be as simple or as complex as you want.

Compare the example above to the example below. The image below shows the Tutorial report named Product Sales Results By Region. Thresholds are displayed for the % Change in Revenue metric, and for the Revenue metric.

Region	Category	% Change in Revenue	2004	
			Revenue	Profit
Mid-Atlantic	Books	◆	\$6,807	\$1,822
	Electronics	◆	\$1,085,630	\$296,006
	Movies	◆	\$268,436	\$66,493
	Music	◆	\$267,845	\$29,507
	Total	(8.74%)	\$1,628,718	\$393,828
Southeast	Books	◆	\$3,812	\$1,012
	Electronics	◆	\$654,417	\$178,276
	Movies	◆	\$155,945	\$38,634
	Music	◆	\$157,014	\$17,088
	Total	(7.06%)	\$971,188	\$235,010
Total		(8.12%)	\$2,599,906	\$628,838

When data is set up to automatically appear with special formatting depending on certain conditions, such as sales over \$1 million or inventory below 50, this is called conditional

formatting. It is special formatting that is applied to values when certain conditions are met. The data that meets the condition is considered to be data that has passed the threshold of the condition; once data passes the threshold, the formatting is applied. So thresholds are cells of data that are formatted differently from the rest of the data on a report; the formatting is applied dynamically, whenever the report is re-executed.



An administrator can create an alert-based subscription to ensure that end users are automatically notified by email when a metric on a report meets specific threshold conditions. This allows email recipients to be alerted to data that is likely to be important for making business decisions. An administrator can also have formatting applied to metric values in the report, to draw immediate attention to the data that meets the alert conditions. See the [System Administration Guide](#) for details on alerts.

Thresholds highlight particular data in a report by displaying special cell formats, symbols, images, or replacement text. In the image above, the gray diamond-shaped symbol replaces (and represents) all values that represent a small increase in revenue from the previous year. “Small increase” is defined as revenue changes between 0 and 5 percent. The yellow diamond-shaped symbol represents a medium decrease in revenue from the previous year, with “medium decrease” defined as between -10 and 0. Values that show a medium decrease for the Revenue metric are displayed in red. Each of these thresholds makes analyzing large amounts of data easier because symbols are easy to locate, and different colors are quickly identified.



To see threshold images you have added to a report, view the report in MicroStrategy Web. Threshold images are also visible if the report is placed in a Report Services document in Developer or Web, or a Visual Insight dashboard in MicroStrategy Web.

You can use certain types of threshold formatting on a graph report. For details to apply a threshold to a graph, see [Formatting conditional data on a graph: Thresholds, page 47](#).

Steps are below to create thresholds in MicroStrategy Web.

Prerequisites

- DHTML must be enabled. See the [MicroStrategy Web Help](#) for steps.
- Decide what condition the metric values must meet to have the threshold formatting applied. Common examples of a threshold’s condition include sales that exceed a certain amount, revenue that falls below a certain percentage, or employee resource numbers that drop below a particular number.

You can use attributes or other metrics on the report to define a threshold’s condition. For example, in the following report, the Trend Lead Conversion column includes a green + (plus) or red - (minus) threshold to highlight when the month-to-month trend is positive or negative. The month-to-month trend is determined by comparing the first and second columns. This means the condition causing the threshold to appear in the last column is based on whatever values appear in the first and second columns, as shown below:

Month: Jan 2004 ▼					
Lead Source	Metrics	% Change # Leads vs. Previous Month	% Change # Qualified Leads vs. Previous Month	% Leads Converted (Qualified)	Trend Lead Conversion
Campaign		8.33%	(28.57%)	38.46%	-
Partner		0.00%	(57.14%)	27.27%	-
Trade Show		12.50%	(20.00%)	44.44%	-
Web-site		40.00%	(33.33%)	28.57%	-
Internal		66.67%	100.00%	40.00%	+
Total		15.38%	(30.43%)	35.56%	

- Decide what you want to be displayed on your report when the condition is met. Common examples include displaying important numbers in red, or in white font with a red background, or displaying a red stop sign or a green traffic light in place of certain data.

Formatting null values and blank cells

An empty cell of data on a grid report represents a null value. A null value is an unknown value, because it can be the result of an empty area of your data source, or the result of the calculations and cross-tabbing that are sometimes performed on a grid report.

For example, a null value in your data source can occur if a customer omits his birth date or another piece of personal information. If your data source does not contain data in a particular field and you pivot the rows and columns on the resulting report, the resultant cross-tabbing may produce a null value. In the image below, the Internet Revenue column does not have data for display and returns empty cells when the report is run.

	Metrics	Internet Revenue	Main-street Revenue
Store			
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

You can replace null values with a specific value, such as a zero or the word NULL or NO VALUE as shown in the image below, so that cells do not appear as empty on a report. The replacement can be for the final report display only, or for the calculation of the report data. Replacements do not change any values in your data source.

	Metrics	Internet Revenue	Main-street Revenue
Store			
Atlanta		NO VALUE	1,052,108
San Diego		NO VALUE	2,962,719
San Francisco		NO VALUE	1,021,447
Washington, DC		NO VALUE	3,135,283
Salt Lake City		NO VALUE	731,413
Miami		NO VALUE	1,187,843
Milwaukee		NO VALUE	4,182,139
New Orleans		NO VALUE	3,305,039
Seattle		NO VALUE	739,741

 Null value replacements are specified in MicroStrategy Developer. MicroStrategy Web displays null values in the format designated for the report in Developer.

To replace a null value with a specific value

1. In Developer, open a grid report.
2. From the **Data** menu, select **Report Data Options**.
3. Expand the **Display** category and select the **Null Values** subcategory.
4. To replace a null value for the final report display only, enter the replacement value (such as a zero) in the **Null Display Settings** area for any of the scenarios listed:
 - An empty value is retrieved from your data source.
 - An empty value is calculated in the cross-tabulation process.
 - An empty value appears when the report is sorted.
5. To replace a null value during the calculation of report data, enter the replacement value in the **Aggregation Null Values** box.
6. Click **OK**.

Renaming row and column headers

You can give a report's row and column headers meaningful names by renaming them. By creating an alias for an object on a report, the object can be displayed on that report with a different name, without changing its name in the MicroStrategy project.

For example, in the image of the report below, one metric is named Web Sales and another metric is named Non-Web Sales.

Report details		
View filter		
Store	Metrics	
	Web Sales	Non-Web Sales
Atlanta	NO VALUE	1,052,108
San Diego	NO VALUE	2,962,719
San Francisco	NO VALUE	1,021,447
Washington, DC	NO VALUE	3,135,283
Salt Lake City	NO VALUE	731,413
Miami	NO VALUE	1,187,843
Milwaukee	NO VALUE	4,182,139
New Orleans	NO VALUE	3,305,039
Seattle	NO VALUE	739,741
Boston	NO VALUE	1,487,936
New York	NO VALUE	7,066,478
Fargo	NO VALUE	847,227
Memphis	NO VALUE	2,084,241
Charleston	NO VALUE	1,317,332
Web	3,902,762	NO VALUE

You might rename the first metric as Internet Revenue, and the second metric as Main Street Revenue as shown in the image below, so that your business audience can more easily understand what the values mean.

Report details		
View filter		
	Metrics	
Store	Internet Revenue	Main-street Revenue
Atlanta	NO VALUE	1,052,108
San Diego	NO VALUE	2,962,719
San Francisco	NO VALUE	1,021,447
Washington, DC	NO VALUE	3,135,283
Salt Lake City	NO VALUE	731,413
Miami	NO VALUE	1,187,843
Milwaukee	NO VALUE	4,182,139
New Orleans	NO VALUE	3,305,039
Seattle	NO VALUE	739,741
Boston	NO VALUE	1,487,936
New York	NO VALUE	7,066,478
Fargo	NO VALUE	847,227
Memphis	NO VALUE	2,084,241
Charleston	NO VALUE	1,317,332
Web	3,902,762	NO VALUE

You can rename any business attribute (usually a row header) or metric calculation (usually a column header) on the report grid. This feature, called aliasing, lets you name an object on a report something that makes sense to you, within the context of a given report.



This alias feature is for report display purposes only. Creating aliases with this feature does not change object names as they appear in the project, as they are stored in the MicroStrategy object repository (metadata), or as they are stored in your data source.

The alias feature also allows you to display descriptive information about an object on a report and edit the description that exists. You can use this to make object descriptions more meaningful for other users who will view this report.

The following is a list of the objects you can rename on a report:

- **Attribute:** A business concept, such as Product, Employee, Month, Region, and so on. The individual characteristics of an attribute are attribute elements. For example, 2006 and 2007 are elements of the Year attribute, while New York and London are elements of the City attribute. On a report, attributes are chosen to build the report, but once the report is executed, the attribute's elements are displayed in the rows or columns.
- **Metric:** A business calculation, such as Revenue, Profit, Employee Headcount, or Probability of Purchase. Some metrics are key performance indicators (KPIs) because they present crucial progress information at a glance. Metrics commonly appear in the columns of a grid report.
- **Consolidation:** A selected group of attribute elements used just like an attribute on a report. For example, suppose you want to see each season of the year as a separate row on a report, but Season does not exist as an attribute in your project. A consolidation

allows you to group together the elements of the Month of Year attribute into various seasons and place them on the report. In this example, the consolidation will contain four consolidation elements, one for each season. Consolidations are covered in the [Advanced Reporting Guide](#).

- Custom group: A special filter for report data. Custom groups are covered in more detail in the [Advanced Reporting Guide](#).

Creating an alias

You can create an alias by renaming a row or column header.

To alias an object name

1. In MicroStrategy Web, open a grid report.
2. From the **Data** menu, choose **Rename/Edit Objects**. The Rename/Edit Objects dialog box (DHTML) or panel (HTML) is displayed.
3. Select the object to rename from the **Object** drop-down list.



Derived metric: If you have MicroStrategy OLAP Services (see [OLAP Services, page 13](#)), you may have a derived metric on the report. If you click on a data cell of a derived metric, you can change the syntax of the derived metric formula in the formula box.

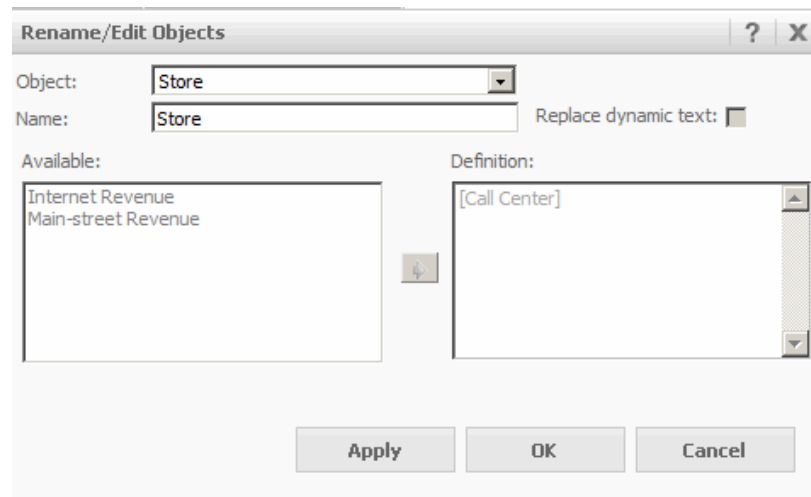
4. Type the **Name** for the object and click **OK** to save your changes.

Determining whether aliases are used on a report

You can review any report to determine whether a column or row header is an alias or shows the original column or row name that comes from your MicroStrategy project.

To determine whether an alias is used on a report

1. In MicroStrategy Web, open a grid report.
2. From the **Data** menu, select **Rename/Edit Objects**. The Rename/Edit Objects dialog box opens.
3. From the **Object** drop-down list, select the object for which you want to determine whether an alias is used. In the example image below, the object Store shows that it is an alias for the Call Center object listed in the Definition area.



Changing from aliases to original names

You can change all row and column names from their alias to their original name.

To quickly reset all names

1. In MicroStrategy Web, open a grid report.
2. From the **Data** menu, select **Reset Data**.

Hiding and re-displaying a metric column

You can hide a metric object (usually a column) on a grid report, yet that metric's data will still be included in any subtotals and grand totals you might have displayed. You can also display any previously hidden metric column so that the metric's data now shows in your report.

Depending on whether you have MicroStrategy OLAP Services, the procedure is different to hide a metric column. To determine whether you have OLAP Services, see [OLAP Services](#), [page 13](#). Use the appropriate procedure below to hide or re-display a metric column.

With OLAP Services

Hiding a metric column

If you have MicroStrategy OLAP Services, you can hide any metric column by simply dragging it off the grid report into the Report Objects pane to the left of your report. (If you do not see the Report Objects pane and you have OLAP Services, from the **View** menu select **Report Objects**.)

Displaying a previously hidden metric column

You can show any hidden metric column by right-clicking the metric in the Report Objects pane and selecting **Add to Grid**.

Without OLAP Services

Hiding a metric column

To hide a metric column on a report

1. Open a grid report.

The example image below shows a report with two metric columns, Revenue and Percent Growth.

Report details				
View filter				
Customer Region	Year	Metrics	Revenue	Percent Growth
Northeast	2008		\$1,916,786	29.66%
	2009		\$2,491,593	29.99%
Mid-Atlantic	2008		\$2,416,040	38.30%
	2009		\$3,142,036	30.05%
Southeast	2008		\$619,410	21.96%
	2009		\$840,215	35.65%

2. From the **Format** menu, select **Resize Columns and Rows**. The Resize Columns and Rows dialog box is displayed.
3. Under **Columns**, choose the **Fixed** option. In the drop-down list underneath, select the metric you wish to hide.
4. Enter **0** in the **Width** field.
5. Click **OK**.

The report automatically updates with the metric column you selected now hidden. In the example image below, the metric Revenue has been hidden, although the Percent Growth remains the same.

Report details			
View filter			
Customer Region	Year	Metrics	Percent Growth
Northeast	2008		29.66%
	2009		29.99%
Mid-Atlantic	2008		38.30%
	2009		30.05%
Southeast	2008		21.96%
	2009		35.65%

Displaying a previously hidden metric column

Follow the procedure above for hiding a metric column. Instead of choosing the Fixed option, select **Auto Fit to Contents** and click **OK**. The report automatically updates with the column now showing.

Resizing a column or row: Column handles and Fixed Column Width mode

Most reports are designed to have column widths and row heights sized automatically by the system. However, you can redesign the report to size columns and rows manually. This lets you drag a column edge left or right, or a row edge up or down, to resize the space. This gives you fine control over the look of your report.

Use the appropriate procedure below, depending on the degree of control you want when resizing rows and columns:

- Use the column handles procedure if you want to simply drag column handles around to resize a column.
- Use the pixel height and width procedure to enter a specific number of pixels for column width, to assign a different width to specific columns, and to enter a specific number of pixels to adjust row heights.

Steps are below to resize columns and rows in both MicroStrategy Developer and MicroStrategy Web.

To display column handles in Developer

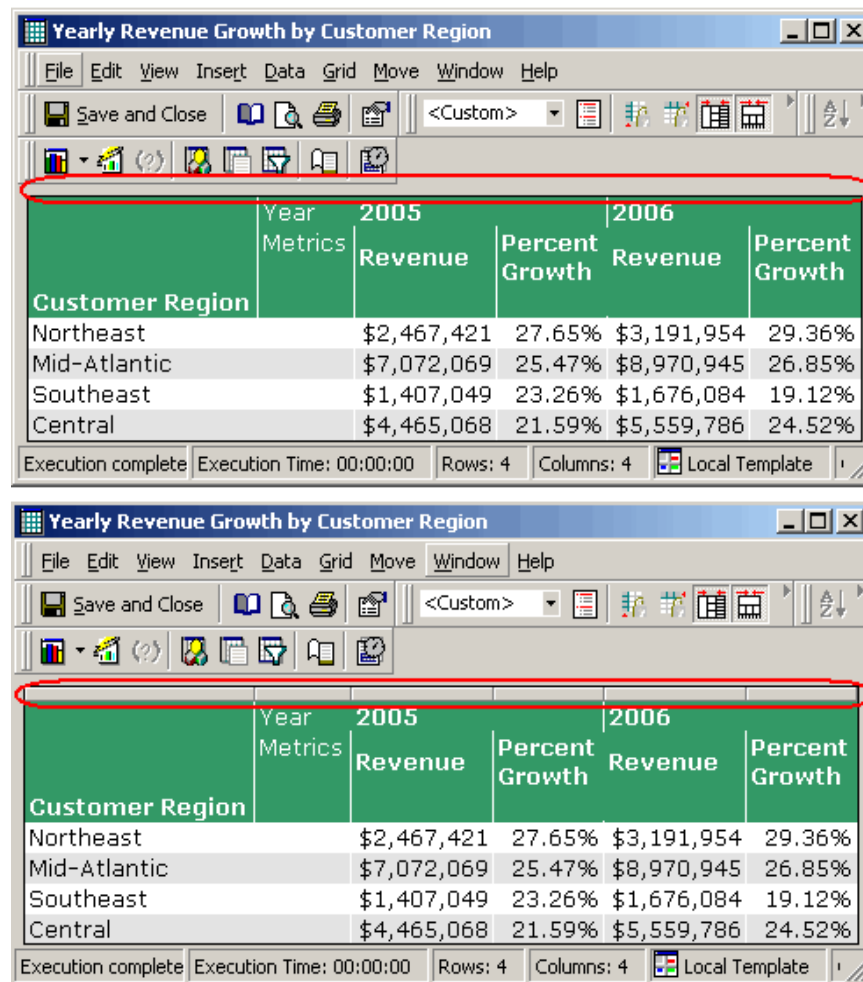
The procedure below is slightly different depending on whether your report was designed to use Fixed Column Width mode or Auto Column Width mode. The differences are described below.

1. Run a grid report.
2. On the **Grid** menu, select **View Column Handles**.

The following message may appear: “Column width changes in Automatic Column Width mode will not be saved. Do you want to switch to Fixed Column Width mode?”

This message indicates that the report you executed is in Automatic Column Width mode. This means the system automatically sizes the columns for you. If you click **No**, the report stays in Automatic mode and any column sizing you do will not be saved. If you click **Yes**, the report's column width mode is changed to Fixed, and any column sizing you do will be saved when you save the report.

- Column handles appear along the top of the columns of the report. In the following image, the report on the top has no column handles displayed. The report on the bottom shows column handles displayed.



Customer Region	Year Metrics	2005		2006	
		Revenue	Percent Growth	Revenue	Percent Growth
Northeast		\$2,467,421	27.65%	\$3,191,954	29.36%
Mid-Atlantic		\$7,072,069	25.47%	\$8,970,945	26.85%
Southeast		\$1,407,049	23.26%	\$1,676,084	19.12%
Central		\$4,465,068	21.59%	\$5,559,786	24.52%


Execution complete | Execution Time: 00:00:00 | Rows: 4 | Columns: 4 | Local Template

- Hover your cursor over a column handle until the cursor changes to a double arrow, as shown below:



- Drag the handle left or right to make the column narrower or wider.

To determine pixel height of rows and width of columns in Developer

1. Open a grid report.
 2. From the **Grid** menu, select **Options**. The Grid Options dialog box opens.
 3. On the Columns and Rows tab, select **Fixed**.
 4. From the drop-down list, select the report features you want to specify width for:
 - **All Columns**: Determines the width of all the columns on the report.
 - **All Row Axis**: Determines the width for the column on the row axis (usually the attributes). Use this setting if there are no metrics (columns) on the report.
 - **All Grid**: Determines the width of the data columns.
 - **Attribute form name**: Determines the width for the specified attribute form. Each attribute form in the report is listed.
 - **Metrics**: Determines the width of the column named “Metrics”, which holds the column headers.
 - **Metric name**: Determines the width for the specified metric. Each metric in the report is listed. All instances of this metric use this width, including those that are in page-by fields. (For details on page-by fields, see [Grouping data by page, page 63.](#))
 5. Enter the column width in **Pixels**.
 6. Select one of the following row height settings:
 - **Auto Row Height**: Allows row heights to be determined automatically by the system.
 - **Fixed Row Height**: Allows you to specify the height of the rows. Enter the number of Pixels for the row height.
-  Column widths must be fixed for row heights to be fixed. Column widths are applied first and then row heights.
7. Click **OK**. You are returned to the report.
-

To resize the columns and rows on a report in MicroStrategy Web

1. Open a report.
2. Do one of the following:
 - Click and drag a column header’s vertical lines to adjust the size of a column. The size of the column is adjusted accordingly.
 - From the **Format** menu, select **Resize Columns and Rows**. The Resize Columns and Rows dialog box is displayed.

- If DHTML is disabled, click **Go**. The Resize Columns and Rows panel is displayed.
3. Resize the columns and rows using the following options:
- To automatically set the size of the columns and rows:
 - **Auto Fit to Window**: The grid report's columns stretch to fit the size of the browser window.
 - **Auto Fit to Contents**: The width of the report's columns or rows is determined by the data in the column or row. All extra space in the grid is removed.
 - To manually size the height of the rows or width of the columns, select **Fixed** in the Columns area or **Fixed Height** in the Rows area. Type a size for the columns or rows. The grid report is adjusted to the column width and row height you specify.



Changing the height of the rows manually does not affect the header rows at the top of the report.

4. Click **OK** to apply the changes.

Formatting groups of report rows or columns: Banding

You can color groups of report rows or columns so that they form bands of data that are easy to locate and analyze. Banding can also make it easier to make sense of a very large report, because the large amounts of data are broken up into visual groups. If you need to keep track of values that mean different things in different columns (for example, dollars in one column and inventory quantities in another column), banding can help an analyst avoid making the mistake of reading the wrong number.

Banding is a method of organizing or grouping data values in a grid report according to certain criteria. You can band rows or columns in several ways. You can band based on the number of rows or columns (for example, alternating color every 5 rows). You can also band based on the row and column headers (for example, sorting the Units Sold column in order, then applying alternating colors to sets of values). As shown in the image below, banding based on column headers helps keep financial numbers from getting confused with unit counts.

For example, for the report shown below, you want to band the columns according to Revenue and Units Sold, such that all Revenue columns appear with one color and all Units Sold columns appear with another color.

Region	Category	Subcategory	Year Metrics	2005		2006	
				Revenue	Units Sold	Revenue	Units Sold
Northeast	Electronics	Audio Equipment		\$114,040	384	\$112,710	355
		Cameras		\$306,580	646	\$240,300	518
		Computers		\$36,547	254	\$36,712	265
		Electronics - Miscellaneous		\$71,078	187	\$58,370	182
		TV's		\$100,111	351	\$98,076	310
		Video Equipment		\$197,420	392	\$178,840	387
Mid-Atlantic	Electronics	Audio Equipment		\$175,830	538	\$176,670	514
		Cameras		\$444,870	927	\$384,140	843
		Computers		\$57,371	392	\$46,449	342
		Electronics - Miscellaneous		\$95,412	242	\$92,058	235
		TV's		\$148,794	507	\$110,913	393
		Video Equipment		\$273,940	583	\$275,400	545
Southeast	Electronics	Audio Equipment		\$94,020	293	\$101,710	298
		Cameras		\$263,070	559	\$230,540	496
		Computers		\$28,177	199	\$24,368	177
		Electronics - Miscellaneous		\$64,360	155	\$55,270	138
		TV's		\$73,238	261	\$76,239	255
		Video Equipment		\$179,320	353	\$166,290	338

To do this, you choose to band by columns, and you select the banding colors. After applying the banding, the report appears as shown below.

Region	Category	Subcategory	Year Metrics	2005		2006	
				Revenue	Units Sold	Revenue	Units Sold
Northeast	Electronics	Audio Equipment		\$114,040	384	\$112,710	355
		Cameras		\$306,580	646	\$240,300	518
		Computers		\$36,547	254	\$36,712	265
		Electronics - Miscellaneous		\$71,078	187	\$58,370	182
		TV's		\$100,111	351	\$98,076	310
		Video Equipment		\$197,420	392	\$178,840	387
Mid-Atlantic	Electronics	Audio Equipment		\$175,830	538	\$176,670	514
		Cameras		\$444,870	927	\$384,140	843
		Computers		\$57,371	392	\$46,449	342
		Electronics - Miscellaneous		\$95,412	242	\$92,058	235
		TV's		\$148,794	507	\$110,913	393
		Video Equipment		\$273,940	583	\$275,400	545
Southeast	Electronics	Audio Equipment		\$94,020	293	\$101,710	298
		Cameras		\$263,070	559	\$230,540	496
		Computers		\$28,177	199	\$24,368	177
		Electronics - Miscellaneous		\$64,360	155	\$55,270	138
		TV's		\$73,238	261	\$76,239	255
		Video Equipment		\$179,320	353	\$166,290	338

The autostyle of a report provides the report's default banding options, but you can define custom banding or even turn off banding for a report, regardless of its autostyle. (For information on autostyles, see [Preset formatting: Autostyles, page 51](#).)

You can perform more complex banding of report data, based on custom grouping of attribute elements (for example, Northeast, Mid-Atlantic, and Southeast on the report above) and other banding conditions. For details, see the chapters on *Custom Groups and Consolidations* as well as *Reports* in the [Advanced Reporting Guide](#).



You cannot create banding formatting in MicroStrategy Web. However, you can enable or disable the display of banding on a report in Web. The procedure is below.

To create custom banding in Developer

1. Open a grid report.
2. From the **Grid** menu, select **Options**. The Grid Options dialog box opens.
3. On the General tab, select **Custom banding**.
4. Click **Settings**. The Banding Settings dialog box opens.
5. Set the banding options as desired. For details on each option in the dialog box, click **Help**. In the example above, to band by columns, you select the banding criteria **By column header** and select the banding color.
6. Click **OK**. Then click **OK** again to close the Grid Options dialog box.

To turn off banding in Developer

1. Open the banded report.
2. From the **Grid** menu, select **Options**. The Grid Options dialog box opens.
3. Select **No Banding** and click **OK**.

To enable or disable banding in MicroStrategy Web

1. Open a grid report.
2. From the **Tools** menu, select **Report Options**. The Report Options dialog box opens.
3. On the **General** tab, select or clear the **Show Banding** check box.

Keeping row and column names visible: Locking headers

You can scroll side to side or up and down in a large report without losing sight of the row or column names, by following one or both of the following procedures.

To lock row or column headers

1. In a report, from the **Tools** menu, select **Report Options**.
2. On the General tab, select the **Lock** check box for Rows or Columns.
3. Click **OK**.

Formatting report borders

You can apply special formatting to the outside borders of a grid report, if you wish. The custom formatting you apply is visible when the report is printed. You can apply dotted or dashed lines, heavier or lighter line weights, and even apply colors to report borders. You can also make report borders disappear.

For example, if you have a report that presents a lot of data along with several subtotals and totals, the report may appear looking almost like a spreadsheet. It may be more aesthetically pleasing to see the data printed with the outside lines of the report gone, to create a more “open” feel and make the data look less overwhelming. By removing the outside border of a report, you can also make important, bolded, or totaled data stand out more clearly.

The following image shows the Regional Sales Management report in the Tutorial project with its default report borders, which are pale gray, the same color as the cell borders:

		Metrics	Units Sold	Revenue	Profit
Year	Region				
2005	Northeast		13,006	\$199,059	\$49,210
	Mid-Atlantic		18,921	\$288,814	\$71,430
	Southeast		11,080	\$169,485	\$41,879
	Central		9,750	\$148,829	\$36,790
	South		7,487	\$115,309	\$28,520
	Northwest		8,523	\$130,844	\$32,358
	Southwest		15,461	\$237,061	\$58,670
	Web		9,791	\$149,815	\$37,075
	Total		94,019	\$1,439,216	\$355,932
	Average		11,752	\$179,902	\$44,492
	Minimum		7,487	\$115,309	\$28,520
	Maximum		18,921	\$288,814	\$71,430
2006	Northeast		12,296	\$188,608	\$46,690
	Mid-Atlantic		17,431	\$268,436	\$66,493
	Southeast		10,134	\$155,945	\$38,634
	Central		9,035	\$139,510	\$34,590
	South		6,931	\$106,394	\$26,324
	Northwest		7,644	\$117,569	\$29,056
	Southwest		14,851	\$227,520	\$56,238
	Web		8,764	\$135,027	\$33,443
	Total		87,086	\$1,339,009	\$331,468
	Average		10,886	\$167,376	\$41,434
	Minimum		6,931	\$106,394	\$26,324
	Maximum		17,431	\$268,436	\$66,493
Total			181,105	\$2,778,225	\$687,400
Average			11,319	\$173,639	\$42,963
Minimum			6,931	\$106,394	\$26,324
Maximum			18,921	\$288,814	\$71,430

The next image shows the same report with the report's borders removed. The data looks less crowded, and the important data at the bottom of the report is emphasized:

Year	Region	Metrics	Units Sold	Revenue	Profit
2005	Northeast		13,006	\$199,059	\$49,210
	Mid-Atlantic		18,921	\$288,814	\$71,430
	Southeast		11,080	\$169,485	\$41,879
	Central		9,750	\$148,829	\$36,790
	South		7,487	\$115,309	\$28,520
	Northwest		8,523	\$130,844	\$32,358
	Southwest		15,461	\$237,061	\$58,670
	Web		9,791	\$149,815	\$37,075
	Total		94,019	\$1,439,216	\$355,932
	Average		11,752	\$179,902	\$44,492
	Minimum		7,487	\$115,309	\$28,520
	Maximum		18,921	\$288,814	\$71,430
2006	Northeast		12,296	\$188,608	\$46,690
	Mid-Atlantic		17,431	\$268,436	\$66,493
	Southeast		10,134	\$155,945	\$38,634
	Central		9,035	\$139,510	\$34,590
	South		6,931	\$106,394	\$26,324
	Northwest		7,644	\$117,569	\$29,056
	Southwest		14,851	\$227,520	\$56,238
	Web		8,764	\$135,027	\$33,443
	Total		87,086	\$1,339,009	\$331,468
	Average		10,886	\$167,376	\$41,434
	Minimum		6,931	\$106,394	\$26,324
	Maximum		17,431	\$268,436	\$66,493
Total			181,105	\$2,778,225	\$687,400
Average			11,319	\$173,639	\$42,963
Minimum			6,931	\$106,394	\$26,324
Maximum			18,921	\$288,814	\$71,430

To format report borders in Developer

1. Open a grid report.
2. In the top left-hand corner of the grid report, right-click in the empty area and select **Formatting**, then select **Grid Borders**. The Format Cells dialog box opens.
3. Select one of the Preset icons. The **None** icon on the left removes all borders from the report. The **Outline** icon on the right automatically adds a border around the outside of the report.
4. If you chose to add a border, select the type of line **Style** you want, such as solid or dashed, and then select a **Color**.
5. Click on a line in the **Border** area and you can see your selections appear on the sample page in the Border area.



The Hair line style cannot be displayed in reports viewed in MicroStrategy Web. It is replaced with the Thin line style. If you want appearance to be consistent between Developer and Web report display, consider a line style other than Hair.

6. Click **OK** to save your changes.
7. Some border effects can be seen well in Developer, while others are more clearly seen in Print Preview mode. To view your border settings, from the report's **File** menu select **Print Preview**.

Formatting a combined grid and graph report

Grid Graph view displays a report as both a cross-tabbed grid report and a graph report in the same screen. You can determine the size and position of the grid (and, in consequence, the size and position of the graph) in Grid Graph view.

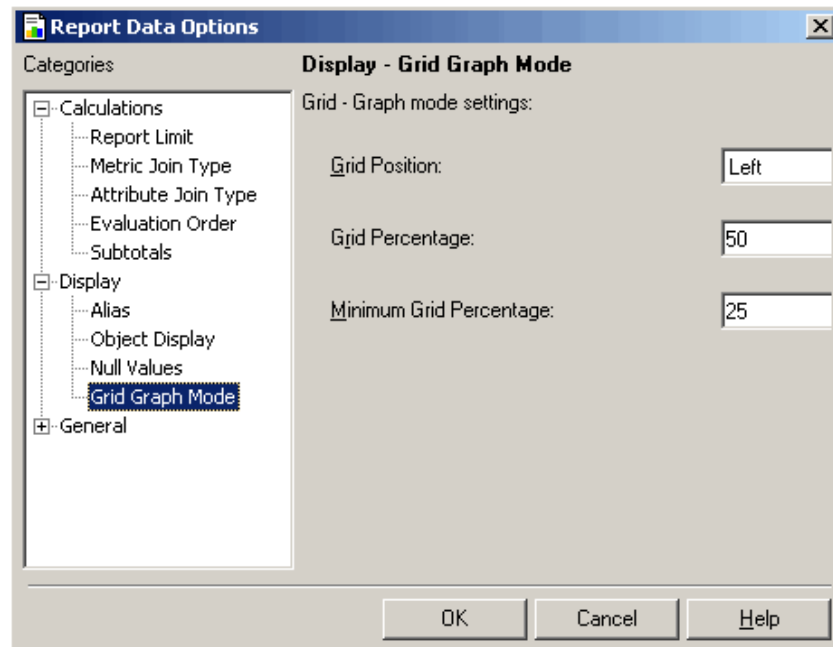


This formatting option is not available in MicroStrategy Web.

To view a report in Grid Graph view, see [Grids and graphs combined, page 8](#).

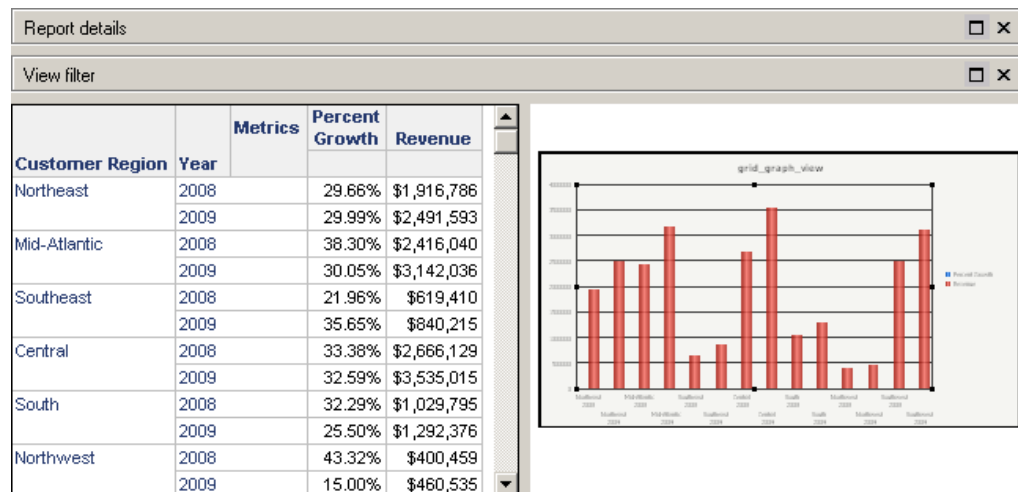
To format Grid Graph view

1. Open a report.
2. From the **View** menu, select **Grid Graph View**.
3. From the **Data** menu, select **Report Data Options**. The Report Data Options dialog box opens.
4. Expand the **Display** category and select the **Grid Graph Mode** subcategory.

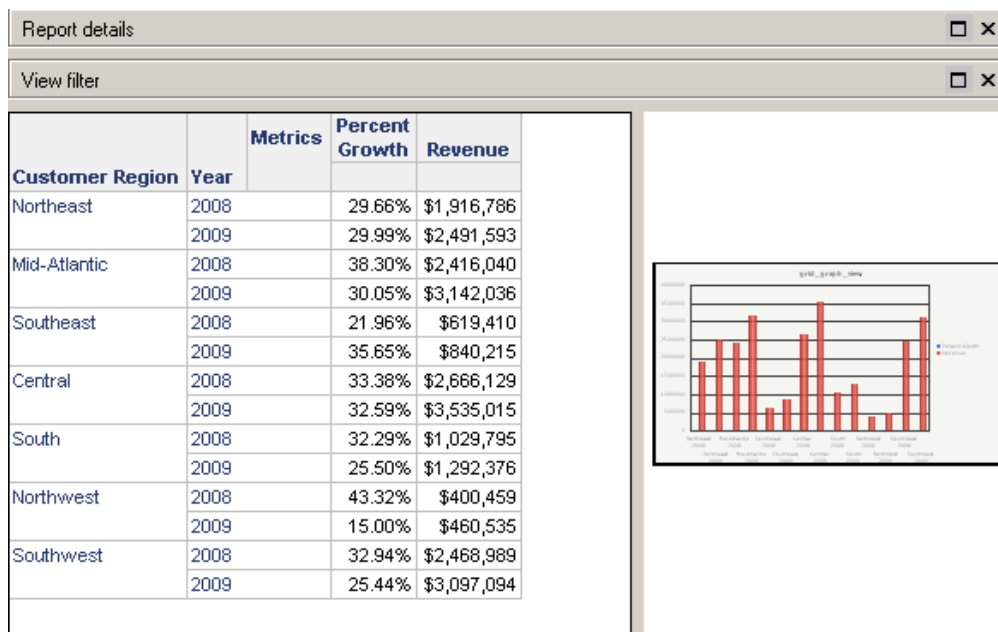


5. Adjust any of the following settings for the grid report:

- **Grid Position** determines where the grid is placed in relation to the graph. For example, if you set the position to Top, the grid is displayed on top of the graph. If you set the position to Left, the grid displays to the left of the graph, as shown in the image below.



- **Grid Percentage** specifies how much space the grid occupies in the display area. For example, if this option is set to 75, the grid occupies 75% of the report display area while the graph is resized to fit in the remaining 25%, as shown below.



If Grid Position is set to Top or Bottom, Grid Percentage represents the height percentage. If Grid Position is set to Left or Right, Grid Percentage is the width percentage.

- **Minimum Grid Percentage** is the minimum space that the grid can occupy.



Grid Percentage and Minimum Grid Percentage interact to determine the size of the grid. For example, if Grid Percentage is set to 25, you cannot set the Minimum Grid Percentage higher than 25.

6. Click **OK**.

Formatting a graph report

You can format a graph report in many ways, including the following:

- The style of the graph (for example, a pie graph, a bar graph, or a scatter graph)
- The size and location of the graph, graph legend, titles, and axis labels
- The color of different sections of the graph (for example, the color of the pie slices on a pie graph)
- Whether a threshold (conditional formatting) appears on the graph

The following sections provide information and examples of different ways you can format your graph report.

For a discussion of the graph styles available in MicroStrategy and when to use each style, see the *Graphing* chapter in the [Advanced Reporting Guide](#).

For steps to apply specific graphing options, click **Help**.

Viewing a graph report

To view a graph report, you can open any report that was saved as a graph report. You can also convert almost any grid report to a graph report, using the procedure below.

To view a graph report in MicroStrategy Developer or MicroStrategy Web

1. Open a grid report.
2. From the **View** menu, select **Graph View** (in Developer) or from the **Home** menu, select **Graph** (in MicroStrategy Web).
3. If this is the first time you are viewing this report in Graph view, you are prompted to select a graph style. Select a bar graph style, since it suits most sets of data. For information on selecting other graph styles, see [Choosing a graph style, page 42](#).

You can also select **Grid Graph** view to see both the report grid and its corresponding graph side-by-side.



Reports saved in Graph view automatically appear in Graph view when executed.

Understanding a graph report

A graph report represents a grid report's numerical data values with the graphical elements within the graph (for example, points, bubbles, lines, bars, or circles). The non-numerical data within a grid report, such as attribute names and metric names (the row and column headers), are represented as the axes on the graph. The axes on a graph are used as reference for the report data (the points, bubbles, lines, bars, and so on). When a grid report is converted to graph format, you can think of the values within the grid cells as giving shape to the graph, while the column and row headings become the graph's axes.

By seeing where a graph element, such as a bar or bubble, appears in relation to the axes on the graph report, you can determine values for that graph element. Additionally, by viewing all the graph elements together, you can often more easily see overall trends in your data than is otherwise possible in a grid report.

Choosing a graph style

You can display your report graph in a variety of graph styles. The style you choose must be compatible with the data you want to display. For example, consider the data requirements for the following graph styles:

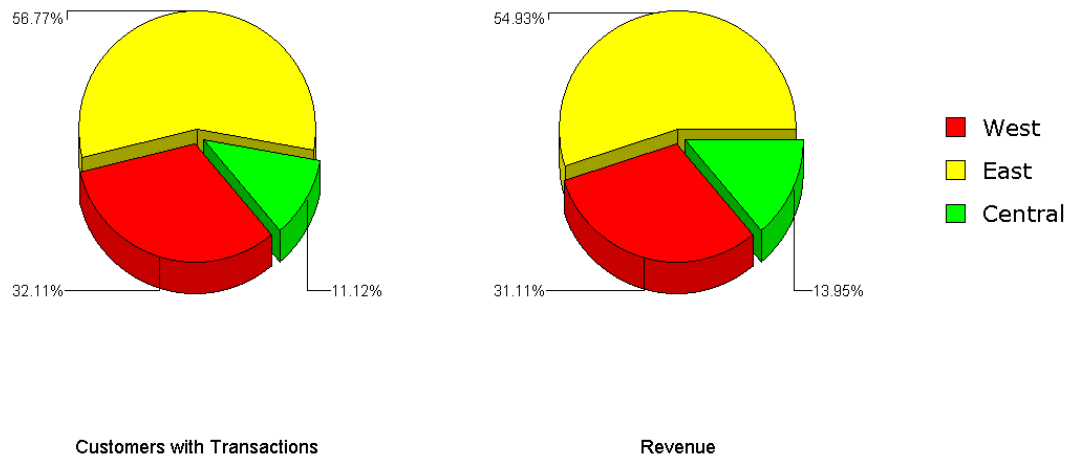
- An area graph or a bar graph require only a minimum of one metric and one attribute to be included in the report, to display data properly within that style.
- A scatter graph requires at least 2 metrics in the report to display the graph style properly.
- A bubble graph requires at least 3 metrics to be a useful graph style to choose.

For complete details on the requirements and recommendations for each graph style available in MicroStrategy, see the *Graphing* chapter in the [Advanced Reporting Guide](#).

Graph style examples

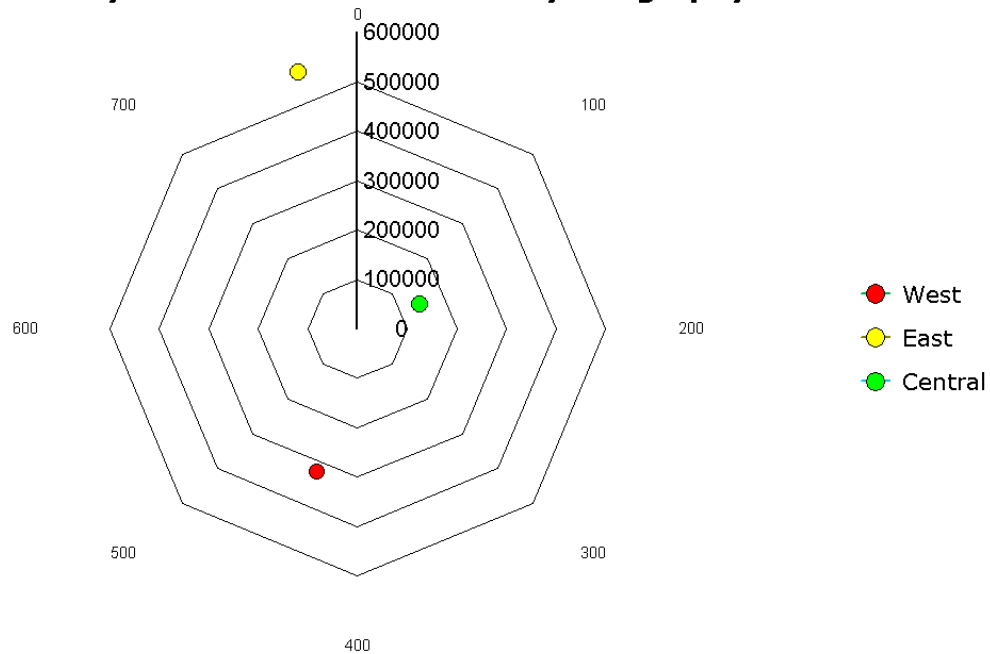
You may want to display your grid report data in a pie graph format, as shown in the image below.

Quarterly Customer Distribution - By Geography



You might then want to see the same data in a Polar graph style, as shown below.

Quarterly Customer Distribution - By Geography



When selecting a graph style to view your data, you must consider two important issues:

- The structure and amount of data on your report affect your decision because some graph styles cannot be displayed unless a certain number of attributes or metrics appear on the report grid. These requirements are listed in the *Graphing* chapter of the [Advanced Reporting Guide](#).
- The position of report objects on your report grid also determines whether a graph can be generated in a certain graph style. For example, to display slices in a pie chart, you can change the placement of report objects by pivoting data; for details, see [Pivoting data, page 68](#). For general information about how the placement of report objects determines which graph styles you can use, see the *Graphing* chapter of the [Advanced Reporting Guide](#).

Changing a graph's style

Perform the following steps to modify the graph style. Use the appropriate procedure below, depending on whether you are working in MicroStrategy Developer or Web.

To change a graph style in Developer

1. Open a report in either **Graph** or **Grid Graph** view.
2. From the **Gallery** menu, select a graph style to use with the graph. The graph is updated with the new style.



If a graph style is grayed out and unavailable, there is insufficient data on your proposed graph to generate the graph in that style. Choose another graph style for the graph. For information about the minimum requirements for each graph style, see the *Graphing* chapter of the [Advanced Reporting Guide](#).

To change a graph style in MicroStrategy Web

1. Open a report in either **Graph** or **Grid and Graph** view.
2. From the Graph toolbar, select a new graph style to use. The graph is updated with the new style.



If an error message is displayed that notifies you that there is insufficient data on your proposed graph to generate the graph in the selected style, click **Cancel**. Choose another graph style for the graph. For information about the minimum requirements for each graph style, see the *Graphing* chapter of the [Advanced Reporting Guide](#).

Changing the color scheme of a graph

You can modify the colors of certain elements on your graph, for example, the pie pieces on your pie graph or the individual bars in your bar graph.

In graphing terms, the pieces of a graph element (for example, the pie slices of a pie graph or the individual bars in a bar graph) are referred to as the graph's series. The series are

described in a graph report's legend. The groups of data along the X-axis are called categories. In general:


- Categories:
 - Are groups of data usually found on the X-axis of a graph report
 - Usually correspond to the rows of a grid report
 - Usually represent attributes
- Series:
 - Are groups of data usually found on the Y-axis of a graph report
 - Usually correspond to the columns of a grid report
 - Are explained in the legend of a graph report
 - Usually represent metrics

You can change the colors of the series in a graph by selecting a color scheme from the Color Palette in the Graph toolbar, as described in the following procedure.



By default, the graph color of a metric overrides the color scheme. For steps to define the graph color, see [Defining a graph color for metrics, page 45](#). For steps to allow the color scheme to override the graph color, see [Defining a graph color for metrics, page 45](#).

To modify the colors of series on your graph in Developer

1. Open a report in either Graph or Grid Graph view.
2. Ensure that the Graph toolbar is enabled by selecting **Toolbar** from the **View** menu, and then selecting **Graph**.
3. Select a color scheme from the color palette by clicking arrow on the **Color Palette** icon  on the **Graph** toolbar. The colors of the graph's series are changed accordingly.

To find information on how to modify colors on a graph report in MicroStrategy Web, click **Help** at the top of any MicroStrategy Web page.



To format the series colors of a graph in MicroStrategy Web, you must be granted the necessary Web Professional privilege. For more information, contact your administrator.

Defining a graph color for metrics

You can define the color used for a metric when it is displayed as a series in a graph. By default, the graph color that you define for a metric overrides any color schemes for the graph report. You can instead allow the graph color scheme to override the metric's graph color, as described in [To disable metric-specific graph colors in a graph report, page 46](#).



You can define a default graph color for a particular metric, and this color is used in all graph reports. You must have the necessary Developer privileges to define this; see the *Graphs* chapter in the [Advanced Reporting Guide](#) for details.

To define the graph color for a metric in a graph report

1. In MicroStrategy Web, log in to a project and navigate to a graph report. Click the report to run it.
2. Locate the metric whose color you want to change in the graph. Right-click the metric and point to **Fill**. A color palette is displayed.
3. Select your desired color in one of the following ways:
 - Select one of the default colors in the color palette.
 - To define a new color outside of the color palette, select **More Colors**. The More Colors dialog box will now be displayed. You can select a new color from the slider on the right or create one based on its Hex, RGB, and HSV values. Click **Apply** to see the changes made to your graph or click **OK** to apply your changes and close the dialog box.
 - To apply a gradient to the metric on the graph, select **Gradient**. A gradient displays a blend of two colors in a gradual color change for the metric when the metric is displayed as a series in a graph report. You can select the two colors for the gradient from the **Color 1** and **Color 2** drop-down lists, and then click one of the squares to set the direction of the shading between the two colors. The colors can blend left to right, right to left, top to bottom, bottom to top, horizontally centered, or vertically centered. Click **OK** to save your changes and close the dialog box.

You can repeat these steps for any metrics on the report that require a specific graph color. Each metric should use a color that can be easily distinguished from the colors used for other metrics. This ensures that graph report results are easy to decipher based on color.

To disable metric-specific graph colors in a graph report

Inheriting metric graph color is enabled by default. The steps below show you how to disable this formatting, to allow the graph color scheme to apply to all the series in a graph.

1. In MicroStrategy Developer, log in to a project and navigate to a graph report.
2. Right-click the graph report and select **Run**. The Report Editor opens, displaying the report as a graph.
3. From the **Graph** menu, select **Preferences**. The Preferences dialog box opens.
4. In the **Other** area, clear the **Apply metric formatting when available** check box.
5. Click **OK** to save your changes and return to the graph report.

Formatting conditional data on a graph: Thresholds

Individual cell data can be automatically formatted differently than the data in the rest of the report. Data that is formatted differently calls attention to itself, and makes that data easier to locate for analysis. This conditional formatting is called a threshold, because when a given value in your data reaches a certain point, or threshold, the conditional formatting is applied.

Thresholds are described in detail in [Formatting conditional values on a grid: Thresholds, page 20](#).



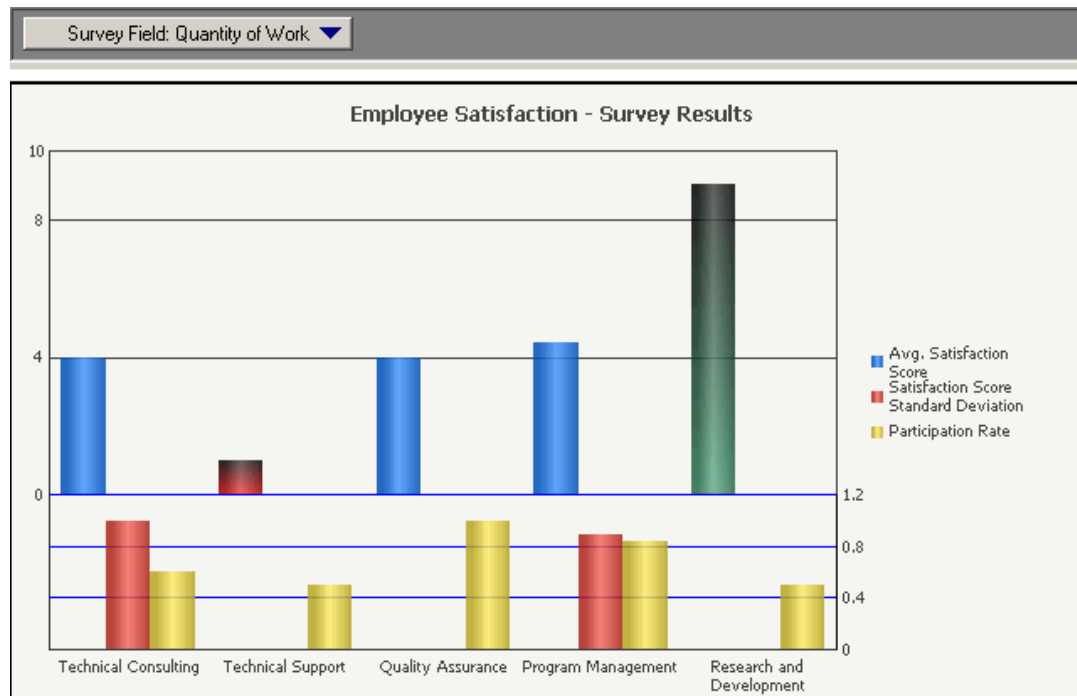
Because of how graph types display report data, a threshold on a graph report displays background formatting only. This includes a solid color, a gradient color, a pattern, and any other available background effects. Other threshold formatting, such as symbols and text formatting, are not applied to the graph report, but are still displayed on the grid report.

Not all graph types can display thresholds. For example, Area graphs combine all data into a single area object. Since the data is all visually connected into the same area object, thresholds cannot be displayed for specific data points. However, many graph types display a separate series or data marker for each data point, and thus can display thresholds.

The following graph types can display thresholds directly on the series of the graph:

- Bar
- Boxplot
- Bubble chart
- Funnel
- Histogram
- Pareto chart
- Pie chart
- Stock

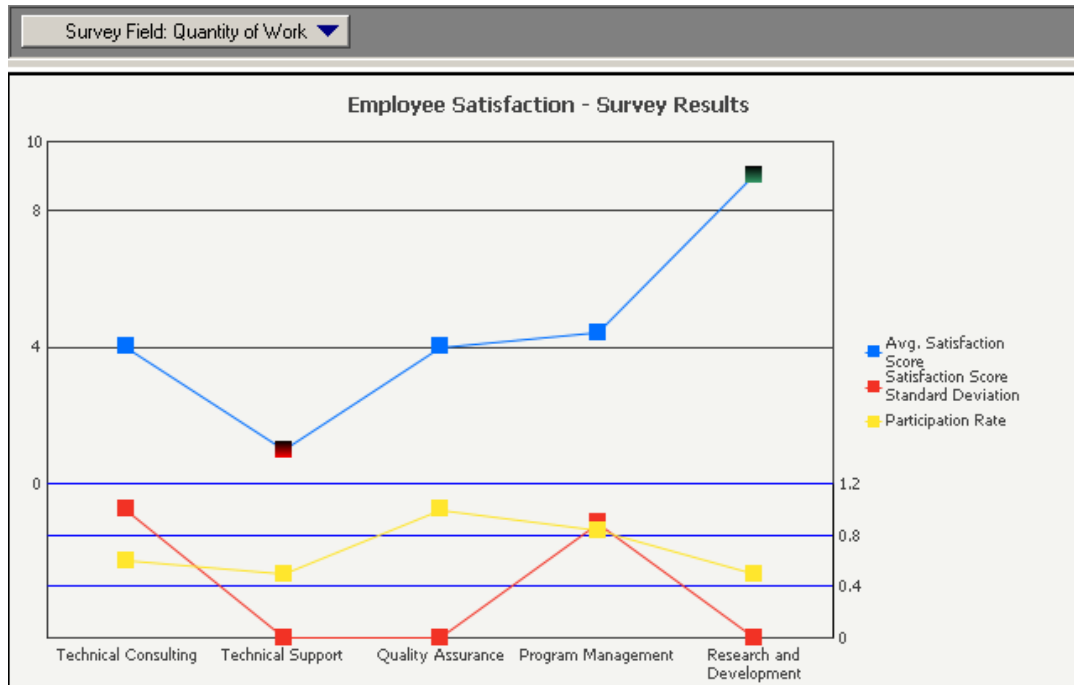
For example, the Bar graph report shown below uses thresholds on the series to highlight when employee satisfaction is above seven or below three for a given survey field.



The following graph types can display thresholds on the data markers that highlight specific data points on the series of the graph:

- Gauge
- Line
- Polar chart
- Radar line chart
- Scatter plot and three-dimensional scatter plot

For example, the graph report shown below is the same report used in the previous example. However, the report shown below uses a Line graph style, and the threshold is applied to the data markers.



To create and apply a threshold to a graph report

1. In Developer, open a graph report.
2. From the **Data** menu, select **Thresholds**. The Thresholds dialog box opens.
3. Click on **New Threshold**, and name your new threshold.



Any thresholds that are already defined for this metric are displayed below the toolbar. If you want, you can select any existing threshold to modify, and then skip defining the condition, as described in the next step. An existing threshold must include some type of background formatting such as a solid color, a gradient, or a pattern. The background formatting is the only conditional formatting that is displayed on a graph report.

4. Define the condition that the value must meet to have the threshold formatting applied. Click the text **Click here to start a new qualification**. The parts of the condition appear, each of which must be defined:
 - a. Click **Field** first, to select the business attribute or metric calculation that is part of your condition.
 - b. Click **Operator** to select an operator, such as In List, Not in List, or Where.
 - c. Click **Value** to specify the elements from the available list.




If you selected an existing threshold in the step above, you do not have to redefine the condition.

5. Next you define the formatting that you want displayed for values that meet the condition you have defined above.
 - a. Click the **Edit the threshold formatting** icon. The Format Cells dialog box opens.
 - b. Click the **Background** tab.
 - c. Select a **Background Style** from the drop-down list, and then choose the colors to use. For details to format the background, click Help.



To apply a background to a graph report, you must select a **Background Style** other than **Default**.

- d. Click **OK**.
6. Select the threshold that you formatted, and click the **Enable threshold on Graph**  icon on the toolbar. This applies the background color to the graph when the threshold condition is satisfied.



This icon is available only when you have formatted the background of the selected threshold.

7. Click **OK** to save your new threshold definition and close the Thresholds dialog box. Your new threshold is automatically applied.
8. Review the graph report. The thresholds should be displayed for applicable data on the graph report. If you are using one of the graph types that support thresholds, and you do not see thresholds on the graph report, use the steps provided below to display the thresholds:
 - a. From the **Graph** menu, select **Preferences**. The Preferences dialog box opens with the Options - General page displayed.
 - b. In the **Other** area, clear the **Apply rounded effects to all series** check box. This removes the automatic beveling effects used for the series and data markers of the graph report, but it also allows the display of thresholds for certain graph types. You can still apply and create your own custom bevel effects for the graph report, as described in the *Graphing* chapter of the [Advanced Reporting Guide](#).
 - c. Click **OK** to save your changes and return to the graph report. The thresholds should now be displayed on the graph report.

Undoing and redoing graph formatting

Creating an attractive and easily understandable graph usually means you have to try different combinations of fonts, colors, gradients, and other options.

For example, you format the series colors (pie pieces) of your pie graph by selecting the Apex color style from the Color Palette in the Graph toolbar. (To change the colors of series in a graph, see [Changing the color scheme of a graph, page 44](#).) Taking another look at your graph, you decide you do not like the change and want to revert to the pie graph's original colors. The Undo icon on the report's Edit menu allows you to easily reverse formatting choices such as these.

If you decide later that you did not want to undo an action (for example, you want to change back to the Apex color style), you can use the Redo icon on the report's Edit menu to quickly reapply that formatting choice.

The Undo and Redo icons work similarly to the corresponding commands in Windows.

Moving and resizing graph objects

In MicroStrategy Developer, you can manually resize or reposition graph elements, including the graph legend, title, subtitles, and the graph itself.

- **Resizing:** When you select any of the objects described above, handles are displayed around the object. You can use these handles to manually resize the object.
- **Moving:** You can relocate the selected object by clicking in the middle of it and dragging it to another location on the graph.

For examples of how to manually resize and reposition objects on a graph, refer to the *Graphing* chapter of the [Advanced Reporting Guide](#).

For steps to manually resize objects in your graph, see the Developer online help (formerly the *Desktop Help*). (See the "Resizing a graph report" topic.)



You cannot manually resize or reposition a graph from MicroStrategy Web.

Formatting numeric data in a report

Metrics on a report can have formatting applied to the metric values independently of any overall report formatting. The metric data displayed on a report is shown with the formatting from the actual metric that is placed on the report when the report is designed. Metric data formatting also depends on several other factors.

To see the possible scenarios for metric formatting with grid and graph image examples, see the *Graphing* chapter of the [Advanced Reporting Guide](#). You can also see the online help (the "Formatting metrics on a report" topic) for complete details on other factors that can affect number formatting in a report.

Preset formatting: Autostyles

MicroStrategy comes with several presentation styles for displaying reports. These are called autostyles. Each autostyle automatically applies a set of formatting that includes color scheme, font style, and font type to a report.

For example, in MicroStrategy Developer and Web, the default autostyle used for all reports is called Corporate, which includes a gray background and dark blue font color, as shown in the image below:

Metrics	Actual Amount - Date1	Actual Amount - Date2	Date1-Date2 Actual Amount Difference
Operating Activities			
A/R and Unbilled	(\$29,652,056)	(\$10,683,337)	(\$18,968,720)
Liabilities	(\$38,256,989)	(\$1,787,773)	(\$36,469,216)
Other Operating Activities	\$101,061,155	\$11,144,064	\$89,917,091

Autostyles let you standardize formatting across many reports.

Explore the available autostyles by opening a grid report in the Tutorial project and selecting any of the available autostyles. For information to locate reports in the Tutorial project, see [About sample data and the MicroStrategy Tutorial project, page 3](#).

Applying an autostyle

To apply an autostyle in MicroStrategy Web

1. In MicroStrategy Web, click to open a grid report.
2. Click the **Grid** menu. If DHTML is disabled, click **Go**.
3. Select an **Autostyle** from the drop-down list. If DHTML is disabled, click **Apply Style**.

Creating a new autostyle

You can save your favorite formatting settings as an autostyle, so you can easily repeat your favorite styles on later reports.



Although you cannot create new autostyles in MicroStrategy Web, autostyles created in Developer are available to be applied to reports in Web.

To create and save an Autostyle in Developer

1. In Developer, double-click to open a grid report.
2. Format the report as desired, using any of the procedures in this chapter or the online help. For example, apply a banding color scheme to the columns or rows of the report, and change the report's borders.
3. From the report's **Grid** menu, select **Save Autostyle As**. The Save Autostyle As dialog box opens.

4. Specify a name for the new autostyle in the Save Autostyle As dialog box. The name should be descriptive so you or other users can be aware of what formatting changes it will make when applied to a report.
5. You can save objects in MicroStrategy so that only you can see and use them, or so that all other users can see and use them. This is determined by the location where you save the object:
 - To save an autostyle so that other users can also use the autostyle to apply formatting to their reports, save the autostyle in the `Public Objects\Autostyles` folder.
 - To save an autostyle so that only you can use it, save the autostyle in the `My Personal Objects\My Objects` folder. If you save an autostyle in this folder, it appears only in your autostyle drop-down list and is not available to other users.

The next time you open a report, you can view the autostyle you created in the list of available autostyles.

For information on creating autostyles for a broad number of reports, changing properties in the default autostyles, and so on, see the [Advanced Reporting Guide](#).

ANALYZING DATA

When reports return large amounts of data, it can be difficult to easily understand what the data is telling you. Several MicroStrategy tools can help you analyze large amounts of data more quickly.

The following analysis tools are available in MicroStrategy Developer and MicroStrategy Web:

- Sorting: See [Sorting data, page 54](#).
- Finding values in a report: See [Finding values, page 57](#).
- Outline mode: See [Summary/detail of data, page 59](#).
- Page-by: See [Grouping data by page, page 63](#).
- Pivoting: See [Pivoting data, page 68](#).
- Report limits: See [Specifying maximum and minimum values: Report limits, page 70](#).
- Metric join type: See [Determining how metric data is combined: Metric join types, page 74](#).
- Evaluation order: See [Evaluation order of calculations, page 79](#).
- Subtotals: See [Subtotals, page 79](#).

Each analysis tool is discussed in detail in this chapter.

Sorting data

You can reorganize how data is displayed on your report by sorting the data. Sorting lets you move data so you can analyze that data more effectively. Consider the following sorting techniques:

- Move the most important data up to the top of the report where you can see it easily.
- Group particular chunks of data together so you can more easily compare the data.

For example, you are looking at a report that shows income ranges for your customers. The report lists all income brackets for customers in every region in the United States. The image below shows just the top half of this lengthy report. (The rest of the report that is not included here shows the rest of the regions in the United States.)

This image shows the default sort order for this report. The default sort order focuses on geographical regions, as shown in the far left column in the report.

		Metrics	Revenue
Region	Income Bracket		
Central	< 21K		\$141,838
	21-30K		\$129,979
	31-40K		\$111,362
	41-50K		\$349,692
	51-60K		\$254,226
	61-70K		\$263,339
	71-80K		\$182,601
	81-90K		\$146,690
	91-100K		\$106,989
	>100K		\$86,554
Mid-Atlantic	< 21K		\$241,377
	21-30K		\$245,794
	31-40K		\$217,649
	41-50K		\$672,392
	51-60K		\$501,112
	61-70K		\$488,869
	71-80K		\$368,366
	81-90K		\$271,868
	91-100K		\$234,807
	>100K		\$171,106
Northeast	< 21K		\$174,201
	21-30K		\$185,337
	31-40K		\$162,575
	41-50K		\$436,052
	51-60K		\$359,365
	61-70K		\$337,050
	71-80K		\$234,543
	81-90K		\$180,649
	91-100K		\$148,467
	>100K		\$116,625
Northwest	< 21K		\$113,391
	21-30K		\$107,624
	31-40K		\$104,947
	41-50K		\$285,839
	51-60K		\$220,122

But you want to analyze only the income bracket revenue over \$80,000, and with the report as it appears now, you must scroll up and down the data to gather the numbers you need, risking missing a number or accidentally looking at the wrong number.

If you sort the Income Bracket column in descending order, you can instantly see the higher income brackets you are interested in, grouped together for clarity and easier comparison, as shown in the image below. With the new sort order, the focus of the report is now on income bracket rather than geographical region.

Region	Income Bracket	Metrics	Revenue
Northeast	91-100K		\$148,467
Mid-Atlantic	91-100K		\$234,807
Southeast	91-100K		\$124,059
Central	91-100K		\$106,989
South	91-100K		\$90,961
Northwest	91-100K		\$87,618
Southwest	91-100K		\$189,551
Web	91-100K		\$110,628
Northeast	81-90K		\$180,649
Mid-Atlantic	81-90K		\$271,868
Southeast	81-90K		\$166,979
Central	81-90K		\$146,690
South	81-90K		\$118,421
Northwest	81-90K		\$116,818
Southwest	81-90K		\$222,386
Web	81-90K		\$136,887
Northeast	71-80K		\$234,543
Mid-Atlantic	71-80K		\$368,366
Southeast	71-80K		\$226,666
Central	71-80K		\$182,601
South	71-80K		\$147,629
Northwest	71-80K		\$148,532
Southwest	71-80K		\$295,693
Web	71-80K		\$178,075

You sort data based on a row header or column header. Row headers are typically business attributes; for example, in the report above, Region and Income Bracket are attributes and are in the rows of the report. Column headers are typically business calculations called metrics; for example, in the report above, Revenue is a metric that is in the columns of the report. Attributes and metrics are the most common objects on a report.

You can sort on any column or row that is on a grid report. When you sort, you determine the sorting order, either ascending or descending:

- **Ascending** sort order arranges the data alphabetically, from A to Z, or lowest to highest, such as from 1 to 10.
- **Descending** sort order arranges the data in reverse alphabetic order, from Z to A, or highest to lowest, such as from 10 to 1.

Sorting is processed by the MicroStrategy Analytical Engine, which means you can sort and organize the data on a report without taking up the time and resources to re-execute the report against your data source.



This guide discusses only quick sorting. For information on more complex, layered sorting patterns, see *Advanced Sorting* in the [Advanced Reporting Guide](#). For information on sorting custom groups, see the *Custom Groups and Consolidations* chapter in the [Advanced Reporting Guide](#).

Quick sort

You can quickly sort the data in a column or row, in either ascending or descending order. A quick sort allows you to experiment with different sort orders for your data, so you can determine which sort order displays the data in the most useful way.

There are various ways to trigger a quick sort, including using the right-click menu or using the sort icons:

- **MicroStrategy Developer:** You can right-click on the column or row, or use the sort icons on the Data toolbar. (To see the sort icons, from the **View** menu, select **Toolbar**, then select **Data**.)
- **MicroStrategy Web:** You can right-click on the column or row, or use the sort icon in each row and column header. (To see the sort icons, from the **Tools** menu, select **Sort Buttons**.)

The procedure below describes the right-click sort method.

To perform a quick sort

1. Open a grid report.
2. Right-click in the heading of the column or row to be sorted.



In Developer, make sure you right-click directly on the column name, not in the blank area of the column header.

3. Point to **Sort**, and select either **Ascending** or **Descending**.

Finding values

Whenever you want to quickly locate a specific data value in a grid report, or you want to jump to a section of a large report, use the Find feature. You can also use the Find feature to locate a string in the SQL syntax, when viewing a report in SQL View. (For steps to look at a report in Grid View or SQL View, see [Report types, page 6](#).)

You can also narrow your searches if you need to, by defining specific requirements for your search.



In MicroStrategy Web, use the browser's Find feature to locate values or other data in a report. For example, in Internet Explorer, from the **Edit** menu, select **Find on this page**.

To find a value in a report in Developer

1. Open a grid report.
2. From the **View** menu, display the report in the appropriate view, depending on what

you want to find:

- **Grid View** or **Grid Graph View**, to find a value in the report
- **SQL View** to find a string in the SQL syntax



The Find feature is not available in Graph view.

3. From the **Edit** menu, select **Find**. The Find dialog box opens.
4. Enter the value to search for and click **Find Next**. The first instance of the value is highlighted if the value is found.
5. Click **Find Next** again to search for additional instances of the value in the report.

Each cell in a grid report is treated as a string value. This means that, for example, if a grid report contains data that includes the numbers 50 and 500, both cells are found when you search for 50. To change this behavior, see [Narrowing a search for report data, page 58](#).

Narrowing a search for report data

When searching for data in a report in Grid view, use any of the following options to narrow the results you get from a search using the Find feature. These options work similarly to Find options in Microsoft Excel.

Searching by row or column

Search **By Rows** or **By Columns** allows you to set the direction of the search so that the data you are looking for may be located more quickly.

Making a search case-sensitive

Match case finds only text that has the same pattern of upper and lower case as the text you specify in the **Find what** text box. Use this option to make the search case-sensitive.

Finding an entire cell

Find entire cell finds only cells that match all of the text you enter in the **Find what** text box. For example, if you enter “3470”, a cell containing “3,470” will not be found. If you enter “50”, a cell containing “500” will not be found.

Narrowing a search for SQL syntax

You can use SQL view to search for specific syntax in the SQL for a report. Use any of the following options to narrow the results you get from a search using the Find feature. These options work similarly to Find options in Microsoft Notepad.

To view a report in SQL view, open a report and select **SQL View** from the **View** menu.

Matching the whole word

Match whole word only finds only strings that match all of the text you enter in the **Find what** text box. For example, if you enter “temporary”, a string containing “temp” will not be found.

Making a search case-sensitive

Match case finds only text that has the same pattern of upper and lower case as the text you specify in the **Find what** text box. Use this option to make the search case-sensitive.

Summary/detail of data

When you have a large set of data on a report, it is generally easier to analyze and understand the data if you can look at only certain sets of the data at one time. Use one of the following tools to organize large sets of data so it is easier to handle:

- Outline mode: This tool lets you expand and collapse sets of data. See [Outlining data, page 59](#).
- Page-by: This tool lets you view one “page” of data at a time. See [Grouping data by page, page 63](#).

Outlining data

You can create an indented grouping of related data on a grid report by organizing the data into a standard outline style. Using an outline style, you can collapse and expand sections of related data, as shown in the images below.

The image below shows just a small portion of an outlined report expanded completely. The outline style is controlled with the numbered buttons that appear in the top left corner of the report. For this image, button 3 was clicked, which expands the outline down to its third level. In this case, the third level is Supplier. Note that most of the report data cannot be viewed without scrolling, but each item of data and its related metric numbers can be seen clearly:

1

2

3

		Metrics	Units Sold	Revenue	Profit
Category	Year	Supplier			
Books					
2005					
		Bantam Books	309	\$4,742	\$1,298
		John Wiley & Sons	271	\$4,726	\$1,320
		McGraw Hill	114	\$4,382	\$1,182
		Perigee	334	\$3,015	\$779
		Prentice Hall	186	\$2,370	\$637
		Scribner	325	\$3,265	\$780
		Simon & Schuster	214	\$3,218	\$870
		Vintage Books	287	\$3,321	\$860
		Warner Books	317	\$4,190	\$1,103
		Total	2,357	\$33,229	\$8,829
		Average	262	\$3,692	\$981
		Maximum	334	\$4,742	\$1,320
2006					
		Bantam Books	275	\$4,327	\$1,176
		John Wiley & Sons	206	\$3,468	\$968
		McGraw Hill	92	\$3,843	\$1,035
		Perigee	315	\$2,839	\$728
		Prentice Hall	181	\$2,425	\$650
		Scribner	311	\$3,139	\$751
		Simon & Schuster	246	\$3,765	\$1,014
		Vintage Books	278	\$3,234	\$827
		Warner Books	288	\$3,952	\$1,069
		Total	2,192	\$30,992	\$8,218

The next image shows the same report as in the image above, but with the lowest level of data collapsed and only the higher levels of data expanded (button 2 in the top left corner was clicked). Note that you can almost see the entire report in a single screen. The detailed data is hidden, but higher level numbers can be analyzed and compared more easily. It is also easier to compare totals and averages for each category.

1	2	3			
		Units Sold	Revenue	Profit	
Category	Year	Supplier			
Books					
	2003		2,357	\$33,229	\$8,829
	2004		2,192	\$30,992	\$8,218
	Total		4,549	\$64,221	\$17,047
	Average		253	\$3,568	\$947
	Maximum		334	\$4,742	\$1,320
Electronics					
	2003		15,581	\$5,952,984	\$1,628,925
	2004		14,168	\$5,348,670	\$1,457,940
	Total		29,749	\$11,301,654	\$3,086,865
	Average		1,487	\$565,083	\$154,343
	Maximum		4,679	\$2,237,510	\$618,668
Movies					
	2003		94,019	\$1,439,216	\$355,932
	2004		87,086	\$1,339,009	\$331,468
	Total		181,105	\$2,778,225	\$687,400
	Average		8,232	\$126,283	\$31,245
	Maximum		15,315	\$222,671	\$55,661
Music					
	2003		99,924	\$1,451,201	\$160,015
	2004		92,202	\$1,341,133	\$147,781
	Total		192,126	\$2,792,334	\$307,796
	Average		16,011	\$232,695	\$25,650
	Maximum		23,954	\$331,871	\$33,905
Total			407,529	\$16,936,434	\$4,099,108
Average			5,660	\$235,228	\$56,932

The next image shows the same report as in the images above, but with all data levels collapsed fully (button 1 in the top left corner was clicked). Note that this outline level provides the highest summary of data:

1	2	3			
		Units Sold	Revenue	Profit	
Category	Year	Supplier			
Books			4,549	\$64,221	\$17,047
Electronics			29,749	\$11,301,654	\$3,086,865
Movies			181,105	\$2,778,225	\$687,400
Music			192,126	\$2,792,334	\$307,796
Total			407,529	\$16,936,434	\$4,099,108
Average			5,660	\$235,228	\$56,932
Maximum			23,954	\$2,237,510	\$618,668

Outlining is particularly useful when information displayed would otherwise involve repetitive entries. For example, you want to display sales for three years, 2004, 2005, and 2006. You also want data listed by month within each of the years. Rather than having all data visible for every month of every year, you can use an outline to expand and view just that data you want to see immediately, and keep other data collapsed, to be expanded later for quick comparisons.

Multiple-page reports work in the same way. For example, if you are on page 4 of a multiple-page report and you want to collapse the data to the second level, then you will only be collapsing data that is displayed on the fourth page of the report.

Enabling an outline

Use the appropriate procedure below, depending on whether you are working in MicroStrategy Developer or MicroStrategy Web.



Outline mode is only available when the report has more than one object in the rows. For example, if your grid report has business attributes on the rows of the report, there must be more than one attribute if you want to use outline mode.

To enable an outline in Developer

1. Open a grid report.
2. From the **Grid** menu, select **Display Outline Results**. You can expand and collapse the outline levels by clicking the numbered buttons at the top of the report. There is one button for each outline level in the report.



Each outline level usually represents a business attribute on the report. For a detailed explanation of rows and columns and what business data they represent, see [Rows and columns](#).

To enable an outline in MicroStrategy Web

1. Open a grid report.
2. From the **Tools** menu, select **Report Options**. The Report Options dialog box opens.
3. Select the **Outline** check box, and click **OK**.
4. You can expand and collapse individual levels by clicking the + or - box within each row on the report. Click the numbers above the report to expand or collapse everything to a certain outline level.



Each outline level usually represents a business attribute on the report. For a detailed explanation of rows and columns and what business data they represent, see [Rows and columns](#).

Initial display of an outline

Depending on whether you are using MicroStrategy Developer or MicroStrategy Web, you may be able to change how outlined reports appear when they are opened.

- MicroStrategy Web: By default, reports with an outline applied are displayed with all outline levels collapsed. This default cannot be changed.
- MicroStrategy Developer: By default, reports with an outline applied are initially displayed with all levels expanded. However, you can specify how you want the report to display when it is opened. You can have an outlined report open with a specific level already expanded, or with all outline levels collapsed.

To determine how an outline displays initially

1. In Developer, open a grid report.
2. If the report does not already have Outline mode enabled, from the **Grid** menu choose **Display Outline Results**. The report is displayed in Outline mode.
3. From the **Grid** menu, select **Options**. The Grid Options dialog box opens.
4. Click the **General** tab, and select one of the following:
 - **Open with all outline levels expanded**: The report will open with all outline levels expanded. This is the default setting.
 - **Open with all outline levels collapsed**: The report will open with all outline levels collapsed.
 - **Open outline expanded up to this level**: The report will open expanded up to the level you select from the drop-down list. The list becomes available once you choose this option.
5. Click **OK** to close the Grid Options dialog box.
6. From the **File** menu, select **Save** to save your outline mode settings for the report definition.

Grouping data by page

When you have a very large set of data on a report, it can be easier to handle that data by grouping the report data into logical subsets, and viewing only one of the subsets at a time. To group data into subsets, you can use the page-by feature.

The subsets you separate your business data into are called pages, and you then page your way through the report, viewing one data subset at a time. Page-by makes viewing a report easier than scrolling through long lists of data.

For example, if a report showing your profit data is organized by Year, Quarter, and Region, you can create a page-by for Year, so that the report shows only one year's data at a time. The following image shows such a report with Year in the page-by pane of the report (the top of the report).

Year: 2004 ▼		
Quarter	Region	Profit
2004 Q1	Northeast	\$42,301
	Mid-Atlantic	\$59,154
	Southeast	\$35,975
	Central	\$29,243
	South	\$24,710
	Northwest	\$28,220
	Southwest	\$48,684
	Web	\$26,494
2004 Q2	Northeast	\$78,769
	Mid-Atlantic	\$135,325
	Southeast	\$53,133
	Central	\$55,343
	South	\$42,489
	Northwest	\$48,970
	Southwest	\$95,016
	Web	\$65,895

You simply click the page-by field to select a different subset of data to display. The page-by feature lets you decide what subsets of your business data you want to display as separate pages of your report.

In MicroStrategy Web, the page-by feature appears as shown in the image below. The specific subset of data from the report that is being displayed is the data related to electronics, as shown in the page-by panel at the top of the report:

PAGE-BY: Category: Electronics ▼ ? x					
1	2	◀ 1 2 of 2 page(s) ▶			Data rows: 1 - 50 of 97 Data columns: 3
Subcategory	Item	Metrics	Unit Cost	Unit Price	Unit Profit
Audio Equipment (Average)			\$ 232	\$ 316	\$ 84
Cameras (Average)			\$ 331	\$ 457	\$ 125
Computers (Average)			\$ 104	\$ 142	\$ 39
Electronics - Miscellaneous					
◀ 1 2 of 2 page(s) ▶					

In the next image, the report is paged by books instead of by electronics, resulting in data showing cost, price, and profits related to book sales:

PAGE-BY: Category: Books ? x

1 2 ◀ 1 2 of 2 page(s) ▶ Data rows: 1 - 50 of 97 Data columns: 3

Subcategory	Item	Metrics	Unit Cost	Unit Price	Unit Profit
Art & Architecture (Average)			\$ 14	\$ 19	\$ 5
Business (Average)			\$ 11	\$ 15	\$ 4
Literature (Average)			\$ 6	\$ 8	\$ 2
Books - Miscellaneous					

◀ 1 2 of 2 page(s) ▶

Attributes and metrics are the most common objects available in the page-by pane of a report, although you can enable page-by for most objects that appear on a report.

You can page-by any of the following objects:

- Attributes
- Metrics
- Hierarchies
- Consolidations and custom groups. (Consolidations and custom groups are described in the [Advanced Reporting Guide](#).)
- Most object prompts. (Specifically, object prompts that are made up of attributes, hierarchies, consolidations, and custom groups. Object prompts containing metrics can be placed in the page-by pane as long as the report's rows or columns do not contain a metric. Prompts are discussed in detail in [Asking for user input: Prompts, page 206 in Chapter 7, Building Query Objects and Queries, for Designers](#).)

Page-by capabilities can be enabled or disabled for your project by your company's project designer. (A project designer is someone who sets up objects within MicroStrategy to reflect your organization's data.) If you encounter a problem moving a certain type of object into the page-by pane above a report, your project designer may have disabled the page-by functionality for that type of object.

To move an object to the page-by pane in Developer




You can place more than one object in the page-by pane. If you decide to place multiple related attributes in the page-by pane, be aware that order matters. Whatever you page-by first (furthest to the left) affects the elements displayed in the other page-by fields. Place multiple objects into the page-by pane in logical order, from left to right.

1. Open a grid report.
2. From the **View** menu, select **Page by**. The Drop Page Fields Here pane opens above the report.
3. On the report, right-click the object you want to move to the page-by pane, point to **Move**, and select **To Page-by**. The object is moved to the page-by pane above the

report. In the example below, the Year attribute is moved to the page-by pane.

Report details					
View filter					
Drop Page Fields Here					
		Metrics	Percent Growth	Revenue	
Year	Customer Region				
2008		Drill	29.66%	\$1,916,786	
		Sort	38.30%	\$2,416,040	
		Attribute Forms	21.96%	\$619,410	
		Move		\$66,129	
		Remove from Grid		\$29,795	
		Formatting		\$400,459	
		Lock Object		\$468,989	
		Edit... Ctrl+E	30.05%	\$3,142,036	
		Remove from Report	35.65%	\$840,215	
		Properties	32.59%	\$3,535,015	
		Edit Links...	25.50%	\$1,292,376	
	Southwest		15.00%	\$460,535	
			25.44%	\$3,097,094	

 To move metrics in columns to the page-by pane, right-click the word **Metrics** on the report and select **Page-by**. All metrics must be moved together. You cannot have one metric in the page-by pane and others on the report grid.

- The report is automatically re-displayed to show only the subset of data shown in the current page-by field. Click the page-by field and select an option from the drop-down list to change the subset of data displayed. In the example below, you can select Year 2009 instead of 2008 to see the Revenue and Percent Growth for each customer region for that year.

Report details			
View filter			
Year: 2008 ▼			
Customer Region	Metrics	Percent Growth	Revenue
Northeast		29.66%	\$1,916,786
Mid-Atlantic		38.30%	\$2,416,040
Southeast		21.96%	\$619,410
Central		33.38%	\$2,666,129
South		32.29%	\$1,029,795
Northwest		43.32%	\$400,459
Southwest		32.94%	\$2,468,989

To remove an object from the page-by pane

1. In the page-by pane at the top of the report, right-click the page-by field you want to remove.
2. Point to **Move**, and select either **To Rows** or **To Columns**. The object is moved out of the page-by pane and onto the report.

To further arrange objects on the report, you can click the row or column headers of objects on the report, and drag and drop them into place.

Retaining page-by display when saving a report

When you save a report that contains the page-by feature, you can choose to either retain the currently displayed page-by selection with the saved report, or to revert to the original page-by display. If you save the current display of a page-by report, the next time you run the report it automatically displays the last page-by choice you made before you saved the report. This feature allows you to choose different criteria to view a report by whenever it is executed.

In instances where you want to view a specific page first, using this setting allows you to decide the initial page to display.

The default page-by saving method reflects the page-by setting designated for the entire project. This is usually set by your company's project designer. (A project designer is someone who sets up objects within MicroStrategy to reflect your organization's data.)

To retain page-by display

1. Open a report that contains a paged-by object.
2. Click the page-by field at the top of the report, and, from the page-by drop-down list, select the page you want to be displayed the next time you execute the report. The report refreshes, displaying the page of data you selected.
3. From the **Data** menu, select **Report Data Options**. The Report Data Options dialog box opens.
4. Expand the **General** category, and select **Advanced**.
5. From the drop-down list called **Retain page-by selections when you save this report**, select **Yes**.
6. Click **OK** to save your change and close the Report Data Options dialog box.
7. Save the report and then reopen it. The page-by field you last selected is now the first page displayed.

Pivoting data

Data pivoting enables you to rearrange the columns and rows in a report so you can view data from different perspectives.

For example, in the image below, the Inventory Received from Suppliers by Quarter report shows a set of data spread across the screen in a large grid display. (The image below shows only a small section of the full report.) It is not always easy to compare numbers in reports of this size.

Subcategory	Supplier	Quarter Metrics	2005 Q1 Units Received	2005 Q2 Units Received	2005 Q3 Units Received	2005 Q4 Units Received	2006 Q1 Units Received	2006 Q2 Units Received
Art & Architecture	Bantam Books			20	40	30	10	20
	John Wiley & Sons			30	30	50	30	40
	Scribner				20		10	10
	Simon & Schuster				10	10	10	10
	Warner Books					15	10	
	Total			50	100	105	70	80
Business	Bantam Books			15	15	15	15	15
	John Wiley & Sons			45		45		45
	Prentice Hall			15		15		15
	Simon & Schuster			45	30	35	45	45
	Warner Books			45	45	10	45	45
	Total			165	90	120	105	165
Literature	Bantam Books			30	30	15	30	30
	Perigee			45	45	45	75	30
	Prentice Hall			30	30	30	30	30
	Scribner			90	60	60	75	75
	Vintage Books			45	45	15	60	30
	Warner Books				15		15	
	Total			240	225	165	285	195

If you pivot the objects on the report, so that the objects that were in the columns are now in the rows, and the objects that were in the rows are now in the columns, much of the data is easier to read and compare, as shown in the image below.

Quarter	Subcategory	Art & Architecture						Business			
	Supplier										
	Metrics	Bantam Books Units Received	John Wiley & Sons Units Received	Scribner Units Received	Simon & Schuster Units Received	Warner Books Units Received	Total Units Received	Bantam Books Units Received	John Wiley & Sons Units Received	Prentice Hall Units Received	Simon & Schuster Units Received
2005 Q1											
2005 Q2		20	30				50	15	45	15	45
2005 Q3		40	30	20	10		100	15			30
2005 Q4		30	50		10	15	105	15	45	15	35
2006 Q1		10	30	10	10	10	70	15			45
2006 Q2		20	40	10	10		80	15	45	15	45
2006 Q3		10	10	20		10	50	15	15	15	75
2006 Q4		30	15		10		55	10	30		30
Total		160	205	60	50	35	510	100	180	60	305

For example, in this pivoted report it is simpler to analyze total units received each quarter within a subcategory of books, because the totals are listed in a single column, making them easy to compare. Any anomalies in the numbers quickly become apparent. To perform the same comparison analysis with the first report above, you must visually skip over groups of data and try to focus only on totals.

With data pivoting, you can do the following:

- Move an object (a business attribute or a metric calculation) and its related data from a row to a column.
- Move an object (a business attribute or a metric calculation) and its related data from a column to a row.
- Change the order of objects in the rows.
- Change the order of objects in the columns.



All metrics are kept together on a report, so they must be moved as a group when pivoting data. For example, on a grid report you cannot move one metric to a row and another to a column. For graph reports, metrics must all be together on only one axis. To pivot metric data, select the word "Metric" in the header to move all metrics together.

Methods for pivoting data

You can pivot data in a grid report using any of the following methods:

- From the **Move** menu (in MicroStrategy Developer) or the **Data** menu (in MicroStrategy Web), select **Swap Rows and Columns**.
- Drag and drop objects on the report to move them around. (In MicroStrategy Web, you must have the DHTML user preference enabled to move data this way.)
- In MicroStrategy Developer, click an object on the report to select it, and choose a data pivoting option from the **Move** menu.

- Right-click an object on the report, select **Move**, and choose a data pivoting option. (In MicroStrategy Web, you must have the DHTML user preference enabled to move data this way.)
- Select an object on the report and use one of the data pivoting buttons on the toolbar (in MicroStrategy Developer) or in the column header (in MicroStrategy Web). To enable pivoting buttons in MicroStrategy Web, from the **Tools** menu, select **Pivot Buttons**.

Specifying maximum and minimum values: Report limits

After a report's results are displayed, you may need to further restrict the data displayed without changing how the calculations were performed. You can limit the data displayed in a report by specifying maximum and minimum values for a given metric. These maximums and minimums determine which rows of a result set are displayed in the report, and are called report limits.

For example, the image below shows you a report that ranks all employee sales.

Report details		
View filter		
Employee		Sales Rank
		Metrics
Bates	Michael	10
Becker	Kyle	26
Bell	Caitlin	13
Benner	Ian	24
Bernstein	Lawrence	11
Brown	Vernon	29
Conner	Beatrice	9
Corcoran	Peter	30
De Le Torre	Sandra	19
Ellerkamp	Nancy	15
Folks	Adrienne	12
Gale	Loren	7
Gedot	Harriet	17
Hall	David	25
Hollywood	Robert	14
Hunt	Matthew	18
Ingles	Walter	32
Johnson	Andrew	27
Kelly	Laura	3
Kiefer	Jack	22

You want to see only the results of the top ten employees. If you apply a report limit to restrict the data displayed to the top ten employees, the data used to calculate the sales rank is not affected. Only the employees displayed changes, as shown in the image below.

Report details		
View filter		
Employee		Sales Rank
Bates	Michael	10
Conner	Beatrice	9
Gale	Loren	7
Kelly	Laura	3
Nelson	Arthur	8
Pierce	Charles	5
Sawyer	Leanne	2
Torrison	Mary	6
Yager	Beth	4
Walker	Robert	1

A report limit is assigned to metrics that appear on the report. Report limits are defined using operators such as Between and Less Than. By default, report limits are joined by the AND operator. To change the operator, double-click the operator and select a new operator.

For more information on additional options and settings within the Report Limit Editor, click **Help**.

For more information on advanced operators to apply to a report limit, see *Appendix B: Logical and Mathematical Operators for Filtering* in the [Advanced Reporting Guide](#).



If you have MicroStrategy OLAP Services, you can apply report limits to any data on a report, not just metrics. For information on OLAP Services, see [OLAP Services, page 13](#).

To limit the data on a report using maximums and minimums

1. Open a grid report.

In the example below, the report shows revenue earned by each employee. You want to add a report limit to restrict data to show employees who earned revenue greater than 1,000,000.

Report details		
View filter		
Employee		Revenue
Bates	Michael	\$1,068,907
Becker	Kyle	\$508,234
Bell	Caitlin	\$1,040,481
Benner	Ian	\$520,737
Bernstein	Lawrence	\$1,060,632
Brown	Vernon	\$331,735
Conner	Beatrice	\$1,650,742
Corcoran	Peter	\$325,147
De Le Torre	Sandra	\$607,895
Ellerkamp	Nancy	\$847,227
Folks	Adrienne	\$1,047,776
Gale	Loren	\$1,669,290
Gedot	Harriet	\$739,741
Hall	David	\$513,213
Hollywood	Robert	\$1,026,874
Hunt	Matthew	\$731,413

- From the **Data** menu, select **Report Data Options**. Under the Calculations category, the Report Limit subcategory displays any report limits that may already be applied to the report.
- To apply new limits to the report data, click **Modify**. The Report Limit Editor opens.
- Double-click in the **Limit Definition** area. The Report Limit Qualification dialog box opens.
- Click **Browse** and navigate to the metric you want to apply the limit to. Then click **OK**.



Derived metrics cannot be used in a report limit. A report limit is a SQL engine function and therefore can only use a metric that exists in the project. A derived metric, which is created within the report, exists only in the report. To use the derived metric, re-create it as a regular metric, using the Metric Editor. For background information on derived metrics, see [Derived metrics, page 13](#). For steps to create a metric, see [Calculating data on a report: Metrics, page 144](#).

- From the **Operator** drop-down list, select the operator you want. Examples include Between, Greater than, Less than, Exactly, and so on.
- Enter the **Value** that you want the operator to apply to. In the example below, the Operator is set to Greater than, and Value is set to 1,000,000 to see only data over 1 million.

Limit Definition

Revenue Greater than 1000000

Double-click here to add a qualification, or drag an object from the

Report Limit Qualification

Choose a metric

Metric: Revenue

Parameters

Function: Metric Value

Operator: Greater than

Value: 1000000

OK

Cancel

Help

Prompt...

Break By...

8. Click **OK**. Then click **Save and Close** to save the report limit.
9. Click **OK** to return to the report. In the image of the report below, you can see that only those employee names that earned revenue greater than 1,000,000 are displayed.

Report details		
View filter		
Employee	Metrics	Revenue
Bates Michael		\$1,068,907
Bell Caitlin		\$1,040,481
Bernstein Lawrence		\$1,060,632
Conner Beatrice		\$1,650,742
Folks Adrienne		\$1,047,776
Gale Loren		\$1,669,290
Hollywood Robert		\$1,026,874
Kelly Laura		\$2,350,720
Nelson Arthur		\$1,654,297
Pierce Charles		\$2,084,241

i Report limits and filters: If the report has a filter, the filter is applied to the report data first, then the report limit is applied to further restrict the data returned in the report.

Calculating data

Your organization's data source contains data related to all of your organization's operations. The goal of reporting is to access the latest data related to your analysis needs, and then calculate that data to display the numbers you need to see.

Within a single set of data that is gathered from your data source in response to a report's query, the results of calculations on that data can change drastically depending on a number of considerations, such as:

- **Metric join types:** These determine how tables of metric data (usually numerical data, such as sales, costs, or profits) are joined to each other. The effect of joining your data in different ways on calculations of numerical data is described below in [Determining how metric data is combined: Metric join types, page 74](#).
- **Attribute join types:** These determine how tables of attribute data (business concepts, such as year, store, or item) are joined together. See the [Advanced Reporting Guide](#) for details and business examples of attribute joins in a report.
- **Evaluation order:** This determines in what order the various objects on a report are calculated. Objects that can affect the calculation of data to be displayed on a report include such things as metrics, report limits, and subtotals. Which object is calculated first, next, and so on can completely change the report's results. A description of the default evaluation order and examples for different evaluation orders are provided below in [Evaluation order of calculations, page 79](#).
- **Subtotals:** These allow you to total metric data using a selected mathematical function. You can subtotal data in different ways for other business users who will be viewing or analyzing the data. See [Subtotals, page 79](#).

As an introduction to understanding joins, be sure you understand the basic report components of a metric, an attribute, and an attribute element. For descriptions and examples, see [MicroStrategy objects, page 138](#).

Determining how metric data is combined: Metric join types

When you execute a report, data is often retrieved that has come from more than one table in your data source. The final results on any report are greatly dependent on the organization and structure of your data source tables and how data is stored within them.

When data is pulled from two or more tables of metric data in your data source, a metric join determines the way that data is combined into a single set of data. The order in which the data is joined from the different tables can affect the outcome of the data calculation, just as the order of operations in any arithmetic expression can affect the result.

Knowing how data is calculated for metrics on a given report is an important part of the data analysis process. Several decisions go into determining rules for how data is calculated when that data is pulled from different tables in your data source. Calculation rules for metrics are defined at several organizational levels:

1. How data is calculated by default is usually decided first by your company's project designer, who implements several settings on a project-wide basis that affect how SQL handles your organization's data during calculation. These decisions are often driven by the type of database your organization owns; most databases process SQL differently. These settings are generally made within the VLDB properties for your project's database instance within MicroStrategy. For details on metric-specific VLDB properties, see the *Advanced Metrics* chapter in the [Advanced Reporting Guide](#).
2. Next, the person in your company who designs a metric can override the project-level default settings described above when she creates the metric. When a metric designer applies settings to a specific metric, these settings are effective for that metric no matter which reports the metric is used in. For details on metric calculation settings at the metric level, as well as joins for a compound metric (a metric that is made up of other metrics), see the *Advanced Metrics* chapter of the [Advanced Reporting Guide](#).
3. Finally, report analysts can change how a metric is calculated for a single report with which the analyst is concerned. You can view the existing settings for a metric, as well as change various settings, within the Report Data Options dialog box. (For steps to do this, see [Viewing and changing metric join types, page 77](#).) Any changes made to metric joins in the report will override any join settings that were made by your company's metric designer or by your company's project designer, described above. However, changes made to the join type using the Report Data Options dialog box affect this metric on this report only. When the metric is used on another report, it uses its default metric join type. These report-level metric join options are discussed in detail below.

Metric joins



An understanding of your organization's data source storage structure is helpful to understand the details of metric joins.

A metric is often calculated based on data that comes from more than one table in your data source. Data coming from multiple tables must be joined together in some way during data calculation.

A metric join setting determines how data is combined by applying a specific type of join, inner or outer. The MicroStrategy SQL Engine applies the designated join type to the data pulled from your data source's tables. The join type places conditions on the data to be displayed in the report.

Inner and outer joins are discussed with examples below.

- **Inner join:** An inner join includes in the calculation only the data common to all the tables from which data is being gathered in your data source.
- **Outer join:** An outer join includes in the calculation all of the data in all of the tables from which data is being gathered in your data source.

Examples of inner and outer joins

Inner joins are generated by default for all metrics in a report. The resulting report contains only those rows that have data returned for all the metrics.

For example, review the data in the following table. The Sales Information and Budget Information columns show whether data exists in the data source for that type of data in that region.

Region	Sales Information?	Budget Information?
North	Yes	No
South	Yes	Yes
East	Yes	Yes
West	No	Yes

A report is created containing Sales and Budget metrics, and the Region attribute. The default inner join is not changed, because you want to view metric values that are common to both metrics and that are therefore not empty for either metric. Since the North region does not have any budget data, as shown in the table above, no data is displayed for the North region on the report. Similarly, the table above shows that sales data has not been tracked for the West, so all data for the West region is also omitted from the report. The resulting report, with an inner join between metrics, displays only those regions that have both sales and budget information, or data that is common to all components of the join. The result looks like the following report:

Region	Metrics	Sales	Budget
South		200	500
East		100	400

However, assume you need to change your analysis and you want to display all of the data from the tables in your data source, whether or not data exists for all the metrics at all levels in the report. (For a definition and examples of levels, see [How data is aggregated on a report: metric level, page 89](#).) You apply an outer join to both metrics because you know there is some incomplete or empty data for some regions in your data source. The outer join results in the following report, in which the North and West regions appear even though they have no data for one of the metrics.

Region	Metrics	Sales	Budget
North		100	
South		200	500
East		100	400
West			300

Finally, you can specify different joins for each of the metrics on a report. You want to see all sales data even if budget data has no values for some regions in your data source, so you apply an outer join to the Sales metric and an inner join to the Budget metric. All regions (all report rows) with information on sales are displayed. The following report is created:

Region	Metrics	Sales	Budget
North		100	
South		200	500
East		100	400

West is not displayed because it does not contain sales information. It is irrelevant whether data exists for the Budget metric or not.

When to use an inner or outer metric join

Inner joins

An inner join is generally more commonly used for metric data than outer joins. (The exception is with rank metrics; see *Outer joins* below for details.) Inner joins are effective in many situations, including the following:

- Inner joins provide effective results when you know the metrics on your report are closely related to each other, such as the Revenue metric and the Profit metric.
- Inner joins are most effective if your data source contains relatively complete metric data, without empty values.
- Inner joins require less processing time than outer joins, so they are useful to lessen the processing load on your MicroStrategy Intelligence Server machine.

Outer joins

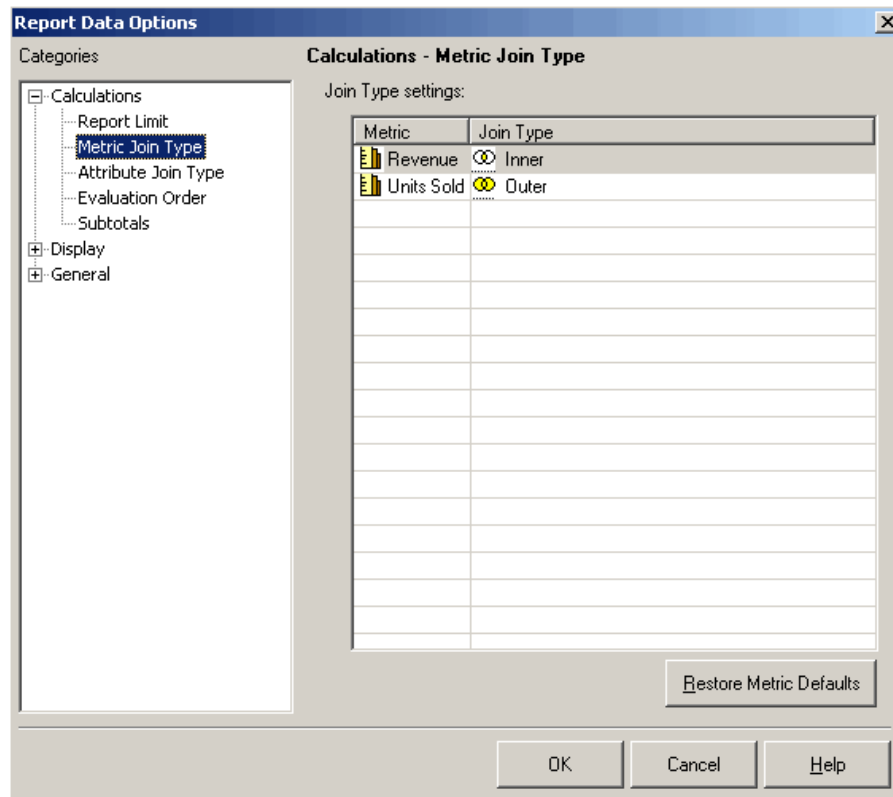
Outer joins are effective if your data source contains empty values for some metric data in some tables. Outer joins are also necessary for metrics that show rank. Outer joins allow you to see all data that is available for a metric.

For example, your revenue data may be completely up to date, but several profit values have not been reported and entered in the data source for certain days during the past week. When the Revenue and Profit metrics are both included on the same report, you can apply an outer join to the Revenue metric so that you can see all values for Revenue for each day of the past week, even if the Profit value for a given day is currently empty.

When a metric calculates rank, it is important to use an outer join on the rank metric. If the default inner join is used on a rank metric, some of the ranks (and therefore, the ranked attribute elements) may not appear on the report because an inner join does not include elements with null values in the result set. But an element with a null value may have a rank. With an outer join, all rows are displayed on the report even if there is no result displayed for some of the elements for some of the metrics on the report. The goal for a rank metric is to display all rankings, so all elements must appear whether they have values or not.


Viewing and changing metric join types

The image below shows the metric join type setting in the Report Data Options dialog box.



To view and change metric join types

- 1 In Developer, open a grid report.
- 2 From the **Data** menu, select **Report Data Options**. Under the Calculations category, select **Metric Join Type**. The Metric Join Type subcategory lists all metrics on the report, along with each metric's join type, as shown in the image above.

 If you have a long list of metrics, you can sort them by metric name or by join type, by clicking the **Metric** or **Join Type** column headers.
- 3 You can change a metric's join type by clicking the join type (**Inner** or **Outer**) for the metric you want to change.
- 4 From the drop-down list that appears, select a different join type. Inner and outer joins are described fully above. You can select the following:
 - **Default:** This option sets the metric to use the join type set for that individual metric when that metric was created with the Metric Editor. If no join type was determined this way for the metric, this option sets the metric to use the join type set at the project level.
 - **Inner:** This option displays only the data common to all data source tables from which data is being gathered for this metric.

- **Outer:** This option displays all of the data from all data source tables from which data is being gathered for this metric.
- 5 Click **OK**. The report is re-executed against your data source, and the newly calculated results are displayed.

For details on all options available on the screen, click **Help**.

Evaluation order of calculations

Evaluation order is the order in which objects are calculated by MicroStrategy's Analytical Engine. Changing the order in which data is calculated can change report results. You change the evaluation order of a report's data calculation by changing the order in which compound smart metrics, consolidations, derived metrics, derived elements, report limits, and subtotals on the report are calculated.

The default order of calculation is as follows:

1. Compound smart metrics (which are compound metrics with smart totals enabled)
2. Consolidations, which are evaluated by their relative position on the report template:
 - Rows, from left to right
 - Columns, from top to bottom
3. Report limits
4. Subtotals

Compound metrics that are not the direct aggregations of other metrics can be used in the evaluation order by setting the **Allow Smart Metrics** option of the Metric Editor to **Yes**.



Page-by and sorting are determined last, to arrange the positions of the calculation results. Their evaluation order cannot be changed.

Many reports contain objects that require complex considerations to determine an effective evaluation order. For a more detailed discussion of evaluation order and how to change it, including examples, see the *Designing Reports* chapter of the [Advanced Reporting Guide](#).

Subtotals

Subtotals are totals of selected groups of your metric data, totaled at a level you select. (For a definition and examples of levels of aggregation, see [How data is aggregated on a report: metric level, page 89](#).) A subtotal lets you see the totals for subgroups of your report data.

A metric's designer must enable grand totals and/or subtotals for a metric. If grand totals and/or subtotals have been enabled, an analyst can choose to either display or hide them for that metric on a given report. Analysts can also change the function used with a subtotal. The subtotal functions available include sum, count, minimum, maximum, average, and median, as well as others.

Analysts also have the ability to change the level at which a subtotal is calculated. For background information on levels, see [How data is aggregated on a report: metric level, page 89](#) in [Chapter 4, Answering Questions about Data](#).

Report designers can also construct custom subtotals in MicroStrategy Developer that, for example, allow you to apply subtotals to selected metrics only. Custom subtotal functionality is explained in detail in the [Advanced Reporting Guide](#).

Displaying subtotals


You can choose to display a subtotal across levels on a report, display grand totals, or display all subtotals.

 You can select the value that is displayed in place of a null value in a subtotal. For steps, see [Formatting null values and blank cells, page 24](#).

To display subtotals in Developer

This procedure assumes that the person who created the metric has enabled grand totals or subtotals for the metric.

1. Open a grid report.
2. From the **Data** menu, select **Subtotals**. The Subtotals dialog box opens.
3. Select the type of subtotal function you want to use on the report.
4. Click **Advanced**. The Advanced Subtotals Options dialog box opens.
5. In the Applied levels section, specify the level on the report at which to calculate the selected subtotal.

 For a definition of a level and examples, see [How data is aggregated on a report: metric level, page 89](#) in [Chapter 4, Answering Questions about Data](#).

The levels you can select from are:

- **By position:** Apply the subtotal to particular parts of the report: rows, columns, and/or page-by fields. Each of these is considered an axis of the grid report. Then select one of the following:
 - **Grand Total:** Apply only the subtotal across the whole axis.
 - **All Subtotals:** Apply the subtotal across all levels on the axis.
 - **None:** Apply the subtotal to no level of the axis.
- **Across level:** Apply the subtotal to all attributes and hierarchies available on the report. When you select this, attributes and hierarchies are listed for you to choose from. Select those you want to subtotal.
- **Group by:** Apply the subtotal by the selected attribute across all other attributes on the report, regardless of position. This works best if the report has been sorted based on the attribute you want to group the subtotal by. When you select this, click **Add** to add new group-by levels. The Grand Total check box adds a subtotal

grouped by nothing, which means the grand total is calculated based on all attributes on the report.

6. Click **OK** to return to the Subtotals dialog box.
7. Click **OK** to complete the subtotal definition. The subtotals are displayed on the report.

To display subtotals in MicroStrategy Web

This procedure assumes that the person who created the metric has enabled grand totals or subtotals for the metric.

1. Open a grid report.
2. From the **Data** menu, select **Edit Totals**. The Subtotals dialog box opens.
3. From the **Definitions** tab, select the type of subtotal function you want to use on the report.
4. Click **OK** to complete the subtotal definition. The subtotals are displayed on the report.

For information on using subtotals in custom groups, see the *Custom Groups and Consolidations* chapter in the [Advanced Reporting Guide](#).

ANSWERING QUESTIONS ABOUT DATA

Filters are an integral part of almost every report. Filters screen the data that the report brings back from your data source. To successfully interpret the data displayed in a report, it is important to understand what data was specifically included in that report, as well as what data was excluded. This chapter shows you how to view a report filter's definition, and provides examples for simple and more complex filters. See [Filtering data, page 82](#).

Drilling is one of the most powerful data analysis functionalities in any reporting environment. Drilling lets you explore data beyond the data immediately visible on a report. You can drill through a report to analyze data that is closely related to the original report data, or you can expose an entirely different object on a report to see what the data looks like within a different context. See [Drilling into related data, page 90](#).

Drilling successfully on data in a report requires that you understand how business attributes in a reporting project can relate to each other within higher-level business concepts called hierarchies. Hierarchies and drilling are covered in this chapter. See [Understanding hierarchies, page 87](#).

Filtering data

A report filter sifts the data in your data source to bring back the information that answers exactly what you require. The following image shows a report that has not had a filter added to it. (This is the Yearly Revenue Growth by Customer Region report, located in the sample Tutorial project.) You can see that the filter is empty by looking at the information in the Report details pane above the report, as shown in the image below:

REPORT DETAILS						?	X
Report Filter: Empty Filter							
Data rows: 7 Data columns: 4							
Customer Region	Year Metrics	2011 Revenue	Percent Growth	2012 Revenue	Percent Growth		
Northeast		\$1,916,786	29.66%	\$2,491,593	29.99%		
Mid-Atlantic		\$2,416,040	38.30%	\$3,142,036	30.05%		
Southeast		\$619,410	21.96%	\$840,215	35.65%		
Central		\$2,666,129	33.38%	\$3,535,015	32.59%		
South		\$1,029,795	32.29%	\$1,292,376	25.50%		
Northwest		\$400,459	43.32%	\$460,535	15.00%		
Southwest		\$2,468,989	32.94%	\$3,097,094	25.44%		

(To display report details for any report, click the **Report Details** icon .)

Now a filter is applied to the report, for the Eastern regions of the United States (Northeast, Mid-Atlantic, and Southeast). The following image shows the Yearly Revenue Growth by Customer Region report “filtered on” specific regions. You can see the filter’s definition in the Report details pane above the report. The filter definition is {Customer Region} = Northeast, Mid-Atlantic, Southeast.

REPORT DETAILS						?	X
Report Filter: {Customer Region} = Northeast, Mid-Atlantic, Southeast							
Data rows: 3 Data columns: 4							
Customer Region	Year Metrics	2011 Revenue	Percent Growth	2012 Revenue	Percent Growth		
Northeast		\$1,916,786	29.66%	\$2,491,593	29.99%		
Mid-Atlantic		\$2,416,040	38.30%	\$3,142,036	30.05%		
Southeast		\$619,410	21.96%	\$840,215	35.65%		

A more complex filter is used in the next report. The report shows revenue and revenue forecasts. The filter selects only that data related to a company’s electronics products, only for the company’s northeastern and Mid-Atlantic US stores, and only for the current year. The filter’s definition is:

[Category = Electronics] And [Quarter = 2006 Q1, 2006 Q2, 2006 Q3 or 2006 Q4] And [Region = Northeast or Mid-Atlantic]

The report and its filter are shown in the image below.

Report details						
Report Description: This report shows Revenues vs. Forecasted Revenues. Users can select the region, category, and time period they are interested in viewing. Thresholds in this report are built on the variance between Revenue and Forecast.						
Report Filter (Local Filter): (Category = Electronics) And (Quarter = 2006 Q1,2006 Q2,2006 Q3 or 2006 Q4) And (Region = Northeast or Mid-Atlantic)						
Report Limits: Filter is empty.						
Cache Used: No						
<div>1 2 3</div>						
Region	Category	Subcategory	Quarter Metrics	2006 Q1 Revenue	2006 Q2 Revenue	2006 Q3 Revenue
Northeast						
	Electronics					
		Audio Equipment		\$ 22,032	\$20,400	\$ 26,497
		Cameras		\$ 34,110	\$34,110	\$ 84,784
		Computers		\$ 8,501	\$7,523	\$ 9,491
		Electronics - Miscellaneous		\$ 8,830	\$9,598	\$ 15,532
		TV's		\$ 12,925	\$11,644	\$ 24,674
		Video Equipment		\$ 31,046	\$32,680	\$ 45,626
Mid-Atlantic						
	Electronics					
		Audio Equipment		\$ 22,935	\$25,770	\$ 54,798

Filters are usually created and added to reports by a report designer. For any report, you can easily see not only whether a report has a filter applied to it, but also what that filter's definition is. You can view this information in the Report Details pane, as shown in the images above. This information helps you understand exactly what data in your data source was included in the report's results, as well as what was excluded. For steps to view a filter's definition in a report, see [Viewing a filter's definition, page 85](#).

OLAP Services view filters and regular filters

MicroStrategy OLAP Services lets MicroStrategy Developer, Web, and Office users slice and dice data in reports without having to re-execute SQL against the data source. Different from a report filter that restricts how much data is retrieved from the data source, a view filter dynamically limits the data being displayed on a report without re-executing the report against the warehouse.

The advantage of using both standard report filters and view filters on a report is that the report can use the standard report filter to bring back more data than can usefully be displayed at any one time. The analyst can then use a view filter to change the data displayed, as long as it falls within the data already retrieved from the database. The analyst generates a view report, which is the result of a view filter. A view filter does not trigger re-execution against the data source. This capability translates into improved response time and decreased database load.

For details on MicroStrategy OLAP Services, see [OLAP Services, page 13](#).

Viewing a filter's definition

Use the appropriate procedure below to view a report's filtering information in MicroStrategy Web.

To specify the information that you want displayed in Report Details, see [Customizing the Report Details pane, page 85](#).

To see a report's filtering information in MicroStrategy Web

1. Open a report.
2. From the **Tools** menu, select **Report Details**. The Report Details pane appears, showing a Report Description and the details of any filter that is included on the report.

Customizing the Report Details pane

MicroStrategy Developer users can determine what information appears in the Report Details pane for all reports viewed on their machines. You can configure the following report details:

- Filter details, which display the report filter and report limit by default, although other types of filters can be displayed
- Report limit details, which display the report limit
- Prompt details, which display the prompt information for all prompts in the report
- Report details, which display the report description, prompt details, filter details, and template details.
- Template details, which display the complete template details, including attribute and metric details

You can configure different options for different types of report details. For example, you can select whether to include view filter information or the attribute name in the filter details. For report details, you can choose whether to include information on prompts or filters. For complete descriptions of all the report detail options, see the *MicroStrategy Developer Help* (formerly the *MicroStrategy Desktop Help*) or the [Advanced Reporting Guide](#).

The following image displays the report description, report filter, and report limits information in the Report Details pane in a report:

Report details						
Report Description: This report shows Revenues vs. Forecasted Revenues. Users can select the region, category, and time period they are interested in viewing. Thresholds in this report are built on the variance between Revenue and Forecast.						
Report Filter (Local Filter): (Category = Electronics) And (Quarter = 2006 Q1,2006 Q2,2006 Q3 or 2006 Q4) And (Region = Northeast or Mid-Atlantic)						
Report Limits: Filter is empty.						
Cache Used: No						
1 2 3						
Region	Category	Subcategory	Quarter Metrics	2006 Q1 Revenue	2006 Q2 Revenue	2006 Q3 Revenue
Northeast						
	Electronics					
		Audio Equipment		\$ 22,032	\$20,400	\$ 26,497
		Cameras		\$ 34,110	\$34,110	\$ 84,784
		Computers		\$ 8,501	\$7,523	\$ 9,491
		Electronics - Miscellaneous		\$ 8,830	\$9,598	\$ 15,532
		TV's		\$ 12,925	\$11,644	\$ 24,674
		Video Equipment		\$ 31,046	\$32,680	\$ 45,626
Mid-Atlantic						
	Electronics					
		Audio Equipment		\$ 22,935	\$25,770	\$ 54,798

You can configure the report details for a specific report, with the Report Details Formatting option in the Report Editor, or for the entire project, with the Project Configuration Editor. Settings configured at the report level override settings configured at the project level. For steps to set the report details formatting options, see the *Developer Help* or the [Advanced Reporting Guide](#).

The Report Details preferences specified in the Developer Preferences dialog box override the report details properties that control whether the following information is displayed:

- Report description
- Prompt details
- Filter details
- Definition of shortcut filters
- View filter details
- Metric details

You can change this behavior by disabling Developer Preferences for report details, as described in the following procedure. For steps to customize report details using Developer Preferences, see the *Developer Help* or the [Advanced Reporting Guide](#).

To disable Developer Preferences for report details

1. In Developer, from the **Tools** menu, select **Preferences**. The Developer Preferences dialog box opens.
2. Expand the **Reports** category, and then select **Report Details**.

3. To use the report details properties instead of the Developer Preferences, clear the **Apply these Developer preferences to the Report Details** check box.
4. Click **OK** to save your changes.

Understanding hierarchies

Most data calculation in a business reporting environment is based on the concept of levels. Hierarchies are an important part of understanding levels in MicroStrategy. To understand a hierarchy, you must first know what a business attribute (generally called an attribute) is. This section defines an attribute, describes a hierarchy, and then explains the concept of levels.

Business attributes

An attribute is a business concept, such as Store, Employee, Geographical Region, or Year. These concepts help you understand the business data (usually numbers) stored in your data source. While knowing your company's total sales is useful, knowing where and when the sales took place provides the kind of analytical depth you require on a regular basis. Attributes provide the answers to the questions "where" and "when".

Attributes appear on reports as row headings or column headings, to tell you what the data in that row or column is for.

Behind the scenes, attributes are MicroStrategy objects associated with one or more columns in a lookup table within your data source. In a reporting environment, attributes provide a context for calculating data and filtering data. Attributes help you make sense of the business facts stored in the data source.

For example, you have a report with the Month, Year, and Region attributes on it, as well as a Revenue metric based on the Revenue fact. When executed, the report displays your company's revenue by region, and for a given month and year. It might tell you that the northeast region brought in a million dollars in revenue in the first three months of last year. Because of the attributes on the report (Region, Month, and Year), a substantial amount of information is available, such as which regions produced the least revenue and which years saw the highest growth in revenue. If you remove the attributes from the report, you can only see how much revenue the entire company grew in total, over all time.

The attributes your organization's project designer creates are based on whatever business concepts are important to your organization. By converting each of these important business concepts into an individual object that can be placed on a report, concepts like Day, Month, Quarter, and Year, or Region, City, and Customer, can appear on a report that displays data within the context of those attributes.

Hierarchies

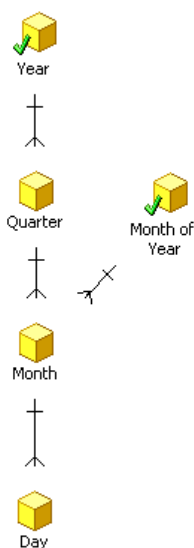
A hierarchy is made up of a group of related business attributes that are conceptually related to each other. (For a description and examples of attributes, see [Business attributes, page 87](#).)

For example, an organization's data source tables may be updated daily with sales data, and they may store inventory information that is updated monthly. The data source may also

store specific financial data in its tables on a quarterly or annual basis. All of this data is stored based on the concepts of day, month, quarter, and year. Therefore, when a MicroStrategy project is created based on the data in this data source, attributes will likely be created to represent Day, Month, Quarter, and Year so that daily sales data can be reported, monthly inventory can be reported, and reports of financial data can display quarterly or annual details and summaries for corporate presentations.

If your data source contains data on daily sales figures, can you see weekly, monthly, or annual sales figures? Yes, you can if you drill to that data, which works because of hierarchies.

The attributes Day, Month, Quarter, and Year all share one thing in common: they are all concepts that describe the larger idea of time. Because they are all part of the same higher-level concept, these attributes are combined into a group called a hierarchy; in this case, the attributes Day, Month, Quarter, and Year are combined into the Time hierarchy. Within a hierarchy, attributes are arranged in a specific way that is based on their relationship to each other. The Year attribute is the highest-level attribute in the Time hierarchy because it encompasses all the other concepts of time (Day, Month, and Quarter). The lowest-level attribute, or least-inclusive attribute, in this hierarchy is Day. This Time hierarchy is shown below:



The example above shows a hierarchy of all the attributes that relate to the business concept of Time. (These attributes and this hierarchy are part of the sample Tutorial project.)

This hierarchical grouping of related business attributes is useful for analyzing data in a reporting project. For example, the sales data is stored in the data source on a daily basis. But what if you want to see a report showing monthly sales data? Because Day and Month are part of the same hierarchy, you can simply drill from the daily sales data displayed on the report, up to monthly sales data. The new report you drill to (which contains monthly sales data) is recalculated automatically based on the drilling path you select. “Drilling up” reflects the direction you are drilling into the data in relation to where the attribute exists within the hierarchy: you drill from Day (shown on the report) up the Time hierarchy to Month (which appears on the new, drilled-to report).

In another example, imagine that your company is an Internet-based retailer and has its call centers all over the U.S., and therefore stores its employee data in your data source within the concept of geographical locations within the U.S. The related business attributes within this idea of geographical location become part of the Geography hierarchy. An example using sample data from the Tutorial project is shown below:



In the Geography hierarchy above, Country is the highest-level attribute and Employee is the lowest-level attribute.



Employee might just as likely be the highest-level attribute in a hierarchy called Employee Resources, which includes related lower level attributes like Profile (Age Range, Gender, Nationality, Ethnicity, Education and Degree Type, Marital Status), Hire Date, Leave Date, Date of Birth, Title, Address, Department, Division, Location, Salary Range Level, and so on. Which attributes are grouped into what hierarchies is decided by your organization's system architect or project designer when a MicroStrategy project is first created. If you are interested in complete details, see the [Project Design Guide](#).

How data is aggregated on a report: metric level

When more than one attribute is on a report, as is generally the case, a metric is calculated by default at the lowest level that is on the report. As described in [Hierarchies, page 87](#), the lowest level is usually the attribute that reflects the least-inclusive business concept, such as Day (in a Time hierarchy) or Employee (in a Geography hierarchy).

For example, imagine a report that shows your company's revenue listed by month and year. The report therefore contains the metric Revenue, and the attributes Year and Month. Is the Revenue metric going to be summed up and displayed by year? Or is it going to be summed up and displayed by month? Since a metric is calculated by default at the level of the lowest attribute that is on the report, in this example the metric results are calculated to reflect monthly sales data, since Month is a less-inclusive, or lower-level, concept than Year.

Be aware that the person who created the metrics on your report can change this default level of calculation. If you have questions about what level your metric data is being calculated for, contact your organization's MicroStrategy report designer or metric designer.

Drilling into related data

Drilling allows you to view report data at levels other than that originally displayed in the report. (To understand levels, read [Understanding hierarchies, page 87](#).) It allows you to retrieve more information after a report has been executed. You can investigate the data in your report quickly and easily with the help of drilling. Drilling automatically executes another report based on the original report to get more detailed or supplemental information.



To understand what you are doing when you are drilling up, down, or across, you should understand the concept of hierarchies. See [Understanding hierarchies, page 87](#) for an introduction to this concept.

For example, you look at the revenue, cost, and profit data for all your stores, at the regional level. The sample report is shown below.

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

You decide that you want to look at this information at the Call Center level. Right-click the Region column header, and choose Drill to Call Center. A new report is automatically created, the metrics are recalculated to reflect the new attribute that you are drilling to, and the report displays the revenue, cost, and profit data for your stores by call center. The new report is shown below:

Region	Call Center	Revenue	Cost	Profit
Central	Milwaukee	\$4,182,139	\$3,544,594	\$637,545
	Fargo	\$847,227	\$720,449	\$126,778
Mid-Atlantic	Washington, DC	\$3,135,283	\$2,662,083	\$473,200
	Charleston	\$1,317,332	\$1,117,448	\$199,884
Northeast	Boston	\$1,487,936	\$1,263,442	\$224,495
	New York	\$7,066,478	\$5,990,241	\$1,076,237
Northwest	San Francisco	\$1,021,447	\$865,116	\$156,330
	Seattle	\$739,741	\$629,086	\$110,655
South	New Orleans	\$3,305,039	\$2,800,048	\$504,990
	Memphis	\$2,084,241	\$1,782,276	\$301,966
Southeast	Atlanta	\$1,052,108	\$894,145	\$157,963
	Miami	\$1,187,843	\$1,009,131	\$178,713
Southwest	San Diego	\$2,962,719	\$2,513,166	\$449,553
	Salt Lake City	\$731,413	\$619,634	\$111,779
Web	Web	\$3,902,762	\$3,319,225	\$583,538

Even though a report generated as a result of drilling is related to the original report, they are two entirely different reports. The two reports can be saved or changed independently of each other. For steps, see [Tracking your drill path and naming the drilled-to report, page 91](#).

You can drill on attribute elements, consolidations, custom groups, and metrics, both on the report and in the page-by field. Consolidations and custom groups are described in detail in the [Advanced Reporting Guide](#), but drilling on them is included in the following procedures.

Methods for drilling on a report

Depending on the drilling method that you choose, you can drill on the entire report or only a part of the report. Some drilling methods provide more drilling options than others. All these methods use the default settings defined by the report designer. For descriptions of the settings that you can change to control the drilling behavior, including steps, see [Controlling drilling behavior to affect report results, page 91](#).

Drilling is often performed on the attribute elements in a report. Elements of an attribute are the values of an attribute. For example, 2011 and 2012 are elements of the Year attribute, while New York and London are elements of the City attribute.

Tracking your drill path and naming the drilled-to report

When you drill from a report, the name of the resulting, drilled-to report automatically becomes the original report's name plus the name of the object that you drilled to.

For example, in the Inventory and Unit Sales report in the Tutorial project, you can drill from the Item attribute up to the Category attribute. The resulting, drilled-to report's name is "Inventory and Unit Sales -> Category". You then drill from this resulting report by drilling down from Category to Subcategory. The drilled-to report's name is "Inventory and Unit Sales -> Category -> Subcategory". If you then drill across from Subcategory to Region, the resulting report's name is "Inventory and Unit Sales -> Category -> Subcategory -> Region".

You can use this report name to track your drilling path, which is especially useful if you continue to drill from each resulting, drilled-to report.

If you drill repeatedly along a single path, at some point the report's name can become too long or cumbersome to be useful. Consider saving a specific drilled-to report with a new name that is useful for you. Then, when you continue drilling from that report, your drill path as reflected by each resulting report's name is shorter and more useful again.

Controlling drilling behavior to affect report results

You can set various options that determine how drilling works on a given report. These allow you to control how other users drill on the report when they execute it, or to preserve your own most useful drilling paths and drilling behavior for later reuse on a given report. For background information on drilling and drilling paths, see [Hierarchies, page 87](#).

Most drilling options involve attributes on reports. An attribute is a MicroStrategy object that represents business data in your data source, such as Customer, Product, or Store. For background information on attributes, see [Business attributes, page 87](#).

You can control how drilling behaves on a report with the options described in this section.



You can change these options for an entire report, as described in the procedures in the following sections. You can also change many of these options for a specific drill action, while you are drilling in Developer. A Web administrator can also customize drill settings under the Drill Mode page of Project Defaults.

Customizing drilling behavior

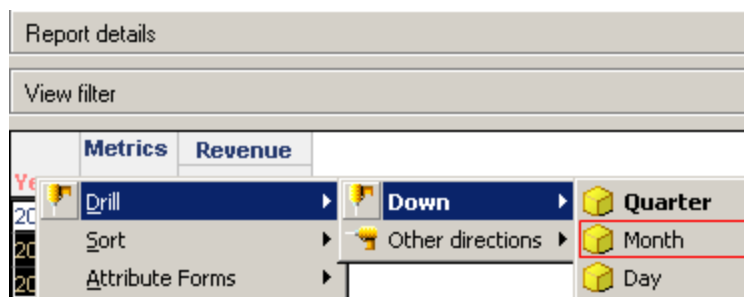
To find the best ways to customize drilling for your way of working or to suit your reporting goals, see the following table for suggestions.

What do you want to do?	Solutions
Reduce the width of reports, especially when drilling.	Do not allow the attribute that you are drilling on to appear in the drilled-to report. To customize this behavior, see Keeping or removing the drilled-from attribute in the new report, page 95 .
Keep track of the drill path so that you can remember what reports you drilled from for each new, drilled-to report.	<ul style="list-style-type: none"> The report name automatically adjusts each time that you drill, by adding the drilled-to object's name to the end of the report's name. For ideas on managing the report's name as it grows, see Tracking your drill path and naming the drilled-to report, page 91. Make sure each attribute that you drill on appears in the resulting, drilled-to report, so the object that you drilled on always appears in the subsequent report. To customize this behavior, see Keeping or removing the drilled-from attribute in the new report, page 95.
Restrict other users of a report from being able to drill wherever the report allows.	Restrict drilling paths to drilling down only. To do this, see Enabling drilling down or drilling anywhere, page 93 .
Have the drilled-to report show only data related to the currently visible page-by object on the drilled-from report.	Use the procedure described in Drilling on a report grouped by page-by fields, page 99 .
Have page-by fields on the drilled-to report show exactly the same information that they displayed on the drilled-from report.	Use the procedure described in Drilling on a report grouped by page-by fields, page 99 .
Have the drilled-to report display subtotals, if the drilled-from report also contained them.	Use the procedure described in Drilling on a report with subtotals calculated across levels, page 112 .
Enable drilling in all directions.	Use the procedure described in Enabling drilling down or drilling anywhere, page 93 .
Restrict drilling to lower-level attributes within a given hierarchy.	Use the procedure described in Enabling drilling down or drilling anywhere, page 93 .

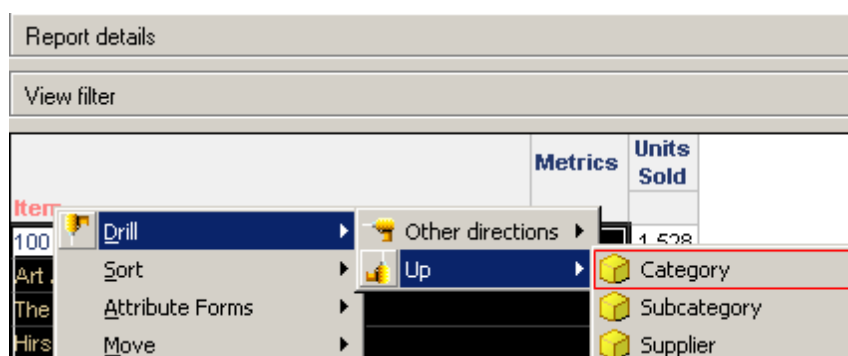
Enabling drilling down or drilling anywhere

For a given report, you can enable drilling in all directions or restrict drilling to lower-level attributes in a given hierarchy.

- **Drill anywhere:** When this option is selected in the procedure below, users can view data associated with the object they drill from, no matter which direction in the attribute's hierarchy they drill. For example:
 - A user can drill down from an attribute to the child attribute data, for example, drilling from Year data down to Month data.

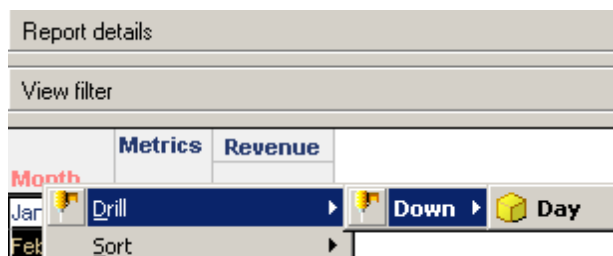


- A user can drill up from an attribute to the attribute's parent attribute data, for example, drilling from Item data up to Category data.



- A user can drill across to other, related attributes, for example, drilling from Region data across to Category data.
- **Drill down only:** When this option is selected in the procedure below, users can only view data associated with objects lower in the hierarchy than the attribute on which they are drilling. For example:

- Drilling down from the Month attribute or one of its elements, users can only drill to Day.



- Drilling down from the Category attribute or one of its elements, users can only drill to Subcategory and Item.

For background information on drilling and how to drill on a report, see [Hierarchies, page 87](#).

To enable drilling in Developer

1. Open a grid report.
2. From the **Data** menu, select **Report Data Options**. The Report Data Options dialog box opens.
3. Expand **General** in the list of categories, then select **Drilling**.
4. If it is not already selected, select the **Enable Report Drilling** check box.
5. Select one of the following options:
 - **Drill anywhere**: Users can view data associated with the object they drill from, no matter which direction in the attribute's hierarchy they drill: up, down, or across. Examples are provided above.
 - **Drill down only**: Users can only view data associated with objects lower in the hierarchy than the attribute on which they are drilling. Examples are provided above.
6. Click **OK** to save your settings and close the Report Data Options dialog box.

To enable drilling in MicroStrategy Web

1. Open a grid report.
2. From the **Tools** menu, select **Report Options**. The Report Options dialog box opens.
3. On the General tab, select one of the following options:
 - **Drill anywhere**: Users can view data associated with the object they drill from, no matter which direction in the attribute's hierarchy they drill: up, down, or across. Examples are provided above.

- **Drill down only:** Users can only view data associated with objects lower in the hierarchy than the attribute on which they are drilling. Examples are provided above.

4. Click **OK** to save your settings and close the Report Data Options dialog box.

Keeping or removing the drilled-from attribute in the new report

When you drill on a report, you can have the drilled-from attribute and its related data displayed in the resulting report, or you can choose to not display the drilled-from attribute on the resulting report. The following examples show the results of both of these options.

For example, a report contains Country, Region, and the Revenue metric, as shown below:

		Metrics	Revenue
Country	Region		
USA	Northeast		\$2,334,864
	Mid-Atlantic		\$3,413,340
	Southeast		\$2,016,186
	Central		\$1,773,270
	South		\$1,380,991
	Northwest		\$1,485,182
	Southwest		\$2,816,334
Web	Web		\$1,716,267

You drill down from Region to Call Center. To do this, you right-click on **Region**, select **Drill**, select **Down**, and select **Call Center**. If you specify that the drilled-from attribute (called the parent attribute) is kept on the drilled-to report, Region (the drilled-from attribute) appears on the drilled-to report along with Call Center (the drilled-to attribute), as shown below:

			Metrics	Revenue
Country	Region	Call Center		
USA	Northeast	Boston		\$1,325,448
		New York		\$1,009,416
	Mid-Atlantic	Washington, DC		\$1,413,865
		Charleston		\$1,999,475
	Southeast	Atlanta		\$1,083,016
		Miami		\$933,170
	Central	Milwaukee		\$1,340,391
		Fargo		\$432,879
	South	New Orleans		\$867,240
		Memphis		\$513,751
	Northwest	San Francisco		\$1,050,983
		Seattle		\$434,199
	Southwest	San Diego		\$2,397,919
		Salt Lake City		\$418,415
Web	Web	Web		\$1,716,267

If you specify that the drilled-from attribute is not kept, when you drill down from Region to Call Center, Call Center replaces Region on the drilled-to report as shown below:

		Metrics	Revenue
Country	Call Center		
USA	Atlanta		\$1,083,016
	San Diego		\$2,397,919
	San Francisco		\$1,050,983
	Washington, DC		\$1,413,865
	Salt Lake City		\$418,415
	Miami		\$933,170
	Milwaukee		\$1,340,391
	New Orleans		\$867,240
	Seattle		\$434,199
	Boston		\$1,325,448
	New York		\$1,009,416
	Fargo		\$432,879
	Memphis		\$513,751
	Charleston		\$1,999,475
Web	Web		\$1,716,267

Keeping the drilled-from attribute can be helpful to trace your drilling path. However, resulting reports can become very wide if you have many attributes and metrics. Not keeping the drilled-from attribute can help reduce the width of drilled-to reports.

The default behavior is to keep the drilled-from attribute on the drilled-to report. Be aware that the report's designer may have changed the default.



You can change this option for an entire report using MicroStrategy Developer, as described in the procedure below. In MicroStrategy Web or Developer, you can specify whether to keep or remove the drilled-from attribute while you are drilling, for that specific drill action. For steps, see [Methods for drilling on a report, page 91](#).

To keep or remove the drilled-from attribute when drilling

1. Open a grid report in Developer.
2. From the **Data** menu, select **Report Data Options**. The Report Data Options dialog box opens.
3. Expand **General** in the list of categories, then select **Drilling**.
4. Select one of the following options from the **Keep Parent While Drilling** drop-down list:
 - To ensure the drilled-from attribute appears on the drilled-to report, select **Yes**.
 - To ensure the drilled-from attribute does not appear on the drilled-to report, select **No**.
5. Click **OK** to save your settings and close the Report Data Options dialog box.

Drilling on a report with threshold formatting

Thresholds are conditional formatting that appears on report data when certain, specified conditions are met. For example, if certain cells of data appear bolded or have a red background on a report, that is data that has met a specified threshold and so is formatted differently to highlight it. For background information on thresholds, see [Formatting conditional values on a grid: Thresholds, page 20](#).

You can have thresholds on the drilled-from report be displayed automatically on any drilled-to report. For example, a report containing the Region attribute and the Revenue metric has a threshold that highlights revenue greater than \$2 million. The revenue amount is bolded when the threshold is met, as shown in the image below:

		Metrics	Revenue
Country	Region		
USA	Northeast		\$2,334,864
	Mid-Atlantic		\$3,413,340
	Southeast		\$2,016,186
	Central		\$1,773,270
	South		\$1,380,991
	Northwest		\$1,485,182
	Southwest		\$2,816,334
Web	Web		\$1,716,267

When you drill from Region to Call Center, the revenue amounts are recalculated for the Call Centers. For the drilled-to report, you can determine whether revenue over \$2 million should still appear bolded.

If you choose to keep thresholds while drilling, and you drill down from Region to Call Center, Revenue amounts over \$2 million are bolded on the drilled-to report, as shown below:

			Metrics	Revenue
Country	Region	Call Center		
USA	Northeast	Boston		\$1,325,448
		New York		\$1,009,416
	Mid-Atlantic	Washington, DC		\$1,413,865
		Charleston		\$1,999,475
	Southeast	Atlanta		\$1,083,016
		Miami		\$933,170
	Central	Milwaukee		\$1,340,391
		Fargo		\$432,879
	South	New Orleans		\$867,240
		Memphis		\$513,751
	Northwest	San Francisco		\$1,050,983
		Seattle		\$434,199
	Southwest	San Diego		\$2,397,919
		Salt Lake City		\$418,415
Web	Web	Web		\$1,716,267

If you choose to remove thresholds while drilling, and you drill down from Region to Call Center, no data is bolded, as shown below:

			Metrics	Revenue
Country	Region	Call Center		
USA	Northeast	Boston		\$1,325,448
		New York		\$1,009,416
	Mid-Atlantic	Washington, DC		\$1,413,865
		Charleston		\$1,999,475
	Southeast	Atlanta		\$1,083,016
		Miami		\$933,170
	Central	Milwaukee		\$1,340,391
		Fargo		\$432,879
	South	New Orleans		\$867,240
		Memphis		\$513,751
	Northwest	San Francisco		\$1,050,983
		Seattle		\$434,199
	Southwest	San Diego		\$2,397,919
		Salt Lake City		\$418,415
Web	Web	Web		\$1,716,267

When deciding whether to enable this option, be aware that, when a report is drilled on, thresholds can become meaningless. For example, if you drill up on an attribute, all the data in the new report could potentially meet the threshold condition. Using the example above where revenue over \$2 million is bolded, if you drill up from Region to Country, the entire report is likely to consist of revenue over \$2 million. The thresholds then only clutter the report and do not provide any meaningful information.

The default behavior retains the threshold on the drilled-to report. Be aware that the report's designer may have changed the default behavior.



You can change this option for an entire report using MicroStrategy Developer, as described in the procedure below. In Developer, you can specify whether to keep or remove thresholds while you are drilling, for that specific drill action. For steps, see [Methods for drilling on a report, page 91](#).

To keep or remove thresholds when drilling

1. Open a grid report in Developer.
2. From the **Data** menu, select **Report Data Options**. The Report Data Options dialog box opens.
3. Expand **General** in the list of categories, then select **Drilling**.
4. Select one of the following options from the **Keep thresholds while drilling** drop-down list:
 - To ensure that thresholds appear on the drilled-to report, select **Yes**.
 - To ensure that thresholds do not appear on the drilled-to report, select **No**.
5. Click **OK** to save your settings and close the Report Data Options dialog box.

Drilling on a report grouped by page-by fields

Page-by is a method of grouping large amounts of report data so you only see a separate subset, or page, of data on the report at one time. For example, in a report that shows sales numbers for every country in which your organization does business, if you only want to see one country's data per page of the report, you put the Country attribute in the page-by pane. For a full description of page-by and examples, see [Grouping data by page, page 63](#).

Determining the effect of the page-by field on the resulting report

You can determine how the page-by field on a drilled-from report affects the drilled-to report. Specifically, if a report you want to drill on contains a page-by field (that displays an attribute or a metric, for example) at the top of the report, you can choose whether to have the object that is currently visible in the page-by field be part of the filter for the drilled-to report.

For example, you have a report that shows sales data for individual countries, one country at a time. It has the Country attribute in the page-by pane above the report. If the currently visible page-by field says Country: USA, and you drill down on the report, which one of the following results do you want to see:

- Data for all countries continues to be displayed on the drilled-to report, one country at a time.
- Only data related to the USA is displayed, and no other countries can be selected in the page-by field.

The options described in the following sections let you determine how you want drilling to perform when you drill on a report that has one or more page-by fields:

- [Drilling to a report that is unaffected by page-by fields, page 100](#)
- [Drilling to a report with page-by fields restricted to visible pages on the original report, page 103](#)
- [Drilling to a report with one page-by field restricted and other page-by fields unaffected, page 105](#)
- [Drilling on a report with page-by fields in the same hierarchy, page 107](#)



If your report has two or more page-by fields that have objects in the same hierarchy, page-by behavior changes slightly when drilling. Be sure you review [Drilling on a report with page-by fields in the same hierarchy, page 107](#) for details.

For steps to set these options, see [Customizing drilling behavior for a report with page-by fields, page 109](#).

Personalizing the drilling location to affect page-by results

You can determine what part of a report will perform specific drilling behaviors. This personalization lets you locate certain drilling behavior within specific areas of a report to suit your drilling habits. When you drill from the page-by field itself, by default the currently visible page-by field becomes part of the drilled-to report's filter. Conversely, when you drill from the body of a report, by default the drilled-to report is identical to the original report (except for the appearance of the object you drilled on, of course).

Drilling to a report that is unaffected by page-by fields

When you drill on a report, you can have the page-by fields of the original report appear in exactly the same state in the drilled-to report, with all the same paging choices available.

For example, a report contains the Region attribute and the Revenue metric, with the Year attribute and the Subcategory attribute in the page-by fields above the report grid. The currently selected year is 2005, shown by **Year: 2005** in one page-by field. The currently selected subcategory is Art & Architecture, shown by **Subcategory: Art & Architecture** in the other page-by field. The report has no filter. The report is shown in the image below:

Year: 2005 ▼ Subcategory: Art & Architecture ▼	
Region	Revenue
Northeast	\$941
Mid-Atlantic	\$1,824
Southeast	\$985
Central	\$701
South	\$520
Northwest	\$851
Southwest	\$1,530
Web	\$497

Your goal is to have these same page-by fields, showing these same options and with the same drop-down list of selections, in the drilled-to report.

Drilling from the grid

When you drill on the report's grid, from the Region attribute down to the Call Center attribute, the resulting drilled-to report appears as shown below:

Report details	
Report Description:	
Report Filter (Local Filter): Filter is empty.	
Year: 2005 ▼ Subcategory: Art & Architecture ▼	
Call Center	Revenue
Atlanta	\$489
San Diego	\$1,364
San Francisco	\$611
Washington, DC	\$803
Salt Lake City	\$166
Miami	\$496
Milwaukee	\$383
New Orleans	\$317
Seattle	\$240
Boston	\$637
New York	\$304
Fargo	\$318
Memphis	\$203
Charleston	\$1,021
Web	\$497

Note the results in the drilled-to report:

- The new report's filter is empty, as it was in the drilled-from report.
- The page-by fields still contain the Year attribute and the Subcategory attribute, as they did in the drilled-from report. The drop-down lists of the page-by fields contain all years

and all subcategories, as they did in the original report, which means you can view revenue data for other years and subcategories in the drilled-to report.

- Call Center replaces Region in the grid of the new report because Call Center was the object you drilled down to.

You must clear the **Any page-by field** and **Any other part of the report** check boxes to achieve this drilling behavior. To do this, see [To customize drilling on a report that has page-by fields, page 111](#).

Drilling from the page-by pane

When you drill on one of the report's page-by fields, for example from Subcategory down to Item, the resulting drilled-to report appears as shown below:

Report details		
Report Description:		
Report Filter (Local Filter): Filter is empty.		
Year: 2005 ▼ Item: 100 Places to Go While Still Young at Heart ▼		
Region	Metrics	Revenue
Northeast		\$184
Mid-Atlantic		\$460
Southeast		\$276
Central		\$230
South		\$46
Northwest		\$230
Southwest		\$460
Web		\$46

Note the results in the drilled-to report:

- The new report's filter remains empty.
- The Year page-by field still contains the Year attribute, and the Subcategory page-by field became the Item page-by field because that is the object you drilled down to. The drop-down lists of the page-by fields contain all years and all items within all subcategories, which means you can view revenue data for other years and items within other subcategories in the drilled-to report.

In summary, based on setting certain drilling options, no page-by fields from the original report have been added to the filter of the resulting report, and therefore all years and all subcategories are included in the data of the drilled-to report.

You must clear the **Any page-by field** and **Any other part of the report** options to achieve this drilling behavior. To do this, see [To customize drilling on a report that has page-by fields, page 111](#).

Drilling to a report with page-by fields restricted to visible pages on the original report

You can include all currently visible page-by fields as part of the new, drilled-to report's filter when you drill from the original report. As a result, the drilled-to report contains data specific to the page-by fields currently visible on the drilled-from report. Additionally, the page-by fields change to display the objects on the level to which you drilled.

To illustrate this using the same example as above, a report contains the Region attribute and the Revenue metric, with the Year attribute and the Subcategory attribute in the page-by fields above the report grid. The currently selected year is 2005, shown by **Year: 2005** in one page-by field. The currently selected subcategory is Art & Architecture, shown by **Subcategory: Art & Architecture** in the other page-by field. The report has no filter. The report is shown in the image below:

Year: 2005 ▼ Subcategory: Art & Architecture ▼	
Region	Revenue
Northeast	\$941
Mid-Atlantic	\$1,824
Southeast	\$985
Central	\$701
South	\$520
Northwest	\$851
Southwest	\$1,530
Web	\$497

Drilling from the grid

When you drill on the report's grid, from the Region attribute down to Call Center, the resulting drilled-to report appears as shown below:

Report details	
Report Description:	
Report Filter (Local Filter): (Year = 2005) And (Subcategory = Art & Architecture)	
Year: 2005 ▼	Subcategory: Art & Architecture ▼
Call Center	Revenue
Atlanta	\$489
San Diego	\$1,384
San Francisco	\$611
Washington, DC	\$803
Salt Lake City	\$186
Miami	\$496
Milwaukee	\$383
New Orleans	\$317
Seattle	\$240
Boston	\$637
New York	\$304
Fargo	\$318
Memphis	\$203
Charleston	\$1,021
Web	\$497

Note the results in the drilled-to report:

- The new report's filter contains the objects that were in the page-by fields of the original report, namely **Year = 2005** and **Subcategory = Art & Architecture**.
- The Year page-by field still contains the Year attribute, and the Subcategory page-by field still contains the Subcategory attribute. However, the drop-down list of the Year page-by field contains only the year that was visible on the original report when you drilled, in this case 2005. The drop-down list of the Subcategory page-by field contains only the subcategory that was visible on the original report, in this case Art & Architecture. This means you only view revenue data for that year and that subcategory in the drilled-to report.
- Call Center replaces Region in the grid of the new report because Call Center was the object you drilled down to.

You must select the **Any Page-by field** check box, the **Apply to all page-by fields** option, and the **Any other part of the report** check box to achieve this drilling behavior. To do this, see [To customize drilling on a report that has page-by fields, page 111](#).

Drilling from the page-by pane

When you drill on a page-by field at the top of the report, for example from Subcategory down to Item, in the resulting, drilled-to report, 2005 and Art & Architecture have been added to the new report's filter so that all of the revenue data on the resulting report is 2005-specific and lists revenue only for art and architecture books.

The drilled-to report is shown below:

Report details		
Report Description:		
Report Filter (Local Filter): (Year = 2005) And (Subcategory = Art & Architecture)		
<div> <div>Year: 2005 ▼</div> <div>Item: 100 Places to Go While Still Young at Heart ▼</div> </div>		
Region	Metrics	Revenue
Northeast		\$184
Mid-Atlantic		\$460
Southeast		\$276
Central		\$230
South		\$46
Northwest		\$230
Southwest		\$460
Web		\$46

Note the results in the drilled-to report:

- The filter on the drilled-to report contains 2005 and Art & Architecture. This means the data for this drilled-to report was filtered so that only revenue for art and architecture books in 2005 is returned.
- Item replaced Subcategory in the page-by field because you drilled down from Subcategory to Item. In the new page-by field, 100 Places to Go While Still Young at Heart appears because that book happens to be the first book among all the art and architecture books that are stored in the data source. This page-by field functions like all page-by fields, in that only revenue for this book is included on the page currently displayed in the new report.

In summary, based on setting specific drilling options, all page-by fields from the original report have been added to the filter of the resulting report, and therefore only those subcategories and years included in that filter are included in the data of the drilled-to report.

You must select the **Any Page-by field** check box, the **Apply to all page-by fields** option, and the **Any other part of the report** check box to achieve this drilling behavior. To do this, see [To customize drilling on a report that has page-by fields, page 111](#).

Drilling to a report with one page-by field restricted and other page-by fields unaffected

When you drill from the original report, you can include only the page-by field on which you drill, as part of the drilled-to report's filter. Any other page-by fields remain as they were on the drilled-from report. As a result, the drilled-to report contains data specific to the drilled-on page-by field visible on the drilled-from report. All other page-by fields stay the same as they were on the original report.

To illustrate this using the same example as above, a report contains the Region attribute and the Revenue metric, with the Year attribute and the Subcategory attribute in the page-by fields above the report grid. The currently selected year is 2005, shown by **Year: 2005** in one page-by field. The currently selected subcategory is Art & Architecture, shown by

Subcategory: Art & Architecture in the other page-by field. The report has no filter. The report is shown in the image below:

Year: 2005 ▼ Subcategory: Art & Architecture ▼	
Region	Revenue
Northeast	\$941
Mid-Atlantic	\$1,824
Southeast	\$985
Central	\$701
South	\$520
Northwest	\$851
Southwest	\$1,530
Web	\$497

Drilling from the page-by pane

When you drill on a page-by field, for example from Subcategory down to Item, the new, drilled-to report is shown below:

Report details	
Report Description:	
Report Filter (Local Filter): Subcategory = Art & Architecture	
Year: 2005 ▼ Item: 100 Places to Go While Still Young at Heart ▼	
Region	Revenue
Northeast	\$184
Mid-Atlantic	\$460
Southeast	\$276
Central	\$230
South	\$46
Northwest	\$230
Southwest	\$460
Web	\$46

Note the results in the drilled-to report:

- The drilled-to report has a filter, for Art & Architecture. The filter contains the page-by field that was drilled on and contains the object that was visible on the page-by field in the original report.
- Item replaces Subcategory in the page-by field, because that is the object you drilled down to.
- The drop-down list of the Year page-by field contains all years, but the drop-down list of the Item page-by field contains only art and architecture books, since that is the only subcategory in the filter. Only revenue for the items in that subcategory is displayed on the report.

You must select the **Any Page-by field** check box and the **Apply to current page-by field** option to achieve this drilling behavior. To do this, see [To customize drilling on a report that has page-by fields, page 111](#).

Drilling from the grid

The drilling behavior described above can only be achieved when you drill from the page-by pane of a report. If you set up a report's drilling behavior this way, you can choose from one of two options for how drilling from the report's grid should behave:

- All the page-by fields are restricted to page-by objects that were visible on the original report. To achieve this drilling behavior, you must select the **Any Page-by field** check box, the **Apply to current page-by field** option, and the **Any other part of the report** check box.
- All page-by fields are unaffected by the drilling action and appear as they did on the original report. To achieve this drilling behavior, you must select the **Any Pageby field** check box and the **Apply to current page-by field** option.

To set these options, see [To customize drilling on a report that has page-by fields, page 111](#).

Drilling on a report with page-by fields in the same hierarchy

This section assumes you understand what a hierarchy is and how attributes are related within a hierarchy. For background information on hierarchies and attributes, see [Understanding hierarchies, page 87](#).

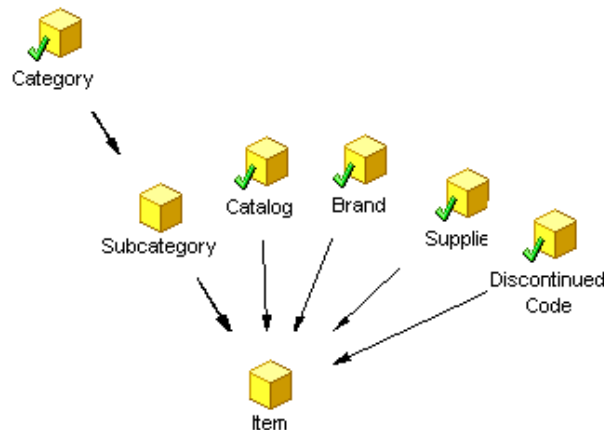
If you drill on a report that has two or more page-by fields that contain attributes within the same hierarchy, when you drill on one of those attributes, the drilling behavior described in the sections above is slightly different.

Specifically, if two or more attributes in the page-by fields are in the same hierarchy, and you drill on one of them, all related page-by fields are restricted to the object that was visible on the original report when you drilled.

For example, you have a report with one page-by field showing the Year attribute, one page-by field showing the Category attribute, and one page-by field showing the Subcategory attribute. This report is shown in the image below:

Report details	
Report Description:	
Report Filter (Local Filter): Filter is empty.	
Year: 2005	Category: Books
Subcategory: Art & Architecture	
Region	Revenue
Northeast	\$941
Mid-Atlantic	\$1,824
Southeast	\$985
Central	\$701
South	\$520
Northwest	\$851
Southwest	\$1,530
Web	\$497

The Category and Subcategory attributes are both within the project's Product hierarchy, as shown on the left side of the image below. The Year attribute is in a separate hierarchy.



You leave all drilling behavior options in the Report Data Options dialog box set to default, as shown in the image below:

☒ Any page by field

☒ Apply to current page by field

☐ Apply to all page by fields

☐ Any other part of the report

These settings normally provide the following results:

- A filter is added to new report; the filter contains only the page-by object that was drilled on.
- The drilled-on page-by field is restricted to the page-by object visible on original report.
- All other page-by fields remain as they were on the original report.

However, when page-by fields contain related attributes, the behavior in the third bullet above is slightly different.

To see the resulting report, you drill from the Subcategory page-by field down to Item. The resulting report is shown in the image below, with the Category page-by field expanded:

Report details	
Report Description:	
Report Filter (Local Filter): Subcategory = Art & Architecture	
Year: 2005 ▼	Category: Books ▼
Item: 100 Places to Go While Still Young at Heart ▼	
Region	Books
Northeast	\$184
Mid-Atlantic	\$460
Southeast	\$276
Central	\$230
South	\$46
Northwest	\$230
Southwest	\$460
Web	\$46

When drilling from any page-by field using the default behavior settings, normally only that drilled-on page-by field is changed so that it shows only the object that was visible in the original report. Other page-by fields are not affected by the drilling action and remain as they appeared on the original report.

As expected, based on your behavior settings the Subcategory page-by field was placed in the resulting report's filter. And as expected, the Year page-by field remains as it was on the original report, with all years available to be selected from the Year page-by.

However, because Category and Subcategory are in the same hierarchy, in the resulting report the Category page-by field only displays choices related to the subcategory that was currently visible in the original report (rather than showing all items from all subcategories as was displayed in the Category page-by field in the original report). This behavior occurs because the higher-level attribute Category must logically reflect the elements displayed in the lower-level attribute Item that you drilled down to. The Art & Architecture subcategory is placed in the resulting report's filter, and thus limits the Category page-by field to displaying only Books.

Because these attributes are connected by their relationship within the same hierarchy, they affect each other when you drill on one of them. This causes drilling behavior to perform slightly differently than the default behavior described throughout this section of the manual. In summary, in a report that has page-by fields containing attributes in the same hierarchy, when you drill on a page-by field containing one of those attributes, all other page-by fields with attributes in the same hierarchy are restricted to the hierarchy level of the page-by field you drill on.

Customizing drilling behavior for a report with page-by fields

The procedure below describes the options to set drilling behavior for a report that has one or more page-by fields. For complete details and examples for each of these options, see the

sections above. You can also refer to the table below for a quick reference to choose the right options to achieve the drilling behavior you prefer on a given report.

The following table summarizes the options described in detail in this section of the manual:

Option(s) Selected	Drill Location In Original Report	Appearance Of Resulting Report
<input checked="" type="checkbox"/> Any page by field <input type="radio"/> Apply to current page by field <input type="radio"/> Apply to all page by fields <input type="checkbox"/> Any other part of the report	Drill from a page-by field	<ul style="list-style-type: none"> Filter is added to new report; filter contains only the page-by object that was drilled on. Drilled-on page-by field is restricted to the page-by object visible on original report. Other page-by fields remain as they were on the original report.
	Drill from the report grid	<ul style="list-style-type: none"> Filter is empty. All page-by fields remain as they were on the original report.
<input checked="" type="checkbox"/> Any page by field <input type="radio"/> Apply to current page by field <input checked="" type="radio"/> Apply to all page by fields <input type="checkbox"/> Any other part of the report	Drill from a page-by field	<ul style="list-style-type: none"> Filter is added to new report; filter contains all page-by objects that were visible on original report. All page-by fields are restricted to the page-by objects visible on original report.
	Drill from the report grid	<ul style="list-style-type: none"> Filter is empty. All page-by fields remain as they were on the original report.
<input checked="" type="checkbox"/> Any page by field <input checked="" type="radio"/> Apply to current page by field <input type="radio"/> Apply to all page by fields <input checked="" type="checkbox"/> Any other part of the report	Drill from a page-by field	<ul style="list-style-type: none"> Filter is added to new report; filter contains only the page-by object that was drilled on. Drilled-on page-by field is restricted to the page-by object visible on original report. Other page-by fields remain as they were on the original report.
	Drill from the report grid	<ul style="list-style-type: none"> Filter is added to new report; filter contains all page-by objects that were visible on original report. All page-by fields are restricted to the page-by objects visible on original report.

Option(s) Selected	Drill Location In Original Report	Appearance Of Resulting Report
<input checked="" type="checkbox"/> Any page by field <input type="radio"/> Apply to current page by field <input checked="" type="radio"/> Apply to all page by fields <input checked="" type="checkbox"/> Any other part of the report	Drill from a page-by field	<ul style="list-style-type: none"> Filter is added to new report; filter contains all page-by objects that were visible on original report. All page-by fields are restricted to the page-by objects visible on original report.
	Drill from the report grid	<ul style="list-style-type: none"> Filter is added to new report; filter contains all page-by objects that were visible on original report. All page-by fields are restricted to the page-by objects visible on original report.
<input type="checkbox"/> Any page by field <input checked="" type="radio"/> Apply to current page by field <input type="radio"/> Apply to all page by fields <input checked="" type="checkbox"/> Any other part of the report	Drill from a page-by field	<ul style="list-style-type: none"> Filter is empty. All page-by fields remain as they were on the original report.
	Drill from the report grid	<ul style="list-style-type: none"> Filter is added to new report; filter contains all page-by objects that were visible on original report. All page-by fields are restricted to the page-by objects visible on original report.
<input type="checkbox"/> Any page by field <input checked="" type="radio"/> Apply to current page by field <input type="radio"/> Apply to all page by fields <input type="checkbox"/> Any other part of the report	Drill from a page-by field	<ul style="list-style-type: none"> Filter is empty. All page-by fields remain as they were on the original report.
	Drill from the report grid	<ul style="list-style-type: none"> Filter is empty. All page-by fields remain as they were on the original report.



You can change this option for an entire report using MicroStrategy Developer, as described in the procedure below. In Developer, you can specify the page-by options while you are drilling, for that specific drill action. For steps, see [Methods for drilling on a report, page 91](#).

To customize drilling on a report that has page-by fields

1. Open a grid report.
2. From the **Data** menu, select **Report Data Options**. The Report Data Options dialog box opens.
3. Expand **General**, then select **Drilling**.
4. You can set the following drilling options, which determine how the page-by on the

drilled-from report affects the drilled-to report, as described in the examples above:

- **Any page-by field:** The page-by object is added to the filter of the drilled-to report when you drill from a page-by field. If this is selected, choose one of the following:
 - **Apply to current page-by field:** Only the page-by object that is currently visible is added to the filter of the drilled-to report.
 - **Apply to all page-by fields:** All page-by objects are added to the filter of the drilled-to report.
 - **Any other part of the report:** The page-by object is added to the filter of the drilled-to report when you drill from anywhere on the report's grid. You choose to locate the page-by drilling feature in the body of the report, where most users drill from the data.
5. Click **OK** to save your settings and close the Report Data Options dialog box. When you drill on this report in the future, your settings will determine how the page-by field affects the results displayed in the drilled-to report.

Drilling on a report with subtotals calculated across levels

A report can be designed to calculate subtotals across selected attribute levels, also referred to as across-level subtotals. The subtotal is applied to particular levels—rows, columns, or pages. Across-level subtotals can be thought of as “group by attributes to the left of the selected attribute”. (For a detailed description of across-level subtotals, see the *Reports* chapter of the [Advanced Reporting Guide](#).)

If a report is subtotaled across levels, you can determine whether the subtotals on the drilled-from report are displayed on the drilled-to report. Across-level subtotals are hidden only when all of the following is true:

- **Inherit across-level subtotal from parent** is set to **No**.
- **Keep parent while drilling** is set to **No**.
- You drill from the object that is the level of the subtotal.

The following example demonstrates how the results of the report change when the above conditions are applied.

A report contains the Region, Category, and Revenue metrics. Subtotals are calculated across all elements of the attribute Category. The attribute to the left of Category is Region, so the subtotals are grouped and calculated for each region, as shown in the portion of the report displayed below.

Region	Category	Metrics	Revenue
Central	Books		\$376,836
	Electronics		\$3,506,062
	Movies		\$589,357
	Music		\$557,112
	Total		\$5,029,366
Mid-Atlantic	Books		\$337,656
	Electronics		\$3,106,940
	Movies		\$518,969
	Music		\$489,049
	Total		\$4,452,615

By default, subtotals are inherited from the parent. Drill from Category to Subcategory. In the resulting report, Region, Category, and Subcategory are displayed. Since the subtotals are inherited, subtotals are applied across the levels of both Category and Subcategory. Subtotals are therefore calculated for Category and Region, the attributes to the left of Category and Subcategory. A portion of that drilled-to report is shown below.

Region	Category	Subcategory	Metrics	Revenue
Central	Books	Art & Architecture		\$69,260
		Business		\$56,324
		Literature		\$43,036
		Books - Miscellaneous		\$46,759
		Science & Technology		\$112,238
		Sports & Health		\$49,219
		Total		\$376,836
	Electronics	Audio Equipment		\$538,719
		Cameras		\$722,368
		Computers		\$286,384
		Electronics - Miscellaneous		\$682,635
		TV's		\$544,605
		Video Equipment		\$731,352
		Total		\$3,506,062
	Movies	Action		\$88,547
		Comedy		\$94,290
		Drama		\$103,299
		Horror		\$89,298
		Kids / Family		\$97,273
		Special Interests		\$116,649
		Total		\$589,357
	Music	Alternative		\$99,073
		Country		\$104,501
		Music - Miscellaneous		\$85,943
		Pop		\$98,767
		Rock		\$101,039
		Soul / R&B		\$67,790
		Total		\$557,112
	Total			\$5,029,366

Return to the original, drilled-from report. Specify that subtotals are not inherited from the parent. Drill from Category to Subcategory again. As with the previous drilled-to report, Region, Category, and Subcategory are displayed. Subcategory does not inherit its parent's subtotal (its parent being Category). Subtotals are still applied at the level of Category, so subtotals are calculated for Region, the attribute to the left of Category. A portion of that report is displayed below.

Region	Category	Subcategory	Metrics	Revenue
Central	Books	Art & Architecture		\$69,260
		Business		\$56,324
		Literature		\$43,036
		Books - Miscellaneous		\$46,759
		Science & Technology		\$112,238
		Sports & Health		\$49,219
	Electronics	Audio Equipment		\$538,719
		Cameras		\$722,368
		Computers		\$286,384
		Electronics - Miscellaneous		\$682,635
		TV's		\$544,605
		Video Equipment		\$731,352
	Movies	Action		\$88,547
		Comedy		\$94,290
		Drama		\$103,299
		Horror		\$89,298
		Kids / Family		\$97,273
		Special Interests		\$116,649
	Music	Alternative		\$99,073
		Country		\$104,501
		Music - Miscellaneous		\$85,943
		Pop		\$98,767
		Rock		\$101,039
		Soul / R&B		\$67,790
	Total			\$5,029,366

By default, the parent attribute is kept on the drilled-to report, so Category is displayed in these examples. Return to the original, drilled-from report. Specify that the parent is not kept when the report is drilled on. Drill from Category to Subcategory. The resulting report displays Region and Subcategory, with no subtotals. Because Category is no longer on the report, the across-level subtotals are no longer valid. A portion of the resulting report is displayed below.

Region	Subcategory	Metrics	Revenue
Central	Art & Architecture		\$69,260
	Business		\$56,324
	Literature		\$43,036
	Books - Miscellaneous		\$46,759
	Science & Technology		\$112,238
	Sports & Health		\$49,219
	Audio Equipment		\$538,719
	Cameras		\$722,368
	Computers		\$286,384
	Electronics - Miscellaneous		\$682,635
	TV's		\$544,605
	Video Equipment		\$731,352
	Action		\$88,547
	Comedy		\$94,290
	Drama		\$103,299
	Horror		\$89,298
	Kids / Family		\$97,273
	Special Interests		\$116,649
	Alternative		\$99,073
	Country		\$104,501
	Music - Miscellaneous		\$85,943
	Pop		\$98,767
	Rock		\$101,039
	Soul / R&B		\$67,790



For information about and examples of the **Keep parent while drilling** option, see [Keeping or removing the drilled-from attribute in the new report, page 95](#).

Return to the original, drilled-from report. Specify that subtotals are inherited from the parent. Drill from Category to Subcategory. The resulting report displays Region and Subcategory, as with the previous report, but subtotals are calculated for Region. Subtotals are inherited from the parent, so the across-level subtotals are transferred to the Subcategory. Since Region is to the left of Subcategory, the report is subtotaled at that level. A portion of that report is displayed below.

Region	Subcategory	Metrics	Revenue
Central	Art & Architecture		\$69,260
	Business		\$56,324
	Literature		\$43,036
	Books - Miscellaneous		\$46,759
	Science & Technology		\$112,238
	Sports & Health		\$49,219
	Audio Equipment		\$538,719
	Cameras		\$722,368
	Computers		\$286,384
	Electronics - Miscellaneous		\$682,635
	TV's		\$544,605
	Video Equipment		\$731,352
	Action		\$88,547
	Comedy		\$94,290
	Drama		\$103,299
	Horror		\$89,298
	Kids / Family		\$97,273
	Special Interests		\$116,649
	Alternative		\$99,073
	Country		\$104,501
	Music - Miscellaneous		\$85,943
	Pop		\$98,767
	Rock		\$101,039
	Soul / R&B		\$67,790
	Total		\$5,029,366

Return to the original, drilled-from report. Drill from Region to Call Center this time, so that you are not drilling on the attribute that the across-level subtotals are defined for. The resulting report displays Call Center and Category. Subtotals are calculated for Call Center, because Call Center is now the attribute to the left of Category. A portion of the resulting report is shown below.

Call Center	Category	Metrics	Revenue
Atlanta	Books		\$59,027
	Electronics		\$547,857
	Movies		\$89,963
	Music		\$87,284
	Total		\$784,131
San Diego	Books		\$167,305
	Electronics		\$1,509,886
	Movies		\$255,768
	Music		\$243,629
	Total		\$2,176,588



You can change this option for an entire report using MicroStrategy Developer, as described in the procedure below. In Developer, you can specify whether to show or hide subtotals while you are drilling, for that specific drill action. For steps, see [Methods for drilling on a report, page 91](#).

To show or hide subtotals when drilling from a report with across-level subtotals



This procedure assumes that the report already contains across-level subtotals. For steps, see the *MicroStrategy Developer Help* (formerly the *MicroStrategy Desktop Help*).

1. Open a grid report.
2. From the **Data** menu, select **Report Data Options**. The Report Data Options dialog box opens.
3. Expand **General**, then select **Drilling**.
4. Specify whether or not the subtotals are displayed in the drilled-to report:
 - To display subtotals in the drilled-to report, set **Inherit across-level subtotal from parent** to **Yes**.
 - To hide subtotals in the drilled-to report, set **Inherit across-level subtotal from parent** to **No**.
 - Subtotals are still displayed unless **Keep parent while drilling** is set to **No** and you drill from the object that is the level of the subtotal.
 - To use the value set in the drill path, set **Inherit across-level subtotal from parent** to **Default**. For information about creating drill paths, see the [Advanced Reporting Guide](#).
5. Click **OK** to save your changes and close the Report Data Options dialog box.

ANSWERING PROMPTS AND REFRESHING DATA

Your analysis of data can only be as accurate as the results displayed in a report. In many instances, you will want to have the most recent information from your data source displayed on your reports. In this case, if you execute a report multiple times, you probably want to be sure the query is submitted through your data source each time so you know you are seeing results based on the latest data available.

At other times, you simply need to see the same report you looked at before — you do not care whether the data is up-to-the-minute. In this case, MicroStrategy provides caching so you can retrieve report results as quickly as possible without submitting the request through your data source again.

This chapter discusses report caches, as well as various methods of refreshing a report's data.

Refreshing a report

As an analyst, you may find yourself regularly executing certain reports that have provided useful information to you in the past. When you re-execute a report, how do you know that the data that is returned reflects the most recent data available in your data source? To answer this question, you must consider a few factors:

- The frequency with which your data source is updated.
- Whether the report you are running is being executed through the data source again, or whether it is pulling its data from a stored cache that was created in MicroStrategy when the report was run the first time.

Your data source may be updated on a daily basis or only biweekly. It is a good idea to familiarize yourself with the frequency and the days or times when your data source receives updates. This information helps you determine when it is most desirable to re-execute your most commonly run reports, if it is important for you to see report results that reflect the latest data.

To take advantage of recently updated data in your data storage, you must refresh the data displayed on the report. To effectively refresh data on a report, you should take a moment to understand your data sources.

Understanding your data sources

With MicroStrategy, you can report on and analyze your organization's data with the goal of answering your business questions. MicroStrategy makes sense of the large amounts of data stored in your data source and returns report results which reflect that data. A data source can be a data warehouse, a simple text file, a Microsoft Excel file, or an external data source such as SAP-BW, Microsoft Analysis Services, or Hyperion Essbase.

No matter which type of data source your organization uses, data sources are commonly separated into specific business divisions. For example, you might have a data source that only holds information related to your supply chain data, storing all data related to monitoring the efficiency of your business workflow. Your organization might also have a separate data source to store all human resources data such as employee headcount, employee turnover, and so on.

It is important to know which data source(s) you are regularly accessing when you execute reports. By knowing which data sources are providing you with your report data, you can learn how frequently they are updated with new data. This information in turn can help you decide how often you need to re-execute certain reports, making sure that the report query is submitted through your data source rather than through a stored report cache in MicroStrategy.

Refreshing the data displayed on a report

There are several ways that data shown on a report can be refreshed so that the report reflects the latest values in the data source.

- **Prompted report:** A report analyst can automatically refresh the data on a prompted report by answering the prompts differently than they have been answered during any previous execution of the report. Answering prompted reports is discussed in this chapter, in [Answering report prompts, page 121](#).
- **Report cache:** A cache is the stored results of a report query that has already been executed. When the report is executed again, the system can quickly access the cache to display report data, rather than putting a load on the system to re-run the request to the data source. Caches are discussed in more detail below, including information on how to determine whether a report's results came from a cache or not. The following methods can be implemented to ensure refreshed data is accessible when a report is re-executed:
 - **Delete a report's cache:** A system administrator can delete a report's cache to ensure the data on that report is refreshed the next time it is executed. If the stored cache is deleted, the system is forced to submit the request through the data source again, thus gathering the most recent data.
 - **Disable caching for a report:** A system administrator can disable caching for a specific report, so that a cache of results is never created in the system when that report is executed. In this way, every time the report is re-executed, the query goes through your data source and thus returns the most recent data.

Report caches

A report cache is a special data store within MicroStrategy software that holds information that was recently requested from the data source to be displayed on a report. A cache is created when a report is executed for the first time and the request is submitted to the

database to gather the latest data. The report's results are then cached, or stored, in MicroStrategy.

Generally, frequently requested reports are cached because future requests for the same reports return data faster if the report has been cached. The execution time is quicker because cached reports do not need to run against the data source. In a cache, results from your data source are stored and can be used by new job requests that require the same data.

Caching is a useful strategy your administrator can use to reduce demands on your database and improve the speed of MicroStrategy's reporting performance. However, cached data is not always the most up-to-date, because it has not been run through your data source since the cache was created.

You can get new data for a report that has been cached, by deleting the report's cache before you execute the report. (There are other ways to refresh data on a report, which are discussed in this chapter.) Deleting the report's cache forces the report to be executed through your data source again, thus returning the most recent data from your data source. You must have administrative privileges to delete a report cache.

You can see whether the results on a report have come from a MicroStrategy cache in two ways:

- Look at the Report Details for the report. To do this, open a report and, from the **View** menu, select **Report Details**. An example image of the Report Details pane and its related report is shown below:

Report details

Report Description:

Report Filter (Local Filter):
{TOP 5 Brands - Filter on metric rank}

Report Limits:
Filter is empty.

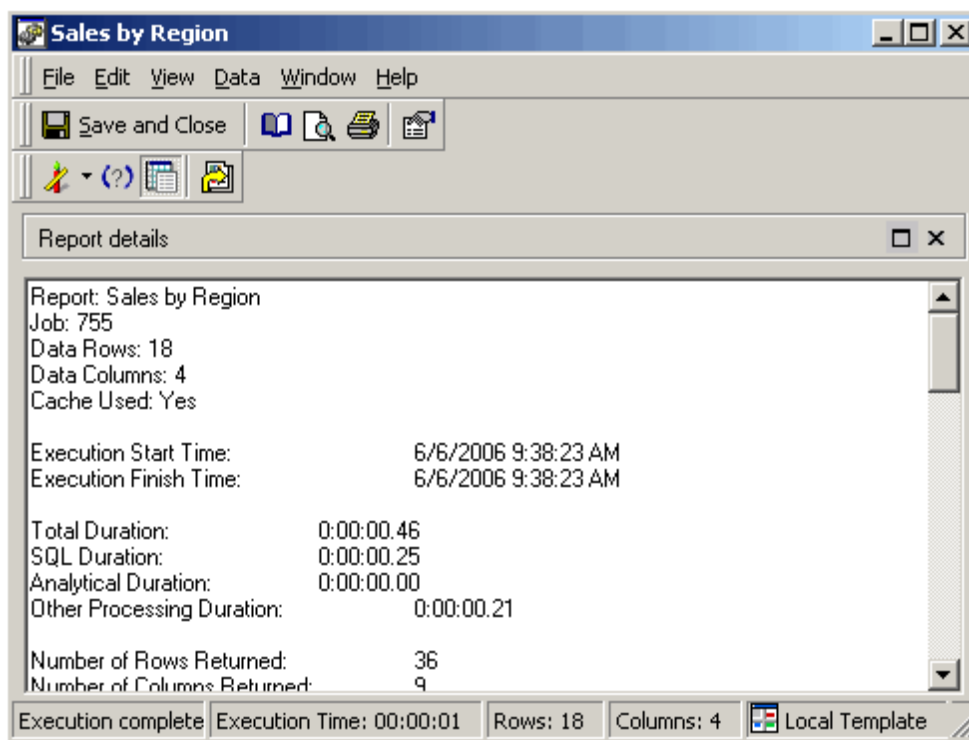
Cache Used: No

Region	Revenue (TOP 5 Brands)	Revenue Rank (TOP 5 Brands)	Revenue (All Products)	Revenue Rank (All Products)
Mid-Atlantic	\$1,618,687	1	\$ 3,413,340	1
Southwest	\$1,346,430	2	\$ 2,816,334	2
Northeast	\$1,087,657	3	\$ 2,334,864	3
Southeast	\$976,927	4	\$ 2,016,186	4
Central	\$862,392	5	\$ 1,773,270	5
Web	\$832,599	6	\$ 1,716,267	6
Northwest	\$687,512	7	\$ 1,485,182	7
South	\$669,918	8	\$ 1,380,991	8

Execution complete Execution Time: 00:00:21 Rows: 8 Columns: 4

In the Report Details pane above, the last line shows whether the cache was used to populate the report with data. For this report, the answer is **Cache Used: No**.

- Look at a report in SQL view. To do this, from the View menu select **SQL View**. As shown in the image below, for this report the 5th line says **Cache Used: Yes**.



Cached data and OLAP Services

MicroStrategy OLAP Services lets MicroStrategy Developer, Web, and Office users make use of features that slice and dice data in reports to create new reports, without re-executing SQL against the data source. These reports are called view reports. This improves performance by resulting in quicker data display within a report as users analyze and manipulate the data. OLAP Services view reports are populated from the original report's cache rather than being run against the data source.

The Report Objects pane is an OLAP Services feature that lets users create mini-reports based on an original report, by dragging objects on and off the report. When report objects are dragged to or from the Report Objects pane, the report results are recalculated based on the cached data rather than being submitted through the data source again.

To determine whether you have OLAP Services, and for details on other OLAP Services features, see [OLAP Services, page 13](#).

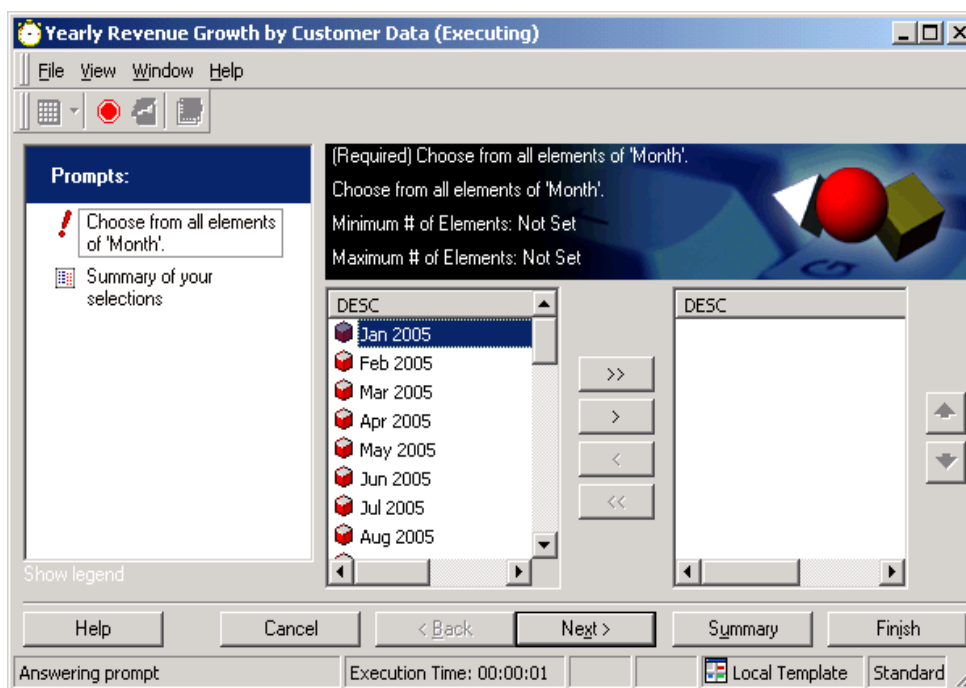
Answering report prompts

Any report can contain prompts. A prompt is a question presented to the user who runs the report. Depending on the answers the user provides, the report brings back and displays

different data from the data source.

Answering a prompted report differently each time it is executed is one way to ensure that a report is executed against your data source and displays the most recent data. This is because different prompt answers usually require different data than what is stored in the report's cache.

There are several types of prompts. The following image shows one example of a prompt that appears when a prompted report is executed. You choose one or more answers from the center pane, in this case months of a given year for which you want to see data. You move your selection(s) to the right, then you finish running the report to see your chosen data displayed.



Saving and re-using prompt answers: Personal answers

When you are answering prompts in a report, you can save a prompt answer independently of the report. Once saved, a prompt answer is called a personal answer. The personal answer can be used when you re-execute the report, and also for any other report that uses the same prompt.

The steps below assume that you have already selected a prompt answer, but have not yet clicked Finish or Run Report.

To save a personal answer

Use this procedure to save the prompt answer as a personal answer.

1. Determine whether the prompt lets you save prompt answers as personal answers. You can tell whether a prompt will let you save a personal answer if the **Remember this answer** check box (for a single personal answer) or the **Save this answer** check box (for multiple personal answers) is displayed.
2. If the **Remember this answer** check box is displayed, only one prompt answer (which can contain multiple items or qualifications) can be saved.

To save the personal answer, select the **Remember this answer** check box. The items that you selected are saved as the personal answer for this prompt. They are displayed, to be used again if you choose, when you re-execute this report and also for any other report that uses this prompt.

3. If the **Save this answer** check box is displayed, you can save and name multiple personal answers.
 - a. To save the personal answer, select the **Save this answer** check box.
 - b. Type a name in the **Name** field. Create a descriptive name that will remind you of the details when you see it at a later date.
 - c. You can set this personal answer as the default, so that it displays when you are presented with this prompt again, either on this report or another.



You do not have to save the report to save a personal answer; the personal answer is saved automatically when one of the check boxes above is selected.

Saving reports with prompts

When you save a prompted report after having executed it, you are presented with special save options that give you several ways to save your prompted report.

You can save your answers with the report. When you run the report in the future, you are not prompted again. (This is called saving the prompted report as static.) The prompt answers that you selected when you ran the report are saved to the report definition, and that definition is used every time the report is run in the future.

You can also save the report so that it prompts you or other users again, when the report is re-executed. You continue to be prompted every time you run the report in the future. (This is called saving the prompted report as prompted.) If you want, you can also have your current prompt answers become the new default prompt answers when the report is run again. This can speed up report execution, because you can save your own preferred answers as the defaults, and then each time you re-run the report, when you are prompted you can simply click **Finish** to accept all the default answers.

All of these choices are described in the procedures below. Use the appropriate procedure, depending on whether you are using MicroStrategy Developer or MicroStrategy Web:

- [To save a prompted report in Developer, page 124](#)
- [To save a prompted report in MicroStrategy Web, page 124](#)

To save a prompted report in Developer

1. Open a prompted report.
2. Answer the prompts and execute the report. For steps to answer a prompt, see [Answering report prompts, page 121](#).
3. From the **Home** menu, select **Save As**. Navigate to where you want to save the report, and provide a name for the report.
4. Click **Save**. The Save Options dialog box opens.
5. Select whether you want to save the report as static or prompted:
 - **Static**: The report is saved with the currently displayed report and filter information. When you execute the report in the future, you are not prompted again.
 - **Prompted**: The report is saved with active prompts. The next time that you run the report, the report prompts you for answers again.
6. If you select prompted, you can choose whether or not to use the current prompt answers as the default prompt answers when you run the report again, as described below:
 - To save the current prompt answers as the default prompt answers, select the **Set the current prompt answers to be the default prompt answers** check box. When you run the report again, you will be prompted, and you can choose to use the default answers or change them.
 - To use the default prompt answers defined in the prompt, clear the **Set the current prompt answers to be the default prompt answers** check box. When you run the report again, you will be prompted, and you can choose to use the displayed default answers or change them. If default prompt answers have not been defined in the prompt, no default answers are displayed.
7. If you select the **Remember options next time** check box, your selections above (in this Save Options dialog box) become the default method for saving all prompted reports when you save prompted reports in the future.
8. Click **OK**. Your selections are applied to the report and it is saved.

To save a prompted report in MicroStrategy Web

1. Open a prompted report.
2. Answer the prompts and execute the report.
3. From the **File** menu, select **Save As**. Navigate to where you want to save the report, and provide a name for the report.
4. You can choose to save the report as a prompted or a static report:

- To save it as a prompted report, select the **Keep report prompted** check box. The report is saved with active prompts. When you execute the report in the future, you are prompted for answers again.
 - To save it as a static report, clear the **Keep report prompted** check box. The report is saved with the currently displayed report and filter information. When you execute the report in the future, you are not prompted again.
5. If you save it as a prompted report, you can choose whether or not to use the current prompt answers as the default prompt answers when you run the report again, as described below:
- To save the current prompt answers as the default prompt answers, click **Advanced Options**. Select the **Set the current prompt answers to be the default prompt answers** check box. When you run the report again, the prompt answers that you selected are displayed as the default prompt answers. You can choose to use the default answers or change them.
 - To use the default prompt answers defined in the prompt, click **Advanced Options**. Clear the **Set the current prompt answers to be the default prompt answers** check box. The prompt answers that you selected are not saved with the report. When you run the report again, the default prompt answers defined in the prompt are displayed. You can choose to use the default answers or change them. If default prompt answers have not been defined in the prompt, no default answers are displayed.
6. Click **OK**. Your selections are saved.

BUILDING A QUICK QUERY FOR ANALYSIS

This chapter shows analysts and report designers how to create a simple business report. Before you create a report, you must have a business query in mind for that report to answer. You must also have access to various report objects that have already been created, so you can place them on the report and provide that report with the information it needs to gather the right data from your data source. You can use report objects that have already been created by your company's project designers and report designers.

Prerequisites

Make sure you review the following prerequisites before you create a report in MicroStrategy. They can save you time and make your report results more effective, thus making data analysis much easier.

- **Define your business query:** Before you can determine what objects to place on a new report, you need to know what data you want to see displayed on a report. MicroStrategy reports answer business questions that can be answered with the help of the data stored in your data source. To define your business question, make sure you consider the following questions:
 - What is the main topic area the report needs to address? In other words, at a general level, what do you need to know?
 - What level of detail do you need? For example, do you want complete details, or do you only want to see a few key measurements of particular data? Key measurements can be useful for a business meeting or high-level presentation.
- **Look for existing reports:** Before you create a report or document, search through MicroStrategy to see whether a similar report already exists that can serve the same purpose as the report you intend to create. This can not only save you time, it can help you avoid unnecessary duplication in your MicroStrategy project.
- **Look for appropriate report objects:** Do objects already exist in the project which match what you want to see on a report? If not, a report designer can create them.

- The objects which you will use to create a report must already be created in a MicroStrategy project. Report objects are generally created by the project's designer when the project is first created, and by report designers.
- Understand how your MicroStrategy project reflects your data source: Since you use objects to create reports, it can be useful for you to understand how the project's objects reflect the actual data in your organization's data source. In this way, you can choose objects to use on reports with full knowledge of the data source tables that data is coming from when the report is executed.

It is not necessary to have in-depth knowledge of your MicroStrategy project's design if you are creating quick reports for analysis, but if you desire more details on project design and data modeling, see the [Project Design Guide](#).

Creating a report by combining a template and a filter: Report Wizard

A report is a combination of a template and a filter:

- A report template is the structure that underlies any report. It specifies the set of information that the report should retrieve from your data source, and the way that you want the data to be displayed. For example, a report template can contain the Region and Call Center attributes, and the Revenue and Profit metrics. The Revenue metric is formatted to display as currency, with no decimal. The attributes display in the rows and the metrics in the columns.
- A filter screens data in your data source to determine whether the data should be included in or excluded from the calculations of the report results. For example, you might filter the Year attribute so that data is only returned for the current year, or for the first three months of last year.

The Report Wizard allows you to quickly and easily create a report by selecting an existing template and filter.

To build a report using the Report Wizard



This procedure assumes that a project designer has created a project in MicroStrategy that reflects your organization's stored data, and the project contains templates and filters.

To start the Report Wizard

1. In MicroStrategy Web, log in to a project. To log in to a specific project, see [Starting MicroStrategy, page 1](#).
2. Click the **MicroStrategy** icon and select **New Report**.
3. Click **Report Wizard**. The Report Wizard opens.

To select the template

A report template is the structure that underlies any report, containing what is to be displayed on the report and the way to display it.

In the list of available templates on the left, navigate to and select the template to use. Click the right arrow to move the selected template to the list of selected templates on the right.



You can search for a template, by typing the word to search for in the **Search for** field and clicking the Search icon.

To select the filter

A filter specifies the conditions that the data must meet to be included in the report results.

In the list of available filters on the left, navigate to and select the filter to use. Click the right arrow to move the selected filter to the list of selected filter on the right.



You can search for a filter, by typing the word to search for in the **Search for** field and clicking the Search icon.

To finish your new report

1. In the **Report Message Name** field, type a name for the new report.
2. Depending on your user privileges, do one of the following:
 - Analysts: If you have Web Analyst privileges, you can run the report or save it.
 - To run the report, click **Run Report**. If the filter contains a prompt, the prompt is displayed for you to answer. (For steps to answer a prompt, see [Answering report prompts, page 121](#).) Your report is executed against your data source and your results are displayed.
 - To save the report, click **Save**. If the filter contains a prompt, the prompt is displayed for you to answer. (For steps to answer a prompt, see [Answering report prompts, page 121](#).) The Save As dialog box opens. Navigate to a project folder in which to save the report, and click **Save**.
 - Report Designers: If you have Web Professional privileges (or higher), you can edit the report or save it.
 - To edit the report, click **Edit in Design Mode**. The report opens in Design Mode within the Report Editor, where you can continue to build the report with additional objects and user functionalities. For information on using the Report Editor, adding or creating additional objects, and adding user functionalities, see [Chapter 7, Building Query Objects and Queries, for Designers](#).
 - To save the report, click **Save**. The Save As dialog box opens. Navigate to a project folder in which to save the report, and click **Save**.

Quick report creation: Building a new report

This chapter provides steps to create a new report using the MicroStrategy Report Builder tool. The Report Builder is meant for users who are already familiar with MicroStrategy objects that are used to create a report, and who need to create a report quickly. However, the Report Builder tool limits you to only adding certain objects to the report while you are using the tool. Once you finish creating a report in Report Builder, you can continue to modify the report in the Report Editor and add additional objects.

If you have Web Professional privileges, before you create a report, you can create links, or shortcuts, to objects that you will want to use regularly. You can place the shortcuts in a location within the project that is conveniently accessible to you. For steps to create shortcuts to objects, see [Quick object access: Creating shortcuts to objects, page 142](#).

Creating a report for analysis

This section describes how to create a report using the quick report creation tool called Report Builder. MicroStrategy's Report Builder steps you easily through the process of quick report creation, and lets you access a wide variety of report objects in your project to define your report.

Report Builder asks for four specific pieces of information from you:

- The attributes to include on the report
- The metrics to include on the report
- Information to create a filter for one or more attributes; the filter is optional
- Information to create a filter for one or more metrics; the filter is optional

Each of these pieces of information is described more fully, with examples, in the procedure below.

Creating a quick report using Report Builder

To create a report that accurately answers a specific business query, be sure you have access to objects that have already been created, as described above in [Prerequisites](#).

To build a quick report using Report Builder



This procedure assumes that a project designer has created a project in MicroStrategy that reflects your organization's stored data, and the project contains attributes and metrics.

To start Report Builder

1. In MicroStrategy Web, log in to the project that contains the objects you want to use to create a report. To log in to a specific project, see [Starting MicroStrategy, page 1](#).

2. Click the **MicroStrategy** icon and select **New Report**.
3. Click **Report Builder**. The Report Builder template opens.

The Report Builder steps on the left pane allow you to easily navigate between different sections of the Report Builder.

To include attributes on the report

Attributes are the business concepts reflected in your stored business data in your data source. Attributes provide a context in which to report and analyze business data. While knowing your company's total sales is useful, knowing where and when the sales took place is more helpful.

For example, you have a report containing the Month, Year, and Region attributes, as well as a Revenue metric. When executed, the report displays your company's revenue for each region, during each month and year for which data is available. Because of the attributes on the report, a substantial amount of information is available, including which regions produced the least revenue and which years saw the highest growth in revenue.

1. Under **Choose the attributes of the report**, in the **Search for** field, type the name of the attribute. Alternatively, from the **Available** pane, browse to the attribute that you want to include on your report.
2. Select one or more attributes and click the **Add** arrow to move them to the **Selected** pane.
 - You must select at least one attribute.
 - Generally, one to three attributes are sufficient to add to a report, depending on the business query you are trying to answer with the report.
 - If you add more than one attribute to the report, make sure you select attributes that make sense when placed together on a report.



When you are finished adding attributes, add the metrics for your report under Choose the metrics of the report.


To include metrics on the report

Metrics are MicroStrategy objects that represent business measures. Metrics are the calculations performed on data stored in your database, the results of which are displayed on a report. Metrics are similar to formulas in spreadsheet software.

Questions such as “What were the sales for the eastern region during the fourth quarter?” or “Are inventory levels being consistently replenished at the beginning of each week?” can easily be answered by metrics. A metric is made up of facts stored in your data source and the mathematical operations to be performed on those facts, so that meaningful business analysis can be performed on the results.

1. Under **Choose the metrics of the report**, in the **Search for** field, type the name of the metric. Alternatively, from the **Available** pane, browse to the metrics you want to include on your report.

2. Select one or more metrics and click the **Add** arrow to move them to the **Selected** pane.


 Generally, one or two metrics is sufficient to add to the report, depending on the business query you are trying to answer with the report.

When you are finished adding metrics, you can add filtering conditions to your attributes under **Qualify** on any attribute.

To include an attribute filter on the report

A filter screens data in your data source to determine whether the data should be included in or excluded from the calculations of the report results. For example, you might filter the Year attribute so that data is only returned for the current year, or for the first three months of last year.

An attribute filter restricts data specifically for the attributes on, or related to, your report. You only need to include an attribute filter if it makes sense with your business query.

 If you do not want to include an attribute filter, proceed to the next subtask in this procedure, [To include a metric filter on the report, page 132](#). However, most reports use a filter to limit the quantity of data returned from the data source, and to help focus the report on a specific business question.

1. Under **Qualify on any attribute**, navigate through the hierarchies displayed in the **Available** pane. Alternatively, type the name of the hierarchy in the **Search for** field.

Hierarchies group all the attributes in your project into logical subsets. For example, the Day, Week, Month, and Year attributes might all be grouped into a Time hierarchy.

2. Double-click the hierarchy that holds the attribute you want to filter data for. The attributes within that hierarchy are displayed in the **Available** pane.
3. Select the attribute you want to use a filter on, and then click the **Add** arrow to move it to the **Selected** pane.

 It is generally simplest to select an attribute that is part of your report, unless you need an attribute filter that relies on a different attribute.

4. For each attribute moved to the Selected pane, select one of the following options, depending on how you want to filter the attribute data:
 - Return results that only show data related to specific elements of the attribute. For example, the attribute Customer might have the elements John Smith, Jane Doe, William Hill, and so on. You can filter data to display a list of only those customers (those elements) that you specify.
 - To create this kind of filter, from the filter's expression, first choose **Select** and then choose the **In List** operator. Click **Empty** to display the attribute's elements. Then, select the elements on the left and click the arrow to move them to the right. Click **OK**.

- Return results that show all the attribute's data EXCEPT for the specific elements you define. Using the example in the bullet above, you might specify certain customers whose data you do not want to see.
- To create this kind of filter, from the filter's expression, first choose **Select** and then choose the **Not In List** operator. Click **Empty** to display the attribute's elements. Then, select the elements on the left and click the arrow to move them to the right. Click **OK**.
- Experiment with other options to create the exact filter you want. For guidance:
 - Click **Help**. Details on every combination of choices is available, along with links to steps for creating more complex filters.
 - Attribute qualifications are discussed in detail in this manual, in [Filtering data based on business attributes: Attribute qualifications, page 174](#).

When you are finished defining your attribute filter, you can add filtering conditions for your metrics in the report under Qualify on any metric.

To include a metric filter on the report

A metric filter screens data based on a metric's value or rank. For example, you might create a filter that displays sales data for only those products with an inventory count below a specified number.

You only need to include a metric filter if it makes sense with your business query.



If you do not want to include a metric filter, proceed to the next subtask in this procedure, [To finish your report, page 133](#).

1. Under **Qualify on any metric**, in the **Available** pane, select the metric on which you want to use a filter. Alternatively, type the name of the metric in the **Search for** field.
2. Click the **Add** arrow to move the metric to the **Selected** pane.

It is generally simplest to select a metric that is part of your report, unless you need a metric filter that relies on a different metric.

3. For each metric moved to the Selected pane, select one of the following options, depending on how you want to filter the metric data:
 - Return results that show all data greater than a specific amount.
 - To create this kind of filter, from the filter's expression, select the **Greater than** operator. Click **Value** and in the **Enter Value** field, enter the number that all calculated values should be greater than.
 - Return results that show data that is outside a particular range of values.
 - To create this kind of filter, from the filter's expression, select the **Not Between** operator. Click the first **Value** and in the **Enter Value** field, enter the number that marks the lower end of the range. Click the second **Value** and in the **Enter Value** field, enter the number that marks the higher end of the range.

- Click the Operator drop-down list to see the many other common operators you can define your filter with. Experiment with other options to create the exact filter you want. For guidance:
 - Click **Help**. Details on every combination of choices is available, along with links to steps for creating more complex filters.
 - Metric qualifications are discussed in detail in [Filtering data based on attribute relationships or metrics: Set qualifications, page 185](#).

To finish your report

1. Review your selections for the report and make changes, if required.
2. Type a name for the report in the **Report Message Name** field.
3. Prior to saving the report, you can choose to view the report results and verify your report selections.
 - Web Analyst: If you have Web Analyst privileges, click **Run Report**. Your report is executed against your data source and your results are displayed.
 - Web Professional: If you have Web Professional privileges (or higher), click **Edit in Design Mode**. The report opens in Design Mode in the Report Editor, where you can continue to build the report with additional objects and user functionalities.
 - To execute the report without making any further changes, from the toolbar select **Run Report**.
 - For information on using the Report Editor, adding or creating additional objects, and adding user functionalities, see [MicroStrategy Web Report Editor interface, page 312](#).
4. To save your new report, click **Save**. Navigate to a project folder in which you want to save the report, and click **OK**.

BUILDING QUERY OBJECTS AND QUERIES, FOR DESIGNERS

This chapter introduces the basics of designing and creating business reports. Before you create a report, you must have a business query in mind for that report to answer. You must also have access to various report objects that have already been created, so you can place them on the report and provide that report with its definition. If you have the appropriate privileges, you can create report objects yourself, or you can use report objects that have been created by other report designers.

This chapter also shows you how to add user-friendly additions to a report, such as a drilling map or other capabilities.

Most of the tasks in this chapter are performed in MicroStrategy Web. Some are performed in MicroStrategy Developer, and are clearly labeled.



This chapter assumes you are familiar with all the other chapters in this guide. The other chapters contain introductory information on the user experience with basic functionality in the MicroStrategy environment.

Before you begin

Before you begin building query objects and queries, you should review these items:

- [Report designer role](#)
- [Developing a business query and report design: Best practices](#)

Report designer role

This chapter primarily discusses software functionality that is only available to users who have privileges equivalent to Developer or Web Professional roles in MicroStrategy (or a broader set of privileges, such as those provided to the Administrator role). If you are not sure which privileges are assigned to your user name in the MicroStrategy environment, contact your system administrator.

Report designers design a reporting context or environment in which report analysts can successfully analyze business data. This environment allows report analysts to work within defined limits, ensuring that business data can be easily and quickly analyzed, as well as making sure that only reasonable queries are submitted to the database. Reasonable means that irrelevant data sets cannot be created, nor can huge amounts of data be retrieved from your data source, which can hamper system performance.

These roles allow a defined group of report designers to be trained on more advanced report functionality, while report analysts can manipulate reports without needing to understand the details of creating reports. Report analysts are not required to have a thorough understanding of the project. These users can analyze data, generate new reports from existing reports through drilling, and create quick and easy reports using Report Builder, which can all be performed in a controlled, user-friendly environment.

For example, a report designer might design a report for the sales department that displays data on the organization's annual regional revenue, including product brands. The report designer places the attributes Customer Region, Category, and Brand on the report, and the metrics Profit, Revenue, and Revenue Rank by Region. (To view this actual report, see the Brand Performance by Region report in the MicroStrategy Tutorial project.) A report analyst can then execute this report and drill to see details about revenue and profits for only the states in the Northeast region. Another report analyst can execute the same report, drill on a different object on the report, such as the brand Son, and view revenue and profits for a single item in the product line that concerns him.

There are numerous ways to design reports, each one giving users a slightly different data analysis experience. For example, you can design reports that prompt users for an answer about the type of data they want to view, before the report is run. Each user then sees report results specific to how he answered the prompts. A prompted report might allow users to select from certain attribute elements to create their own personalized version of the report. (Elements of an attribute are the values of an attribute. For example, 2011 and 2012 are elements of the Year attribute, while New York and London are elements of the City attribute.)

A report designer can also add to a report a selection of extra functionality for users. For example, drill maps define specific paths for users to navigate through the data. Drilling is a report manipulation method through which the user requests additional information that is directly related to the information available in the current report. After running a report, you can allow users to drill to various levels on the report. For example, with a drill map in the Brand Performance by Region report discussed above, a report analyst might drill from the regional level down to the State level, then down to the City level, then drill further down to view data for individual customers. Each drilling displays a new report.

Each of these report design methods is described in this chapter:

- For information on creating prompts and adding them to a report, see [Asking for user input: Prompts, page 206](#).
- For information on drilling, see [Drilling into related data, page 90](#) in [Chapter 3, Analyzing Data](#).
- For information on drill maps, see [Enabling drilling and customizing drill maps, page 286](#).
- For information on creating metrics, see [Calculating data on a report: Metrics, page 144](#).
- For information on creating a report, see [Creating a grid report, page 251](#).

Developing a business query and report design: Best practices

Before you create a report, you need to gather information from your user community, your project designer, your database administrator, and your MicroStrategy software. Some best practices are described here.

Gather information about your user audience

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

- What is the main topic area the report 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 reports do users expect?
 - Higher level executives sometimes have expectations on how data is displayed in a report, so it can be helpful to ask what types of reports they are used to receiving, and whether it is important to try to adhere to that data display style.
 - For all user communities, determine whether they are willing to learn a new report format or whether it will be easier for them to receive reports in a style they have become used to. For example, some users adopt MicroStrategy so they can read spreadsheets of data more easily. A standard MicroStrategy grid report can be a good style to start with when introducing spreadsheet users to MicroStrategy reports.
- Who makes up your universe of users?
 - If your universe of users is extremely diverse, consider making reports as flexible as possible for each user who executes them, by adding prompts to the report. A prompt asks users questions about the results they want to see on a report, and then submits the appropriate report query to the data source. For details on prompts, see [Asking for user input: Prompts, page 206](#).
 - Your universe of users may include different security requirements. For example, you may need a single report 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 report'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, review [Understanding your data sources, page 119](#).

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 reports 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 reports, 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 on reports with full knowledge of the data source tables that data is coming from when the report 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 reports? If not, you or another report designer 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 [Adding consolidations and custom groups, page 288](#).
- What VLDB (Very Large Database) properties have been set? These settings affect how the SQL is written when a report sends a SQL query to your data source. VLDB properties are usually determined by an administrator, but some may also be defined by a project's designer. All VLDB properties are described in detail in the (missing or bad snippet).
- 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

Consider the following approaches to report creation:

- Before you create a report, search through MicroStrategy to see whether a similar report already exists that can serve the same purpose as the report you intend to create. This can save you time and help you avoid unnecessary duplication in your MicroStrategy metadata.
- Before you create the finished report, use Microsoft Excel, Paint, PowerPoint, or another tool to create a mock-up of the report 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 report that may have to be redone.
- If you format the orientation of text in cells (for example, its vertical or horizontal alignment within a cell), you can use an autostyle to apply that same orientation to all reports you design. To do this, create an autostyle with the desired vertical and horizontal alignment (see [Preset formatting: Autostyles, page 51](#)). While creating the autostyle, from the **Format** menu select **Row** or **Column**, select **Values**, and choose your text alignment on the **Alignment** tab. Then right-click the project, select **My Preferences**, select the **Grid** tab, and select **General**. From the **Default style** drop-down list, select your new autostyle to be applied to all reports you create.

Quick report creation: Building a new report

If you are already familiar with MicroStrategy objects that are used to create a report, and you need to create a report quickly, MicroStrategy's Report Builder steps you through the process of quick report creation.

Quick reports can be useful to test out a basic report design concept for a more complex report, as described in [Locate or create time-savers, page 138](#). Before you spend time creating, formatting, and fine-tuning a complex report, you can create a basic report quickly and ask users to provide feedback on its general usefulness in answering their business queries. Once you feel confident that your basic report design includes the appropriate objects, you can move on to create any additional objects necessary and to create the more complex, final report.

While Report Builder itself provides limited access to certain objects and functionality during report creation, when you are finished with Report Builder, it opens your new report in Design Mode if you have design privileges. In Design Mode you can add, edit, or remove objects freely, and you can provide additional functionality for users who will later execute the report to perform data analysis.

To create a report quickly using Report Builder, see [Creating a report for analysis, page 129](#).

To create objects, see [Creating and saving objects, page 141](#). To create a report from scratch, see [Creating a grid report, page 251](#).

MicroStrategy objects

All reports have specific business objects placed on them. Those objects determine what data is gathered from your data source, how that data is calculated, and how the results are

displayed when each report is run. Therefore, to create a report, you must first determine whether the objects you want to place on it already exist. If they do not, you must learn how to create the objects you want.

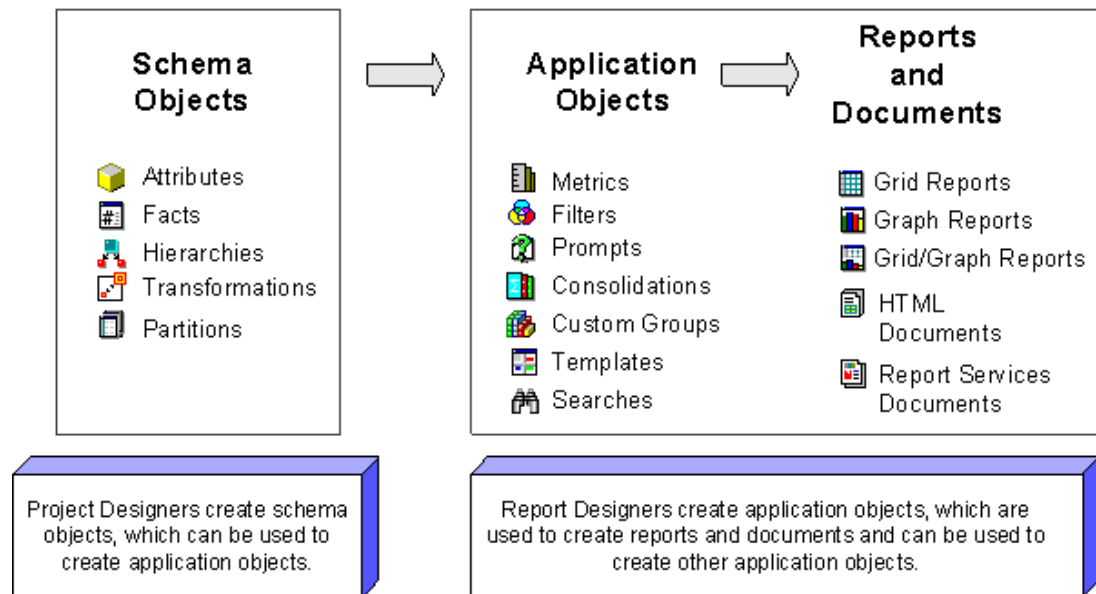
Objects used on reports include such things as:

- **Attributes:** An attribute is a business concept, such as Product, Employee, Month, and so on. Attributes provide a context for metrics (described below). Attributes based on the data in your data source should have already been created by your company's project designer. An attribute on a report serves as a label for a group of metrics. To use attributes on a report, see [Providing business context to a report: Attributes, page 143](#).
- **Metrics:** A metric is a business measure or key performance indicator, such as Revenue, Profit, Employee Headcount, or Probability of Purchase. From a practical perspective, metrics are the calculations performed on data stored in your database, the results of which are displayed on a report. A metric on a report shows a list of values used for analytical calculations. To create metrics and use them on reports, see [Calculating data on a report: Metrics, page 144](#).
- **Filters:** A filter sifts the data in your data source to bring back the information that answers exactly what you require. To create filters and use them on reports, see [Filtering data on a report: Filters, page 169](#).
- **Prompts:** A prompt is a question the system presents to a user during report execution. How the user answers the question determines what data is displayed on the report. To create prompts and use them on reports, see [Asking for user input: Prompts, page 206](#).

The objects you can create in MicroStrategy fall into one of three groups: schema objects, application objects, and reports and documents.

- **Schema objects:** Schema objects are generally created by a project designer and include such things as facts, attributes, hierarchies, and transformations. Schema objects are building block objects; they are used to create application objects. For information on how to create these types of objects, see the [Project Design Guide](#).
- **Application objects:** These objects are used to create reports. Application objects are generally created by a report designer and are built from schema objects. This chapter describes how to create these types of objects. Samples of each type of application object are located in the Public Objects folder in the Tutorial project.
- **Report and document objects:** Reports (and documents, if you own MicroStrategy Report Services) are built from application objects. Reports and documents are the objects that display the results calculated from your data for analysis purposes. Reports and documents are generally created by a report designer. This chapter describes how to create these types of objects.

The objects in each group, and their related icons, are shown in the following diagram. Take a moment to familiarize yourself with the icons for application objects and reports, so you can quickly identify objects you want to use in the MicroStrategy interface:



Application objects must be created and saved within a project before they can be used on reports.

MicroStrategy projects

Conceptually, a project in MicroStrategy is the environment in which all related reporting is done.

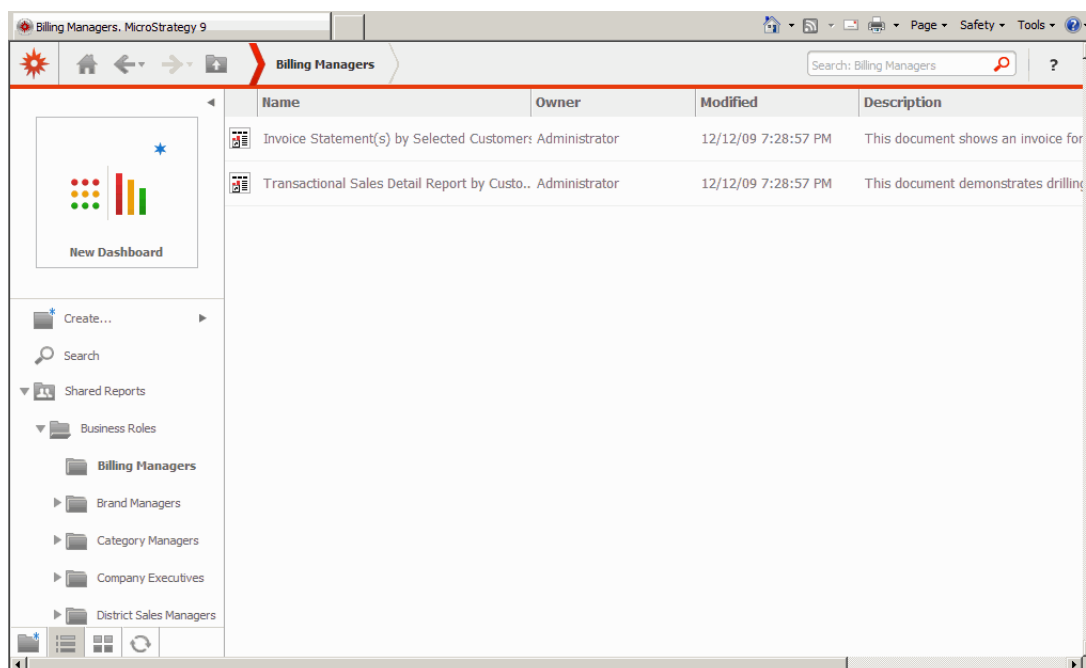
The image below shows the default projects that appear if all default installation options were accepted during MicroStrategy installation. The projects in the image below include MicroStrategy Tutorial and My First Project, as well as other sample projects.



A typical project contains reports, filters to qualify the report data, metrics that calculate the data, attributes that provide context for the metric data, and mathematical functions. Projects

generally also contain other schema objects and application objects. This chapter introduces you to basic attributes, metrics, filters, and prompts. For detailed information on and examples of other report objects, see the [Advanced Reporting Guide](#). For interface-specific information on report objects, click **Help**.

The image below shows some dashboards in the MicroStrategy Tutorial project, within the Billing Managers folder on the left. Objects within a selected folder on the left (in this case, the folder called Billing Managers) appear on the right side of the screen.



Generally, a report designer places various MicroStrategy objects such as filters, metrics, and attributes on reports, thus creating reports for business users to run and analyze.

If you do not have a working project yet, you can use the Tutorial project with most of the procedures in this chapter to learn how to create the various report objects in MicroStrategy. For information about what the Tutorial project is and how to access it, see [About sample data and the MicroStrategy Tutorial project, page 3](#).

Creating and saving objects

Before you create a report to display your business data, you must have objects to place on the report. These objects define what business data will be displayed in any report on which the objects are placed.

In MicroStrategy, you use editors to create and save the report-related objects you intend to use on reports. Steps to create several types of objects are in this chapter.

When a saved object is placed on a report, the definition you gave to that object becomes part of the report's definition, and in turn affects the SQL that is sent to your data source when the report is run. The SQL determines the appropriate data to be gathered, calculated, and displayed on this report. In this way, the objects you create and place on a report determine the results a user sees when he runs the completed report.

Quick object creation

The quickest way to create an object is to create a shortcut object, which is simply a shortcut to an existing object. Because a new shortcut object must be based on an existing object, other objects must already exist in your project. If your project does not yet contain objects, see the following sections of this chapter to create the objects you need to place on reports.

Shortcut objects are stand-alone objects in MicroStrategy that represent links to other objects, such as reports, filters, metrics, and so on. Shortcut objects make navigating among objects easy and quick, because you can locate specific report objects in the most useful folders within a project. Creating shortcuts to objects in different locations facilitates access to these objects without having to duplicate them.

Shortcuts also make project maintenance easier by eliminating the need to maintain numerous duplicate copies of objects. Using shortcuts, when you want to change any properties of an object, you only have to modify the original object and these changes are reflected in all shortcuts linked to this object. You can also edit the original object by right-clicking one of its shortcuts and selecting **Edit**. The original object is displayed in the editor.

For steps to create shortcuts to existing objects, see [Quick object access: Creating shortcuts to objects, page 142](#).

Quick object access: Creating shortcuts to objects

The quickest way to access an existing object to place on a report is to create a shortcut to the object, called a shortcut object. A shortcut object is simply a link, or shortcut, to an existing object in a MicroStrategy project. You can place a shortcut object in a location that is most convenient for you. By creating shortcut objects for the objects you commonly use in a project, you can make the report creation process quicker and easier.


For example, you use the Units Sold metric frequently when you create new reports. You want to create a shortcut to the Units Sold metric, which resides in the project's Metrics folder, and you want the shortcut to be saved in the My Objects folder. Locate the Units Sold metric by expanding the **Metrics** folder, then expanding the **Sales Metrics** folder. Right-click the **Units Sold** metric and choose **Create Shortcut**. In the Browse to Folder dialog box that opens, navigate to the My Objects folder and click **OK**. The Units Sold shortcut object is created in the My Objects folder.

Prerequisites

- DHTML must be enabled. For steps, click **Help** in MicroStrategy Web.
- Because a new shortcut object must be based on an existing object, other objects must already exist in your project. If your project does not yet contain objects, your report designer or object designer can create the objects you need to place on reports.

To create a shortcut object from the original object

1. In MicroStrategy Web, right-click the object for which you want to create a shortcut and select **Create Shortcut**. A dialog box opens.

2. Navigate to the folder in which to create the new shortcut and click **OK**. The shortcut is created in the specified folder. For example, you can save shortcuts in your My Objects folder within your project.
3. By default, the name of the shortcut is the same as the name of the object. To rename the shortcut, right-click the object and select **Rename**. Type a new name for the object and click the **Apply** icon . The name of the shortcut is updated.

Providing business context to a report: Attributes

Attributes are the business concepts reflected in your stored business data in your data source. Attributes provide a context in which to report on and analyze business facts or calculations. While knowing your company's total sales is useful, knowing where and when the sales took place provides the kind of analytical depth users require on a daily basis.

For example, you have a report containing the Month, Year, and Region attributes, as well as a Revenue metric. When executed, the report displays your company's revenue for each region, during each month and year for which data is available. Because of the attributes on the report, a substantial amount of information is available, including which regions produced the least revenue and which years saw the highest growth in revenue. If you remove the attributes from the report, you can only find out how much revenue the company made in total. An attribute on a report serves as a label for a group of metrics.

As you can see from the examples above, when you place attributes on a report, you should choose attributes that make sense together when they are on the same report.

Attributes are created by the project designer when an organization's project is first created. If you do not already have a company project running, you can use the sample Tutorial project that comes with MicroStrategy. For details on accessing the Tutorial project, see [About sample data and the MicroStrategy Tutorial project, page 3](#).

The elements of a business attribute are the unique values for that attribute. For example, 2006 and 2007 are elements of the Year attribute, while New York and London are elements of the City attribute. On a report, attributes are chosen to build the report, but once the report is executed, the attribute's elements are displayed in the rows or columns.

To see sample attributes in the Tutorial project

1. Open the MicroStrategy Tutorial project and log in to MicroStrategy Web.
2. On the left, click **Create** and select **New Report**. Then select **Blank Report**. The report opens in Design Mode.
3. On the left, click **Attributes** and explore the various attributes within each folder.

For details on creating attributes, see your MicroStrategy project designer or the [Project Design Guide](#).

Calculating data on a report: Metrics

Metrics are MicroStrategy objects that represent business measures and key performance indicators. From a practical perspective, metrics are the calculations performed on data stored in your database, the results of which are displayed on a report. Metrics are similar to formulas in spreadsheet software.

It is not an overstatement to say that the focus of almost any report is its metrics. Most of the decisions you make about the other objects to include on a report depend on the metrics you use on the report. Questions such as “What were the sales for the eastern region during the fourth quarter?” or “Are inventory counts being consistently replenished at the beginning of each week?” can easily be answered by metrics.

Specifically, metrics define the analytical calculations to be performed against data that is stored in the data source. A metric is made up of data source facts and the mathematical operations to be performed on those facts, so that meaningful business analysis can be performed on the results. A metric on a report shows a list of values used for analytical calculations.

Metric creation is usually the responsibility of advanced analysts.

Metrics terminology

The following terms are used throughout this guide and the [MicroStrategy Web Help](#) and the [Advanced Reporting Guide](#) to describe aspects of metrics. It is useful to understand their relationship to each other if you want to develop a logical approach to creating metrics.

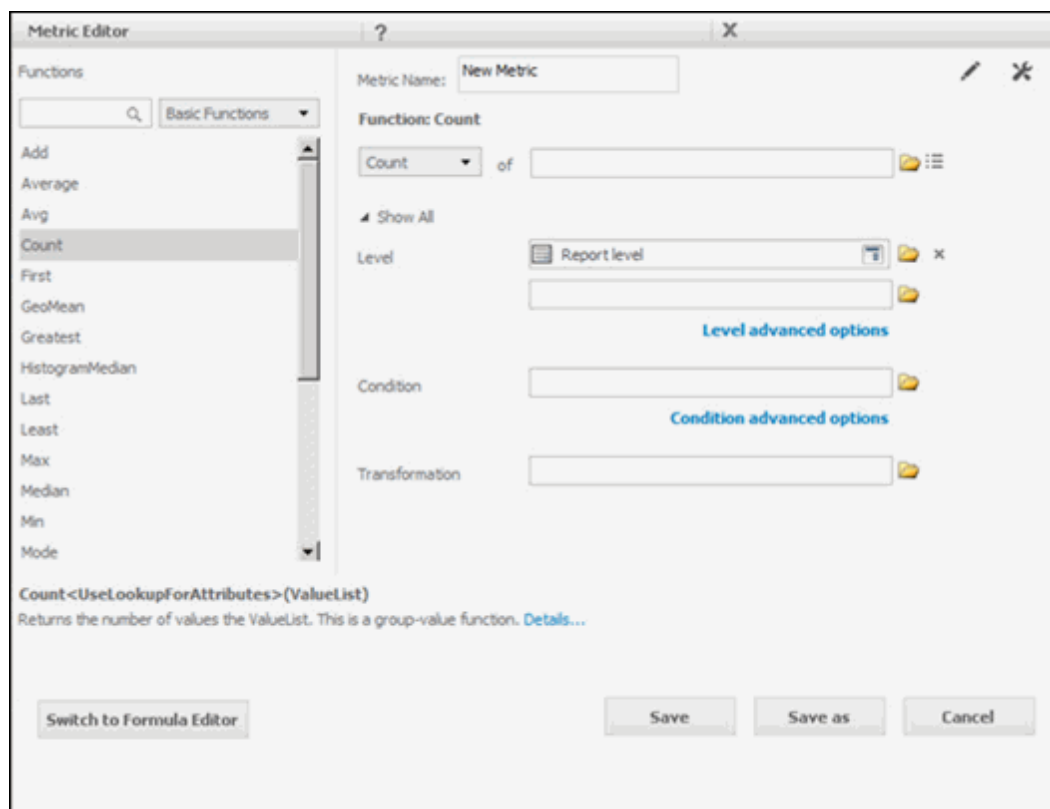
Metric formula: A metric’s formula is made up of a mathematical function and the business facts stored in your data source. A metric’s formula can also consist of other metrics.

Metric expression: A metric’s expression is made up of all the metric components displayed when a metric is opened in the Function Editor: formula (described above), level, condition (if any), and transformation (if any).

Metric definition: A metric’s definition includes the metric’s expression, plus any software settings applied to the metric.

Viewing and working with metrics: The Function Editor

You use the Function Editor mode of the Metric Editor to create and save most metrics, and to edit most existing metrics. The Function Editor is shown in the image below:



To access the Function Editor

1. In MicroStrategy Web, on the left, click **Create**, then select **New Metric**. The Metric Editor opens in Function Editor mode.
2. Select the function to use to calculate data in the metric. You can narrow the list of functions displayed in the pane by doing one of the following:
 - To search for the function by name, type the function's name in the search field.
 - Choose a function category from the drop-down list, such as Math Functions or Financial Functions. The pane is updated to include only the functions that belong to the selected category.

When you select a function, a description of the function is displayed at the bottom of the dialog box. Click **Details** to view more information about the function, such as syntax and examples.

To open an existing metric in the Function Editor

Click any metric within the MicroStrategy software to open that metric and view the metric's definition.



Most metrics open in Function Editor mode in the Metric Editor. Compound metrics and custom metrics open in Formula Editor mode in the Metric Editor. For details on compound and custom metrics in the Formula Editor, click the MicroStrategy Web **Help**.

All of the terms in the definitions above are described in the following pages.

Providing business context: Calculating metric levels

A metric's formula must be calculated within the context of a business concept. For example, a report with the metric called Revenue on it could show a list of company revenue — but in what context? Revenue generated by a particular salesperson, or by your company's top five best-selling products? Revenue earned last year, or lost due to lost sales leads last quarter? Revenue data alone is meaningless without at least one business attribute to provide context to the metric data. If you add the attribute Year, revenue for the current year makes sense.

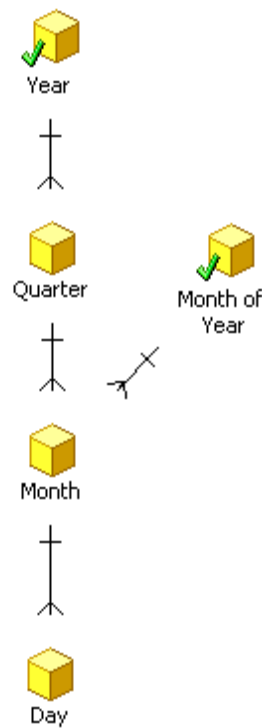
A metric, therefore, must be calculated in relation to some attribute if the metric is to have meaning on the report. Therefore, every metric definition must include a reference to the attribute that you want to provide context to the metric's calculation of data.

For an introduction to attributes, see [Providing business context to a report: Attributes, page 143](#).

Level of calculation for a metric

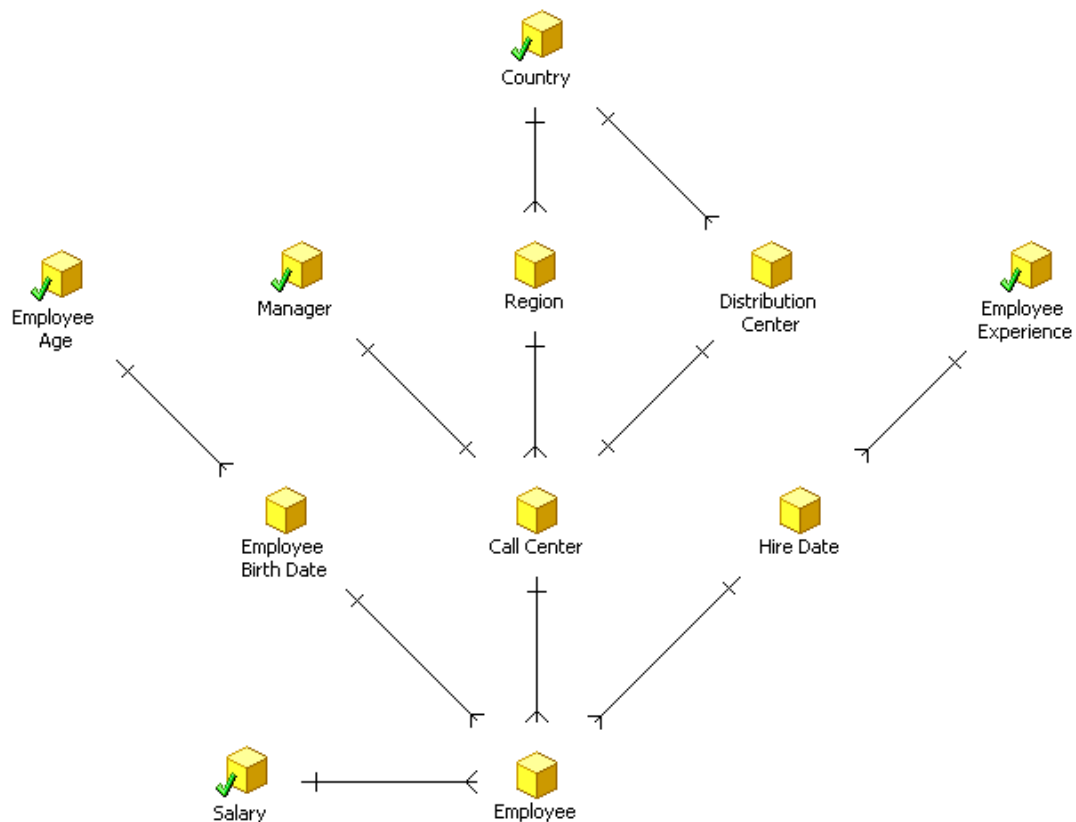
As noted above, a metric must be calculated within the context of a business attribute - but which attribute? Most reports contain more than one attribute. For example, on a report containing the Revenue metric and the attributes Month and Year, is revenue calculated and displayed by month? Or is it calculated and displayed by year?

Another way to ask this question is, at what level is the Revenue metric calculated? Is it calculated at the higher-level Year attribute or the lower-level Month attribute? To understand an attribute's level, picture a hierarchy of related business attributes. An example is shown below:



The example above shows a hierarchy of all the attributes that relate to the business concept of Time. (These attributes and this Time hierarchy are part of the sample Tutorial project.) The attribute Year is higher than Quarter, Month, or Day, because it appears above those other attributes. The highest level attribute is usually the attribute that reflects the most-inclusive business concept. In this hierarchy, Day is the lowest-level attribute and reflects the least-inclusive business concept.

In another example, suppose that your company is an Internet-based retailer and has its call centers all over the U.S. Your company therefore stores its employee data in your data source within the concept of geographical regions within the U.S. The related business attributes within this idea of geographical region become part of the Geography hierarchy. An example using sample data from the Tutorial project is shown below:



In the Geography hierarchy above, Country is the highest-level attribute and Employee is the lowest-level attribute.

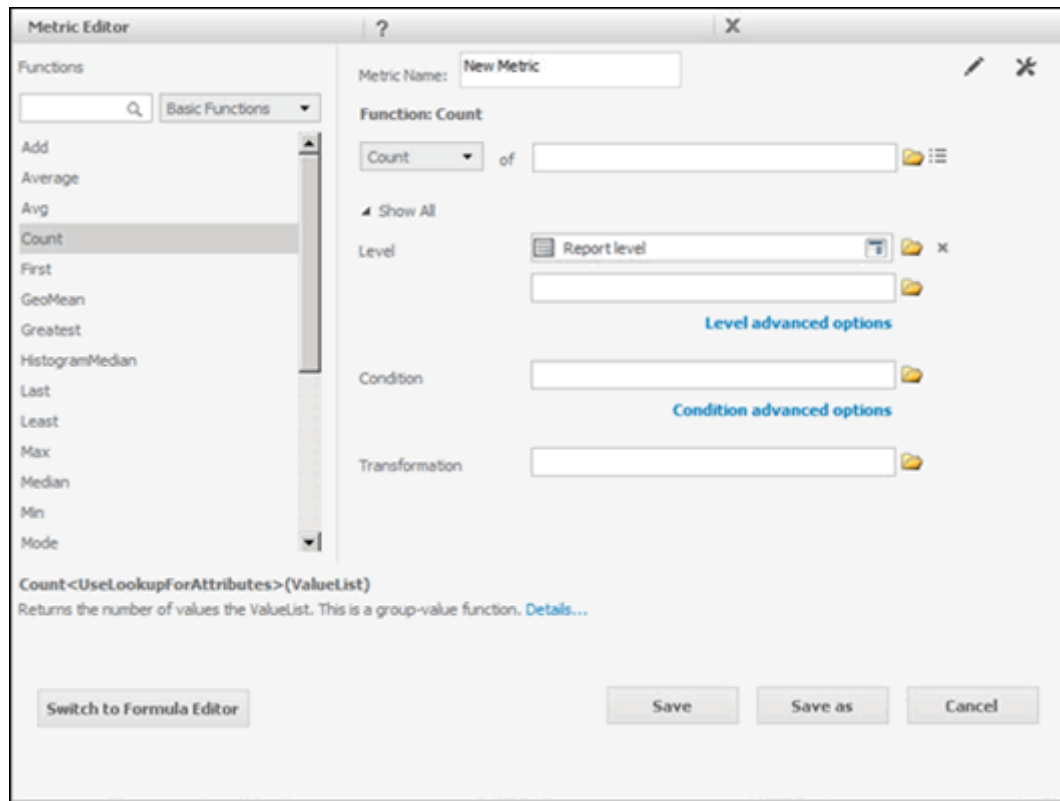
A metric's level (sometimes called dimensionality) determines the level at which the metric is calculated. Therefore, every metric must have a level as part of its definition. By default, a metric is calculated at the report level, which means it is calculated at the level of the attribute on the report in which the metric is placed.

When more than one attribute is on a report, as is generally the case, a metric is calculated by default at the level of the lowest-level attribute that is on the report. The lowest level is usually the attribute that reflects the least-inclusive business concept. For example, a report shows your company's revenue listed by month and year. The report therefore contains the Revenue metric and the attributes Year and Month. Is the Revenue metric going to be summed up and displayed by year? Or is it going to be summed up and displayed by month? The metric results by default are calculated to reflect monthly sales data, since Month is a less-inclusive, or lower-level, concept than Year.

Determining calculation level

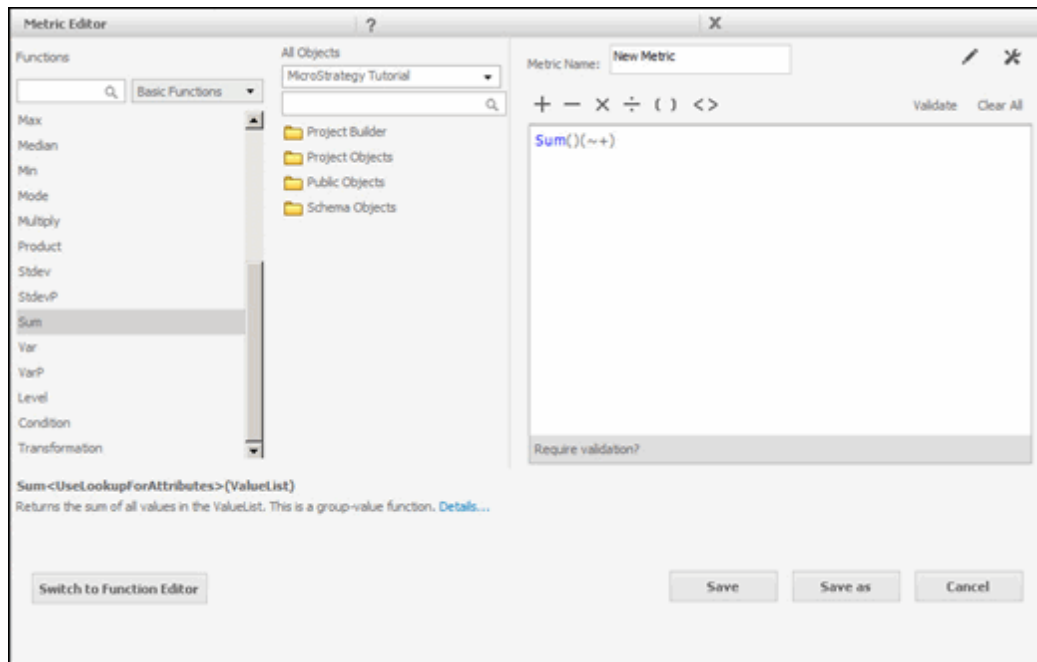
In MicroStrategy, the level at which a metric is calculated is displayed in both the Function Editor and the Formula Editor.

In the Function Editor, the level appears in the Level area, as shown below, where it is listed as **Report Level**:



In the Formula Editor, the level appears within curly braces, as shown below.

- {~} denotes the default metric level. If the default level is changed, the name of the attribute that represents the new level appears between the curly braces.
- {~+} denotes that the metric is calculated at the level of the lowest attribute on the report, which is the default calculation level for a metric.



Following are examples of metric formulas with the level displayed at the end of the formula:

`Sum (Revenue - Cost) {~+}`

`Sum (Abs (Revenue - Cost)) {~+}`

The level at which a metric is calculated can be changed. In a report that shows Revenue, Year, and Month, which means the metric on the report measures revenue by year and month, you might change the Revenue metric's level from the default of Month (which is the level of the lowest attribute on the report,) and redefine the level as Year. The metric then calculates at the Year level, and the report results display yearly sales data. This metric appears in the Formula Editor as:

`Revenue {Year}`

For examples of more complex metrics with various levels, see the *Advanced Metrics* chapter of the [Advanced Reporting Guide](#).

Metrics that do not use a level

Certain types of metrics can only have a level applied to their constituent parts, not to the metric as a whole. These restricted metrics are called compound metrics. See [Metrics made up of metrics: Compound metrics, page 156](#) for a description and examples of these types of metrics.

Components of a metric

The pieces, or components, of a metric include such things as the metric's mathematical formula, the business context in which to calculate the formula, and so on. When you define the components that make up a metric and then adjust any specific settings for the metric, you create a definition for that metric.

A metric definition contains some components that are required, and some components that are optional. The components you decide to include in the metric's definition are based on the calculations you want to be performed on the data in your data source, and thus the results to be displayed when that metric is placed on a report and the report is executed.

Required metric components

All metrics require the following components as part of the metric's definition:

- Mathematical formula, which includes a mathematical function
- Business level at which to calculate the formula

Both required metric components are described below.

Mathematical formula

A metric definition must contain a formula, which determines the data to be used from your data source and the calculations to be performed on that data. An example of the formula of a metric is

`Sum (Cost)`

where `Cost` is a fact stored in the data source. (Facts are one type of business data, typically numeric, stored in a data source.) The metric formula above calculates the sum of all costs recorded in the data source, to determine a measure of a company's expenditures.

A metric formula can be made up of facts in the data source (as in the example above), business attributes in the data source, or other metrics that have already been created. The following examples of metrics show these different formula options:

- **Metric made up of facts:** `(Sum(Profit) + Sum(Cost))`

This metric's formula adds all profits recorded in the data source, adds all costs recorded in the data source, and then adds the cost total to the profit total.

- **Metric made up of attributes:** `Count (Employee)`

This metric's formula counts the total number of company employees recorded in the data source. (An attribute is a business concept that is reflected in your stored business data, such as Year or Customer or Product. Attributes provide a context in which to evaluate metric data.)

- **Metric made up of other metrics:** `[This month's profit] - [Last month's profit] / [Last month's profit]`

This metric's formula subtracts last month's profit (a metric) from this month's profit (another metric), then divides the result by last month's profit to determine the percent difference in profit from last month. Existing metrics can be part of a newly created metric's formula, and thus they become part of the new metric's definition.

A metric that contains other metrics is called a compound metric. Compound metrics are discussed in [Metrics made up of metrics: Compound metrics, page 156](#).

If you are familiar with SQL syntax, a metric's formula is included in the SELECT clause of a SQL statement.

A metric formula that is shared among many metrics is called a base formula; for details, see [Required metric components, page 151](#).

Function

Most metrics must also have a mathematical function as part of the metric formula. The function is part of the formula.

In the examples above, the functions are Sum and Count. If a formula did not have a function, a metric formula might consist solely of the Cost fact or the Profit fact, and the data results of such a formula would simply be the extensive list of all the costs or profits ever recorded in the tables in your data source.

The default function for every formula made up of facts is Sum. The default function for every formula made up of attributes is Count.

Once your formula is in the Function Editor, you can change the function, of course. MicroStrategy provides over a hundred functions that can be a part of all calculations, whether simple or complex. For a description and examples of every function available, see the [Functions Reference](#). You can also create your own functions. See the [Advanced Reporting Guide](#) for information on creating your own functions.

Optional metric components

Optional components that can be added to a metric include:

- [Arithmetic operators, page 152](#)
- [Filtering metric data: Conditionality, page 152](#)
- [Time-series analysis: Transformation, page 154](#)
- [Base formulas, page 156](#)

Arithmetic operators

A metric's formula can also contain one or more arithmetic operators. You can add an arithmetic operator to a metric's definition in the Formula Editor (to access the Formula Editor, from the Function Editor click the **Switch to Formula Editor** link). Place the cursor in the appropriate location in the metric's formula and type the operator, such as + or -. When you are finished changing the formula, click **Validate** to validate your formula.

Filtering metric data: Conditionality

When you filter data in your data source, you screen a broad set of data and extract the specific information you want to see. For example, you have a report that displays monthly operations data, such as operating income, payroll, overtime, and so on. This report provides a good overall view of your monthly numbers. You decide you want to see the same metric calculations on the same data, but you want to restrict payroll numbers to contractors' payroll

only, and only for your subsidiaries in the northwest region. You can create a filter consisting of Employee=Contractor and Region=Northwest. You then apply this filter to the report, and your results appear and are calculated for only the data that your filter specifies.

A filter is a condition placed on data from your data source. A filter placed on a report as a whole screens overall report data. You can also apply a filter directly to an individual metric on a report. A filter applied this way screens only the data related to that individual metric. The filter becomes part of that metric's definition.

In this context, the filter is called a condition and the metric to which the filter is applied is called a conditional metric. A condition is not required in a metric's definition; this is an optional metric component. Applying conditionality to a metric forces the calculation of a metric to be qualified by the metric's filter irrespective of what is specified in the report filter, if one exists.

For example, you want to create a report with multiple metrics: Cost, Profit, and Sales. You want to apply a time filter, January 2007, so that users only see data for January, 2007 when the report is executed. To achieve this, you create a report filter for January 2007 and place it on the report. However, for one metric, Sales, you want to show all the values for the entire year 2007. You want this one metric to ignore the filter on the report. By creating a condition for the Year=2007 and adding it to the Sales metric's definition, when the report is run the Sales metric ignores the report filter (January 2007) and uses its own condition (2007) to calculate and display the sales for the entire year 2007.

To apply conditionality to a metric, you define a filter (a condition) as part of the metric's definition so that only data that meets the filter conditions is included in that metric's calculation.

To determine whether a metric has a condition applied to it

1. Click the metric you want to see the definition for. The metric opens in the Function Editor.
2. The metric's condition is shown in the Condition area:
 - In the example below, there is no filter displayed in the Condition area, so this metric has no condition applied to it.

Function: Sum

Sum of []

Show All

Level: Report level []

Condition: []

Transformation: []

Level advanced options

Condition advanced options

- In the example below, the Condition area shows the Web Sales filter, so this metric has a filtering condition as part of its definition. The condition filters data by looking at only those sales that occurred on the web.

The screenshot shows a configuration window for a metric. At the top, it says 'Function: Sum'. Below this is a dropdown menu set to 'Sum' followed by 'of' and an empty text box. There is a 'Show All' link with a left-pointing arrow. The 'Level' section has a dropdown menu set to 'Report level' and a 'Level advanced options' link. The 'Condition' section has a dropdown menu set to 'Web Sales' and a 'Condition advanced options' link. The 'Transformation' section has an empty text box.

While you can only use one filter on a metric, that single filter can contain multiple filtering criteria.

For details on filters generally and on creating various types of conditions for filters, see [Filtering data on a report: Filters, page 169](#).

For information to create and use a conditional metric, as well as additional examples on conditionality, information on conditional metrics with multiple conditions and levels, and details on how conditional metrics interact with report filters, see the [Advanced Metrics](#) chapter of the [Advanced Reporting Guide](#).

Metrics that do not accept a condition

Certain types of metrics can only have a condition applied to their constituent parts, not to the metric as a whole. These restricted metrics are called compound metrics. See [Metrics made up of metrics: Compound metrics, page 156](#) for a description and examples of these types of metrics.

Time-series analysis: Transformation

A transformation applies offset values, such as “four months ago,” to a metric on a report. A transformation is not required in a metric’s definition; this is an optional metric component.

Transformations are generally added to metrics that are designed to do time-series analysis, for example, to compare values at different times, such as this year versus last year, or month-to-date. Transformations are useful for discovering and analyzing time-based trends in your data.

Transformations are created as a separate object and then added to a metric. Transformations are schema objects, so you must have the appropriate privileges to create or modify them.

When a transformation is created and applied to a metric, you have created a transformation metric. A transformation metric is a metric that assumes the properties of the transformation

applied to it. For example, you create a metric to calculate revenue. If you add a transformation named Month to Date to that metric, the new metric (a transformation metric) calculates month to date revenue, or the sum of revenue this month, up to today's date. The following image shows the resulting report from this example:

Month	Day	Revenue	Month to Date Revenue
Jan 2012	1/1/2012	\$35,589	\$ 35,589
	1/30/2012	\$26,945	\$ 953,903
Feb 2012	2/1/2012	\$36,258	\$ 36,258
	2/28/2012	\$76,530	\$ 1,014,628

Any transformation can be included as part of the definition of a metric, and multiple transformations can be applied to the same metric.

To determine whether a metric has a transformation applied to it

1. Click the metric whose definition you want to see.
 2. If the metric has a transformation, it is shown in the Transformation area of the Function Editor, as shown in the images below:
- In the example below, there is no transformation displayed in the Transformation area, so this metric has no transformation applied to it.

Function: Sum

Sum of

Show All

Level: Report level

Condition

Transformation

Level advanced options

Condition advanced options

- In the example below, the transformation transforms Month to Last Month and Day to Last Month's Day, so this metric has a transformation as part of its definition.

The screenshot shows the 'Function: Avg' configuration for a metric named 'Revenue'. The interface includes a 'Show All' button and several configuration sections:

- Level:** Set to 'Report level' with a 'Level advanced options' link below it.
- Condition:** An empty field with a 'Condition advanced options' link below it.
- Transformation:** Set to 'Month to Date' with an empty field below it.

For details to use a transformation with a metric, and for more information on metrics that use transformations, refer to the *Advanced Metrics* chapter of the [Advanced Reporting Guide](#). For information on creating transformations, see the [Project Design Guide](#).

Metrics that do not accept a transformation

Certain types of metrics can only have a transformation applied to their constituent parts, not to the metric as a whole. These restricted metrics are called compound metrics. See [Metrics made up of metrics: Compound metrics, page 156](#) for a description and examples of these types of metrics.

Base formulas

A base formula is a standard metric formula that is saved and then used in multiple metrics. A base formula is typically a common expression used in a large number of metrics.

A base formula saves time. As you create metrics, you do not have to type the common formula repeatedly but can instead re-use the formula by adding the base formula to each new metric.

A base formula used in a metric is linked to that metric as a shortcut. This means that when you update the base formula, it is automatically updated in all metrics in which it is used. Base formulas only contain calculation information; they do not include level information or conditionality, and you cannot use them to perform transformations or calculate subtotals.

For steps to create a base formula, add a base formula to a metric, or remove the base formula from a metric, see the *MicroStrategy Developer help* (formerly the *MicroStrategy Desktop help*).

To see the full expression for a metric that contains a base formula, in Developer, open the metric in the Metric Editor, and then, in the **Metric metricname is defined as** area, select **Formula**.

Metrics made up of metrics: Compound metrics

Certain types of metrics can only have a level, condition, or transformation applied to their constituent parts, not to the metric as a whole. These metrics are called compound metrics. If

a metric contains any of the following elements, it is a compound metric and can only have levels, conditions, and transformations applied to its individual parts:

- A metric is a compound metric if it uses a non-group function, which includes OLAP functions and scalar functions. (For details on the all functions available in MicroStrategy, see the [Functions Reference](#).)
- A metric is a compound metric if it consists of two or more existing metrics joined by an arithmetic operator (+, -, *, and /).

Each of these compound metric types is described with examples below.

One advantage of compound metrics compared to simple metrics is that compound metrics can use smart totals. Smart totals define the evaluation order for the final calculation. For more information on smart totals, see [Totals and subtotals, page 161](#).

Compound metric with an arithmetic operator

The following example shows a compound metric that uses an arithmetic operator to create a metric formula out of existing metrics:

```
Sum(Cost) + Sum(Profit)
```

where `Cost` and `Profit` are metrics. The addition operator (+) between the two metrics makes this a compound metric.

The same metric is shown in the Formula Editor within the Metric Editor in the image below. It is a compound metric because it contains an arithmetic operator (+) that creates a formula out of two existing metrics, `Cost` and `Profit`. The level of the metric is indicated between curly braces ({ }) in the metric definition. {~+} denotes that the metric is calculated at the level of the lowest attribute on the report, which is the default calculation level for a metric. Each constituent metric has its own level, and you can change the default level for the individual metrics. No level exists for the entire compound metric as a whole.



Levels, conditions, and transformations cannot be set on a compound metric, although they can be applied separately on the constituent metrics that make up the compound metric. For

more information on compound metrics and examples of compound metrics used in reports, refer to the *Advanced Metrics* chapter of the [Advanced Reporting Guide](#).

Compound metric with a non-group function

The following example shows a compound metric that uses a non-group function:

`RunningAvg (Cost)`

where `Cost` is a metric. The `Cost` metric is part of the definition of the `RunningAvg(Cost)` compound metric. The compound metric's formula contains a non-group function, `Running Average`.

The same metric is shown in the Function Editor within the Metric Editor in the image below. It is a compound metric because it contains a non-group function, `Running Average`. Because it uses a non-group function, the Function Editor displays the value list and parameters for the function, rather than level, condition, and transformation options. The `Cost` metric is the input value of the function.

Metric Name:

Function: RunningAvg

ValueList*:

Sort By:

Break By:

If you switch to the Formula Editor, you do not see the syntax for the level, as you did in the previous example (see [Compound metric with an arithmetic operator, page 157](#)). You do not use a level, condition, or transformation with a compound metric. You can apply a level, condition, or transformation to the `Cost` metric that is used in this compound metric, by editing the `Cost` metric.

`RunningAvg(Cost)`

☐ Require validation?


Creating a metric

You create a metric using the Metric Editor. You can also use the Metric Editor to modify an existing metric. For an image of the Metric Editor, see [Viewing and working with metrics: The Function Editor, page 144](#).

When you create a metric, you define its formula, enable a total or subtotal if you want, and determine a function for dynamic aggregation. The following steps walk you through this process in the Metric Editor.

After you create a metric, you can then include it on a report. When placed on a report, the metric becomes part of the report's definition and determines the data displayed each time the report is executed. For steps to add a metric to a report, see [Reports: Adding metrics to a report, page 258](#).



To create a metric

1. From the MicroStrategy home page, click **New Metric** . If you are on a folder page, click **Create** on the icon bar on the left, then select **New Metric**. The Metric Editor opens in Function Editor mode.
2. Select the function to use to calculate data in the metric. You can narrow the list of functions displayed in the pane by doing one of the following:
 - To search for the function by name, type the function's name in the search field.
 - Choose a function category from the drop-down list, such as Math Functions or Financial Functions. The pane is updated to include only the functions that belong to the selected category.


When you select a function, the function is added to the metric and a description of the function is displayed at the bottom of the dialog box. Click **Details** to view more information about the function, such as syntax and examples.

To define the metric's formula

Different options are available depending on the type of function selected above:

- If you selected a grouping function, such as Sum, Average, First, or Maximum, you define the metric's expression, as well as optional components such as level, condition, and transformation. Do one of the following:
 - To specify the expression by typing the name of an object, type the name of the object in the **Function** field. As you type, matching objects are displayed in a drop-down list. You can type multiple objects, such as Revenue-Profit.
 - To specify the expression by choosing an object, click the **Browse** icon . The Select... dialog box opens. Navigate to and select an object, or search for the object.
 - Depending on the function that you selected, you may be able to define parameters for the function. Click the **Function Parameters** icon .

- If you selected a non-grouping 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 guidance on arguments and parameters for the selected function, click **Details** at the bottom of the dialog box. Perform the following steps:

- a. Depending on the function that you selected, you may need to determine arguments. For each argument listed, type a value or click the **Browse** icon  to find the metric, fact, prompt, or other compatible object to use as input values of the function.



An argument is the input value of a function. For example, you can select the Profit fact as the argument of the Average function, to calculate the average profit.

- b. Depending on the function that you selected, you may need to define parameters. For each parameter listed, type a value or select the parameter value from the drop-down list.

Parameters determine the behavior of the function. For example, the NTile function requires two parameters, Ascending and Tiles. Ascending controls whether the NTiles are ordered in ascending or descending order, while Tiles determines the number of splits.

To select subtotal functions

You can determine which aggregation functions can be used to calculate subtotals for a metric. When the metric is added to a report and the report is run, users can display subtotals for the metric by selecting from the functions that you have made available. See [Totals and subtotals, page 161](#) for details on subtotals.

1. Click the **Options** icon . The Advanced Metric Options dialog box opens.
2. In the list of categories on the left, click **Subtotals**.
3. Select the default function to use to calculate report subtotals from the **Function for default subtotal** drop-down list.
4. You can select additional functions that will be available to calculate subtotals for the metric. To do this, click the expand icon  next to **Select the subtotals you want available for this metric**. Select the subtotal types to be available to the user when the report is run, and clear any subtotal types that you do not want to be available.

To select a dynamic aggregation function for OLAP Services

Dynamic aggregation allows you to change the level of report aggregation as users move objects off the report grid and into the Report Objects pane, and vice versa. You can define the dynamic aggregation function.



For an overview of OLAP services, see [OLAP Services, page 13](#). For details to set up and use dynamic aggregation, see the *Reports* chapter of the [Advanced Reporting Guide](#).

1. In the list of categories on the left, click **General**.
2. Select the function to be used for the report aggregation from the **Dynamic Aggregation function** drop-down list.
3. Click **OK** to return to the Function Editor.

To save your new metric

1. Click **Save** to save your changes. The Save As dialog box opens.
2. Navigate to the folder where you want to save the metric. Type a Name and Description for the metric, and click **Save**. A confirmation message displays. Click **OK**. Your new metric is saved.

The metric you created can now be added to a report. For steps, see [Reports: Adding metrics to a report, page 258](#).

A metric definition can also include a level, condition, and transformation. To apply a level, condition, or transformation to your metric, see the sections listed below:

- [Components of a metric, page 150](#)
- [Components of a metric, page 150](#)
- [Components of a metric, page 150](#)

Joins for rank metrics

If you create a rank metric, which is a metric that ranks attribute elements by numbering them, for example, 1 through 10, you must set the metric's join type to outer. If the default inner join is used on a rank metric, some of the ranks (and therefore, the ranked attribute elements) may not appear on the report because an inner join does not include elements with null values in the result set. But an element with a null value may have a rank. With an outer join, all rows are displayed on the report even if there is no result displayed for some of the elements for some of the metrics on the report. For steps to set a metric's join type, see [Determining how metric data is combined: Metric join types, page 74 in Chapter 3, Analyzing Data](#).

Totals and subtotals

You can enable subtotals and grand totals for a metric, so that analysts can display them on a report at run time. You must decide what function will be used to calculate a subtotal or grand total for a given metric. You can enable several different subtotals from which analysts can choose, depending on their analysis needs.

To see an example of a report with subtotals and a grand total, in the Tutorial project open the **Subtotals** report, which is displayed below. The example below shows subtotals for each region, an additional subtotal for each quarter (encompassing all regions), and a grand total at the bottom of the report.

Data rows: 35 Data columns: 3						
Quarter	Region	Employee	Metrics	Revenue	Cost	Profit
2012 Q1	Central	Ellerkamp	Nancy	\$72,959	\$60,256	\$12,703
		Gale	Loren	\$145,501	\$119,829	\$25,672
		Torrison	Mary	\$160,573	\$132,062	\$28,511
		Zemlicka	George	\$74,376	\$61,089	\$13,287
		Total		\$453,409	\$373,236	\$80,173
	Northeast	De Le Torre	Sandra	\$46,347	\$38,300	\$8,047
		Kelly	Laura	\$217,982	\$179,387	\$38,595
		Kieferson	Jack	\$40,419	\$33,266	\$7,153
		Sawyer	Leanne	\$209,347	\$172,317	\$37,030
		Sonder	Melanie	\$19,639	\$16,167	\$3,472
		Yager	Beth	\$193,719	\$159,775	\$33,944
		Total		\$727,453	\$599,212	\$128,241
	South	Conner	Beatrice	\$147,565	\$121,649	\$25,916
		Nelson	Arthur	\$150,503	\$124,009	\$26,494
		Pierce	Charles	\$164,100	\$135,408	\$28,692
		Total		\$462,168	\$381,067	\$81,101
	Total			\$1,643,030	\$1,353,514	\$289,516
2012 Q2	Central	Ellerkamp	Nancy	\$79,822	\$68,579	\$11,243
		Gale	Loren	\$156,363	\$133,558	\$22,804
		Torrison	Mary	\$166,639	\$142,489	\$24,150
		Zemlicka	George	\$83,569	\$71,794	\$11,775
		Total		\$486,394	\$416,421	\$69,973
	Northeast	De Le Torre	Sandra	\$48,697	\$41,778	\$6,919
		Kelly	Laura	\$225,029	\$191,553	\$33,477
		Kieferson	Jack	\$54,890	\$47,253	\$7,638
		Sawyer	Leanne	\$232,334	\$197,841	\$34,493
		Sonder	Melanie	\$27,887	\$23,869	\$4,018
		Yager	Beth	\$231,569	\$197,311	\$34,258
		Total		\$820,406	\$699,603	\$120,803
	South	Conner	Beatrice	\$145,351	\$123,644	\$21,707
		Nelson	Arthur	\$150,334	\$128,977	\$21,356
		Pierce	Charles	\$202,484	\$173,066	\$29,398
		Total		\$498,169	\$425,707	\$72,462
	Total			\$1,804,969	\$1,541,731	\$263,237
Total				\$3,447,999	\$2,895,246	\$552,753

Grand totals (usually called totals) and subtotals allow users to control how metrics are further calculated at different levels (such as by quarter, by year, by region, and so on), and they can be applied dynamically by the analyst to any report on which a metric is used that has the totals or subtotals enabled.

When you enable a total or subtotal for a metric, you select a function by which the metric should be aggregated to display the total or subtotal. You can use one of many standard functions such as total, count, minimum, maximum, standard deviation, and others.

You can also create your own functions to be used with subtotal calculations. For details on creating your own function, see the [Advanced Reporting Guide](#).



For more advanced information on subtotals, see the [Advanced Reporting Guide](#).

Applying a grand total or subtotals to a metric

The following steps show you how to enable a grand total or subtotals for a metric. When the metric is added to a report and the report is run, users can display subtotals for the metric by selecting from the functions that you have made available. Steps are also provided below to remove totals and subtotals so that they cannot be displayed on a report.



To enable totals or subtotals for a metric

1. In MicroStrategy Web, click the metric for which you want to enable a grand total or subtotals. The Metric Editor opens in either Function Editor mode or Formula Editor mode, depending on the type of metric you chose to edit.

2. Click the **Options** icon . The Advanced Metric Options dialog box opens.
3. In the list of categories on the left, click **Subtotals**.
4. Select the default function to use to calculate report subtotals from the **Function for default subtotal** drop-down list.
5. You can select additional functions that will be available to calculate subtotals for the metric. To do this, click the expand icon  next to **Select the subtotals you want available for this metric**. Select the subtotal types to be available to the user when the report is run, and clear any subtotal types that you do not want to be available.
6. Click **OK**.
7. Click **Save** to save the metric with its newly enabled total and/or subtotals. A confirmation message displays.
8. Click **OK** to close the Metric Editor.

To remove a grand total or subtotals from a metric

You may want to remove, or disable, a grand total or subtotals for a particular metric. For example, if the metric counts inventory numbers, subtotals may be irrelevant and should therefore not be displayed on a report.

1. In MicroStrategy Web, click the metric for which you want to enable a grand total or subtotals. The Metric Editor opens in either Function Editor mode or Formula Editor mode, depending on the type of metric that you chose to edit.
2. Click the **Options** icon . The Advanced Metric Options dialog box opens.
3. In the list of categories on the left, click **Subtotals**.
4. To prevent a grand total from appearing when the metric is used on a report, from the **Function for default subtotal** drop-down list, select **None**.
5. To prevent any subtotals from appearing when the metric is used on a report, click the expand icon  next to **Select the subtotals you want available for this metric**. Clear all subtotal types.
6. Click **OK**.
7. Click **Save** to save the metric. A confirmation message displays.
8. Click **OK** to close the Metric Editor.

When this metric is used on a report in the future, the removed totals or subtotals cannot be displayed as part of the report.

Smart totals

Smart totals are also referred to as smart metrics. Smart totals are used on compound metrics.

Smart totals allow you to change the default evaluation order of a compound metric. For details on what a compound metric is, see [Metrics made up of metrics: Compound metrics, page 156](#). Smart totals calculate subtotals on individual elements of the compound metric. For example, a smart metric uses the formula $\text{Sum}(\text{Metric1}) / \text{Sum}(\text{Metric2})$ rather than $\text{Sum}(\text{Metric1}/\text{Metric2})$.

The smart metric property is available for compound metrics and for some simple metrics which combine two or more calculation formulas with arithmetic operators. To enable or disable smart metrics, use the **Allow Smart Metric** check box on the Advanced Metric Options dialog box in the Metric Editor.

For example, consider the following report.

Year	Revenue	Discount	Ratio of Discount to Revenue
2005	\$200	\$50	25%
2006	\$100	\$50	50%

If you choose to display the grand total for the report without using smart totals for the Ratio of Discount to Revenue metric, you get the following results.


Year	Revenue	Discount	Ratio of Discount to Revenue
2005	200	50	25%
2006	100	50	50%
Total	300	100	75%

However, the Total value in the last column is incorrect; it is displaying a sum of the percentages of the Ratio of Discount to Revenue metric. To calculate a meaningful total value for this metric, enable smart totals by editing them in the Metric Editor and selecting the Allow Smart Metric option. When you select the **Allow Smart Metric** check box, you get the following correct results.

Year	Total Sales	Discount Sales	Ratio of Discount Sales to Total Sales
2005	200	50	25%
2006	100	50	50%
Total	300	100	33.33%

A more complex business example for smart totals is provided in the *Advanced Metrics* chapter of the [Advanced Reporting Guide](#).

To enable or disable smart totals for a metric

1. In MicroStrategy Web, click the metric for which you want to enable or disable smart totals. The Metric Editor opens in either Function Editor mode or Formula Editor mode, depending on the type of metric that you chose to edit.
2. Click the **Options** icon . The Advanced Metric Options dialog box opens.
3. From the left, click **General**.
4. Do one of the following:
 - To enable smart metrics, select **Allow smart metric**.
 - To disable smart metrics, clear **Allow smart metric**.
5. Click **OK**.
6. Click **Save** to save the metric. A confirmation message displays.
7. Click **OK** to close the Metric Editor.

Formatting a metric

Metrics can be formatted independently of the report(s) on which they appear. When you format a metric, you can format the metric's column or row header, and you can also format the data that will appear for that metric.

You can apply special formatting to numeric values that appear when a metric is calculated, such as currency, percentages, and date format style. You can apply special font styles and sizes, and you can determine cell background colors or patterns. This formatting can help analysts more easily identify specific data. For example, you might have all sales data appear in a blue font, while profit data appears in a bold green font.

Metric formatting can be performed using either of the following interfaces:

- **Metric Editor:** Use this method to format one metric at a time. Formatting changes made using this method affect the metric no matter which report the metric is included on. For details on accessing the Metric Editor, see [Viewing and working with metrics: The Function Editor, page 144](#).
- **Find and Replace feature:** Use this method to format a number of metrics at one time with the same format.



For information about using the Find and Replace feature to format metrics, see the [Advanced Reporting Guide](#). For specific steps to use the feature, as well as information on each option in the software, open the **Find and Replace** feature from Developer's **Tools** menu, and then click **Help**.

For information to format metric data on a report so that the formatting applies to that report only, see [Formatting for easier data analysis, page 276](#).

Formatting a metric's header and values

You can format a metric's display of numeric values, font styles and sizes, cell display colors, and so on. You can select different formatting options for metric column headers (the title of the metric) and metric values (the numbers calculated by the metric and displayed in the report). This formatting, called metric-level formatting, is used to display the metric when the metric is placed on a report. You can override metric-level formatting in a specific report by defining formatting options on the report (except for graph colors, as described below). For more information on metric formatting at the report level, including how the different levels work together, see the [Advanced Reporting Guide](#).

You can format the:

- **Number display:** Determine how numeric data is displayed. For example, you can format numbers to appear as dollars and cents, as percentages, or even as scientific notation. You can also determine whether the values appear with or without decimal places.




Number formatting is only relevant for metric values. If a number appears in your report results that does not reflect a metric calculation, such as a list of product identification numbers, you cannot format the data.

- **Alignment:** Control vertical and horizontal alignment of data within a cell, and select whether or not to wrap text. For example, you can right justify and pad the data.
- **Font:** Select the font name, script, size, and color of the data; whether the font is bold, underlined, or italicized; and whether to strikeout the text.
- **Borders:** Select the style and color of the border line. You can select which borders (top, bottom, left, and right) are displayed, or hide all the borders.
- **Background:** Apply a background color, including a gradient.
- **Graph:** Apply a background color for a metric when it is displayed as a series in a graph report. (Available for metric headers.)



By default, the graph color that you define for a metric overrides any default color schemes for the graph report, although you can disable this metric formatting. For more detailed steps, see [Defining a graph color for metrics, page 45](#).

To format metric values or headers

1. In MicroStrategy Web, click the metric you want to format. The Metric Editor opens in either Function Editor mode or Formula Editor mode, depending on the type of metric that you chose to edit.
2. Click the **Format** icon . The Format dialog box opens.
3. Select the area of the metric to format by selecting one of the following from the drop-down list at the top left:

- To format the metric column headers (the titles), select **Metric Headers**.
 - To format the metric values (the numbers calculated by the metric), select **Metric Values**.
4. From the left, select the type of formatting to define for the metric:
 - Number
 - Alignment
 - Font
 - Borders
 - Background
 - Graph (available only for metric headers)


Select the appropriate options to define the formatting for the metric. Click **Help** to see details on all the available options.
 5. Repeat the appropriate steps above to add additional formatting as desired.
 6. Click **OK** to save your selections and close the Format dialog box.
 7. Click **Save** to save the metric with your new formatting. A confirmation message displays.
 8. Click **OK** to close the Metric Editor.

Customizing a metric number format

You can create a custom format syntax for metric values to be displayed on the report. Following are some examples of common customized formatting you can apply to a metric:

- Cut off decimal numbers automatically after a certain number of digits, or truncate the leading zero in a decimal so that 0.2 becomes .2.
- Align decimals down a column, rather than left-aligning or right-aligning.
- Include strings that always appear with the calculated value, such as “this month”, “sales=”, or “Customer no.”.
- Provide a specialized date or time format, such as Feb 3, 06 or 01h 32m.

To create a custom metric format

1. In MicroStrategy Web, click the metric you want to format. The Metric Editor opens in either Function Editor mode or Formula Editor mode, depending on the type of metric that you chose to edit.
2. Click the **Format** icon . The Format dialog box opens.
3. Select the area of the metric to format by selecting one of the following from the drop-

down list at the top left:

- To format the metric column headers (the titles), select **Metric Headers**.
 - To format the metric values (the numbers calculated by the metric), select **Metric Values**.
4. From the list of categories on the left, select **Number**.
 5. Select **Custom**.
 6. Enter your custom format syntax in the **Custom** field. See the [Advanced Reporting Guide](#) for a table of formatting symbols you can use and examples you can replicate.
 7. Click **OK** to save your settings and close the Format dialog box.
 8. Click **Save** to save the metric with your custom format. A confirmation message displays.
 9. Click **OK** to close the Metric Editor.

Asking for user input into a metric's definition

You can allow the user who executes the report that contains the metric, to decide for himself certain aspects of the metric's formula. This lets each individual user define the report results he sees. To do this, you include a prompt in the metric's definition. You can make use of prompts in any metric where you want to let each user impact the formula of the metric, by having the user enter a specific number that makes sense for that user.

For example, if you create a tax metric that calculates tax numbers on sales, you can let each user who executes the report enter the sales tax for his own state. Thus, the report's results will reflect the information each user wants to see.

To add a prompt to your metric's definition, use the following high-level steps:

1. Decide what prompt type you need for your metric. Prompt types that you can use in a metric definition are listed in the table in [Reports: Adding prompts to a report, metric, or filter, page 264](#).
2. Follow the steps in this chapter to create that prompt; for the appropriate procedure, see [Creating a prompt, page 213](#).
3. Then follow the steps in this chapter to add the prompt to your metric's definition; see [Reports: Adding prompts to a report, metric, or filter, page 264](#).

Editing a metric

You can open an existing metric in the Metric Editor. The metric is ready to be edited.

1. In MicroStrategy Web, click the metric you want to format. The Metric Editor opens in either Function Editor mode or Formula Editor mode, depending on the type of metric that you chose to edit.
2. Use the information above for various metric components and types of metrics to edit your metric according to your needs, as follows:

- To change the formula or the function in the formula, see [Components of a metric, page 150](#) or [Creating a metric, page 159](#).
- To change or add an arithmetic operator, see [Components of a metric, page 150](#).
- To change or add totals or subtotals, see [Totals and subtotals, page 161](#).
- To edit the appearance of a metric or its values, see [Formatting a metric, page 165](#).
- To create a custom number format, see [Formatting a metric, page 165](#).

Additional metric functionality

In the [Advanced Reporting Guide](#), you build on your knowledge of metrics that you have learned in this guide. You learn about creating various types of advanced metrics such as level metrics, non-aggregatable metrics, and transformation metrics. You can find information on the following advanced metrics topics in the [Advanced Reporting Guide](#):

- **Compound metrics:** Learn details about compound metrics, how they work with smart subtotals, and additional information and examples.
- **Level metrics:** Learn about targets, grouping, filtering, and how to use level metrics with filters, along with additional information and examples.
- **Conditional metrics:** Learn about conditional metrics with multiple conditions and with metric levels, how they work with report filters, and additional information and examples.
- **User-defined subtotals:** Learn about these custom subtotals by following the detailed examples.
- **Metric-specific VLDB properties:** Learn how to use certain VLDB (Very Large Database) properties in MicroStrategy to customize the SQL queries to your database.
- **Metric column aliases:** Learn about the information you can change for a metric, such as the column name as it appears in the SQL for a report, data type, and byte length.
- **Metric functions:** Learn how to use various functions that are particularly useful or commonly used in metrics.
- **Custom plug-in functions:** Learn how to use custom functions to make a metric relevant to your business environment.
- **Metric creation using Command Manager:** Learn how to automate the metric creation process.

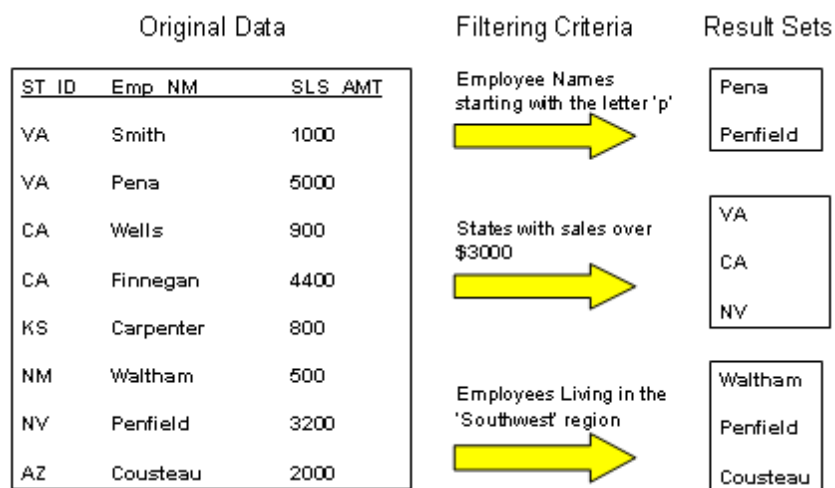
Filtering data on a report: Filters

A report filter is the part of a MicroStrategy report that screens data in your data source to determine whether the data should be included in or excluded from the calculations of the report results. A brief introduction to filters is provided for report analysts in [Chapter 4, Answering Questions about Data](#), in the section [Filtering data, page 82](#). Review this information if you are new to creating report filters. It describes how to view a filter's definition for a given report. This can be a useful way to create an effective filter, because you can copy parts of an existing filter's definition when creating a new filter. You can even use an existing filter within a newly created filter.

If you are familiar with SQL syntax, a filter is equivalent to the WHERE clause in a SQL statement.

Filters are helpful in clarifying large quantities of data and only displaying subsets of that data, so reports show users what they really need to see. For example, you want to determine the number of injuries to your delivery personnel in 2005 that may have been due to bad winter weather in the northeastern U.S. You also want to know the time of day when most injuries occurred. You place the Delivery Location and Delivery Time attributes on your report. You also place the Number of Reported Injuries metric on the report. But you only want the report to display injuries in your northeast region during the winter of 2005. Without a filter, you would have to sift through a lot of report data on your own. By creating a filter that includes Northeast Region, January 2005, and February 2005, and using that filter on the report, the data displayed when the report is executed is limited to that geographical region and season.

In another example, consider the following diagram, which shows a table of data filtered by three different filters.



Each filter returns a different result set. Filters ensure that the report results contain only the data that answers the specific business query the report was designed to answer. It is important to design the correct filter to retrieve the desired data.

Filters are most commonly used on reports, to filter all the data the report would otherwise retrieve from the data source and display to users. However, filters can also be used with a specific object on a report, such as on a metric. A filter placed on a metric only filters data related to that metric. When used on a metric, a filter essentially “goes with” the metric so that whatever report the metric is placed on, the filter is always part of that metric. (This type of metric is called a conditional metric. For details on conditional metrics, see the [Advanced Reporting Guide](#).)

Filters are an important part of almost all reports. Understanding how to create a filter is an important skill in making the best use of the data in your data source. This section describes the different types of filters available in MicroStrategy and shows you how to create a simple filter of each type.

Basic knowledge of formal logic is useful in understanding report filters and their concepts, but it is not a prerequisite to learn how to create filters.



Many of the reports and filters used as examples in this section already exist in the MicroStrategy Tutorial project. You can follow the steps presented in this chapter to create filters, or you can view the saved samples in the Tutorial project. For information on the Tutorial project and how to access it, see [About sample data and the MicroStrategy Tutorial project, page 3](#).

A note on terms: filter, qualification, condition

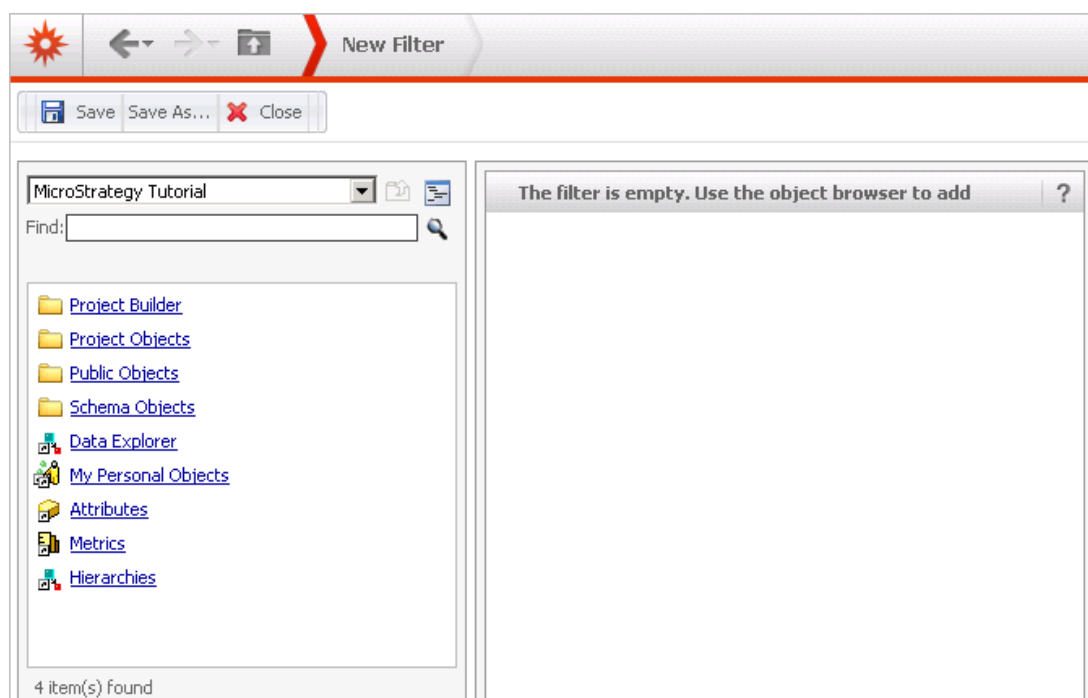
A filter is composed of one or more qualifications. Qualifications define the conditions that the data must meet to be included in a report, for example, “Region = Northeast” or “Revenue > \$1 million”. If a filter contains more than one qualification, the qualifications are joined by an arithmetic operator such as AND or NOT. For details on using operators to join filter qualifications, see [Joining filter qualifications with operators, page 196](#).

Creating or editing filters: The Filter Editor

You can create and save a filter using the Filter Editor. You can also use the Filter Editor to modify an existing filter. The Filter Editor is accessible from MicroStrategy Web.

To access the Filter Editor

In MicroStrategy Web, on the Home page, click **New Filter**. The New Filter page opens as shown below:



To create a filter, see [Types of filters, page 172](#) to determine which kind of filter you need. Then follow the related procedure for the filter type you choose to create.

To edit a filter, click on the filter in MicroStrategy Web. The filter opens within the Filter Editor. For details on each filter type, see the appropriate section below. For details on each option in the software, click **Help**.

After you create a filter, you can then include it in a report, a metric, or some other report object. When placed on a report, a filter becomes part of the report's definition and affects the data displayed each time the report is executed. For steps to include a filter on a report, see [Reports: Adding a filter to a report, page 260](#).

Types of filters

Select a filter type from this list, and then specify the information that is required for the type of filter you are creating.

Filter types include the following:

Filter Type	Filter Name	What Data It Is Designed To Filter
Attribute qualifications These types of qualifications restrict data related to attributes on the report.	Attribute form qualification Create a filter based on attribute forms. For details, see click here .	Filters data related to a business attribute's form(s), such as ID or description. <ul style="list-style-type: none"> For example, the attribute Customer has the forms ID, First Name, Last Name, Address, and Birth Date. An attribute form qualification might filter on the form Last Name, the operator Begins With, and the letter H. The results show a list of customers whose last names start with the letter H.
	Attribute element list qualification Create a filter based on attribute elements. For details, see click here .	Filters data related to a business attribute's elements, such as New York, Washington, and San Francisco, which are elements of the attribute City. <ul style="list-style-type: none"> For example, the attribute Customer has the elements John Smith, Jane Doe, William Hill, and so on. An attribute element list qualification can filter data to display only those customers specified in the qualification by selecting the In List option or all the customers excluding those specified in the qualification by selecting the Not In List option.
Set qualifications	Metric set	Filters data related to a set of

Filter Type	Filter Name	What Data It Is Designed To Filter
<p>These types of qualifications restrict data based on the value, rank, or percentage of a metric, or based on the relationships between the attributes on the report.</p>	<p>qualification</p> <p>Create a filter based on metric value or rank.</p> <p>For details, see click here.</p>	<p>attributes that are determined based on the metrics associated with those attributes.</p> <ul style="list-style-type: none"> For example, a metric set qualification might filter data to display sales data for only those products with an inventory count below a specified number.
	<p>Relationship set qualification</p> <p>Create a filter based on relationships between attributes.</p> <p>For details, see click here.</p>	<p>Filters data based on a specific relationship between two attributes.</p> <ul style="list-style-type: none"> For example, a relationship set qualification might filter data to display those stores selling Nike shoes in the Washington, DC area.
<p>Shortcut qualifications</p> <p>These types of qualifications restrict data related to existing report results or an existing filter.</p>	<p>Shortcut-to-a-report qualification</p> <p>Create a filter based on the results of an existing report.</p> <p>For details, see click here.</p>	<p>Uses the result set of an existing report as is, or with additional conditions, as a filter in a different report.</p> <ul style="list-style-type: none"> For example, you might use a shortcut-to-a-report qualification by taking the result set of one report showing all customers in the Southwest region, placing that result set as a filter into a new report, adding a new filter qualification for active customers in the current year, and displaying all currently active customers in the Southwest region.
	<p>Shortcut-to-a-filter qualification</p> <p>Create a filter based on an existing filter.</p> <p>For details, see click here.</p>	<p>Uses an existing filter as is, or with additional conditions, in a report.</p> <ul style="list-style-type: none"> For example, you might use a shortcut-to-a-filter qualification by taking an existing filter for Region = Northeast and Year = 2006, placing it in a report, and adding a new filter qualification for Month of Year = December.

You can also create advanced qualifications such as attribute-to-attribute qualifications and prompted filters. For more information on all types of advanced filters, refer to the *Advanced Filters* chapter of the [Advanced Reporting Guide](#).

Stand-alone filter vs. filter as part of report

This chapter primarily describes how to create stand-alone filters. A stand-alone filter is a filter created as an independent MicroStrategy object. The stand-alone filter can then be used on many different reports, as well as on metrics and other objects. However, in MicroStrategy, filters can also be created as part of a given report, at the same time the report itself is being created. These kinds of filters are generically called report filters. Report filters are saved with the report's definition. Therefore, a report filter cannot be used on any other report.

However, a report filter can use any of the qualification types described in this chapter. Both stand-alone filters and report filters accomplish the same results: the filter's qualifications determine the data to use when calculating the data displayed in a report.

For an example of a report filter and steps to create one during the report creation process, see the procedure in [Creating a report for analysis, page 129](#).

Filtering data based on business attributes: Attribute qualifications

When you want to restrict report data to a certain subset of information, and your restriction conditions are defined by an attribute's forms or elements, you use an attribute qualification. Attribute qualifications come in two types: attribute element list qualifications and attribute form qualifications.

Attribute element list qualification

The elements of a business attribute are the unique values for that attribute. For example, 2006 and 2007 are elements of the Year attribute, while New York and London are elements of the City attribute. On a report, attributes are chosen to build the report, but once the report is executed, the attribute's elements are displayed in the rows or columns.

The filter type called an attribute element list qualification qualifies (or filters) report data based on a list of attribute elements belonging to an attribute. For example, the attribute Customer has elements which are individual customer names. For a report containing the attributes Region, Customer, and Income Range, you can use an attribute element list qualification on the attribute Customer to obtain income data for only those customers you specify in your filter's list.

Attribute element list qualification example

You want to create a report that includes the revenue, cost, and profit by month for all employees last year. However, certain months are not representative of the normal business cycle, so they should be excluded from the report calculations. To do that, you create an

attribute element qualification that excludes the months April, May, and December, which are elements of the Month attribute.

The steps to create this attribute element list qualification are in the procedure below. The example after the procedure shows how a report is affected when this filter is applied.

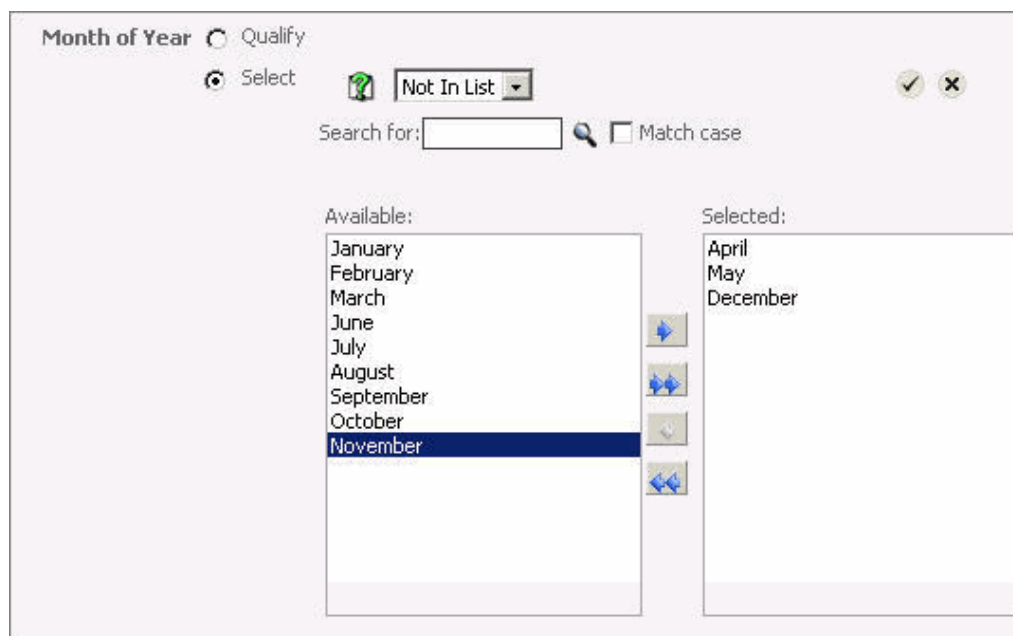
Creating a filter based on attribute elements

This procedure creates an attribute element list qualification based on the example described above. It uses the sample MicroStrategy Tutorial project.

To filter data based on business attribute elements

1. In MicroStrategy Web, on the Home page, click **New Filter**. The New Filter page opens.
2. In the pane on the left, navigate to the attribute that has the elements by which you want to filter a report's data. Alternatively, type the name of the attribute in the **Find** field.
3. Right-click the attribute and select **Add to Filter**. You can also drag and drop the attribute to the right pane. For the Tutorial example described above, browse to the Attributes folder and select the **Month of Year** attribute.

The right pane displays fields similar to the image below:



4. To create the list of elements that the filter will use to filter data, perform the following steps:

- a. Click **Select**.
- b. From the **In List** drop-down list, select one of the following:
 - To define what attribute elements the filter should include data for, select **In List**.
 - To define what attribute elements the filter should exclude data for, select **Not In List**.

For this Tutorial example, select **Not In List**.

- c. The **Available** area on the left displays the elements that belong to the attribute you chose for this filter. Select an element and then click the right arrow to move the element to the **Selected** area. Press CTRL to select multiple elements. If the Available list contains a large number of elements, use the **Search for** field to locate the elements you want to select.

For this Tutorial example, select **April**, **May**, and **December**.

5. Click the **Apply** icon to create your filtering condition.
6. Click **Save As**. The Save As dialog box opens.
7. Navigate to the folder where you want to save the filter. Enter a name and description for the filter in the **Name** and **Description** fields.
8. For this Tutorial example, name the filter **Month** and save it in the My Objects folder.
9. Click **OK**. Your new filter is saved.



If you have multiple qualifications, be aware that it is possible to unintentionally change the evaluation order of a filter's qualifications simply by adding a new qualification and not looking at where the new qualification is added in the list of qualifications. For information on changing the evaluation order of qualifications, see [Editing a filter, page 205](#).

The filter you created can now be added to a report. For steps, see [Reports: Adding a filter to a report, page 260](#).

If you followed the Tutorial example in the procedure above, you created the Month filter which excludes the months April, May, and December. Now see what happens to report data when the filter is used on a report. Open the Basic Report from the Tutorial project, located in Shared Reports\ MicroStrategy Platform Capabilities\ Advanced Reporting Guide. The Basic Report, part of which is shown below, displays employee revenue, cost, and profit for all months of the year:

REPORT DETAILS ? X					
Report Filter: Empty Filter					
Data rows: 34 Data columns: 3					
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
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
Northwest	Becker	Kyle	\$508,234	\$430,346	\$77,887
	Gedot	Harriet	\$739,741	\$629,086	\$110,655
	Hall	David	\$513,213	\$434,770	\$78,443
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
Southeast	Benner	Ian	\$520,737	\$441,073	\$79,664
	Lynch	Sam	\$592,471	\$503,833	\$88,639
	McClain	Sean	\$531,371	\$453,072	\$78,299
	Strome	Fred	\$595,372	\$505,298	\$90,074
	Bates	Michael	\$1,068,907	\$904,996	\$163,911
Southwest	Bell	Caitlin	\$1,040,481	\$883,441	\$157,039
	Hunt	Matthew	\$731,413	\$619,634	\$111,779
	Johnson	Andrew	\$445,052	\$378,221	\$66,831
	Schafer	Rose	\$408,280	\$346,508	\$61,772
	Walker	Robert	\$3,902,762	\$3,319,225	\$583,538

In the Basic Report, Leanne Sawyer's contribution to revenue is \$2,411,912. Next, add your Month filter. To do this, from the Home menu click the **Design** icon. From the left pane, navigate to where you saved your Month filter, and drag the filter into the report's filter pane. When you re-execute the report, it looks like the following image:

REPORT DETAILS ? X					
Report Filter: {Month of Year} <> April, May, December					
Data rows: 34 Data columns: 3					
Region	Employee	Metrics	Revenue	Cost	Profit
Central	Ellerkamp	Nancy	\$625,618	\$525,158	\$100,460
	Gale	Loren	\$1,257,167	\$1,055,919	\$201,248
	Torrison	Mary	\$1,266,549	\$1,061,505	\$205,045
	Zemlicka	George	\$611,031	\$512,675	\$98,356
Mid-Atlantic	Bernstein	Lawrence	\$787,248	\$660,669	\$126,580
	Brown	Vernon	\$258,395	\$216,019	\$42,377
	Corcoran	Peter	\$249,169	\$209,316	\$39,853
	Folks	Adrienne	\$790,894	\$663,536	\$127,357
	Hollywood	Robert	\$765,954	\$642,217	\$123,737
	Ingles	Walter	\$167,187	\$140,486	\$26,701
	Smith	Thomas	\$167,514	\$141,053	\$26,461
	Young	Sarah	\$159,081	\$133,778	\$25,303
Northeast	De Le Torre	Sandra	\$464,624	\$389,704	\$74,920
	Kelly	Laura	\$1,735,106	\$1,457,161	\$277,944
	Kieferson	Jack	\$451,352	\$380,038	\$71,314
	Sawyer	Leanne	\$1,813,538	\$1,523,097	\$290,441
	Sonder	Melanie	\$215,232	\$181,300	\$33,932
	Yager	Beth	\$1,725,674	\$1,448,743	\$276,931
Northwest	Becker	Kyle	\$380,800	\$319,500	\$61,300
	Gedot	Harriet	\$550,253	\$461,767	\$88,486
	Hall	David	\$382,257	\$320,320	\$61,938
South	Conner	Beatrice	\$1,229,072	\$1,031,064	\$198,008
	Nelson	Arthur	\$1,216,452	\$1,021,118	\$195,334
	Pierce	Charles	\$1,532,435	\$1,288,568	\$243,866
Southeast	Benner	Ian	\$378,395	\$317,595	\$60,800
	Lynch	Sam	\$428,074	\$360,805	\$67,270
	McClain	Sean	\$377,844	\$319,702	\$58,142
	Strome	Fred	\$447,110	\$375,442	\$71,668
Southwest	Bates	Michael	\$795,696	\$668,313	\$127,383
	Bell	Caitlin	\$760,689	\$638,588	\$122,100
	Hunt	Matthew	\$544,056	\$455,925	\$88,130
	Johnson	Andrew	\$330,480	\$277,580	\$52,901
	Schafer	Rose	\$309,072	\$260,331	\$48,742
Web	Walker	Robert	\$2,879,150	\$2,425,458	\$453,692

(To see the filtered report shown above, open the report named Filter - Month Report Filter from the Tutorial project, located in Shared Reports\MicroStrategy Platform Capabilities\Advanced Reporting Guide.) In this filtered report, the metrics have different values than in the unfiltered Basic Report. Sawyer's contribution to revenue is now \$1,813,538. In the unfiltered Basic Report, the data was retrieved from the data warehouse for all months of the year. In the filtered report, the data for the months April, May, and December is not retrieved from the data warehouse, so the metrics cannot include this data in their calculations. As this filtered report shows, your top revenue-producing employees can be very different if you exclude the months April, May, and December.

Attribute form qualification

Attribute forms are additional descriptive information about a business attribute. Most attributes only have the forms ID and Description. But an attribute can have many other forms. For example, the attribute Customer has the forms First Name, Last Name, Address, Email Address, and so on. A form is a descriptive category for any data your organization saves about any of its attributes.

Attribute form qualifications allow you to filter report data based on an attribute form. For example, to return data for only those customers whose last names start with the letter H, you can create an attribute form qualification defined with the form Last Name, the operator Begins With, and the letter H as the value.

Attribute form qualification example

A report includes the revenue, cost, and profit for all employees. You want to view the data of only those employees whose last name begins with the letter B. To do this, create a filter that qualifies on the Last Name form of the attribute Employee. The steps to create this attribute form qualification are listed below. The example after the procedure shows what happens to report data when the filter is used on a report.

Creating a filter based on business attribute forms

This procedure creates an attribute form qualification based on the example described above. It uses the sample MicroStrategy Tutorial project.

To filter data based on business attribute forms

1. In MicroStrategy Web, on the Home page, click **New Filter**. The New Filter page opens.
2. In the pane on the left, navigate to the attribute whose form you want to filter a report's data by. Alternatively, type the name of the attribute in the **Find** field.
3. Right-click the attribute and select **Add to Filter**. You can also drag and drop the attribute to the right pane.

The right pane displays fields similar to the image below:

For this Tutorial example, choose **Employee**.

4. To create the list of forms that the filter will use to filter data, perform the following steps:

- a. Select **Qualify**.
- b. From the first drop-down menu, select the form you want to filter data based on.

For this Tutorial example, click **Last Name**.

- c. From the next drop-down menu, select the operator that describes how you want to filter the data.

For this Tutorial example, click **Begins With**.

- d. In the last field, type the value to use to qualify on the attribute form. This is the value that will be compared against the data in your data source.

Depending on the operator you have selected, you may need to enter multiple values. For example, the operator **Between** requires two values.

For a date attribute form, you can compare the form to a dynamic date, which is a fixed offset of the current date, such as one month ago. For more information on dynamic dates, see the [Advanced Reporting Guide](#).

For this Tutorial example, type **B**.

5. Click **Apply** to create your filtering condition.
6. Click **Save As**. The Save As dialog box opens.
7. Navigate to the folder where you want to save the filter. Type a **Name** and **Description** for the filter.

For this Tutorial example, name the filter **Employee Last Name = B** and save it in the My Objects folder.

8. Click **OK**. Your new filter is saved.



If you have multiple qualifications, be aware that it is possible to unintentionally change the evaluation order of a filter's qualifications simply by adding a new qualification and not looking at where the new qualification is added in the list of qualifications. For information on changing the evaluation order of qualifications, see [Editing a filter, page 205](#).

The filter you created can now be added to a report. For steps, see [Reports: Adding a filter to a report, page 260](#).

If you followed the Tutorial example in the procedure above, you created the Employee Last Name = B filter which excludes all employees except those whose last name begins with the letter B. Now see what happens to report data when the filter is used on a report. Open the Basic Report from the Tutorial project, located in `Shared Reports\MicroStrategy Platform Capabilities\Advanced Reporting Guide`. The Basic Report, shown in the image below, displays data for all employees:

REPORT DETAILS ? X					
Report Filter: Empty Filter					
Data rows: 34 Data columns: 3					
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
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
Northwest	Becker	Kyle	\$508,234	\$430,346	\$77,887
	Gedot	Harriet	\$739,741	\$629,086	\$110,655
	Hall	David	\$513,213	\$434,770	\$78,443
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
Southeast	Benner	Ian	\$520,737	\$441,073	\$79,664
	Lynch	Sam	\$592,471	\$503,833	\$88,639
	McClain	Sean	\$531,371	\$453,072	\$78,299
	Strome	Fred	\$595,372	\$505,298	\$90,074
	Bates	Michael	\$1,068,907	\$904,996	\$163,911
Southwest	Bell	Caitlin	\$1,040,481	\$883,441	\$157,039
	Hunt	Matthew	\$731,413	\$619,634	\$111,779
	Johnson	Andrew	\$445,052	\$378,221	\$66,831
	Schafer	Rose	\$408,280	\$346,508	\$61,772
	Walker	Robert	\$3,902,762	\$3,319,225	\$583,538

Next, add your Employee Last Name = B filter. To do this, from the **Home** menu click the **Design** icon. From the left pane, navigate to where you saved your Employee Last Name = B filter, and drag the filter into the report's filter pane. When you re-execute the report, it looks like the following image:

REPORT DETAILS					
Report Filter: (Employee ({Last Name}) Begins with "B")					
Data rows: 6 Data columns: 3					
Region	Employee	Metrics	Revenue	Cost	Profit
Mid-Atlantic	Bernstein	Lawrence	\$1,060,632	\$901,702	\$158,930
	Brown	Vernon	\$331,735	\$280,504	\$51,231
Northwest	Becker	Kyle	\$508,234	\$430,346	\$77,887
Southeast	Benner	Ian	\$520,737	\$441,073	\$79,664
Southwest	Bates	Michael	\$1,068,907	\$904,996	\$163,911
	Bell	Caitlin	\$1,040,481	\$883,441	\$157,039

The report displays the revenue of only those employees whose last names begin with the letter B.

Filtering data based on dates

This filter is an attribute form qualification that enables you to filter data based on an attribute with a date data type. For example, you can create a date qualification on the Day attribute to return data for only those days between January 1, 2011, and February 6, 2011.

Use the following procedure to create a date qualification filter. The example after the procedure shows what happens to report data when the filter is used on a report.

Creating a filter based on dates

This procedure creates a date qualification based on the example described above. It uses the sample MicroStrategy Tutorial project.

To qualify on a date

1. In MicroStrategy Web, on the Home page, click **New Filter**. The New Filter page opens.
2. In the pane on the left, navigate to the attribute with the date data type on which you want to qualify. Alternatively, type the name of the attribute in the **Find** field.
3. Right-click the attribute and select **Add to Filter**. You can also drag and drop the attribute to the right pane.

For this Tutorial example, select the **Day** attribute.

The right pane displays fields similar to the image below:

The screenshot shows a dialog box titled 'New Filter' with a 'Clear All' button in the top left and a help icon in the top right. The main area contains a 'Day' attribute with a 'Qualify' button (a green question mark icon) next to it. Below 'Qualify' is a 'Select' button. To the right of 'Qualify' is a dropdown menu showing 'ID'. Next to the dropdown is a text field containing 'Between (enter value1;value2)'. To the right of the text field is another dropdown menu showing '1/1/2011;2/6/2011'. To the right of the date field is a 'Select Attribute...' button with a double arrow icon. There are also checkmark and close (X) icons at the bottom right.

4. Select **Qualify**.
5. From the first drop-down menu, select the form you want to filter data based on.
For this Tutorial example, click the **ID** attribute form.
6. From the next drop-down menu, select the operator that describes how you want to filter data.
7. For this Tutorial example, select **Between**.
8. In the last field, type the value(s) or click the calendar to select a date to use to qualify on the attribute form. This is the value that will be compared against the data in your data source.

If you are using a date range in your filter, click the calendar again to select the second date. For example, if you want to filter data so the report shows results between January 1, 2011 and February 6, 2011, click the calendar and select January 1, 2011, then click the calendar again and select February 6, 2011.

You can compare the form to a dynamic date, which is a fixed offset of the current date, such as one month ago. For more information on dynamic dates, see the [Advanced Reporting Guide](#).

For this Tutorial example, use the drop-down list to select the date range **January 1, 2011 to February 6, 2011**.

9. Click the **Apply** icon to create your filtering condition.
10. Click **Save As**. The Save As dialog box opens.
11. Navigate to the folder where you want to save the filter. Type a **Name** and **Description** for the filter.
For this Tutorial example, name the filter **Date Filter** and save it in the My Objects Folder.
12. Click **OK**. Your new filter is saved.



If you have multiple qualifications, be aware that it is possible to unintentionally change the evaluation order of a filter's qualifications simply by adding a new qualification and not looking at where the new qualification is added in the list of qualifications. For information on changing the evaluation order of qualifications, see [Editing a filter, page 205](#).

The filter you created can now be added to reports. For steps, see [Reports: Adding a filter to a report, page 260](#).

If you followed the Tutorial example in the procedure above, you created the Date Filter which excludes all data except the data gathered between January 1, 2011 and February 6, 2011. Now see what happens to report data when the filter is used on a report. Open the Basic Report from the Tutorial project, located in `Shared Reports\MicroStrategy Platform Capabilities\Advanced Reporting Guide`. The Basic Report, shown in the image below, displays all employee revenue:

REPORT DETAILS ? X					
Report Filter: Empty Filter					
Data rows: 34 Data columns: 3					
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
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
Northwest	Becker	Kyle	\$508,234	\$430,346	\$77,887
	Gedot	Harriet	\$739,741	\$629,086	\$110,655
	Hall	David	\$513,213	\$434,770	\$78,443
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
Southeast	Benner	Ian	\$520,737	\$441,073	\$79,664
	Lynch	Sam	\$592,471	\$503,833	\$88,639
	McClain	Sean	\$531,371	\$453,072	\$78,299
	Strome	Fred	\$595,372	\$505,298	\$90,074
	Bates	Michael	\$1,068,907	\$904,996	\$163,911
Southwest	Bell	Caitlin	\$1,040,481	\$883,441	\$157,039
	Hunt	Matthew	\$731,413	\$619,634	\$111,779
	Johnson	Andrew	\$445,052	\$378,221	\$66,831
	Schafer	Rose	\$408,280	\$346,508	\$61,772
	Walker	Robert	\$3,902,762	\$3,319,225	\$583,538

Notice the revenue amount of Leanne Sawyer. Next, add your Date Filter. To do this, from the **Home** menu click the **Design** icon. From the left pane, navigate to where you saved your Date Filter, and drag the filter into the report's filter pane. When you re-execute the report, it looks like the following image:

REPORT DETAILS ? X					
Report Filter: (Day (ID) Between 1/1/2011 and 2/6/2011)					
Data rows: 34 Data columns: 3					
Region	Employee	Metrics	Revenue	Cost	Profit
Central	Ellerkamp	Nancy	\$23,558	\$19,448	\$4,110
	Gale	Loren	\$47,333	\$38,794	\$8,539
	Torrison	Mary	\$43,597	\$36,059	\$7,538
	Zemlicka	George	\$18,953	\$15,676	\$3,277
Mid-Atlantic	Bernstein	Lawrence	\$28,208	\$23,302	\$4,906
	Brown	Vernon	\$9,435	\$7,763	\$1,672
	Corcoran	Peter	\$9,903	\$8,170	\$1,733
	Folks	Adrienne	\$24,989	\$20,520	\$4,469
	Hollywood	Robert	\$24,099	\$19,935	\$4,164
	Ingles	Walter	\$8,121	\$6,624	\$1,497
	Smith	Thomas	\$5,511	\$4,497	\$1,014
	Young	Sarah	\$6,107	\$5,061	\$1,046
Northeast	De Le Torre	Sandra	\$15,194	\$12,362	\$2,832
	Kelly	Laura	\$69,033	\$56,731	\$12,302
	Kieferson	Jack	\$16,830	\$13,968	\$2,862
	Sawyer	Leanne	\$70,160	\$57,704	\$12,456
	Sonder	Melanie	\$5,608	\$4,738	\$870
	Yager	Beth	\$66,409	\$54,605	\$11,804
Northwest	Becker	Kyle	\$13,566	\$11,274	\$2,292
	Gedot	Harriet	\$18,877	\$15,622	\$3,255
	Hall	David	\$12,398	\$10,260	\$2,138
South	Conner	Beatrice	\$49,637	\$40,869	\$8,768
	Nelson	Arthur	\$37,108	\$30,847	\$6,261
	Pierce	Charles	\$74,461	\$61,024	\$13,437
Southeast	Benner	Ian	\$17,469	\$14,214	\$3,255
	Lynch	Sam	\$16,143	\$13,328	\$2,815
	McClain	Sean	\$12,577	\$10,393	\$2,184
	Strome	Fred	\$10,952	\$9,088	\$1,864
Southwest	Bates	Michael	\$30,319	\$24,970	\$5,349
	Bell	Caitlin	\$31,024	\$25,536	\$5,488
	Hunt	Matthew	\$26,400	\$21,782	\$4,618
	Johnson	Andrew	\$12,776	\$10,522	\$2,254
	Schafer	Rose	\$11,643	\$9,559	\$2,084
Web	Walker	Robert	\$57,902	\$47,795	\$10,107

The report displays the revenues of employees for only the specified date range. Notice the new revenue amount for Leanne Sawyer.

Filtering data based on attribute relationships or metrics: Set qualifications

This type of filter allows you to generate data in a report based on a set of attributes. The set of attributes is generated dynamically based on either the metrics associated with those attributes or the relationships between the attributes.

For example, a metric set qualification might limit the data displayed on a report to sales numbers for only those products whose current inventory count falls below a certain number. The system must first generate the set of products with the specified inventory count; then it can generate the sales numbers for that set of products.

A relationship set qualification might limit the data displayed on a report to those bank customers who have checking accounts but not savings accounts. In this example, the system must first generate the set of customers with checking accounts; then it can generate the subset of those customers without savings accounts.

For details and steps, see:

Metric set qualification

A metric set qualification lets you define the attributes to be used in a filter by restricting the attributes in the set based on the value, rank, or rank percentage of a metric associated with the attributes. For example, a store manager wants to see sales numbers for products whose current inventory count falls below a certain level. A metric set qualification lets the manager restrict data based on a set of attributes, in this case certain products, based on a metric value, rank, or rank percentage, in this case, inventory count below a certain level.

The resulting report displays the sales data for only those products with inventory counts below the threshold value. This report does not necessarily display the inventory figures for those products.

Filters and metric calculations: Output, Break By, and rank

A metric set qualification is additionally defined by an output level and a break by setting. The output level specifies the level at which the metric is calculated, and the break by setting allows you to choose the level at which to restart counting rank or percent values for a metric. For more information and examples on output level and break by, see the [Advanced Reporting Guide](#). For an explanation of levels, see [Components of a metric, page 150](#).

You can also designate a level at which to stop counting rank or percent values for a metric and then restart the count. See the [Advanced Reporting Guide](#) for details and an example to use the BreakBy property in a metric set qualification.

Creating a filter based on metric value or rank

Use the following steps to create a simple metric set qualification. For more details on any of the options, click **Help**.

To filter data based on a metric value, rank, or rank percentage

1. In MicroStrategy Web, on the Home page, click **New Filter**. The New Filter page opens.
2. In the pane on the left, navigate to the metric on which you want to filter data. Alternatively, type the name of the metric in the **Find** field.

- Right-click the metric and select **Add to Filter**. You can also drag and drop the metric to the right pane.

The right pane displays fields similar to the image below:

- From the first drop-down menu, select an operator that describes how you want to filter data, such as Equal To or Less Than.
- In the field on the right, type a metric value to use for the metric qualification. This is the value against which the metric calculation will be compared.
- Depending on the operator you selected from the previous drop-down menu, you may need to type multiple values. For example, the operator Between requires two values.
- Click the **Apply** icon to create your filtering condition.
- Click **Save As**. The Save As dialog box opens.
- Navigate to the folder where you want to save the filter. Enter a **Name** and **Description** for the filter, and click **OK**. Your new filter is saved.



If you have multiple qualifications, be aware that it is possible to unintentionally change the evaluation order of a filter's qualifications simply by adding a new qualification and not looking at where the new qualification is added in the list of qualifications. For information on changing the evaluation order of qualifications, see [Editing a filter, page 205](#).

The filter you created can now be added to a report. For steps, see [Reports: Adding a filter to a report, page 260](#).

Relationship set qualification

A report must list customers from the same region as a specific customer, Hugh Abarca. You need to use the relationship between customer and customer region to filter the report. A relationship set qualification lets you restrict data based on the relationship between two attributes, in this case Customer and Customer Region.

The image below shows a section of the report without the relationship set qualification added. Notice that all customers are listed regardless of customer region.

Customer		Customer Region	Metrics	Revenue
Aaby	Alen	Southwest		\$3,104
Aadland	Miko	Northeast		\$3,814
Aadland	Warner	Central		\$2,378
Aadland	Constant	Central		\$4,508
Aafedt	Wendy	Northwest		\$1,064

In a relationship qualification, you create a relationship between two attributes and then place a filter on that relationship. In this case, a relationship between customer Hugh Abarca and Customer Region is created and the report is filtered to show only customers in the same region as Hugh Abarca.

Customer		Customer Region	Metrics	
Aadland	Warner	Central	Revenue	\$2,378
Aadland	Constant	Central	Revenue	\$4,508
Aagesen	Bink	Central	Revenue	\$2,580
Aamodt	Stacy	Central	Revenue	\$786
Aaron	Ferrell	Central	Revenue	\$4,778
Aba	Blain	Central	Revenue	\$6,955
Abadilla	Lennie	Central	Revenue	\$621
Abajian	Lorin	Central	Revenue	\$3,420
Abarca	Hugh	Central	Revenue	\$6,979

Relationship filters are considered set qualifications because they create a subset of attributes from the whole. They are created using either the Set qualification or Advanced qualification option in the Filter Editor. The Set qualification option provides an interface to guide you through the process, whereas the Advanced qualification option allows you more control by letting you use commands. For more information on the Advanced qualification option, see the [Advanced Reporting Guide](#).

Filters and attributes: Output level

A relationship set qualification lets you determine the output level, which is the level at which the set should be calculated. Using the example above, to create a report that shows customers in the same region as Hugh Abarca, you need to set the output level to Customer Region and the filter qualification to Hugh Abarca.

For details on levels, see [How data is aggregated on a report: metric level, page 89](#). For more information on the output level, see the [Advanced Reporting Guide](#).

Creating a filter based on relationships between attributes

Use the following steps to create a simple relationship set qualification. For more details on any of the options, click **Help** or see the [Advanced Reporting Guide](#).



A filter based on relationships between attributes is created from MicroStrategy Developer.

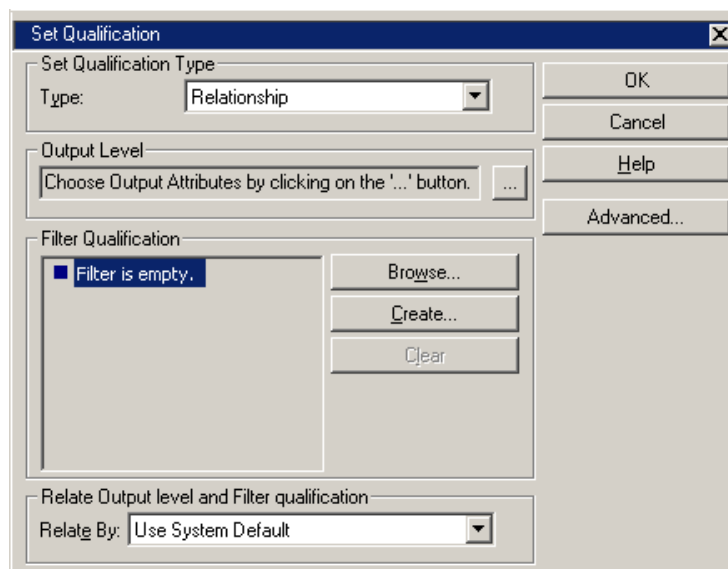
To create a filter based on relationships between attributes

1. Log in to a project in Developer. On the **File** menu, point to **New**, and choose **Filter**. The Filter Editor opens.

If the New Filter dialog box is displayed, click the **Empty Filter** icon. If you do not want this dialog box to be shown in the future, select **Don't show this dialog in the future**. Click **OK**. For more information about Object templates, see the *Designing Reports* chapter of the [Advanced Reporting Guide](#).

If you are using the MicroStrategy Tutorial to create the example mentioned above, log in to the MicroStrategy Tutorial project. Create a new report containing the Customer Region and Customer attributes, and the Revenue metric. To create a new report in Developer, see the *MicroStrategy Developer Help*.

2. Double-click the Filter definition pane at the top right. The Filtering Options pane opens.
3. Click the **Add a Set qualification** option, and click **OK**. The Set Qualification pane opens.
4. Select **Relationship** from the Type drop-down list. The Set Qualification pane expands, similar to the image below:



5. Set the output level, which is the level at which the set is calculated. To do this, browse by clicking ... (the browse button) next to the Output Level to locate the level at which you want the set calculated. Select the attribute, and click **OK**. (For an explanation of levels, see [How data is aggregated on a report: metric level, page 89](#).)

If you are using the Tutorial, set the output level to Customer Region.

6. In the Filter Qualification area, choose a filter in one of the following ways:

To use an existing filter, click **Browse**. In the Open dialog box, navigate to the folder that contains the filter, select the filter, and click **OK**.

To build a new filter, click **Create**. The Qualification Editor opens. (You may notice that this editor is similar to the Filter Editor.) Click **Help** for steps to use the Qualification Editor to create a filter. When you are finished, click **Save and Close**.

If you are using the Tutorial, create a filter with an attribute qualification for Customer = Hugh Abarca.

7. By default, the Filter Qualification chosen applies to the whole report and not just the relationship filter. You can change this option by clicking **Advanced** and clearing the **Also apply this qualification independently of the relationship filter** box. For more information on this option, see the [Advanced Reporting Guide](#)

If you are using the MicroStrategy Tutorial, clear the default so the Hugh Abarca filter is applied only to the relationship. Otherwise, when the report is executed, the only row in the report will be Hugh Abarca, with no other customers from his region included.

8. Click **OK** to close the Set Qualification pane.
9. Click **Save and Close** on the Filter Editor toolbar. The Save Filter As dialog box opens.
10. Navigate to the folder where you want to save the filter. Enter a **Name** and **Description** for the filter, and click **OK**. Your new filter is saved.
11. Navigate to the folder where you want to save the filter. Enter a **Name** and **Description** for the filter, and click **Save**. Your new filter is saved.



If you have multiple qualifications, be aware that it is possible to unintentionally change the evaluation order of a filter's qualifications simply by adding a new qualification and not looking at where the new qualification is added in the list of qualifications. For information on changing the evaluation order of qualifications, see [Editing a filter, page 205](#).

The filter you created can now be added to a report. If you are using the MicroStrategy Tutorial, apply the filter to the report you created above. For steps, see [Reports: Adding a filter to a report, page 260](#).

Filtering data based on existing filters or report results: Shortcut qualifications

You can use existing report results or existing filters as the basis of a new filter. These types of filters are called shortcut qualifications, because you are creating a shortcut to an existing report or to an existing filter. Details and steps to create each type are below:

Shortcut-to-a-report qualification

The results of an existing report can be used as a filter for another report. You can use the first report itself as a filter inside a new report. This type of filter is called a shortcut-to-a-report qualification.



To be used as a shortcut-to-a-report qualification, a report cannot contain any of the following objects or be of any of the following report types:

- Consolidations
- Custom groups
- Freeform SQL reports: Reports created using MicroStrategy's Freeform SQL functionality
- MDX cube reports: Reports that draw their data from an MDX cube source such as SAP Business Intelligence Warehouse (SAP BW), Microsoft Analysis Services (Analysis Services), or Hyperion Essbase (Essbase)

For example, consider the Basic Report shown below, which has no filter. Notice that Leanne Sawyer has earned \$2,411,912 in revenue.

REPORT DETAILS ? X					
Report Filter: Empty Filter					
Data rows: 34 Data columns: 3					
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
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
Northwest	Becker	Kyle	\$508,234	\$430,346	\$77,887
	Gedot	Harriet	\$739,741	\$629,086	\$110,655
	Hall	David	\$513,213	\$434,770	\$78,443
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
Southeast	Benner	Ian	\$520,737	\$441,073	\$79,664
	Lynch	Sam	\$592,471	\$503,833	\$88,639
	McClain	Sean	\$531,371	\$453,072	\$78,299
	Strome	Fred	\$595,372	\$505,298	\$90,074
Southwest	Bates	Michael	\$1,068,907	\$904,996	\$163,911
	Bell	Caitlin	\$1,040,481	\$883,441	\$157,039
	Hunt	Matthew	\$731,413	\$619,634	\$111,779
	Johnson	Andrew	\$445,052	\$378,221	\$66,831
	Schafer	Rose	\$408,280	\$346,508	\$61,772
Web	Walker	Robert	\$3,902,762	\$3,319,225	\$583,538

Create a new filter. Drag and drop the Revenue By Brand report into the right pane of the new filter, and save. Open the Basic Report and drag and drop your newly-created filter to the Report Filter pane, to use the Revenue By Brand report as a filter in the Basic Report. Finally, re-execute the Basic Report.

With its new filter, the Basic Report displays the revenue generated by each employee only for those brands specified in the results of the Revenue by Brand report. The filtered Basic Report is shown below. Notice that Leanne Sawyer has now earned only \$1,655,540 in revenue.

REPORT DETAILS ? X					
Report Filter: {09a Revenue by Brand}					
Data rows: 34 Data columns: 3					
Region	Employee	Metrics	Revenue	Cost	Profit
Central	Ellerkamp	Nancy	\$580,716	\$479,270	\$101,446
	Gale	Loren	\$1,141,158	\$939,348	\$201,810
	Torrison	Mary	\$1,159,352	\$952,272	\$207,080
	Zemlicka	George	\$565,828	\$466,104	\$99,725
Mid-Atlantic	Bernstein	Lawrence	\$737,550	\$609,061	\$128,489
	Brown	Vernon	\$225,273	\$184,674	\$40,599
	Corcoran	Peter	\$217,859	\$178,954	\$38,905
	Folks	Adrienne	\$711,440	\$585,026	\$126,414
	Hollywood	Robert	\$706,658	\$583,098	\$123,561
	Ingles	Walter	\$161,471	\$133,538	\$27,934
	Smith	Thomas	\$150,992	\$124,719	\$26,273
	Young	Sarah	\$140,238	\$115,822	\$24,416
Northeast	De Le Torre	Sandra	\$417,129	\$343,261	\$73,868
	Kelly	Laura	\$1,610,885	\$1,325,310	\$285,575
	Kieferson	Jack	\$396,623	\$327,471	\$69,153
	Sawyer	Leanne	\$1,655,540	\$1,361,360	\$294,181
	Sonder	Melanie	\$203,279	\$168,168	\$35,111
	Yager	Beth	\$1,572,925	\$1,294,745	\$278,181
Northwest	Becker	Kyle	\$352,839	\$290,461	\$62,378
	Gedot	Harriet	\$511,143	\$422,138	\$89,005
	Hall	David	\$350,176	\$287,423	\$62,753
South	Conner	Beatrice	\$1,129,626	\$927,183	\$202,442
	Nelson	Arthur	\$1,122,291	\$923,087	\$199,204
	Pierce	Charles	\$1,420,527	\$1,179,273	\$241,254
Southeast	Benner	Ian	\$358,096	\$294,306	\$63,789
	Lynch	Sam	\$399,048	\$329,125	\$69,923
	McClain	Sean	\$358,883	\$297,256	\$61,627
	Strome	Fred	\$407,615	\$335,788	\$71,828
Southwest	Bates	Michael	\$734,331	\$602,880	\$131,451
	Bell	Caitlin	\$707,944	\$583,164	\$124,780
	Hunt	Matthew	\$500,037	\$411,122	\$88,915
	Johnson	Andrew	\$299,617	\$247,089	\$52,528
	Schafer	Rose	\$277,286	\$227,901	\$49,385
Web	Walker	Robert	\$2,677,777	\$2,211,556	\$466,220

You can perform the example above on your own. The Basic Report and the Revenue By Brand report are located in Shared Reports\MicroStrategy Platform Capabilities\Advanced Reporting Guide.

You can also use a report as a filter and then add additional qualifications to expand the overall filter definition. For example, you can take the result set of one report showing all customers in the Southwest region, place that result set as a filter into a new report, and add a new filter qualification for active customers in the current year. The new report displays all currently active customers in the Southwest region.

This approach shows you the value of creating some basic, relatively simple reports in your project, such as a report for customers in a specific region. Then you can make use of these basic reports within shortcut-to-a-report filters to make the filter creation process quicker.

Shortcut-to-a-report qualification and OLAP Services

If you have MicroStrategy OLAP Services, be aware that a report's view definition does not affect how the report is used in a shortcut-to-a-report qualification. A report's data definition is the query that is sent to the database to retrieve information for the report, whereas the report's view definition determines how much of the retrieved information is displayed in the report. When you use a report as a filter, the report's entire data definition is considered; any view definitions do not influence the filter conditions.

For an introduction to MicroStrategy OLAP Services, see [Determining whether you have OLAP Services](#).

Creating a filter based on the results of a report: Shortcut-to-a-report qualifications

Use the following steps to create a simple shortcut-to-a-report qualification. For more details on any of the options, click **Help**.

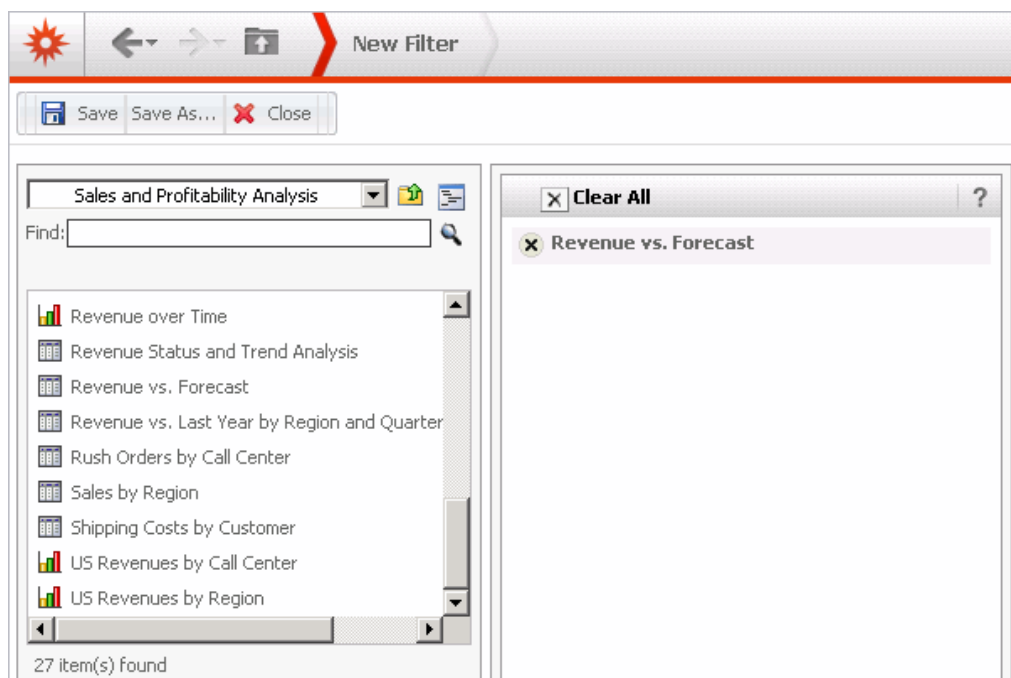
To use a report as a filter in a shortcut-to-a-report qualification

1. In MicroStrategy Web, on the Home page, click **New Filter**. The New Filter page opens.
2. In the pane on the left, navigate to the report that you want to use as a filter. Alternatively, type the name of the report in the **Find** field.
3. Right-click the report and select **Add to Filter**. Alternatively, drag and drop the report to the right pane.



You cannot use a report containing a consolidation or custom group, a Freeform SQL report, or an MDX cube report as a shortcut to a report.

The report is added to the right pane as shown in the image below:



4. Click **Save As**, navigate to the folder where you want to save the filter, type a **Name** and **Description** for the filter, and click **OK**. Your new filter is saved.

The shortcut-to-a-report filter you created can now be added to a report. For steps, see [Reports: Adding a filter to a report, page 260](#).

Shortcut-to-a-filter qualifications

A shortcut-to-a-filter qualification allows you to move an existing filter into a new filter, and apply the new filter to a report. You can also add additional conditions to the new filter and then apply the new filter to the report. For example, Filter 1 contains two conditions, A and B. You can use Filter 1 as the basis of a new filter, and then add another condition C to the new filter. The data that is filtered for must then satisfy all three conditions A, B, and C to be included in any report which uses the new filter. Note that Filter 1 remains unchanged throughout this process.

For example, you are a manager in New England, responsible for stores in Boston, Providence, and Greenwich. Your project contains a filter called *Stores In My Region*, which is defined as the Boston, Providence, and Greenwich stores. A second filter, called the *Women's Clothing* filter, includes the categories Blouses and Dresses. A third filter, *All Days in December 06*, is a date range that includes all the days in the month of December, 2006. To study December sales in your stores for women's clothing, you create a new filter. The new filter includes a shortcut to each of the three filters. Use this new filter in your report. The original three filters are unchanged, which is useful for other reports that use one or more of those filters.

You can also use an existing filter as a base for a new filter and then add additional qualifications to expand the overall filter definition. For example, you can take a filter that screens data for all customers in the Southwest region, place that filter into a new filter, and

add a new filter qualification for active customers in the current year. The new filter screens data for all currently active customers in the Southwest region.

This approach shows you the value of creating some basic, relatively simple filters in your project, such as a filter for customers in a specific region. Then you can make use of these basic filters within shortcut-to-a-filter filters to make the filter creation process quicker.

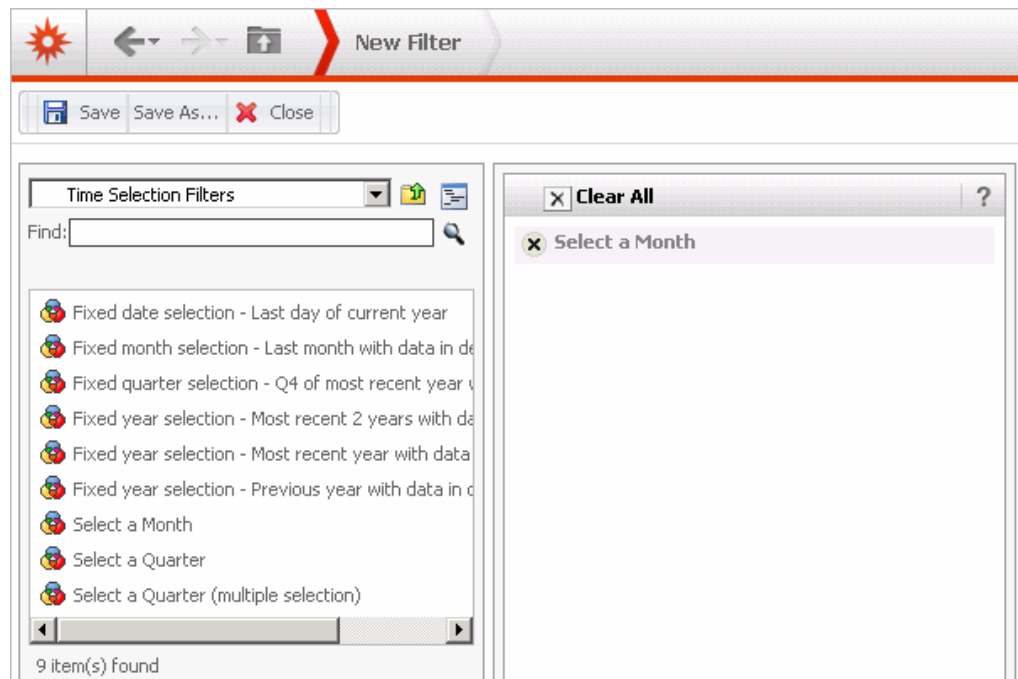
Creating a filter based on another filter

Use the following steps to create a simple shortcut-to-a-filter qualification. For more details on any of the options, click **Help**.

To create a filter based on another filter

1. In MicroStrategy Web, on the Home page, click **New Filter**. The New Filter page opens.
2. In the pane on the left, navigate to the filter that you want to use in the new filter. Alternatively, type the name of the filter in the **Find** field.
3. Right-click the report and select **Add to Filter**. You can also drag and drop the filter to the right pane.

The filter is added to the right pane as shown in the image below:



4. Add desired conditions to the filter. Navigate to the appropriate report object in the pane on the left. Right-click and select **Add to Filter**. Define the conditions in the right pane.

5. Click **Save As**, navigate to the folder where you want to save the filter, type a **Name** and **Description** for the filter, and click **OK**. Your new filter is saved.

The filter you created can now be added to a report. For steps, see [Reports: Adding a filter to a report, page 260](#).

Joining filter qualifications with operators

When a filter has multiple qualifications, they are always joined by operators. When qualifications are joined, operators govern the interaction between different filtering conditions and thus affect the evaluation order of qualifications in a filter.

Whenever you have more than one qualification in a report filter, you can define the operator as any of the following:

- AND
- OR
- OR NOT
- AND NOT

The AND operator is the operator assigned by default when more than one qualification is added to a filter. You can change the default AND operator by simply clicking or right-clicking on the word AND, and selecting a different operator.

For more information on advanced operators to apply to a report limit, see *Appendix B: Logical and Mathematical Operators for Filtering* in the [Advanced Reporting Guide](#).

For more information on changing evaluation order among qualifications in a filter, see [Editing a filter, page 205](#).

The AND operator

By default, the operator AND is inserted between filter qualifications.

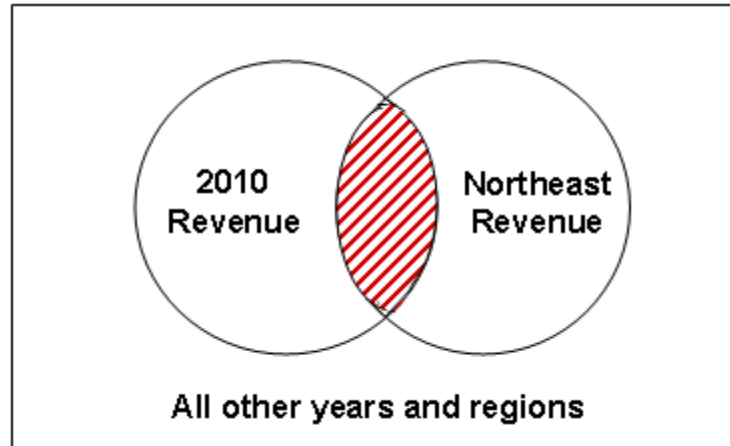
The following images show the initial report with no filter, and the resulting report after two filter qualifications are applied and joined with AND. The initial report with no filter appears as follows:

Year	Region	Revenue
2010	Central	\$1,293,634
	Mid-Atlantic	\$1,140,008
	Northeast	\$2,246,294
	Northwest	\$480,476
	South	\$1,415,767
	Southeast	\$596,681
	Southwest	\$1,002,900
	Web	\$471,477
2011	Central	\$1,667,004
	Mid-Atlantic	\$1,518,592
	Northeast	\$2,870,291
	Northwest	\$603,996
	South	\$1,822,819
	Southeast	\$759,665
	Southwest	\$1,243,847
	Web	\$1,031,392
2012	Central	\$2,068,728
	Mid-Atlantic	\$1,794,014
	Northeast	\$3,437,829
	Northwest	\$676,715
	South	\$2,150,695
	Southeast	\$883,605
	Southwest	\$1,447,384
	Web	\$2,399,894

After the filter (**Year = 2010**) And (**Region = Northeast**) is applied to the initial report, the report appears as follows:

REPORT DETAILS			?	X
Report Filter: (Year = 2010) And (Region = Northeast)				
Data rows: 1 Data columns: 1				
Year	Region	Revenue		
2010	Northeast	\$2,246,294		

The following diagram shows the impact of the AND operator on a result set:



The shaded area represents the report's result set, which contains only revenue generated in the Northeast in 2010.

The OR operator

For those familiar with logic terminology, the OR operator acts as an inclusive OR, not an exclusive OR.

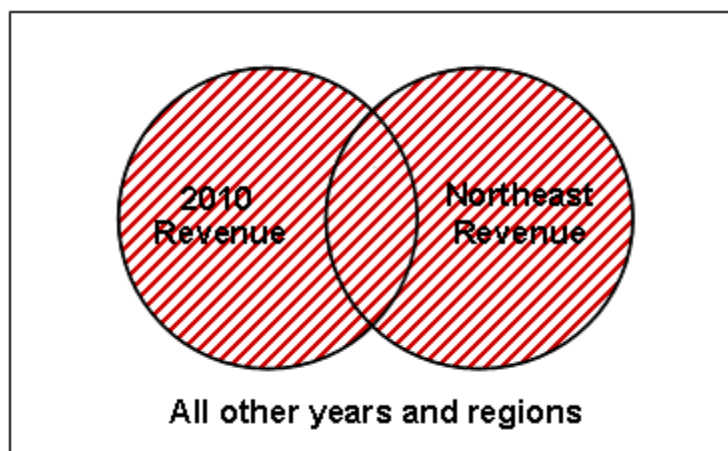
The following images show the initial report with no filter, and the resulting report after two filter qualifications are applied and joined with OR. The initial report with no filter appears as follows:

Year	Region	Revenue
2010	Central	\$1,293,634
	Mid-Atlantic	\$1,140,008
	Northeast	\$2,246,294
	Northwest	\$480,476
	South	\$1,415,767
	Southeast	\$596,681
	Southwest	\$1,002,900
	Web	\$471,477
2011	Central	\$1,667,004
	Mid-Atlantic	\$1,518,592
	Northeast	\$2,870,291
	Northwest	\$603,996
	South	\$1,822,819
	Southeast	\$759,665
	Southwest	\$1,243,847
	Web	\$1,031,392
2012	Central	\$2,068,728
	Mid-Atlantic	\$1,794,014
	Northeast	\$3,437,829
	Northwest	\$676,715
	South	\$2,150,695
	Southeast	\$883,605
	Southwest	\$1,447,384
	Web	\$2,399,894

After the filter **(Year = 2010) Or (Region = Northeast)** is applied, the report appears as follows:

REPORT DETAILS			?	X
Report Filter: (Year = 2010) Or (Region = Northeast)				
Data rows: 10 Data columns: 1				
Year	Region	Revenue		
2010	Central	\$1,293,634		
	Mid-Atlantic	\$1,140,008		
	Northeast	\$2,246,294		
	Northwest	\$480,476		
	South	\$1,415,767		
	Southeast	\$596,681		
	Southwest	\$1,002,900		
	Web	\$471,477		
2011	Northeast	\$2,870,291		
2012	Northeast	\$3,437,829		

The following diagram shows the impact of the OR operator on a result set:



As represented by the shaded areas, revenue generated in either 2010, or the Northeast, or in both 2010 and the Northeast, is returned in the result set.

The OR NOT operator

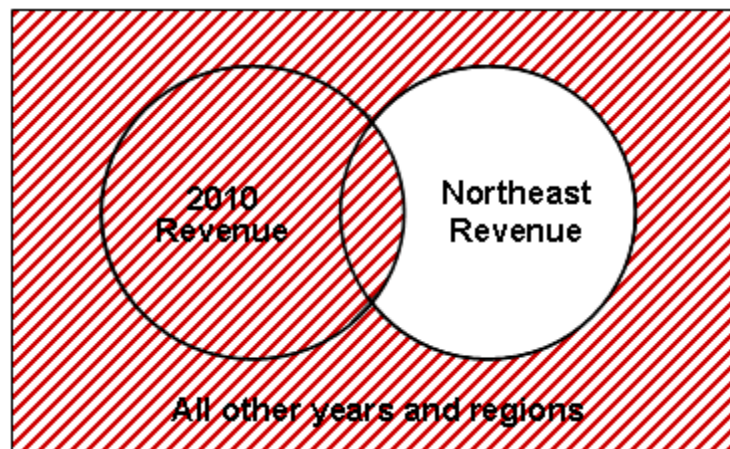
The following images show the initial report with no filter, and the resulting report after two filter qualifications are applied and joined with OR NOT. The initial report with no filter appears as follows:

Year	Region	Revenue
<u>2010</u>	<u>Central</u>	\$1,293,634
	<u>Mid-Atlantic</u>	\$1,140,008
	<u>Northeast</u>	\$2,246,294
	<u>Northwest</u>	\$480,476
	<u>South</u>	\$1,415,767
	<u>Southeast</u>	\$596,681
	<u>Southwest</u>	\$1,002,900
	<u>Web</u>	\$471,477
<u>2011</u>	<u>Central</u>	\$1,667,004
	<u>Mid-Atlantic</u>	\$1,518,592
	<u>Northeast</u>	\$2,870,291
	<u>Northwest</u>	\$603,996
	<u>South</u>	\$1,822,819
	<u>Southeast</u>	\$759,665
	<u>Southwest</u>	\$1,243,847
	<u>Web</u>	\$1,031,392
<u>2012</u>	<u>Central</u>	\$2,068,728
	<u>Mid-Atlantic</u>	\$1,794,014
	<u>Northeast</u>	\$3,437,829
	<u>Northwest</u>	\$676,715
	<u>South</u>	\$2,150,695
	<u>Southeast</u>	\$883,605
	<u>Southwest</u>	\$1,447,384
	<u>Web</u>	\$2,399,894

After the filter **(Year = 2010) Or Not (Region = Northeast)** is applied, the report appears as follows:

REPORT DETAILS		
Report Filter: (Year = 2010) Or Not(Region = Northeast)		
Data rows: 22 Data columns: 1		
Year	Region	Revenue
2010	Central	\$1,293,634
	Mid-Atlantic	\$1,140,008
	Northeast	\$2,246,294
	Northwest	\$480,476
	South	\$1,415,767
	Southeast	\$596,681
	Southwest	\$1,002,900
	vWeb	\$471,477
2011	Central	\$1,667,004
	Mid-Atlantic	\$1,518,592
	Northwest	\$603,996
	South	\$1,822,819
	Southeast	\$759,665
	Southwest	\$1,243,847
	vWeb	\$1,031,392
2012	Central	\$2,068,728
	Mid-Atlantic	\$1,794,014
	Northwest	\$676,715
	South	\$2,150,695
	Southeast	\$883,605
	Southwest	\$1,447,384
	vWeb	\$2,399,894

The following diagram shows the impact of the OR NOT operator on a result set.



In this case, revenue generated in 2010 in any region (including the Northeast), or revenue generated in all other years in any region except for the Northeast, is returned in the result set.

The AND NOT operator

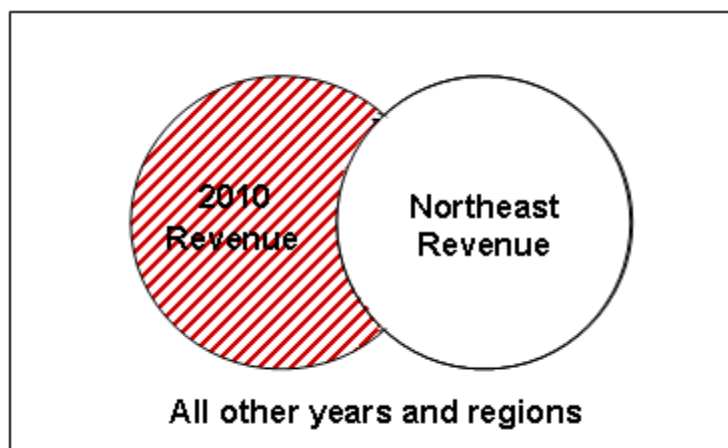
The following images show the initial report with no filter, and the resulting report after two filter qualifications are applied and joined with AND NOT. The initial report with no filter appears as follows:

Year	Region	Revenue
<u>2010</u>	<u>Central</u>	\$1,293,634
	<u>Mid-Atlantic</u>	\$1,140,008
	<u>Northeast</u>	\$2,246,294
	<u>Northwest</u>	\$480,476
	<u>South</u>	\$1,415,767
	<u>Southeast</u>	\$596,681
	<u>Southwest</u>	\$1,002,900
	<u>Web</u>	\$471,477
<u>2011</u>	<u>Central</u>	\$1,667,004
	<u>Mid-Atlantic</u>	\$1,518,592
	<u>Northeast</u>	\$2,870,291
	<u>Northwest</u>	\$603,996
	<u>South</u>	\$1,822,819
	<u>Southeast</u>	\$759,665
	<u>Southwest</u>	\$1,243,847
	<u>Web</u>	\$1,031,392
<u>2012</u>	<u>Central</u>	\$2,068,728
	<u>Mid-Atlantic</u>	\$1,794,014
	<u>Northeast</u>	\$3,437,829
	<u>Northwest</u>	\$676,715
	<u>South</u>	\$2,150,695
	<u>Southeast</u>	\$883,605
	<u>Southwest</u>	\$1,447,384
	<u>Web</u>	\$2,399,894

After the filter **(Year = 2010) And Not(Region = Northeast)** is applied, the report appears as follows:

REPORT DETAILS			?	X
Report Filter: (Year = 2010) And Not(Region = Northeast)				
Data rows: 7 Data columns: 1				
Year	Region	Revenue		
2010	Central	\$1,293,634		
	Mid-Atlantic	\$1,140,008		
	Northwest	\$480,476		
	South	\$1,415,767		
	Southeast	\$596,681		
	Southwest	\$1,002,900		
	vWeb	\$471,477		

The following diagram shows the impact of the AND NOT operator on a result set.



As shown by the shaded area, revenue generated in 2010 in any region except the Northeast is returned in the result set.

Changing the operator which joins filter qualifications

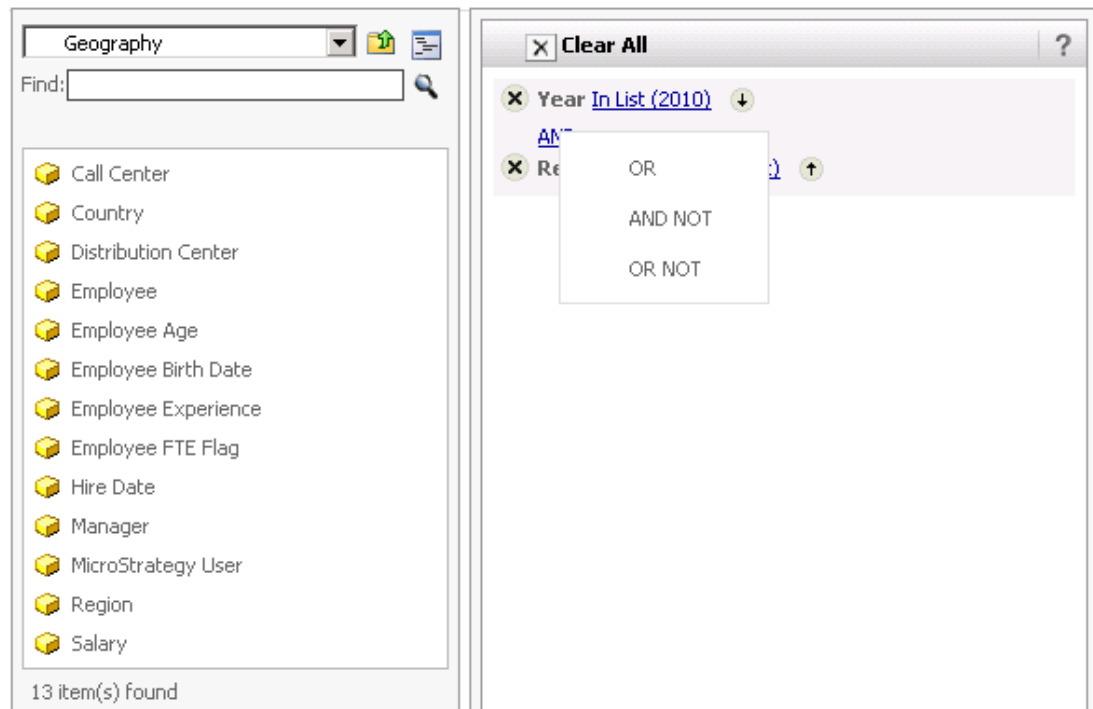
The following steps show how to change the operator that joins filter qualifications.

Changing the operator can affect the evaluation order among qualifications in a filter. For more information on changing evaluation order among qualifications in a filter, see [Editing a filter, page 205](#).

To change the operator between filter qualifications

1. In MicroStrategy Web, on the Home page, click **New Filter**. The New Filter page opens.

- From the pane on the left, add more than one qualification to the pane on the right. For steps to create filter qualifications, see [Creating or editing filters: The Filter Editor, page 171](#).
- In the right pane, right-click the operator and then choose the required operator, as shown in the image below:



Asking for user input into a filter's definition

You can allow the user who executes the report that contains the filter, to decide for himself certain aspects of the filter's definition. This lets each individual user define the report results he sees. To do this, you include a prompt in the filter's definition. You can make use of prompts in any filter where you want to let each user impact the results of the filter, by having the user enter a specific number, date, or text that makes sense for that user. For examples of prompts, see [Asking for user input: Prompts, page 206](#).

To add a prompt to your filter's definition, use the following high-level steps:

- Decide what prompt type you need for your filter. Prompt types that you can use in a filter's definition are listed in the table in [Reports: Adding prompts to a report, metric, or filter, page 264](#).
- Follow the steps in this chapter to create that prompt; for the appropriate procedure, see [Creating a prompt, page 213](#).
- Then follow the steps in this chapter to add the prompt to your filter's definition; see [Reports: Adding prompts to a report, metric, or filter, page 264](#).

Editing a filter

You can make changes to an existing filter using the Filter Editor. For an image of the Filter Editor and more information on working with filters, see [Creating or editing filters: The Filter Editor, page 171](#).

When you edit a filter, you can add a new qualification, change the operator in a qualification, or remove a qualification that is part of the filter's definition. You can also change the evaluation order of qualifications.

- To add qualifications, see [Types of filters, page 172](#) to determine the type of qualification you want to add, then use the appropriate section for the type of filter you choose.
- To change operators between qualifications, see [Joining filter qualifications with operators, page 196](#).
- To remove a qualification from a filter, open the filter, click the **Remove condition** icon to the left of the qualification you want to delete.
- To change the evaluation order of qualifications in a filter, see the options below.

Changing the evaluation order of qualifications in a filter

Qualifications at the top of a filter are evaluated first. To change the evaluation order, you can perform a number of steps depending on the final evaluation order that you want to achieve:

- You can move qualifications up and down in the order so that they are evaluated before or after other qualifications. Qualifications must be indented at the same level to be able to move them above or below one another. To do this, in MicroStrategy Web click **Shift Up** or **Shift Down** next to the qualification. The qualification is moved up or down accordingly.
- You can group qualifications so that they are evaluated together. The filter must contain at least 3 qualifications to be able to group qualifications. To do this, in MicroStrategy Web click **Shift Left** or **Shift Right** between 2 qualifications that you want to group together. The qualifications are grouped together and moved together either to the right (indented) or to the left.
- When you add or remove a qualification, you are changing the evaluation order. To add qualifications, see [Types of filters, page 172](#) to determine the type of qualification you want to add, then use the appropriate section for the type of filter you choose. To remove a qualification from a filter, open the filter, and click the **Remove condition** icon to the left of the qualification you want to delete.
- When you change an operator between qualifications, you may be changing the evaluation order of qualifications. For steps to change operators between qualifications, see [Joining filter qualifications with operators, page 196](#).

Additional filtering functionality

The [Advanced Reporting Guide](#) provides detailed information about the following advanced features:

- Attribute-to-attribute qualifications: Learn about creating reports that compare two attributes, using their respective attribute forms.
- Dynamic dates: Learn how to filter on fixed offsets of the current date.
- Break by property for set qualification filters: Learn about the level at which to restart counting rank or percent values for a metric.
- Metric-to-metric comparisons: Learn how to create a filter that dynamically compares the values of two metrics.
- Output levels for set qualification filters: Learn how to specify the level at which the metric is calculated for a set qualification.
- Custom expressions: Learn about creating custom metric expressions to fit particular needs.
- Joint element lists: Learn about using attribute elements from different attributes to filter the report result set.
- Imported filter elements: Learn how lists of data from existing files can be imported into the filter definition.
- Report object prompts: Learn how to have the results of one report be included in a prompt, and how to specify a search object or specify a predefined list of objects to choose from during report execution.

Asking for user input: Prompts

A prompt is a question the system presents to a user during report execution. How the user answers the question determines what data is displayed on the report when it is returned from your data source.

For example, an analyst in an accounting company needs a report designed to show actual revenue and forecasted revenue for his company's clients. However, the analyst does not want to see data for every corporation his company does business with; he is only interested in seeing revenue and forecasts for certain corporations and only for the current year.

The report designer can create one prompt that asks users to select which corporations they want to see data for, and another prompt that asks users what year they want to see data for. The report designer places the prompts on a report. When the analyst executes the report, he is prompted to answer these questions before the report's SQL query is sent to the data source, and as a result the report displays revenue and forecast numbers for only those corporations and the year that this analyst is interested in seeing.

A report designer can include one or more prompts in any report. Prompts are an effective tool for the report designer, because:

- Prompts allow each user who executes the report to request individualized sets of data from your data source when he answers the prompts and runs the report. Effectively, each user creates his own filter for the report.

- Prompts can allow the report designer to create a smaller number of reports overall, using more inclusive objects, rather than having to create numerous, more specific reports that are individualized to each analyst.
- Prompts allow the report designer to ensure that the objects on a report are the latest available objects in the project. This is possible using a search object in a prompt. When a user launches a prompt by running a report, the search object goes through the project and retrieves the latest objects that fit the search criteria the report designer defined. Thus, no matter when the prompt was created, each time a user executes the report, the user chooses prompt answers from a list of the most up-to-date objects available in the project, including objects that may not have existed when the prompt was created.
- Prompts allow users to keep the objects on their saved reports up-to-date, because users can save a prompted report so that the objects within the prompt remain connected to the original objects within the project that they were originally based on when the prompt was created. If objects are modified or deleted in the project, the report can reflect those changes the next time the prompted report is run.

With prompts, you can let the user decide how to restrict the data to be returned from the data source.

For information on using prompts in a report to be displayed on an Apple® iPhone® or iPad®, or an Android device, see the [MicroStrategy Mobile Design and Administration Guide](#).

A prompt is similar to a filter (see [Filtering data on a report: Filters, page 169](#)) because a prompt determines the specific data to be displayed on a report. The difference, from a report designer's perspective, is that you create a filter for a report to provide a single, specific definition for the report. A filtered report then displays the same set of data to every user who executes that report. In contrast, a prompt dynamically modifies the contents of a report. With prompts, users can determine the objects (attributes, attribute elements, metrics, and so on) they want to be part of, or excluded from, the report query that is sent to the data source. Therefore, a prompt can be seen as a way for users to create their own filter for a given report. For example:

- Users can choose from among several existing filters to determine exactly what filter will screen the data on the report they are about to execute. To achieve this, create an Object prompt that contains existing filters and place that Object prompt on a report. Then the user can choose which filter to apply to the report.
- Prompts allow a report to have a dynamic report definition, which users can change each time they submit the query by choosing different answers when prompted. If you create an Attribute prompt containing the Year attribute, users are prompted to select the year for which they want the report results. The report can be run the first time by selecting 2005 and then a second time by selecting 2006.

Prompts and security filters

Security filters in MicroStrategy restrict a user's ability to access or view certain objects within a given MicroStrategy project. As a result, a security filter can limit the data a user sees on a report, even if the report is designed to display a broader set of data. For example, a report shows revenue data for all geographical regions of the U.S., but a set of users may have a security filter assigned to their MicroStrategy user accounts that limits the display of data to only the Northeast region.

For prompts, this means that users who have a security filter assigned to them may only see certain prompt answers to choose from when they execute a prompted report, even when the prompt creator has explicitly defined a broader set of prompt answers to be available to users of that report.

When describing what prompt answers will be available to users, this manual assumes that no security filter restricts an individual user's access to certain objects or object elements. However, most environments use security filters, so it is important to be aware of the potential impact of a security filter on a user's experience when answering a prompt. Consider this possibility when designing a specific prompt for your users' reporting needs.

For details on security filters, see the [System Administration Guide](#).

Components of a prompt

The pieces that make up a prompt control how a prompt appears and how it functions. These components include the following:

- **Answer requirement:** This component lets you determine whether users will be required to answer the prompt or an answer will be optional. If an answer is required, a report with this prompt cannot be executed until an answer is provided.



Keep in mind that, because a report with a required prompt cannot be executed until an answer is provided, a report with this type of prompt is not a good choice to be subscribed to. This is because the subscription will be unable to answer the required prompt and thus unable to execute the report. The subscription is then automatically invalidated and deleted. To avoid this scenario, always add a default prompt answer when you make an answer required.

- **Default prompt answers:** This component lets you include a pre-selected answer for the prompt, which the user can then accept, replace with a different answer, or accept and add more answers.
- **Personal answers:** This component lets a user save prompt answers for a specific prompt, and then reuse the answers on any report that uses the prompt. Personal answers are saved for each prompt and each user, but they can be used on different reports. Allowing users to save personal answers can help reduce the storage space taken up by saved static reports.
- **Title and instructions:** This component lets you provide a useful name for the prompt, which can significantly impact how straightforward or complex a user finds prompts to be. You can also include instructions on how to use the prompt.

Consider your users' needs as well as the purpose of the report and the objects on it when you decide on these options.

These prompt components are defined from the Create Prompt page. See [Creating a prompt, page 213](#) for steps to access the Create Prompt page. Each prompt component is described below.



If you plan to apply a schedule to a prompted report, the decisions you make about answer requirements and default answers will affect how the report is filtered when it is automatically executed on schedule. For a table showing how various combinations of these options affect how a scheduled report is filtered when executed, see the [Advanced Prompts](#) chapter in the [Advanced Reporting Guide](#).

Answer requirements

You can either require users to answer a prompt when they execute a report, or you can make an answer optional.

- **Required:** A required prompt means at least one prompt answer must be selected from the available choices, or the report cannot be executed.
- **Optional:** An optional prompt does not require a prompt answer to be selected. The report can be executed without any input from the user.

If you determine that a prompt must be answered, consider also providing a default answer. Default answers allow users to execute prompted reports quickly because they can simply accept the defaults. Default answers are especially useful if you have a large number of users of a given report who will likely choose the same answer for the prompt. See [Answer requirements, page 209](#).

To specify whether an answer is required or optional, select the **Prompt answer is required** check box on the New Prompt page. See the appropriate procedure below for the type of prompt you want to create, for steps to select this setting when creating a prompt.

Default prompt answers

You can specify default answers for prompts. Users can then do one of the following:

- Execute the report using the default answer(s)
- Select a different answer
- Keep the default answer and add additional answers

Providing default answers allows users to execute prompted reports more quickly, because they can simply accept the defaults with a single click and run the report. Default answers are particularly useful if a large percentage of your users will answer the prompt the same way. A common example is 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 report, then providing the current year as the default answer can save users time. Additional scenarios where default prompt answers can be useful:

- If a user subscribes to a report. This is common for mobile users. When the subscription is delivered to a user's mobile device, the prompts are answered automatically using the default answers defined by the designer. So, the mobile user can simply open his device and view the executed report.
- If a report is being used as the destination of a link in a widget, document, or report (the source of the link). When the user clicks the link to a report from the source, the default answer defined by the designer allows the link to directly open the destination report without requiring the user to answer prompts before they can see the report.

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 then the report is reprompted.

You can determine whether to have prompts in a report automatically answered when the report is run, using default prompt answers.

To specify a default prompt answer

1. In MicroStrategy Web, create a prompted report. For steps to include a prompt on a report, see [Reports: Adding prompts to a report, metric, or filter, page 264](#).
2. From the toolbar, select **Run Report**.
3. Select the answer that you want to save as the default prompt answer and click **Run Report** to execute the report.
4. Click **Save As**. The Save Options dialog box opens.
5. To save the current prompt answers as the default prompt answers, click **Advanced Options** and then select the **Set the current prompt answers to be the default prompt answers** check box. For more information on the other available options while saving a prompted report, see [Saving a report, page 271](#).
6. Click **OK**. Your selections are applied to the report and it is saved.

This sets the prompt answers that you selected while answering the prompted report, as the default prompt answers to be used the next time the report is run.

Personal answers

You can allow personal answers, so that a user can save prompt answers for a specific prompt, and then reuse the answers on any report that the prompt is used on.

Personal answers can save time, for example, when a prompt answer involves complicated metric qualifications. Allowing users to save personal answers can help reduce the storage space taken up by saved static reports. Personal answers also provide consistency, to ensure that the same prompt answers are used across a number of reports.



Personal answers are saved for each prompt and each user, but they can be used on different reports. Users can save prompt answers without having to save the report itself.

When you create a prompt, you can allow no, one, or multiple personal answers:

- **None:** No personal answers can be saved. Every time a user sees the prompt, he must answer it manually (if it is required) or ignore it.
- **One:** Only one personal answer can be saved for this prompt. When the prompt is used again (on this report or a different one), the personal answer is displayed. A user can keep the personal answer, or add or delete selections. He can save his changes as a new personal answer, but only one personal answer can be saved for the prompt.
- **Multiple:** Multiple personal answers can be named and saved, allowing different answers for the same prompt. When the prompt is used again (on this report or a different one), the personal answers are available. The user can select one of them, or answer the prompt manually.



In MicroStrategy Web, while creating a prompt, you can allow personal answers for the prompt, if the administrator has enabled personal answers in the default settings for prompts. An administrator can change this default setting for prompts from the Preferences Menu.

Examples of each option follow. While they are simple examples, they illustrate how the different types of personal answers work.

Example: No personal answers

Create an attribute element list prompt (see [Filtering data on an attribute, attribute form, attribute element, or metric: Qualification Prompts, page 218](#) for steps) on Region, and do not allow personal answers (select **None** for the **Personal answers allowed** option). Name the prompt **No personal answers**.

Create a report with Region, the Revenue metric, and the No personal answers prompt. Execute the report, and select Northeast, Mid-Atlantic, and Southeast at the prompt. Save the report as a prompted report rather than a static one (select the **Keep report prompted** check box in the Save As dialog box; for more information see [Saving reports with prompts, page 123](#)).

Re-execute the report. You are not able to select a saved personal answer from your previous report execution, but instead you must enter your prompt answers again.

Example: Single personal answer

Create an attribute element list prompt on Region, and allow a single personal answer. Name the prompt **Single personal answer**.

Create a report with Region, the Revenue metric, and the Single personal answer prompt. Execute the report and select Northeast, Mid-Atlantic, and Southeast at the prompt. Select the **Remember this answer** check box, which saves your selections as a personal answer. Save the report as a prompted report.



It is not required to save a report in order to save the personal answer. However, save the report for this example.

Re-execute the report. Northeast, Mid-Atlantic, and Southeast are displayed automatically as the default answer. You can continue executing the report or change the prompt selections by adding or deleting regions. Delete all the regions from the prompt answers, and replace them with Southeast, Southwest, and South. Do not clear the **Remember this answer** check box. These regions are now saved as the personal answer.

Re-execute the report. Southeast, Southwest, and South are displayed automatically as the default answer. Delete all the regions from the prompt answers, and replace them with just Central. Clear the **Remember this answer** check box. The personal answer is now cleared.

Re-execute the report. Since no personal answer exists, no prompt answers are displayed. You must enter your prompt answers manually.

Example: Multiple personal answers

Create an attribute qualification prompt on Region, and allow multiple personal answers.

Create a report with Region, the Revenue metric, and the prompt that you created above. Execute the report, and select Northeast, Mid-Atlantic, and Southeast at the prompt. Save the prompt answer (select the **Save this answer when report is run** check box), naming it **Eastern Regions**. Save the report as a prompted report.



It is not required to save a report in order to save the personal answer. However, save the report for this example.

Re-execute the report. No default prompt answers are displayed, but you can select Eastern Regions, the personal answer that you created previously, by clicking the **Load Answers** icon. Instead, select Southeast, Southwest, and South for prompt answers. Save them as a personal answer, naming it **Southern Regions**. Set this personal answer as the default (select the **Set as default** check box).

Re-execute the report. Southeast, Southwest, and South are displayed as the default prompt answers, since they were defined as the default above. Clear the prompt answers, and replace them with Central. Do not save it as a personal answer.

Re-execute the report. Southeast, Southwest, and South are displayed as the prompt answers, since they are still the default. You can select Eastern Regions or Southern Regions (the current selection) as personal answers.

When you click **Load Answers**, you can view the personal answers created previously. You can delete and rename these personal prompt answers by clicking the **More Options** link. You cannot edit the contents of personal answers.

Title and instructions

You can customize a prompt's title and instructions, which are displayed to users when they are answering the prompt.

Think about a name and instructions carefully, with your users in mind. The title and instructions you provide for a prompt can make the difference between users finding prompted report execution confusing and users completing rapid report execution and displaying exactly the data they want to see.

Example of an ineffective prompt title and instructions

You create an Attribute Element prompt. You select the Year attribute, from which the user will be asked to select one or more attribute elements (years) to see data displayed for. You name this prompt "Attribute element prompt" and you provide the following instructions: "Choose an attribute element."

This title and instructions are not useful to the majority of users, who likely do not know what an attribute element is. A better choice is described below.

Example of a useful prompt title and instructions

You create an Attribute Element prompt. You select the Year attribute, from which the user will be asked to select one or more attribute elements (years) to see data displayed for. You name this prompt "Year(s)" and you provide the following instructions: "Select one or more years for which you want to see data."

This title makes sense to all users and defines the prompt generally enough so it can be easily used by report designers on other reports. The instructions are useful not only because it uses language that users will understand, but also because it is more than just a repeat of the title. It provides basic information to the user who may never have used a prompt before, and it emphasizes that more than one year can be chosen, in case a user missed that information at the top of the prompt screen.

You can determine the title and instructions for a prompt on the New Prompt page. See the appropriate procedure below for the type of prompt you want to create, for steps to enter a title and instructions when creating a prompt.

Creating a prompt

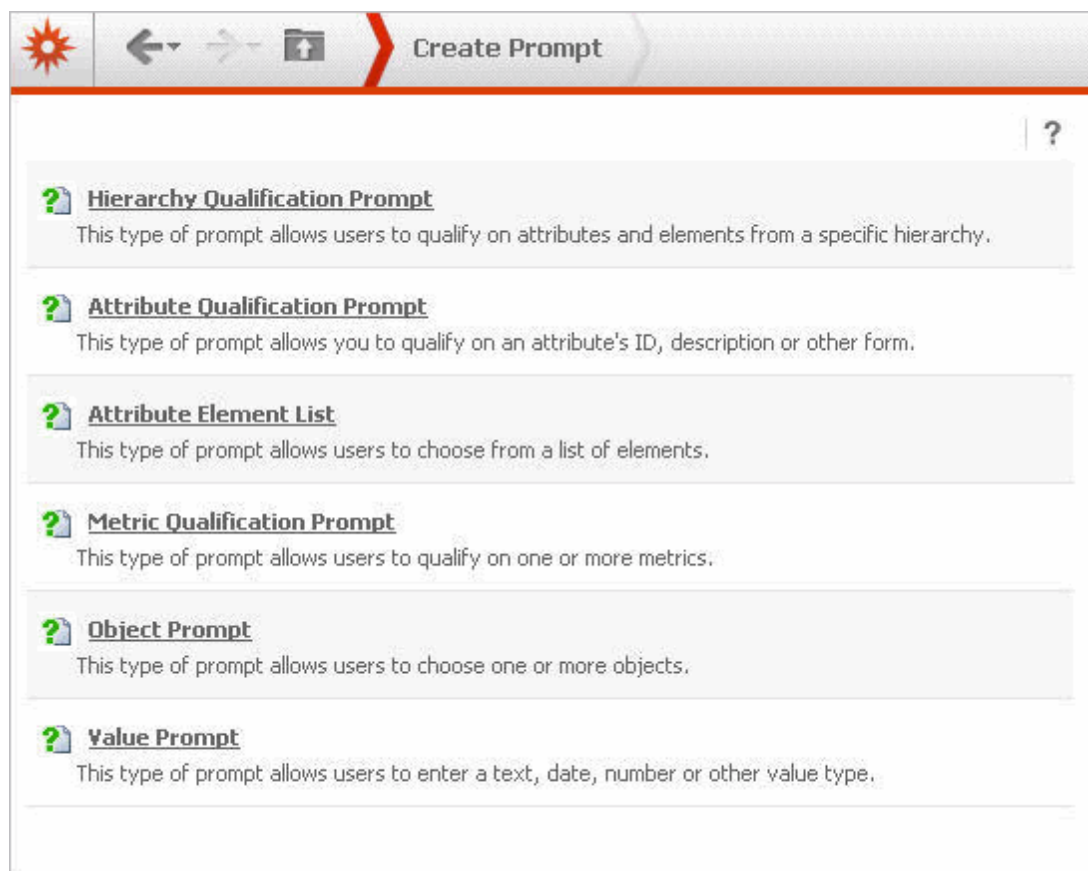
You create a prompt for a report when you want to let the user decide what restrictions the data must meet to be displayed on the report.

Prompts can be placed on a report, and they then become part of the report definition. They can also be used in a filter, metric, or custom group.



This chapter covers prompts placed on reports, filters, and metrics. Prompts used on custom groups are covered in the *Advanced Prompts* chapter of the [Advanced Reporting Guide](#).

The image below shows the Create Prompt page, where you select the type of prompt you want to create. See [Types of prompts, page 214](#) for details on each prompt type.



To access the Create Prompt page

1. In MicroStrategy Web, on the Home page, click **New Prompt**. The Create Prompt page opens with a list of the types of prompts that you can create.
2. To create a new prompt, click on the type of prompt that you want to create.

See the sections that follow for the type of prompt you want to create. You can see specific details on each option in each page of the wizard by clicking **Help**.

After you create a prompt, you then place the prompt on any report so it becomes part of the report's definition and any user who executes that report must interact with the prompt. For steps to include a prompt on a report, see [Adding a prompt to a report](#).

Types of prompts

The correct prompt type to create depends on what report objects you want users to be able to base a filter on to filter data.

Prompt Type	Prompt Name	What Data It Allows Users to Define
Object prompts This type of prompt allows users to select objects to include in a report, such as attributes, metrics, or filters.	Object prompt	Users can use this prompt to add more data to a report. Users select objects (such as attributes or metrics) they want to add to the report. Users can also choose from among a selection of filters, to apply a filter that is most useful for their analysis purposes. For steps, see Filtering data based on metrics, attributes, or other objects: Object prompts, page 239 .
Hierarchy Qualification Prompts This type of prompt allows users to determine how the report's data is filtered based on attributes in a hierarchy.	Hierarchy Qualification Prompt	Users can select prompt answers from one or more attribute elements from one or more attributes. The attribute elements they select are used to filter data displayed on the report. This prompt lets you give users the largest number of attribute elements to choose from when they answer the prompt to define their filtering criteria. For example, on a report displaying profit forecasts, if the prompt lets users select from the Product hierarchy, one user might choose to see forecasts for certain electronic products, while another user might select different electronics products, or all media products. For steps, see Filtering data on an attribute, attribute form, attribute element, or metric: Qualification Prompts, page 218 .
Attribute Qualification Prompts This type of prompt allows users to determine how the report's data is filtered	Attribute Qualification Prompt	Users can select prompt answers from a list of attribute elements from a single attribute. This prompt is more restrictive than the Hierarchy prompt, because the user has fewer attribute elements to select answers from. For steps, see Filtering data on an attribute, attribute form, attribute element, or metric: Qualification Prompts, page 218 .

Prompt Type	Prompt Name	What Data It Allows Users to Define
based on attribute form.		
Attribute Element List Prompts This type of prompt allows users to determine how the report's data is filtered based on attribute element.	Attribute Element List Prompt	Users can select prompt answers from a limited list of specific attribute elements. This prompt is the most restrictive of the Hierarchy Qualification, Attribute Qualification, and Attribute Element List prompts, because the user has the fewest number of attribute elements to select answers from. For steps, see Filtering data on an attribute, attribute form, attribute element, or metric: Qualification Prompts, page 218 .
Metric Qualification Prompts This type of prompt allows users to determine how the report's data is filtered based on metrics.	Metric Qualification Prompt	Users can define a metric qualification, which determines what data should be displayed for one or more specific metrics on the report. For steps, see Filtering data on an attribute, attribute form, attribute element, or metric: Qualification Prompts, page 218 .
Value prompts This prompt type lets users select a single value, such as a date or a specific text string, and filter report data based on their selection. For steps, see Filtering data based on a single value or string: Value prompts, page 243 .	Date prompt	Users enter a specific date for which to see data. This prompt is used in a filter.
	Numeric prompt	Users enter a specific number, up to 15 digits, which is then used as part of a filter, or within a metric, to look for specific numeric data. If a user enters more than 15 digits for a numeric prompt, the data is converted to scientific notation. If precision is needed beyond 15 digits, you should use a Big Decimal value prompt instead.
	Text prompt	Users enter a word or phrase, which is then used as part of a filter to look for specific data with that text.
	Big Decimal prompt	Users can enter up to 38 digits, to search for numeric data with the Big Decimal data type assigned to it.
	Long prompt	Users enter up to 10 digits, to search for numeric data.
Level prompts This prompt type allows users to specify the level of calculation for a metric.	Level prompt	Levels are explained in Components of a metric, page 150 . Level prompts are covered in the <i>Advanced Prompts</i> chapter of the Advanced Reporting Guide .

Most of the prompt types in the table above are explained in detail in the sections that follow. Level prompts are covered in the *Advanced Prompts* chapter of the [Advanced Reporting Guide](#).

Choosing the right prompt type

Use the table below as a reference when choosing which prompt to create, to help you provide the reporting results that your users need.

User Needs	Solutions
Restrict the amount of data displayed on a report	Prompts used on filters in a report are more restrictive than other prompts in terms of the number of attribute elements from which a user can select prompt answers. For details on prompts used on a filter, see Filtering data on an attribute, attribute form, attribute element, or metric: Qualification Prompts, page 218 .
Increase the amount of data displayed on a report	<ul style="list-style-type: none"> Object prompts are more inclusive in terms of the data that is displayed on the resulting report, because the user can select additional objects to include on the report. To create an Object prompt, see Filtering data based on metrics, attributes, or other objects: Object prompts, page 239. In general, the more answers an analyst is allowed to select for a prompt, the more information is displayed on the report. The maximum number of answers a user can provide is determined by one component of all prompts, called an answer requirement. You can allow users to select more answers for a prompt by setting or changing the maximum number of answers. For details, see Components of a prompt, page 208.
Answer prompts that are easier to use	<ul style="list-style-type: none"> The Attribute Element List prompt and the Object prompt are generally the simplest prompts for a user to answer. Users simply click one or more objects they want to see data for and execute the report. The user does not have to create a filtering definition as with other prompts. Any prompt increases the complexity for a user when running a report. This can be alleviated by providing good descriptions for the prompts so that users are clear about the questions they are answering. For an example of an effective prompt description, see Components of a prompt, page 208.
Choose a report filter from among a selection of filters	Users can choose from among several existing filters to determine exactly what filter will screen the data on the report they are about to execute. To do this, create the filters you want users to be able to choose from, then create an Object prompt made up of existing filters, and then place that Object prompt on a report. To create an Object prompt, see Filtering data based on metrics, attributes, or other objects: Object prompts, page 239 .
Select a prompt answer from the most up-to-date objects in the project	You can use a search object in most prompts. A search object will search for and display specific objects at the moment the user accesses the report and the prompt appears. This lets users select their answers from the most up-to-date hierarchies, attributes, metrics, or other objects in the project. To do this, create a search object, then during prompt creation choose the search object rather than choosing specific attributes or other objects to prompt the user with. For steps to create a search object, see the prompt creation procedure below for the prompt you want to create. Steps to create a search object are within the prompt creation steps.

User Needs	Solutions
Restrict the number of attribute elements users can choose from when answering a prompt	<p>The three Hierarchy and Attribute prompts are designed to be increasingly restrictive in the number of objects they allow users to select answers from. These three prompts are listed below, in increasing order of restrictiveness:</p> <ul style="list-style-type: none"> • Hierarchy Qualification Prompt: Allows users the widest number of objects to choose answers from. • Attribute Qualification Prompt: More restrictive than the Hierarchy prompt. Allows fewer objects for users to choose answers from. • Attribute Element List Prompt: The most restrictive of the three prompts. Allows the fewest objects for users to choose answers from.
Select from a reasonable subset of a long list of attribute elements, for example, a list of customer names	<p>The Attribute Element List prompt provides a filter option. You can use this option to create a filter that will display to users a specific list of attribute elements, based on the condition defined in the filter. For example, you create a filter to display the top 20 customers in terms of revenue or the top 10 employees in terms of sales. Place this filter in the Attribute Element prompt, and place the prompt on a report. To create an Attribute Element prompt, see Filtering data on an attribute, attribute form, attribute element, or metric: Qualification Prompts, page 218.</p>

Stand-alone prompt vs. prompt as part of report or filter

This chapter primarily describes how to create stand-alone prompts. A stand-alone prompt is a prompt that is created as an independent MicroStrategy object. A stand-alone prompt can then be used on many different reports, as well as on filters, metrics, and other objects, and can be used by other report designers. A stand-alone prompt gives report designers flexibility.

However, in MicroStrategy, prompts can also be created as an intrinsic part of a given report, at the same time the report itself is being created. Prompts created as part of a report are saved with the report's definition. Therefore, a prompt created as part of a report cannot be used on any other report.

Prompts can also be created as an intrinsic part of a filter, at the same time the filter itself is being created. Prompts created as part of a filter are saved with the filter's definition. Therefore, a prompt created as part of a filter cannot be used on any other filter.

No matter how a prompt is created, whether stand-alone or as part of another object, each approach allows you to create most prompt types described in this chapter. Both stand-alone prompts and prompts created as part of another object accomplish the same results: the user is presented with one or more questions to answer, and the answers determine the data used when calculating the results displayed on a report.

Filtering data on an attribute, attribute form, attribute element, or metric: Qualification Prompts

These types of prompts let users define the filtering criteria for a report. While answering the prompt, the user actually goes through the process of creating a filter for the report. You create the prompt to define constraints for which objects can be used to create the filter. Filtering criteria might include certain attributes in a hierarchy, specific attribute forms or attribute elements, or certain metrics.

For example, if you create a Hierarchy Qualification prompt, you can specify a hierarchy from which users can select attributes or attribute elements to create a filter with. (The option to create this prompt in the Create Prompt page is called “Hierarchy Qualification Prompt”.) Users are presented with a prompt similar to the following image when they execute the report:

When creating the prompt shown above, the report designer chose the Time hierarchy, so users could choose any attribute within that hierarchy for which to see data. The prompt shown above is asking the user to select from the attributes listed, or the user can also browse to a specific attribute’s elements and select one or more of those elements. Then the user drags a desired attribute or element into the filter’s Definition pane on the right-hand side. (Alternatively, the user can use the Attribute Qualification pane to select an attribute for the filter.) By being able to interact with this prompt, each user can create his own filter with which to screen the data that appears on the resulting report.

You can add these types of prompts to a stand-alone filter, so that the prompt is presented to any users who run a report on which that filter is placed. Alternatively, you can place these

types of prompts directly on a report. Either way, these types of prompts allow users to specify conditions that data must meet to be included in report results.

For a table of where to use all prompts, see [Reports: Adding prompts to a report, metric, or filter, page 264](#).

You can create the following types of prompts:

- **Hierarchy Qualification Prompt:** This prompt lets the user create a filter by selecting from any attribute or attribute element that is part of one or more hierarchies you specify. The attribute elements the user selects then become the filter for the report when it is sent to your data source. To create a Hierarchy Qualification prompt, see [Filtering data on an attribute, attribute form, attribute element, or metric: Qualification Prompts, page 218](#).
- **Attribute Qualification prompt:** This prompt enables the user to filter (or qualify) the report based on the attribute forms or the attribute elements of the specified attribute. To create an Attribute Qualification prompt, see [Filtering data on an attribute, attribute form, attribute element, or metric: Qualification Prompts, page 218](#).
- **Attribute Element List prompt:** This prompt enables the user to filter the report based on a specified set of attribute elements from a given attribute. To create an Attribute Element List prompt, see [Filtering data on an attribute, attribute form, attribute element, or metric: Qualification Prompts, page 218](#).
- **Metric Qualification prompt:** This type of prompt enables the user to filter (or qualify) the report based on a specific metric. To create a Metric Qualification prompt, see [Filtering data on an attribute, attribute form, attribute element, or metric: Qualification Prompts, page 218](#).

After you have created a prompt, you can incorporate it into a report as described in [Reports: Adding prompts to a report, metric, or filter, page 264](#).

Hierarchy Qualification prompts

The Hierarchy Qualification prompt allows users to create their own report filter using attributes and attribute elements from:

- A specific hierarchy
- Specific hierarchies returned by a search object
- All hierarchies in the project

For an explanation of what a hierarchy is, see [Hierarchies, page 87](#).

For example, analysts want to be able to monitor the aging of various accounts receivable transactions by customer. You create a report with the Customer attribute and various Accounts Receivable-related metrics on it. (The report and its metrics are shown below.) You want users to be able to select any corporations or parent corporations to view past-due amounts for, when they execute the report.

You create a Hierarchy Qualification prompt which asks the user to choose an attribute or attribute elements from the Organization hierarchy. Then you add the Hierarchy Qualification prompt to the report.

When you execute the report and respond to the prompt by choosing the Global Enterprises HQ corporation, the report appears as shown in the following image. (This image shows only part of the resulting report.)

Customer	Metrics	Open	A/R (0-	A/R (31-	A/R (61-	A/R (91-	A/R (181-	A/R (over
		Receivable	30 Days)	60 Days)	90 Days)	180 Days)	360 Days)	360 Days)
		Amount						
Internet Solutions LLC		\$116,774	\$30,591	\$27,796	\$58,387	\$0	\$0	\$0
Cleats The Chemists		\$113,385	\$44,401	\$0	\$24,583	\$0	\$44,401	\$0
Nippon Insurance		\$99,970	\$5,600	\$0	\$29,746	\$0	\$64,624	\$0
Great Motors		\$89,204	\$52,262	\$28,758	\$8,184	\$0	\$0	\$0
Beach Hotels		\$55,601	\$2,898	\$0	\$0	\$52,703	\$0	\$0
Long Island Homes		\$51,068	\$0	\$32,894	\$0	\$0	\$18,174	\$0
NT and T Wireless		\$35,303	\$0	\$22,402	\$0	\$0	\$12,901	\$0
Sun Inns		\$12,588	\$1,911	\$0	\$0	\$27	\$10,650	\$0

The Hierarchy Qualification prompt allows users to select from the widest number of attribute elements when they are choosing prompt answers to define their filtering criteria. The Attribute Qualification prompt is more restrictive, and the Attribute Element List prompt is the most restrictive, allowing users to choose from the fewest number of attribute elements to define their filter criteria.

To create a Hierarchy Qualification prompt

1. In MicroStrategy Web, on the Home page, click **New Prompt**. The Create Prompt page opens.
2. Click **Hierarchy Qualification Prompt**. The New Prompt page opens.

To select the hierarchy

Select the hierarchy which contains the attributes the user will be prompted to choose from as he creates the filter for the report.

On the Definition tab, choose one of the following options and, as necessary, specify the required information for your chosen option:

- **All hierarchies**: Select this option to let the user choose attributes from all the hierarchies in the project.
- **Choose a hierarchy**: Select this option to present the user with a specific hierarchy from which to choose attributes and elements.
- Click **Select Hierarchy**, select the hierarchy or specify the name of the hierarchy, and then click **OK**.
- **Use a predefined list of hierarchies**: Select this option to allow the user to choose attributes from a list of hierarchies that you select.
- To add hierarchies, click **Add**, select the hierarchy or specify the name of the hierarchy, and then click **OK**.
- To delete a hierarchy from the list, highlight it and click **Remove**.

- To remove all the hierarchies from the list, click **Clear**.
- **Use the result of a search object:** Select this option to browse to and select a previously created search object or specify the name of the search object. A search object will search for and display specific project objects when the user executes the report. This lets you prompt the user with the most up-to-date objects in the project.
- Click **Select Search**, select the search object or specify the name of the object, and then click **OK**.

To determine the attribute forms which are displayed to the user

Once users select a hierarchy, the prompt displays the related attributes and attribute elements for users to select their filter criteria from. The attribute forms can also be displayed.

An attribute form is a descriptive aspect of an attribute. Most attributes have at least two forms, ID and description (Desc). For example, the Product attribute has an attribute form called ID, which is made up of ID numbers that represent each attribute element (each product). The attribute form Last Name contains the last names for each attribute element, such as each customer in the Customer attribute, or each employee in the Employee attribute. Your project designer determines which attribute forms users see directly in a report's results (the report display forms), and which attribute forms users can see displayed in the Object Browser, for browsing purposes (the browse forms). You can select which of these display types users can select from when they answer the prompt.

From the **Displayed forms** drop-down list, select one of the following options:

- **All attribute forms:** This option allows users to see and select from attribute elements within all attribute forms. It is the default choice.
- **Browse forms:** This option allows users to see and select from only the attribute forms defined as browse forms. All attribute forms defined as browse forms are displayed in the Data Explorer when the user browses the related attribute.
- **Report display forms:** This option lets users see only the attribute forms defined as report display forms. All attribute forms defined as report display forms are included in report results for a report that uses the related attribute.
- **Custom display forms:** This option allows you to specify a customized set of attribute forms to display to users by selecting each attribute form from a list. In the list of attribute forms in the bottom left, select the attribute forms that you want to display, then click the **Add** icon to add the attribute forms to the list on the right. You can select more than one attribute form at the same time by pressing **CTRL** and clicking additional attribute forms. This option is available if the Choose an attribute option above is selected

To specify a title and instructions

For considerations when determining a title and description, see [Components of a prompt, page 208](#).

- On the General tab, type a **Title**, which is used as the default object name when you save the prompt, although you can change it.
- Type text in the **Instructions** field, which is displayed when the prompt is run during report execution.

To restrict the number of prompt answers.

1. To require users to answer the prompt before running the report, specify whether the prompt requires an answer. Select the **Prompt answer is required** check box. If you require an answer, it is a good idea to also provide a default answer, otherwise a subscription to this report will fail.
2. Set the maximum and/or minimum number of prompt answers allowed, if desired. Select the **Minimum number of qualifications** and/or the **Maximum number of qualifications** check boxes, and type the numbers in the fields.

To allow personal answers

Personal answers allow a user to save prompt answers for this prompt, and then reuse the answers on any report that this prompt is used on. For more information on personal answers, and how they can be used, see [Components of a prompt, page 208](#).

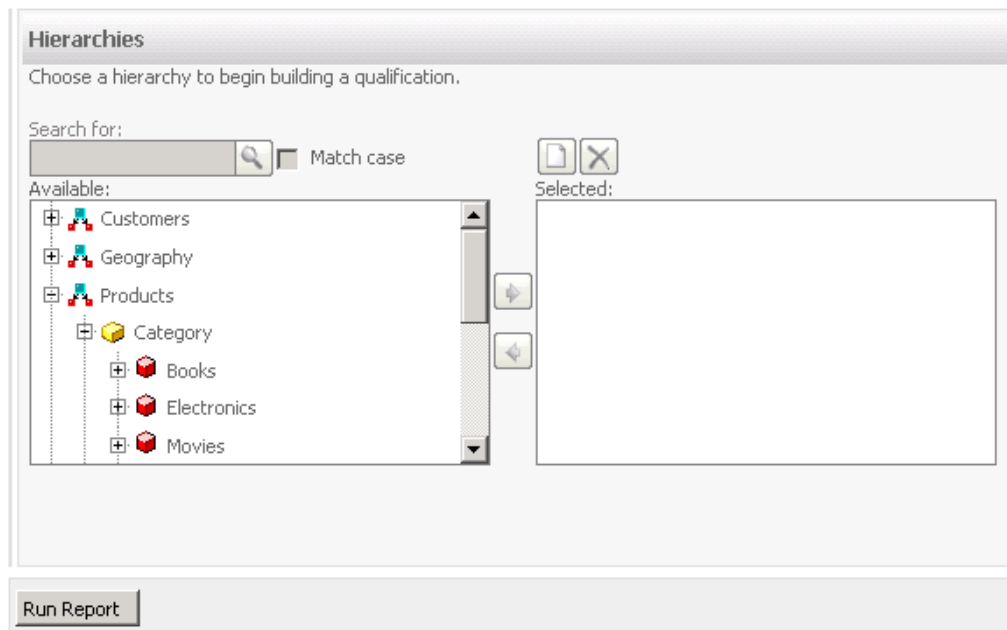
To determine whether personal answers can be saved for this prompt, select one of the following options from the **Personal answers allowed** drop-down list:

- **None:** No personal answers can be saved. Every time a user sees the prompt, he must answer it manually (if it is required) or ignore it.
- **One:** Only one personal answer can be saved for this prompt. When the prompt is used again (on this report or a different one), the personal answer is displayed. A user can keep the personal answer, or add or delete selections. He can save his changes as a new personal answer, but only one personal answer can be saved for the prompt.
- **Multiple:** Multiple personal answers can be named and saved, allowing different answers for the same prompt. When the prompt is used again (on this report or a different one), the personal answers are available. The user can select one of them, or answer the prompt manually.

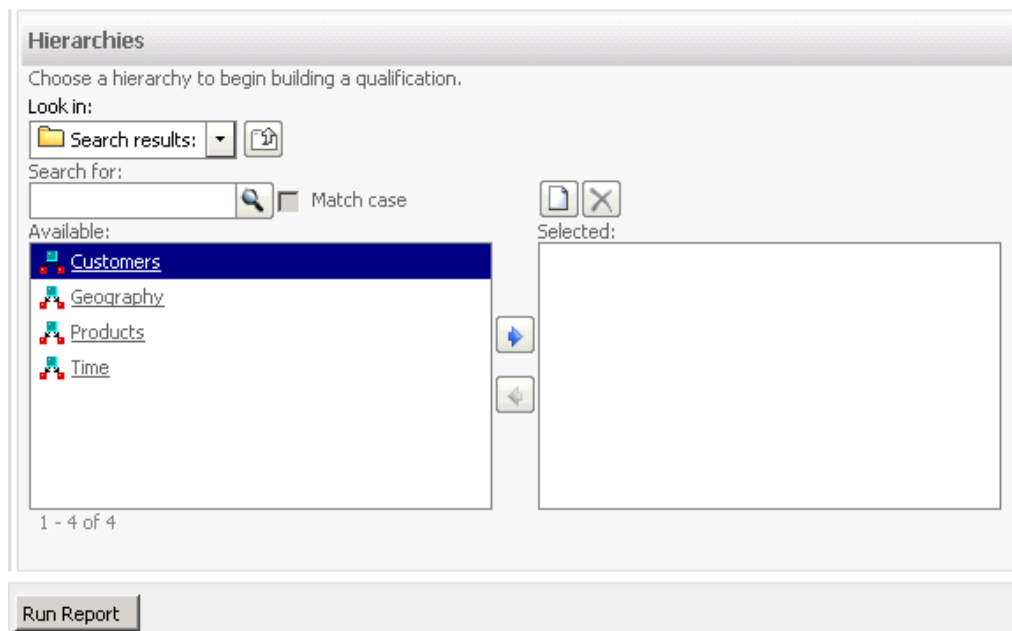
To specify the layout and display style of the prompt

1. On the Style tab, from the **Display style** drop-down list, specify a presentation style such as **Tree** or **Shopping Cart** for the prompt. Depending upon the option you select, the prompt is displayed to the user when the report is executed.

The following image shows the Tree display style:



The following image shows the Shopping Cart display style:



2. To ensure that the prompt's text fields and options are a fixed size, select the **Fixed textbox width** and/or the **Fixed textbox height** check boxes, and specify the size of the prompt's text fields and options in the fields.

Specifying the size of the textbox can be beneficial when users answer prompts on a smaller screen of a mobile device.

1. To determine how prompt options are arranged, from the **Orientation** drop-down list, select **Vertical** or **Horizontal**.
2. To determine the number of prompt answers displayed in a row or column (depending on alignment), select the **Items per column/row** check box and enter the number in the field.
3. You can determine whether to allow users to use a search box to locate prompt answers. Searching for objects allows analysts to quickly locate specific objects to use to answer the prompt. From the **Show search box** drop-down list, select one of the following options:
 - To display the search box, select **True**.
 - To not display a search box, select **False**.
4. If the search box is enabled, you can ensure that users use the search box to locate answers, by selecting the **Make search required** check box.



If you are using the Shopping Cart display style, you can select the **Use folder structure** check box to display the prompt choices in a folder structure. This option, available for search objects only, is useful when the same object with the same name is saved in multiple folders.

- Select the **Do not show empty folders** check box if you do not want the search result to display empty folders.
- To allow users to navigate above the root folder when searching, select the **Allow navigation above search root** check box.

To specify how qualifications are displayed in the prompt

1. On the Qualification tab, determine the types of qualification expressions allowed in the prompt by selecting an option from the **Expression type allowed** drop-down list.
2. Determine the default condition (for example, Select or Qualify) that is displayed in the prompt by selecting an option from the **Default expression type** drop-down list.
3. Determine the default qualification operator (for example, Greater than or Less than) that is displayed in the prompt by selecting an option from the **Default condition operator** drop-down list.
4. Determine how many elements are listed in each prompt answer list by selecting the **Maximum number of elements per list** check box and entering the number in the field.
5. To allow users to import a list of attribute elements from which they can choose, select the **Allow element import** check box.
6. Determine the default logical operator that is used between conditions by selecting an option from the **Default operator between conditions** drop-down list.
7. To allow users to modify expressions, select the **Allow modification of the logical operator** check box.

To ensure that users can only use a single condition operator (AND/OR) between all of the conditions in an expression, select the **Use a single logical operator between all conditions** option.

To ensure that users can choose a default operator to use between each condition, select the **Allow the user to set independent logical operators between conditions** option.

To save your prompt

Click **Save As**, navigate to the folder where you want to save the prompt, type a **Name** and **Description** for the prompt, and click **OK**. Your new prompt is saved.

You can now add your new prompt to a report or filter. For a table showing how to add each prompt type to a report, metric, or filter, see [Reports: Adding prompts to a report, metric, or filter, page 264](#).

You can also set a default prompt answer, which allows the user to complete report execution quickly, as they do not need to answer the prompt but can simply run the report using the default answer. For steps to specify a default prompt answer, see [Components of a prompt, page 208](#).

Attribute Qualification prompts

The Attribute Qualification prompt can be used to create a more focused prompt than the Hierarchy Qualification prompt. You determine a single attribute from which each user who executes the report can select elements to define his report filter. You can also let users select an attribute from a set of attributes, and then select elements from their chosen attribute.

For example, your report contains the attribute Region and the metric Revenue. You want users to be able to select specific geographical regions of the country for which to see revenue data, from among all regions.

You create an Attribute Qualification prompt, which prompts the user to choose attribute elements from the Region attribute. Using the MicroStrategy Tutorial project data, you might choose the following default answers for the prompt:

- Northeast
- Northwest
- Southeast
- Southwest

When you apply this prompt to the report and execute the report using the default answers, the report appears as shown in the following image.

Region	Revenue
Northeast	\$8,554,415
Northwest	\$1,761,187
Southeast	\$2,239,951
Southwest	\$3,694,132

The Attribute Qualification prompt is more restrictive than a Hierarchy Qualification prompt but less restrictive than an Attribute Element List prompt. The Hierarchy Qualification prompt allows users to select from the widest number of attribute elements when they are choosing prompt answers to define their filtering criteria. The Attribute Element List prompt is the most restrictive, allowing users to choose from the fewest number of attribute elements to define their filter criteria.

To create an Attribute Qualification prompt

1. In MicroStrategy Web, on the Home page, click **New Prompt**. The Create Prompt page opens.
2. Click **Attribute Qualification Prompt**. The New Prompt page opens.

To select the attribute from which the user can create the filter

You must determine which attribute will be displayed to the user when the user is prompted. (Alternatively, you can present the users with a list of attributes from which the user selects one attribute.) The user then selects elements from that attribute to be part of the filter he creates to filter data for the report.

On the Definition tab, choose one of the following options:

- **Choose an attribute:** You can present the user with a specific attribute to select elements from.
- Click **Select Attribute**, select the attribute or specify the name of the attribute, then click **OK**.
- **Use a predefined list of attributes:** Select this option to allow the user to choose attributes from a list of attributes that you select.
- Click **Add**, select the attributes, then click **OK**.
 - To delete an attribute from the list, select the attribute, then click **Remove**.
 - To remove all the attributes from the list, click **Clear**.
- **Use the results of a search object:** A search object will search for and display specific project objects when the user executes the report. This lets you prompt the user with the most up-to-date objects in the project. Use this option to present the user with a list of attributes, from which he can choose one.

Click **Select Search**, select the object or specify the name of the object, then click **OK**.

To determine which attribute forms to display to the user

The prompt displays the related attribute elements for users to select their filter criteria from. The attribute's forms can also be displayed.

An attribute form is a descriptive aspect of an attribute. Most attributes have at least two forms, ID and description (Desc). For example, the Product attribute has an attribute form called ID, which is made up of ID numbers that represent each attribute element (each product). The attribute form Last Name contains the last names for each attribute element, such as each customer in the Customer attribute, or each employee in the Employee attribute. Your project designer determines which attribute forms users see directly in a report's results (the report display forms), and which attribute forms users can see displayed in the Object Browser, for browsing purposes (the browse forms). You can select which of these display types users can select from when they answer the prompt.

From the **Displayed forms** drop-down list, select one of the following options:

- **All attribute forms:** This option allows users to see and select from attribute elements within all attribute forms. It is the default choice.
- **Browse forms:** This option allows users to see and select from only the attribute forms defined as browse forms. All attribute forms defined as browse forms are displayed in the Data Explorer when the user browses the related attribute.
- **Report display forms:** This option lets users see only the attribute forms defined as report display forms. All attribute forms defined as report display forms are included in report results for a report that uses the related attribute.
- **Custom display forms:** This option allows you to specify a customized set of attribute forms to display to users by selecting each attribute form from a list. In the list of attribute forms in the bottom left, select the attribute forms that you want to display, then click the **Add** icon to add the attribute forms to the list on the right. You can select more than one attribute form at the same time by pressing **CTRL** and clicking additional attribute forms. This option is available if the Choose an attribute option above is selected.

To specify a title and instructions

For considerations when determining a title and description, see [Components of a prompt, page 208](#).

1. On the **General** tab, type a **Title**, which is used as the default object name when you save the prompt, although you can change it.
2. Type text in the **Instructions** field, which is displayed when the prompt is run during report execution.

To restrict the number of prompt answers.

1. You can specify whether the user is required to answer the prompt before running the report. To require users to answer the prompt, select the **Prompt Answer is Required** check box.

2. Set the maximum and/or minimum number of prompt answers allowed, if desired. Select the **Minimum number of qualifications** and/or the **Maximum number of qualifications** check boxes, and enter the numbers in the fields.

To allow personal answers

Personal answers allow a user to save prompt answers for this prompt, and then reuse the answers on any report that this prompt is used on. For more information on personal answers, and how they can be used, see [Components of a prompt, page 208](#).

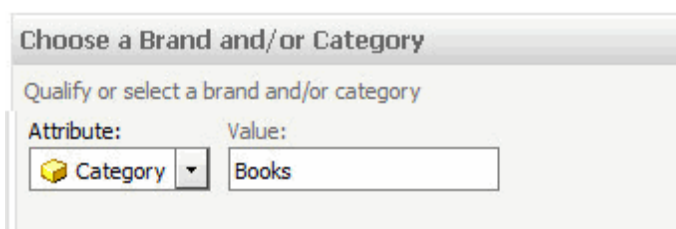
To determine whether personal answers can be saved for this prompt, select one of the following options from the **Personal answers allowed** drop-down list:

- **None:** No personal answers can be saved. Every time a user sees the prompt, he must answer it manually (if it is required) or ignore it.
- **Single:** Only one personal answer can be saved for this prompt. When the prompt is used again (on this report or a different one), the personal answer is displayed. A user can keep the personal answer, or add or delete selections. He can save his changes as a new personal answer, but only one personal answer can be saved for the prompt.
- **Multiple:** Multiple personal answers can be named and saved, allowing different answers for the same prompt. When the prompt is used again (on this report or a different one), the personal answers are available. The user can select one of them, or answer the prompt manually.

To specify the layout and display style of the prompt

1. On the **Style** tab, from the **Display style** drop-down list, specify a presentation style, such as Textbox, for the prompt. Depending upon the option you select, the prompt is displayed to the user when the report is executed.

The following image shows the Textbox display style:



The following image shows the Radio Button display style:

Choose a Brand and/or Category

Qualify or select a brand and/or category

Attribute:

- ☐ - none -
- ☐ Brand
- ☒ Category

☐ Qualify ☒ Select

Is:

In List ▼

- Books
- Movies

[Edit...](#)

The following image shows the Pull Down display style:

Choose a Brand and/or Category

Qualify or select a brand and/or category

Attribute:

Category ▼

☒ Qualify ☐ Select

Form:

DESC ▼

Is:

Equals ▼

Value:

Books

[Browse values...](#)

The following image shows the List display style:

Choose a Brand and/or Category

Qualify or select a brand and/or category

Attribute:

- none -
- Brand
- Category

☐ Qualify ☒ Select

Is:

In List ▼


- Sharp
- Sony
- Pioneer
- Panasonic
- RCA

[Edit...](#)

- 1 To ensure that the prompt's text fields and options are a fixed size, select the **Fixed textbox width** and/or the **Fixed textbox height** check boxes, and specify the size of the prompt's text fields and options in the fields.
 - Specifying the size of the textbox can be beneficial when users answer prompts on a smaller screen of a mobile device.
- 2 To determine how prompt options are arranged, from the **Orientation** drop-down list, select **Vertical** or **Horizontal**.
 - To determine the number of prompt answers displayed in a row or column (depending on alignment), select the **Items per column/row** check box and enter the number in the field.
- 3 You can determine whether to allow users to use a search box to locate prompt answers. Searching for objects allows analysts to quickly locate specific objects to use to answer the prompt. From the **Show search box** drop-down list, select one of the following options:
 - To display the search box, select **True**.
 - To not display a search box, select **False**.

 The Show search box option is not available if you are using the Textbox display style.

- 4 If you are using the Shopping Cart display style, you can select the **Use folder structure** check box to display the prompt choices in a folder structure. This option, available for search objects only, is useful when the same object with the same name is saved in multiple folders.
 - Select the **Do not show empty folders** check box if you do not want the search result to display empty folders.
 - To allow users to navigate above the root folder when searching, select the **Allow navigation above search root** check box.

 For an Attribute Qualification prompt that uses a search object and the Tree display style, the **Use folder structure** check box is selected and cannot be changed.

To specify how qualifications are displayed in the prompt

- 5 On the **Qualification** tab, determine the types of qualification expressions allowed in the prompt by selecting an option from the **Expression type allowed** drop-down list.
- 6 Determine the default condition (for example, Select or Qualify) that is displayed in the prompt by selecting an option from the **Default expression type** drop-down list.
- 7 Determine the default condition operator (for example, Greater than or Less than) that is displayed in the prompt by selecting an option from the **Default condition operator** drop-down list.

- 8 Determine how many elements are listed in each prompt answer list by selecting the **Maximum number of elements per list** check box and entering the number in the field.
- 9 To allow users to import a list of attribute elements from which they can choose, select the **Allow element import** check box.
- 10 To allow users to browse the elements in attribute qualification, select the **Allow element browsing in attribute qualification** check box.
- 11 Determine the default logical operator that is used between conditions by selecting an option from the **Default operator between conditions** drop-down list.
- 12 To allow users to modify expressions, select the **Allow modification of the logical operator** check box.
 - To ensure that users can only use a single condition operator (AND/OR) between all of the conditions in an expression, select the **Use a single logical operator between all conditions** option.
 - To ensure that users can choose a default operator to use between each condition, select the **Allow the user to set independent logical operators between conditions** option.

To save your prompt

- 13 Click **Save As**, navigate to the folder where you want to save the prompt, type a **Name** and **Description** for the prompt, and click **OK**. Your new prompt is saved.

You can now add your new prompt to a report, metric, or filter. For a table showing how to add each prompt type to a report, metric, or filter, see [Reports: Adding prompts to a report, metric, or filter, page 264](#).

You can also set a default prompt answer, which allows the user to complete report execution quickly, as they do not need to answer the prompt but can simply run the report using the default answer. For steps to specify a default prompt answer, see [Components of a prompt, page 208](#).

Attribute Element List prompts

The Attribute Element List prompt allows a user to choose from a list of attribute elements to be included in a filter or custom group. This is generally the simplest prompt for users to answer, because it offers the fewest number of answers to choose from and does not require the user to create a filtering “statement”.

You define the specific attribute elements to be displayed in the prompt, by using one of the following methods:

- Selecting all elements associated with an attribute
- Creating a filter that returns a limited list of elements from one attribute
- Selecting specific attribute elements one by one

For example, your report contains the attribute **Region** and the metric **Revenue**. You want users to be able to select specific geographical regions of the country for which to see revenue data, from among only eastern U.S. regions.

You create an attribute element list prompt, which prompts the user to choose from three attribute elements in the **Region** attribute. Using the MicroStrategy Tutorial project data, you might use all three regions as default answers for the prompt:

- Northeast
- Mid-Atlantic
- Southeast

When you apply this prompt to the report and execute the report using the default answers, the report appears as shown in the following image.

Region	Revenue
Mid-Atlantic	\$4,452,615
Northeast	\$8,554,415
Southeast	\$2,239,951

The Attribute Element List prompt is the most restrictive, allowing users to choose from the fewest number of attribute elements to define their filter criteria. The Hierarchy Qualification prompt allows users to select from the widest number of attribute elements when they are choosing prompt answers to define their filtering criteria. The Attribute Qualification prompt is more restrictive than the Hierarchy Qualification prompt, but less restrictive than the Attribute Element List prompt.

To create an Attribute Element List prompt

1. In MicroStrategy Web, on the Home page, click **New Prompt**. The Create Prompt page opens.
2. Click **Attribute Element List**. The New Prompt page opens.

To determine the attribute whose elements the user will be able to choose from

The prompt will display the related attribute elements for users to select their filter criteria from.

On the Definition tab, click **Select Attribute**. Select the attribute whose elements are displayed in the prompt and click **OK**. Users select their filter criteria from a list of these attribute elements.

To define the specific elements the user will be able to choose from

Choose one of the following options:

- **List all elements (no restriction):** This option displays all of the attribute's elements to the user when he is answering the prompt.
- **Use a pre-defined list of elements:** This option lets you select specific attribute elements to display to the user.
 - Click **Add**, select the elements, then click **OK**.
 - To delete an element from the list, select the element, then click **Remove**.
 - To remove all the elements from the list, click **Clear**.
- **Use a filter to reduce the number of elements:** This option is useful for attributes with a large number of elements, such as Customer or Employee. You can create a filter that returns a specific set of customers, for example, the top 100 customers this month.

Click **Select Filter**, select the filter or specify the name of the filter, then click **OK**.

To specify a title and instructions

For considerations when determining a title and description, see [Components of a prompt, page 208](#).

1. On the General tab, type a **Title**, which is used as the default object name when you save the prompt, although you can change it.
2. Type text in the **Instructions** field, which is displayed when the prompt is run during report execution.

To restrict the number of prompt answers

1. You can specify whether the user is required to answer the prompt before running the report. To require users to answer the prompt, select the **Prompt Answer is Required** check box.
2. Set the maximum and/or minimum number of prompt answers allowed, if desired. Select the **Minimum number of answers** and/or the **Maximum number of answers** check boxes, and enter the numbers in the fields.

To allow personal answers

Personal answers allow a user to save prompt answers for this prompt, and then reuse the answers on any report that this prompt is used on. For more information on personal answers, and how they can be used, see [Components of a prompt, page 208](#).

To determine whether personal answers can be saved for this prompt, select one of the following options from the **Personal answers allowed** drop-down list:

- **None:** No personal answers can be saved. Every time a user sees the prompt, he must answer it manually (if it is required) or ignore it.

- **Single:** Only one personal answer can be saved for this prompt. When the prompt is used again (on this report or a different one), the personal answer is displayed. A user can keep the personal answer, or add or delete selections. He can save his changes as a new personal answer, but only one personal answer can be saved for the prompt.
- **Multiple:** Multiple personal answers can be named and saved, allowing different answers for the same prompt. When the prompt is used again (on this report or a different one), the personal answers are available. The user can select one of them, or answer the prompt manually.

To specify the layout and display style of the prompt

1. On the **Style** tab, you can determine the presentation style used to display the prompt to the user. The default is Shopping Cart. From the Display style drop-down list, select one of the following:
 - **Radio Button:** This prompt lets users select an attribute element option by selecting a radio button.
 - **Check Box:** This prompt lets users specify attribute elements by selecting check boxes.
 - **Pull Down:** This prompt lets users select an answer from a drop-down list.
 - **List:** This prompt lets users select prompt answers from a list.
 - **Shopping Cart:** This prompt lets users add attribute elements to a list of selected attribute elements.
 - **Calendar:** This prompt lets users answer the prompt by selecting a date on a calendar. This option is available if a date/time attribute such as Month of Year is selected.
 - **Barcode Reader:** This prompt lets users answer the prompt by scanning or typing a bar code.
 - **Geo Location:** This prompt lets users filter the attribute element list based on their current geographical location.



Styles for prompts for mobile devices, including the Calendar, Barcode Reader, and Geo Location display styles, display when the prompt is viewed on a mobile device with MicroStrategy Mobile. Certain styles are available for specific types of Attribute Element List prompts. For more information on displaying prompts for mobile devices, see the *Allowing users to filter data: prompts* section of the [MicroStrategy Mobile Design and Administration Guide](#).

2. To ensure that the prompt's text fields and options are a fixed size, select the **Fixed textbox width** and/or **Fixed textbox height** check boxes, and specify the size of the prompt's text fields and options in the fields.

Specifying the size of the textbox can be beneficial when users answer prompts on a smaller screen of a mobile device.

3. To determine how prompt options are arranged, from the **Orientation** drop-down

list, select **Vertical** or **Horizontal**.

To determine the number of prompt answers displayed in a row or column (depending on alignment), select the **Items per column/row** check box and type a number in the field.

4. You can determine whether to allow users to use a search box to locate prompt answers. Searching for objects allows analysts to quickly locate specific objects to use to answer the prompt. From the **Show search box** drop-down list, select one of the following options:

To display the search box, select **True**.

To not display a search box, select **False**.

5. To require using the search box to locate prompt answers, select the **Make search required** check box.
6. If you are using the Shopping Cart display style, you can select the **Use folder structure** check box to display the prompt choices in a folder structure. This option, available for search objects, is useful when the same object with the same name is saved in multiple folders.

Select the **Do not show empty folders** check box if you do not want the search result to display empty folders.

To allow users to navigate above the root folder when searching, select the **Allow navigation above search root** check box.

7. For the Barcode Reader prompt style, to specify the attribute form used to look up item barcodes, select an attribute form from the **Barcode mapping attribute form** drop-down list.
8. For the Geo Location prompt style, from the **Select location mapping level** drop-down list, select the level at which you wish to filter elements in the attribute. For example, select City to filter the attribute elements by the current city in which the mobile device is located.
9. To select the attribute whose elements you want to filter, click **Select Attribute**, browse to and select the attribute, and then click **OK**.

To save your prompt

Click **Save As**, navigate to the folder where you want to save the prompt, type a **Name** and **Description** for the prompt, and click **OK**. Your new prompt is saved.

You can now add your new prompt to a report, metric, or filter. For a table showing how to add each prompt type to a report, metric, or filter, see [Reports: Adding prompts to a report, metric, or filter, page 264](#).

You can also set a default prompt answer, which allows the user to complete report execution quickly, as they do not need to answer the prompt but can simply run the report using the default answer. For steps to specify a default prompt answer, see [Components of a prompt, page 208](#).

Metric Qualification prompts

The Metric Qualification prompt allows users to create their own instant filter for data returned for one of the metrics on the report. You create a Metric Qualification prompt by selecting one or more metrics. Users will be able to define their filters based on these metrics.

For example, your report contains the attribute Region and the metric Revenue. You want users to be able to define the amount of revenue they want to see data for, showing any geographical region which satisfies the user's selected metric condition.

You create a Metric Qualification prompt, which prompts the user to enter a value for which all revenue data will be displayed that is greater than the value entered by the user. Using the MicroStrategy Tutorial project data, you might define the default answer for the prompt to be Revenue > \$1,000,000.

When you apply this prompt to the report and execute the report using the default answer, the report appears as shown in the following image.

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

The metric(s) you choose for the prompt do not have to appear on the report itself. For example, a store manager needs a report to show sales data for products whose current inventory falls below a certain count. However, the report does not necessarily need to display inventory counts for those products.

When answering the prompt, users can define their filters based on the value, rank, or percentage of the metric.

To create a Metric Qualification prompt

1. In MicroStrategy Web, on the Home page, click **New Prompt**. The Create Prompt page opens.
2. Click **Metric Qualification Prompt**. The New Prompt page opens.

To select the metric(s) for which users can define their filters

The prompt will display the metric(s) on which users define their filter criteria.

On the Definition tab, choose one of the following options:

- **Choose a metric:** Users will be able to filter their report data based on the metric you select.

Click **Select Metric** and select a specific metric or specify the name of the metric to use in the prompt.

- **Use a predefined list of metrics:** Select this option to allow the user to choose metrics from a list that you select.
 - Click **Add**, select the metrics, then click **OK**.
 - To delete a metric from the list, select the metric, then click **Remove**.
 - To remove all the metrics from the list, click **Clear**.
- **Use the results of a search object:** A search object will search for and display specific project objects when the user executes the report. This lets you prompt the user with the most up-to-date objects in the project. For example, you can let the user select a metric from a search for all metrics with “Revenue” in the name.

Click **Select Search**, select the object or specify the name of the object, then click **OK**.

To specify a title and instructions

For considerations when determining a title and description, see [Components of a prompt, page 208](#).

1. On the General tab, type a **Title**, which is used as the default object name when you save the prompt, although you can change it.
2. Type text in the **Instructions** field, which is displayed when the prompt is run during report execution.

To restrict the number of prompt answers.

1. You can specify whether the user is required to answer the prompt before running the report. To require users to answer the prompt, select the **Prompt Answer is Required** check box.
2. Set the maximum and/or minimum number of prompt answers allowed, if desired. Select the **Minimum number of qualifications** and/or the **Maximum number of qualifications** check boxes, and enter the numbers in the fields.

To allow personal answers

Personal answers allow a user to save prompt answers for this prompt, and then reuse the answers on any report that this prompt is used on. For more information on personal answers, and how they can be used, see [Components of a prompt, page 208](#).

To determine whether personal answers can be saved for this prompt, select one of the following options from the **Personal answers allowed** drop-down list:

- **None:** No personal answers can be saved. Every time a user sees the prompt, he must answer it manually (if it is required) or ignore it.
- **Single:** Only one personal answer can be saved for this prompt. When the prompt is used again (on this report or a different one), the personal answer is displayed. A user can keep the personal answer, or add or delete selections. He can save his changes as a new personal answer, but only one personal answer can be saved for the prompt.
- **Multiple:** Multiple personal answers can be named and saved, allowing different answers for the same prompt. When the prompt is used again (on this report or a different one), the personal answers are available. The user can select one of them, or answer the prompt manually.

To specify the layout and display style of the prompt

1. On the **Style** tab, from the **Display style** drop-down list, specify a presentation style, such as Textbox, for the prompt. Depending upon the option you select, the prompt is displayed to the user when the report is executed.
2. To ensure that the prompt's text fields and options are a fixed size, select the **Fixed textbox width** and/or the **Fixed textbox height** check boxes, and specify the size of the prompt's text fields and options in the fields.

Specifying the size of the textbox can be beneficial when users answer prompts on a smaller screen of a mobile device.

3. To determine how prompt options are arranged, from the **Orientation** drop-down list, select **Vertical** or **Horizontal**.

To determine the number of prompt answers displayed in a row or column (depending on alignment), select the **Items per column/row** check box and enter the number in the field.

4. You can determine whether to allow users to use a search box to locate prompt answers. Searching for objects allows analysts to quickly locate specific objects to use to answer the prompt. From the **Show search box** drop-down list, select one of the following options:
 - To display the search box, select **True**.
 - To not display a search box, select **False**.



The Show search box option is not available if you are using the Textbox display style.

5. To show the object path (folder hierarchy), select the **Use folder structure** check box. This option, available for search objects, is useful when the same object with the same name is saved in multiple folders. If you are using the Shopping Cart display style, you can select the check box to display the prompt choices in a folder structure.
 - Select the **Do not show empty folders** check box if you do not want the search result to display empty folders.
 - To allow users to navigate above the root folder when searching, select the **Allow navigation above search root** check box.



For a Metric Qualification prompt that uses a search object and the Tree display style, the **Use folder structure** check box is selected and cannot be changed.

To specify how qualifications are displayed in the prompt

1. On the Qualification tab, determine the default condition operator (for example, Greater than or Less than) that is displayed in the prompt by selecting an option from the **Default conditionoperator** drop-down list.
2. Determine the default logical operator that is used between conditions by selecting an option from the **Default operator between conditions** drop-down list.
3. To allow users to modify expressions, select the **Allow modification of the logical operator** check box.
 - To ensure that users can only use a single condition operator (AND/OR) between all of the conditions in an expression, select the **Use a single logical operator between all conditions** option.
 - To ensure that users can choose a default operator to use between each condition, select the **Allow the user to set independent logical operators between conditions** option.
4. To allow users to specify the output level of metrics, select the **Display output level selector** check box.

To save your prompt

Click **SaveAs**, navigate to the folder where you want to save the prompt, type a **Name** and **Description** for the prompt, and click **OK**. Your new prompt is saved.

You can now add your new prompt to a report, metric, or filter. For a table showing how to add each prompt type to a report, metric, or filter, see [Reports: Adding prompts to a report, metric, or filter, page 264](#).

You can also set a default prompt answer, which allows the user to complete report execution quickly, as they do not need to answer the prompt but can simply run the report using the default answer. For steps to specify a default prompt answer, see [Components of a prompt, page 208](#).

Filtering data based on metrics, attributes, or other objects: Object prompts

Object prompts provide users the ability to add additional objects to a report. You can let users select from almost any object available in MicroStrategy. The objects the user selects in the prompt are placed on the report. This essentially allows users to create their own reports, although you use the Object prompt to control what objects they can choose to include on their reports.

For example, you can create a prompt that allows users to choose from a list of existing stand-alone filters to apply to the report. Or, you can create a prompt that displays the Day,

Month, Quarter, and Year attributes to users, so the user can specify the granularity of the report. Object prompts enable you to provide versatile reports to users.

The Customer Distribution Trend report contains two Object prompts. The report's display is shown below:

Customer Income Range	Customer Education	Quarter Metrics	2006 Q1		2006 Q2	
			Customers with Transactions	Revenue	Customers with Transactions	Revenue
0 - 20K	High School		57	\$44,865.11	64	\$56,652.68
	Undergraduate		69	\$43,502.17	75	\$71,643.61
	Graduate		60	\$50,944.80	66	\$56,180.48
	Other		48	\$34,188.62	55	\$47,686.27
20K - 40K	High School		58	\$54,658.27	62	\$61,377.77
	Undergraduate		52	\$59,141.90	61	\$40,127.25
	Graduate		59	\$37,327.06	61	\$50,735.79
	Other		54	\$33,724.51	58	\$56,379.32
40K - 60K	High School		56	\$41,879.60	62	\$48,150.05
	Undergraduate		70	\$60,023.05	76	\$71,295.20
	Graduate		55	\$44,800.45	58	\$40,958.22
	Other		50	\$50,971.63	56	\$64,073.74
60K - 80K	High School		35	\$29,360.22	38	\$27,952.95
	Undergraduate		43	\$35,590.22	51	\$37,575.49
	Graduate		41	\$30,958.66	44	\$34,913.36
	Other		41	\$21,764.79	46	\$35,734.18
> 80K	High School		49	\$33,461.36	52	\$38,123.45
	Undergraduate		45	\$32,377.51	51	\$29,351.48
	Graduate		57	\$32,410.45	61	\$54,919.81
	Other		41	\$37,244.27	43	\$31,010.48

The first prompt, called Demographics List, contains a set of attributes that users select one or more answers from. Answer choices include the attributes Customer Income Range, Customer Age Range, and Customer Gender. The second prompt, called Psychographic List, contains another set of attributes users can choose from. Its answer choices include the attributes Customer Education, Customer Household Count, Customer Housing Type, Customer Marital Status, and so on.

By separating the user's choices into two Object prompts, the designer is able to group the attributes according to user analysis needs. In this case, a user can focus on customer demographics and customer psychographics separately when the user is considering what data to see in the resulting report. Additionally, data for various combinations of demographics and psychographics can be compared by running the report again and answering the prompts differently.

Object prompts can be used in many places, including the following:

- Object prompt containing attributes: Any place that can accept a list of attributes.
- Object prompt containing metrics: Embedded in a Set qualification filter, as well as any place that accepts metrics.



One prompt can contain different types of objects, such as both metrics and attributes, or attributes and custom groups. However, if the prompt mixes metrics with another type of object, either the metrics or the other objects are removed when the prompt is executed in a report. For a more detailed explanation, see the *Advanced Prompts* chapter in the [Advanced Reporting Guide](#).

For a table of where to use all prompts, see [Reports: Adding prompts to a report, metric, or filter, page 264](#).

Creating Object prompts

When you create an Object prompt, you can decide whether users can select from a specified list of MicroStrategy objects, or you can define a specific search that presents an up-to-date set of objects for users to select from. Including a search object in the Object prompt, rather than specifying the exact object names, allows users to select from new objects that might not have been part of the project when you first created the prompt.

To create an Object prompt

1. In MicroStrategy Web, on the Home page, click **New Prompt**. The Create Prompt page opens.
2. Click **Object Prompt**. The New Prompt page opens.

To create the list of objects from which the user can select

You can only use objects of one type in an Object prompt. For example, you can include metrics or attributes in a single Object prompt, but not both. To prompt for multiple object types in the same report, you must create an Object prompt for each object type.

On the Definition tab, choose one of the following options:

- **Use a pre-defined list of objects:** This option lets you define a specified list of objects.
 - Click **Add**, select the objects, then click **OK**.
 - To delete an object from the list, select the object and click **Remove**.
 - To remove all the items from the list, click **Clear**.
 - To change the order in which the objects are displayed in the prompt, select an object and click the **Up** and **Down** arrows to move the selected object.
- **Use the results of a search object:** A search object will search for and display specific project objects when the user executes the report. This lets you prompt the user with the most up-to-date objects in the project.

Click **Select Search**, select the object, then click **OK**.

To specify a title and instructions

For considerations when determining a title and description, see [Components of a prompt, page 208](#).

1. On the **General** tab, type a **Title**, which is used as the default object name when you save the prompt, although you can change it.

2. Type text in the **Instructions** field, which is displayed when the prompt is run during report execution.

To restrict the number of prompt answers

1. You can specify whether the user is required to answer the prompt before running the report. To require users to answer the prompt, select the **Prompt Answer is Required** check box.
2. Set the maximum and/or minimum number of prompt answers allowed, if desired. Select the **Minimum number of answers** and/or the **Maximum number of answers** check boxes, and enter the numbers in the fields.

To allow personal answers

Personal answers allow a user to save prompt answers for this prompt, and then reuse the answers on any report that this prompt is used on. For more information on personal answers, and how they can be used, see [Components of a prompt, page 208](#).

To determine whether personal answers can be saved for this prompt, select one of the following options from the **Personal answers allowed** drop-down list:

- **None:** No personal answers can be saved. Every time a user sees the prompt, he must answer it manually (if it is required) or ignore it.
- **Single:** Only one personal answer can be saved for this prompt. When the prompt is used again (on this report or a different one), the personal answer is displayed. A user can keep the personal answer, or add or delete selections. He can save his changes as a new personal answer, but only one personal answer can be saved for the prompt.
- **Multiple:** Multiple personal answers can be named and saved, allowing different answers for the same prompt. When the prompt is used again (on this report or a different one), the personal answers are available. The user can select one of them, or answer the prompt manually.

To specify the layout and display style of the prompt

1. On the Style tab, from the **Display style** drop-down list, specify a presentation style, such as Check box, for the prompt. This is how the prompt is displayed to the user.
2. To ensure that the prompt's text fields and options are a fixed size, select the **Fixed textbox width** and/or the **Fixed textbox height** check boxes, and specify the size of the prompt's text fields and options in the fields.

Specifying the size of the textbox can be beneficial when users answer prompts on a smaller screen of a mobile device.

3. To determine how prompt options are arranged, from the **Orientation** drop-down list, select **Vertical** or **Horizontal**.

To determine the number of prompt answers displayed in a row or column (depending on alignment), select the **Items per column/row** check box and enter the number in the field.

1. You can determine whether to allow users to use a search box to locate prompt answers. Searching for objects allows analysts to quickly locate specific objects to use to answer the prompt. From the **Show search box** drop-down list, select one of the following options:
 - To display the search box, select **True**.
 - To not display a search box, select **False**.
1. If you are using the Shopping Cart display style, you can select the **Use folder structure** check box to display the prompt choices in a folder structure. This option, available for search objects, is useful when the same object with the same name is saved in multiple folders. Use the up and down ordering arrows to reorder prompt objects.

To allow users to navigate above the root folder when searching, select the **Allow navigation above search root** check box.

2. For an object prompt that uses a search object and the Tree display style, the **Use folder structure** check box is selected and cannot be changed. You can select whether or not empty folders are shown in the tree when the prompt is executed. Select or clear the **Do not show empty folders** check box. Note that selecting it can impact performance.



The search object must search within subfolders. For background information on search objects and steps to create them, see the *MicroStrategy Developer Help* (formerly the *MicroStrategy Desktop Help*).

To save your prompt

Click **Save As**, navigate to the folder where you want to save the prompt, type a **Name** and **Description** for the prompt, and click **OK**. Your new prompt is saved.

You can now add your new prompt to a report, metric, or filter. For a table showing how to add each prompt type to a report, metric, or filter, see [Reports: Adding prompts to a report, metric, or filter, page 264](#).

You can also set a default prompt answer, which allows the user to complete report execution quickly, as they do not need to answer the prompt but can simply run the report using the default answer. For steps to specify a default prompt answer, see [Components of a prompt, page 208](#).

Filtering data based on a single value or string: Value prompts

Value prompts are useful when the result desired on the report is a single value, such as a specific date, a number, or a specific word or phrase. The Value prompt is designed to return report results based on the data type assigned to the data in your data source.

For example, you want a report that lists all employees whose age is less than 40 years. You create a report with the Employee attribute and the Employee Age attribute. You create a Numeric Value prompt while you are creating the report. The Numeric Value prompt

contains the Employee Age attribute, the operator Less than, and a Maximum Value set at 50.

Using the MicroStrategy Tutorial sample data, if you execute the report and answer the prompt by specifying 40 as the Employee Age, the final report looks like the following:

Employee		Employee Age
Bates	Michael	<u>31</u>
Becker	Kyle	<u>28</u>
Bernstein	Lawrence	<u>39</u>
Bogus	Dirk	<u>36</u>
Folks	Adrienne	<u>33</u>
Gale	Loren	<u>37</u>
Hunt	Matthew	<u>33</u>
Kelly	Laura	<u>34</u>
Lundergard	Kari	<u>32</u>
Lynch	Sam	<u>39</u>
Miner	Henry	<u>33</u>
Pierce	Charles	<u>33</u>
Sonder	Melanie	<u>39</u>
Yager	Beth	<u>37</u>
Zemlicka	George	<u>35</u>
Walker	Robert	<u>28</u>

Value prompts are typically used on a filter, where they become part of the filter's definition, but they can also be used on a metric as part of the metric's formula. The filter or metric is then placed on a report.

Because they are often used in filters, Value prompts can be created directly in the Filter Editor at the same time you create the filter in which you want to place the Value prompt. When created this way, a Value prompt is part of the filter's definition and is not a stand-alone prompt, so it cannot be added to another filter. To create a stand-alone Value prompt, create it in the New Prompt page. This gives you and other designers the flexibility to create a Value prompt once and add it to various filters.

For a table of where to use all prompts, see [Reports: Adding prompts to a report, metric, or filter, page 264](#).

The different types of Value prompts are:

- **Date prompt:** This Value prompt type asks users to type or select a date, and returns data that has the date data type assigned to it and that matches the user's entered date. For example, the Date prompt can be useful when added to a filter that screens data based on Year=2006. The prompt lets users select a specific date within the year of the filter's condition. Date prompts are used in filters which qualify on a date.
- **Numeric prompt:** This Value prompt type asks users to type a numeric value. Numeric Value prompts accept integers or decimals up to 15 digits of precision. Numeric prompts can be used in any filter that needs a number input from the user, such as a metric

qualification. For information on metric qualification filters, see [Filtering data based on attribute relationships or metrics: Set qualifications, page 185](#).



If a user enters more than 15 digits for a numeric prompt, the data is converted to scientific notation. If precision is needed beyond 15 digits, you should use a Big Decimal value prompt instead.

- **Text prompt:** This Value prompt type asks users to type a string of text. Text prompts are commonly used in attribute form qualification filters. For information on attribute form qualification filters, see [Filtering data based on business attributes: Attribute qualifications, page 174](#).
- **Big Decimal prompt:** This Value prompt type asks users for a “big decimal” value. Big Decimal Value prompts accept integers and decimals up to 38 digits of precision.



Big Decimal prompts should be used in expressions that require high precision, such as qualifying on a Big Decimal attribute ID.

- **Long prompt:** This Value prompt type asks users for a long integer value. Long prompts accept integer numbers up to 10 digits.

Long prompts can be created in MicroStrategy Developer. The ability to create a Long Value prompt is not enabled in the Prompt Generation Wizard by default. To enable Long Value prompts:

- a. Double-click your project to open it.
- b. From the **Tools** menu in Developer, select **My Preferences**. The My Preferences dialog box opens.
- c. Expand the **General** category on the left, and select **Prompts**.
- d. Select **Add long prompts to the list of available value prompts**.
- e. Click **OK** to save your changes.

Creating Value prompts

To create a Value prompt

1. In MicroStrategy Web, on the Home page, click **New Prompt**. The Create Prompt page opens.
2. Click **Value Prompt**. The New Prompt page opens.

To define the prompt type to be presented to the user

Specify the type of Value prompt:

- **Date and Time prompt:** This prompt lets users filter for data related to either a specific date or a range of dates.
- **Numeric prompt:** This prompt lets users filter numeric data, usually based on a metric.
- **Text prompt:** This prompt lets users filter text data, usually based on attribute forms.
- **Big Decimal prompt:** This prompt lets users filter data based on a big decimal value for a metric.

To specify a title and instructions

For considerations when determining a title and description, see [Components of a prompt, page 208](#).

1. On the General tab, type a **Title**, which is used as the default object name when you save the prompt, although you can change it.
2. Type text in the **Instructions** field, which is displayed when the prompt is run during report execution.

To define a range within which the user's answer must fall

1. You can specify whether the user is required to answer the prompt before running the report. To require users to answer the prompt, select the **Prompt Answer is Required** check box. For considerations about required and optional prompt answers, see [Components of a prompt, page 208](#).
2. To restrict the user to entering values within certain ranges:
 - Select the **Minimum value** check box and enter the lowest value allowed for the prompt answer.
 - For a Date prompt, this is the earliest date.
 - For a Text prompt, this is the fewest number of characters allowed in the text string.
 - Select the **Maximum value** check box and enter the highest value allowed for the prompt answer.
 - For a Date prompt, this is the latest date.
 - For a Text prompt, this is the maximum number of characters allowed in the text string.

To allow personal answers

Personal answers allow a user to save prompt answers for this prompt, and then reuse the answers on any report that this prompt is used on. For more information on personal answers, and how they can be used, see [Components of a prompt, page 208](#).

To determine whether personal answers can be saved for this prompt, select one of the following options from the **Personal answers allowed** drop-down list:

- **None:** No personal answers can be saved. Every time a user sees the prompt, he must answer it manually (if it is required).
- **Single:** Only one personal answer can be saved for this prompt. When the prompt is used again (on this report or a different one), the personal answer is displayed. A user can keep the personal answer, or add or delete selections. He can save his changes as a new personal answer, but only one personal answer can be saved for the prompt.
- **Multiple:** Multiple personal answers can be named and saved, allowing different answers for the same prompt. When the prompt is used again (on this report or a different one), the personal answers are available. The user can select one of them, or answer the prompt manually.

To specify the layout and display style of the prompt

1. On the Style tab, from the **Display style** drop-down list, specify a presentation style, such as Textbox, for the prompt. This is how the prompt is displayed to the user.



Styles for prompts displayed for mobile devices, such as Slider, Stepper, and Switch, display when the prompt is viewed on a mobile device with MicroStrategy Mobile. Certain styles are available for specific types of Value prompts. For a general overview of displaying prompts on mobile devices, see the *Allowing users to filter data: prompts* section of the [MicroStrategy Mobile Design and Administration Guide](#).

The options are:

- **Textbox:** This prompt lets users type a value directly into a field.
 - **Slider:** This prompt lets users specify a numeric value on a horizontal slider.
 - **Stepper:** This prompt displays a numeric value. Users can use the increment and decrement buttons to increase or decrease the value displayed.
 - **Switch:** This prompt lets users choose between two choices, On and Off.
 - **Wheel:** This prompt displays a wheel or row of wheels the user can move up or down to specify a value.
 - **Geo Location:** This prompt lets users filter results based on their current geographical location.
 - **Barcode Reader:** This prompt lets users answer the prompt by scanning or typing an item's bar code.
2. Depending on the prompt's type and display style, you can specify other available formatting options:
 - To ensure that the prompt's text fields and options are of a fixed size, select the **Fixed textbox width** check box and type a value in the field.
 - For the **Date and Time prompt**, to allow users to select time before running a report, select the **Allow user to select time** check box.



On mobile devices, the Date and Time prompts are displayed as a calendar by default. If the Allow user to select time check box is selected, the Date and Time prompts are



displayed as wheels on an iPhone or iPad, and as a date/time stepper on an Android device.

- For the **Numeric** prompt, to specify a value for the prompt when it is set to the on position, type a value in the **On value** field. To specify a value for the prompt when it is set to the off position, type a value in the **Off value** field.
- To specify the interval between numeric values that are displayed in the prompt, type a value in the **Interval** field. For example, in a Numeric prompt with the display style set to Slider, a minimum value of 1 and a maximum value of 50, and an interval of 5, users can select values such as 5, 10, 15, and so on.
- For prompts with the display style set to Geo Location, to specify whether the prompt is set using latitude or longitude, select Latitude or Longitude from the **Location coordinate** drop-down list.
- To format how numeric values are displayed in the prompt, click **Number Format**, select a number formatting style and click **OK** to apply changes.

To save your prompt

Click **Save As**, navigate to the folder where you want to save the prompt, type a **Name** and **Description** for the prompt, and click **OK**. Your new prompt is saved.

All Value prompts must be added to either a metric or a filter (depending on the type of Value prompt and what you want it to do), and then the metric or filter is added to a report.

For a table showing how to add each prompt type to a report, see [Reports: Adding prompts to a report, metric, or filter, page 264](#).

You can also set a default prompt answer, which allows the user to complete report execution quickly, as they do not need to answer the prompt but can simply run the report using the default answer. For steps to specify a default prompt answer, see [Components of a prompt, page 208](#).

Editing a prompt

You can edit any prompt by clicking it in MicroStrategy Web. The prompt opens in Edit mode. For steps to edit a prompt, see [Types of prompts, page 214](#) to determine the type of prompt you are editing, and then use the appropriate section to make changes to any aspect of the prompt.

Additional prompt functionality

The [Advanced Reporting Guide](#) provides detailed information about the following advanced features:

- Prompts in scheduled reports: Learn about how prompted reports work when they are on a set schedule to be executed, and what the special requirements are for scheduled reports with prompts.





- Level prompts: Learn about creating a Level prompt that lets users determine what level a metric is aggregated at, as well as any target or grouping associated with the metric's level.
- Dynamic dates: Learn about defining a date that is a fixed offset of the current date.
- System prompts: These are special built-in prompts, such as the User Login system prompt. Additional information and examples can be found in the [System Administration Guide](#).

Designing a report's structure: Templates


A template is the structure that underlies any report. A template specifies the set of information that the report should retrieve from your data source, and it also determines the structure in which the information is displayed in the report's results. A template's structure is the location of objects on the template, such as showing that metrics have been placed in the report's columns, and attributes have been placed in the rows; the Revenue metric has been placed to the left of the Revenue Forecast metric so that a user reading left to right can see current revenue before seeing forecasted revenue; and so on.

When you are creating a report, you place various MicroStrategy objects on the report's template. Objects can include attributes, metrics, filters, and prompts, as well as other objects such as custom groups and consolidations which are introduced in the [Advanced Reporting Guide](#). Filters and prompts further restrict and refine the data displayed on the executed report. When a report is executed, the data related to all the objects on the template that have satisfied the filtering conditions of the report filter are displayed on the report using the format specified by the template.


MicroStrategy comes with a set of pre-created report templates which you can use to build your own reports. These templates let you create a new report quickly because the template already contains common objects and basic filters. When you create any new report, you can start with an existing template, which will shorten the time it takes to produce the finished report. The Create Report page opens whenever you create a new report in MicroStrategy Web, and this is where you can select an existing template on which to base the new report. The templates on the Create Report page are shown in the image below:






Create Report


☒ View report in Design Mode



Blank Report
 You will be shown an empty report on which you may place various data objects.


Choose data source:



MDX Cube Report
 You will be shown an empty report on which you may place various data objects from the selected MDX Cube.



Intelligent Cube Report
 You will create a new report using a Cube report as the data source.



Call Center Analysis
 This template allows users to build new Call Center reports. Only calculations relevant to this topic are available through this template.



Customer Analysis
 This template allows users to build new Customer reports. Only calculations relevant to this topic are available through this template.



Employee Analysis
 This template allows users to build new Employee reports. Only calculations relevant to this topic are available through this template.



Inventory Analysis
 This template allows users to build new Inventory reports. Only calculations relevant to this topic are available through this template.



Performance Analysis
 This is a fully prompted report that can be used as a template for building other reports.


Product Analysis
 This template allows users to build new Product reports. Only calculations relevant to this topic are available through this template.

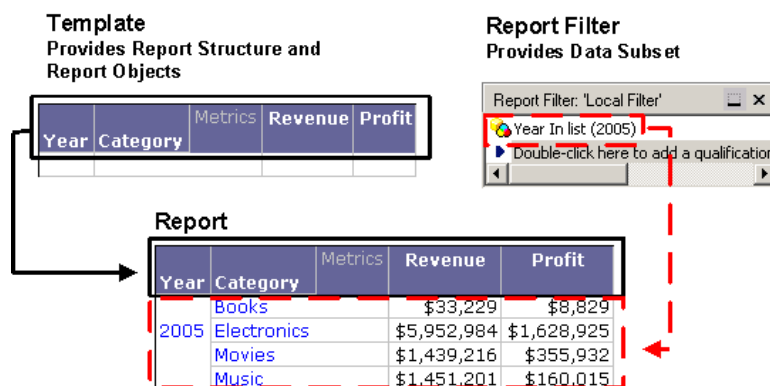

Report Builder
 This is a fully prompted report that can be used as a template for building other reports.


Report Wizard
 The report wizard allows you to build new reports by selecting a combination of existing templates and filters.


Sales and Profitability Analysis
 This is a fully prompted report that can be used as a template for building other Sales and Profitability Analysis reports.


Time Analysis
 This template allows users to build new sales reports by Time period. Only calculations relevant to this topic are available through this template.

The diagram below shows the template and filter for a report, as well as the executed report that results from what is defined on the template.



Whenever you initiate the creation of a new report, the system automatically creates a template and a basic, empty report filter. Although you may not specifically define and use a separate template or report filter object, a template and empty filter are a logical part of every report's definition.

Creating a grid report

A report is a MicroStrategy object that represents a request for a specific set of formatted data from your data source. In its most basic form it consists of two parts:

- A report template (usually simply called a template), which is the underlying structure of the report.
- The report-related objects placed on the template, such as attributes, metrics, filters, and prompts.

To create a report that accurately answers a specific business query, be sure you understand the fundamental MicroStrategy objects that make up a report, as described in *MicroStrategy objects*, page 138. This section assumes you have a basic understanding of each object presented in this chapter. For information on the specific objects that make up a report, refer to the following:

- Attributes: See *Providing business context to a report: Attributes*, page 143.
- Metrics: See *Calculating data on a report: Metrics*, page 144.
- Filters: See *Filtering data on a report: Filters*, page 169.
- Prompts: See *Asking for user input: Prompts*, page 206.
- Templates: See *Designing a report's structure: Templates*, page 249.
- Consolidations and custom groups: See the *Consolidations and Custom Groups* chapter in the *Advanced Reporting Guide*.

A simple report generally has at least one attribute, one metric, and one filter. It is not necessary to have all these objects in the report, but the data returned is more meaningful if all these objects are present in the report.

For example, if you create a report with just one attribute, such as Customer, and run the report, it returns a list of all the attribute elements for that attribute. In this case, you see a list

of names for every customer who has done business with your company and is in your database. Likewise, if you add just one metric to an otherwise blank report, you see all revenue data for all time, for all regions.

If you add a metric and an attribute to the same report, such as the Customer attribute and the Revenue metric, the report data begins to become useful because you can view what revenue each customer brought to your stores. However, for most organizations, this is still a prohibitively large report.

If you add a report filter to the report, you can limit the data to a specific area of interest. For example, you can define a specific geographic region and a time period by adding a few additional attributes to the report, such as Region and Year. Then you can add a filter to see only your most profitable Northeast region customers for the past year. The resulting report can display those customers in your Northeast region who brought in the most revenue last year.



It is not required that the objects in a filter are also part of the report itself. In this example, adding the Region and Year attributes to the report lets the report's users see the context of the report's results.

This section describes how to design a report with basic reporting components, such as attributes, metrics, and filters, in MicroStrategy Web using the Report Editor. It provides procedures to create a new report and add attributes, metrics, filters, and prompts to the report. It also provides a procedure to modify an existing report.

If you use the MicroStrategy Tutorial project to perform the examples in the procedures that follow, you can become familiar with the Report Editor environment and the features it offers. The Tutorial project offers an opportunity to use MicroStrategy even if your organization does not yet have its own data available in a MicroStrategy project.

Prerequisites

To create a report that displays your organization's data, you must have a MicroStrategy project already created, and you must have the appropriate MicroStrategy privileges to perform the necessary tasks. If you plan to use the MicroStrategy Tutorial project and its sample data with the following procedures, you only need the privileges necessary to perform the procedures; it is not necessary to have your own project set up in MicroStrategy.

Each of these requirements is discussed below.

A working project with data objects

Before you create your own reports, you must have a working MicroStrategy project containing objects that reflect your business data. (If you do not yet have your own working project, you can use the Tutorial project to practice procedures in this book. The Tutorial project is discussed below.) A project must contain objects that reflect your business data, so that those objects can be placed on a report and, when the report is executed, the appropriate business data can be retrieved from your data source.

Business objects that must already be created within a project include the following:

- **Facts**, for example Revenue or Units Sold, are business measurements, which take the form of data stored in your data source, or variables. Facts are typically numeric and suitable for aggregation. They are used to create metrics as well as other objects in MicroStrategy.
- **Attributes** are business concepts that answer questions about facts, such as when, where, and so on. Attributes provide a context for reporting those facts.



Your project may already contain other objects in addition to attributes and facts, such as metrics, filters, and prompts. Facts and attributes are the minimum objects that must already be created. They are usually created by your project designer when the project itself is created.

For example, on a report that contains the Year attribute and a Units Sold metric (based on a Units Sold fact), you can view how many units were sold during a given year. Without any attribute on this report, the report can provide information only about how many units were sold overall; it cannot answer questions about who purchased the units, when, where, and so on.

Detailed information about creating projects, as well as about facts, attributes, and how to create these objects can be found in the [Project Design Guide](#).

If you do not have a working project yet, you can use the Tutorial project with the procedures in this chapter to learn how to create the various report objects in MicroStrategy. For information on the Tutorial project and how to access it, see [About sample data and the MicroStrategy Tutorial project, page 3](#).

Report design and creation privileges

As a MicroStrategy user, you must have the appropriate privileges assigned to you, to be able to create reports and report objects, as follows:

- For MicroStrategy Web, the group of privileges assigned to most report designers is called Web Professional.
- For MicroStrategy Developer, the group of privileges assigned to most report designers is called Developer.

See your administrator for any questions about privileges assigned in MicroStrategy.

Creating a report with the Report Editor

You can use the Report Editor available in MicroStrategy Web to create a new report or modify an existing report. The Report Editor displays the report as it will be seen by the user and includes toolbars, menus, and panels that allow you to change how the report is displayed.

To modify a report's template, filter, or any other aspect of the report's definition, you can use Design Mode within the Report Editor. A new report automatically opens in Design Mode. It is also accessible within an existing report through the **Home** menu of the Report Editor interface.

Design Mode allows you to create or edit the report's template and definition. A report's definition is the definitions of all the objects that are included on the report when the report is designed, as well as any formatting applied to the report.

Creating a quick report

If you are already familiar with MicroStrategy objects that are used to create a report, and you need to create a report quickly, you can use MicroStrategy's Report Builder to create a report. However, the Report Builder tool limits you to only adding certain objects to the report while you are using the tool. Once you finish creating a report in Report Builder, you can continue to modify the report in the Report Editor and add additional objects.

To use Report Builder to create a quick report, see [Creating a report for analysis, page 129](#).

Opening the Report Editor with a blank report template

Templates are introduced in [Designing a report's structure: Templates, page 249](#).

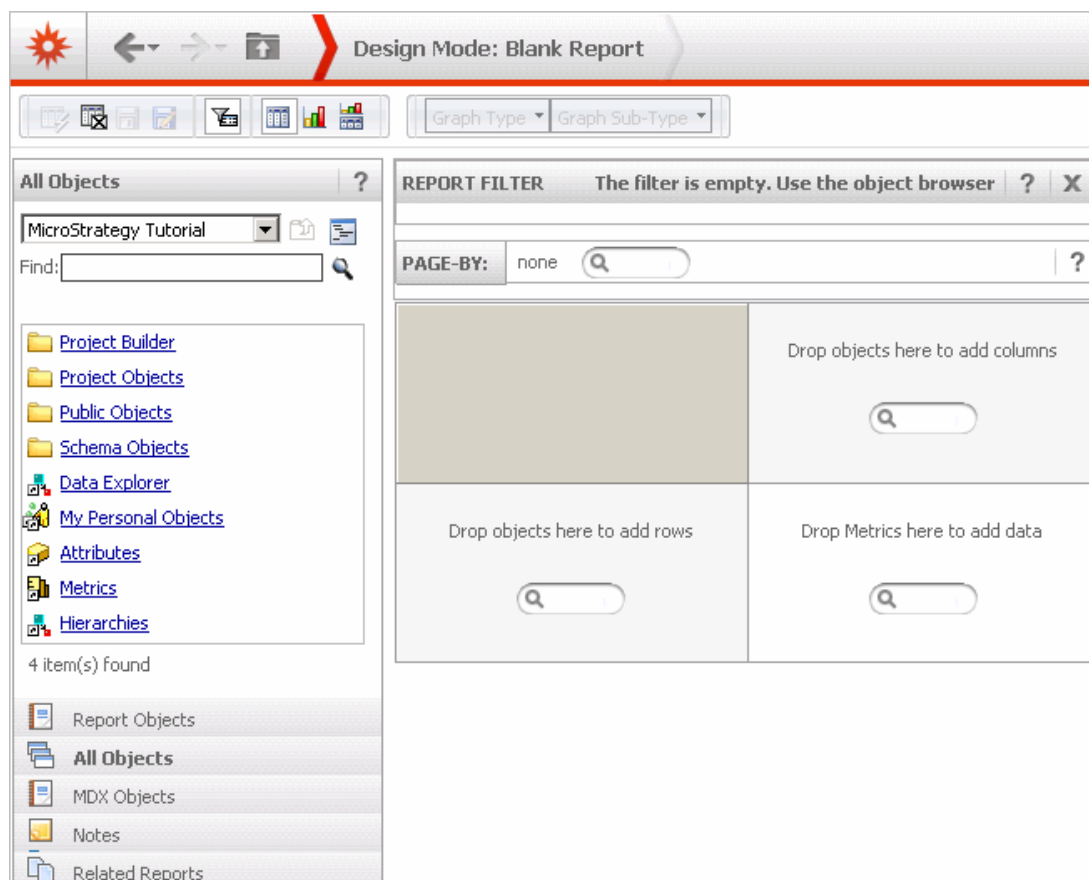
Once objects are added to it, a template specifies the set of information that the report should retrieve from your data source, and it also determines the structure in which the information is displayed in the report's results.

This section contains steps to open Design Mode in MicroStrategy Web with a blank report template, so you can create a new report.

To access a blank report

1. In MicroStrategy Web, log in to the project in which you want to create a report.
If you are using the MicroStrategy Tutorial project and its sample data, log in to the Tutorial project.
2. Click the **MicroStrategy** icon and select **Create Report**.
3. Click **Blank Report**. A blank report template is displayed, and you are ready to design a new report.

The following image shows Design Mode displaying a blank report template in MicroStrategy Web.



For a description of each area or pane of the MicroStrategy Web Report Editor and Design Mode, see [MicroStrategy Web Report Editor interface, page 312](#).

4. Use the following sections to add attributes, metrics, filters, and prompts to your new report. Almost all reports have one or more attributes, one or more metrics, and one filter.
 - Attributes: See [Reports: Adding attributes to a report, page 255](#).
 - Metrics: See [Reports: Adding metrics to a report, page 258](#).
 - Filters: See [Reports: Adding a filter to a report, page 260](#).
 - Prompts: See [Reports: Adding prompts to a report, metric, or filter, page 264](#).

Reports: Adding attributes to a report

Attributes are MicroStrategy objects that represent the business concepts reflected in your stored business data in your data source. Attributes provide a context in which to report on and analyze business facts or calculations. While knowing your company's total sales is useful, knowing where and when the sales took place is much more helpful for analysts. For details on attributes, see [Providing business context to a report: Attributes, page 143](#).

Selecting the right attributes

When you choose attributes to place on a report, select attributes that make sense together. For example, Product Supplier and Customer Income Bracket do not make much sense when their related data is displayed side-by-side on a report. It is difficult to imagine a metric that can be included on a report with these attributes, which would calculate useful report results which would be meaningful for both these attributes.

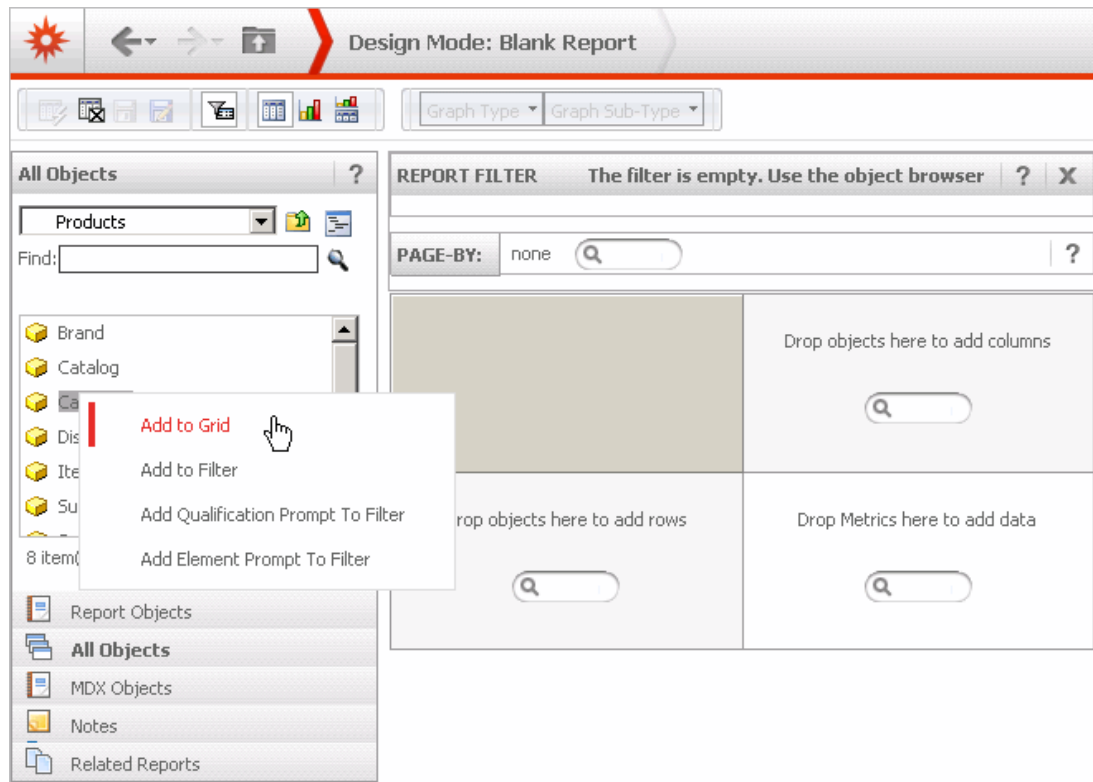
However, the Customer Income Bracket attribute makes sense when it is combined with the Product attribute on a report, where they might allow an analyst to consider a list of products preferred by higher and lower income bracket customers. The Product Supplier attribute makes more sense when combined with any or all of the attributes Ship Date, Rush Orders, Weeks to Ship, or some other attribute related to the supply chain.

To add an attribute to a report



If you are using one of your organization's projects, this procedure assumes attributes have been created. Attributes are usually created by your project's designer. If attributes need to be created, see the [Project Design Guide](#).

1. In MicroStrategy Web, create a new report in Design Mode. See [Creating a report with the Report Editor, page 253](#).
2. In the All Objects pane on the left, navigate to your project's attributes folder and open it.
 - If you are using the Tutorial project, open the **Schema Objects** folder, then open the **Attributes** folder. Select any attribute to use for the next step. In this procedure, Category attribute from the Products folder is used.
 - To search for an attribute in your project, type the name of the attribute in the **Find** text field and press **Enter** or click the **Find** icon.
3. To add an attribute to the report, do one of the following:
 - Drag and drop the attribute to the desired location on the report's grid.
 - Double-click the attribute to add it to the report.
 - Right-click the attribute and select **Add to Grid** as shown in the image below, then move it to the desired location on the report's grid.



Attributes are commonly displayed in a report's rows, although you can add attributes to a report's column, if you want. To add an attribute to a column, do one of the following:

- Drag and drop the attribute to the **Drop objects here to add columns** area of the grid.
 - Right-click the attribute name, select **Move** and select **To Columns**.
4. The attribute appears in the row or the column section of your report's template depending upon where it is added, as shown in the image below:

5. Repeat the steps above to add additional attributes to your report, if you wish.
6. Almost all reports have one or more attributes, one or more metrics, and one filter. If you need to, use the following sections of this manual to add additional objects to your new report:
 - Metrics: See [Reports: Adding metrics to a report, page 258](#).
 - Filters: See [Reports: Adding a filter to a report, page 260](#).
 - Prompts: See [Reports: Adding prompts to a report, metric, or filter, page 264](#).
7. Save the report. For details on how a report is saved, see [Saving a report, page 271](#).

Reports: Adding metrics to a report

Metrics are MicroStrategy objects that represent business measures and key performance indicators. From a practical perspective, metrics are the calculations performed on data stored in your database, the results of which are displayed on a report. For details on metrics, see [Calculating data on a report: Metrics, page 144](#).

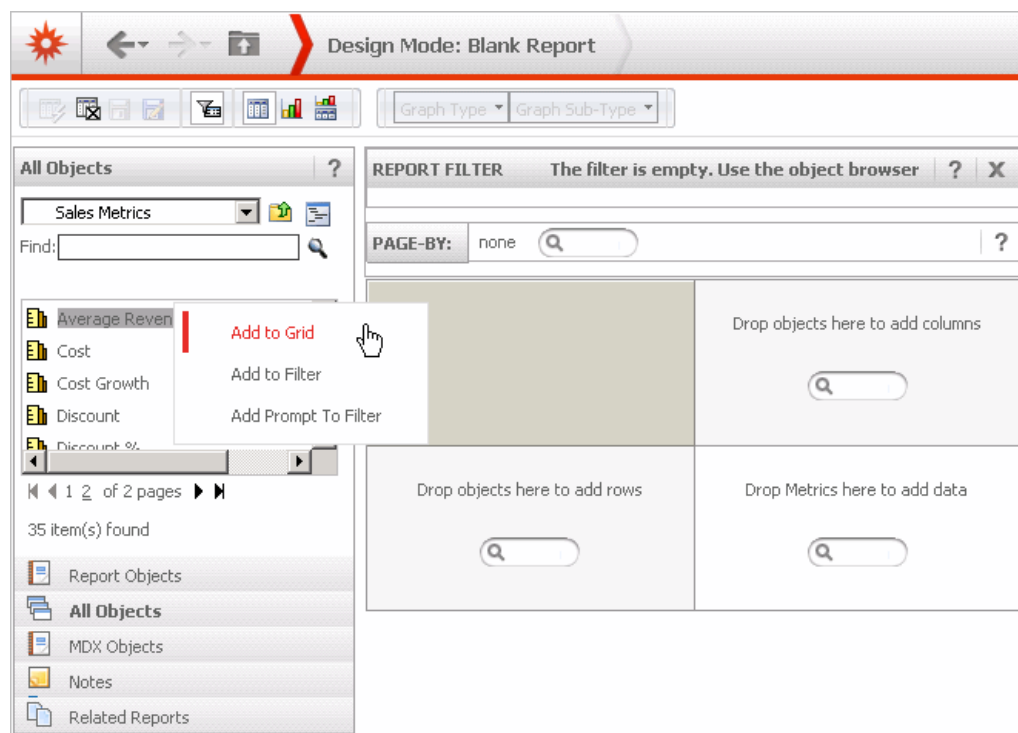
To add a metric to a report



If you are using one of your organization's projects, this procedure assumes at least one metric has been created. If you need to create metrics, see [Calculating data on a report: Metrics, page 144](#).

1. In MicroStrategy Web, create a new report in Design Mode. See [Creating a report with the Report Editor, page 253](#).

2. In the All Objects pane on the left, navigate to your project's metric folder and open it.
 - If you are using the Tutorial project, open the **Public Objects** folder, then open the **Metrics** folder. Select any metric to use in the next step. In this procedure, the Average Revenue metric from the Sales Metrics folder is used.
 - To search for a metric in your project, type the name of the metric in the **Find** text field and press **Enter** or click the **Find** icon.
3. To add a metric to the report, do one of the following:
 - Drag and drop the metric to the desired location on the report's grid.
 - Double-click the metric to add it to the report.
 - Right-click the metric and select **Add to Grid** as shown in the image below, then move it to the desired location on the report's grid.



Metrics are commonly displayed in a report's columns, although you can add metrics to a report's row, if you want. To add a metric to a row, do one of the following:

- Drag and drop the metric on the row in the report grid.
 - Right-click the Metrics header, select **Move** and select **To Rows**.
4. The metric appears in the row or the column section of your report's template depending upon where it is added, as shown in the image below:

REPORT FILTER		The filter is empty. Use the object browser	?	X
PAGE-BY:	none	<input type="text"/>		?
		Metrics	Average Revenue	
Drop objects here to add rows			<Average Revenue>	
<input type="text"/>				

5. Repeat the steps above to add additional metrics to your report, as needed.
6. Almost all reports have one or more attributes, one or more metrics, and one filter. If you need to, use the following sections of this manual to add additional objects to your new report:
 - Attributes: [Reports: Adding attributes to a report, page 255](#).
 - Filters: [Reports: Adding a filter to a report, page 260](#).
 - Prompts: [Reports: Adding prompts to a report, metric, or filter, page 264](#).
7. If you want to see what your report looks like when executed against the data source, once your report has one or more attributes and metrics in it, from the toolbar select **Run Report**.
8. Save the report. For details on how a report is saved, see [Saving a report, page 271](#).

Reports: Adding a filter to a report

A filter screens data in your data source to determine whether the data should be included in or excluded from the calculations of the report results. A filter is not required in a report, although reports without filters are more likely to return too much data to be displayed effectively. If a filter is added, it should make sense with the objects already on the report.

For details on filters in general and the various types of filters, see [Filtering data on a report: Filters, page 169](#). You need to know what type of filter you want to have when you add it to a report.

Filters can be added to a report in two ways:

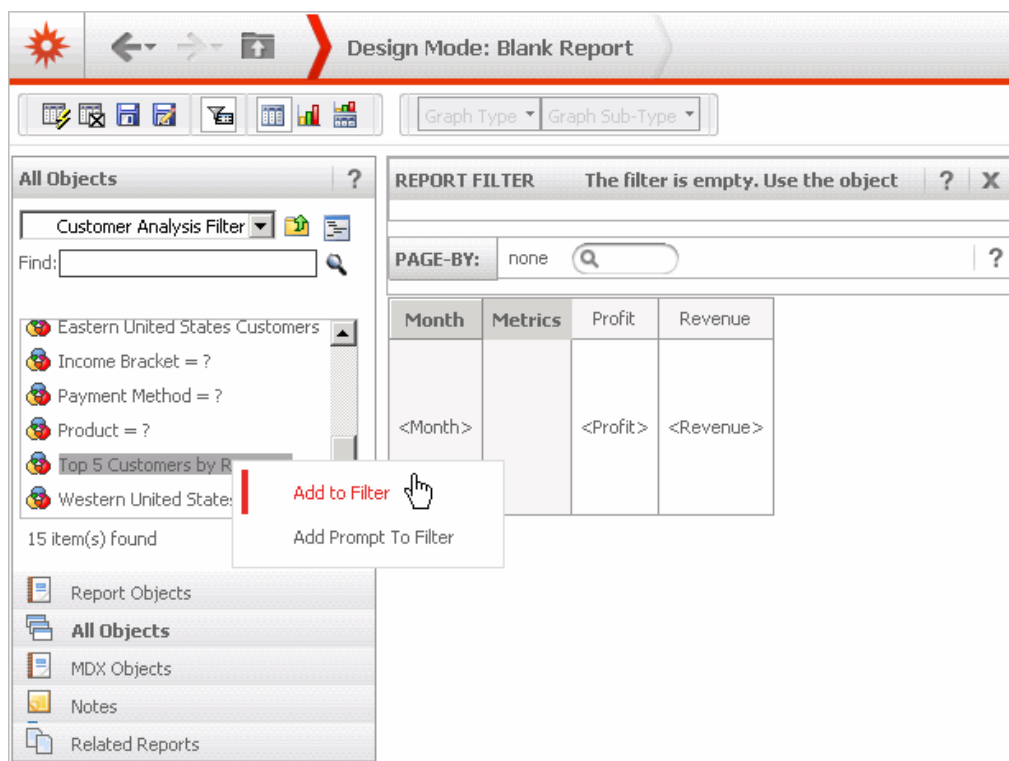
- If a filter object has already been created in your project (this is a stand-alone filter), use the [To add a stand-alone filter to a report, page 261](#) procedure below.
- If a separate filter has not already been created, you can create a filter directly in the report. However, be aware that the filter cannot be used as an independent object on other reports. To create a filter within the report, use the [To create a filter directly within a report: Embedded filters, page 262](#) procedure below.

To add a stand-alone filter to a report



If you are using one of your organization's projects, this procedure assumes at least one filter has been created. If you need to create filters, see [Filtering data on a report: Filters, page 169](#).

1. In MicroStrategy Web, create a new report in Design Mode. See [Creating a report with the Report Editor, page 253](#).
2. If the Report Filter pane is not displayed above the report, display it by clicking the **Filter** icon on the toolbar.
3. In the All Objects pane on the left, navigate to the folder where your filter is located and open it.
 - If you are using the Tutorial project, open the **Public Objects** folder, then open the **Shared Filters** folder. Select any filter to use in the next step. In this procedure, the Top 5 Customers By Revenue filter from the Customer Analysis Filters folder is used.
 - To search for a filter in your project, type the name of the filter in the **Find** text field and press **Enter** or click the **Find** icon.
4. To add a filter to the report's Filter pane, do one of the following:
 - Drag and drop the filter on the Report Filter pane.
 - Double-click the filter to add it to the Report Filter pane.
 - Right-click the filter and select **Add to Filter** as shown in the image below.

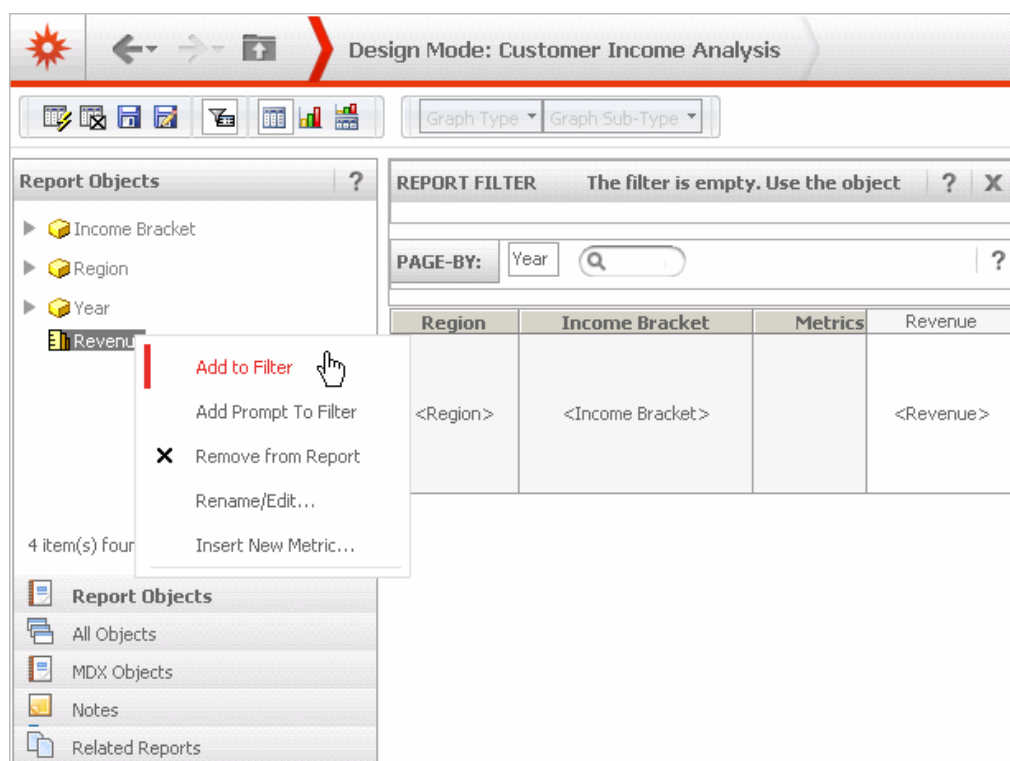


5. Repeat the steps above to add additional filters to your report, as needed.
6. Almost all reports have one or more attributes, one or more metrics, and one filter. If you need to, use the following sections of this manual to add additional objects to your new report:
 - Attributes: [Reports: Adding attributes to a report, page 255](#).
 - Metrics: [Reports: Adding metrics to a report, page 258](#).
 - Prompts: [Reports: Adding prompts to a report, metric, or filter, page 264](#).
7. If you want to see what your report looks like when executed against the data source, once your report has one or more attributes and metrics in it, from the toolbar select **Run Report**.
8. Save the report. For details on how a report is saved, see [Saving a report, page 271](#).

To create a filter directly within a report: Embedded filters

1. In MicroStrategy Web, create a new report in Design Mode. See [Creating a report with the Report Editor, page 253](#).
2. If the Report Filter pane is not displayed above the report, display it by clicking the **Filter** icon on the toolbar.
3. Select the object you want to base your filter on:

- To base your filter on an object that is part of the report's definition, select **Report Objects** from the bottom left to open the Report Objects pane if it is not already open. Select the object you want to base your filter on. The object can be an attribute or a metric.
 - To base your filter on the results of another report, select **All Objects** from the bottom left to open the All Objects pane if it is not already open. Navigate to and select the report you want to base your filter on.
4. To add the selected object to the report's Filter pane, do one of the following:
- Drag and drop the object on the Report Filter pane.
 - Right-click the object and select **Add to Filter** as shown in the image below.



5. Depending on the type of object you added to the filter, a new set of choices may appear. The links below provide steps to filter data based on the object you chose:
- If you are filtering based on an attribute, see one of the following:
 - [Filtering data based on business attributes: Attribute qualifications, page 174.](#)
 - [Filtering data based on business attributes: Attribute qualifications, page 174.](#)
 - [Filtering data based on business attributes: Attribute qualifications, page 174.](#)
 - If you are filtering based on a metric, see [Filtering data based on attribute relationships or metrics: Set qualifications, page 185.](#)

- If you are filtering based on the results of another report, see [Filtering data based on existing filters or report results: Shortcut qualifications, page 190](#).
 - If you are filtering based on a filter, see [Filtering data based on existing filters or report results: Shortcut qualifications, page 190](#).
 - If you are creating an advanced filter, see the [Advanced Reporting Guide](#).
6. Click the **Apply** icon to apply your new filter condition to the report.
 7. You can add additional conditions to the report's filter by repeating the steps above to add another object to the filter and define the condition.
 8. Almost all reports have one or more attributes, one or more metrics, and one filter. If you need to, use the following sections of this manual to add additional objects to your new report:
 - Attributes: See [Reports: Adding attributes to a report, page 255](#).
 - Metrics: See [Reports: Adding metrics to a report, page 258](#).
 - Prompts: See [Reports: Adding prompts to a report, metric, or filter, page 264](#).
 9. If you want to see what your report looks like when executed against the data source, once your report has one or more attributes and metrics in it, from the toolbar select **Run Report**.
 10. Save the report. For details on how a report is saved, see [Saving a report, page 271](#).

Reports: Adding prompts to a report, metric, or filter

You need to know what type of prompt you will be using when deciding where and how to add it to a report, a metric, or a filter. For example, Object prompts are most commonly placed directly on a report, but can also be placed in the condition part of a metric's definition in the Metric Editor, depending on the type of object in the Object prompt.

Use the following table when considering how and where to add a prompt to a report, metric, or filter:

Filter Name	Add To Report Editor: Template Definition Pane	Add To Report Editor: Report Filter Pane	Add To Report Editor: Page-by-Page Pane	Add To Metric Editor: Definition Pane	Add To Filter Editor: Filter Definition Pane
Hierarchy Qualification prompt	No	Yes	No	No	Yes
Attribute Qualification prompt	No	Yes	No	No	Yes
Attribute Element List prompt	No	Yes	No	No	Yes

Filter Name	Add To Report Editor: Template Definition Pane	Add To Report Editor: Report Filter Pane	Add To Report Editor: Page-by Page	Add To Metric Editor: Definition Pane	Add To Filter Editor: Filter Definition Pane
Metric Qualification prompt	No	Yes	No	No	Yes
Object Prompts					
Object prompt of attributes	Yes	No	Yes	Yes	Added as part of an advanced qualification
Object prompt of metrics	Yes	No	Yes	Yes	No
Object prompt of filters	No	Yes	No	Yes	Yes
Object prompt of reports	No	Yes	No	No	Yes
Value Prompts					
Date prompt	No	No	No	No	Added as part of an attribute form qualification, on an attribute form of Date data type
Numeric prompt, Long prompt, or Big Decimal prompt	No	No	No	Yes	Added as part of a metric set qualification, as a metric value comparison
Text prompt	No	No	No	No	Added as part of an attribute form qualification, on an attribute form of a text data type

	Add To Report Editor: Template Definition Pane	Add To Report Editor: Report Filter Pane	Add To Report Editor: Page-by Page	Add To Metric Editor: Definition Pane	Add To Filter Editor: Filter Definition Pane
Procedure	<i>Reports: Adding prompts to a report, metric, or filter, page 264</i>	<i>Reports: Adding prompts to a report, metric, or filter, page 264</i>	<i>Reports: Adding prompts to a report, metric, or filter, page 264</i>	<i>Reports: Adding prompts to a report, metric, or filter, page 264</i>	<i>Reports: Adding prompts to a report, metric, or filter, page 264</i>

Adding prompts in the Report Editor

Adding a prompt to the Template definition pane in the Report Editor

You can add Object prompts to the Template definition pane of the Report Editor.

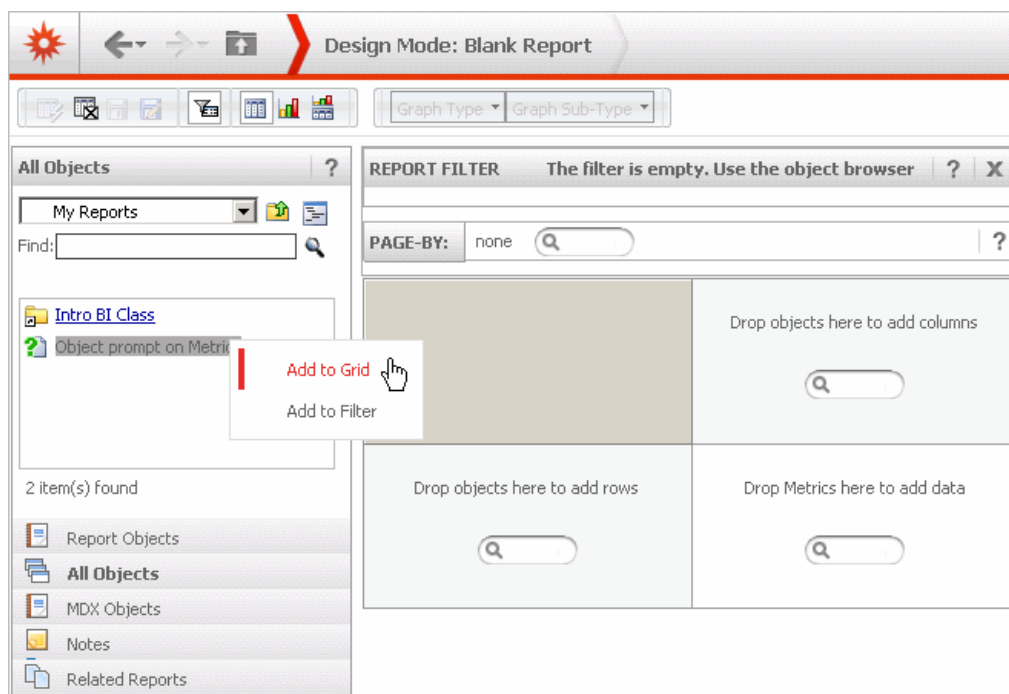
This procedure assumes you have already created and saved a prompt. For steps to create an Object prompt, see [Filtering data based on metrics, attributes, or other objects: Object prompts, page 239](#).

To add a prompt to the Template definition pane in the Report Editor

1. In MicroStrategy Web, if you are creating a new report, open Design Mode. For steps to do this, see [Creating a report with the Report Editor, page 253](#). If you are adding the prompt to an existing report, from the **Home** menu in the Report Editor, select **Design**.
2. In the All Objects pane on the left, navigate to the folder where the prompt you want to add to the report is located and open it.

To search for the prompt, type the name of the prompt in the **Find** text field and press **Enter** or click the **Find** icon.

3. Drag and drop the prompt to the desired location on the report's grid. Alternatively, right-click the prompt and select **Add to Grid** as shown in the image below, then move it to the desired location on the report's grid.



4. Add more prompts or other objects to the report if desired.

5. If you want to see what your report looks like when executed against the data source, and if you want to see how a prompt works for a user, once your report has one or more attributes and metrics in it and you have added a prompt, from the toolbar select **Run Report**.
6. Save the report. For details on how a report is saved, see [Saving a report, page 271](#).

Adding a prompt to the Report Filter pane in the Report Editor

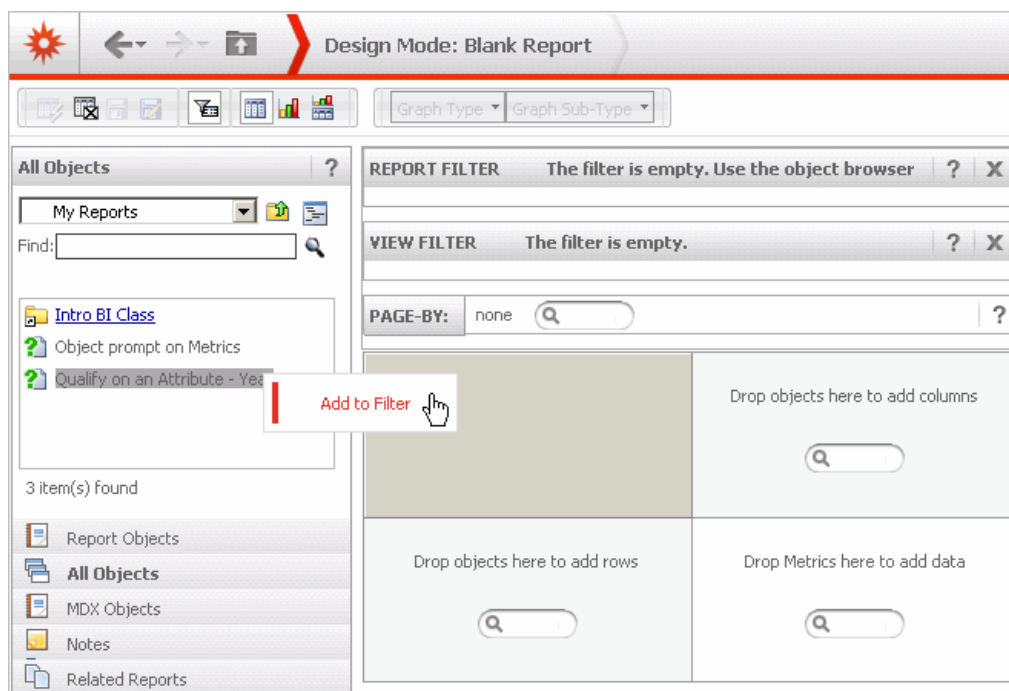
You can add Filter Definition prompts to the Report Filter pane of the Report Editor. You can also add an Object prompt that is made up of filters or reports.

This procedure assumes you have already created and saved a prompt. For steps to create a filter definition prompt, see [Filtering data on an attribute, attribute form, attribute element, or metric: Qualification Prompts, page 218](#). To create an Object prompt, see [Filtering data based on metrics, attributes, or other objects: Object prompts, page 239](#).

To add a prompt to the Report Filter pane in the Report Editor

1. In MicroStrategy Web, if you are creating a new report, open Design Mode. For steps to do this, see [Creating a report with the Report Editor, page 253](#). If you are adding the prompt to an existing report, from the **Home** menu in the Report Editor, select **Design**.
2. In the All Objects pane on the left, navigate to the folder where the prompt you want to add to the report is located and open it.

To search for the prompt, type the name of the prompt in the **Find** text field and press **Enter** or click the **Find** icon.
1. Drag and drop the prompt onto the Report Filter pane. Alternatively, right-click the prompt and select **Add to Filter** as shown in the image below:



2. Add more prompts or other objects to the report if desired.
3. If you want to see what your report looks like when executed against the data source, and if you want to see how a prompt works for a user, once your report has one or more attributes and metrics in it and you have added a prompt, from the toolbar select **Run Report**.
4. Save the report. For details on how a report is saved, see [Saving a report, page 271](#).

Adding a prompt to the page-by pane in the Report Editor

Page-by lets you turn a long report into a set of individual pages. The pages are created based on the objects on the report, allowing users to see manageable subsets of otherwise large quantities of data. For background information on page-by fields, see [Grouping data by page, page 63](#).

You can add Object prompts to the page-by pane of the Report Editor.

This procedure assumes you have already created and saved a prompt. For steps to create an Object prompt, see [Filtering data based on metrics, attributes, or other objects: Object prompts, page 239](#).

To add a prompt to the page-by pane in the Report Editor

1. In MicroStrategy Web, if you are creating a new report, open Design Mode. For steps to do this, see [Creating a report with the Report Editor, page 253](#). If you are adding the prompt to an existing report, from the **Home** menu in the Report Editor, select

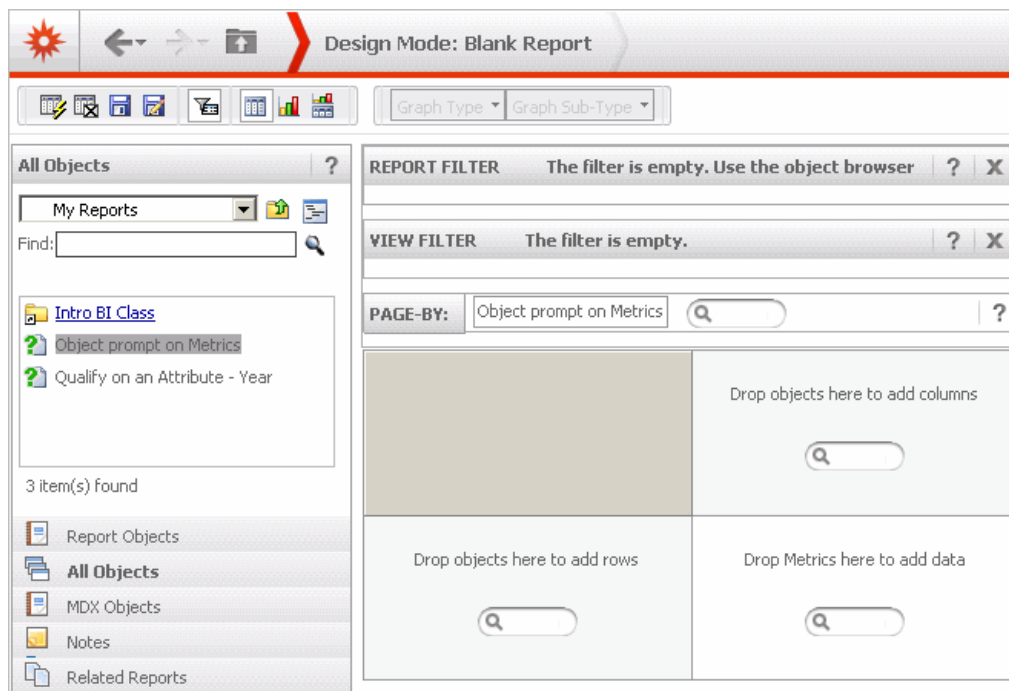
Design.

2. In the All Objects pane on the left, navigate to the folder where the prompt you want to add to the report is located and open it.

To search for the prompt, type the name of the prompt in the **Find** text field and press **Enter** or click the **Find** icon.

3. Drag and drop the prompt onto the page-by pane.

The image below shows an Object prompt called Object Prompt on Metric in the page-by pane:



4. Add more prompts or other objects to the report if desired.
5. If you want to see what your report looks like when executed against the data source, and if you want to see how a prompt works for a user, once your report has one or more attributes and metrics in it and you have added a prompt, from the toolbar select **Run Report**.
6. Save the report. For details on how a report is saved, see [Saving a report, page 271](#).

Adding prompts in the Metric Editor

Adding a prompt to a metric's definition in the Metric Editor

You can add the following prompt types to a metric's definition in the Metric Editor:

- An Object prompt of attributes, to allow the user to select the attribute at which to calculated the metric. For steps to create a level metric, see the [Advanced Reporting Guide](#).
- A Numeric prompt, Big Decimal prompt, or Long prompt, which are all types of a Value prompt.
 - You can use a Value prompt in the formula of a metric. For example, a user can enter the tax rate to be multiplied by the Revenue fact. For steps, see [To add a prompt to a metric's definition in the Metric Editor, page 270](#) below.
 - For a non-group function, you can use a Value prompt as the input values of the function. For more information about non-group functions, see [Metrics made up of metrics: Compound metrics, page 156](#).



You can create a conditional metric, which filters data for that metric. As part of the filter on the metric, you can use a prompt. For steps to create a conditional metric, see the [Advanced Reporting Guide](#).

To add a prompt to a metric's definition in the Metric Editor

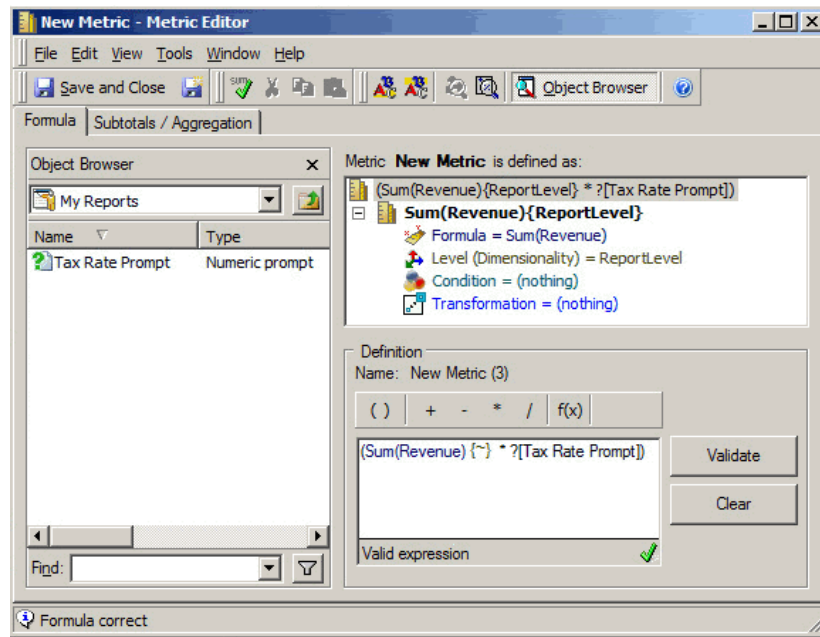


This procedure assumes you have already created and saved a prompt. For steps to create a Value prompt, see [Filtering data based on a single value or string: Value prompts, page 243](#).

1. In MicroStrategy Developer, select **File**, point to **New**, and then select **Metric**. The Metric Editor opens.
2. Create your metric's formula. Use the Object Browser on the left to locate the prompt to add to the metric's definition.

If the Object Browser is not displayed, from the **View** menu select **Object Browser**.

3. Drag the prompt onto the Definition pane at the bottom right, as shown in the image below:



4. Save the metric, and add it to a report. For steps to do this, see [Reports: Adding metrics to a report, page 258](#).

If you want to see what your report looks like when executed against the data source, and if you want to see how a prompt works for a user, once your report has one or more attributes and metrics in it, from the **View** menu select **Grid View**.

Saving a report

After you create or modify a report, you must save the report so that you and others can execute it in the future. When you save a report, its name and its definition such as the template, report filtering criteria, and report formatting information are stored in the MicroStrategy metadata repository.

You can select options for prompted reports, such as whether to keep the report prompted. You can also save reports as filters or templates, as follows:

- Saving a report as a filter allows you to use the saved report to filter a different report. For example, if you have a report that returns basic data such as revenue for the year 2008, you can save the report as a filter and then use the new filter on other reports; in this example, the filter would restrict data on other reports to revenue in the year 2008.
- Saving the report as a template allows you to use the saved report as a base on which to build other reports. For example, if you have a report that returns basic data such as countries and revenue, you can save the report as a template on which you build several other reports, all of which contain country and revenue data but also contain additional data as appropriate for each report.

Saving a new report creates a predefined report. Other users can then execute that report to analyze the data it shows, and they can limit or reformat the data results according to their own analysis needs. To execute the report, double-click the report to retrieve and display the most recent data from your data source.

To save a report

This procedure assumes you have either finished creating a new report or modifying an existing report, and you have the report open in the Report Editor. For steps to create a report, see [Creating a grid report, page 251](#).

1. From the **Home** menu, select one of the following:

- To save a report, select **Save**. If you are saving changes to a report that has already been saved, your changes are saved automatically. Otherwise, the Save As dialog box opens. Select the appropriate options to save your report, as described in the steps below.



If the report has already been saved and contains prompts, the report is automatically saved as a prompted report with the Filter and Template set as prompted, and the Set the current answers to be the default prompt answers check box selected. To select different prompt options, select Save As from the Home menu instead of Save, as described in the option below.

- To save a copy of an existing report using a different name or to specify prompt options for an existing report, select **Save As**. The Save As dialog box opens. Select the appropriate options to save your report, as described in the steps below.
 1. Browse to the folder in which you want to save the report. You can create a new folder in which to save the report. To do so, click the **Create New Folder** icon. The Create Folder dialog box is displayed. To create a new folder:
 - a. In the **Folder** field, enter a name for the folder. You cannot create a folder with the same name as an existing folder.
 - b. In the **Description** field, enter a description for your folder.
 - c. Click **Create Folder**.
 2. If you are saving a prompted report, you can choose whether or not to keep the report prompted when the report is executed again. Select the **Keep report prompted** check box. Expand the **Advanced Options**, then select one of the following:
 - To save the prompt answers you specified and automatically skip the prompt selection page when running the report, select the **Save report as static** option. The next time the report is run, the saved answers will automatically be used to answer the prompts and run the report. The prompt selection page will not be displayed to users.
 - To display the prompt selection page each time the report is run, select the **Save report as prompted** option, then perform the following steps:
 - a You can determine which prompts will be presented to users when the report is run. You can choose to display prompts that are part of the report's filter, prompts that have been placed on the report's template, or both. Select one of the following:
 - To present users only with prompts that have been added to the report's filter, select the **Only filter will be prompted** option. The next time the report is run, users will only be prompted to provide answers for filter

definition prompts. Answers for prompts that have been placed on the report's template, such as objects that users have selected in an object prompt or levels selected in a level prompt, are saved with the report definition and do not need to be provided by the user.

- To present users only with prompts that have been added to the report's filter, select the **Only filter will be prompted** option. The next time the report is run, users will only be prompted to provide answers for filter definition prompts. Answers for prompts that have been placed on the report's template, such as objects that users have selected in an object prompt or levels selected in a level prompt, are saved with the report definition and do not need to be provided by the user.
 - To present users only with prompts that are part of the report's template, select the **Only template will be prompted** option. The next time the report is run, users are only prompted to select objects for prompts that have been placed on the report's template. Answers for prompts that have been added to the report's filter are saved with the report definition and do not need to be provided by the user.
 - To present users with all prompts, regardless of whether they have been added to the report's filter or the report's template, select the **Filter and template will be prompted** option. The report is saved so that object prompts, level prompts, and filter definition prompts all remain active.
- b You can choose to use the prompt answers you specified as default prompt answers to be used the next time the report is run. Do one of the following:
- To use the prompt answers as default prompt answers, select the **Set the current prompt answers to be the default prompt answers** check box.
 - To save the report without default answers, clear the **Set the current prompt answers to be the default prompt answers** check box.
3. To save the report as a filter, perform the following steps:
- a Click the **Filter** tab.
 - b Select the **Keep filter prompted** check box. Expand the **Advanced Options** and choose one of the following:
 - To save the prompt answers that have been selected for the report and automatically use them as answers each time the user runs a report to which the report-as-filter has been added, select the **Save filter as static** option. The report-as-filter is not prompted when a report it has been added to is run.
 - To present the prompt selection page to the user each time the user runs a report to which the report-as-filter has been added, select the **Save**

filter as prompted option. The report-as-filter is prompted when the report it is added to is run.

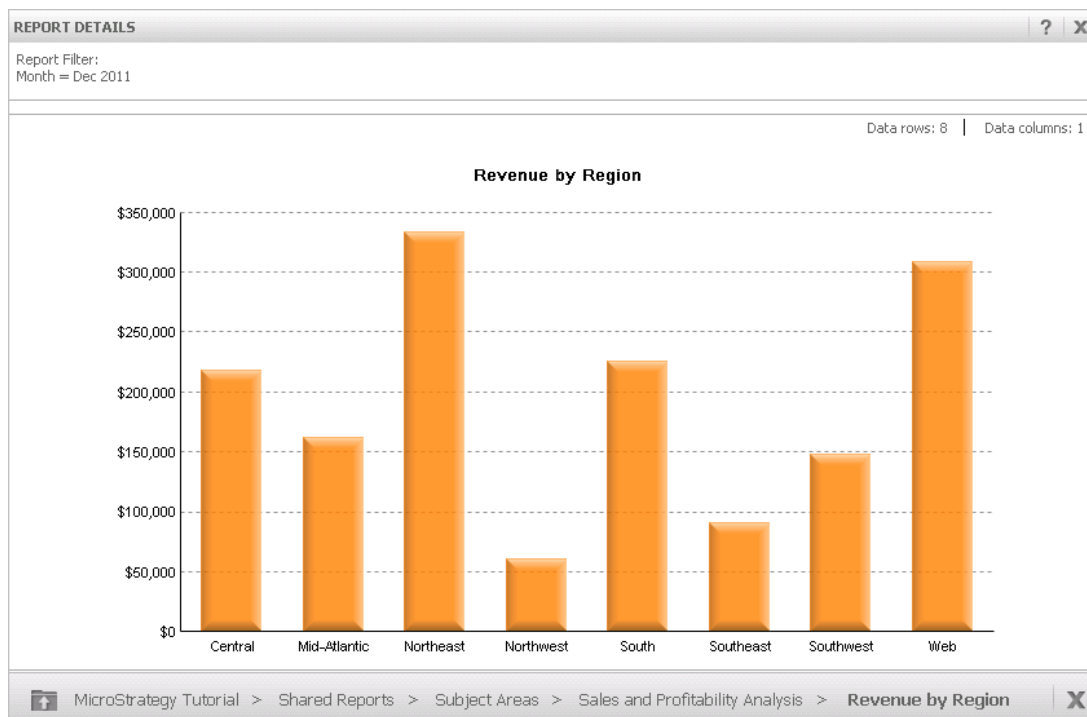
4. To save the report as a template, perform the following steps:
 - a Click the **Template** tab.
 - b Select the **Keep template prompted** check box. Expand the **Advanced Options** and choose one of the following:
 - To save the prompt answers that have been selected for the report and automatically use them as answers each time the user runs a report that is based on the report-as-template, select the **Save template as static** option. The report-as-template is not prompted when a report that is based on it is run.
 - To present the prompt selection page to the user each time the user runs a report that is based on the report-as-template, select the **Save template as prompted** option. The report-as-template is prompted when a report that is based on it is run.
5. In the **Name** and **Description** fields, type a name and description for the report.
6. Click **OK** to save the report. If a report with the same name already exists in the folder, the Confirm Overwrite dialog box appears. Click **Yes** if you want to replace the existing report.

After you create and save a report, you can include additional functionality on the report for users, so they can explore report data more effectively and see related data. For details on additional options you can add to a report, see [Adding features for users, page 276](#).

Example for creating a new report

This section provides tutorials for designing a basic grid report in MicroStrategy Web.

Using the procedure below, you design the report called My Revenue by Region using the Region attribute and the Revenue metric. The report on which it is based can be found in the MicroStrategy Tutorial project in the following location: Shared Reports\Subject Areas\Sales and Profitability Analysis. The report is shown in the image below:



Designing a report

The following procedure assumes you are using report objects from the MicroStrategy Tutorial project and are making use of the sample Tutorial data. For details on the Tutorial project, see [About sample data and the MicroStrategy Tutorial project, page 3](#).

This procedure also assumes you are familiar with the Report Editor in MicroStrategy Web; see [MicroStrategy Web Report Editor interface, page 312 in Appendix A, Reporting Interfaces in MicroStrategy](#) for an introduction to the Report Editor functionality.

To design the Revenue by Region report

1. In MicroStrategy Web, log in to the MicroStrategy Tutorial project, click the **MicroStrategy** icon and select **New Report**.
2. Select **Blank Report**. The report opens in Design Mode.
3. In the Object Browser on the left, click **Schema Objects** to open the Schema Objects folder. Open the **Attributes** folder and then the **Geography** folder.
4. Double-click the **Region** attribute to add it to the Template pane.
5. In the Object Browser, browse to the Public Objects folder. (To do this, navigate back to MicroStrategy Tutorial, then select **Public Objects**.) In the Public Objects folder, select **Metrics**.
6. In the Metrics folder, open the Sales Metrics folder. Double-click the **Revenue** metric to add it to the Template pane.

7. Click **Save**. The **Save As** dialog box opens. Browse to the folder where you want to save your report, usually the My Reports folder. Save the report as **My Revenue by Region Web** and click **OK**.
8. Click **Run newly saved report** to execute the report and display the results, showing sample data from the sample data warehouse. When a report like this is built using your organization's objects, this view provides actual revenue numbers an analyst can use for detailed reporting purposes.
9. From the **Home** menu, select **Graph**. This lets analysts compare data on a higher level to see how various regions are doing in terms of revenue.

Adding features for users

You can provide several report manipulation capabilities for report analysts, by either enabling them or creating and adding them to an existing report. These options provide an interactive reporting experience to your users. You can also format the “No Data Returned” message that appears in a report or document when no data is returned. For steps, see the [Document Creation Guide](#).

User features you should consider adding include:

Formatting for easier data analysis

If you created a report in MicroStrategy Developer, be sure to execute and look at your new report in MicroStrategy Web as well. Make sure the report is visually pleasing, and if necessary apply an autostyle to ensure the report is easy to read. A report designer can create new autostyles in Developer and make them available in MicroStrategy Web.

Additional formatting ideas can be found in the *Reports* chapter of the [Advanced Reporting Guide](#).

Formatting row and column headers and cells

Analysts can apply a number of formatting characteristics to a report they have executed. However, the report's designer can apply a broader range of formatting options to a report, so that users can more effectively understand the data displayed on the report, or to simply achieve a pleasing and easy-to-read look. Formatting options available to analysts are described in [Chapter 2, Formatting a Report](#).

To format row and column headers and cells

1. In MicroStrategy Web, run the report that you want to format.
2. From the **Format** menu, select **Advanced Grid Formatting**. The Format: Template dialog box opens.

If DHTML is disabled, click **Go**. The Format panel opens.

3. From the first drop-down list at the top of the dialog box, select the area of the grid to change.
4. From the second drop-down list at the top of the dialog box, select whether to format the **All**, **Header**, **Values**, **Subtotal Names**, or **Subtotal Values** of that area of the grid.
5. Select one of the following tabs to access formatting options for your report. For details about the options on each tab, click **Help**:
 - **Font**: Change the font and color of letters and numbers in the report, and change the background by applying gradients and other effects.

To change cell background (fill) color:

 - If DHTML is enabled, use the **Fill Color** option on the **Color and Lines** tab.
 - If DHTML is disabled, use the **Fill Color** drop-down list on the **Font** tab.
 - **Number**: Specify a number format for values. For example, you can ensure that certain metric values are displayed as percentages.
 - **Alignment**: Specify how values and text are aligned within cells on the grid report.
 - **Color and Lines**: Change the formatting of lines in your grid report, such as cell borders.

To format cell borders:

 - If DHTML is enabled, use the **Borders** options on the **Color and Lines** tab.
 - If DHTML is disabled, use the **Borders** tab in the Format panel.
6. Click **Apply** to apply your formatting-related changes to the report.

Formatting empty cells and null values

Some cells within the tables in your data source may be empty because the data was not available. This, along with other reasons, can cause cells in some reports to be empty. You can determine how these empty or null values are handled for display within a report. Determining a specific format for null values can be helpful for analysts who might otherwise be confused on seeing one or more blank cells in a report.

In Freeform SQL reports, null values can occur when the report references unavailable objects. For example, you map the attribute description and ID forms of the Region attribute, but you only include the ID in the SELECT clause. When the report is executed, the description cannot be displayed because it has not been retrieved from the data source.

For steps to format empty cells or null values, see [Formatting null values and blank cells, page 24](#) in [Chapter 2, Formatting a Report](#).

Analysts can apply formatting for null values to a given report, if they want to.

Merge, Lock, and Rename column and row headers

Merging column and row headers

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 report 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 report 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.

To merge the column or row headers of a report

1. In MicroStrategy Web, run the report that you want to format.
2. From the **Tools** menu, select **Report Options**. The Report Options dialog box opens.
3. Select the **Merge** check box in either or both the Rows and Columns areas. Click **OK** to apply the changes.

If DHTML is disabled, select **Merge Row Headers** or **Merge Column Headers**, then click **Go**.
4. Click **OK** to apply the changes.

Locking column and row headers

You can lock column and row headers at the top and side of a grid report, so that when a user scrolls through a large report, the row and column headers remain visible. Row and column headers can be locked independently of each other.

Prerequisite

DHTML must be enabled. For steps, click **Help** in MicroStrategy Web.

To lock the column or row headers of a report

1. In MicroStrategy Web, run a report.
2. From the **Tools** menu, select **Report Options**. The Report Options dialog box opens.

3. Select the **Lock** check boxes in either or both the Rows and Columns areas, depending on whether you want to lock rows, columns, or both.
4. Click **OK** to apply the changes.

Renaming row and column headers: Aliasing

Creating different aliases for different reports enables you to create flexible reports for many different users. Different departments of the same company may have different names for the same business measurement. For example, you create a metric named Sales. The Sales department commonly refers to this metric as Revenue, while Marketing calls it Sales. Use an alias to display the Sales metric as Revenue for Sales department reports. Metric aliases help provide greater flexibility for naming conventions in situations such as this one.

Aliases also allow you to initially name metrics descriptively, including the level and condition in the name, which can be helpful while you are designing reports. However, that name is often too long and technical to be displayed for analysts on a report. The end users may not need or want to know what the level is; they simply want to know what the metric represents on their specific report. Aliases provide a second opportunity to name the metric for those users, without changing the original name of the metric or its name on other reports.

For more details on aliasing and steps to create an alias on a report, see [Renaming row and column headers, page 25](#) in [Chapter 2, Formatting a Report](#).

Formatting metrics on a specific report

You can format the data related to individual metrics on a report. Certain formatting choices can help analysts more quickly identify important values or perform data comparisons.

For example, an analyst can instantly understand what a particular metric's values mean when they are preceded by a currency sign. Financial numbers are generally easier to work with when a decimal is in place. Consider the type of data that is returned on the report you are formatting, and apply formatting choices that enhance understanding of that data.



The procedure below formats a metric only within the context of the report that is open when the formatting is applied to the metric. If the metric is also used on another report, the formatting applied with this procedure does not appear on that other report. To format a metric so that the formatting appears on every report in which the metric is used, see [Formatting a metric, page 165](#).

To format a metric on a specific report

1. In MicroStrategy Web, run the report containing the metric to be formatted.
2. From the **Format** menu, select **Advanced Grid Formatting**. The Format: Template dialog box opens.
3. From the first drop-down list at the top of the dialog box, select the metric to be formatted.

4. You can format the metric's column or row header, and you can format the metrics' values that appear when the report is executed against your data source.
 - To format the metric's column or row header, from the second drop-down list at the top of the dialog box, select **Header**.
 - To format the metric's values, from the second drop-down list at the top of the dialog box, select **Values**.
5. Format any or all of the following aspects of the metric. The following steps describe the most commonly used options; for details on every option in each tab, click **Help**.
 - **To format numbers:** Select the **Number** tab. Choose a Category, then choose how to format numbers for this metric.
 - For example, if you select Date as your category, the **Type** list lets you choose which date format to use, such as 4/12/06, April 12, 2006, 12/4/2006, and so on. If you select Fixed as your category, you can determine the number of decimal places to be displayed, whether you want numbers to be separated every three decimal places, and whether negative numbers are allowed to be displayed.
 - **To format the alignment:** Select the **Alignment** tab. Select an alignment option. Text alignment determines how the content of each cell is aligned, for example, centering the text. You can also select Horizontal and Vertical alignment, and whether to wrap the text.
 - **To format the font:** Select the **Font** tab. Select the **Font** that you want values to appear in. You can also select a **Size**, a **Style** (Bold, Italic, and so on), and a **Color** in which text should be displayed.
 - **To format the background and borders:** Select the **Color and Lines** tab. You can select a color to fill the cell background and the type of border to display around the selected cells. You can also customize the border by selecting the type of line and color used for each of the left, right, top, and bottom borders.
6. When you are finished formatting this metric, click **OK** to apply the formatting.

Formatting conditional values on a grid: Thresholds

Data in a report can be set up to appear with special formatting if it satisfies a particular condition. The condition that the data needs to satisfy and the special formatting that it will appear with are pre-determined by the user. For an introduction to thresholds, and for prerequisites to define conditions and formatting, see [Formatting conditional values on a grid: Thresholds, page 20](#).

MicroStrategy Web comes with several default thresholds:


- **Quick thresholds:** Quick thresholds allow end users to apply green, red, or yellow colors or symbols to metric values on your report. The end users can automatically format the thresholds, and add them to a report quickly. See [Formatting conditional values on a grid: Thresholds, page 20](#).
- **Visual thresholds:** Visual thresholds allow end users to use range expressions (such as Greater Than, Less Than, or Top N%) to determine whether a metric has met the condition. If a metric meets the condition, the end users can apply special formatting to the

values, or replace the values with an image or a symbol. See [Formatting conditional values on a grid: Thresholds, page 20](#).


- **Advanced thresholds:** A Web Professional can use advanced thresholds to apply formatting to a report or a grid in a document, based on multiple metrics and more complex expressions than a visual threshold. This allows for very specific conditions to be defined. Advanced thresholds allow Web Professionals to create conditions based on metrics or attributes, and a single advanced threshold can be based on multiple conditions.

Steps are below to create an advanced threshold.

To create an advanced threshold

1. In MicroStrategy Web, click the name of the report to run it.
2. From the **Data** menu, select **Advanced Threshold Editor** . The Advanced Threshold Editor opens.

Specify the threshold's conditions

1. From the **Filter On** drop-down list, select the attribute or metric on which to base the threshold.
2. If you are creating a condition based on a metric, do the following:
 - a. Select a comparison operator such as Greater Than or Less Than.
 - b. Enter 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**  icon to create the new threshold.

3. 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 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.
- 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**  icon to create the new threshold.


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 threshold condition.
- c. Move attribute elements from the **Available** list to the **Selected** list. Elements in the **Selected** list are included in the threshold 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**  icon to create the new threshold.

Specify the formatting for the threshold

1. To specify how data that meets the threshold is formatted, click the threshold, then click the **Cell Formatting**  icon on the toolbar. The **Format** dialog box opens.
2. Specify a name for the threshold in the **Name** field, if desired.
3. To replace the threshold values with text, an image, or a quick symbol, 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 might 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 could 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 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 the 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
4. To format the threshold values by adjusting the font, color, alignment, and other options, make the appropriate selections within the Font, Number, Alignment, and Color and Lines tabs. Click **Help** for more information on the options available.
 5. You can create, edit, and delete thresholds:
 - It is often convenient to make a copy of a threshold if you plan to create similar thresholds in the report. To copy a threshold, select the threshold in the Advanced Threshold Editor and click **Copy**, then paste the copied threshold by selecting the threshold and clicking **Paste**.
 - To delete a threshold, select the threshold and click **Delete Threshold** .
 - To move a threshold above or below other thresholds, select the threshold and click **Move up** or **Move down**.
 - To add an additional condition to a threshold, select the threshold and click **Add Condition** .
 - To clear the conditions from a threshold, select the threshold and click **Clear Conditions** .
 - To determine whether to apply the specified background color to graph reports in which thresholds are met, select the **Enable Thresholds on Graph** icon .
 - To have an email automatically delivered to you or other users when the threshold is met, click **Create Email Alert**  or **Create Mobile Alert** . For details on using the Alerts Editor, click **Help**.
 6. Selectors provide dashboards with interactivity, allowing each user to change how he sees the data. A selector can change panels, the focus of a Grid/Graph, or dynamic text fields (a text field that is a reference to an object on a report) in a panel stack. Selectors that contain attribute, custom group, 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, all of the elements at the same time, or the totals.

If you are formatting a grid in a document that is also the target of a selector, you can specify whether to apply conditional formatting to the grid when metrics are selected in the selector, when totals are selected, or for both metrics and totals. To determine what parts of the report are formatted when a threshold is met, 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 only when totals are selected in the selector, click the **Format subtotals only** icon.
 - To apply conditional formatting for both metrics and the Total option, click the **Format metrics and subtotals** icon.
7. For steps to show totals in a selector, click **Help**.
 8. To add another threshold condition, click **Add a New Threshold** , then repeat the appropriate steps above.
 9. Click **OK** to save changes and return to the report or document.

Removing the extra Metrics column from a report

You can determine whether the word “Metrics”, which usually appears in the column headers, is displayed on a report. If you remove this column from the report, it is also removed if you export the report.

To remove the extra 'Metrics' column from a report

1. In MicroStrategy Web, click the name of a report to run it.
2. From the **Tools** menu, select **Report Options**. The Report Options dialog box opens.
3. Select the **Remove extra column** check box.



If DHTML is disabled, from the **Format** drop-down list, select **Overlap Grid Titles**, and then click the **Go** icon.

4. Click **OK** to apply the changes.


Displaying or hiding attribute forms

An attribute is a business concept. An attribute form is descriptive information about an attribute. For example, the attribute Customer can have the forms First Name, Last Name, Address, Email Address, and so on. A form is a descriptive category for any data your organization saves about any of its attributes. Just as an attribute element is a distinct occurrence of an attribute, a form defines the attribute.

In Design Mode in MicroStrategy Web, report designers can choose which attribute forms are displayed on a report. From the Report Objects panel, right-click any attribute form and select the attribute forms you want to appear on the report.

You can choose to display or hide any attribute forms related to the attributes on your report.

To display or hide attribute forms

1. In MicroStrategy Web, run the report that you want to format.
2. From the **Data** menu, select the **Edit Attribute Forms**  icon. The Attribute Forms dialog box is displayed. If DHTML is disabled, click **Go**.
3. From the **Current Attribute** drop-down list, select the attribute whose forms you want to display.
4. Select the check boxes next to the attribute forms you want to display. In the Selected Forms area, you can see what attribute forms are currently available for the given attribute.
5. To specify a display order for the attribute forms, click the name of the attribute form to highlight it. Then, click the up or down arrow on the right to reorder the selected form. If DHTML is disabled, click the option in the **Selected** column for the attribute form to move.
6. Click **Apply** to display the selected attribute forms in the report.

Letting users choose their own report filter

You can let each user choose the report filter that suits his analysis needs. You can also let users design their own filters, within the constraints that you define. To provide this functionality to users, you add prompts to a report.

An Object prompt that is made up of filters lets each analyst choose from among your chosen set of filters, to apply the most useful filter for that analyst's reporting needs. A filter definition prompt allows analysts to design their own filters, within your chosen constraints, before the report is executed against your data source.

This provides an opportunity for individual analysts to define the data that is returned from your data source. For details on Object prompts and filter definition prompts, see [Asking for user input: Prompts, page 206](#).

Adding usability to a Report Services document

Report Services documents are described in [Report Services dashboards and documents, page 11](#) in [Chapter 1, Getting Started with MicroStrategy Reporting](#). If you created a Report Services document, look carefully at your final document before making it available to users, and consider the following issues:

- Consider usability carefully. Be sure you have named the individual datasets on the document with usable names. (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.)

For example, a general title such as Customer Behavior which appears above a list of products and percentages for each product, makes it difficult for a user to intuitively understand what to do with the numbers displayed. Perhaps from the context of the

overall document it seems clear that the percentages represent purchasing behavior by customers for each of the products listed, but it is better to make this explicit in the title of that dataset.

- Spend a higher percentage of your design time making the information understandable, rather than adding “bells and whistles”. A clean, minimalist document is always easier to derive useful information from than a busy, cramped, and distracting document.

Confirming your choice of graph style

When you first decide on a graph style to use, you generally choose a style that is compatible with the data you want to display. Most graph styles have specific requirements for the type of data that must exist on the report for the graph style to appear properly, as described in [Choosing a graph style, page 42](#) in [Chapter 2, Formatting a Report](#).

After you have made this decision, consider your graph report from a usability perspective. How easy is it for an analyst to get detailed data from the graph report?

For example, a pie graph is useful in many circumstances, but it usually only shows percentages, which can leave an analyst unclear about specific numbers. A good alternative might be a bar graph, which usually lists actual numbers for each attribute element.

For complete details on requirements and recommendations for each graph style available in MicroStrategy, see the *Graphing* chapter in the [Advanced Reporting Guide](#).

Enabling drilling and customizing drill maps

Analysts can drill through a report by clicking on an object on the report, to analyze data that is closely related to the original report data. They can use drilling to expose an entirely different object on a report to see what the data looks like within a different context. If you need an introduction to drilling or a better understanding of how users experience drilling, see [Drilling into related data, page 90](#) in [Chapter 4, Answering Questions about Data](#).

A drill map is a set of restrictions you can define that shape the directions that users can drill (called a drill path) on a report. If a report does not have a drill map specifically defined, the default paths available are based on the system hierarchy of the project. Any customized drill map you create can override the default. You create a drill map using the Drill Map Editor.

Analysts can perform several procedures to personalize their drilling experience in a given report. For example, an analyst can determine whether the drilled-from attribute automatically appears on the drilled-to report. For more information on the personalizations related to drilling that an analyst can define, see [Controlling drilling behavior to affect report results, page 91](#) in [Chapter 4, Answering Questions about Data](#).

For more information on the default drill map, and steps and examples for creating a new drill map, see the *Drilling* chapter of the [Advanced Reporting Guide](#).

To enable or restrict drilling

1. In MicroStrategy Web, run the report that you want to enable drilling in.
2. From the **Tools** menu, select **Report Options**. The Report Options dialog box opens.

3. From the **Drill options** drop-down list, select one of the following options to specify how users can drill in the report:
 - **No drilling**: Users cannot drill up, down, or across to any objects.
 - **Drill down only**: Users can only drill down on objects on the report. They cannot drill up or across to other objects.
 - **Drill anywhere**: Users can drill up, down, and across to any objects available in the drop-down list.
4. Click **OK** to apply the changes and return to the report.

Including totals and subtotals

If you enable grand totals and/or subtotals for a metric, an analyst can choose to display or hide them on any report that contains the metric. You can also create a selection of subtotals from which users can choose the subtotal function that best suits their analysis purposes.

For information, examples, and steps to enable grand totals and subtotals for a metric, see [Totals and subtotals, page 161](#).

Including sorted data

Analysts can sort data in various ways on a report. But the report designer can have report data appear automatically in a given sorted order, saving analysts time and making some data trends clear immediately. You can sort on any object placed on the report.

Information and an example for how to sort data in a column or row in either ascending or descending order, called a Quick Sort, is in [Sorting data, page 54](#) in [Chapter 3, Analyzing Data](#). Quick sorting is limited to one row or column of data.

For directions to create a more advanced sort for rows, columns, and pages, for either a grid report or a graph report, see the *Advanced Sorting* section in the [Advanced Reporting Guide](#). Advanced sorting lets you sort by multiple rows and columns.

Hierarchical display of grouped attribute elements

For custom groups to display hierarchically, hierarchical display must be enabled for the custom group and the item display of at least one custom group element must be expanded.

For information about creating custom groups and setting hierarchical display, see the *Custom Groups and Consolidations* chapter in the [Advanced Reporting Guide](#).

Grouping data by page: Adding objects to the page-by field in a report

Page-by is the MicroStrategy functionality that lets you turn a long report into a set of individual pages. The pages are created based on the objects on the report, allowing users to see manageable subsets of otherwise large quantities of data.


Users can place report objects in the page-by pane of a report, if they wish. However, the report's designer can also place report objects into the page-by pane of a report. When a

user executes the report, the user is presented with a subset of what would otherwise be a long list of data.

For images of the page-by feature, see [Grouping data by page, page 63](#).

To add objects to the page-by field in a report

1. In MicroStrategy Web, open the report in Design Mode.
2. Select the object to include in the page-by pane from either the All Objects pane on the left or from the report's template. Drag and drop the object onto the page-by pane.

 You can place more than one object in the page-by pane. If you decide to place multiple related attributes in the page-by pane, be aware that order matters. Whatever you page-by first (furthest to the left) affects the elements displayed in the other page-by fields. Place multiple objects into the page-by pane in logical order, from left to right.

For a list of objects that can be used as pages, see [Grouping data by page, page 63](#).

3. Save the report.

Adding consolidations and custom groups

A consolidation is a set of attribute elements grouped in a way that they were not originally grouped within the project, so that you can use the consolidation (the newly consolidated elements) just like a regular attribute on a report. For example, you might group the Month elements into December, January, and February and call the consolidation Winter; then you group March, April, and May into a consolidation called Spring; and so on. These names appear on the resulting report.

When you create a consolidation, you do not change your organization's data source definitions or the MicroStrategy metadata definitions. Consolidations allow users to filter a report on a row-by-row basis.

A custom group is a group of filters that bring back from your data source a specifically defined set of attribute elements to be displayed on the report. Custom groups allow you to group and display attribute elements in a way that is not defined in your data source. For example, you might create filters to bring back data that is displayed as Top 5 Customers, Top 5 Employees and Top 5 Items on the same report.

The table below compares consolidations and custom groups.

	Consolidation	Custom Group
Example	Grouping specific months into seasons, and displaying the seasons on a report.	Displaying Top 5 Customers, Top 5 Employees, and Top 5 Items on one report.
Structure	Groups of attribute elements (such as January, February, and so on).	Groups of filters (such as top 5 revenue-producing customers, top 5 revenue-producing employees, and so on).
How it works	Creates a virtual attribute to allow reporting on an attribute that does not exist in the data model.	Applies different filters to different rows of a report.

The following table outlines other differences between custom groups and consolidations.

Feature or Action	Consolidation	Custom Group
Arithmetic operations (row level math)	Yes, this can be done.	No, this cannot be done.
Site of final calculation	MicroStrategy Analytical Engine.	Your data source.
SQL efficiency	High.	Low. One pass for each custom group element.
Recursive definition	Yes.	No.
Display mode	Fixed at element level only.	Flexible and expandable.
Subtotals	No.	Yes.

For details on these differences, as well as business examples and steps to create consolidations and custom groups, see the *Consolidations and Custom Groups* chapter of the [Advanced Reporting Guide](#).

Specifying maximum and minimum values: Report limits

A report limit specifies a set of criteria used to restrict the data returned in a result set after the report's metrics are calculated. Because it is based on the report's final metric values, the report limit is applied after all the metrics are calculated. A report limit can make a report more efficient to run, because less information is returned from the data source.

For an introduction to report limits and steps to apply a simple report limit, see [Specifying maximum and minimum values: Report limits, page 70](#) in [Chapter 3, Analyzing Data](#).

For an explanation of the difference between a filter and a report limit, as well as examples of each and how they affect a report, see the *Filtering* chapter in the [Advanced Reporting Guide](#).

Determining evaluation order of calculations

You can change the evaluation order of various objects on a report to affect how data is calculated for a given report. You can change the evaluation order of consolidations, compound smart metrics (which are compound metrics with smart totals enabled), report limits, and subtotals.

The default evaluation order on a report is:

1. Compound smart metrics
2. Consolidations, which are evaluated by their relative position on the report grid:

- First, rows from left to right
 - Then, columns from top to bottom
3. Report limits
 4. Subtotals



Notice that the metrics that are included in the evaluation order are compound smart metrics. A metric must have smart totals enabled for the evaluation order to affect it, otherwise the metric is always calculated first. Only compound metrics can have smart totals enabled.

For steps to change the evaluation order of these objects on a report, see [Evaluation order of calculations, page 79](#) in [Chapter 3, Analyzing Data](#).

For additional information on changing the evaluation order of objects on a report, see the following chapters of the [Advanced Reporting Guide](#):

- For the evaluation order of multiple consolidations, see the *Custom Groups and Consolidations* chapter.
- For the evaluation order of all other report objects, see the *Reports* chapter.

For more information on compound metrics and smart totals, see [Metrics made up of metrics: Compound metrics, page 156](#) and [Totals and subtotals, page 161](#).

Specifying the delivery options available to users subscribing to a report

You can determine which delivery options are available to users subscribing to a specific report. For example, you can specify which delivery schedules can be used to subscribe to the report, or prevent users from subscribing to the report altogether. 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.



If an existing report subscription uses a schedule or report that has been made unavailable for subscriptions, the report will not be delivered.

For general information on subscribing to reports and documents, see the [MicroStrategy Web Help](#). For steps to specify delivery options for users subscribing to a document, see the *Formatting Documents* chapter in the *Document Creation Guide*.

You can create new schedules in 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 report

1. In MicroStrategy Web, click the name of the report to run it.
2. From the **Tools** menu, select **Report Options**. The Report Options dialog box opens.
3. On the Advanced tab, select one of the following options under Schedules for Subscriptions:
 - To prevent users from subscribing to the report, select the **Do not allow this report to be scheduled** option.
 - To allow users to subscribe to the report using any schedule associated with the MicroStrategy project in which the report 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 report, select the **Only allow users to subscribe to schedules in the list below** option. Schedules in the list on the right are available to users. Select a schedule from the list on the left and click the **Add** icon to move it to the list on the right.



Administrators can determine which schedules are included in the list on the left. For more information, see the *Web Administrator Help*.

4. Click **OK** to apply your changes.

Modifying an existing report

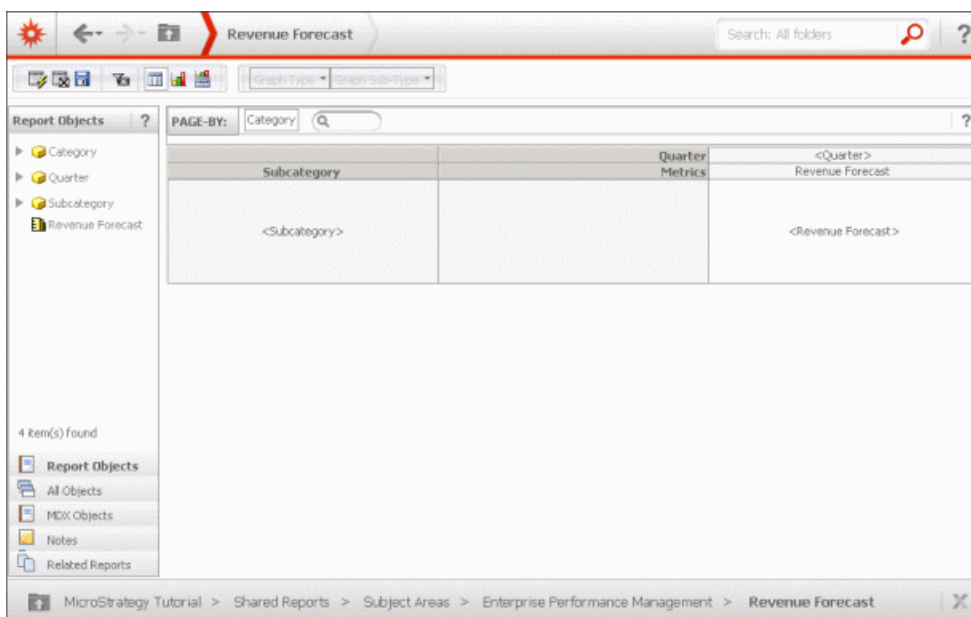
This section shows you how to open an existing report in Design Mode. You can access the Report Editor in MicroStrategy Web.

To modify an existing report

1. Open MicroStrategy Web and log in to the project that contains the report you want to modify. For steps, see [Starting MicroStrategy, page 1](#).
2. Locate and double-click the report you want to modify. The report opens in the Report Editor interface.
3. From the **Home** menu, select **Design**. The report's template is displayed within Design Mode.


The following image shows Design Mode in MicroStrategy Web displaying the template for the sample report called Revenue Forecast. On the right side of the

image, you can see the report objects on the template: the Subcategory attribute, the Quarter attribute, and the Revenue Forecast metric:



4. Modify the report in whatever way you wish, as follows:

- To add an object to the report, see the appropriate procedure in this section, depending on what you want to add:
 - [Reports: Adding attributes to a report, page 255](#)
 - [Reports: Adding metrics to a report, page 258](#)
 - [Reports: Adding a filter to a report, page 260](#)
 - [Reports: Adding prompts to a report, metric, or filter, page 264](#)
- To modify an object on the report, see the appropriate procedure(s) in this chapter, depending on what object you want to edit and the changes you want to make to it:

 To modify an attribute in a MicroStrategy Web report, open it in MicroStrategy Developer to make your changes. The changes appear when you save the attribute and the report in Developer and then open the report in Web.

- To modify a metric, see [Editing a metric, page 168](#).
- To modify a filter, see [Editing a filter, page 205](#).
- To modify a prompt, see [Editing a prompt, page 248](#).
- To modify an attribute, see your project designer or the [Project Design Guide](#).
- To remove an object from the grid report, right-click the object's header and select **Remove from Grid**. The objects removed from the grid are still

available in the Report Objects, if you want to add them back to the grid. To remove an object from the grid and the Report Objects pane, right-click the object's header and select **Remove from Report**.

- To add usability features to the report, see [Adding features for users, page 276](#)
5. Save the report. For details on how a report is saved, see [Saving a report, page 271](#).



If you modify an object on a report and want to execute the report to see how your changes appear, you must first save and close the report, then re-open the report to see your changes.

Creating other types of reports

You can create other kinds of reports:

Creating a graph report

A graph report provides a different way to display report data than in the standard grid format. Depending on the graph style you choose, viewing report data in a graph can often highlight trends or allow comparisons that are difficult when viewing data in a grid.

For details on designing a graph report, and for graph-related options and other details, see the *Graphing* chapter in the [Advanced Reporting Guide](#). If you are working on a graph report, you can also see window-specific information on graphing options by clicking **Help**.

Creating a Report Services document

A MicroStrategy Report Services document contains datasets from one or more reports. This data is positioned and formatted, resulting in a single display of presentation quality. (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.)

SALES PIPELINE REPORT									
Opportunity Information			Status				Amounts		
Account	Lead Type	Description	Opportunity Status	Close Probability	Primary Competitor	Open Date	Estimated Close Date	Unweighted Sales Forecast	Weighted Sales Forecast
Canada								\$3,700,000	\$2,292,500
Quebec								\$1,850,000	\$1,425,000
Jori Oakes								\$325,000	\$305,000
Nile - Corporate	New Business	Free Upgrade	Closed	100 %	Wizard Corporation	12/13/2002	1/12/2003	\$100,000	\$100,000
NetMusic.com - Corporate	New Business	Resource Management Conf 2001	Closed	100 %	Wizard Corporation	1/7/2003	2/6/2003	\$125,000	\$125,000
AOP - Corporate	Existing Business	Partner (Others) Lead	Commit	80 %	Sphinx Solutions	1/14/2003	1/30/2003	\$100,000	\$80,000
<i>Everything looks good for a month-end close; heard from HK that competitor failed to make in-roads at meeting last week.</i>									
Miko Kemna								\$550,000	\$345,000
Net Security Corp - Corporate	Existing Business	Sys Integrator (Others) - Lead	Closed	100 %	Pulsar Applications	12/15/2002	1/14/2003	\$100,000	\$100,000
Stacys Stores - Corporate	Existing Business	Only Web Offer - Lead	Lost	0 %	Sphinx Solutions	12/16/2002	12/27/2002	\$175,000	\$0
Lending Money - Corporate	Existing Business	Year-end inventory closeout	Closed	100 %	Pulsar Applications	1/9/2003	2/8/2003	\$125,000	\$125,000
Digivision - Corporate	Existing Business	From Sales Call	Commit	80 %	Pulsar Applications	1/18/2003	1/26/2003	\$150,000	\$120,000
<i>Will be meeting again with VP contacts on-site tomorrow. Confident that all objections have been addressed and will move the app to CLOSE soon.</i>									
Printed: 12/4/2003 1:35:50 PM			CONFIDENTIAL				Page 4 of 10		

When you create a document, you can specify the data that appears; control the layout, formatting, grouping, and subtotaling of data; and specify the position of page breaks. In addition, you can insert pictures and draw borders in the document. All of these capabilities allow you to create reports that are suitable for presentation to management and for printing boardroom quality material.

The image above shows a sample production and operational report document. It lists all sales opportunities in the pipeline, and it groups those opportunities based on sales region, sales district, and sales representative. This document also provides a snapshot of each opportunity's current status and measures key metrics such as unweighted and weighted sales forecasts.

Sales managers can use this document to see a general overview of the sales pipeline and to identify key opportunities and opportunity statuses. The data in this document can help you evaluate sales opportunities for each sales representative and to prioritize those opportunities that have a greater probability of being closed.

You must have MicroStrategy Report Services to be able to design and work with Report Services documents. Detailed information to create and modify Report Services documents can be found in the [Document Creation Guide](#).

The document types that can be created in MicroStrategy include the following:

- Scorecards and dashboards: designed for visual impact, these documents provide a distilled view of the business, organized in adaptive sections or zones.

- **Managed metrics reports:** with a quantitative focus, these documents present lists of metrics or process-driven tabular views of the business.
- **Production and operational reports:** designed for production operations management, these documents present data in hierarchical categories or bands and can span hundreds of printed pages.
- **Invoices and statements:** these documents use transaction and sub-transaction level data necessary for billing, collection, and customer service.
- **Business reports:** designed for financial and other statutory business reporting, these documents present comprehensive data in print and electronic forms.

Creating an HTML document

HTML documents are a popular way to create dashboards and scorecards to display a group of reports within the MicroStrategy platform. Dashboards and scorecards display and distribute data from business intelligence projects. Scorecards typically follow a specific methodology and are focused on key metrics within a business area. Dashboards, on the other hand, tend to provide key metrics along with summary information.

HTML documents in the MicroStrategy platform are HTML containers or shells into which you can place MicroStrategy reports and other graphics, and control the formatting and appearance with style sheets. You can modify the appearance of an HTML document just like any other HTML page, to include text, images, hyperlinks, tables, and one or more report objects.

For details on how to create HTML documents, see the *HTML Documents* chapter in the [Advanced Reporting Guide](#).

Designing reports that use OLAP Services

OLAP Services lets MicroStrategy Developer, Web, and Office users make use of features that slice and dice data in reports without re-executing SQL against the data source. This improves performance by resulting in quicker data display within a report as users analyze and manipulate the data.

If you own OLAP Services and analysts will be taking advantage of it, its features can be useful for a report designer to understand. When you design a report, you should take into account the fact that users can view subsets of data easily with an OLAP Services “view report”. This can allow you to create larger and more inclusive reports, since analysts can later create smaller reports, called view reports, made up of only that data they want to see.

Specifically, OLAP Services surfaces in a grid report in two places:

- The Report Objects pane
- The View Filter pane

Each of these features is described below. To see descriptions and images of these panes in the Report Editor, see [MicroStrategy Developer Report Editor interface, page 304](#).

View filters and view reports

Unlike a report filter that restricts how much data is retrieved from the data source, a view filter dynamically limits the data being displayed on a report without re-executing the report against the warehouse.

This feature allows analysts to create multiple reports out of a larger, parent report, without stressing the system or your data source. It also allows different users to access the same report cache but see different data according to their needs.

The advantage of using both standard report filters and view filters on a report is that the report can use the standard report filter to bring back more data than can usefully be displayed at any one time. The analyst can then use a view filter to change the data displayed, as long as it falls within the data already retrieved from the database. The analyst generates a view report, which is the result of a view filter. A view filter does not trigger re-execution against the data source. This capability translates to improved response time and decreased database load.

A report designer does not need to enable view filters for users to take advantage of them. If you have OLAP Services, view filters can be used on any report on which a user wants to use them.

For additional information on report caches and how they work with your data source, see [Report caches, page 119](#) in [Chapter 5, Answering Prompts and Refreshing Data](#). For steps to use a view filter, click **Help**.

Derived metrics

Derived metrics are metrics that a report analyst can use to perform calculations based on report results. A derived metric performs a calculation on the fly with the data available in a report without re-executing the report against the database. Derived metrics are created based on existing metrics in the report. Since derived metrics are evaluated in memory, their computation does not require any SQL execution in the database. They are evaluated on the client for MicroStrategy Developer, or on Intelligence Server for MicroStrategy Web.

A report designer does not need to enable derived metrics for users to take advantage of them. If you have OLAP Services, derived metrics can be used on any report on which a user wants to use them.

Dynamic aggregation

Dynamic aggregation allows a report analyst to change the level at which the data on a report is aggregated. (For an introduction to levels, see [Components of a metric, page 150](#).) The analyst can make the change on the fly, while reviewing the report data. Dynamic aggregation occurs when report objects (such as an attribute or an attribute form) are moved from the grid to the Report objects pane. As attributes are moved on and off the report between the grid and the Report objects pane, metric values are dynamically recalculated at the level of the objects remaining on the grid.

A report designer does not need to enable dynamic aggregation for users to take advantage of it. If you have OLAP Services, dynamic aggregation can be used on any report on which a user wants to use it.

To see an image of the Report objects pane, see [MicroStrategy Developer Report Editor interface, page 304](#).

Building a query using alternative data access methods

Freeform SQL and Query Builder are MicroStrategy tools that provide you alternative methods to access your business data and create reports.

Freeform SQL

Freeform SQL is a MicroStrategy tool that allows you to write your own SQL statements to run directly against a data warehouse or operational data store, giving you full control over accessing your data.

Traditionally, you use the MicroStrategy Engine to generate SQL to run against one specific relational database to return results for a desired report. In addition to generating reports in the traditional way, you can also use your own customized SQL statements to generate reports from operational systems included in a MicroStrategy project. This capability can save you time since you do not need to place the data into a data mart or data warehouse first.

The Freeform SQL feature allows you to use your own SQL statements to access data from various ODBC data sources, including relational databases, Excel files, and flat files, as long as they are included in the MicroStrategy environment. Since you create your own SQL statements to create reports with Freeform SQL, a strong knowledge of how to create and use SQL statements is essential.

For detailed information on how to create a Freeform SQL report, see the *Custom SQL Queries* chapter in the [Advanced Reporting Guide](#).

Query Builder

Query Builder is a graphical user interface that helps guide you when building SQL queries that can adapt to different data models. Query Builder allows you to run queries against ODBC data sources that are not easily modeled to an attribute and fact schema. This includes databases that are a collection of flat tables rather than being defined into fact and lookup tables.

Query Builder provides an easy way to quickly access your ODBC data sources without having to write any SQL, which is required by the Freeform SQL tool. You can create queries to be run against imported database tables, which allows you to begin reporting and analysis with MicroStrategy without performing the project creation step of modeling attribute and fact schemas. (The modeling step is necessary for MicroStrategy's ROLAP Engine to define attribute and fact schemas.) You can also import tables into a project's Warehouse Catalog using the Query Builder feature.

Query Builder allows you more control over the SQL generated against your database systems, without the need for extensive knowledge on how to create SQL statements. A basic knowledge of how SQL statements use tables, columns, and joins to build queries is essential.

For detailed information on how to create a Query Builder report, see the *Custom SQL Queries* chapter in the [Advanced Reporting Guide](#).

REPORTING INTERFACES IN MICROSTRATEGY

If you are new to MicroStrategy, use this appendix to help you become familiar with where things are in MicroStrategy Web and Developer.

If you are already familiar with MicroStrategy, use this appendix to identify icons and other features you can take advantage of for quicker access to your most commonly used functionality.

This appendix includes OLAP Services features as they appear in the described interfaces. This information is useful if you own MicroStrategy OLAP Services. For background information about OLAP Services, see [OLAP Services, page 13](#).

The Developer and Web interfaces for creating and editing reports and documents can also be accessed from within MicroStrategy Office, if you own it. For details on MicroStrategy Office, see the [MicroStrategy Office User Guide](#).

MicroStrategy Developer interface

The MicroStrategy Developer interface has three panes:

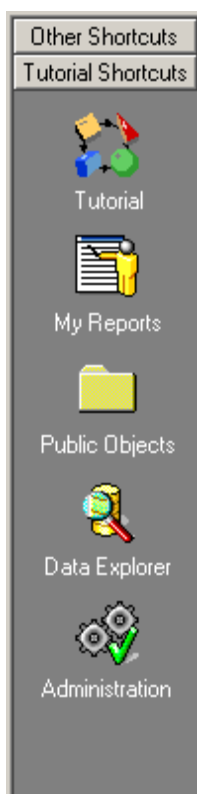
- **Folder List:** Where all the project folders that hold your reports and report-related objects are accessible. The Folder List displays all the project sources, projects, application and schema object folders, and the administrative functions for your business intelligence system. When all panes are displayed, the Folder List is the center pane of the Developer interface.

If the Folder List does not automatically appear when you log in to MicroStrategy Developer, from the View menu select **Folder List**.
- **Object Viewer:** Where the contents of each folder, such as reports or report objects, are displayed as you browse through folders in the Folder List. The right pane of the MicroStrategy Developer interface is the Object Viewer.
- **Shortcut Bar:** This pane contains icons that allow you instant access to your favorite or most frequently used folders. Simply click on a shortcut icon to jump immediately to the folder to which it is linked. You can create a shortcut to any folder that appears in your Folder List. You can add or remove shortcuts at any time. For steps, see [Adding and](#)

[removing shortcuts from the Shortcut Bar, page 300](#). When all panes are displayed, the Shortcut Bar is the left pane of the Developer interface.

Adding and removing shortcuts from the Shortcut Bar

Shortcuts are icons on the left side of Developer that provide instant access to commonly used folders. Shortcut icons are displayed within groups, called shortcut groups. The image below shows the two default shortcut groups, Tutorial Shortcuts and Other Shortcuts. The shortcut icons within the Tutorial Shortcuts group are displayed:



Use the following procedures to create new shortcut groups, add shortcut icons to groups, and rename or remove icons and groups.

Creating a shortcut group

Shortcut icons are displayed within groups, called shortcut groups. By default, the Shortcut Bar contains two shortcut groups, namely Tutorial Shortcuts and Other Shortcuts. You can create additional groups of shortcut icons, which can be useful for large MicroStrategy implementations.

You can view the shortcuts within each group by clicking the group name in the Shortcut Bar. For example, when you click **Tutorial Shortcuts** in the Shortcut Bar, the Tutorial Shortcuts group expands to display the shortcuts to the Tutorial project login, the Tutorial project's My Reports folder, the Tutorial project's Public Objects folder, and so on. The image above displays the Tutorial Shortcuts group and its default shortcut icons.

To create a shortcut group

1. Right-click an empty area of the Shortcut Bar and select **Add Group**.
2. In the Create a new shortcut group dialog box, type a name for the new group and click **OK**. Your new shortcut group appears in the Shortcut Bar.

Adding a shortcut icon to a group

When you want to create a new shortcut to a commonly used folder or project, you must create the shortcut icon within an existing shortcut group.

To add a shortcut icon to a group in the Shortcut Bar

1. On the Shortcut Bar, click the shortcut group to which you want to add your new shortcut. Any shortcuts which are currently in the group appear in the Shortcut Bar.
2. In the Folder List, right-click the project or folder for which you want to create a shortcut, and select **Add to Shortcut Bar**. A new shortcut icon appears in the Shortcut Bar.



By default, the name of the shortcut icon is the same as the name of the folder or project for which you created the shortcut. You can rename any shortcut icon by right-clicking it and selecting **Rename Shortcut**.

Removing a shortcut icon from the Shortcut Bar

To remove a shortcut icon from the Shortcut Bar

1. Right-click the shortcut and select **Remove from Shortcut Bar**.
2. In the confirmation dialog box, click **Yes**.

Removing a shortcut group from the Shortcut Bar

If you remove a group that has existing shortcut icons within it, the shortcut icons are deleted also.

To remove a shortcut group

1. Click the shortcut group you want to remove. The shortcut icons which are currently in the group appear in the Shortcut Bar.
2. Right-click an empty area of the Shortcut Bar and select **Remove Group**.

3. In the confirmation dialog box, click **Yes** to remove the shortcut group. All shortcut icons within this group are also removed.

Renaming a shortcut icon or shortcut group

By default, the name of a shortcut icon is the same as the name of the folder or project for which you created the shortcut. You can rename any shortcut icon by right-clicking it and selecting **Rename Shortcut**.

To rename a shortcut group

1. Click the shortcut group you want to rename.
2. Right-click an empty area of the Shortcut Bar and select **Rename Group**.
3. In the Rename a shortcut group dialog box, type a name for the shortcut group and click **OK**. The shortcut group is renamed.

Navigating through Developer

Use the following menus and tools in MicroStrategy Developer to access the different reporting features of MicroStrategy.



The menus, options, and icons available to you depend on your security privileges. For example, if you do not have administrative privileges, you do not see the Administration menu.

Developer menus

From the Developer menus, you can do the following.








Common Microsoft Windows-style menus and menu options are not included here, such as the Edit menu, which contains Cut, Copy, Paste, and so forth.

Menu	Description
File	Create new objects and folders.
View	Change the appearance of the object icons in the Object Viewer (Developer's right-hand pane). Show or hide the Status Bar, Shortcut Bar, and Folder List.
Go	Move one level up in the Folder List or go directly to a project's home page.

Menu	Description
Tools	Use general Developer tools, such as: <ul style="list-style-type: none"> • Search Editor • Developer Preferences • Change Password
Administration	Access administrative functions, such as: <ul style="list-style-type: none"> • Project Configuration Editor • Database Instance Wizard • Report Scheduler • User Manager Integrity Checker • Event Viewer
Schema	Access project design tools such as the Project Creation Wizard and the Attribute and Fact Creation Wizards.
Window	Close all open editors with one click.
Help	Access the online help system and useful MicroStrategy websites.

Developer interface icons

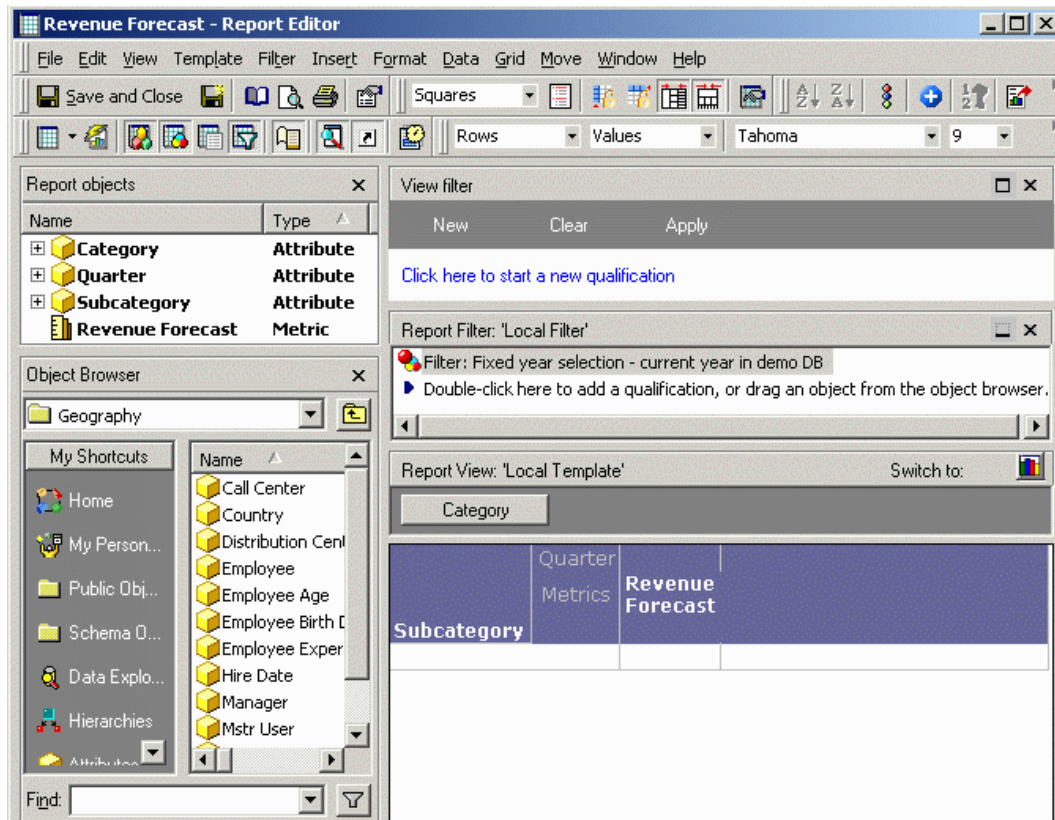
From the Developer toolbar, you can do the following:

Name	Icon	Description
Create a New Object		Creates a new report or report-related object. The objects you can create depend on your privileges and your location in the Folder List.
Cut		Cuts the selected objects. Use this to move or remove objects from the My Personal Objects folder (and the folders within it).
Copy		Copies the selected objects. Use this to duplicate objects.
Paste		Pastes the objects you have cut or copied. Use this to move or duplicate objects in the My Personal Objects folder (and the folders within it).
Delete the object selected		Deletes the selected objects.

Name	Icon	Description
Rename the object selected		Renames the selected object in the My Personal Objects folder (and the folders within it).
View Object Properties		Displays information about the selected object's general properties such as type, location, description, creation and modification dates, owner and user access.
Search		Opens the Search Editor. Use this to search for report-related objects.
Edit the object selected		Opens the appropriate editor for the selected object. Use this to change the settings of an object's definition such as formatting, sorting, defining totals or subtotals, assigning thresholds, and so on.
Run		Executes the selected report. Use this to view your business data in an existing report.
View		Lists options to change the display of the object icons in Developer's right-hand pane.
Show or hide the Folder List		Turns the Folder List display on or off. The Folder List displays all the projects to which you have access, as well as the folders containing objects within those projects.
Refresh object with latest definition		Refreshes the current display.
Go to project		Displays the home page of the current project.
Go one level up		Moves one level up in the Folder List. Use this for quick navigation among report-related objects and their folders.

MicroStrategy Developer Report Editor interface

If you have report designer privileges, you can use the Report Editor in either MicroStrategy Developer or MicroStrategy Web to create new reports in MicroStrategy. (You can of course also access these editors if you have other sets of privileges, such as Administrator, and so on.) Use this section to familiarize yourself with the Report Editor interface. The following image shows the Report Editor in Developer, with the sample Revenue Forecast report ready to be edited within it:



For details on report designer privileges and the report designer role, see [Before you begin](#), page 134 in *Chapter 7, Building Query Objects and Queries, for Designers*.

Finding your way around the Developer Report Editor

Refer to the image above as you read about the various areas or panes in the Developer Report Editor. You can perform the following tasks within the appropriate Report Editor pane:

- **Report Objects** pane: (top left) (This pane appears only if you have MicroStrategy OLAP Services. See [OLAP Services](#), page 13 for details.) Where you can see a summary of all the objects you have included on your report.

There may be more objects in this pane than are displayed on the executed report, because OLAP Services lets analysts quickly remove or add objects from this pane directly to the report template. When the report is executed, the MicroStrategy Engine generates SQL that includes all the objects in this Report Objects pane, not just the objects that are displayed in the report after it is executed. For details on using the Report Objects pane, see [Designing reports that use OLAP Services](#), page 295.

- **Object Browser** pane: (center left) Where you navigate through the project to locate objects to include on the report. For details on report objects, see [MicroStrategy objects](#), page 138.
- **My Shortcuts** pane: (bottom left) Enables you to access any folder in the Object Browser quickly. Creating shortcuts can save you time if you repeatedly browse to the

same folders. For details on creating shortcuts, see [Quick object access: Creating shortcuts to objects, page 142](#).

- **View Filter** pane: (top right) (This pane is only available if you have MicroStrategy OLAP Services. See [OLAP Services, page 13](#) for details.) Where you apply a special kind of filter to any object that is in the Report Objects pane. View filters do not modify the SQL for the report like normal report filters do. Instead, view filters are applied to the overall result set after the SQL is executed and results are returned from the data source. This can help improve report execution performance. For details on using view filters, see [Designing reports that use OLAP Services, page 295](#).
- **Report Filter** pane: (center right) Where you add filtering conditions to a report. Filtering conditions can be made up of attributes, metrics, advanced filter qualifications, and shortcuts to an existing report filter. The Report Filter pane allows you to create a filter without having to open a separate object editor (the Filter Editor). Simple filters can be conveniently created by dragging and dropping objects from the Object Browser into this pane to create a filter. For details on creating filters, see [Filtering data on a report: Filters, page 169](#).
- **Report View** pane: (bottom right) Where you define your report layouts by dragging and dropping objects from the Object Browser onto this report view pane. You can create a report to serve as a template for other reports; for details on templates, see [Designing a report's structure: Templates, page 249](#).
- **Page-by** pane: (top of Report View pane) Where you place subsets of your report results to be displayed as separate pages of the executed report. For details on adding page-by functionality to a report, see [Grouping data by page, page 63](#).

MicroStrategy Web interface

The MicroStrategy Web interface is a set of web pages where you can browse through folders containing reports and objects, preferences, and so on for your projects. From the various pages in MicroStrategy Web, you can perform a number of tasks with the reports, objects, and preferences available on each page.

Navigating the report interface in MicroStrategy Web

When you execute and view a report in MicroStrategy Web, the interface allows you to manipulate and explore the report data you are viewing.



The menus, options, and icons available to you depend on your security privileges. For example, if you do not have administrative privileges, you do not see the Administration menu.

Web menus

From the interface that is displayed when viewing an executed report in MicroStrategy Web, you can perform the following.















Common Microsoft Windows-style menus and menu options are not included here, such as the Edit menu, which contains Cut, Copy, Paste, and so forth.














Menu	Description
Home	<p>Create, save, export, subscribe to, and view the details of reports, and send reports to the History List.</p> <p>Change the view of a report by choosing Design, Grid, Graph, or Grid and Graph view.</p>
Tools	<p>Convert the report to a document.</p> <p>Change the display using the following report options:</p> <ul style="list-style-type: none"> • Merge or lock column and row headers • Show color banding on the report • Enable outline mode • Show thresholds <p>You can also show or hide the following:</p> <ul style="list-style-type: none"> • Report filter • View filter • Object Browser • MicroStrategy Web toolbars • Pivot and sort buttons • Page-by axis • A list of reports related to the current report
Data	<p>Manipulate objects and data on the report.</p> <p>For example, you can do the following:</p> <ul style="list-style-type: none"> • Swap the columns and rows • Add objects to a report • Edit view filter conditions • Sort data • Drill on a report • View only specific data on the report by filtering on selections • Reset, refresh, or re-prompt the report • Insert a new metric • Rename objects on the report • Include attribute forms on the report • Enable and customize totals • Add and edit thresholds















Menu	Description
Format	<p>Format various aspects of a grid or graph report.</p> <p>For example, you can do the following:</p> <ul style="list-style-type: none"> • Format the font, size, alignment, and colors of various objects on the grid or graph report • Resize the columns and rows















Web interface icons










From the MicroStrategy Web toolbars, you can perform the following:

Name	Icon	Description
Save As		Saves the report.
Undo		The previous action performed is undone, and the report returns to its status prior to the most recent action.
Redo		The previously undone action is redone, and the report returns to its status prior to undoing the most recent action.
Design		Changes the report to Design Mode so that you can modify the definition of your report.
Grid		Displays the report as a grid, similar to a standard spreadsheet style.
Graph		Displays the report as a graph. MicroStrategy can display data in numerous graph types and styles.
Grid and Graph		Displays the report in both grid and graph views at the same time on the screen.
Add to History List		Adds the report to the History List of the logged-in user. History List is an area in MicroStrategy Web where you can store report results and document results from various sources.
Print		Lets you specify print settings for the report and print the report.
Send Now		Lets you send the report to specified email addresses.
Schedule delivery to History List		Opens the Subscribe to History List dialog box, which lets you set up automatic delivery of a report/document to your History List on a specific schedule.
Export		Exports all or a portion of the report in Excel, CSV, HTML, or plain text format.

Name	Icon	Description
PDF		Lets you specify settings to convert and display reports in PDF format.
Full Screen Mode		Maximizes your view of the report by removing most of the Web toolbars. You can toggle Full Screen Mode on or off.
New		Lets you create a new report using a pre-defined report template.
Convert to Document		Converts the report into a Report Services document. The new document opens, with the report displayed as a Grid/Graph in the Detail Header.
Report Objects		Shows or hides the Report Objects pane, which displays all objects in the report. This icon is available only if you own MicroStrategy OLAP Services.
All Objects		Shows or hides the All Objects pane, which lets you search for, locate, and select objects that are part of the project.
Notes		Shows or hides the Notes pane, which lets you add a new note or edit an existing note. Notes can include details about the report, information on how the report was created, reasons to use it, queries about the data displayed, or anything useful to you and other users who execute the same report.
Related Reports		Shows or hides the Related Reports pane, which displays a list of reports related to the objects in the current report.
Page-by Axis		Shows or hides the page-by pane. Page-by is used to group large amounts of data into separate pages of the report, allowing you to view a subset of data.
View Filter		Shows or hides the View Filter pane, which lets you apply a filter on-the-fly to any attribute or metric on the report. This icon is available only if you own MicroStrategy OLAP Services.
Report Details		Shows or hides the Report Details pane, which displays the report description and filter details for the report. The Report Details pane may also display the prompt details and template details of the report.
Prompt Details		Shows or hides the Prompt Details pane, which displays the prompt information for all prompts in the report. The information includes the name of each prompt and its answers.
Show Pivot Buttons		Shows or hides pivot buttons on column headers of a grid report. Pivoting lets you re-arrange the columns and rows in a report.

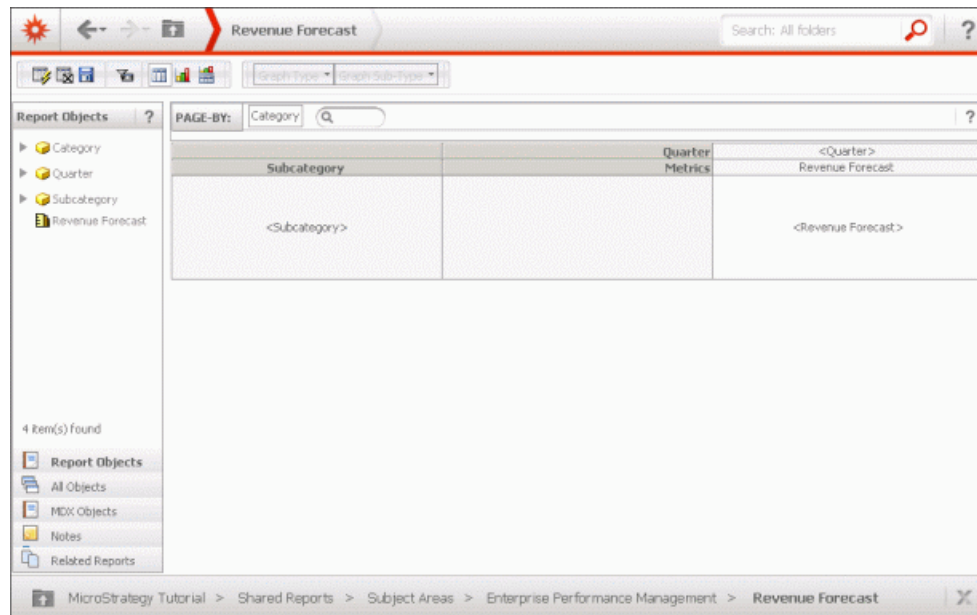
Name	Icon	Description
Show Sort Buttons		Shows or hides the sort buttons on the column headers of a grid report. The sort buttons let you quickly sort the data in either ascending or descending order.
Graph Zones		Shows or hides the Graph zone list. This list displays all the objects on the graph report and lets you move them to and from the Categories, Series, and Metrics zones on a graph report.
Report Options		Lets you format a grid report.
Sort		Lets you specify advanced sort options. You can sort the data in rows or columns either in ascending or descending order.
Drill		Lets you customize the drill options for the attributes of a report. For details on drilling, see Drilling into related data, page 90 .
Filter on Selections		Displays the rows and columns for the selected attribute in a report. For example, if a report has more rows of information than you wish to view, you can specify which rows to display.
Refresh		Refreshes the current display.
Re-prompt		Lets you answer the prompt again, thereby creating a new filter for the report results.
Swap Rows and Columns		Moves all report objects in the rows of the report to the columns of the report, and moves all report objects in the columns of the report to the rows of the report.
Insert New Metric		Lets you create a new derived metric. Derived metrics are metrics that you can create based on existing metrics in the report. This icon is available only if you own MicroStrategy OLAP Services.
Rename/Edit Objects		Lets you rename an object in a report.
Edit Attribute Forms		Lets you select the attribute forms to be displayed on the report. For example, the Customer attribute can have the forms such as First Name, Last Name, Address, Email Address, and so on.
Toggle Attribute Form Names		Shows or hides the attribute forms of an attribute in the report.
Show Totals		Shows or hides subtotals and grand totals included in the report.

Name	Icon	Description
Edit Totals		Lets you include or remove subtotals from the report.
Quick Thresholds		Displays the quick thresholds that you can add to a report. Quick thresholds apply green, red, or yellow colors or symbols to metric values on your report.
Toggle Thresholds		Shows or hides thresholds on the report.
Visual Threshold Editor		Opens the Visual Threshold Editor, which lets you define and format a simple threshold.
Advanced Thresholds Editor		Lets you create advanced thresholds based on multiple metrics and uses more complex expressions than a simple threshold.
Legend		Shows or hides the legend in the graph report.
Data Values		Shows or hides the data values in the graph.
Series by Row		Uses the objects on the rows of the report as the series (data markers) of the graph report. The objects on the columns are used as the categories of the graph report.
Series by Column		Uses the objects on the columns of the report as the series (data markers) of the graph report. The objects on the rows are used as the categories of the graph report.
Auto Arrange		Rearranges the layout of a graph report. This helps you to automatically reposition the layout of the MicroStrategy pre-8.x graph reports containing overlapping components when you open them in MicroStrategy 8.x Web.
Apply		Applies the specified number of categories and series that are to be displayed on the graph.
Autostyle		Applies a selected autostyle to quickly format a report. An autostyle is a set of report formatting that is predefined and can be applied to reports to create a consistent look and feel.
Banding		Applies or removes background colors for alternate rows on a grid report. Banding helps you view and analyze the data on a report.
Outline		Enables or disables outline mode for the report. You can use outline mode to collapse or expand sections of related data in the report.

Name	Icon	Description
Merge Column Headers		Merges multiple column headers that are identical into a single header.
Merge Row Headers		Merges multiple row headers that are identical into a single header.
Lock Row Headers		Retains the display of row headers when scrolling horizontally in a report so that when a user scrolls through a large report, the row headers remain visible.
Lock Column Headers		Retains the display of column headers when scrolling vertically in a report so that when a user scrolls through a large report, the column headers remain visible.
Auto Fit to Contents		Enlarges or shrinks the report so that all data on the report fits in the columns and rows.
Auto Fit to Window		Enlarges or shrinks the report so that it fits in the window.
Advanced Grid Formatting		Lets you format the template of the grid report.
Advanced Graph Formatting		Lets you format the graph report.
MicroStrategy		Displays a drop-down menu that provides access to Projects, Home, Shared Reports, My Reports, History List, My Subscriptions, Preferences, Create Report, Create Document, and Logout.

MicroStrategy Web Report Editor interface

If you have Web Professional privileges, you can use the Report Editor in MicroStrategy Web to create new reports. (You can of course also access this editor if you have other sets of privileges, such as Administrator, and so on.) Use this section to familiarize yourself with the Report Editor interface. The following image shows the Report Editor in Web, with the sample Revenue Forecast report ready to be edited within it:



For details on report designer privileges and the report designer role, see [Before you begin, page 134](#) in [Chapter 7, Building Query Objects and Queries, for Designers](#).

Finding your way around the MicroStrategy Web Report Editor

Refer to the image above as you read about the various areas or panes in the Web Report Editor. You can perform the following tasks within the appropriate Report Editor pane:

- **Object Browser** pane: (left-hand side) Where you navigate through the project to locate objects to include in the report. In the Object Browser you can navigate to **All Objects** in the project. If you have MicroStrategy OLAP Services, you can also choose to navigate only through **Report Objects**:
 - **All Objects** pane: Where you see the list of all the objects available in your project.
 - **Report Objects** pane: (This pane appears only if you have MicroStrategy OLAP Services. See [OLAP Services, page 13](#) for details.) Where you can see a summary of all the objects you have included on your report.
- There may be more objects in this pane than are displayed on the executed report, because OLAP Services lets analysts quickly remove or add objects from this pane directly to the report template. When the report is executed, the MicroStrategy Engine generates SQL that includes all the objects in this Report Objects pane, not just the objects that are displayed in the report after it is executed. For details on using the Report Objects pane, see [Designing reports that use OLAP Services, page 295](#).
- **Notes** pane: Where you can see the notes that include report details, such as information on how the report was created, reasons to use it, or queries about the data displayed.
- **Related Reports** pane: Where you can see a list of reports and documents related to the objects in the current report.

- **Report Filter** pane: (top right) Click **Edit Report Filter** to display the Report Filter and View Filter panes:
 - **Report Filter** pane: Where you add filtering conditions to a report. Filtering conditions can be made up of attributes, metrics, advanced filter qualifications, and shortcuts to an existing report filter. The Report Filter pane allows you to create a filter without having to open a separate object editor (the Filter Editor). Simple filters can be conveniently created by dragging and dropping objects from the Object Browser into this pane to create a filter. For details on creating filters, see [Filtering data on a report: Filters, page 169](#).
 - **View Filter** pane: (This pane is only available if you have MicroStrategy OLAP Services. See [OLAP Services, page 13](#) for details.) Where you apply a special kind of filter to any object that is in the Report Objects pane. View filters do not modify the SQL for the report like normal report filters do. Instead, view filters are applied to the overall result set after the SQL is executed and results are returned from the data source. This can help improve report execution performance. For details on using view filters, see [Designing reports that use OLAP Services, page 295](#).
- **Page-by** pane: (center right) Where you place subsets of your report results to be displayed as separate pages of the executed report. For details on adding page-by functionality to a report, see [Grouping data by page, page 63](#).
- **Template** pane: (bottom right) Where you define your report layouts by dragging and dropping objects from the Object Browser onto this report template pane. For details on templates, see [Designing a report's structure: Templates, page 249](#).

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