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Preface

This content includes all WebFOCUS Designer topics and is intended for all users.

How This Manual Is Organized

This manual includes the following chapters:

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<td>Provides an overview of the WebFOCUS Designer interface, and how to create content.</td>
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<td>2 Connecting to Data</td>
<td>Describes how to upload, append, or merge delimited, Excel, JSON, or XML files to a target environment, configure adapters and connect to data sources.</td>
</tr>
<tr>
<td>3 Creating Content</td>
<td>Learn how to convey your information visually with WebFOCUS Designer's array of charts, grids, maps, workbooks, and chart extensions, add filters, and more.</td>
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<tr>
<td>4 Adding Content to Pages</td>
<td>Describes how to create pages in WebFOCUS Designer that you can add to a portal or portal page to share with other users in your organization</td>
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<tr>
<td>5 Building Portals</td>
<td>Describes how to access and share content, customize your portal experience, collaborate, and build sophisticated structures for data storytelling.</td>
</tr>
<tr>
<td>6 Scheduling and Distributing Content</td>
<td>Describes how to schedule and distribute content, create event-based schedules using alerts, or share your content right from the WebFOCUS Home Page.</td>
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<tr>
<td>7 Searching Content</td>
<td>Provides information on how to search to easily find content.</td>
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Technical Content Conventions

The following table describes the conventions that are used in this content.
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<td>THIS TYPEFACE</td>
<td>Denotes syntax that you must enter exactly as shown.</td>
<td></td>
</tr>
<tr>
<td>or this typeface</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>this typeface</strong></td>
<td>Represents a placeholder (or variable) in syntax for a value that you or the system must supply.</td>
<td></td>
</tr>
<tr>
<td>underscore</td>
<td>Indicates a default setting.</td>
<td></td>
</tr>
<tr>
<td><strong>this typeface</strong></td>
<td>Represents a placeholder (or variable), a cross-reference, or an important term. It may also indicate a button, menu item, or dialog box option that you can click or select.</td>
<td></td>
</tr>
<tr>
<td>Key + Key</td>
<td>Indicates keys that you must press simultaneously.</td>
<td></td>
</tr>
<tr>
<td>{ }</td>
<td>Indicates two or three choices. Type one of them, not the braces.</td>
<td></td>
</tr>
<tr>
<td>[ ]</td>
<td>Indicates a group of optional parameters. None are required, but you may select one of them. Type only the parameter in the brackets, not the brackets.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Separates mutually exclusive choices in syntax. Type one of them, not the symbol.</td>
</tr>
<tr>
<td>...</td>
<td>Indicates that you can enter a parameter multiple times. Type only the parameter, not the ellipsis (...).</td>
<td></td>
</tr>
<tr>
<td>.</td>
<td>Indicates that there are (or could be) intervening or additional commands.</td>
<td></td>
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**WebFOCUS 8205 KnowledgeBase**

Visit our WebFOCUS 8205 KnowledgeBase [https://kb.informationbuilders.com/](https://kb.informationbuilders.com/) for access to technical content topics, videos, PDFs, and more.
Focal Point Community

Join the Focal Point community. Focal Point is our online developer center and more than a message board. It is an interactive network of more than 3,000 developers from almost every profession and industry, collaborating on solutions and sharing tips and techniques. Access Focal Point at http://forums.informationbuilders.com/eve/forums.

Customer Support

You can access support services electronically, 24 hours a day, with InfoResponse Live Online, which is accessible from our website, http://www.informationbuilders.com. It connects you to the tracking system and known-problem database at the Information Builders support center. Registered users can open, update, and view the status of cases in the tracking system and read descriptions of reported software issues. New users can register immediately for this service. The technical support section of http://www.informationbuilders.com also provides usage techniques, diagnostic tips, and answers to frequently asked questions.

Call Information Builders Customer Support Services (CSS) at (800) 736-6130 or (212) 736-6130. Customer Support Consultants are available Monday through Friday between 8:00 a.m. and 8:00 p.m. EST to address all your questions. Information Builders consultants can also give you general guidance regarding product capabilities. Please be ready to provide your six-digit site code number (xxxx.xx) when you call.

Information You Should Have

To help our consultants answer your questions effectively, be prepared to provide the following information when you call:

- Your six-digit site code (xxxx.xx).
- Your WebFOCUS configuration:
  - The front-end software you are using, including vendor and release.
  - The communications protocol (for example, TCP/IP or HLLAPI), including vendor and release.
  - The software release.
  - Your server version and release. You can find this information using the Version option in the Web Console.
  - The stored procedure (preferably with line numbers) or SQL statements being used in server access.
The Master File and Access File.

The exact nature of the problem:

- Are the results or the format incorrect? Are the text or calculations missing or misplaced?
- Provide the error message and return code, if applicable.
- Is this related to any other problem?

Has the procedure or query ever worked in its present form? Has it been changed recently? How often does the problem occur?

What release of the operating system are you using? Has it, your security system, communications protocol, or front-end software changed?

Is this problem reproducible? If so, how?

Have you tried to reproduce your problem in the simplest form possible? For example, if you are having problems joining two data sources, have you tried executing a query containing just the code to access the data source?

Do you have a trace file?

How is the problem affecting your business? Is it halting development or production? Do you just have questions about functionality or documentation?

Community

Join the Focal Point community. Focal Point is our online developer center and more than a message board. It is an interactive network of more than 3,000 developers from almost every profession and industry, collaborating on solutions and sharing tips and techniques. Access Focal Point at http://forums.informationbuilders.com/eve/forums.

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Navigating WebFOCUS Designer

WebFOCUS Designer is a web-based development platform that you can use to quickly and easily create content from your data. Discover how you can go from data discovery to content creation and application development all from a single tool.

In this chapter:
- Introducing WebFOCUS Designer

Introducing WebFOCUS Designer

WebFOCUS Designer is a web-based development platform that you can use to quickly and easily create content from your data. WebFOCUS Designer provides tools to manage your data using data flows and use that data to create charts, interactive and responsive pages, and workbooks.

Using WebFOCUS Designer, you can combine related data from multiple sources in a data flow. You can then use a simple, but powerful, set of tools to create a variety of chart types, or use a Technical Preview feature to create tabular reports to communicate detailed information about your data. This content, as well as any other content available in your WebFOCUS repository, can then be added to a page simply by dragging and dropping. With the interactive canvas, you can resize and rearrange resources on the page with ease. Additionally, you can use the integrated filter controls to create instant and compelling applications from your content. You can enhance this content further by bringing your pages together with additional charts and reports in the form of a workbook, allowing you to explore your data in depth and keep your analytical content in one place for quick access. With WebFOCUS Designer, you can go from data discovery to content creation to content integration, and application development all in a single tool.

The WebFOCUS Designer interface provides a different set of options depending on what type of content you are creating. However, each WebFOCUS Designer mode always provides the following resources:

1. An area containing the resources that you can use to build your content. In a data flow, these are synonyms, in a chart, these are fields, and in a page, these are charts and reports.

2. An area where you add the resources that you want to use in order to build your content. In a data flow and a page, you build your content on the canvas. In a chart or report, you build your content by adding fields to buckets.
3. A design area where you can view your content as it is configured and modified. This area dynamically refreshes as any changes are made. In a data flow, this is the Data sheet. In a chart, report, or page, this is the canvas.

4. A set of customization options to modify your content. These are available in different panels and tabs in the WebFOCUS Designer interface. Customization options change depending on the types of content that you are creating or modifying.

5. A filter toolbar that provides options to limit the data being displayed. Filtering capabilities are available for charts, reports, and pages.

6. A set of universal tools for file management and run-time behavior. These are available on the WebFOCUS Designer toolbar.

The following images show the locations of the six areas listed above when creating a data flow, chart, report, and page, respectively.

**Creating a Data Flow**
Creating a Chart

Creating a Report (Technical Preview)
Creating a Page

**Note:** When creating a workbook, the interface that displays corresponds to the component you are currently editing.

Navigating the WebFOCUS Home Page

The Home Page is the default landing page that opens when you first sign in to WebFOCUS. It serves as a centralized place for creating, organizing, and sharing content, performing administrative tasks, scheduling reports and procedures, and working with your data. These functions are controlled by the permissions that are assigned to role of a user. To learn more about the available roles in WebFOCUS, see the *WebFOCUS Security and Administration* technical content.
The default Home Page is shown in the following image. The appearance of this page may vary, depending on the configuration or setup of your organization. For example, the administrator in your organization may configure a custom sign-in page and home page.

The main elements of the Home Page are:

- **Banner**
- **Sidebar**
- **WebFOCUS Explorer**

**Banner**

The banner is located on the upper-right corner of the Home Page.

From the banner, you can access the User menu, from which you can perform the following tasks:

- **Administration:**
  - Access the Security Center, where you define users and groups, and grant access permissions.
  - Access the Administration Console, where you configure, administer, and monitor the components of the WebFOCUS environment.
  - Access the Magnify Console, where you specify settings, configure security, and perform maintenance and diagnostic tasks for Magnify.
  - View and administer private resources for groups and users.
Switch between Normal mode, seeing your own content, and Manager mode, managing other user content.

Tools:
- Access the ESRI Configuration Utility to create or edit a file.
- View the status of deferred reports, and manage them.
- Stop outstanding interactive requests that are running.
- Access the ReportCaster Explorer, where you view ReportCaster content within columns that provide detailed information specific to the displayed ReportCaster item, such as Schedules, Distribution Lists, Library Access Lists, Library Reports, and Watch List Reports.
- Access the ReportCaster Status, where you view the status of your scheduled jobs and log reports. Authorized users can also view the status of the ReportCaster Distribution Server and perform configuration and administration tasks.
- Access the Magnify Search Page.

Configure the Home Page preferences.

Access the online Help and other resources, including the WebFOCUS Information Center, Information Builders web site, and Community.

Access the Legacy Home Page.

Change your password.

Sign out of WebFOCUS.

From the banner, you can also toggle the sidebar. Click the toggle button to expand or collapse the sidebar.

Note: Expanding or collapsing the sidebar is remembered as a preference. The last status of the sidebar before you sign off is applied when you sign in.

Sidebar

You can use the sidebar to switch between five views of your repository content. These include:

- Content. Displays your repository content and provides options so you can create, share, and modify domains and content. Here, you can also upload files and spreadsheets, connect to data, create portals and pages, and generate sample content.
- **Portals.** Displays all of the existing portals in your repository. If tags are created for these portals, tag buttons display on top of the portals.

- **Favorites.** Displays the items that you designate as favorites. To designate an item as a Favorite, right-click the item, and click *Add to Favorites*.

- **Ask WebFOCUS.** Provides access to WebFOCUS InfoSearch, where you can search your repository for content and data values, compare statistics, and perform other analytical tasks. To use WebFOCUS InfoSearch, type your inquiry in the search field or click the microphone icon and ask a question.

### WebFOCUS Explorer

The WebFOCUS Explorer is the main component of the Home Page. Here, you can create and interact with content, work with data, create sample content, organize your repository structure and perform other essential tasks. The WebFOCUS Explorer is shown in the following image.

The WebFOCUS Explorer consists of the following elements:

- **Navigation bar**

  The navigation bar is located beneath the banner and above the WebFOCUS Explorer area. You can use the navigation bar to move between folders in your repository, search the contents of a domain or folder, change the view of items in the content area, and refresh content in a domain or folder you select.
When you drill down into folders in your repository, the navigation bar generates a breadcrumb trail that you can use to move between folders. You can move back one folder or multiple folders in a single click. You can click a folder name to view the contents of that folder. You can also click arrows between the folders, to see the file structure that is currently displayed, as shown in the following image. The selected folder appears in bold text.

From the navigation bar, you can also search for items in your repository. To search for an item, type a key word in the Search field and press Enter. The results of your search display in the content area.

Resources tree

The Resources tree provides a way to view your repository structure and navigate between domains and folders that are available to you. The following image shows an example of a Resources tree.
You can expand or collapse folders by clicking the plus (+) or minus (-) sign. When you click a folder, its contents display in the content area. You can also right-click a folder to access a shortcut menu of available options.

**Action bar**

You can use the Action Bar to create analytical content, upload files and spreadsheets, connect to data, build portals and pages, schedule procedures, and generate sample content using the options available to you for a domain or folder. The following image shows an example of the Action Bar an advanced or basic user has access to for a folder.

The default view of the Action Bar displays the most common options available to you.

**Content area**

The content area displays the items contained within a domain or folder that is currently selected. An example of a content area is shown in the following image.
If a resource contains folders and items, the folders are always displayed first, followed by the items. Items shown in the content area include reports, charts, pages, portals, and more.

**Using the Action Bar**

The Action Bar is available on the Home Page, in the Content View and enables you to create analytical content, upload files and spreadsheets, connect to data, build portals and pages, schedule procedures, and generate sample content.

Access to options and categories on the Action Bar is subject to permissions and determined by your role in a domain. Contact your administrator to obtain access to additional options. To learn more about roles, see the *WebFOCUS Security and Administration* technical content.

Action Bar categories display at the folder level, and not from the Domains node view. If you click the Domains node, the Action Bar displays Domain and Folder buttons.

**Action Bar Overview**

Depending on your view, the Action Bar is organized by tabs into the following categories:

- **Common.** Displays buttons for actions you would most commonly use.
- **Data.** Displays buttons for using different WebFOCUS data workflows.
- **Designer.** Displays buttons for content that can be created using WebFOCUS Designer.
- **InfoAssist.** Displays buttons for content that can be created using InfoAssist.
- **Schedule.** Displays buttons for using WebFOCUS ReportCaster.
- **Other.** Displays buttons for additional WebFOCUS actions, such as creating links, shortcuts, blogs, and collaborative portals.
Similar to the Resources tree, you can collapse the actions bar to make more room for the content area. To collapse the actions bar, click the arrow in the upper-right corner of the actions bar, as shown in the following image.

The following table lists and describes all of the content items that you can create from the Action Bar on the WebFOCUS Home Page.

<table>
<thead>
<tr>
<th>Action Button</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Folder</td>
<td>Creates a folder or a portal section if used inside a portal. This option is available from the Common and Other tabs.</td>
</tr>
<tr>
<td></td>
<td>Upload Data</td>
<td>Uploads an Excel spreadsheet, CSV, JS, or XML file to your database. This option is available from the Common and Data tabs.</td>
</tr>
<tr>
<td></td>
<td>Connect</td>
<td>Creates synonyms by connecting to various data sources. This option is available from the Common and Data tabs.</td>
</tr>
<tr>
<td></td>
<td>Workbook</td>
<td>Creates a workbook file, where you can create charts, combine embedded charts with external content, and use the integration of the chart and page modes to create compelling displays. This option is available from the Common and Designer tabs.</td>
</tr>
<tr>
<td></td>
<td>Chart (Designer)</td>
<td>Creates a graphical representation of data in WebFOCUS Designer. This option is available from the Common and Designer tabs.</td>
</tr>
<tr>
<td><strong>Action Button</strong></td>
<td><strong>Name</strong></td>
<td><strong>Description</strong></td>
</tr>
<tr>
<td>------------------</td>
<td>----------</td>
<td>-----------------</td>
</tr>
</tbody>
</table>
| ![Report](image) | Report   | Creates a tabular representation of your data created in InfoAssist, by default. This option is available from the Common and InfoAssist tabs.  
If you have the necessary Technical Preview enabled, the Report option is added to the Designer tab, and clicking *Report* on the Common tab or Designer tab allows you to create a report using WebFOCUS Designer. Clicking *Report* on the InfoAssist tab still creates a report using InfoAssist. |
<p>| <img src="image" alt="Page" />  | Page     | Creates a page in WebFOCUS Designer, which is a flexible interactive application for various BI content, including charts, visualization, reports, maps, URLs, and other resources. This option is available from the Common and Designer tabs. |
| <img src="image" alt="Metadata" /> | Metadata | Enables you to edit or delete previously created synonyms. This option is available from the Data tab. |
| <img src="image" alt="Reporting Object" /> | Reporting Object | Creates a report procedure (FEX) that is a tailored view of data that groups or individual users use to create personal reports quickly, and in compliance with the reporting rules and guidelines of your company. This option is available from the Data tab. |
| <img src="image" alt="Chart (InfoAssist)" /> | Chart (InfoAssist) | Creates a graphical representation of your data created in InfoAssist. This option is available from the InfoAssist tab. |
| <img src="image" alt="Visualization" /> | Visualization | Creates a graphical representation of your data, comprised of one or more visuals. Visuals can be charts, maps, or grids. This option is available from the InfoAssist tab. |</p>
<table>
<thead>
<tr>
<th>Action Button</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>📄</td>
<td>Document</td>
<td>Creates a customized document in InfoAssist. This option is available from the InfoAssist tab.</td>
</tr>
<tr>
<td>📝</td>
<td>Sample Content</td>
<td>A set of sample charts, reports, and dashboard that is generated automatically based on uploaded Excel workbooks, CSV files, or existing single-segment Master Files in your repository. This option is available from the InfoAssist tab.</td>
</tr>
<tr>
<td>⏰</td>
<td>Alert</td>
<td>Creates a report procedure that evaluates whether a defined condition is true or a file exists to determine whether to run (trigger) the specified or referenced report request. ReportCaster can be used to schedule and distribute an Alert report and specify how the Alert test should be evaluated after it has been triggered. This option is available from the InfoAssist tab.</td>
</tr>
<tr>
<td>📘</td>
<td>Access List</td>
<td>Specifies the groups and users that the private Library report can be shared. This option is available from the Schedule tab.</td>
</tr>
<tr>
<td>💌</td>
<td>Distribution List</td>
<td>Specifies the email addresses, directory locations, or printers that you can configure to distribute a schedule. This includes Email, FTP, or Printer. This option is available from the Schedule tab.</td>
</tr>
<tr>
<td>🔔</td>
<td>Schedule</td>
<td>Specifies when to run a report procedure, how to distribute the report (Email, FTP, Report Library, Printer), and the destination to which the report will be distributed. This is available when you are licensed for ReportCaster. This option is available from the Schedule tab.</td>
</tr>
<tr>
<td><strong>Action Button</strong></td>
<td><strong>Name</strong></td>
<td><strong>Description</strong></td>
</tr>
<tr>
<td>------------------</td>
<td>------------</td>
<td>-----------------</td>
</tr>
<tr>
<td><img src="image" alt="Upload File" /></td>
<td>Upload File</td>
<td>Uploads files such as images and office documents to the repository. This option is available from the Other tab.</td>
</tr>
<tr>
<td><img src="image" alt="URL" /></td>
<td>URL</td>
<td>Creates a link to a web page that can be displayed inside a portal or page or within the WebFOCUS repository. This option is available from the Other tab.</td>
</tr>
<tr>
<td><img src="image" alt="Shortcut" /></td>
<td>Shortcut</td>
<td>Creates a shortcut to a repository file or a Master file. This option is available from the Other tab.</td>
</tr>
<tr>
<td><img src="image" alt="Text Editor" /></td>
<td>Text Editor</td>
<td>Opens a simple editor where you can create, view, and edit the source code for procedures, procedure components, Master Files and Access Files, and other types of files. This option is available from the Other tab.</td>
</tr>
<tr>
<td><img src="image" alt="Blog" /></td>
<td>Blog</td>
<td>Creates an interactive item that operates as commonly seen blogs on the internet, and allows users to post and view comments. This option is available from the Other tab.</td>
</tr>
<tr>
<td><img src="image" alt="Portal Page" /></td>
<td>Portal Page</td>
<td>Creates a page from which you can organize dynamic content. A portal page can be created as part of a portal, in which case it resides in the Resources folder of that portal by default. Portal pages can only be viewed inside a portal. This option is available from the Other tab.</td>
</tr>
<tr>
<td>Action Button</td>
<td>Name</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Collaborative Portal</td>
<td>Creates an analytical content management and deployment system that provides a flexible environment for users to access BI content, including visualizations, reports, charts, maps, and interactive InfoApps. This option is available from the Other tab.</td>
</tr>
</tbody>
</table>

**Web Content Folder**

Administrators have access to a Web Content folder on the Domains level in the Resources tree. The Web Content folder provides access to the HTML, CSS, and image files that are associated with legacy self-service applications, such as those that may have been created in earlier versions of App Studio. Clicking on the Web Content folder changes the breadcrumb trail in the navigation bar, as shown in the following image.

![Web Content Folder Image]

**Web Content Subfolders**

The Web Content folder contains subfolders for various web elements, as shown in the following image.
Right-Click Options

The Web Content folder provides the right-click options Expand/Collapse, Refresh, and Security, as shown in the following image.

![Right-click options](image)

**Note:** The Expand/Collapse option is determined by the initial folder state.

All Web Content subfolders provide the following shortcut menu options: Expand/Collapse, Paste, Delete, Refresh, and Security. These menu options are shown in the following image.
From the shortcut menu, select **Security** to display Security options: Rules, Rules on this resource, Effective policy.

Security options are shown in the following image.

**Actions Bar Options**

Clicking a Web Content folder displays the following additional Create New options on the Actions Bar: Folder, Text Editor, Upload File.

The Actions Bar icons are shown in the following image.
**Global Resources Folder**

Administrators have access to a Global Resources folder on the Domains level in the Resources tree. The Global Resources folder contains files that are used to style and format your content in WebFOCUS Designer and Portal Page Designer. Clicking on the Global Resources folder changes the breadcrumb trail in the navigation bar, as shown in the following image.

![Global Resources](image1)

**Global Resources Subfolders**

The Global Resources folder contains three main subfolders: Page Templates, Page Templates (Legacy), and Themes. These main subfolders as shown in the following image.

![Global Resources Subfolders](image2)

Each main subfolder contains two additional subfolders: Standard and Custom. These subfolders are shown in the following image.
Right-Click Options

The Global Resources folder provides the right-click options Expand/Collapse and Refresh, as shown in the following image.

![Expand](image1)

![Refresh](image2)

**Note:** The Expand/Collapse option is determined by the initial folder state.

All Global Resources main subfolders and Standard subfolders provide the following shortcut menu options: Expand/Collapse, Refresh, Security, and Properties. These menu options are shown in the following image.

![Expand](image3)

![Refresh](image4)

![Security](image5)

![Properties](image6)

All Global Resources Custom subfolders provide the following shortcut menu options: Expand/Collapse, Paste, Refresh, Security, and Properties. These menu options are shown in the following image.
From the shortcut menu, select Security to display Security options: Rules, Rules on this resource, Effective policy.

Security options are shown in the following image.

**Actions Bar Options**

Clicking a Page Templates Custom subfolder displays the following additional Create New options on the Actions Bar: Folder, Page.

The Actions Bar icons are shown in the following image.

Clicking a Page Templates (Legacy) Custom subfolder displays the following additional Create New options on the Actions Bar: Folder, Portal Page.

The Actions Bar icons are shown in the following image.
Clicking a Themes Custom subfolder displays the following additional Create New options on the Actions Bar: Folder, Text Editor.

The Actions Bar icons are shown in the following image.

**Exploring Chart Creation Options**

WebFOCUS Designer enables you to quickly and easily create many different types of charts. You can build charts that use filters, matrix rows and columns, calculated fields, include runtime behavior such as Insight and Auto Drill, and many other customizable features. These charts can be added to a page or workbook with other charts to provide an expanded view of your data.
To create a chart in WebFOCUS Designer, from the WebFOCUS Home Page, on the Action bar, click the **Designer** tab or **Common** tab and click **Chart**. In the Open dialog box, navigate to a data source that you want to use and click **Select**. The following image shows WebFOCUS Designer while creating a chart.

![WebFOCUS Designer chart creation](image)

When creating a chart, the WebFOCUS Designer toolbar provides access to general properties, as well as chart-specific features to help you explore and distribute your content and provide run-time enhancements. The WebFOCUS Designer toolbar when creating a chart is shown in the following image.

![WebFOCUS Designer toolbar](image)

The following table lists and describes the controls that you can access from the WebFOCUS Designer toolbar.
<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>📉</td>
<td><strong>Application Menu.</strong> Opens a menu that includes the following options:</td>
</tr>
<tr>
<td>📚</td>
<td><strong>Open.</strong> Opens an existing chart. When creating a workbook, this option allows you to open another workbook.</td>
</tr>
<tr>
<td>🌟</td>
<td><strong>New.</strong> Creates new content in WebFOCUS Designer. This option is not available when the chart is part of a workbook.</td>
</tr>
<tr>
<td>✂️</td>
<td><strong>Save.</strong> Saves the current chart.</td>
</tr>
<tr>
<td>✂️</td>
<td><strong>Save as.</strong> Saves the current chart as a new file.</td>
</tr>
<tr>
<td>📈</td>
<td><strong>Export data.</strong> Downloads a spreadsheet containing the data in the chart.</td>
</tr>
<tr>
<td>📈</td>
<td><strong>Export image.</strong> Downloads an image of the chart.</td>
</tr>
<tr>
<td>⚖️</td>
<td><strong>View Source.</strong> Allows you to view the underlying source code of a chart. This enables you to see how the chart is built by exposing the code that comprises it. Specially, it is used by support technicians to help you with debugging charts. Within View Source, you can examine the contents of the procedure in a view only window. Clicking the <em>Export</em> button places a copy of the procedure as a .fex file into your download directory.</td>
</tr>
<tr>
<td>🗟</td>
<td><strong>Close.</strong> Close WebFOCUS Designer.</td>
</tr>
<tr>
<td>🗑️</td>
<td><strong>Save.</strong> Opens the Save dialog box, where you can save the chart to a specific location in your environment.</td>
</tr>
<tr>
<td>⇐</td>
<td><strong>Undo.</strong> Undoes the previous action.</td>
</tr>
<tr>
<td>➡️</td>
<td><strong>Redo.</strong> Available when you have undone an action. Redoes the last undone action.</td>
</tr>
<tr>
<td>📽️</td>
<td><strong>Preview.</strong> Shows the page in preview mode, allowing you to view how the page will appear when run. To exit the preview mode of the WebFOCUS Designer, click the back arrow.</td>
</tr>
<tr>
<td>Icon</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
</tr>
<tr>
<td><img src="image" alt="Thumbnail" /></td>
<td><strong>Thumbnail.</strong> Takes a snapshot of the chart to use as a thumbnail on the WebFOCUS Home Page and in the Resource selector when creating a page. A thumbnail is an image of the chart that can be used to quickly identify the component in your repository.</td>
</tr>
<tr>
<td><img src="image" alt="Show option" /></td>
<td><strong>Show option.</strong> Allows you to show or hide the chart header, chart footer, or Filter toolbar.</td>
</tr>
</tbody>
</table>
| ![More](image) | **More.** Provides options to apply Auto Drill or Auto Linking to the chart, set it to be an Auto Link target, enable Insight for the chart, and enable Automatic refresh.  
**Note:** Charts that are part of a workbook cannot be Auto Link targets or run with Insight. |
| ![Settings](image) | **Settings.** Opens the Designer Settings dialog box, where you can change the following settings:  
- **Preview data.** Allows you to choose to show Live data from the data source or generic Dummy data in the canvas at design time when creating a chart.  
- **Record limit.** When Live Data is selected, allows you to specify the number of records from the data source to display in the canvas at design time when creating a chart. |
| ![Help](image) | **Help.** Launches the online Help content. |
When creating a chart, you use fields from a selected data source. Placing a field into a bucket adds that field to the chart, creating, sizing, or styling chart elements accordingly. Fields can be selected from the Field panel, as shown in the following image.

The Field panel includes the Fields tab and Variables tab.
When viewing fields, the menu at the top of the panel allows you to change how the fields are displayed. You can switch between Folder view, which shows your fields organized into folders and hierarchies, and Flat view, which shows a single list of fields in your data source. You can also choose whether to split dimensions and measures into separate sections of the panel and choose whether to show the field titles, field names, or field paths. The Enforce Paths option automatically checks any joins in your data source to ensure that all fields are connected. If a field is used whose table is not joined to another table, Enforce Paths will not allow fields from that disconnected table to be used, ensuring that the request executes successfully.

To add a field to the chart, drag it into a bucket on the Display tab or onto the canvas. Right-clicking a field provides further options, depending on the type of field. These options include the ability to add the field to the chart or filter toolbar, use a dimension field as a measure or a measure field as a dimension, create bins for measure fields, or create a define field using the selected field. You can also create a define using the menu to the right of the Dimensions and Measures sections.

Drag a field into the Filter toolbar above the canvas to create a dynamic parameter filter for the chart. Click the filter to open it and select default values.

The Variables tab contains a list of variables and preset filters defined in your data source, as well as default system variables. To add a variable to the chart to use as a filter, drag it into the Filter toolbar.
Adding fields to a chart places them in corresponding buckets that define the information displayed in the chart. Different buckets are available for different chart types. The following image shows the available buckets for a bar chart.
By contrast, the following image shows the available buckets for a ring pie chart.

The ring pie chart uses a Measure bucket that is not used in a bar chart. This is because bar charts use the Vertical and Horizontal buckets for the height and number of risers in the bar charts, as well as for matrix rows and columns. In a ring pie chart, the Vertical and Horizontal buckets are used for matrix rows and columns only, while the number and size of slices in the chart are defined by the Color and Measure buckets, respectively.

Depending on the type of chart that you create, you may see some of the following buckets:

- Vertical
- Horizontal
The Display tab also includes options that you can use to modify the structure of the chart. These options are also different for each chart type. The display options for a bar chart are shown in the following image.

The menu to the right of each bucket label also provides different options, depending on the bucket. These options include the ability to clear the bucket, split the x-axis for multiple measures, or use measure names in the Color field.
When placed in the Vertical and Horizontal buckets, fields display icons indicating the sort order of the field and provide an option to use the field as a matrix row or column. In the following image, the Vertical bucket contains a matrix row field and a vertical axis measure field.

When placed into buckets, aggregate field labels appear in green while sort field labels appear in blue.

You can also right-click a field label in the Display tab to access options pertaining to that field. These options include field format, sorting, and more.
The tabs above the buckets allow you to switch from the Display tab to the Style tab. The Style tab contains a set of options to format the chart. These options include general options, as well as options specific to each chart type. You can use the Quick Access menu to access different sets of formatting options. For example, the following image shows the menu to access different sets of options for a bar chart.

![Menu to access different sets of options for a bar chart](image)

General options include the ability to change the theme or style sheet, format the chart frame and background, and define sizing and behavior for null values. The other sets of options contain settings for different elements of the chart and settings specific to certain chart types. For more information on these options, see the content about different formatting options and formatting specific chart types.

The current state of the chart appears on the canvas. When you add fields to the chart, either by dragging fields to buckets or onto the canvas itself, the chart on the canvas is automatically refreshed.

The canvas also contains, if enabled in the Show option menu, a Chart Heading section and a Chart Footing section. You can double-click these sections to add and edit the header and footer text for the chart.

When editing the chart header, a text toolbar appears, allowing you to make modifications to the header or footer text including font, size, style, alignment, and color. You can also drag a field from the Field panel into this area to create a dynamic header or footer containing the displayed field value.
Above the canvas is the Filter toolbar. The Filter toolbar enables you to quickly filter your chart with a dynamic parameter for the selected field. To add a filter, drag a field from the Field panel to the Filter toolbar. Click the filter to open the control, allowing you to select filter values for the chart. The selection control changes depending on whether the field is a character field, numeric field, or date field. If no value is selected, all values will be available.

If you right-click a filter, you can set it to exclude the selected values or choose whether to allow one value or multiple selected values. If you filter for all values and then right-click the filter and click Require Selection, the chart will not load until a value is selected.

To see a run-time view of the chart, including behaviors such as tooltips and Auto Drill that are not available in the canvas, click Preview on the WebFOCUS Designer toolbar.
You can change chart types using the Chart Picker. Click a chart type to quickly change to that type of chart. The canvas and the Display and Format panel refresh accordingly. The Chart Picker is collapsed by default. When collapsed, the Chart Picker shows a default set of 14 chart types, as shown in the following image.
You can expand the Chart Picker by clicking the left arrow at the bottom. This reveals an extra set of Business charts and a Custom section containing HTML5 chart extensions that have been enabled in your environment, as shown in the following image.
Accessing Fields and Variables

In order to build charts and reports, you use fields from a selected data source to define the data that appears in your content. When you open WebFOCUS Designer and select a data source, the fields and variables defined in it appear in the Data pane, which is shown in the following image.

The Data pane contains two tabs, which allow you to view fields and variables. You can add fields to buckets to populate a chart, add fields and system variables to a chart header or footer to add dynamic text, and add fields and query variables to the Filter toolbar to filter the chart.
You can control how fields and variables are presented by using the View Selector menu, which is shown in the following image.

![View Selector Menu]

The following options are available:

- **Field layout.** Choose how the fields in your data source are organized. Folder view is the default.
  - **Folder view.** Organizes fields into folders based on segments and field hierarchies defined in the data source.
  - **Flat view.** Lists all fields in alphabetical order on the same level instead of grouping them into folders.

- **Split dimensions/measures.** By default, dimension fields and measure fields in the data source are separated into different sections of the Fields tab, highlighting the different roles they perform in sorting and aggregating the values in a chart. You can deselect this setting to show all fields in a single pane. This option is unavailable when viewing the Variables tab.
- **Field identifier.** You can choose how fields are identified in the Fields tab. By default, field titles display. You can choose to show the field name or field path and name instead.

- **Show title.** Displays field titles in the Fields tab. The field title is a logical name defined in the data source that is used in axis labels, column headers, tooltips, and other areas.

- **Show name.** Displays field names. The field name is the literal name of the field listed in the data source.

- **Show path and name.** Displays qualified field names. This option shows the field name, as well as the file and segment where the field is located.

- **Enforce paths.** Selecting Enforce paths means that any joins in your data are automatically checked to ensure that all fields are connected. If a field is used from a table that is not joined to another table whose fields are being used, Enforce paths will not allow that field or any other fields from the disconnected table to be used, ensuring that the request executes successfully. This option is deselected, by default.

You can search for a field or a variable using the search bar. Type a text string into the search bar text box to filter for fields or variables whose titles or names contain that string. The list of fields or variables refreshes dynamically to display values that contain the string. The string can appear at any point in the field name or title.

To clear the search query, click the X button in the search bar, as shown in the following image.

![Search Bar Example](image)

**Using the Fields tab**

The fields in your data source are available from the Fields tab. By default, if the data source uses folders to organize the fields that it contains, these folders are reflected in the Fields tab. This folder organization is called a business view. For dimension fields, these folders could be field hierarchies defined in the data source or segments in the data based on different tables that have been joined together. Measures can also be grouped based on segments.

Icons identify whether a folder is a basic folder or a hierarchy, and whether a field is a character, geography, date, or numeric field. Calculated fields are indicated by a function symbol added to the field icon.

By default, the Fields tab is divided into two sections, one for dimension fields and one for measure fields.
Dimension fields are categories that sort and organize the values in your data. For example, product categories, customer names, geographic locations, and dates are all commonly used as dimensions. In a chart, each value in a dimension field often defines a separate section of the chart. For example, each dimension value might be represented by a riser in a bar chart, a slice in a pie chart, or a point in a scatter plot.

Dimension fields in your data source can be organized into hierarchies, where the top field is the most general and the bottom field is the most specific. The following image shows a hierarchy of product fields.

Note: Hierarchies in cube data sources do not include a Values list in WebFOCUS Designer.
Some dimension fields can also be expanded to show attributes. Attributes are other fields that provide additional information about field values. Each attribute field value is correlated to a value of the field that it describes. For example, in the following image, the attribute fields for the Customer City field, listed in the Customer,City Details folder, provide information such as the latitude, longitude, and population of each city value.

Measure fields supply quantitative values for each category defined in the chart, often sizing components of a chart or applying a color scale to reflect those values. Measure values are typically numeric fields.

To add a field to a chart, drag it from the Data pane into a bucket or onto the chart canvas. Different buckets are configured to use different kinds of fields. For example, in a bar chart, the first field added to the Vertical bucket is used as a measure to aggregate the sort values in the chart. Therefore, you will typically use a measure field in this bucket. Similarly, you will typically use a dimension field in the Horizontal bucket for a bar chart in order to determine the values that each bar represents. If you use a measure field in the Horizontal bucket using the Add as dimension option, a bar will be generated for each value in the measure field.
If a bucket is designed to use only measure fields or only dimension fields, you cannot drag a field into it from the Fields tab. To indicate this, the cursor changes to a cancel sign when pointing to an invalid bucket. For example, when creating a vertical bar chart, you cannot drop a measure field into the Horizontal bucket, or a dimension field into the size bucket. If you drop a dimension field into the Vertical bucket, instead of aggregating the report like a measure field in the Vertical bucket would, matrix rows are created for each value in the dimension field.

Instead, to add a measure field to a dimension bucket, right-click the field in the Fields tab and click *Add as dimension*. The field is added to the default dimension bucket, and appears in blue, indicating that it is a dimension, as shown in the following image.

![Horizontal](image1)

Similarly, to use a dimension field as a measure, right-click it and click *Add as measure*. The field is converted to a measure by applying the CNT. aggregation function, which provides a count of data records, and added to the default measure bucket. The field appears in green, indicating that it is a measure, as shown in the following image.

![Vertical](image2)

You can then move the field into another bucket that accepts measure fields.

You can right-click the field in the measure bucket and point to *Aggregate* to change the prefix operator aggregation from count (CNT.) to count distinct (CNT.DST.), which provides the number of distinct values for the field, or percent of count (PCT.CNT.), which computes percentages based on the number of instances found.

Some buckets accept measure fields and dimension fields, but use different types of fields differently. For example, if you add a measure field to the Color bucket for a bar chart, a color scale is generated, and each bar is colored according to that scale. If you add a dimension field to the color bucket, a legend is created. The bars are each segmented into different colored sections based on the legend.
You can add fields to other areas, as well. If you drag a field to the Filter toolbar, you can create a filter for the field. If the field is a character field, you can select values from a list. If the field is a numeric field, you can use a slider to specify filter values. If the field is a date field, you can use a calendar to select dates or use a predefined date range.

If you drag a field into the chart header or footer, the field is used as a parameter to dynamically provide a value in the header or footer text. The first value found for the field is displayed at run time. Using a field in the header or footer is especially useful if that field is also used to filter the chart or if it is used as a multipage field. The following image shows WebFOCUS Designer with the Customer Country field added to the header of a chart that is filtered to only show data for the United States.
The following image shows the chart at run time. The chart header displays *United States*, which is the value of the Customer Country parameter.

![Product Sales in United States](image)

You can manipulate fields from the Fields tab as well. You can right-click a field to add it to the chart, create a filter for it, or create a define using the selected field. If you right-click a dimension field, you can add it to the chart as a measure. When you do this, an aggregation function that calculates a *count* of the dimension values is applied to the Dimension, and the field is placed in the bucket.

Similarly, you can right-click a measure field and add it as a dimension. In this case, the measure value in each row of the data source is used as a sort value in the chart. You can also right-click a measure and point to *Bin values* to create bins. Bins are ranges of values that you can use to sort the chart. For example, bins are used in histograms to plot the distribution of data values.
You can right-click a measure or dimension once they are added to the chart to access additional options. For example, if you right-click a dimension added to a chart, you can change the location of the axis, the sort order, create a compute, and more, as shown in the following image.

![Image showing filter toolbar options](image.jpg)
If you right-click a measure added to a chart, you can set it to use a logarithmic scale, set sorting, apply an aggregation function, use a quick transform, create a compute, and more, as shown in the following image.

<table>
<thead>
<tr>
<th>Add to filter toolbar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log scale</td>
</tr>
<tr>
<td>Shape</td>
</tr>
</tbody>
</table>

- No sort
- Sort ascending
- Sort descending
- Sort limit

- Format data
- Aggregate
- Quick transform
- New calculation...

- Rename
- Hide
- Remove
In the Fields tab of the Data pane, you can also create a calculation that runs before aggregation (DEFINE) by clicking the ellipsis buttons on the top right of the Dimensions and Measures panes, and clicking New calculation, as shown in the following image.

![New calculation button](image)

**Using the Variables Tab**

The Variables tab contains a set of predefined parameters that you can use to add information to the chart header or footer, build dynamic calculated fields, or quickly create filters based on conditions defined in the data source.
The available variables are divided into two sections, System Variables and Query Variables, as shown in the following image.

<table>
<thead>
<tr>
<th>System Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Today's date (default format)</td>
</tr>
<tr>
<td>Today's date (mm/dd/yyyy)</td>
</tr>
<tr>
<td>Today's date (yyyy/mm/dd)</td>
</tr>
<tr>
<td>Today's date (dd/mm/yyyy)</td>
</tr>
<tr>
<td>Time of Day (hh:mm:ss)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Query Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filters and Variables</td>
</tr>
<tr>
<td>Product Filter</td>
</tr>
<tr>
<td>Accessories</td>
</tr>
<tr>
<td>Discontinued</td>
</tr>
<tr>
<td>Store Name</td>
</tr>
<tr>
<td>Web Store</td>
</tr>
<tr>
<td>Store Front</td>
</tr>
<tr>
<td>Geography, Customer</td>
</tr>
<tr>
<td>Geography, Store</td>
</tr>
</tbody>
</table>

System Variables are predefined variables that are always available for use. These are:

- Today's date (default format)
- Today's date (mm/dd/yyyy)
- Today's date (yyyy/mm/dd)
- Today's date (dd/mm/yyyy)
- Time of Day (hh:mm:ss)
These values are dynamic, and are set when your content is run. That means that if you use a system variable to show the current date, it will display the date that the chart was run, regardless of when the chart was created.

You can use a system variable in two ways. You can drag a system variable to the chart header or chart footer to create a dynamic label that shows when the chart was run. If you run a chart multiple times as your data updates, adding the date and time of day when the chart was executed to the header or footer can tell you when it was generated, differentiating between multiple executions of the same procedure.

You can also add a system variable to a calculated field. For example, you could create a calculated field that uses a date function like DTADD to subtract 7 days from the date indicated by a system variable. You could then filter by this calculated field to create a chart that always only shows the last week of data.

The Variables tab also contains Query Variables. Query variables are preset filters that are defined in the data source. You can use one by dragging it to the Filter toolbar.

For example, the following image shows a query variable called Store Front that has been added as a filter in the chart.

![Store Front Filter](image)

This filter has already been set in the data source to exclude sales made online. When you drag it to the Filter toolbar, you can choose whether the filter is set to True or False. When set to True, the filter is applied. Only brick and mortar stores are included in the chart. When set to False, the filter is excluded. Brick and mortar stores are excluded from the chart, so only online sales are included. When the filter is set to All, it has no effect on the chart.

When you right-click a query variable, you can add it to the Filter toolbar or create a new calculation using the filter.

**Exploring Report Creation Options**

A report is a tabular display of data, in which quantitative measure values are displayed in rows and columns based on categorical dimension values. As a Technical Preview feature, WebFOCUS Designer provides tools to expand on this basic structure through organization, filtering, and formatting options, among others.
To enable the Technical Preview so that you can create reports using WebFOCUS Designer, on the WebFOCUS Home Page, expand the User menu, point to Administration and click Administration Console. In the Administration Console, from the navigation pane on the Configuration tab, click Other. On the Other page, type DesignReports in the Technical Preview Features field, and then click Save.

To create a report, on the WebFOCUS Home Page, select the domain or folder in which you want to save your content, click Designer on the Action bar, and then click Report. You are then prompted to select a data source, which defines the fields that you can use to build the report. Once you have selected a data source, WebFOCUS Designer opens in report mode.

When creating a report, the WebFOCUS Designer toolbar provides access to general content-creation functionality, as well as report-specific features to help you explore and contextualize your content and provide run-time enhancements. The WebFOCUS Designer toolbar when creating a report is shown in the following image.

![WebFOCUS Designer Toolbar](image)

The following table lists and describes the controls that you can access from the WebFOCUS Designer toolbar when creating a report.
<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Icon" /></td>
<td><strong>Application Menu.</strong> Opens a menu that includes the following options:</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>- <strong>Open.</strong> Opens an existing report. When creating a workbook, this option allows you to open another workbook.</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>- <strong>New.</strong> Creates new content in WebFOCUS Designer. This option is not available when the report is part of a workbook.</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>- <strong>Save.</strong> Saves the current report.</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>- <strong>Save as.</strong> Saves the current report as a new file.</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>- <strong>Export data.</strong> Downloads a spreadsheet containing the data in the report.</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>- <strong>View Source.</strong> Allows you to view the underlying source code of a report. This enables you to see how the report is built by exposing the code that comprises it. Specially, it is used by support technicians to help you with debugging reports. Within View Source, you can examine the contents of the procedure in a view only window. Clicking the Export button places a copy of the procedure as a .fex file into your download directory.</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td>- <strong>Close.</strong> Close WebFOCUS Designer.</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td><strong>Save.</strong> Opens the Save dialog box, where you can save the report to a specific location in your environment. Once the report has been saved, clicking Save overwrites the existing saved report.</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td><strong>Undo.</strong> Undoes the previous action.</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td><strong>Redo.</strong> Available when you have undone an action. Redoes the last undone action.</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td><strong>Preview.</strong> Shows the report in preview mode, allowing you to view how the page will appear when run. To exit the preview mode of the WebFOCUS Designer, click the docked back arrow button or press the Esc key.</td>
</tr>
</tbody>
</table>
## Introducing WebFOCUS Designer

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Icon" /></td>
<td><strong>Show option.</strong> Allows you to show or hide the page header, page footer, or Filter toolbar.</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td><strong>More.</strong> Provides options to apply Auto Drill or Auto Linking to the chart, set it to be an Auto Link target, and add column and row totals. <strong>Note:</strong> Reports that are part of a workbook cannot be Auto Link targets or run with Insight.</td>
</tr>
</tbody>
</table>
| ![Icon](image) | **Settings.** Opens the Designer Settings dialog box, where you can change the following settings:  
- **Preview data.** Allows you to choose to show Live data from the data source or generic Dummy data in the canvas at design time when creating a chart.  
- **Record limit.** When Live Data is selected, allows you to specify the number of records from the data source to display in the canvas at design time when creating a chart. |
| ![Icon](image) | **Help.** Launches the online Help content. |
When creating a report, you use fields from a selected data source. Placing a field into the Rows, Columns, or Summary bucket adds that field to the report to sort it into rows, sort it into columns, or display aggregated values.

The Field panel includes the Fields tab and Variables tab.
When viewing fields, the menu at the top of the panel allows you to change how the fields are displayed. You can switch between Folder view, which shows your fields organized into folders and hierarchies, and Flat view, which shows a single list of fields in your data source. You can also choose whether to split dimensions and measures into separate sections of the panel and choose whether to show the field titles, field names, or field paths. The Enforce Paths option automatically checks any joins in your data source to ensure that all fields are connected. If a field is used whose table is not joined to another table, Enforce Paths will not allow fields from that disconnected table to be used, ensuring that the request executes successfully.

To view the selected data source and join it to additional related data sources, click the Data tab at the bottom of the Designer interface. You can return to the report by clicking the report tab.

To add a field to the report, drag it into a bucket on the Display tab or onto the canvas. Right-clicking a field provides further options, depending on the type of field. These options include the ability to add the field to the report or filter toolbar, create bins for measure fields, or create a define field calculation using the selected field. You can also create a define using the menu to the right of the Dimensions and Measures areas.

The Variables tab contains a list of variables and preset filters defined in your data source, as well as default system variables. To use a variable to filter the report, drag it into the Filter toolbar.
Adding fields to a bucket in the report defines how the report is structured. The Rows bucket creates a row for each unique value in each field within it, sorting the aggregate or detail values in the report. You can use multiple fields in the Row bucket to show more granular information in the report. In the following image, the Product Category and Sale Year fields have both been placed in the Rows bucket, with the Quantity Sold and Revenue fields in the Summary bucket providing aggregated values for each row.

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Sale Year</th>
<th>Quantity Sold</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories</td>
<td>2016</td>
<td>63,836</td>
<td>$16,060,415.69</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>139,977</td>
<td>$35,619,872.81</td>
</tr>
<tr>
<td></td>
<td>2018</td>
<td>209,571</td>
<td>$53,208,007.57</td>
</tr>
<tr>
<td>Camcorder</td>
<td>2016</td>
<td>56,782</td>
<td>$19,438,607.89</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>123,972</td>
<td>$42,396,539.60</td>
</tr>
<tr>
<td></td>
<td>2018</td>
<td>187,033</td>
<td>$63,107,166.95</td>
</tr>
<tr>
<td>Computers</td>
<td>2016</td>
<td>34,626</td>
<td>$7,857,928.55</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>89,626</td>
<td>$24,176,475.33</td>
</tr>
<tr>
<td></td>
<td>2018</td>
<td>188,736</td>
<td>$63,190,001.88</td>
</tr>
<tr>
<td>Media Player</td>
<td>2016</td>
<td>92,435</td>
<td>$30,105,200.05</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>199,311</td>
<td>$65,002,426.97</td>
</tr>
<tr>
<td></td>
<td>2018</td>
<td>315,783</td>
<td>$99,448,235.40</td>
</tr>
</tbody>
</table>
The Columns bucket creates a set of measure columns for each unique value in each Column field. Like the Rows bucket, fields in the Columns bucket can be used to sort the aggregate or detail values in the report, and you can use multiple Column fields to display more granular information. In the following image, Product Category is in the Rows bucket, while Sale Year is in the Columns bucket. Since Quantity Sold and Revenue are in the Summary bucket, they are repeated in separate columns for each Sale Year value.

<table>
<thead>
<tr>
<th>Product Category</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Quantity Sold</td>
<td>Revenue</td>
<td>Quantity Sold</td>
<td>Revenue</td>
</tr>
<tr>
<td>Accessories</td>
<td>63.836</td>
<td>$16,060,416.69</td>
<td>139.977</td>
<td>$35,819,872.91</td>
</tr>
<tr>
<td>Camcorder</td>
<td>59.782</td>
<td>$19,438,076.89</td>
<td>123.972</td>
<td>$42,396,539.60</td>
</tr>
<tr>
<td>Computers</td>
<td>34.626</td>
<td>$7,857,926.55</td>
<td>89.626</td>
<td>$24,170,475.33</td>
</tr>
<tr>
<td>Media Player</td>
<td>92.435</td>
<td>$30,105,200.05</td>
<td>199.311</td>
<td>$65,002,426.97</td>
</tr>
<tr>
<td>Stereo Systems</td>
<td>138.850</td>
<td>$36,604,611.32</td>
<td>302.717</td>
<td>$79,343,037.84</td>
</tr>
<tr>
<td>Televisions</td>
<td>11.542</td>
<td>$9,295,726.31</td>
<td>24.940</td>
<td>$20,042,655.67</td>
</tr>
<tr>
<td>Video Production</td>
<td>25.032</td>
<td>$7,313,170.38</td>
<td>54.853</td>
<td>$15,959,666.25</td>
</tr>
</tbody>
</table>

The Summary bucket aggregates measure field values for each sort value in the report. Measure values are summed, by default, for each sort row and sort column value. You can right-click a field in the Summary bucket and point to Aggregate to aggregate measure values using a different operation, such as average or percent. Adding multiple fields to the Summary bucket creates multiple measure columns in the report. These columns are repeated for each Column value, if any have been added.

While the Summary bucket is the default measure bucket, it is not the only option for displaying measure values. You can use the display options to change the Summary bucket to the Count, Detail, or Detail with counter bucket to display different information for the fields within it. The display options can be accessed above the buckets, as shown in the following image.

The Count bucket, enabled by selecting the Count display option, aggregates values in the report by displaying the number of records for each field within it, for each sort value. The Detail bucket, enabled by selecting the Detail display option, does not aggregate the values of the fields within it. Instead, it displays all values for the selected fields. The Detail with counter bucket, enabled by selecting the Detail with counter display option, displays all values for the selected fields, similar to the Detail bucket, and also counts the rows for each primary sort field.
The menu to the right of each bucket label also provides different options, depending on the bucket. On all buckets, this menu allows you to create a new field list parameter or clear the bucket. For the Rows bucket, you can also create a new calculation, and for the measure bucket, you can change the display option or create a new calculation.

When placed into buckets, aggregate field labels appear in green while sort field labels appear in blue. Hidden fields appear slightly dimmed. When placed in the Row and Column buckets, fields display icons indicating the sort order of the field. You can click this icon to change the sort order from ascending to descending. You can drag fields around within a bucket to reorder them, or click the X on a field in a bucket to remove it.

To remove all fields from the report, click the Clear buckets content icon above the buckets.

You can also right-click a field label in the Display tab to access options pertaining to that field. These options include field format, sorting, and more.

The tabs above the buckets allow you to switch from the Display tab to the Style tab. The Style tab contains a set of options to style and format the report. You can select a theme to provide automatic styling to different components of the report, such as headers, column titles, and data values, based on a predefined StyleSheet. You can also change the output format. You can use the default HTML format, which runs your report in a web browser, or you can use the Offline Analysis option to enable a number of in-document analytic options that allow you to interact with the report and explore the data that it was created with, even without a connection to the original data source.

The current state of the report appears on the canvas. When you add fields to the report, either by dragging fields to buckets or onto the canvas itself, the report on the canvas is automatically refreshed.

You can quickly and easily change the layout of the report by using the report picker, which is shown in the following image.
You can click a pattern in the report picker to instantly change how the field values are arranged on the report, by having sort field values display on each row instead of showing blanks to indicate repeated values, or by using stacked measures to organized measure fields in sets of rows instead of columns.

The canvas also contains, if enabled in the Show option menu, a page heading section and a page footing section. You can double-click these sections to add and edit the header and footer text for each page of the report.

When editing the header or footer, a text toolbar appears, allowing you to make modifications to the text including font, size, style, alignment, and color, as shown in the following image.

You can also drag a field from the Field panel into the heading or footing area to create a dynamic header or footer containing the displayed field value. If there are page breaks in the report that affect the field added to the header or footer, a different field value appears on each page.

Above the canvas is the Filter toolbar. The Filter toolbar enables you to quickly filter your report with a dynamic parameter for the selected field. To add a filter, drag a field from the Field panel to the Filter toolbar. Click the filter to open the control, allowing you to select filter values for the report. The selection control changes depending on whether the field is a character field, numeric field, or date field. If no value is selected in the filter control, all values are displayed in the report, and no filtering is applied.

If you right-click a filter, you can set it to exclude the selected values or choose whether to allow one value or multiple selected values. If you click Require Selection, the report will not load until a value is selected to dynamically filter the report at run time.

To see a run-time view of the report, including behaviors such as Auto Drill, Auto Linking, or dynamic filtering that are not available in the canvas, click Preview on the WebFOCUS Designer toolbar.

**Exploring Page Creation Options**

You can create interactive responsive pages using content that you or other members of your organization create. Content can be added to a page by utilizing drag-and-drop actions. With the interactive canvas, you can resize and rearrange resources with ease. Additionally you can use the integrated filter control capability to create instant, compelling applications and InfoApps from your content.
To create a page, from the WebFOCUS Home Page, on the Action bar, click the Common tab or Designer tab and click Page, then select a page template.

When creating a page, WebFOCUS Designer includes the following components that contain different tools and functionality.

When working with pages, WebFOCUS Designer consists of the following components:

- WebFOCUS Designer toolbar
- Resource selector
- Canvas
- Page toolbar
- Properties panel

The WebFOCUS Designer toolbar provides access to general properties and interface controls that you use to help develop content in WebFOCUS Designer, as shown in the following image.
The following table lists and describes the controls that you can access from the WebFOCUS Designer toolbar.

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Image" /></td>
<td><strong>Application Menu.</strong> Opens a menu that you can use to open an existing page, create a new page, save the current page, and close WebFOCUS Designer.</td>
</tr>
<tr>
<td><img src="image2" alt="Image" /></td>
<td><strong>Save.</strong> Opens the Save dialog box, where you can save the page to a specific location in your environment.</td>
</tr>
<tr>
<td><img src="image3" alt="Image" /></td>
<td><strong>Preview.</strong> Shows the page in preview mode, allowing you to view how the page will appear when run. To exit the preview mode of the WebFOCUS Designer, click the back arrow.</td>
</tr>
<tr>
<td><img src="image4" alt="Image" /></td>
<td><strong>Quick Filter.</strong> Configures filters that automatically appear when new unbound parameters are found in the content on the page. The badge icon shows the number of parameters available.</td>
</tr>
<tr>
<td><img src="image5" alt="Image" /></td>
<td><strong>Page Filter Configuration.</strong> Opens the Page Filter Configuration dialog box, where you can choose to display filters in a filter bar above your content or in a modal window.</td>
</tr>
<tr>
<td><img src="image6" alt="Image" /></td>
<td><strong>Info Mode.</strong> Enables the informational mode that changes the view of all content items on the canvas to display their paths in the repository and parameters configured within these items.</td>
</tr>
<tr>
<td><img src="image7" alt="Image" /></td>
<td><strong>Help.</strong> Launches the online Help content.</td>
</tr>
<tr>
<td><img src="image8" alt="Image" /></td>
<td><strong>Resources.</strong> Hides or shows the Resource selector.</td>
</tr>
<tr>
<td><img src="image9" alt="Image" /></td>
<td><strong>Properties.</strong> Hides or shows the Properties panel.</td>
</tr>
</tbody>
</table>

You can use the Resource selector to access content, containers, and controls for your page. The Resource selector has the following tabs:

- Containers
- Content
- Controls
The Containers tab is shown in the following image.

Using this tab, you can select empty containers that you can drag to the canvas and populate with the content of your choice. The types of containers available to you include the following:

- Panel
- Tabbed
- Carousel
- Accordion
- Grid
- Panel group

The Content tab is shown in the following image.

The Content tab consists of two drop-down areas, Content and Repository Widgets.
The Content area, provides access to the Resources tree, where you can navigate to your content. The initial view of the Resources tree displays the directory in which the page is created. You can navigate to other domains and folders using the back arrow. Each item on the tree is represented by a thumbnail, making it easy to locate content. The following images show the Resources tree displaying two different levels of the domain hierarchy.

The Repository Widgets area, shown in the following image, displays the Explorer and Link Tile widgets, which give you more ways to interact with your content.
The Controls tab is shown in the following image.

Using this tab, you can add a text label or a Submit button to your page.

The canvas is the design area. It provides a responsive grid for all your containers and content and resizes automatically to fit any browser or device. The canvas is shown in the following image.

When you right-click the grid area, a shortcut menu of options opens that include the following:

- **Settings.** Opens Section Settings inside the Properties panel, which you can use to make the current section collapsible.

- **Style.** Opens the Style tab of the Properties panel, which you can use to apply styling to the current section.

- **Delete section.** Deletes the current section.

- **Insert section above.** Inserts a section above the current section.

- **Insert section below.** Inserts a section below the current section.
The Page toolbar is located above the canvas. Here you can edit the page title by double-clicking the text and typing the new text. You can hide the page title by disabling Title in the Properties panel.

The Page toolbar also contains two options, which are described in the following table.

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Refresh Icon" /></td>
<td><strong>Refresh.</strong> Refreshes the content on the canvas.</td>
</tr>
<tr>
<td><img src="image" alt="Filter Icon" /></td>
<td><strong>Filter.</strong> Toggles the page filter, which can be displayed as a filter bar or a filter modal window. This option is only visible when filters are added to the page.</td>
</tr>
</tbody>
</table>

You can hide the options by disabling Toolbar in the Properties panel. To hide the Page toolbar completely, disable both Title and Toolbar in the Properties panel.

You can use the Properties panel to configure properties for the element that you selected on the page. An example of the Properties panel for a page is shown in the following image. Under the Settings tab, you can toggle the title and toolbar visibility. Under the Style tab, you can configure page style and page heading.
Exploring Workbook Creation Options

A workbook combines a page and multiple charts into a single file. Using a workbook, you can create a data flow to engage in data discovery, create charts to analyze that data, and add multiple charts to a page for a broader perspective. Using a workbook is a quick way to explore your data in a single session, providing the ability to save multiple content components together for easy access.

To create a workbook, from the WebFOCUS Home Page, click the Common tab or the Designer tab, then click Workbook. In the Open dialog box, navigate to a data source and click Select. A new workbook opens to a chart component in WebFOCUS Designer.

The options available to create content in a workbook depend on the type of component you are editing. If you are editing a chart in a workbook, the available options are the same as for a stand-alone chart. If you are editing a page, the available options are those that you use to create a page.

The workbook contains additional options in the navigation area. You can use them to switch between components, add a chart to the workbook, and add a page to the workbook. There can be only one page component in a workbook. The navigation area is shown in the following image.

To delete a chart or report from a workbook containing multiple charts and reports, right-click the navigation tab for an item, select Delete, and then select Yes to confirm the deletion of the item. You cannot delete an item if it is currently being used in the page within a workbook. You must remove it from the page first, then delete it. Additionally, you cannot delete the only component in a workbook, or the page component.
Connecting to Data

Learn how you can upload, append, or merge delimited, Excel, JSON, or XML files to a target environment, configure adapters and connect to data sources that you can use to build reports, charts, and visualizations, join and blend data from multiple tables into a single view, and transform complex views of data into simple objects using WebFOCUS.

In this chapter:

- Preparing Data for Upload
- Uploading Data
- Pivoting Data
- Connecting to Data
- Editing Data
- Editing Metadata
- Joining Data
- Extending Metadata With Reporting Objects

Preparing Data for Upload

Uploading data to WebFOCUS can be made easier if you first familiarize yourself with the data file, and then ensure that it is properly formatted for upload, so that geographic data, hierarchies, and other important aspects of your data are recognized. This is important because the synonym created for your uploaded data provides the basis for quality analytical content.

You can use the following techniques to prepare your data for the uploading process.

Naming Conventions and Microsoft Excel Sheet Names

For Excel spreadsheets, the name of the file is not important, but the name of the worksheet that contains your data is used to generate the synonym name. For the best results, note the following guidelines:

- Ensure that the worksheet name is meaningful. For example, Store Sales is better than Sheet1.
Remove special characters from the worksheet name. Spaces will be converted to underscores, but all non-alphanumeric characters should be removed from the name, such as the following:

/`~!@#$%^()-+={}|;,

Remove or replace NLS characters with standard alphanumeric characters.

The following image shows a worksheet with a meaningful name, Retail Sales.

While you have an opportunity to edit the worksheet name within the Upload workflow, editing in Excel may be preferable. Note that your spreadsheet data and column titles may contain National Language Support data and special characters.

For CSV files, there is no worksheet name, so the CSV file name is used to generate the synonym name. For this reason, all of the limitations identified for Excel worksheet names apply to the CSV file name. Be sure to check and adjust the file name prior to the upload.
Removing Introductory Information

Sometimes, an Excel spreadsheet contains formatted headings in the first few rows. This information cannot be imported into WebFOCUS and should be removed. Delete the introductory rows and save the file before uploading. Alternatively, you can define a data range within your worksheet and leave the introductory information in place. The following image shows an example spreadsheet with a heading and subheadings highlighted.

Placing Column Titles in the First Row

For data to be useful in WebFOCUS, your data columns must be identified and properly described in the synonym that is generated during the upload process. You can make this easier by ensuring that the first few rows of your Excel spreadsheet contain column titles that are meaningful to you and to other users who will be using it. An example of meaningful column titles is shown in the following image.

If your spreadsheet has more than one row of column titles, WebFOCUS can merge the information when creating the synonym. You will be given an option to specify how many first rows of the Excel file contain title information in the Upload workflow.
Removing Aggregated Information

Excel spreadsheets may contain subtotals, grand totals, and other non-data row information. Data aggregation is performed by WebFOCUS, so you should remove these kinds of rows from your spreadsheet and save the file before uploading it.

Using Excel Name Ranges

Data ranges defined within your Excel worksheet can be helpful for the following reasons:

- Your worksheet may have introductory information, such as formatted headings or non-data information, in the first few columns.

- You may not want to import all of the data columns found on your worksheet.

You can define a data range in your worksheet to remove the data that you want WebFOCUS to process during upload, and leave your spreadsheet in its original format. An example of this is shown in the following image.

Preparing Hierarchical Data Columns

WebFOCUS recognizes columns of data that have hierarchical relationships. This is useful because the field names are arranged more logically in InfoAssist and because it facilitates Auto-drill capabilities in the content. Auto-drill lets you drill up and down a field hierarchy automatically, making the content engaging and useful.
To help WebFOCUS recognize hierarchical columns correctly, ensure that the column titles begin with a common word or words, and are arranged left-to-right in the correct top-to-bottom direction, as shown in the following image. In the Upload workflow, you can define and edit dimension hierarchies prior to creating the synonym. You can also do this prior to the upload in Excel.

### Removing Date Formulas

Spreadsheets may contain a date column where the values are computed by Excel using a formula. You need to convert these computed values into simple values before uploading a spreadsheet. To remove date formulas, select a column, right-click, and then click Copy. Then, right-click the selected column again and select Values. This can be found under the Paste Options menu, which is highlighted in the following image. Menu options may vary by Excel release. Now you can see that each cell contains a date value, and WebFOCUS can decompose your dates into useful components for use in InfoAssist.
Uploading Data

You can upload, append, or merge delimited, Excel, JSON, or XML files to a target environment using WebFOCUS. Your file is initially loaded to a temporary environment, where you can modify and enhance your data before loading it to permanent storage.

After you upload a new file, you can append a file by adding new data to an existing synonym, without changing the structure. This option is useful when you are working with a complex or heavily edited synonym, by allowing you to retain all previous edits and data transformations. You can also merge a file with your data and enhance the existing structure.

The procedures in this section provide step-by-step instructions for uploading, appending, and merging files.

Procedure: How to Upload Data Files

1. You can upload data in the following ways:

   - From the WebFOCUS Home Page, click the Data tab on the Action Bar, and then click the Upload Data button.

   - From the WebFOCUS Home Page, click the Designer tab on the Action Bar, then click the Workbook or Chart button, and then click Upload in the Open dialog box.

   - From the WebFOCUS Home Page, click the InfoAssist tab on the Action Bar, then click the Chart, Visualization, Report, or Document button, and then click Upload Data in the Open dialog box.

   - From the Legacy Home Page, in the Resources tree, right-click a domain or folder, point to Upload, and then click Data.

Note: The Report button appears in the Designer category if you have enabled the Technical Preview feature.

Note: After you upload your data, a shortcut to that data is added to the same folder location in the repository from where you clicked the Upload Data button.
2. Click the desktop file type in the Upload panel that you want to upload, and navigate to the location of the file on your machine.

You can select from the following file types to upload: Delimited Files, Excel, JSON, or XML.

Delimited, JSON, and XML files are individual data sources. An Excel file can be a single-worksheet or a multiple-worksheet file.
The default data preparation screen opens, as shown in the following image.

Your data is loaded into temporary storage and default data preparation is shown in a Business View panel, a modeling panel, and an output panel. There are many options for reviewing and modifying your data before you upload it to the target environment.

**Note:** Clicking the data prep icon highlighted on the ribbon takes you to a further data preparation workflow.
The Business View panel is shown in the following image.

In the Business View panel, data fields are categorized as Measures, based on numeric data types, or as Dimensions, based on non-numeric data types.
You can right-click fields to change roles, create filters and expressions, pivot, or profile data, among other options, as shown in the following image.

The modeling view panel is shown in the following image.
In the modeling view panel, you can drag and drop synonyms from the Data panel onto the canvas to create a JOIN structure, change Join Editor options, and insert a child or root. An expanded Data panel and a canvas JOIN structure is shown in the following image.

**Note:** Default data preparation is shown only for single-sheet Excel and other file types. If uploading an Excel file with multiple-worksheets, you can select the worksheet for default preparation by dragging it from the Data panel to the canvas in the modeling view panel.

The output view panel is shown in the following image.

In the output view panel you can work in an Excel-like mode. The options in each column drop-down menu are the same as the right-click options in the Business View panel.

3. If you are satisfied with how your data is displayed, click the arrow icon highlighted on the ribbon to load.
The Target Load Options dialog box opens, as shown in the following image.

![Target Load Options dialog box](image)

**Note:** The Apply Filters check box is selected by default. If you have created filters, they will be applied automatically to the load process. If you do not want filters applied automatically, but do want them applied to your created metadata, clear the Apply Filters check box.

4. If the information is correct, click *Proceed to Load.*
You are returned to the Home Page. A message displays indicating your new data is available. A shortcut to your new data is added to the repository folder from where you uploaded your data, as shown in the following image.

From the shortcut menu options, you can create new content by selecting *New*, or edit your data by selecting *Edit* as shown in the following image.
Procedure: How to Append New Data to an Existing Synonym

1. On the default data preparation screen, click the drop-down menu icon from the ribbon and then click Load Options from the drop-down menu.

   The Target Load Options dialog box opens.

   Note: By default, the Apply Filters check box is selected. If you have created filters, they will be applied automatically to the load process. If you do not want filters applied automatically, but do want them applied to your created metadata, clear the Apply Filters check box.

2. From the Load Option drop-down list, click Append to Existing.

   The Select Target Synonym dialog box opens.

3. In the Select Target Synonym dialog box, select the synonym to which you want to append your data.

4. Click OK.

   The Target Load Options dialog box opens.

5. Click OK.

   The Merge Editor dialog box opens.

6. In the Merge Editor dialog box, you can make additional changes to how your data is appended, for each column in the spreadsheet.

   You must create at least one Insert expression.

7. Click OK.

   If the load is successful your data is displayed.

8. If you are satisfied with how your data is displayed, click the arrow icon highlighted on the ribbon to load.

   You are returned to the Home Page. A shortcut to your new data is added to the repository folder from where you uploaded your data, as shown in the How to Upload Data Files procedure.

Procedure: How to Merge New Data With an Existing Synonym

1. On the default data preparation screen, click the drop-down menu icon from the ribbon and then click Load Options from the drop-down menu.

   The Target Load Options dialog box opens.
**Note:** By default, the Apply Filters check box is selected. If you have created filters, they will be applied automatically to the load process. If you do not want filters applied automatically, but do want them applied to your created metadata, clear the Apply Filters check box.

2. From the Load Option drop-down list, click *Merge into Existing*.

   The Select Target Synonym dialog box opens.

3. In the Select Target Synonym dialog box, select the synonym to which you want to merge your data.

4. Click *OK*.

   The Target Load Options dialog box opens.

5. From the If the record exists drop-down list, click the action you want to occur when a record in the new spreadsheet matches a record in the existing data. You can choose to reject the matching record, update the existing record, or delete the existing record. By default, Update the existing record is selected.

6. From the If the record does not exist drop-down list, click the action you want to occur when a record in the new spreadsheet does not match the record in the existing data. You can choose to include or reject the record that does not match the existing record.

7. Click *OK*.

   The Merge Editor dialog box opens.

8. In the Merge Editor dialog box, you can make additional changes to how your data is merged, for each column in the spreadsheet.

   You must create at least one Matching expression.

9. Click *OK*.

   If the load is successful your data is displayed.

10. If you are satisfied with how your data is displayed, click the arrow icon highlighted on the ribbon to load.

    You are returned to the Home Page. A shortcut to your new data is added to the repository folder from where you uploaded your data, as shown in the How to Upload Data Files procedure.
Pivoting Data

Some data files may contain repeating columns, such as sales figures for a series of years. There may even be repeating column groups, such as both budget and actual figures for a series of years. When uploading data, you can use the pivot option to transform these columns or groups of columns into rows, as shown in the following image.

![Image of Business View panel with pivot functionality highlighted]

**Note:** The pivot option is also available when creating or editing metadata.

**Procedure:** How to Pivot Columns Into Rows

1. Right-click a field name in the Business View panel, point to **Pivot**, and then click **Multiple columns to rows**.
   
   The Pivot Columns to Rows dialog box opens.

2. In the Pivot Type drop-down menu, select **Repeating column**. This is the default setting.

3. In the First column drop-down menu, select the first column in the range of repeating columns.

4. In the Last column drop-down menu, select the last column in the range of repeating columns.

5. In the Column Title for Pivoted Value, type the new column title that reflects the numeric cell that you are describing.

6. In the Column Title for Pivoted Key field, type the new column title that represents the repeating columns that you are pivoting into rows.

7. Leave the Formula for Pivoted Key field value unedited. This value is automatically generated and should not be changed.
An example of the completed configuration for pivoting columns is shown in the following image.

![Pivot Column(s) to Rows in synonym years](image)

### Procedure: How to Pivot Column Groups into Rows

1. Right-click a field name in the Business View panel, point to Pivot, and then click Multiple columns to rows.

   The Pivot Columns to Rows dialog box opens.

2. In the Pivot Type drop-down menu, select Repeating group of columns.

3. In the Number of groups field, specify the number of groups of columns that you are pivoting.

4. In the first column in group drop-down menu, select the first column in the range of repeating column groups.

5. In the last column in group drop-down menu, select the last column in the range of repeating column groups.

6. In the Column Title for Pivoted Value, type the new column title that will be used for all the columns across the repeating groups.

7. In the Column Title for Pivoted Key field, type the new column title that represents the repeating columns that you are pivoting into rows.

8. Click OK.

   The repeating columns now display as rows.

   **Note:** To revert your pivoting changes, right-click the synonym on the Join Editor canvas, and click Remove Pivot.
8. Edit the automatically generated formula in the Formula for Pivoted Key field by clicking the ellipsis button.

The Edit Formula dialog box opens, as shown in the following image.

<table>
<thead>
<tr>
<th>ORDER</th>
<th>Pivoted Column</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1960_plan</td>
</tr>
<tr>
<td>2</td>
<td>1961_plan</td>
</tr>
<tr>
<td>3</td>
<td>1962_plan</td>
</tr>
<tr>
<td>4</td>
<td>1963_plan</td>
</tr>
<tr>
<td>5</td>
<td>1964_plan</td>
</tr>
<tr>
<td>6</td>
<td>1965_plan</td>
</tr>
</tbody>
</table>

Make sure there are no repetitive alphanumeric values in the Pivoted Column field. In the example above, delete _plan in each field to show only the year.

9. Click Apply.

An example of the completed configuration for pivoting groups of columns is shown in the following image.

10. Click OK.
The repeating groups of columns now display as rows.

**Note:** To revert your pivoting changes, right-click the synonym on the Join Editor canvas, and click *Remove Pivot.*

## Connecting to Data

You can configure adapters and connect to data sources that you can use to build reports, charts, and visualizations using WebFOCUS. You can also create a synonym for one or more data objects, or create cluster synonyms for select objects assigned as facts or dimensions.

You can connect to data in the following ways:

- From the WebFOCUS Home Page, click the *Data* tab on the Action Bar, and then click the *Connect* button.

- From the WebFOCUS Home Page, click the *Designer* tab on the Action Bar, then click the *Workbook* or *Chart* button, and then click *Connect* in the Open dialog box.

- From the WebFOCUS Home Page, click the *InfoAssist* tab on the Action Bar, then click the *Chart, Visualization, Report, or Document* button, and then click *Connect to Data* in the Open dialog box.

- From the Legacy home page, in the Resources tree, right-click a domain or folder, point to *Metadata*, and then click *Connect to Data*.

  **Note:** The *Report* button appears in the *Designer* category if you have enabled the Technical Preview feature.

## Configuring Adapters

Connect to Data creates a connection to your data, which will allow you to modify your data for use in WebFOCUS. You can configure a new adapter or connection, add a connection to an existing adapter, or change adapter connections.
The initial Connect to Data screen displays a panel for selecting or configuring adapters, and also for uploading data, as shown in the following image.

- **Desktop files.** You can upload, append, or merge delimited, Excel, JSON, or XML files to a target environment from this area of the Connect to Data workflow.

- **New Datasource.** Displays all available adapters. If a connection has already been configured for an adapter, a check mark is displayed next to the adapter name. If the adapter has multiple versions, you can select which version to configure when you right-click the adapter name or click its drop-down arrow. You can select a category of adapter to display from a categorical drop-down list. A search option is also available.

- **Server Datasources.** Displays all adapters and connections that have been configured. You can create synonyms and cluster business views from this panel, add new or duplicate connections, remove connections, and view and edit properties.

**Procedure:** How to Configure a New Adapter/Connection

1. In the Connect to Data panel, click *New Datasource.*
The Available adapter dialog box opens, as shown in the following image.

2. Right-click an adapter name and click **Configure**.
   
   **Note:** If the adapter has multiple versions, right-click the adapter name and select which version to configure.

   The Configuration dialog box opens, as shown in the following image.
3. Enter the parameters for the specific adapter in the dialog box.
4. Click Test, if available, to test your configuration.
5. Click Configure.

**Note:** Once configured, the adapter appears beneath Server Datasources in the Connect to Data panel.

**Procedure: How to Add a Connection**

1. In the Connect to Data panel, under Server Datasources, right-click a configured adapter.
   
   A shortcut menu opens, as shown in the following image.

   ![Add Connection Menu](image)

   **Note:** These menu options are for a SQL adapter. Options may differ for different categories of adapters.

2. Click Add Connection.
3. Enter the parameters for the specific adapter in the dialog box.
4. Click Test, if available, to test your configuration.
5. Click Configure.

**Procedure: How to Change a Connection**

1. In the Connect to Data panel, under Server Datasources, right-click a configured adapter.
2. Click Properties.
3. Change the parameters for the specific connection in the dialog box and click Configure.

**Creating Synonyms**

You can create Base or Cluster Synonyms. A Cluster Synonym is made up of multiple Base Synonyms connected by Joins.
Procedure: How to Create a Synonym

1. In the Connect to Data panel, under Server Datasources, right-click a configured adapter. A shortcut menu opens, as shown in the following image.

```
Show DBMS objects

- Properties
- Test
- Duplicate Connection
- Test Bulk
- Test DBMS Case Sensitivity
- Impact Analysis
- Delete
```

**Note:** These menu options are for a SQL adapter. Options may differ for different categories of adapters.

2. Click Show DBMS objects from the shortcut menu.

The Available Objects panel opens, as shown in the following image.

3. Select from the available object Filter options.
Procedure: How to Create a Cluster Synonym

1. Select the *Cluster Synonym* radio button. This is the default setting. Available Cluster Synonym candidates display.

2. Select the Fact or Dimension of the object for which you want to create a Cluster Synonym, as shown in the following image.

3. You can change the name of any selected Base synonym in the Default Synonym Name field.

4. To display related Dimensions, right-click a selected object name, and select *Show Related Dimensions*.

5. To add related Dimensions, select *Add Related Dimensions*.

**Note:** Show and Add Related Dimensions options are only available for Relational data sources if Foreign Key to Primary key information is available in the RDBMS.
The related dimensions are automatically selected, as shown in the following image.

6. Click the arrow icon from the ribbon to proceed.
7. Enhance your Cluster Synonym from the panels or ribbon, as needed.

8. Click the arrow icon from the ribbon to proceed.

The Save As dialog box opens, as shown in the following image.

9. You can change the name of your Cluster Synonym in the Selection field.
10. Click OK.

You are returned to the Home Page. A message displays indicating your new data is available. A shortcut to your new data is added to the repository folder from where you connected to data, as shown in the following image.

From the shortcut menu options, you can edit your data by selecting *Edit*, or create new content by selecting *New*, as shown in the following image.

*Procedure*: **How to Create a Base Synonym**

1. Select the *Base Synonym* radio button.

   Available Base Synonym candidates display.
2. Select the object for which you want to create a Base Synonym, as shown in the following image.

3. Click the arrow icon from the ribbon to proceed. Your Base Synonym selection displays, as shown in the following image.

4. Enhance your Base Synonym from the panels or ribbon, as needed.

5. Click the arrow icon from the ribbon to proceed.
The Save As dialog box opens, as shown in the following image.

6. You can change the name of your Base Synonym in the Selection field.

7. Click OK.

You are returned to the Home Page. A message displays indicating your new data is available. A shortcut to your new data is added to the repository folder from where you connected to data, as shown in the following image.
From the shortcut menu options, you can edit your data by selecting *Edit*, or create new content by selecting *New*, as shown in the following image.

![Shortcut Menu Options](image)

### Editing Data

When you are working within a WebFOCUS Business View panel, you can edit your data by selecting from folder and field shortcut menu options. These options are also available in the Table/Column and Output views.

### Creating Folders

You can create folders to organize your data. Folders function as segments to provide a view of the synonym, and define the accessible fields and their relationships. Folder relationships are the same as segment relationships, with parent folders, child folders, and sibling folders. Once you create a new folder, you can add data fields and assign roles. Synonym folder structures can be predefined or flexible.

Predefined folder structures are categorized as Measure Groups, Dimensions, Hierarchies, and Attributes, and are created by default when using the WebFOCUS Upload or Connect to Data workflows. In a predefined folder structure, a Measure Group contains measures or facts that are numeric values, such as Gross Profit or Cost of Goods Sold, that you may want to aggregate. All numeric values that can logically be summed can be categorized as Measures. All other fields are categorized as Dimensions, Hierarchies, or Levels.

Flexible folder structures allow you to insert any number of folders at any level to represent the Business need. A folder can contain any type of field categorized as a Measure or Dimension. However, it is good practice to keep different field types in separate folders.
Within a WebFOCUS Business View panel, you can create a new folder by right-clicking a folder or field, pointing to Manage Folders, and then clicking New Folder, as shown in the following image of a predefined folder structure.

![Folder Creation](image-url)
When editing or creating a synonym, you can click the icons at the top of the Business View panel to create a predefined folder structure, as shown in the following image.

Click the Default icon to create a populated predefined folder structure. Click the Template icon to create an unpopulated predefined folder structure.

**Note:** You can start to create a new flexible folder structure by right-clicking the synonym name path, pointing to Manage Folders, and then clicking New Folder, as shown in the following image.
Assigning DV Roles

Categorization can be assigned using the DV Role option. When editing a synonym within a WebFOCUS Business View panel, you can assign a DV role to a folder or field by right-clicking the folder or field, clicking DV Role, and then clicking a DV Role option, as shown in the following image of a predefined folder structure.

You can explicitly assign a DV Role to a folder or field, or have it automatically inherit a role from its parent. If you explicitly assign a DV Role, that role moves with the object when dragged to a different location within the Business View structure. If you do not explicitly assign a DV Role, the role changes when the object is dragged under a new parent. However, if the object is dragged under a parent with a field with a Drill Level role, it inherits that role.
A folder can only have one drill level field hierarchy. However, you can use the same fields in multiple hierarchies by placing each hierarchy in a separate folder. A folder with a drill level hierarchy is not limited to the hierarchy and can contain other fields with different DV Roles.

You can assign the following DV Roles.

- **Dimension.** A dimension is a way to categorize data or sort output. You can use a dimension to analyze and compare measures. Dimension fields are generally alphanumeric fields, such as Product.

  Dimension fields can be organized into hierarchies to define the relationships between them, and provide information for the AUTODRILL feature. For example, a Geography hierarchy can contain the Continent, Country, State, and City fields. When AUTODRILL is turned on, automatic drilldown links are created in the report or chart output.

  A dimension field, when double-clicked or dragged onto the report or chart canvas in the WebFOCUS tools, is automatically added to the request as a vertical (BY) sort field. A folder can be assigned the role Dimension. A field can be assigned the role Dimension (Standalone) or Dimension (Drill Level). When it is assigned the role Dimension (Drill Level), it becomes part of a hierarchy, where the levels depend on the order of the fields in the folder. You can also define dimension fields that are not part of a dimension hierarchy.

- **Measure.** A measure field, when double-clicked or dragged onto the report or chart canvas in the WebFOCUS tools, will automatically be added to the request as an aggregated value (SUM), if it is numeric. If it is alphanumeric, it will be added as a vertical (BY) sort field. A folder or field can be assigned the role Measure.

- **Attribute.** An attribute is a field or collection of fields that add additional information about a dimension. An attribute field, when double-clicked or dragged onto the report or chart canvas in the WebFOCUS tools, will automatically be added to the request as an aggregated value (SUM), if it is numeric, or as a vertical sort field (BY), if it is alphanumeric.

- **Folder.** A folder is a virtual segment in a Business View. It can be assigned the roles Dimension, Measure, or Attribute.

  **Note:** When a folder is inserted as a child of a field, the attribute PARENT_FIELD describes this relationship. By default, such a folder and its fields will be assumed to have the Attribute role.

---

**Editing Metadata**

Metadata is data about data, and describes the characteristics of your data sources, or synonyms. Metadata can be generated whenever data is created, acquired, added to, deleted from, or updated.
You can edit previously created synonyms in the following ways:

- From the WebFOCUS Home Page, click the Data category on the Action Bar, and then click Metadata.

- From the Legacy Home Page, in the Resources tree, right-click a folder or domain, point to Metadata and then click Edit.

The Applications page opens, from which you can edit your synonym, or choose from other options.

**Procedure: How to Edit a Synonym**

1. From the Applications page, in the Application Directories tree, click a folder to expand it, then right-click on a procedure or metadata file in the file panel and select Open, as shown in the following image.

![Application Directories tree with Open option highlighted](image)

**Note:** to edit as text, select Metadata Management, and then select Edit as Text or Edit Access File as Text.

The Synonym Editor opens, where you can modify your synonym, as shown in the following image.
Note: You can open the Synonym Editor directly from the WebFOCUS Home Page by clicking the repository shortcut that was created, if you previously uploaded or connected to data. You can also select Edit from the shortcut menu, as shown in the following image.

2. Make edits to the synonym, as required.

3. To save your synonym, click the File icon highlighted on the ribbon, and then select Save.

4. To close the Synonym Editor, click the File icon highlighted on the ribbon, and then select Close.
Joining Data

In WebFOCUS Designer, you can Join data when creating a Chart or Workbook, and create new content from your joined data.

The joined data structure is used when WebFOCUS runs the Chart or Workbook, and is not applied permanently to the metadata. This allows you to virtually join multiple data sources as if they were a single data source, from which you can report in a single request. This can increase the number of relevant fields available for use in your content, giving you an expanded selection of data specific to your charting purposes.

The join is created when fields that match in your original data source and second data source are identified. For example, you can join two data sources on a join field of ID Product, using just one data source in your chart. You can then create content using your joined data source.

The following image shows the Data tab within WebFOCUS Designer displaying an original data source.
The following image shows the Data tab within WebFOCUS Designer displaying joined data sources.
Resources Tree

Use the Resources tree to select synonyms from your application path that you want to add. Click an application folder to display the available synonyms in that folder. You can return to the previous folder by clicking the folder name at the top of the tree, as shown in the following image.
Canvas

You can drag a synonym from the resources tree onto the canvas, on top of your original data source, to join them together. A join object is added between the two synonyms on the canvas, as shown in the following image.

You can also drag additional synonyms into the canvas. Right-click the join object or a synonym joined to the original data source, and click Delete to remove the join from the data flow.

You can make the following edits from the canvas toolbar:

**Options**

Sets the following join defaults.

- **Insert child segment with snowflakes.** The default is No, which inserts only the segment selected. You can select Yes to insert the selected segment and all of its descendants.

- **Display full component names.** The default is Yes. Full component names are field names qualified/prefixed with the Master File and segment name.

- **Use Monotree.** The default is Yes. The monotree view displays the current folder in the Data panel and provides navigation to other folders. Select No to display all folders.

**View**

The view options for Model mode are:

- **Collapse All.** Collapses all the synonyms so the fields do not show.

- **Expand All.** Expands all the synonym icons to show four fields.
- **Set to Standard Size.** Shows four fields at a time.
- **Expand to Full Size.** Expands the synonym boxes to full size.
- **Expand to Custom Size.** Options are: Height standard, Height Full, Width Standard, Width Full.
- **Auto Arrange.** Automatically arranges the synonyms.

The view options for Flow mode are:
- **Layout.** Options are: Vertically spread out, Vertically Compressed, Vertically Compressed with long H-Space, and Default.
- **Auto Arrange.** Automatically arranges the synonyms and joins.

**Mode**

Displays the joins in the following modes:
- **Model.** Each synonym is represented by a list box, and each join is represented by a vector between the joined synonyms.
- **Flow.** Each synonym is represented by an icon, and each join is represented by a container that displays the type of join.

**Delete All Joins**

Deletes all joined segments.

**Insert**

You can insert a child or root in Model mode. You can add a join in Flow mode.

**Data Sheet**

The current state of your data is reflected in the Data sheet, which shows a data sample in a tabular format similar to a spreadsheet, as shown in the following image.
Sample Data

If you click the Sample Data tab, which is the default setting, the values for the field being joined in each synonym are displayed, as shown in the following image.

Join Profiler

If you click the Join Profiler tab, a join analyzer chart displays the number of matching values from each part of the join and the total number of values included in the data source as a result of the join, and a key fields grid showing LHS and RHS match states, as shown in the following image.
You can click the table bars or numbers to display the matching fields in the report. Clicking the filter icon clears the matches and returns the report to show all values, as shown in the following image.

Join Configurator

You can modify the join using the Join configurator, as shown in the following image.

You can change the join type, change expressions and operators, and check the Multiple check box to indicate a one-to-many join. The following join types are available:

- **Inner.** Returns only records where the selected join fields match between the left-side table and the right-side table. If there are no matches, no records are returned.

- **Left Outer.** Returns all records from the left-side table, and only matched records from the right-side table.
Right Outer. Returns all records from the right-side table, and only matched records from the left-side table.

Full Outer. Returns all records, matched and unmatched, from the left-side table and the right-side table. This type of join can potentially return very large result-sets and can take longer to run.

You can display the joined fields using the double drop-down menus, as shown in the following image.
Type inside the search bars to restrict the field results displayed in the drop-down menus, as shown in the following image.

Click *Suggestions* to display Join Suggestions, including a confidence score based on any database relationships and the number of matching names in the fields, as shown in the following image.
Click the plus icon + to add the suggestion to the join pair list.

Procedure: How to Create a Basic Join

You can join data sources based on shared fields to enhance the data available to you, and then create charts based on the joined data source.

1. From the WebFOCUS Home Page, on the Action Bar, click the Designer tab or Common tab, then click Chart or Workbook.

   **Note:** The Report button appears in the Designer tab if you have enabled the Technical Preview feature.

2. From the Open dialog box, select a data source, as shown in the following image.

   The selected file opens in WebFOCUS Designer.

3. Click the Data tab at the bottom-left of the canvas.
The selected data source displays on the canvas and in the tabular Data Sheet, as shown in the following image.

Note: You can have multiple Data tabs open in a single browser.

4. From the Data panel, navigate to the folder containing the synonym you want to add.

5. Drag the synonym to the canvas and drop it on your original data source to join them, as shown in the following image.
A join object is added between the two synonyms on the canvas, and panels display for configuring and profiling data, as shown in the following image.

6. Click the chart tab at the bottom-right of the canvas.

7. On the toolbar, click Save.

   The Save dialog box opens.
8. Name your new joined file and click Save, as shown in the following image.

Your new joined data is saved. From the chart tab, you can create content from your new joined data.
Extending Metadata With Reporting Objects

With WebFOCUS Managed Reporting, a developer can easily transform complex views of data into simple objects labeled with common business terminology that every user can understand, such as Weekly Sales or Revenue. Developers create Reporting Objects that present available data using terms and formats meaningful to users. Users can then use Reporting Objects as templates for the creation of a wide range of reports and charts.

This topic describes Reporting Objects and how you can use them in WebFOCUS.
Reporting Object Tool

Reporting Objects are stored in folders in the tree within workspace folders under the Content folder. They can include selection criteria (WHEREs), JOINs, virtual fields (DEFINEs), filters, and other WebFOCUS statements, as well as reports or charts supplied as templates.

**Note:** A Reporting Object will not show in the repository when the user cannot functionally use the Reporting Object.

The browser Reporting Object tool allows you to create, edit, test, run, or delete a Reporting Object or its components. The main interface, as shown in the following image, consists of a static Quick Launch toolbar, a ribbon of context-sensitive options, and a window that displays the components of the Reporting Object with which you are working.

![Reporting Object Tool Interface](image)

**Reference:** Reporting Object Tool Quick Launch Toolbar

The Reporting Object tool Quick Launch toolbar is a static menu whose commands apply to the entire Reporting Object, not simply to the particular component that you have selected. The following table describes each command in the Reporting Object tool Quick Launch toolbar.
<table>
<thead>
<tr>
<th>Button</th>
<th>Shortcut Keys</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="RO" /></td>
<td>None</td>
<td>Reporting Object tool main menu</td>
<td>Launches a menu allowing you to Save, Save As, Run, and Exit.</td>
</tr>
<tr>
<td><img src="image" alt="Save" /></td>
<td>Ctrl+S</td>
<td>Save</td>
<td>Saves the Reporting Object.</td>
</tr>
<tr>
<td><img src="image" alt="Undo" /></td>
<td>Ctrl+Z</td>
<td>Undo</td>
<td>Undoes the last action.</td>
</tr>
<tr>
<td><img src="image" alt="Redo" /></td>
<td>Ctrl+Y</td>
<td>Redo</td>
<td>Repeats the last action.</td>
</tr>
<tr>
<td><img src="image" alt="View code" /></td>
<td>None</td>
<td>View code</td>
<td>Displays Reporting Object code in a read-only window.</td>
</tr>
<tr>
<td><img src="image" alt="Run" /></td>
<td>Ctrl+R</td>
<td>Run</td>
<td>Runs the Reporting Object.</td>
</tr>
</tbody>
</table>

**Reference:** Reporting Object Tool Ribbon

The Reporting Object tool ribbon is a menu whose commands apply to what you have selected, whether that is the Reporting Object as a whole, a particular component, or an individual example of a component. For example, a particular filter or filter group, if you have selected one, rather than selecting the entire Filter component.

The following table describes each command on the Reporting Object tool ribbon.
<table>
<thead>
<tr>
<th>Button</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="New" /></td>
<td>New</td>
<td>Creates a new join, DEFINE statement, filter, or WHERE statement.</td>
</tr>
<tr>
<td><img src="image" alt="Open" /></td>
<td>Open</td>
<td>Launches InfoAssist to create or edit a report or chart, or launches the appropriate tool to create or edit a join, DEFINE statement, filter, or WHERE statement.</td>
</tr>
<tr>
<td><img src="image" alt="Edit" /></td>
<td>Edit</td>
<td>Opens component source code in the text editor.</td>
</tr>
<tr>
<td><img src="image" alt="Properties" /></td>
<td>Properties</td>
<td>Renames the selected filter or filter group.</td>
</tr>
<tr>
<td><img src="image" alt="Run" /></td>
<td>Run</td>
<td>Runs the selected component.</td>
</tr>
<tr>
<td><img src="image" alt="Delete" /></td>
<td>Delete</td>
<td>Deletes the selected item.</td>
</tr>
</tbody>
</table>
**Delete All**

Deletes all items of the type selected, for example, all WHERE statements, all filters in a particular group, or all filters in every group if the Filter component itself is selected.

---

**Procedure: How to Create a Reporting Object**

1. From the WebFOCUS Home Page, select the Workspaces view.
2. Select the Workspace in which you want to create the Reporting Object, and on the Action Bar, click **Reporting Object**. The Reporting Object tool opens in a new browser window, with an Open dialog box.
3. Select a Master File and click **OK**. The Reporting Object tool interface appears.

**Procedure: How to Edit a Reporting Object**

From the WebFOCUS Home Page, in the Workspaces view, right-click the Reporting Object and select **Edit**.

*Note:* Double-clicking the Reporting Object runs the Reporting Object rather than allowing you to edit it.

**Procedure: How to Save a Reporting Object**

1. Press Ctrl+S or click the Save icon on the Quick Launch toolbar. The Save dialog box opens.
2. Type the name of the new Reporting Object in the Title field and click **OK**. From now on, clicking Save or pressing Ctrl+S saves the Reporting Object without launching the Save dialog box.
Running a Reporting Object From the Browser

You can run a Reporting Object or any individual component of it from the browser. You can run a Reporting Object in the following ways:

- Select the object in the Reporting Object tool and click Run, or right-click the object and select Run.
- Right-click the Reporting Object in the Workspaces view and select Run or Run Deferred.

The Run option in the Reporting Object tool is enabled regardless of the setting of the Only Run as a Deferred Report property.

Expected Behavior of Running a Reporting Object

When you select and run a Reporting Object, the expected behavior is as follows:

- When you define a Report or Chart component, all components of the Reporting Object run.
- When you define a Report and Chart component, an HTML page opens, which enables you to select which component to run.
- When you define filters in a Reporting Object, an HTML page opens, which enables you to select from the defined filters of the Reporting Object.
- When you define parameters in a report or chart and the Reporting Object Prompt for Parameters property is specified, an HTML page opens, which prompts you for parameter values.
- Reporting Object components are validated prior to run time. This means that errors are found and corrected more easily, since errors in individual components are detected prior to run time.
- If you attempt to run a Reporting Object that is created without using the Report or Chart component, you receive the message:

  Your request did not return any output to display.

  Possible causes:
  - No data rows matched the specified selection criteria.
  - Output was directed to a destination such as a file or printer.
  - An error occurred during the parsing or running of the request.
Properties of a Reporting Object

From the WebFOCUS Home Page, in the Workspaces view, you can view or edit the properties of a Reporting Object by right-clicking the object and selecting Properties. The Reporting Object Properties dialog box opens.

Components of a Reporting Object

A Reporting Object may contain any of the following types of components, which are run in the order of precedence, as listed:

- Preprocessing Other (custom code that runs before all other components)
- Joins
- DEFINE statements
- Filters, when applicable
- WHERE statements
- Report or chart templates
- Postprocessing Other (custom code that runs after all other components)

Users using the Reporting Object to create a report do not see the DEFINE statements, WHERE statements, or JOIN commands defined in the Reporting Object, which are issued automatically every time a user accesses the Reporting Object. However, the report or chart components, including headers, footers, and styling features, are visible to authorized users who can use them to create their own customized report.

The filters defined in the Filter component are applied only if the user of the Reporting Object activates them when the report or chart based on the Reporting Object is run.

Preprocessing Other Component

The Preprocessing Other component contains custom code that must run before all other components. You can use the text editor in the component to create and edit code or to paste the code that you have copied from another application.

To create or edit a Preprocessing Other component, do one of the following:

- Double-click the component.
- Select the component and click Edit on the ribbon.
- Right-click the component and select Edit.

The Preprocessing Other text editor appears.
See Creating Reports With WebFOCUS Language for more information about using the WebFOCUS language to code procedures.

**Note:**

- Syntax and error checking is not performed on the commands that you type until the Reporting Object is run.

- Commands in the Preprocessing Other component should not return a displayable answer set.

- InfoAssist previews in the Report component and the Chart component are disabled if the Preprocessing Other component contains the syntax:

  ```
  --OLAP ON
  ```

  To avoid this issue, enable OLAP through the Reporting Object properties instead of the Preprocessing Other component. For more information on the Reporting Object properties, see Properties of a Reporting Object on page 136.

**Reference: Considerations for Amper Auto Prompting With the Preprocessing and Postprocessing Other Components**

When using Amper Auto prompting, users may be prompted to supply amper variable values for parameters that the private user content does not reference. These scenarios are directly related to the internal processing of reports created using a Reporting Object.

Auto prompting considerations and expected behavior must be understood when referencing amper variables within a Reporting Object. For information on the Amper Auto prompting facility, see Developing Reporting Applications. The specification of values for the amper variables in the Reporting Object Other component using --DEFAULT, --DEFAULTH, or --SET commands will assign a default value for amper variables in a report request to avoid a FOC error for not specifying a value. A consideration for --DEFAULTH and --SET is that Amper Auto prompting does not prompt for amper variables that have values assigned using --DEFAULTH and --SET.
Whether a user is prompted by the Amper Auto prompting facility for amper variables assigned a default value using the –DEFAULT command is dependent on the setting of the WebFOCUS Client configuration parameter, IBIMR_prompting. When IBIMR_prompting is set to XMLPROMPT, users are prompted for amper variable values, and default values are displayed in fields in which the default values have been specified. When IBIMR_prompting is set to XMLRUN, users are not prompted for values when all amper variables have been assigned a default value. For more information on setting the IBIMR_prompting parameter, see WebFOCUS Security and Administration.

**Reference:** Creating a Reporting Object That Uses a HOLD File

Suppose that your company has a data warehouse and you need a Reporting Object that uses an extract from that data warehouse. In your Preprocessing Other component, you create a HOLD file from the data warehouse, and then you use that HOLD file in each Reporting Object component. You can clear the JOIN command and delete the HOLD file in the Postprocessing Other component so that it is not mistakenly used again the next time that the Reporting Object is used.

This task has the following steps:

1. Create a HOLD file in the Preprocessing Other component.
2. Create a new Join component with two joins.
3. Use the Report component to create a new report in InfoAssist.
4. Clear the JOIN command and delete the HOLD file in the Postprocessing Other component.
5. Run the Reporting Object, and then view the object source to verify that the output is correct.
6. Verify that the HOLD file does not exist in the location in which it was created.

**Example:** Creating a HOLD File With the Preprocessing Other Component

1. Create a Reporting Object with the baseapp and ibisamp selected as the application paths and employee as the Master File.

   For more information on creating a Reporting Object, see Properties of a Reporting Object on page 136.

2. Select the Preprocessing Other component and click *Edit*.
3. Type the following code:
APP HOLD IBISAMP
TABLE FILE EMPLOYEE
PRINT EMPLOYEE.EMPINFO.DEPARTMENT AS 'NEWDEP'
EMPLOYEE.EMPINFO.CURR_SAL AS 'NEWCURR_SAL'
BY EMPLOYEE.EMPINFO.EMP_ID AS 'EMP_ID'
BY EMPLOYEE.EMPINFO.HIRE_DATE AS 'NEWHIRE_DATE'
ON TABLE HOLD AS WINFILE FORMAT FOCUS INDEX EMP_ID
END

4. Click Save, and then close the text editor.
5. To verify that the component works properly, select the Preprocessing Other component and click Run.

The following output is produced:

0 NUMBER OF RECORDS IN TABLE= 12 LINES= 12

**Example:** Creating a New Join Component With Two Joins

1. Select the Join component and click New.

   The Join component is prefilled with the data from the employee Master File.

2. Click Add New, select the winfile Master File, and click OK.

3. Click the Add New button, select the jobfile Master File, and click OK.

4. Click OK to close the Join tool, saving your changes.

5. Click View Code in the Reporting Object Quick Launch toolbar to review the code.

   The following code for the Join component displays:

```
-\*COMPONENT=Join_J001
JOIN EMPLOYEE.EMPINFO.EMP_ID IN IBISAMP/EMPLOYEE
TO UNIQUE WINFILE.SEG01.EMP_ID IN IBISAMP/WINFILE TAG J001 AS J001
END
-\*COMPONENT=Join_J002
JOIN EMPLOYEE.PAYINFO.JOBCODE IN IBISAMP/EMPLOYEE
TO UNIQUE JOBFILE.JOBSEG.JOBCODE IN IBISAMP/JOBFILE TAG J002 AS J002
END
```

**Example:** Creating a Report With the Report Component

1. Double-click the Report component.

   InfoAssist is launched.

2. Drag the NEWCURR_SAL measure from the Data pane to the canvas.
3. Drag the EMP_ID dimension to the left of the NEWCURR_SAL column in the canvas, and select *Drop as sort*.

4. Drag the NEWHIRE_DATE dimension to the left of the NEWCURR_SAL column in the canvas, and select *Drop as sort*.

5. Drag the NEWDEP dimension to the left of the NEWCURR_SAL column in the canvas, and select *Drop as sort*.

   The report is displayed as a table with four columns, sorted by EMP_ID.

6. Save the report and exit InfoAssist.

7. To verify that the component works properly, click *Run* on the Quick Launch toolbar.

   The report that you created in InfoAssist is displayed in the browser.

**Example:** Deleting the Join in the Postprocessing Other Component

1. Select the *Postprocessing Other* component and click *Edit*.

2. Type the following:

   ```
   JOIN CLEAR *
   ? JOIN
   ```

3. Click *Save*, and then click *Exit*.

4. To verify that the Reporting Object works properly, click *Run* on the Quick Launch toolbar.

   The report that you created in InfoAssist is displayed in the browser.

5. Right-click the report webpage and select *View source*.

   **Note:** Depending on your browser, information may display differently.

6. Scroll to the bottom of the source window.

   The following comment is displayed:

   ```
   <!--
   0 NUMBER OF RECORDS IN TABLE= 12 LINES= 12
   0 NUMBER OF RECORDS IN TABLE= 12 LINES= 12
   0 HOLDING HTML FILE ON PC DISK ... 
   JOINS CURRENTLY ACTIVE
   HOST CROSSREFERENCE
   FIELD FILE TAG FIELD FILE TAG AS ALL WH
   ----- ---- --- ----- ---- --- --- -- -- -- --
   EMPLOYEE.EM&gt;EMPLOYEE WINFILE.SEG&gt; WINFILE J0 J0 Y N
   EMPLOYEE.PA&gt;EMPLOYEE JOBFILE.JOB&gt; JOBFILE J1 J1 Y N
   0 NO JOINS CURRENTLY IN EFFECT
   -->
   ```
Joins

A join is a temporary connection between two or more data sources that share at least one common field. After you join two data sources, each time that WebFOCUS retrieves a record from the first data source (the host file), it also retrieves the matching records from the second data source (the target file).

For more information on joining data sources, see the *WebFOCUS InfoAssist User’s Manual*.

**Note:**

- When you join two FOCUS data sources, the target file field must be indexed or the join must be a WHERE-based join. If you attempt to link to a non-indexed target file, the Reporting Object tool offers you the opportunity to create a WHERE-based join. For more information on creating WHERE-based joins, see *Join Group* in the *WebFOCUS InfoAssist User’s Manual*.

- Since every procedure creates a new session on the Reporting Server when it is run, the duration of your connection is always limited to a single procedure. Therefore, any join issued at the beginning of a procedure is in effect only for those report requests that are called in the same procedure.

**Procedure:** How to Create a Join

1. Right-click the Joins component and select New, or select the Join component and click New on the ribbon.

   The Join tool opens, displaying the data source associated with the Reporting Object.

2. Create a join using the Join tool.

   For more information on using the Join tool, see *Join Group* in the *WebFOCUS InfoAssist User’s Manual*.

3. When you are finished, click OK to return to the Reporting Object tool.

**Procedure:** How to Delete a Join

To delete a join, right-click the join and select Delete, or select the join and click Delete on the Quick Launch toolbar.

**Procedure:** How to Rename a Join

1. In the Join tool, select a join by clicking its connector line, and then click Edit on the Join toolbar.

   The Edit Join dialog box opens.
2. Type a new description in the Description box and click OK to return to the Join tool.

   The new description appears under the Join component in the Reporting Object tool. The internal name used for the join remains the same name assigned to the join when you created it.

**Procedure: How to View or Edit Join Syntax in a Text Editor**

1. Select the join and click Edit on the ribbon, or right-click the join and select Edit.

   The join code is displayed in a text editor.

2. Make the desired changes and click Save to return to the Reporting Object tool. To exit without making any changes, click Close.

**Virtual Fields (DEFINE Statements)**

A virtual field is a field whose value is not stored in the data source but can be calculated from the data that is there. A virtual field takes up no storage space. It is created only when a user accesses the Reporting Object that includes the virtual field.

You use the Define tool to create a virtual field. Using this tool, you specify the virtual field name and format, and the expression that defines the field. An expression enables you to combine fields, constants, predefined functions, and operators into an operation that produces a single value. When you define a virtual field, you must specify a field format type, length, and appropriate display options.

For more information about defining fields, see Data Tab in the WebFOCUS InfoAssist User’s Manual.

**Procedure: How to Create a Virtual Field**

1. Right-click the Defines component and select New, or select the Define component and click New on the ribbon.
The Define tool dialog box opens, as shown in the following image.

2. Create a virtual field using the Define tool.

   For more information about the Define tool, see *Data Tab* in the *WebFOCUS InfoAssist User's Manual*.

3. Click OK to save the virtual field and return to the Reporting Object tool.

   The virtual field now appears in the field list when a user accesses this Reporting Object.
**Note:**

- The field list shown in the Define tool is not updated to display new virtual fields until you exit from the Define tool and reopen it. If you are creating a virtual field (DEFINE statement) that uses a previously created virtual field in the expression, you must save the first virtual field before creating the second one.

To save the first virtual field, exit from the Define tool by clicking OK. Reopen the Define tool to create the second field. Alternatively, you can type the name of the first virtual field in the expression instead of selecting it from the field list. In this case, you do not need to exit and reopen the Define tool.

- Since every procedure creates a new session on the Reporting Server when it is run, the duration of your connection is always limited to a single procedure. Therefore, any DEFINE statements issued at the beginning of a procedure are in effect only for those report requests that are called in the same procedure.

**Procedure:**  **How to Edit a Virtual Field**

Existing virtual fields appear under the Defines node, as shown in the following image.

1. Right-click the virtual field that you want to edit and select Open, or select the virtual field and click Open on the ribbon.
   
   The Define tool dialog box opens, displaying the selected field.

2. Make changes to the field name, expression, or format, and click OK to return to the Reporting Object tool.

**Procedure:**  **How to View or Edit a Virtual Field in the Text Editor**

1. Right-click the virtual field that you want to view or edit as text and select Edit, or select the virtual field and click Edit on the ribbon.
The Text Editor opens, displaying the selected field.

2. Make changes to the field name, expression, or format, and click OK to return to the Reporting Object tool.

**Procedure:** How to Delete a Virtual Field

1. Right-click the virtual field that you want to delete and select Delete, or select the virtual field and click Delete on the ribbon.

2. To delete all virtual fields at once, right-click the Defines component and select Delete All, or select the component and click Delete All on the ribbon.

**Filters**

Filters enable users to quickly select predefined criteria that limit the data included in a report or chart. Filters are selection criteria (WHERE statements) that you create for users, who then select the filters needed to limit the data in a report or chart without having to create their own selection criteria.

In order to create a filter, you must create the filter group and define the filters that make up the group.

**Note:** The Undo and Redo functions are not available for the Filter component until you have created at least one filter.

For more information about filters, see the Using Filters to Customize the Display of Data topic in the WebFOCUS InfoAssist User’s Manual.

**Procedure:** How to Create a Filter Group

1. Right-click the Filters component and select New, or select the Filter component and click New on the ribbon.

   The Reporting Object Filter Group dialog box opens.

2. In the Filter Group Name field, type a descriptive name for the filter group folder.

   Make the filter group name as explicit as possible, because users depend on this name to select the correct filter to apply to their reports.

3. Click OK.

   You are returned to the Reporting Object tool. The filter group folder appears below the Filter component node.
Procedure: How to Define a Filter

1. Right-click the Filter group to which you would like to add a filter and select New, or select the Filter group folder and click New on the Quick Launch toolbar.

   The Reporting Object Filter dialog box opens.

2. In the Filter Name field, type a descriptive name for the filter and click Add New if you plan to create multiple filters, or click OK if you plan to create only one filter.

   Make the filter names as explicit as possible, because users depend on these names to select the correct filter to apply to their reports.

   The Advanced Filter dialog box opens, as shown in the following image.

   ![Advanced Filter dialog box]

3. Use the Advanced Filter dialog box to create the filter.

   For more information about defining filters, see Data Tab in the WebFOCUS InfoAssist User's Manual.

4. When you have created the filter, click OK.

   If you clicked Add new in step 2, the New Filter dialog box opens. If you clicked OK in step 2, you are returned to the Reporting Object tool.
Procedure: How to Edit a Filter

Existing filters appear under the Filter group beneath the Filters node, as shown in the following image.

1. Right-click the filter that you want to edit and select Open, or select the filter and click Open on the ribbon.

   The Advanced Filter dialog box opens, displaying the selected filter.

2. Make your changes and click OK to return to the Reporting Object tool.

Procedure: How to Rename a Filter or Filter Group

1. Right-click the filter or filter group that you want to rename and select Properties, or select the filter or filter group and click Properties on the ribbon.

2. Type the new filter or filter group name in place of the current one and click OK.

Procedure: How to Delete a Filter or a Filter Group

1. Right-click the filter or filter group that you want to delete and select Delete, or select the filter or filter group and click Delete on the ribbon.

2. To delete all filters at once, right-click the Filter component and select Delete All, or select the component and click Delete All on the ribbon.

Procedure: How to View or Edit a Filter in the Text Editor

1. Right-click the filter that you want to view or edit as text and select Edit, or select the filter and click Edit on the ribbon.

   The text editor opens, displaying the selected filter.
2. Make your changes and click OK to return to the Reporting Object tool.

Reference: Filter Considerations With Amper Auto Prompting

When Amper Auto prompting is used (Prompt for Parameters is selected in the Reporting Object properties), there are scenarios in which users are prompted to provide amper variable values in selection criteria (WHERE statements) in the Reporting Object that the user did not save with the report. This is due to the internal processing of reports created from Reporting Objects. You can avoid this issue by using the Filter component to predefine selection criteria for users to include in reports. Only the filter or filters that users select for inclusion in their reports are evaluated by the WebFOCUS Amper Auto prompting facility.

Selection Criteria (WHERE Statements)

WHERE statements or selection criteria, restrict the data retrieved to only those records that meet the conditions that you specify. Filters are selection criteria that run when the user selects the filter in WebFOCUS. Other selection criteria run when the user opens the Reporting Object, preventing data values that do not meet the criteria from being available to the user.

For more information on WHERE statements, see Field Tab in the WebFOCUS InfoAssist User’s Manual.

Procedure: How to Create Selection Criteria

1. Right-click the Where Statements component and select New, or select the component and click New on the ribbon.

   The New Filter dialog box opens.

2. Double-click the red text or press F12 to edit the WHERE statement.

   For more information on creating selection criteria, see the Using Filters to Customize the Display of Data topic in the WebFOCUS InfoAssist User’s Manual.

3. When you have created the selection criterion, click OK to return to the Reporting Object tool.

Report Component

The Report component creates a report template and saves it in a Reporting Object. Authorized users can use the report template to create a report that suits their needs and then save the new report.

To create a report template, double-click the Report component, or right-click the component and select Open. InfoAssist opens, allowing you to create a report template.

For more information on using InfoAssist, see the WebFOCUS InfoAssist User’s Manual.
Note:

- To open the report source code in the text editor instead of InfoAssist, right-click the Report component and select Edit. Manual changes to the code may make the report incompatible with InfoAssist.

- Syntax and error checking is not performed on the commands that you type until the Reporting Object is run.

- If the Reporting Object contains both a report and a chart, the user is asked whether to run the object as a report or chart. The Reporting Object cannot be run simultaneously as both.

- When Amper Auto prompting is used (Prompt for Parameters is selected in the Reporting Objects properties), there are scenarios in which users are prompted to provide amper variable values in selection criteria (WHERE statements) in the Reporting Object that the user did not save with the report. This is due to the internal processing of reports created from Reporting Objects. You can avoid this issue by using the Filter component to predefined selection criteria for users to include in reports. Only the filter or filters that users select for inclusion in their reports are evaluated by the WebFOCUS Amper Auto prompting facility.

Chart Component

The Chart component works exactly like the Report component. The Chart component creates a chart template and saves it in a Reporting Object. Authorized users can use the chart template to create a chart that suits their needs and then save the new chart.

To create a chart template, double-click the Chart component, or right-click the component and select Open. InfoAssist opens, allowing you to create a chart template.

For more information on using InfoAssist, see the WebFOCUS InfoAssist User’s Manual.

Note:

- To open the chart source code in the text editor instead of InfoAssist, right-click the Chart component and select Edit. Manual changes to the code may make the chart incompatible with InfoAssist.

- Syntax and error checking is not performed on the commands that you type until the Reporting Object is run.

- If the Reporting Object contains both a report and a chart, the user is asked whether to run the object as a report or chart. The Reporting Object cannot be run simultaneously as both.
When Amper Auto prompting is used (*Prompt for Parameters* is selected in the Reporting Object properties), there are scenarios in which users are prompted to provide amper variable values in selection criteria (WHERE statements) in the Reporting Object that the user did not save with the report. This is due to the internal processing of private reports created from Reporting Objects. You can avoid this issue by using the Filter component to predefined selection criteria for users to include in reports. Only the filter or filters that users select for inclusion in their reports are evaluated by the WebFOCUS Amper Auto prompting facility.

**Postprocessing Other Component**

The Postprocessing Other component contains custom code that must run after all other components. You can use the text editor in the component to create and edit code, or to paste the code that you have copied from another application.

To create or edit a Postprocessing Other component, double-click the component, or select the component and click *Edit* on the ribbon. Alternatively, right-click the component and select *Edit*. The Postprocessing Other dialog box opens.

See *Creating Reports With WebFOCUS Language* for more information about using the WebFOCUS language to code procedures.

**Note:**

- Syntax and error checking is not performed on the commands that you type until the Reporting Object is run.
- Commands in the Postprocessing Other component should not return a displayable answer set.
- InfoAssist previews in the Report component and the Chart component are disabled if the Postprocessing Other component contains the syntax:

  ```
  -OLAP ON
  ```

  To avoid this issue, enable OLAP through the Reporting Object properties instead of the Postprocessing Other component. For more information on the Reporting Object properties, see *Properties of a Reporting Object* on page 136.

  For information on Amper Auto Prompting, see *Considerations for Amper Auto Prompting With the Preprocessing and Postprocessing Other Components* on page 137.
Convey your information visually with WebFOCUS Designer’s array of charts, grids, maps, workbooks, and chart extensions. Add filters to your content to control the display of information that is shown, enable In-Document Analytics, interact with your chart and data fields in real-time with Insight, and more!

**In this chapter:**

- Creating Reports
- Creating Charts
- Adding Filters to Charts and Reports
- Using Prefix Operator Aggregation Functions
- Creating Calculations
- Using Quick Transforms to Apply Analytical Functions to Data Fields
- Creating Numeric Ranges With Binning
- Enabling Hierarchical Drilling in WebFOCUS Designer With Auto Drill
- Enabling Automatic Content Linking in WebFOCUS Designer With Auto Linking
- Creating Workbooks
- Creating Infographics
- Editing Source Code Files
- Creating Blogs
- Creating URLs
- Creating Shortcuts
- Uploading Files
- Using Favorites
- Embedding Search and Navigation Widgets in Portals
- Sharing Content With Users

**Creating Reports**

Available as a Technical Preview, you can use WebFOCUS Designer to create reports. Reports allow you to communicate information at a high level of detail using a familiar tabular format. You can save and share reports, add saved reports to pages, or edit existing reports created in WebFOCUS Designer. The Technical Preview provides basic reporting functionality within the easy to use Designer interface.
To enable the Technical Preview so that you can create reports using WebFOCUS Designer, on the WebFOCUS Home Page, expand the User menu, point to Administration and click Administration Console. In the Administration Console, from the navigation pane on the Configuration tab, click Other. On the Other page, type DesignReports in the Technical Preview Features field, and then click Save.

To create a report, on the WebFOCUS Home Page, select the domain or folder in which you want to save your content, and, on the Common or Designer tab of the Action bar, click Report.

You are then prompted to select a data source, which defines the fields that you can use to build the report. You can select a Master File (.mas) or a Reporting Object (.ro) as your data source. Reporting Objects help non-technical users see their data in a manner that is already filtered and refined, allowing you to limit the information that specific users can access when creating content in WebFOCUS. You can also upload a spreadsheet, CSV file, or other local file, or connect to an external data source.

You select your data from the Open dialog box, which has two tabs: Server and Repository. These tabs list data files based on where they are stored. Master Files are typically stored on the Server, while you can access Reporting Objects and Master File shortcuts from the Repository.

Once you have selected a data source, you are ready to begin creating a report. The following image shows the default WebFOCUS Designer interface when you create a report.
To populate the report, select measures and dimensions from the Fields tab, which displays the fields that were populated from your data source. You can add fields to your report in the following ways:

- Drag a field from the Fields tab to the canvas.
- Double-click a field in the Fields tab.
- Drag a field from the Fields tab into a bucket.
- Right-click a field on the Fields tab and click Add to report.

When you add a field to your report, the canvas updates to display the values in it.

You can define the rows and columns in a report by adding fields to the Rows and Columns buckets, respectively. Typically, these are dimension fields. The values in these fields are used to sort the report.

You can display aggregated values in a report by adding fields to the Summary bucket. This bucket is usually used to display values for measure fields. The Summary bucket displays by default, but you can change the bucket by selecting a different display option. The available display options are shown in the following image.

The Summary and Count options provide aggregated measure values for each sort value, that is, each row or column, in the report. The Detail and Detail with counter display options, on the other hand, provide a complete list of every value for the selected field or fields.

Once you have added fields to the report, you can format it to enhance its appearance or style. For example, you might want to add a header and footer to identify the information on each page of the report, or use a report template to modify the layout. You can also click the Style tab to apply a theme or change the output format of the report.
You can filter a report using a prompted filter. To create a filter, drag a field from the Fields tab to the Filter toolbar. When you click the filter on the Filter toolbar, a control appears, allowing you to select default filter values. When content with prompted filters is added to a page, you can create filter controls to allow users to select their own filter values at run time. You can also require user selection for a prompted filter, so that the report does not run until the user makes a filter selection, by right-clicking the filter in the toolbar and clicking *Require selection*, as shown in the following image.

![Filter Control](image)

**Procedure:** How to Create a Report Using WebFOCUS Designer

1. From the WebFOCUS Home Page, click the *Designer* tab.
2. Click *Report*.

   **Note:** The Report option will only be available on the Designer tab if the Technical Preview has been enabled.

3. Select an existing data source, or connect to a new one, and click *Select* in the Open dialog box.

4. Add sort fields to the report by dragging dimension fields from the Fields pane into the Rows and Columns buckets.

   **Note:** You can also double-click a dimension field or drag it onto the canvas to add it to the Rows bucket.

5. Add aggregated data values to the report by dragging measure fields from the Fields pane into the Summary bucket.

   **Note:** You can also double-click a measure field or drag it onto the canvas to add it to the Summary bucket, or other measure bucket if you have changed the display option.
The report displays the selected fields, based on the bucket they were placed in.

6. The following are some of the options you have to customize the report:
   - Select a theme from the Style tab.
   - Select an output format for the report by selecting a value from the Output Format menu on the Style tab.
   - Change the layout of the report by selecting a report template from the Report picker.
   - Filter the report by dragging fields into the Filter toolbar.
   - Add subtotals, page breaks, or row breaks to the report each time the value in a field changes by right-clicking a field, pointing to Insert breaks, and selecting an option for each category.
   - Add a header or footer from the Show option menu.
   - Enable Auto Drill or Auto Linking, or make the report an Auto Link target, from the More menu.
   - Add column or row totals to the report from the More menu.

7. To see a run-time view of the report, including behaviors such as Auto Drill or dynamic filtering that are not available in the canvas, click Preview on the Designer toolbar.

8. On the WebFOCUS Designer toolbar, click Save to save your report to a selected location. Once saved, you can share the report and add it to a page.

   To open the report to edit it again at a later time, locate it on the Home Page, right-click it, and click Edit from the shortcut menu.

**Previewing Reports**

As you create reports in WebFOCUS Designer, you can preview them to see how your data displays in the report, to check the styling before publishing it or sharing it with others, and to see run time behaviors such as filter prompting, Auto Drill and Auto Linking, and offline analysis features. At any point in the development of your report, click Preview on the Designer toolbar, as shown in the following image.

This executes your request and presents the results in the preview window.
When previewing a report that contains filters that require selection, the autoprompt facility opens, allowing you to select filter values at run time. Once you’ve made your selections, you can load the report by clicking *Run with filter values*. To change your filter selections, click the hamburger control to reopen the filter panel, and then change the values selected in the filter controls.

When autoprompt is present, the Esc key causes the parameter panel to open and close. In this case, you can use the blue dot to return from the preview to the design view of your report.

### Changing the Layout of a Report

You can use report templates in conjunction with different combinations of fields in each bucket to quickly change the structure of a report into a number of common report layouts. These provide the ability to visualize the same set of data in a number of different ways, depending on the intended purpose, output type, or audience of the report.

You can select a report template from the report picker, which appears to the right of the canvas area, as shown in the following image.

Three options are available:

- **Standard Report.** The default option. Sort values that occupy multiple consecutive rows do not repeat, and measure fields are organized as columns.

- **Grid.** Sort values that occupy multiple consecutive rows are repeated, and measure fields are organized as columns.

- **Stacked Measures.** Sort values that occupy multiple consecutive rows do not repeat, and measure fields are organized as rows.
**Procedure:** How to Transform a Report Using Report Layouts

By using different report layouts with combinations of fields in the Row, Column, and Summary buckets, you can quickly transform a report into a number of common layouts.

1. Create a new report.
   a. On the WebFOCUS Home Page, click *Designer* on the Action bar and then click *Report*.

   The Open dialog box opens.

   b. Select *wf_retail_lite.mas* as your data source.

   WebFOCUS Designer opens.

2. Add fields to the report.
   a. In the Fields panel, in the Dimensions area, expand *Product* and double-click *Product,Category* to add it to the Rows bucket.

   b. In the Fields panel, in the Dimensions area, expand *Sales_Related* and *Transaction Date, Simple*, and double-click *Sale,Quarter* to add it to the Rows bucket.

   c. In the Fields panel, in the Measures area, expand *Sales* and double-click *Quantity,Sold* to add it to the Summary bucket.

   d. In the Fields panel, in the Measures area, double-click *Cost of Goods* to add it to the Summary bucket.

   e. In the Fields panel, from the Measures area, drag *Revenue* to the Summary bucket.
The resulting report resembles the one shown in the following image.

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Sale Quarter</th>
<th>Quantity Sold</th>
<th>Cost of Goods</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories</td>
<td>1</td>
<td>125,092</td>
<td>$21,947,437.00</td>
<td>$31,676,924.79</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>117,189</td>
<td>$20,581,704.00</td>
<td>$29,742,966.86</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>120,146</td>
<td>$21,095,150.00</td>
<td>$30,452,126.77</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>149,240</td>
<td>$26,129,607.00</td>
<td>$37,736,320.11</td>
</tr>
<tr>
<td>Camcorder</td>
<td>1</td>
<td>110,797</td>
<td>$25,503,637.00</td>
<td>$37,586,254.67</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>104,875</td>
<td>$24,252,823.00</td>
<td>$35,732,839.51</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>107,495</td>
<td>$24,918,162.00</td>
<td>$36,628,127.74</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>132,077</td>
<td>$30,192,235.00</td>
<td>$44,518,480.32</td>
</tr>
<tr>
<td>Computers</td>
<td>1</td>
<td>78,538</td>
<td>$14,011,533.00</td>
<td>$21,516,248.03</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>83,421</td>
<td>$15,766,293.00</td>
<td>$23,656,785.84</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>89,639</td>
<td>$18,177,851.00</td>
<td>$26,551,436.48</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>100,179</td>
<td>$21,851,987.00</td>
<td>$31,592,011.77</td>
</tr>
<tr>
<td>Media Player</td>
<td>1</td>
<td>187,768</td>
<td>$46,650,488.00</td>
<td>$60,355,251.64</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>176,776</td>
<td>$43,382,307.00</td>
<td>$56,111,219.39</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>182,289</td>
<td>$44,711,027.00</td>
<td>$57,817,992.97</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>225,101</td>
<td>$55,496,659.00</td>
<td>$71,788,595.36</td>
</tr>
<tr>
<td>Stereo Systems</td>
<td>1</td>
<td>272,423</td>
<td>$49,799,202.00</td>
<td>$70,752,895.47</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>256,598</td>
<td>$47,155,044.00</td>
<td>$67,016,061.39</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>260,811</td>
<td>$48,129,984.00</td>
<td>$68,284,662.61</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>324,500</td>
<td>$60,029,633.00</td>
<td>$85,241,314.05</td>
</tr>
</tbody>
</table>

This report shows aggregated values for the Quantity Sold, Cost of Goods, and Revenue fields, and each row represents a different combination of Product Category and Sale Quarter. Repeating Product Category values are not displayed.

This report is simple and easy to read. The tabs help to clearly indicate the hierarchies in the report.
3. Change the report pattern to Grid. On the report picker, click Grid. Now all dimension values display, including repeated values, as shown in the following image.

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Sale Quarter</th>
<th>Quantity Sold</th>
<th>Cost of Goods</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories</td>
<td>1</td>
<td>125,092</td>
<td>$21,947,437.00</td>
<td>$31,676,924.79</td>
</tr>
<tr>
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<td>2</td>
<td>117,189</td>
<td>$20,581,704.00</td>
<td>$29,742,966.86</td>
</tr>
<tr>
<td>Accessories</td>
<td>3</td>
<td>120,146</td>
<td>$21,095,150.00</td>
<td>$30,452,126.77</td>
</tr>
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<td>149,240</td>
<td>$26,129,607.00</td>
<td>$37,736,320.11</td>
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<tr>
<td>Camcorder</td>
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<td>Camcorder</td>
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<td>3</td>
<td>107,495</td>
<td>$24,918,162.00</td>
<td>$36,628,127.74</td>
</tr>
<tr>
<td>Camcorder</td>
<td>4</td>
<td>132,077</td>
<td>$30,192,235.00</td>
<td>$44,518,480.32</td>
</tr>
<tr>
<td>Computers</td>
<td>1</td>
<td>78,538</td>
<td>$14,011,533.00</td>
<td>$21,516,248.03</td>
</tr>
<tr>
<td>Computers</td>
<td>2</td>
<td>83,421</td>
<td>$15,766,293.00</td>
<td>$23,656,785.84</td>
</tr>
<tr>
<td>Computers</td>
<td>3</td>
<td>89,639</td>
<td>$18,177,851.00</td>
<td>$26,551,436.48</td>
</tr>
<tr>
<td>Computers</td>
<td>4</td>
<td>100,179</td>
<td>$21,851,987.00</td>
<td>$31,592,011.77</td>
</tr>
<tr>
<td>Media Player</td>
<td>1</td>
<td>187,768</td>
<td>$46,650,488.00</td>
<td>$60,355,251.64</td>
</tr>
<tr>
<td>Media Player</td>
<td>2</td>
<td>176,776</td>
<td>$43,382,307.00</td>
<td>$56,111,219.39</td>
</tr>
<tr>
<td>Media Player</td>
<td>3</td>
<td>182,289</td>
<td>$44,711,027.00</td>
<td>$57,817,992.97</td>
</tr>
<tr>
<td>Media Player</td>
<td>4</td>
<td>225,101</td>
<td>$55,496,659.00</td>
<td>$71,788,595.36</td>
</tr>
<tr>
<td>Stereo Systems</td>
<td>1</td>
<td>272,423</td>
<td>$49,799,202.00</td>
<td>$70,752,895.47</td>
</tr>
<tr>
<td>Stereo Systems</td>
<td>2</td>
<td>256,598</td>
<td>$47,155,044.00</td>
<td>$67,016,061.39</td>
</tr>
<tr>
<td>Stereo Systems</td>
<td>3</td>
<td>260,811</td>
<td>$48,129,984.00</td>
<td>$68,284,662.61</td>
</tr>
<tr>
<td>Stereo Systems</td>
<td>4</td>
<td>324,500</td>
<td>$60,029,633.00</td>
<td>$85,241,314.05</td>
</tr>
</tbody>
</table>

This style of report is very flexible, and is often used in data grids, spreadsheets, and more.

4. Clear all of the data from the report by clicking the Clear buckets content button above the Rows bucket.

This makes it easy to restart our report from scratch.

5. In the Field panel, in the Measures area, double-click the Quantity Sold, Cost of Goods, and Revenue fields to add them back to the report in the Summary bucket.

6. Arrange the measure fields into rows. On the report picker, click Stacked Measures.
The report is a simple list of sales metrics and their total values, as shown in the following image.

<table>
<thead>
<tr>
<th>Quantity Sold</th>
<th>3,509,891</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of Goods</td>
<td>$761,439,529.00</td>
</tr>
<tr>
<td>Revenue</td>
<td>$1,061,192,925.21</td>
</tr>
</tbody>
</table>

This can be an effective way to show simple KPI metrics.

7. In the Field panel, in the Dimensions area, double-click Product,Category to add it to the Rows bucket.

8. In the Field panel, in the Dimensions area, double-click Sale,Quarter to add it to the Rows bucket.

The report now shows three measure fields, arranged into rows, for each sort value, as shown in the following image.

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Sale Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories</td>
<td>1</td>
</tr>
<tr>
<td>Quantity Sold</td>
<td>125,052</td>
</tr>
<tr>
<td>Cost of Goods</td>
<td>$21,947,437.00</td>
</tr>
<tr>
<td>Revenue</td>
<td>$31,676,924.79</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Quantity Sold</td>
<td>117,189</td>
</tr>
<tr>
<td>Cost of Goods</td>
<td>$20,581,704.00</td>
</tr>
<tr>
<td>Revenue</td>
<td>$29,742,966.86</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Quantity Sold</td>
<td>120,140</td>
</tr>
<tr>
<td>Cost of Goods</td>
<td>$21,095,150.00</td>
</tr>
<tr>
<td>Revenue</td>
<td>$30,452,126.77</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Quantity Sold</td>
<td>146,240</td>
</tr>
<tr>
<td>Cost of Goods</td>
<td>$26,129,607.00</td>
</tr>
<tr>
<td>Revenue</td>
<td>$37,736,320.11</td>
</tr>
<tr>
<td>Camcorder</td>
<td>1</td>
</tr>
<tr>
<td>Quantity Sold</td>
<td>110,707</td>
</tr>
<tr>
<td>Cost of Goods</td>
<td>$25,503,637.00</td>
</tr>
<tr>
<td>Revenue</td>
<td>$37,586,254.67</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Quantity Sold</td>
<td>104,875</td>
</tr>
<tr>
<td>Cost of Goods</td>
<td>$24,252,823.00</td>
</tr>
<tr>
<td>Revenue</td>
<td>$35,732,839.51</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Quantity Sold</td>
<td>107,495</td>
</tr>
<tr>
<td>Cost of Goods</td>
<td>$24,918,162.00</td>
</tr>
<tr>
<td>Revenue</td>
<td>$36,628,127.74</td>
</tr>
</tbody>
</table>
This layout displays data for two dimensions and three measures in only four columns, making it a good option when you want to save on the horizontal space occupied by your report.

9. In the Field panel, in the Dimensions area, expand Customer and drag Customer,Business,Region into the Columns bucket.

A column is created for each business region. This arrangement allows you to show information for three different dimension fields without requiring a significant amount of space, as shown in the following image.

<table>
<thead>
<tr>
<th>Customer,Business,Region</th>
<th>EMEA</th>
<th>North America</th>
<th>Oceania</th>
<th>South America</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessories</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Category</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Quantity Sold</td>
<td>66,101</td>
<td>52,411</td>
<td>330</td>
</tr>
<tr>
<td></td>
<td>Cost of Goods</td>
<td>$11,630,379.00</td>
<td>$9,168,740.00</td>
<td>$65,402.00</td>
</tr>
<tr>
<td></td>
<td>Revenue</td>
<td>$16,780,147.83</td>
<td>$13,261,230.43</td>
<td>$95,304.84</td>
</tr>
<tr>
<td>2</td>
<td>Quantity Sold</td>
<td>62,204</td>
<td>48,888</td>
<td>253</td>
</tr>
<tr>
<td></td>
<td>Cost of Goods</td>
<td>$10,923,374.00</td>
<td>$8,560,501.00</td>
<td>$42,673.00</td>
</tr>
<tr>
<td></td>
<td>Revenue</td>
<td>$15,775,262.93</td>
<td>$12,421,427.58</td>
<td>$52,303.28</td>
</tr>
<tr>
<td>3</td>
<td>Quantity Sold</td>
<td>63,419</td>
<td>50,467</td>
<td>293</td>
</tr>
<tr>
<td></td>
<td>Cost of Goods</td>
<td>$11,168,126.00</td>
<td>$8,216,209.00</td>
<td>$46,148.00</td>
</tr>
<tr>
<td></td>
<td>Revenue</td>
<td>$16,125,191.32</td>
<td>$12,726,231.11</td>
<td>$59,421.78</td>
</tr>
<tr>
<td>4</td>
<td>Quantity Sold</td>
<td>79,542</td>
<td>62,312</td>
<td>325</td>
</tr>
<tr>
<td></td>
<td>Cost of Goods</td>
<td>$13,945,970.00</td>
<td>$10,502,050.00</td>
<td>$55,127.00</td>
</tr>
<tr>
<td></td>
<td>Revenue</td>
<td>$20,132,370.58</td>
<td>$15,751,056.33</td>
<td>$81,241.74</td>
</tr>
<tr>
<td><strong>Camcorder</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Quantity Sold</td>
<td>56,481</td>
<td>45,459</td>
<td>245</td>
</tr>
<tr>
<td></td>
<td>Cost of Goods</td>
<td>$13,951,851.00</td>
<td>$10,565,952.00</td>
<td>$43,745.00</td>
</tr>
<tr>
<td></td>
<td>Revenue</td>
<td>$19,967,148.37</td>
<td>$15,603,470.41</td>
<td>$58,897.75</td>
</tr>
<tr>
<td>2</td>
<td>Quantity Sold</td>
<td>65,576</td>
<td>43,876</td>
<td>248</td>
</tr>
<tr>
<td></td>
<td>Cost of Goods</td>
<td>$12,816,195.00</td>
<td>$10,144,232.00</td>
<td>$51,471.00</td>
</tr>
<tr>
<td></td>
<td>Revenue</td>
<td>$18,888,957.92</td>
<td>$14,959,257.04</td>
<td>$79,179.44</td>
</tr>
<tr>
<td>3</td>
<td>Quantity Sold</td>
<td>56,986</td>
<td>44,952</td>
<td>265</td>
</tr>
<tr>
<td></td>
<td>Cost of Goods</td>
<td>$13,220,021.00</td>
<td>$10,307,253.00</td>
<td>$58,624.00</td>
</tr>
<tr>
<td></td>
<td>Revenue</td>
<td>$19,437,760.38</td>
<td>$15,261,915.58</td>
<td>$80,906.41</td>
</tr>
</tbody>
</table>

10. Empty the Rows bucket. Click the menu next to the Rows bucket and click Clear.
The result is a simple crosstab report, which displays rows of measures across dimension values, as shown in the following image.

![Crosstab Report Example](image)

As you can see, by using the patterns in the report picker and different combinations of fields in the Rows, Columns, and Summary buckets, it is easy to quickly change the layout of the report to match your audience and the information that you want to communicate.

**Displaying Measure Values in Reports**

When you add a measure field to a report using the Summary bucket, the values in that field are aggregated, by default. This means that measure values are evaluated for each sort value in the report. This option is used when the Summary display option is selected.

By default, the values of fields in the Summary bucket are aggregated by summing them. You can also aggregate them by average, count, count distinct, percent, percent of count, minimum, maximum, median, and mode values. To use one of these aggregation options, right-click a field in the Summary bucket, point to Aggregate, and select an aggregation.
You can change the display method for measure values from Summary to Count, Detail, or Detail with counter to change how the fields in this bucket are evaluated. These display methods are available from the display options above the buckets on the Display tab, and in the menu next to the Summary bucket, as shown in the following image.

Changing the display method also changes the name of the Summary bucket.

You can use the Count display option as an alternative to the Count aggregation option to provide a count of data records. A count allows you to see the distribution of your data by displaying the number of records in the selected Count fields, for each sort value.

You can select the Detail display option to individually display all record values for the fields in the Display bucket instead of aggregating them.
For example, the following image shows two reports. The one on the left uses the default Summary display option, while the one on the right uses the Detail display option.

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories</td>
<td>$495.08</td>
</tr>
<tr>
<td>Camcorder</td>
<td>$2,299.04</td>
</tr>
<tr>
<td>Computers</td>
<td>$1,899.97</td>
</tr>
<tr>
<td>Media Player</td>
<td>$4,049.87</td>
</tr>
<tr>
<td>Stereo Systems</td>
<td>$6,574.92</td>
</tr>
<tr>
<td>Televisions</td>
<td>$699.88</td>
</tr>
<tr>
<td>Video Production</td>
<td>$2,997.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories</td>
<td>$349.88</td>
</tr>
<tr>
<td>Camcorder</td>
<td>$135.20</td>
</tr>
<tr>
<td>Computers</td>
<td>$179.00</td>
</tr>
<tr>
<td>Media Player</td>
<td>$350.00</td>
</tr>
<tr>
<td>Stereo Systems</td>
<td>$289.00</td>
</tr>
<tr>
<td>Televisions</td>
<td>$509.99</td>
</tr>
<tr>
<td>Video Production</td>
<td>$556.00</td>
</tr>
<tr>
<td></td>
<td>$568.00</td>
</tr>
<tr>
<td></td>
<td>$323.98</td>
</tr>
<tr>
<td></td>
<td>$399.99</td>
</tr>
<tr>
<td></td>
<td>$529.99</td>
</tr>
<tr>
<td></td>
<td>$689.99</td>
</tr>
<tr>
<td></td>
<td>$280.00</td>
</tr>
<tr>
<td></td>
<td>$299.99</td>
</tr>
<tr>
<td></td>
<td>$279.99</td>
</tr>
<tr>
<td></td>
<td>$399.99</td>
</tr>
<tr>
<td></td>
<td>$380.00</td>
</tr>
<tr>
<td></td>
<td>$279.99</td>
</tr>
<tr>
<td></td>
<td>$799.97</td>
</tr>
<tr>
<td></td>
<td>$508.99</td>
</tr>
<tr>
<td></td>
<td>$599.99</td>
</tr>
<tr>
<td></td>
<td>$446.99</td>
</tr>
<tr>
<td></td>
<td>$999.98</td>
</tr>
<tr>
<td></td>
<td>$210.99</td>
</tr>
<tr>
<td></td>
<td>$259.00</td>
</tr>
<tr>
<td></td>
<td>$99.99</td>
</tr>
<tr>
<td></td>
<td>$239.00</td>
</tr>
<tr>
<td></td>
<td>$179.98</td>
</tr>
<tr>
<td></td>
<td>$509.98</td>
</tr>
<tr>
<td></td>
<td>$713.97</td>
</tr>
<tr>
<td></td>
<td>$196.99</td>
</tr>
<tr>
<td></td>
<td>$2,697.00</td>
</tr>
<tr>
<td></td>
<td>$279.99</td>
</tr>
<tr>
<td></td>
<td>$148.99</td>
</tr>
<tr>
<td></td>
<td>$179.50</td>
</tr>
<tr>
<td></td>
<td>$627.08</td>
</tr>
<tr>
<td></td>
<td>$999.99</td>
</tr>
<tr>
<td></td>
<td>$127.59</td>
</tr>
<tr>
<td>Televisions</td>
<td>$599.98</td>
</tr>
<tr>
<td>Video Production</td>
<td>$2,997.00</td>
</tr>
</tbody>
</table>

Records in a Detail field are separated into groups based on the fields in the Row and Column buckets, but are not individually sorted. The order in which they appear reflects the order in which they are accessed from the data source.
To see a list of the records in your data source without grouping them, for example as a data extract, you can add all desired dimension and measure fields to the Detail bucket, as shown in the following image.
You can also use the Detail with counter display option to display individual values in the report and number them. This can be useful if you want to display records from your data source and provide a key value, such as a record ID number, for each one, as shown in the following image.

<table>
<thead>
<tr>
<th>LIST</th>
<th>Category</th>
<th>Model</th>
<th>Cost of Goods</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Video Production</td>
<td>BOSE V-S2-P</td>
<td>$234.00</td>
<td>$390.00</td>
</tr>
<tr>
<td>2</td>
<td>Media Player</td>
<td>N1000</td>
<td>$46.00</td>
<td>$59.99</td>
</tr>
<tr>
<td>3</td>
<td>Media Player</td>
<td>SAMSUNG BD-C6500</td>
<td>$380.00</td>
<td>$440.99</td>
</tr>
<tr>
<td>4</td>
<td>Media Player</td>
<td>JVC DR-MV150B</td>
<td>$374.00</td>
<td>$599.98</td>
</tr>
<tr>
<td>5</td>
<td>Media Player</td>
<td>Panasonic DMP-BD30</td>
<td>$310.00</td>
<td>$389.99</td>
</tr>
<tr>
<td>6</td>
<td>Stereo Systems</td>
<td>DC390/37</td>
<td>$83.00</td>
<td>$127.59</td>
</tr>
<tr>
<td>7</td>
<td>Stereo Systems</td>
<td>Yamaha RXV495</td>
<td>$312.00</td>
<td>$400.30</td>
</tr>
<tr>
<td>8</td>
<td>Stereo Systems</td>
<td>Onkyo TXSR875B</td>
<td>$548.00</td>
<td>$785.50</td>
</tr>
<tr>
<td>9</td>
<td>Media Player</td>
<td>Panasonic DMP-BD70V</td>
<td>$400.00</td>
<td>$599.99</td>
</tr>
<tr>
<td>10</td>
<td>Stereo Systems</td>
<td>LG XD63</td>
<td>$131.00</td>
<td>$199.99</td>
</tr>
<tr>
<td>11</td>
<td>Computers</td>
<td>i897B</td>
<td>$243.00</td>
<td>$306.56</td>
</tr>
<tr>
<td>12</td>
<td>Media Player</td>
<td>Pioneer BDP-330</td>
<td>$370.00</td>
<td>$499.99</td>
</tr>
<tr>
<td>13</td>
<td>Stereo Systems</td>
<td>Panasonic</td>
<td>$135.00</td>
<td>$172.49</td>
</tr>
<tr>
<td>14</td>
<td>Media Player</td>
<td>JVC DR-MV150B</td>
<td>$374.00</td>
<td>$449.99</td>
</tr>
<tr>
<td>15</td>
<td>Accessories</td>
<td>BCG340RE4KN</td>
<td>$16.00</td>
<td>$29.99</td>
</tr>
<tr>
<td>16</td>
<td>Stereo Systems</td>
<td>Sony STRDH810</td>
<td>$240.00</td>
<td>$350.00</td>
</tr>
<tr>
<td>17</td>
<td>Media Player</td>
<td>SHARP BD-HF70U</td>
<td>$390.00</td>
<td>$359.99</td>
</tr>
<tr>
<td>18</td>
<td>Video Production</td>
<td>Thomson Grass Valley ADVC110</td>
<td>$185.00</td>
<td>$219.99</td>
</tr>
<tr>
<td>19</td>
<td>Media Player</td>
<td>Pioneer BDP-120</td>
<td>$410.00</td>
<td>$599.96</td>
</tr>
<tr>
<td>20</td>
<td>Stereo Systems</td>
<td>DC390/37</td>
<td>$83.00</td>
<td>$127.59</td>
</tr>
<tr>
<td>21</td>
<td>Stereo Systems</td>
<td>D33205/37</td>
<td>$106.00</td>
<td>$199.98</td>
</tr>
<tr>
<td>22</td>
<td>Accessories</td>
<td>Pioneer HDJ1000</td>
<td>$80.00</td>
<td>$169.00</td>
</tr>
</tbody>
</table>
When there are fields in the Rows bucket, the Detail with counter display option generates a numbered list based on the primary sort field, but places it before the measure columns in the report. Notice that in the following image, the report is sorted by Product Category and Model, so the record list column appears to the right of the Model column, but the counter resets only on each Product Category value.

Since the Detail and Detail with counter display options create a row in the report for every record in the data source, be careful when using them with larger data sources.

### Adding Column and Row Totals to a Report

You can summarize the measure data in a report by adding column and row totals. Column totals provide a grand total of each measure column in a report, while row totals provide a grand total of each row in a report.

To add column totals to a report, open the More menu on the Designer toolbar, point to Column totals, and click Aggregate columns or Recalculate totals.
The Aggregate columns option provides a sum total for each column. As shown in the following image, the values in each measure column are summed into total values. Columns created by dimension fields in the Columns bucket are treated as separate columns for this purpose.

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Sale,Year</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sale Quarter</td>
<td>Quantity Sold</td>
<td>Revenue</td>
<td>Quantity Sold</td>
</tr>
<tr>
<td>Accessory</td>
<td>1</td>
<td>4,580</td>
<td>$1,125,123.02</td>
<td>7,121</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>4,662</td>
<td>$1,165,106.04</td>
<td>7,323</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>4,783</td>
<td>$1,270,872.45</td>
<td>7,893</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>6,127</td>
<td>$1,478,196.06</td>
<td>9,059</td>
</tr>
<tr>
<td>Computers</td>
<td>1</td>
<td>1,343</td>
<td>$302,839.60</td>
<td>2,723</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1,235</td>
<td>$285,463.66</td>
<td>2,726</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1,659</td>
<td>$349,989.27</td>
<td>3,170</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>2,493</td>
<td>$503,542.66</td>
<td>3,620</td>
</tr>
<tr>
<td>Media Player</td>
<td>1</td>
<td>11,717</td>
<td>$3,427,197.08</td>
<td>12,067</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>11,618</td>
<td>$3,268,394.69</td>
<td>10,264</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>12,688</td>
<td>$3,585,613.72</td>
<td>11,422</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>14,943</td>
<td>$4,699,372.80</td>
<td>13,379</td>
</tr>
<tr>
<td>Televisions</td>
<td>1</td>
<td>3,925</td>
<td>$1,566,904.80</td>
<td>1,437</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3,748</td>
<td>$1,577,021.42</td>
<td>1,331</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>4,301</td>
<td>$1,790,316.25</td>
<td>1,371</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>4,431</td>
<td>$1,540,975.20</td>
<td>1,668</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>94,253</td>
<td>$27,942,928.78</td>
<td>96,574</td>
</tr>
</tbody>
</table>

Alternatively, you can use a recomputed total to provide summed totals for measure fields from the data source but recalculate the total values for computed fields created in a report. To add a recomputed total to a report, open the More menu, point to Column totals, click Recalculate totals. Values for each measure field are recomputed after each value in the selected field.
For example, perhaps you have created a report that includes a calculated field, Revenue Per Item, that is evaluated after aggregation from Revenue divided by Quantity Sold. The following image shows a report containing that field, with summed totals added using the Aggregate columns option.

<table>
<thead>
<tr>
<th>Product Category</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Revenue Per Item</td>
<td>Revenue Per Item</td>
<td>Revenue Per Item</td>
</tr>
<tr>
<td>Accessories</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>$1,125,123.02</td>
<td>$245.66</td>
<td>$1,800,658.41</td>
</tr>
<tr>
<td>2</td>
<td>$1,165,106.04</td>
<td>$249.92</td>
<td>$1,827,354.16</td>
</tr>
<tr>
<td>3</td>
<td>$1,270,872.45</td>
<td>$265.71</td>
<td>$1,964,121.52</td>
</tr>
<tr>
<td>4</td>
<td>$1,478,106.06</td>
<td>$241.26</td>
<td>$2,258,524.84</td>
</tr>
<tr>
<td>Camcorder</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>$1,225,199.72</td>
<td>$316.34</td>
<td>$2,304,019.65</td>
</tr>
<tr>
<td>2</td>
<td>$1,244,408.92</td>
<td>$326.45</td>
<td>$2,073,199.24</td>
</tr>
<tr>
<td>3</td>
<td>$1,536,974.19</td>
<td>$353.65</td>
<td>$2,529,194.52</td>
</tr>
<tr>
<td>4</td>
<td>$1,871,848.70</td>
<td>$326.91</td>
<td>$2,756,844.75</td>
</tr>
<tr>
<td>Media Player</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>$3,427,197.08</td>
<td>$382.50</td>
<td>$3,851,602.64</td>
</tr>
<tr>
<td>2</td>
<td>$3,268,394.60</td>
<td>$281.32</td>
<td>$3,313,025.34</td>
</tr>
<tr>
<td>3</td>
<td>$3,585,013.72</td>
<td>$282.00</td>
<td>$3,727,532.88</td>
</tr>
<tr>
<td>4</td>
<td>$4,689,372.86</td>
<td>$314.49</td>
<td>$4,239,470.35</td>
</tr>
<tr>
<td>Televisions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>$1,566,904.80</td>
<td>$399.21</td>
<td>$1,095,511.50</td>
</tr>
<tr>
<td>2</td>
<td>$1,577,021.42</td>
<td>$420.76</td>
<td>$1,074,107.17</td>
</tr>
<tr>
<td>3</td>
<td>$1,796,316.25</td>
<td>$417.65</td>
<td>$1,181,874.36</td>
</tr>
<tr>
<td>4</td>
<td>$1,540,975.20</td>
<td>$347.77</td>
<td>$1,385,046.13</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$32,379,525.12</td>
<td>$5,084.20</td>
<td>$37,403,787.48</td>
</tr>
</tbody>
</table>

The total row contains summed values for the Revenue and Revenue Per Item fields.
By contrast, the following image shows the same report, but with recomputed totals, using the Recalculate totals option, instead.

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Sale Year Quarter</th>
<th>Revenue 2014</th>
<th>Revenue Per Item 2014</th>
<th>Revenue 2015</th>
<th>Revenue Per Item 2015</th>
<th>Revenue 2016</th>
<th>Revenue Per Item 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories</td>
<td>1</td>
<td>$1,125,123.02</td>
<td>$245.66</td>
<td>$1,800,008.41</td>
<td>$425.78</td>
<td>$3,045,787.53</td>
<td>$254.83</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>$1,165,105.04</td>
<td>$249.92</td>
<td>$1,827,354.16</td>
<td>$429.54</td>
<td>$3,251,667.25</td>
<td>$251.63</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>$1,270,872.45</td>
<td>$265.71</td>
<td>$1,954,121.52</td>
<td>$426.84</td>
<td>$3,120,804.18</td>
<td>$240.88</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>$1,478,195.06</td>
<td>$241.26</td>
<td>$2,208,524.84</td>
<td>$350.42</td>
<td>$3,315,315.00</td>
<td>$254.85</td>
</tr>
<tr>
<td>Camcorder</td>
<td>1</td>
<td>$1,225,199.72</td>
<td>$316.34</td>
<td>$2,304,049.65</td>
<td>$356.16</td>
<td>$3,452,156.37</td>
<td>$338.48</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>$1,244,408.92</td>
<td>$326.45</td>
<td>$2,073,169.24</td>
<td>$320.18</td>
<td>$3,339,495.11</td>
<td>$334.08</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>$1,536,074.19</td>
<td>$353.65</td>
<td>$2,529,104.52</td>
<td>$350.84</td>
<td>$3,385,661.05</td>
<td>$344.25</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>$1,871,848.70</td>
<td>$328.91</td>
<td>$2,768,844.75</td>
<td>$332.07</td>
<td>$3,794,394.68</td>
<td>$338.18</td>
</tr>
<tr>
<td>Media Player</td>
<td>1</td>
<td>$3,427,197.08</td>
<td>$292.59</td>
<td>$3,851,602.64</td>
<td>$319.18</td>
<td>$5,239,161.93</td>
<td>$320.01</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>$3,268,394.69</td>
<td>$281.32</td>
<td>$3,313,925.34</td>
<td>$322.87</td>
<td>$4,961,985.38</td>
<td>$325.53</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>$3,585,613.72</td>
<td>$282.60</td>
<td>$3,727,532.88</td>
<td>$326.35</td>
<td>$5,008,038.72</td>
<td>$320.01</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>$4,099,372.80</td>
<td>$314.49</td>
<td>$4,239,470.35</td>
<td>$316.87</td>
<td>$5,084,901.35</td>
<td>$325.40</td>
</tr>
<tr>
<td>Televisions</td>
<td>1</td>
<td>$1,566,904.80</td>
<td>$399.21</td>
<td>$1,096,511.50</td>
<td>$763.06</td>
<td>$1,684,377.91</td>
<td>$814.68</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>$1,577,021.42</td>
<td>$420.76</td>
<td>$1,074,107.17</td>
<td>$806.99</td>
<td>$1,481,739.79</td>
<td>$803.11</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>$1,796,316.25</td>
<td>$417.65</td>
<td>$1,181,674.36</td>
<td>$861.91</td>
<td>$1,654,188.08</td>
<td>$854.44</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>$1,540,975.20</td>
<td>$347.77</td>
<td>$1,385,046.13</td>
<td>$830.72</td>
<td>$2,030,387.03</td>
<td>$908.09</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>$32,796,525.12</td>
<td>$307.06</td>
<td>$37,463,787.46</td>
<td>$351.54</td>
<td>$54,055,165.16</td>
<td>$332.31</td>
</tr>
</tbody>
</table>

In this report, the total values in the Revenue Per Item columns are recomputed for the entire report, since Revenue Per Item is a calculated field. On the other hand, the Revenue columns are still summed, since they come from the data source.

Note that the Recalculate totals option does not reapply prefix operators. Fields with prefix operators are summed just as they would be when applying a regular subtotal. In this case, COMPUTE fields, which are calculated fields evaluated after data aggregation, are recalculated.

You can also add row totals to a report to generate summed grand totals for each row of the report. To add row totals, open the More menu on the Designer toolbar and click Row totals.
Row totals behave differently depending on whether or not fields have been placed into the Columns bucket. If there are no fields in the Columns bucket, then all measure columns in the report are summed in a single Total column, as shown in the following image.

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Sale Quarter</th>
<th>Cost of Goods</th>
<th>Discount</th>
<th>Gross Profit</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories</td>
<td>1</td>
<td>$4,147,248.00</td>
<td>$280,171.28</td>
<td>$1,826,730.96</td>
<td>$6,254,150.24</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>$3,925,748.00</td>
<td>$269,670.58</td>
<td>$1,762,391.45</td>
<td>$5,957,810.03</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>$4,166,868.00</td>
<td>$297,293.76</td>
<td>$1,829,020.15</td>
<td>$6,293,181.91</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>$4,887,672.00</td>
<td>$334,687.80</td>
<td>$2,174,363.90</td>
<td>$7,396,723.70</td>
</tr>
<tr>
<td>Camcorder</td>
<td>1</td>
<td>$4,754,152.00</td>
<td>$331,388.92</td>
<td>$2,227,223.74</td>
<td>$7,312,764.66</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>$4,479,378.00</td>
<td>$291,023.13</td>
<td>$2,177,715.27</td>
<td>$6,948,116.40</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>$5,086,129.00</td>
<td>$341,115.23</td>
<td>$2,365,701.66</td>
<td>$7,792,945.89</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>$5,702,159.00</td>
<td>$380,644.79</td>
<td>$2,730,929.13</td>
<td>$8,813,732.92</td>
</tr>
<tr>
<td>Media Player</td>
<td>1</td>
<td>$9,475,832.00</td>
<td>$577,328.70</td>
<td>$3,042,129.65</td>
<td>$13,095,290.35</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>$8,796,078.00</td>
<td>$548,854.63</td>
<td>$2,768,227.41</td>
<td>$12,113,160.04</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>$9,441,755.00</td>
<td>$577,436.23</td>
<td>$2,969,430.32</td>
<td>$12,988,621.55</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>$11,419,820.00</td>
<td>$670,837.94</td>
<td>$3,603,924.56</td>
<td>$15,694,582.50</td>
</tr>
<tr>
<td>Televisions</td>
<td>1</td>
<td>$3,376,862.00</td>
<td>$212,974.63</td>
<td>$972,932.21</td>
<td>$4,562,768.84</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>$3,199,280.00</td>
<td>$177,866.59</td>
<td>$933,588.38</td>
<td>$4,310,734.97</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>$3,597,757.00</td>
<td>$218,950.77</td>
<td>$1,034,422.59</td>
<td>$4,851,130.36</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>$3,861,098.00</td>
<td>$240,878.10</td>
<td>$1,101,910.36</td>
<td>$5,203,886.46</td>
</tr>
</tbody>
</table>
If there is a field in the Columns bucket, then instead of summing all columns, the row totals are evaluated for each measure field in the report, as shown in the following image.

Note that row totals provide sum values for the measures in each row, including instances when the report includes calculated fields.

If your report includes both column totals and row totals, then column totals are evaluated for any row total columns, as shown in the following image.
Using Breaks and Subtotals in a Report

Breaks and subtotals allow you to divide a report into smaller sections for more granular analysis and a more digestible view of your data. These sections are generated for each value in a selected Row field or after the last value of a selected Column field.

To apply a break or subtotal, right-click a field in the Rows or Columns bucket, point to Insert breaks, and select an option. Three categories of options are available for row fields: Subtotals, Page breaks, and Row breaks. You can select an option for each of these categories in each row field of a report. For columnar sort fields, only the Subtotal options are available.

Using Breaks and Subtotals on Rows in a Report

The Subtotal options allow you to add a subtotal or recompute row after each value in the selected field. Subtotals and recomputes do not add page breaks to a report.

To add a subtotal, right-click a field in the Rows bucket, point to Insert breaks, and click Aggregate columns. A subtotal row is added for each value in the selected field and evaluated for each measure field in the report.
The selected field does not need to be the primary sort field. For example, the following image shows a report with subtotals for Product Subcategory, the secondary sort field, but not Product Category, the primary sort field. You can add subtotals for each sort field separately.

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Product Subcategory</th>
<th>Sale Year</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories</td>
<td>Charger</td>
<td>2014</td>
<td>$158,015.56</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$248,167.29</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$374,562.24</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2017</td>
<td>$493,220.38</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2018</td>
<td>$1,101,388.29</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2019</td>
<td>$1,647,481.15</td>
</tr>
<tr>
<td><strong>Subtotal Charger</strong></td>
<td></td>
<td></td>
<td><strong>$4,022,834.91</strong></td>
</tr>
<tr>
<td>Headphones</td>
<td></td>
<td>2014</td>
<td>$2,914,047.37</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$4,612,931.48</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$6,899,210.86</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2017</td>
<td>$9,332,629.55</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2018</td>
<td>$21,114,466.12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2019</td>
<td>$31,313,302.59</td>
</tr>
<tr>
<td><strong>Subtotal Headphones</strong></td>
<td></td>
<td></td>
<td><strong>$76,186,587.97</strong></td>
</tr>
<tr>
<td>Universal Remote Controls</td>
<td></td>
<td>2014</td>
<td>$1,967,234.64</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$2,998,970.16</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$4,546,902.86</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2017</td>
<td>$6,234,565.76</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2018</td>
<td>$13,404,018.40</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2019</td>
<td>$20,247,223.83</td>
</tr>
<tr>
<td><strong>Subtotal Universal Remote Controls</strong></td>
<td></td>
<td></td>
<td><strong>$49,398,915.65</strong></td>
</tr>
</tbody>
</table>

Alternatively, you can use the recompute option to provide summed totals for fields from the data source but recalculate the total values for computed fields created in a report. To add recompute rows to a report, right-click a field in the Rows bucket, point to Insert breaks, and click Recalculate totals. Values for each measure field are recomputed after each value in the selected field.
For example, perhaps you have created a report that includes a calculated field, Revenue Per Item, that is evaluated after aggregation from Revenue divided by Quantity Sold. The following image shows a report containing that field, with subtotals added using the Aggregate columns option.

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Product Subcategory</th>
<th>Sale Year</th>
<th>Revenue</th>
<th>Revenue Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories</td>
<td>Charger</td>
<td>2014</td>
<td>$158,015.56</td>
<td>$38.74</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$248,167.29</td>
<td>$38.32</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$374,562.24</td>
<td>$38.23</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2017</td>
<td>$493,220.38</td>
<td>$38.02</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2018</td>
<td>$1,101,388.29</td>
<td>$38.31</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2019</td>
<td>$1,647,481.15</td>
<td>$38.15</td>
</tr>
<tr>
<td><strong>Subtotal Charger</strong></td>
<td></td>
<td></td>
<td><strong>$4,022,834.91</strong></td>
<td><strong>$229.77</strong></td>
</tr>
<tr>
<td>Headphones</td>
<td></td>
<td>2014</td>
<td>$2,914,047.37</td>
<td>$323.68</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$4,612,931.48</td>
<td>$328.56</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$6,899,210.86</td>
<td>$335.56</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2017</td>
<td>$9,332,629.55</td>
<td>$328.11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2018</td>
<td>$21,114,466.12</td>
<td>$335.68</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2019</td>
<td>$31,313,302.59</td>
<td>$335.25</td>
</tr>
<tr>
<td><strong>Subtotal Headphones</strong></td>
<td></td>
<td></td>
<td><strong>$76,186,587.97</strong></td>
<td><strong>$1,986.84</strong></td>
</tr>
<tr>
<td>Universal Remote Controls</td>
<td></td>
<td>2014</td>
<td>$1,967,234.64</td>
<td>$278.25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$2,998,970.16</td>
<td>$275.67</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$4,546,902.86</td>
<td>$277.62</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2017</td>
<td>$6,234,565.76</td>
<td>$278.11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2018</td>
<td>$13,404,018.40</td>
<td>$277.34</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2019</td>
<td>$20,247,223.83</td>
<td>$277.42</td>
</tr>
<tr>
<td><strong>Subtotal Universal Remote Controls</strong></td>
<td></td>
<td></td>
<td><strong>$49,386,915.65</strong></td>
<td><strong>$1,664.40</strong></td>
</tr>
</tbody>
</table>

The subtotal rows each contain summed values for the Revenue and Revenue Per Item fields.
By contrast, the following image shows the same report, but with recomputes, using the Recalculate totals option, instead.

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Product Subcategory</th>
<th>Sale Year</th>
<th>Revenue</th>
<th>Revenue Per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories</td>
<td>Charger</td>
<td>2014</td>
<td>$158,015.56</td>
<td>$38.74</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$248,157.29</td>
<td>$38.32</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$374,562.24</td>
<td>$38.23</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2017</td>
<td>$493,220.38</td>
<td>$38.02</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2018</td>
<td>$1,101,386.29</td>
<td>$38.31</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2019</td>
<td>$1,647,481.15</td>
<td>$38.15</td>
</tr>
<tr>
<td><strong>Subtotal Charger</strong></td>
<td></td>
<td></td>
<td><strong>$4,022,834.91</strong></td>
<td><strong>$38.22</strong></td>
</tr>
<tr>
<td>Headphones</td>
<td></td>
<td>2014</td>
<td>$2,914,047.37</td>
<td>$323.68</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$4,612,931.48</td>
<td>$328.56</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$6,899,210.86</td>
<td>$335.56</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2017</td>
<td>$9,332,629.55</td>
<td>$328.11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2018</td>
<td>$21,114,466.12</td>
<td>$335.68</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2019</td>
<td>$31,313,302.59</td>
<td>$335.25</td>
</tr>
<tr>
<td><strong>Subtotal Headphones</strong></td>
<td></td>
<td></td>
<td><strong>$70,186,587.97</strong></td>
<td><strong>$333.64</strong></td>
</tr>
<tr>
<td>Universal Remote Controls</td>
<td></td>
<td>2014</td>
<td>$1,957,234.64</td>
<td>$279.25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$2,996,970.16</td>
<td>$275.67</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$4,546,902.86</td>
<td>$277.62</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2017</td>
<td>$6,234,555.76</td>
<td>$278.11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2018</td>
<td>$13,404,018.40</td>
<td>$277.34</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2019</td>
<td>$20,247,223.63</td>
<td>$277.42</td>
</tr>
<tr>
<td><strong>Subtotal Universal Remote Controls</strong></td>
<td></td>
<td></td>
<td><strong>$49,396,915.65</strong></td>
<td><strong>$277.43</strong></td>
</tr>
</tbody>
</table>

Now the subtotal rows provide reaggregated values. They provide a sum total value for the Revenue field, just like with a subtotal, and a recalculated value for the Revenue Per Item field.

Note that the Recalculate totals option does not reapply prefix operators. Fields with prefix operators are summed just as they would be when applying a regular subtotal. Only COMPUTE fields, which are calculated fields evaluated after data aggregation, are recalculated.

You can also add page breaks to a report using two different options. Right-click a field in the Rows bucket, point to Insert breaks, and click Continuous numbering or Restart at 1 to split the report into separate pages for each value in the selected field.

Page headers and footers appear at each page break. Page headers and footers can use dynamic text to indicate the values on the page. Dynamic text is added by typing a less-than sign (<) and the name of the field, with no spaces between them.
For example, the following image shows a report with page breaks added for the Product Category field, and page headers added by typing $Sales for <PRODUCT_CATEGORY$ in the page header area on the Report canvas.

### Sales for Accessories

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Product Subcategory</th>
<th>Sale Year</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories</td>
<td>Charger</td>
<td>2014</td>
<td>$150,015.56</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$248,167.29</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$374,562.24</td>
</tr>
<tr>
<td><strong>Subtotal Charger</strong></td>
<td></td>
<td></td>
<td>$780,745.09</td>
</tr>
<tr>
<td></td>
<td>Headphones</td>
<td>2014</td>
<td>$2,914,047.37</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$4,512,931.48</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$6,899,210.86</td>
</tr>
<tr>
<td><strong>Subtotal Headphones</strong></td>
<td></td>
<td></td>
<td>$14,426,189.71</td>
</tr>
<tr>
<td></td>
<td>Universal Remote Controls</td>
<td>2014</td>
<td>$1,967,234.64</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$2,998,970.16</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$4,546,902.86</td>
</tr>
<tr>
<td><strong>Subtotal Universal Remote Controls</strong></td>
<td></td>
<td></td>
<td>$9,513,107.66</td>
</tr>
</tbody>
</table>

### Sales for Camcorder

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Product Subcategory</th>
<th>Sale Year</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camcorder</td>
<td>Handheld</td>
<td>2014</td>
<td>$1,632,425.21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$2,500,025.44</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$3,837,933.41</td>
</tr>
<tr>
<td><strong>Subtotal Handheld</strong></td>
<td></td>
<td></td>
<td>$8,069,384.06</td>
</tr>
<tr>
<td></td>
<td>Professional</td>
<td>2014</td>
<td>$1,590,967.15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$2,732,875.05</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$4,036,890.50</td>
</tr>
<tr>
<td><strong>Subtotal Professional</strong></td>
<td></td>
<td></td>
<td>$8,360,732.70</td>
</tr>
<tr>
<td></td>
<td>Standard</td>
<td>2014</td>
<td>$2,655,039.17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$4,341,347.57</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$6,096,884.20</td>
</tr>
<tr>
<td><strong>Subtotal Standard</strong></td>
<td></td>
<td></td>
<td>$13,083,271.94</td>
</tr>
</tbody>
</table>
There is no difference between the Continuous numbering and Restart at 1 page break options unless there are page numbers added to the report. If there are page numbers, then using the Continuous numbering option counts page breaks for all values in the field toward page numbering, while the Restart at 1 option resets the page count for each value in the selected field. You can display page numbers by adding the dynamic text <TABPAGENO to a page header or footer.

The Restart at 1 option can be used on a higher level sort field to control the displayed page number for lower level sort fields using the Continuous paging option. For example, the report shown in the image below uses the Restart at 1 page break option on Product Category, the primary sort field, and the Continuous numbering option on Product Subcategory, the secondary sort field. It also contains the following page footer text:

\texttt{Page <TABPAGENO of <BYLASTPAGE}

At run time, <TABPAGENO provides the current page, and <BYLASTPAGE provides the page count for the sort field using the Restart at 1 option. Using <TABLASTPAGE instead of <BYLASTPAGE would instead provide the total page count.
The following image shows that the page for each Product Subcategory is numbered, while different values for Product Category cause the page numbers to reset.

### Page for Charger under Accessories

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Product Subcategory</th>
<th>Sale Year</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories</td>
<td>Charger</td>
<td>2014</td>
<td>$158,015.56</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$248,157.29</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$374,562.24</td>
</tr>
</tbody>
</table>

**Subtotal Charger**

$780,745.09

### Page for Headphones under Accessories

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Product Subcategory</th>
<th>Sale Year</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories</td>
<td>Headphones</td>
<td>2014</td>
<td>$2,914,047.37</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$4,612,931.48</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$6,899,210.80</td>
</tr>
</tbody>
</table>

**Subtotal Headphones**

$14,426,189.71

### Page for Universal Remote Controls under Accessories

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Product Subcategory</th>
<th>Sale Year</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories</td>
<td>Universal Remote Controls</td>
<td>2014</td>
<td>$1,957,234.64</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$2,998,970.16</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$4,546,902.86</td>
</tr>
</tbody>
</table>

**Subtotal Universal Remote Controls**

$9,513,107.66

### Page for Handheld under Camcorder

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Product Subcategory</th>
<th>Sale Year</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camcorder</td>
<td>Handheld</td>
<td>2014</td>
<td>$1,632,425.21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$2,589,025.44</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$3,837,933.41</td>
</tr>
</tbody>
</table>

**Subtotal Handheld**

$8,059,384.06
By contrast, if Product Category used the either Continuous numbering option or no page breaks at all (since breaks have already been added on a lower level sort field, Product Category values will display on separate pages anyway), <BYLASTPAGE would display the total number of all pages in the report, as shown in the following image, and <TABPAGENO would not reset.

### Page for Charger under Accessories

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Product Subcategory</th>
<th>Sale Year</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories</td>
<td>Charger</td>
<td>2014</td>
<td>$158,015.56</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$248,167.29</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$374,562.24</td>
</tr>
<tr>
<td><strong>Subtotal Charger</strong></td>
<td></td>
<td></td>
<td>$780,745.09</td>
</tr>
</tbody>
</table>

**Page 1 of 21**

### Page for Headphones under Accessories

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Product Subcategory</th>
<th>Sale Year</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories</td>
<td>Headphones</td>
<td>2014</td>
<td>$2,914,047.37</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$4,612,931.46</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$6,899,210.86</td>
</tr>
<tr>
<td><strong>Subtotal Headphones</strong></td>
<td></td>
<td></td>
<td>$14,426,189.71</td>
</tr>
</tbody>
</table>

**Page 2 of 21**

### Page for Universal Remote Controls under Accessories

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Product Subcategory</th>
<th>Sale Year</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories</td>
<td>Universal Remote Controls</td>
<td>2014</td>
<td>$1,907,234.04</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$2,998,970.16</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$4,546,902.86</td>
</tr>
<tr>
<td><strong>Subtotal Universal Remote Controls</strong></td>
<td></td>
<td></td>
<td>$9,513,107.66</td>
</tr>
</tbody>
</table>

**Page 3 of 21**

### Page for Handheld under Camcorder

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Product Subcategory</th>
<th>Sale Year</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camcorder</td>
<td>Handheld</td>
<td>2014</td>
<td>$1,632,425.21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$2,596,025.44</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$3,837,933.41</td>
</tr>
<tr>
<td><strong>Subtotal Handheld</strong></td>
<td></td>
<td></td>
<td>$8,066,384.06</td>
</tr>
</tbody>
</table>

**Page 4 of 21**
To visually break up a report without adding page breaks, you can add a row break in the form of a blank row or line. To add a row break, right-click a field in the Rows bucket, point to *Insert breaks*, and click *Blank row* or *Solid line*. 
Row breaks do not create page breaks, so page headers and footers are not repeated on the field to which the row break is added, and they are not counted for page numbering. This technique can be a good way to space out the values and information in a report without adding unnecessary functionality. In the following image, blank row breaks on Product Subcategory make it easier to locate and isolate the values for each product subcategory.

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Product Subcategory</th>
<th>Sale Year</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories</td>
<td>Charger</td>
<td>2014</td>
<td>$158,015.56</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$248,167.29</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$374,562.24</td>
</tr>
<tr>
<td>Headphones</td>
<td></td>
<td>2014</td>
<td>$2,914,047.37</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$4,612,931.48</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$6,899,210.86</td>
</tr>
<tr>
<td>Universal Remote Controls</td>
<td></td>
<td>2014</td>
<td>$1,967,234.64</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$2,998,970.16</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$4,546,902.86</td>
</tr>
<tr>
<td>Camcorder</td>
<td>Handheld</td>
<td>2014</td>
<td>$1,632,425.21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$2,599,025.44</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$3,837,933.41</td>
</tr>
<tr>
<td>Professional</td>
<td></td>
<td>2014</td>
<td>$1,590,967.15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$2,732,875.05</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$4,036,890.50</td>
</tr>
<tr>
<td>Standard</td>
<td></td>
<td>2014</td>
<td>$2,655,039.17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$4,341,347.67</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$6,096,884.20</td>
</tr>
</tbody>
</table>
Using Subtotals on Sort Columns in a Report

Page and row breaks are not available for fields in the Columns bucket, but you can use the subtotal and recompute options on columnar sort fields similarly to row sort fields. To add columnar subtotal columns, right-click a field in the Columns bucket, point to **Insert breaks**, and click **Aggregate rows**. To add columnar recompute columns, right-click a field in the Columns bucket, point to **Insert breaks**, and click **Recalculate totals**.

Columnar subtotals work differently than row subtotals. While a subtotal or recompute row is added for each value in the selected Row field, subtotal or recompute columns are added after the last value of the selected field in each column group. For example, in the following image, subtotals have been added to the Sale Quarter field, so the subtotal column sums the revenue values for all of the quarters within each value for Sale Year, which is a higher level columnar sort field. Effectively, the subtotals applied to the Sale Quarter field provide a total for each Sale Year value.

As a result, subtotals and recomputes added to the highest level field in the Column bucket serve as a grand total for all of the columns in the report.

Adding Headings and Footings to a Report

You can use headers and footers to add key information, such as purpose of the report and the audience for whom it is intended.

You can add multiple lines of information into the heading and footing areas in a report, and apply different styling options to different sections of the heading or footing. This accommodates thorough explanations and additional information, while offering the most readable presentation.

When you create a report, the heading area is visible at the top of the canvas, and shows default placeholder text. You can double-click this text to edit the page header.
Footers are not enabled, by default, but can be enabled on the Designer toolbar, in the Show option menu, as shown in the following image.

Once enabled, default placeholder footing text appears below the report. Double-click this text to edit it.

When you double-click the Page Heading or Page Footing placeholder text in the canvas, the heading or footing is selected for editing and the styling toolbar appears.

You can make styling changes to the text in your headers and footers, according to your preferences. Using a WYSIWYG canvas, formatting changes are applied instantly, allowing you to see the results of your styling selections as you make them. When editing your header or footer, you can find the options at the top of the canvas, as shown in the following image.
You can change the font and font size using the drop-down lists. You can add bold, italic, and underline accents to your text. In addition, you can change the positioning of your text (left, center, and right). You can also customize the color of the text, as well as the background of the header or footer text area. When your formatting is complete, you can close the toolbar and continue working with your report. The canvas adjusts to ensure that all lines of the heading or footing are visible.

You can add a new line in the heading and footing by pressing the Enter key. The number of lines of heading and footing you can add to a report is only limited by the available space on your screen. A scrollbar is added to a report if all of the data cannot fit on the page.

When you are done editing the heading or footing, click the X button on the styling toolbar to close it. Once you have edited the heading or footing, the updated text will appear when the report is run.

If you delete the header or footer text and close the styling toolbar, the header or footer is removed from the report, and the option to enable that component is deselected in the Show option menu. You can select the header or footer option to add it to the report again.

Heading and footing text in WebFOCUS Designer is created at the page level, so the heading or footing is displayed for each separate page of the report.

You can add dynamic heading or footing text by dragging a field from the Fields tab into the heading or footing text area, or by typing a less-than sign (<) followed by the field name. At run time, the first value for the selected field is displayed in place of the field name in the header or footer. You can combine dynamic page heading or page footing text with filters or page breaks to provide more relevant information at run time.

**Procedure:** How to Add a Dynamic Page Heading to a Report

You can add a dynamic page heading to a report that changes depending on filter selections and sort values for each page.

1. On the WebFOCUS Home Page, click the Designer tab in the Action bar.
2. Click Report.
3. Select the `wf_retail_lite.mas` data source and click Select.
4. Click the Style tab and select HTML from the Output Format menu.
5. Return to the Display tab.
6. In the Dimensions pane, expand `Product`, and add the `Product Category` and `Product Subcategory` fields to the Rows bucket, in that order.
7. In the Measures pane, expand `Sales`, and drag `Quantity Sold` and `Revenue` to the Summary bucket.
8. Create a filter for Customer Country.

   In the Dimensions pane, expand Customer and drag Customer Country into the Filter toolbar.

9. Select Argentina, and click outside of the filter control to apply the filter.

10. Create a page break after each Product Category value.

    Right-click the Product Category field in the Rows bucket, point to Insert Breaks, and click Continuous numbering.

11. Double-click the Page Heading text above the report to select it for editing.

12. Delete the placeholder text in the heading area, and type Sales for.

13. From the Dimensions pane, drag the Product Category field into the heading area after where you typed Sales for.

    The heading should resemble the following image. Dynamic values for the Product Category field will be substituted for the text string starting with the less-than sign (<) at run time.

    
    Sales for <WF_RETAIL_LITE.WF_RETAIL_PRODUCT.PRODUCT_CATEGORY

14. Click the close button on the styling toolbar to finish editing.

15. On the Designer toolbar, click the Show option menu and select Footing.

    The text Page Footing appears at the bottom of the page.

16. Double-click the Page Footing text to select it for editing.

17. Type, This report shows figures for sales in.

18. From the Dimensions pane, drag the Customer Country field into the footing area after the text that you just typed.

    The name of the field, with a less-than sign in front of it, appears in the page footing area.

19. With the entire page footing text selected, click the Italic button on the styling toolbar.

20. Click Preview to see a run-time view of the report.

    Notice that the page header appears and displays a different value for each Product Category value. The Page footer appears below each section of the report, and indicates that values are for Argentina, since this was the value selected for the Customer Country filter. If you were to select a different value for Customer Country, the footing text would automatically change.
The following image shows an example of what a section of the report may look like.

**Sales for Accessories**

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Product Subcategory</th>
<th>Quantity Sold</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories</td>
<td>Charger</td>
<td>509</td>
<td>$19,101.40</td>
</tr>
<tr>
<td></td>
<td>Headphones</td>
<td>1,095</td>
<td>$376,563.98</td>
</tr>
<tr>
<td></td>
<td>Universal Remote Controls</td>
<td>869</td>
<td>$245,119.09</td>
</tr>
</tbody>
</table>

*This report shows figures for sales in Argentina*

**Sales for Camcorder**

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Product Subcategory</th>
<th>Quantity Sold</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camcorder</td>
<td>Handheld</td>
<td>1,232</td>
<td>$206,880.45</td>
</tr>
<tr>
<td></td>
<td>Professional</td>
<td>77</td>
<td>$270,196.10</td>
</tr>
<tr>
<td></td>
<td>Standard</td>
<td>919</td>
<td>$331,031.88</td>
</tr>
</tbody>
</table>

*This report shows figures for sales in Argentina*

**Sorting Data in a Report**

You can modify the order and arrangement of values in a report by using different sort orders. Reports are sorted into rows based on the values of fields in the Rows bucket, and into columns based on the values of fields in the Columns bucket.
Sorting is hierarchical, so values are first sorted by the first field in the Row or Column bucket, then by the second field, and so on. For example, in the following image, the report is sorted by the Product Category field, then for product subcategories under each product category, then by sale year values for each product subcategory. Product Category, Product Subcategory, and Sale Year have all been placed into the Rows bucket. Gross Profit was placed in the Summary bucket, so it is not used to sort the report. Instead, gross profit values are sorted by the other three fields.

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Product Subcategory</th>
<th>Sale Year</th>
<th>Gross Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computers</td>
<td>Smartphone</td>
<td>2014</td>
<td>$560,961.19</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$968,864.58</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$1,451,039.85</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2017</td>
<td>$1,980,595.07</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2018</td>
<td>$5,153,998.61</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2019</td>
<td>$5,719,242.85</td>
</tr>
<tr>
<td>Tablet</td>
<td></td>
<td>2016</td>
<td>$196,009.74</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2017</td>
<td>$1,395,785.48</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2018</td>
<td>$3,123,898.72</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2019</td>
<td>$12,958,422.03</td>
</tr>
<tr>
<td>Media Player</td>
<td>Blu Ray</td>
<td>2014</td>
<td>$2,018,067.15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$3,237,933.79</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$4,701,470.35</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2017</td>
<td>$6,554,474.17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2018</td>
<td>$14,110,114.35</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2019</td>
<td>$21,149,135.32</td>
</tr>
<tr>
<td>DVD Players</td>
<td></td>
<td>2014</td>
<td>$1,717,087.44</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$142,558.37</td>
</tr>
<tr>
<td>DVD Players - Portable</td>
<td></td>
<td>2014</td>
<td>$265,150.77</td>
</tr>
<tr>
<td>Streaming</td>
<td></td>
<td>2014</td>
<td>$46,646.99</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015</td>
<td>$107,489.05</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2016</td>
<td>$147,308.03</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2017</td>
<td>$176,395.88</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2018</td>
<td>$370,256.62</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2019</td>
<td>$1,088,490.08</td>
</tr>
</tbody>
</table>
By default, field values are sorted into ascending order based on the numeric and alphabetical order defined in the code page that you are using. To reverse the sort order, right-click a field and click **Sort descending**. To return to the original sort order, right-click a field and click **Sort ascending**. You can also click the sort arrows on the fields in a bucket, as shown in the following image.
You can rearrange the fields within a bucket by dragging them, which allows you to prioritize certain information in the report. The previous example showed a report sorted by Product Category, then Product Subcategory, then Sale Year. If we move Sale Year to the top of the Rows bucket so that it is the primary sort field, the report becomes a breakdown of yearly sales, as shown in the following image.

<table>
<thead>
<tr>
<th>Sale Year</th>
<th>Product Category</th>
<th>Product Subcategory</th>
<th>Gross Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>Accessories</td>
<td>Charger</td>
<td>$77,918.56</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Headphones</td>
<td>$943,893.37</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Universal Remote Controls</td>
<td>$536,815.64</td>
</tr>
<tr>
<td></td>
<td>Camcorder</td>
<td>Handheld</td>
<td>$832,239.21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Professional</td>
<td>$326,739.15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Standard</td>
<td>$749,341.17</td>
</tr>
<tr>
<td></td>
<td>Computers</td>
<td>Smartphone</td>
<td>$560,961.19</td>
</tr>
<tr>
<td></td>
<td>Media Player</td>
<td>Blu Ray</td>
<td>$2,018,067.15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DVD Players</td>
<td>$1,717,087.44</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DVD Players - Portable</td>
<td>$265,150.77</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Streaming</td>
<td>$46,646.99</td>
</tr>
<tr>
<td></td>
<td>Stereo Systems</td>
<td>Boom Box</td>
<td>$546,423.99</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Home Theater Systems</td>
<td>$1,116,533.39</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Receivers</td>
<td>$673,700.84</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Speaker Kits</td>
<td>$1,010,824.45</td>
</tr>
<tr>
<td></td>
<td></td>
<td>iPod Docking Station</td>
<td>$615,492.06</td>
</tr>
<tr>
<td></td>
<td>Televisions</td>
<td>CRT TV</td>
<td>$602,419.65</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flat Panel TV</td>
<td>$645,916.40</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Portable TV</td>
<td>$341,221.62</td>
</tr>
<tr>
<td></td>
<td>Video Production</td>
<td>Video Editing</td>
<td>$706,553.17</td>
</tr>
</tbody>
</table>
You can sort by measure fields as well when they use the Summary, Detail, or Detail with counter display options. To sort by aggregated measure values, right-click a field in the measure bucket and click *Sort ascending* or *Sort descending*. A hidden instance of the measure field is added to the top of the Rows bucket, as shown in the following image.
The result is a report that is sorted into rows based on the selected measure value, as shown in the following image.

<table>
<thead>
<tr>
<th>Sale Year</th>
<th>Product Category</th>
<th>Product Subcategory</th>
<th>Gross Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>Media Player</td>
<td>Blu Ray</td>
<td>$21,149,135.32</td>
</tr>
<tr>
<td>2018</td>
<td>Media Player</td>
<td>Blu Ray</td>
<td>$14,110,114.35</td>
</tr>
<tr>
<td>2019</td>
<td>Computers</td>
<td>Tablet</td>
<td>$12,958,422.03</td>
</tr>
<tr>
<td>2019</td>
<td>Stereo Systems</td>
<td>Home Theater Systems</td>
<td>$11,437,009.44</td>
</tr>
<tr>
<td>2019</td>
<td>Stereo Systems</td>
<td>Speaker Kits</td>
<td>$10,556,588.15</td>
</tr>
<tr>
<td>2019</td>
<td>Accessories</td>
<td>Headphones</td>
<td>$10,077,097.59</td>
</tr>
<tr>
<td>2019</td>
<td>Camcorder</td>
<td>Handheld</td>
<td>$8,758,717.23</td>
</tr>
<tr>
<td>2019</td>
<td>Camcorder</td>
<td>Standard</td>
<td>$8,021,561.37</td>
</tr>
<tr>
<td>2018</td>
<td>Stereo Systems</td>
<td>Home Theater Systems</td>
<td>$7,662,268.78</td>
</tr>
<tr>
<td>2019</td>
<td>Video Production</td>
<td>Video Editing</td>
<td>$7,330,486.17</td>
</tr>
<tr>
<td>2018</td>
<td>Stereo Systems</td>
<td>Speaker Kits</td>
<td>$7,072,283.83</td>
</tr>
<tr>
<td>2018</td>
<td>Accessories</td>
<td>Headphones</td>
<td>$6,795,787.12</td>
</tr>
<tr>
<td>2019</td>
<td>Stereo Systems</td>
<td>Receivers</td>
<td>$6,759,172.56</td>
</tr>
<tr>
<td>2019</td>
<td>Televisions</td>
<td>Flat Panel TV</td>
<td>$6,560,087.29</td>
</tr>
<tr>
<td>2017</td>
<td>Media Player</td>
<td>Blu Ray</td>
<td>$6,554,474.17</td>
</tr>
<tr>
<td>2019</td>
<td>Stereo Systems</td>
<td>iPod Docking Station</td>
<td>$6,244,914.54</td>
</tr>
<tr>
<td>2018</td>
<td>Camcorder</td>
<td>Handheld</td>
<td>$5,839,787.45</td>
</tr>
<tr>
<td>2019</td>
<td>Computers</td>
<td>Smartphone</td>
<td>$5,719,242.85</td>
</tr>
</tbody>
</table>

In this example, sorting by the Gross Profit field from the Summary bucket has allowed us to see at a glance that larger profits have been made in more recent years. You could change the sort order to see lowest profits first by clicking the sort arrow for the hidden Gross Profit field in the Rows bucket, just as you could for a visible field.
You can move this hidden field to change the sorting priority. In the following image, the hidden Gross Profit field has been moved to after Sale Year, allowing us to see the most profitable products in each year.

<table>
<thead>
<tr>
<th>Sale Year</th>
<th>Product Category</th>
<th>Product Subcategory</th>
<th>Gross Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>Media Player</td>
<td>Blu Ray</td>
<td>$2,018,067.15</td>
</tr>
<tr>
<td></td>
<td>Media Player</td>
<td>DVD Players</td>
<td>$1,717,087.44</td>
</tr>
<tr>
<td></td>
<td>Stereo Systems</td>
<td>Home Theater Systems</td>
<td>$1,116,533.39</td>
</tr>
<tr>
<td></td>
<td>Stereo Systems</td>
<td>Speaker Kits</td>
<td>$1,010,824.45</td>
</tr>
<tr>
<td></td>
<td>Accessories</td>
<td>Headphones</td>
<td>$943,893.37</td>
</tr>
<tr>
<td></td>
<td>Camcorder</td>
<td>Handheld</td>
<td>$832,239.21</td>
</tr>
<tr>
<td></td>
<td>Camcorder</td>
<td>Standard</td>
<td>$749,341.17</td>
</tr>
<tr>
<td></td>
<td>Video Production</td>
<td>Video Editing</td>
<td>$706,553.17</td>
</tr>
<tr>
<td></td>
<td>Stereos Systems</td>
<td>Receivers</td>
<td>$673,700.84</td>
</tr>
<tr>
<td></td>
<td>Televisions</td>
<td>Flat Panel TV</td>
<td>$645,916.40</td>
</tr>
<tr>
<td></td>
<td>Stereos Systems</td>
<td>iPod Docking Station</td>
<td>$615,492.06</td>
</tr>
<tr>
<td></td>
<td>Televisions</td>
<td>CRT TV</td>
<td>$602,419.65</td>
</tr>
<tr>
<td></td>
<td>Computers</td>
<td>Smartphone</td>
<td>$560,961.19</td>
</tr>
<tr>
<td></td>
<td>Stereos Systems</td>
<td>Boom Box</td>
<td>$546,423.99</td>
</tr>
<tr>
<td></td>
<td>Accessories</td>
<td>Universal Remote Controls</td>
<td>$536,815.64</td>
</tr>
<tr>
<td></td>
<td>Televisions</td>
<td>Portable TV</td>
<td>$341,221.62</td>
</tr>
<tr>
<td></td>
<td>Camcorder</td>
<td>Professional</td>
<td>$326,739.15</td>
</tr>
<tr>
<td></td>
<td>Media Player</td>
<td>DVD Players - Portable</td>
<td>$265,150.77</td>
</tr>
<tr>
<td></td>
<td>Accessories</td>
<td>Charger</td>
<td>$77,918.56</td>
</tr>
<tr>
<td></td>
<td>Media Player</td>
<td>Streaming</td>
<td>$46,646.99</td>
</tr>
<tr>
<td>2015</td>
<td>Media Player</td>
<td>Blu Ray</td>
<td>$3,237,933.79</td>
</tr>
<tr>
<td></td>
<td>Stereos Systems</td>
<td>Home Theater Systems</td>
<td>$1,706,265.20</td>
</tr>
<tr>
<td></td>
<td>Stereos Systems</td>
<td>Speaker Kits</td>
<td>$1,580,534.80</td>
</tr>
<tr>
<td></td>
<td>Accessories</td>
<td>Headphones</td>
<td>$1,482,596.48</td>
</tr>
<tr>
<td></td>
<td>Camcorder</td>
<td>Handheld</td>
<td>$1,325,634.44</td>
</tr>
<tr>
<td></td>
<td>Camcorder</td>
<td>Standard</td>
<td>$1,235,711.67</td>
</tr>
</tbody>
</table>

You can sort by multiple measures to have more granular control over how the report is sorted. If there are some matching values of the first sorting measure, the second sorting measure will sort those matching values.
When using the Detail or Detail with counter display option instead of the Summary option, you can sort fields in the Detail bucket in the same way. This can be helpful if you want to view a sorted list of all records for a field. Right-click a field in the Detail or Detail with counter bucket and click Sort ascending or Sort descending to sort the report using the values from that field.

You can remove the sorting effect of a field in the Summary, Detail, or Detail with counter bucket by pointing to the invisible measure field in the Rows bucket and clicking the X, or by right-clicking the original field in the measure bucket and clicking No sort. The hidden field is removed from the Rows bucket, but the original field remains in the measure bucket. When you remove the original field from the measure bucket, the invisible field in the Rows bucket is automatically removed as well.

You can also sort by hidden dimension fields, if you do not want them to display in the chart. To hide a dimension field in your report, right-click the field in the Rows or Columns bucket and click Hide.
The following image shows a report sorted by Sale Day Name and Sale Date. We want to see sales information based on the day of the week. Notice, however, that Sale Day Name is sorted alphabetically, by default.

<table>
<thead>
<tr>
<th>Sale Day Name</th>
<th>Sale Date</th>
<th>Gross Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRI</td>
<td>2015/08/06</td>
<td>$45,635.83</td>
</tr>
<tr>
<td></td>
<td>2015/08/13</td>
<td>$39,750.60</td>
</tr>
<tr>
<td></td>
<td>2015/08/20</td>
<td>$37,301.13</td>
</tr>
<tr>
<td></td>
<td>2015/08/27</td>
<td>$51,734.44</td>
</tr>
<tr>
<td>MON</td>
<td>2015/08/02</td>
<td>$43,686.90</td>
</tr>
<tr>
<td></td>
<td>2015/08/09</td>
<td>$40,032.54</td>
</tr>
<tr>
<td></td>
<td>2015/08/16</td>
<td>$51,617.52</td>
</tr>
<tr>
<td></td>
<td>2015/08/23</td>
<td>$47,854.15</td>
</tr>
<tr>
<td></td>
<td>2015/08/30</td>
<td>$37,810.80</td>
</tr>
<tr>
<td>SAT</td>
<td>2015/08/07</td>
<td>$51,172.54</td>
</tr>
<tr>
<td></td>
<td>2015/08/14</td>
<td>$44,150.39</td>
</tr>
<tr>
<td></td>
<td>2015/08/21</td>
<td>$50,272.42</td>
</tr>
<tr>
<td></td>
<td>2015/08/28</td>
<td>$43,300.21</td>
</tr>
<tr>
<td>SUN</td>
<td>2015/08/01</td>
<td>$41,126.93</td>
</tr>
<tr>
<td></td>
<td>2015/08/08</td>
<td>$53,612.56</td>
</tr>
<tr>
<td></td>
<td>2015/08/15</td>
<td>$40,017.77</td>
</tr>
<tr>
<td></td>
<td>2015/08/22</td>
<td>$50,313.68</td>
</tr>
<tr>
<td></td>
<td>2015/08/29</td>
<td>$54,462.54</td>
</tr>
<tr>
<td>THU</td>
<td>2015/08/05</td>
<td>$47,093.23</td>
</tr>
<tr>
<td></td>
<td>2015/08/12</td>
<td>$44,636.91</td>
</tr>
<tr>
<td></td>
<td>2015/08/19</td>
<td>$46,274.34</td>
</tr>
</tbody>
</table>
We can add the Sale Day of Week field, which assigns a number to each day, to the report as the primary sort field, and then hide it, so the days are listed in weekday order, as shown in the following image.

<table>
<thead>
<tr>
<th>Sale Day Name</th>
<th>Sale Date</th>
<th>Gross Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>MON</td>
<td>2015/08/02</td>
<td>$43,686.90</td>
</tr>
<tr>
<td></td>
<td>2015/08/09</td>
<td>$40,032.54</td>
</tr>
<tr>
<td></td>
<td>2015/08/16</td>
<td>$51,617.52</td>
</tr>
<tr>
<td></td>
<td>2015/08/23</td>
<td>$47,854.15</td>
</tr>
<tr>
<td></td>
<td>2015/08/30</td>
<td>$37,810.80</td>
</tr>
<tr>
<td>TUE</td>
<td>2015/08/03</td>
<td>$45,751.82</td>
</tr>
<tr>
<td></td>
<td>2015/08/10</td>
<td>$42,189.51</td>
</tr>
<tr>
<td></td>
<td>2015/08/17</td>
<td>$44,574.08</td>
</tr>
<tr>
<td></td>
<td>2015/08/24</td>
<td>$53,328.87</td>
</tr>
<tr>
<td></td>
<td>2015/08/31</td>
<td>$45,781.18</td>
</tr>
<tr>
<td>WED</td>
<td>2015/08/04</td>
<td>$43,407.44</td>
</tr>
<tr>
<td></td>
<td>2015/08/11</td>
<td>$55,236.32</td>
</tr>
<tr>
<td></td>
<td>2015/08/18</td>
<td>$42,632.29</td>
</tr>
<tr>
<td></td>
<td>2015/08/25</td>
<td>$42,574.44</td>
</tr>
<tr>
<td>THU</td>
<td>2015/08/05</td>
<td>$47,093.23</td>
</tr>
<tr>
<td></td>
<td>2015/08/12</td>
<td>$44,636.91</td>
</tr>
<tr>
<td></td>
<td>2015/08/19</td>
<td>$46,274.34</td>
</tr>
<tr>
<td></td>
<td>2015/08/26</td>
<td>$45,633.70</td>
</tr>
<tr>
<td>FRI</td>
<td>2015/08/06</td>
<td>$45,635.63</td>
</tr>
<tr>
<td></td>
<td>2015/08/13</td>
<td>$39,750.60</td>
</tr>
<tr>
<td></td>
<td>2015/08/20</td>
<td>$37,301.13</td>
</tr>
</tbody>
</table>
Using Hidden Fields in Reports

When creating a report in WebFOCUS Designer, you can hide a field so that it exists in the report but is not shown as a column. The main advantage of doing this is that hidden fields are still used for sorting, which gives you more control over how the values in a report are displayed and organized. To hide a field in your report, right-click a field and click Hide. The hidden field appears slightly faded in its bucket, as shown in the following image.

You can display the field again by right-clicking it and de-selecting the Hide option.

You can sort by hidden dimension fields if you do not want them to display in the chart, but still want to use the values in those fields to sort the values in the fields that do display.
The following image shows a report sorted by Sale Day Name and Sale Date. We want to see sales information based on the day of the week. Notice, however, that Sale Day Name is sorted alphabetically, by default.

<table>
<thead>
<tr>
<th>Sale Day Name</th>
<th>Sale Date</th>
<th>Gross Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRI</td>
<td>2015/08/06</td>
<td>$45,635.83</td>
</tr>
<tr>
<td></td>
<td>2015/08/13</td>
<td>$39,750.60</td>
</tr>
<tr>
<td></td>
<td>2015/08/20</td>
<td>$37,301.13</td>
</tr>
<tr>
<td></td>
<td>2015/08/27</td>
<td>$51,734.44</td>
</tr>
<tr>
<td>MON</td>
<td>2015/08/02</td>
<td>$43,686.90</td>
</tr>
<tr>
<td></td>
<td>2015/08/09</td>
<td>$40,032.54</td>
</tr>
<tr>
<td></td>
<td>2015/08/16</td>
<td>$51,617.52</td>
</tr>
<tr>
<td></td>
<td>2015/08/23</td>
<td>$47,854.15</td>
</tr>
<tr>
<td></td>
<td>2015/08/30</td>
<td>$37,810.80</td>
</tr>
<tr>
<td>SAT</td>
<td>2015/08/07</td>
<td>$51,172.54</td>
</tr>
<tr>
<td></td>
<td>2015/08/14</td>
<td>$44,150.39</td>
</tr>
<tr>
<td></td>
<td>2015/08/21</td>
<td>$50,272.42</td>
</tr>
<tr>
<td></td>
<td>2015/08/28</td>
<td>$43,300.21</td>
</tr>
<tr>
<td>SUN</td>
<td>2015/08/01</td>
<td>$41,126.93</td>
</tr>
<tr>
<td></td>
<td>2015/08/08</td>
<td>$53,612.56</td>
</tr>
<tr>
<td></td>
<td>2015/08/15</td>
<td>$40,017.77</td>
</tr>
<tr>
<td></td>
<td>2015/08/22</td>
<td>$50,313.68</td>
</tr>
<tr>
<td></td>
<td>2015/08/29</td>
<td>$54,462.54</td>
</tr>
<tr>
<td>THU</td>
<td>2015/08/05</td>
<td>$47,093.23</td>
</tr>
<tr>
<td></td>
<td>2015/08/12</td>
<td>$44,636.91</td>
</tr>
<tr>
<td></td>
<td>2015/08/19</td>
<td>$46,274.34</td>
</tr>
</tbody>
</table>
We can add the Sale Day of Week field, which assigns a number to each day, to the report as the primary sort field, and then hide it so that the days are listed in order, as shown in the following image.

<table>
<thead>
<tr>
<th>Row</th>
<th>Sale Day Name</th>
<th>Sale Date</th>
<th>Gross Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>MON</td>
<td></td>
<td>2015/08/02</td>
<td>$43,686.90</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015/08/09</td>
<td>$40,032.54</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015/08/16</td>
<td>$51,617.52</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015/08/23</td>
<td>$47,854.15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015/08/30</td>
<td>$37,810.80</td>
</tr>
<tr>
<td>TUE</td>
<td></td>
<td>2015/08/03</td>
<td>$45,751.82</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015/08/10</td>
<td>$42,189.51</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015/08/17</td>
<td>$44,574.08</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015/08/24</td>
<td>$53,328.87</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015/08/31</td>
<td>$45,781.18</td>
</tr>
<tr>
<td>WED</td>
<td></td>
<td>2015/08/04</td>
<td>$43,407.44</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015/08/11</td>
<td>$55,236.32</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015/08/18</td>
<td>$42,632.29</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015/08/25</td>
<td>$42,574.44</td>
</tr>
<tr>
<td>THU</td>
<td></td>
<td>2015/08/05</td>
<td>$47,093.23</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015/08/12</td>
<td>$44,636.91</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015/08/19</td>
<td>$46,274.34</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015/08/26</td>
<td>$45,633.70</td>
</tr>
<tr>
<td>FRI</td>
<td></td>
<td>2015/08/06</td>
<td>$45,635.63</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015/08/13</td>
<td>$39,750.60</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2015/08/20</td>
<td>$37,301.13</td>
</tr>
</tbody>
</table>
A hidden field is also created automatically when you sort by a measure field. To sort by aggregated measure values, right-click a measure field in the Sum bucket and click Sort ascending or Sort descending. A hidden instance of the measure field is added to the top of the Rows bucket, as shown in the following image.
The result is a report that is sorted into rows based on the selected measure value, as shown in the following image.

<table>
<thead>
<tr>
<th>Sale Year</th>
<th>Product Category</th>
<th>Product Subcategory</th>
<th>Gross Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>Media Player</td>
<td>Blu Ray</td>
<td>$21,149,135.32</td>
</tr>
<tr>
<td>2018</td>
<td>Media Player</td>
<td>Blu Ray</td>
<td>$14,110,114.35</td>
</tr>
<tr>
<td>2019</td>
<td>Computers</td>
<td>Tablet</td>
<td>$12,958,422.03</td>
</tr>
<tr>
<td>2019</td>
<td>Stereo Systems</td>
<td>Home Theater Systems</td>
<td>$11,437,009.44</td>
</tr>
<tr>
<td>2019</td>
<td>Stereo Systems</td>
<td>Speaker Kits</td>
<td>$10,556,588.15</td>
</tr>
<tr>
<td>2019</td>
<td>Accessories</td>
<td>Headphones</td>
<td>$10,077,097.59</td>
</tr>
<tr>
<td>2019</td>
<td>Camcorder</td>
<td>Handheld</td>
<td>$8,758,717.23</td>
</tr>
<tr>
<td>2019</td>
<td>Camcorder</td>
<td>Standard</td>
<td>$8,021,561.37</td>
</tr>
<tr>
<td>2018</td>
<td>Stereo Systems</td>
<td>Home Theater Systems</td>
<td>$7,662,268.78</td>
</tr>
<tr>
<td>2019</td>
<td>Video Production</td>
<td>Video Editing</td>
<td>$7,330,486.17</td>
</tr>
<tr>
<td>2018</td>
<td>Stereo Systems</td>
<td>Speaker Kits</td>
<td>$7,072,283.83</td>
</tr>
<tr>
<td>2018</td>
<td>Accessories</td>
<td>Headphones</td>
<td>$6,795,787.12</td>
</tr>
<tr>
<td>2019</td>
<td>Stereo Systems</td>
<td>Receivers</td>
<td>$6,759,172.56</td>
</tr>
<tr>
<td>2019</td>
<td>Televisions</td>
<td>Flat Panel TV</td>
<td>$6,560,087.29</td>
</tr>
<tr>
<td>2017</td>
<td>Media Player</td>
<td>Blu Ray</td>
<td>$6,554,474.17</td>
</tr>
<tr>
<td>2019</td>
<td>Stereo Systems</td>
<td>iPod Docking Station</td>
<td>$6,244,914.54</td>
</tr>
<tr>
<td>2018</td>
<td>Camcorder</td>
<td>Handheld</td>
<td>$5,839,787.45</td>
</tr>
<tr>
<td>2019</td>
<td>Computers</td>
<td>Smartphone</td>
<td>$5,719,242.85</td>
</tr>
</tbody>
</table>

In this example, sorting by Gross Profit has allowed us to see at a glance that larger profits have been made in more recent years. You could change the sort order to see lowest profits first by clicking the sort arrow for the hidden Gross Profit field in the Rows bucket, just as you could for a visible field.
You can move this hidden field to change the sorting priority. In the following image, the hidden Gross Profit field has been moved to after Sale Year, allowing us to see the most profitable products in each year, as shown in the following image.

<table>
<thead>
<tr>
<th>Sale Year</th>
<th>Product Category</th>
<th>Product Subcategory</th>
<th>Gross Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>Media Player</td>
<td>Blu Ray</td>
<td>$2,018,067.15</td>
</tr>
<tr>
<td></td>
<td>Media Player</td>
<td>DVD Players</td>
<td>$1,717,087.44</td>
</tr>
<tr>
<td></td>
<td>Stereo Systems</td>
<td>Home Theater Systems</td>
<td>$1,116,533.39</td>
</tr>
<tr>
<td></td>
<td>Stereo Systems</td>
<td>Speaker Kits</td>
<td>$1,010,824.45</td>
</tr>
<tr>
<td></td>
<td>Accessories</td>
<td>Headphones</td>
<td>$943,893.37</td>
</tr>
<tr>
<td></td>
<td>Camcorder</td>
<td>Handheld</td>
<td>$832,239.21</td>
</tr>
<tr>
<td></td>
<td>Camcorder</td>
<td>Standard</td>
<td>$749,341.17</td>
</tr>
<tr>
<td></td>
<td>Video Production</td>
<td>Video Editing</td>
<td>$706,553.17</td>
</tr>
<tr>
<td></td>
<td>Stereo Systems</td>
<td>Receivers</td>
<td>$673,700.84</td>
</tr>
<tr>
<td></td>
<td>Televisions</td>
<td>Flat Panel TV</td>
<td>$645,916.40</td>
</tr>
<tr>
<td></td>
<td>Stereo Systems</td>
<td>iPod Docking Station</td>
<td>$615,492.06</td>
</tr>
<tr>
<td></td>
<td>Televisions</td>
<td>CRT TV</td>
<td>$602,419.65</td>
</tr>
<tr>
<td></td>
<td>Computers</td>
<td>Smartphone</td>
<td>$560,961.19</td>
</tr>
<tr>
<td></td>
<td>Stereo Systems</td>
<td>Boom Box</td>
<td>$546,423.99</td>
</tr>
<tr>
<td></td>
<td>Accessories</td>
<td>Universal Remote Controls</td>
<td>$536,815.64</td>
</tr>
<tr>
<td></td>
<td>Televisions</td>
<td>Portable TV</td>
<td>$341,221.62</td>
</tr>
<tr>
<td></td>
<td>Camcorder</td>
<td>Professional</td>
<td>$326,739.15</td>
</tr>
<tr>
<td></td>
<td>Media Player</td>
<td>DVD Players - Portable</td>
<td>$265,150.77</td>
</tr>
<tr>
<td></td>
<td>Accessories</td>
<td>Charger</td>
<td>$77,918.56</td>
</tr>
<tr>
<td></td>
<td>Media Player</td>
<td>Streaming</td>
<td>$46,646.99</td>
</tr>
<tr>
<td>2015</td>
<td>Media Player</td>
<td>Blu Ray</td>
<td>$3,237,933.79</td>
</tr>
<tr>
<td></td>
<td>Stereo Systems</td>
<td>Home Theater Systems</td>
<td>$1,706,265.20</td>
</tr>
<tr>
<td></td>
<td>Stereo Systems</td>
<td>Speaker Kits</td>
<td>$1,580,534.80</td>
</tr>
<tr>
<td></td>
<td>Accessories</td>
<td>Headphones</td>
<td>$1,482,596.48</td>
</tr>
<tr>
<td></td>
<td>Camcorder</td>
<td>Handheld</td>
<td>$1,325,634.44</td>
</tr>
<tr>
<td></td>
<td>Camcorder</td>
<td>Standard</td>
<td>$1,235,711.67</td>
</tr>
</tbody>
</table>
You can sort by multiple measures to have more granular control over how the report is sorted. If there are some matching values of the first sorting measure, then the second sorting measure will be used as a secondary means of determining sort order.

When using the Detail display option instead of the Sum option, you can sort fields in the Detail bucket in the same way. This can be helpful if you want to view a sorted list of all records for a field. Right-click a field in the Detail bucket and click Sort ascending or Sort descending to sort the report using the values from that field.

You can remove the sorting effect of a field in the Sum or Detail bucket by pointing to the invisible measure field in the Rows bucket and clicking the X, or by right-clicking the original field in the Sum or Detail bucket and clicking No sort. The hidden field is removed from the Rows bucket, but the original field remains in the Sum or Detail bucket. When you remove the original field from the Sum or Detail bucket, the invisible field in the Rows bucket is automatically removed as well.

**Using Sort Limits in WebFOCUS Designer Reports**

You can use sort limits to control how many values to display in a report. While a filter allows you to limit a report by specifying which values should display, a sort limit allows you to limit a report by specifying how many values should display, depending on the amount of information that you want to see.

To add a sort limit to a report, right-click a field in the Rows bucket or the measure bucket, point to Sort limit, and select a value. The values 5, 10, and 25 are provided for quick selection, but you can select Custom to specify a different number as the sort limit. You can remove the sort limit from a field by right-clicking the field, pointing to Sort limit, and clicking No limit.
When a sort limit is applied to a field in the Rows bucket, only the specified number of values is displayed for that field within each sort group. If a sort limit of 5 is applied to the primary sort field, then only the first five sort values display in the report. If a sort limit of 5 is applied to a secondary sort field, then five values for that field display within each higher level sort value. In the following image, both the Customer Business Sub Region and Customer City fields have a sort limit of 5, so the report shows the first five Customer Business Sub Region values and the first five Customer City values within each subregion.

The values that display are based on the sort order of the field that has the sort limit applied. If an alphanumeric dimension field has a sort limit of 5 and is sorted ascending, then the first five alphabetic values for that field display. If the same field is sorted descending, then the last five alphabetic values display.
As a result, one of the most effective ways to use sort limits is to apply them to a sorting measure field, which allows you to limit the report to the highest or lowest aggregated values in each sort category. To do this, right-click a field in the measure bucket of a report, point to Sort limit, and select a value. A hidden instance of the selected measure field is automatically added to the top of the Rows bucket, with the sort limit applied. You can click the arrow icon on the hidden field in the Rows bucket to change the sort order, and you can drag the hidden field into a different order in the Rows bucket to change the level at which the sort limit is applied.

In the following image, a sort limit of 5 has been applied to the Revenue field from the Summary bucket. The resulting Revenue sort field has been changed to descending order and moved to apply the sort limit after the Customer Business Sub Region field. As a result, the report shows the cities with the five highest Revenue values in each business subregion.
If you are sorting by a measure field with a sort limit, and multiple rows within a sort group have the same value for that measure field, then they are all displayed. This may result in a number of rows higher than the sort limit. For example, the following image shows a report in which the Quantity Sold field has a sort limit of 5. Since multiple Customer City values in the Africa subregion have the same Quantity Sold value, seven values display, representing the cities with the five highest distinct Quantity Sold values in that subregion.

### Changing Field Formats in a Designer Report

Changing the display format of fields in a report allows you to control how values in a field are interpreted and the styling that they use when displayed. This feature allows for field display formatting, which is essential for any data-based content design tool.
To change the format of a field in a bucket in the Display pane, right-click the field and point to *Format data*, as shown in the following image.
When creating or editing a calculated field, you can access Data Format options by clicking the Edit Format button, which appears with a different icon depending on whether the field is a number, character, or date field. The Edit Format button is located above the Operator Selection pane next to the field name, as shown in the following image.
To edit the format of a field, first select the data type, then set details specific to that data type. In the following image, the numeric data type is selected, providing options for numeric fields.

You can select one of the following data types:

- Character format, for fields containing letters and numbers.
- Number format, for fields containing numbers that you want to sum or aggregate.
- Date format, for fields containing dates.
- Custom format, for fields that have values that do not match one of the other formats, such as date-time fields or string fields, or are a variety of another type of field, such as packed decimal fields or Julian date fields.

The available data types are limited by the original format of the field. Character fields can only use the character and custom format options, numeric fields can only use the numeric and custom format options, and date fields can only use the date and custom format options.
When you select the character data type, you can specify character-specific formatting, as shown in the following image.

![Image of character data type formatting](image)

You can use the Length option to select the number of characters to display in the field, and enable variable length. Variable length indicates that the number of characters can vary depending on the data that is stored in the field.

When you select the numeric data type, you can specify number-specific formatting, as shown in the following image.

![Image of numeric data type formatting](image)

You can choose whether or not to display decimals, and set the maximum number of digits to show before and after the decimal point. You can also choose how to format negative numbers, whether to show thousands separators, and whether to show a zero before the decimal point when the value is less than one.
You can also specify currency and percent variations, such as a different currency symbol or a change in the use of a percentage value. When you select the currency option under Type, the Currency symbol and Symbol position options appear, allowing you to select the currency symbol and how it displays.

**Note:** The Percent data format option automatically multiplies the field value by 100 so that decimal values are accurately converted to percentages. If your data values do not need to be multiplied by 100 and only need the percent symbol (%) added, select the custom format data type and manually enter a field format followed by %. For example, **D12.2%**.

When your data type is a date field, you can make a selection from the supported date formats that are available for selection. The options for a date field are shown in the following image.

The Date format menu shows a list of date formats as applied to December 31 of the current year. You can select date formats that use separators or month names, or show a single date component as a number, name, or abbreviation.

When you select a date format that uses a separator, the Date separator menu is available. You can choose to use a slash (/), dash (-), dot (.), or space.
If you want to use a format not available in the character, number, or date sections, you can a
custom data type. Type a valid WebFOCUS field format into the Format text box. For example,
the following image shows a field using the format HMDYYS, which is a date-time format.

![Custom Data Type](image)

**Styling Reports in WebFOCUS Designer**

You can apply styling changes to a report to help it visually matching the styling of your other
content and make it easier to read and more visually appealing. You can style a report from
the Style tab.

On the Style tab, you can select a theme (.sty file, or StyleSheet), to apply to your report. Themes style multiple components of a report, such as headers, column titles, and data text, all at once. Themes include associated cascading style sheet files along with a StyleSheet to help coordinate styling between content items and pages into which they can be placed.

You can use a default theme, such as the Designer 2018, Light, or Midnight theme, or you can click Custom to select a legacy template or a StyleSheet saved to a domain or folder in your Repository. When you select a StyleSheet using the Custom option, it is applied to the report and added to the Theme list.

**Note:** Charts and reports created for use on pages that have colors applied to the component containers can use a transparent background to allow the defined background color of the page container to show through. The Midnight theme, provided as one of the Global Resources options, is an example of a page theme that contains darker background colors. When used in content such as a chart or report, the Midnight theme uses white text to create contrast with this darker background.

In the current release of WebFOCUS Designer, the chart and report canvases display a white background only. This means that if, in order to display on a dark colored page, the font color in the selected theme is defined as white and uses a transparent background then the text will not be visible on the white canvas. To view the white text, build your chart or report on the canvas and add it to a page container with a dark background.
To make a custom theme available directly from the Theme menu, create a folder for it in the Global Resources domain, in the Themes folder. In that folder, you can add a custom StyleSheet to use with charts and reports, and a custom CSS file to use for pages. The .sty file and .css file must both be named themes.

**Tip:** When creating a custom theme, you can copy the CSS and StyleSheet syntax from existing themes to use as a model.

### Changing Output Formats in a Report

The output format of your content determines the type of file that is generated when that content is run. Different output types enable different levels of run-time interactivity, embedding behavior, and compatibility with outside programs, so you can change the output type depending on how you intend to use your content and who the intended audience is.

To change the output format of a report created in WebFOCUS Designer, click the **Style** tab, and select an option from the Output Format drop-down menu. The following options are available:

- HTML
- AHTML
- PDF
- PPTX
- XLSX
- Select at runtime
The HTML and AHTML options are browser-based formats, while PDF, PPTX, and XLSX output can be downloaded, distributed, and opened using standard office suite software. The Select at runtime option provides the ability to run a report using any of the other output formats. Users can select a format at runtime in which to run the report.
The HTML output format generates a basic report that can be run in a web browser. The simplicity of the HTML format makes it extremely flexible. Run-time interactivity is available in the form of hyperlinks, which can be used to drill into data hierarchies used in the report, known as Auto Drill, or connect to outside content through shared parameters associated with sort fields in the report, known as Auto Linking. An example of an HTML report with Auto Drill hyperlink behavior is shown in the following image.

Reports using the AHTML format can also be run in a web browser. AHTML is a format that allows you to perform offline analysis using in-document analytic features. The AHTML format allows you to use Auto Drill and Auto Linking functionalities just like HTML. In addition to this, AHTML enables numerous features that allow you to reorganize and explore the data in your chart without directly accessing the data source on which it is based. This includes the ability to filter the report, view the data in the report as a chart, and more. When you click a column header, a menu of options appears, allowing you to explore and transform the report, as shown in the following image.
You can also make your report output available to common desktop tools by using the PDF, PPTX, or XLSX output formats.

When you run a report that uses PDF, PPTX, or XLSX as the output format, a file is created in a .pdf, .pptx, or .xlsx format, respectively. The file opens in a browser viewer for that file type or is downloaded in the browser. The file can be opened using a tool compatible with the output file type.

Certain features may not be available, depending on the file type. For example, the PDF, PPTX, and XLSX output formats do not support Auto Linking or Auto Drill, since a single, self-contained file is created.

Page breaks also behave differently, depending on the output file type. In PDF, a separate page is created for each page break, and in PPTX, a separate slide is created. In XLSX, however, separate pages of a report are output to the same worksheet, with a set of column headers for each section, similar to how page breaks work in the HTML output format.
The following image shows an example of a report created using the PDF output format viewed in a web browser.

The following image shows an example of a report created using the PPTX output format viewed in Microsoft PowerPoint 2007.
The following image shows an example of a report created using the XLSX output format viewed in Excel 2007.

You can use the Select at runtime option to enable any of these output formats. When a report using the Select at runtime option is run, the Responsive Autoprompt page opens. You can select an output type from the drop-down menu, as shown in the following image.
When you click the Run button, the report runs in the selected output format.

Creating Charts

Using WebFOCUS Designer, you can create charts, grids, and maps, which enable you to convey information visually. You can save and share charts, add saved charts to pages, or edit existing charts should a scenario change. For example, you might want to create a line chart that compares two numeric measures or a ring pie chart that shows the intersections of your data as parts of a whole. You can also create a matrix chart, which allows you to identify hot spots and areas of concentration in your data. Because of its flexibility, WebFOCUS Designer provides you with the platform and tools you need to create charts that communicate.

Many charts show contrasting intersections of data, giving you the opportunity to share useful information that conveys patterns in your data. WebFOCUS Designer provides you with access to different types of simple and complex charts in a suite of charting options. You can also add your saved charts to pages or use them as standalone components that you can share with others in your organization, allowing for collaboration, which a centerpiece for business communication.

Creating a chart begins with the selection of a data source, which contains the underlying data that is used to create your chart. You can select a Master file (.mas) or a Reporting Object (.ro) as your data source. You can also upload a spreadsheet or connect to an existing data source.
You select your data from the Open dialog box, which has two tabs: Server and Repository. These tabs list data files based on where they are stored. Once you have selected a data source, you are ready to begin creating a chart. The following image shows the default WebFOCUS Designer interface when you create a chart.
When you begin creating a chart in WebFOCUS Designer, you start with a vertical stacked bar chart type, which is a frequently used type of chart. You can change this by choosing a different chart type from the chart picker, which is located to the right of your canvas. When you choose between the different chart types in the chart picker, you can hover over each chart type to display the name of the chart and the minimum data requirements to run the chart (for example, one measure and one dimension). You also have access to a number of chart extensions from the chart picker, which are specialized charts that are installed by your administrator. You can view these by expanding the chart picker. Chart extensions display in a double-column list, as shown in the following image.
You select measures and dimensions from the Fields tab, which holds the fields that were populated from your data source. You can add fields to your chart in the following ways: drag a field to the canvas, double-click a field, or drag a field into one of the buckets.

Once you have created a chart, you can format it to enhance the appearance or style of the chart. For example, you might want to add a header and footer to identify your chart and prepare it for distribution. Depending on the chart type, you can access targeted formatting options that allow you to customize the Legend, Series, and Axis in a chart. Additional options display when working with a specific chart type (for example, Map or Matrix chart types).

**Previewing Charts**

As you create charts in WebFOCUS Designer, you can preview them to see how your data displays in the chart, or to check the styling before publishing it or sharing it with others. At any point in the development of your chart, click *Preview* on the Quick Access Toolbar, as shown in the following image.

This executes your request and presents the results in the preview window.

Once you've reviewed your chart, you can exit the Preview using the Esc key.

For charts that contain prompts for parameters, in the prompting facility activated in Autoprompt mode, the Esc key causes the parameter panel to open and close. In this case, you can use the blue dot to return from the preview to the design view of your chart, as shown in the following image.
Procedure: How to Create a Chart Using WebFOCUS Designer

1. From the WebFOCUS Home Page, click the Designer tab.
2. Click Chart.
3. Select an existing data source or connect to a new data source and click Select.
4. Choose a chart type from the chart picker, as shown in the following image, or use the default vertical stacked bar chart.

5. Add measures by dragging them onto the canvas.
   **Note:** You can also double-click a measure to add it to the relevant bucket or drag it into the relevant bucket.

6. Add dimensions by dragging them onto the canvas.
   **Note:** You can also double-click the dimension to add it to the relevant bucket or drag it into the relevant bucket.
The chart refreshes with your selections.

7. You can format your chart in the following ways:
   a. Edit the style, size, or format of your fonts.
   b. Modify the appearance or location of your legend.
   c. Modify axis options.
   d. Add a header and footer.
   e. Customize the series in your chart.

Before you save your chart, you can also create a thumbnail, which is used to show an image of the chart on the Home Page or when you create a page in WebFOCUS Designer. To create a thumbnail, on the WebFOCUS Designer toolbar, click Thumbnail.

8. On the WebFOCUS Designer toolbar, click Save to save your chart.

   To edit your chart, locate it on the Home Page, right-click it, and click Edit from the shortcut menu.

   You can now share your chart or add it to a page.

Creating Vertical Stacked Bar Charts

Use a vertical stacked bar chart when you want to view information for one dimension within another dimension. For example, when you want to see which product subcategories accounted for the most sales within each product category.
If you use one measure in the Vertical bucket and one dimension in the Horizontal bucket, a simple bar chart is created, with no stacked segments. Vertical stacked bar charts require at least one measure and one dimension. If you add a second measure to the Vertical bucket, a second series is created for the new measure and a new segment is placed on top of the first measure in each bar, as shown in the following image.

Additional measures increase the number of segments in a stack.
If you instead add a dimension field to the Color bucket, colored segments are created for each value in that dimension field, as shown in the following image.

Additional fields added to the color field create additional segments based on concatenated values.

The following display options are available for a vertical stacked bar chart:

- **Change chart orientation.** Switches the horizontal and vertical axes, making the bars horizontal.

- **Clear buckets content.** Empties all buckets.

- **Stacked.** When selected, creates a vertical stacked bar chart.

- **Side-by-Side.** When selected, creates a vertical side-by-side bar chart, in which the series are placed side-by-side in groups.

- **Absolute.** When selected, creates a vertical absolute bar chart, in which the series are layered in front of one another.

- **Percent.** When selected, creates a vertical percent bar chart. Each series is stacked to show a proportion of each bar instead of their actual value.
You can add fields to the following buckets for a vertical stacked bar chart:

- **Vertical.** The first field is added to the vertical axis to determine the height of each bar. Additional measures create additional segments in each bar. Additional dimensions create matrix rows. You can click the icon in the bucket field label to toggle between using the field as a measure or a matrix row.

- **Horizontal.** The first field is added to the horizontal axis to create a bar for each unique value. Additional fields create matrix columns. You can click the icon in the bucket field label to toggle between using the field as a horizontal axis sort field or matrix column.

- **Size.** Controls the width of the bars based on a measure value.

- **Color.** If a dimension field is used, creates segments for each value. If a measure field is used, applies a color scale to the bars.

- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.

- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.

- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket.

**Procedure:** How to Create a Vertical Stacked Bar Chart

1. From the WebFOCUS Home Page, click the Designer tab, and then click Chart.
2. Choose a data source and click Select.
3. Add one or more measures and dimensions to the chart.
The vertical stacked bar chart refreshes with your selections, as shown in the following image.

4. You can perform the following tasks with your vertical stacked bar chart:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the legend).

5. Save your vertical stacked bar chart.

**Creating Horizontal Bar Charts**

Use a horizontal bar chart when you want to emphasize a ranking relationship in descending order. This chart type can also be used when the x-axis label is too long to fit legibly side-by-side.

If you add additional measure fields to the Horizontal bucket or add dimension fields to the Color bucket, additional bars are placed in groups for each vertical axis value.

**Note:** Horizontal bar charts require at least one measure and one dimension. Add measures as required to compare additional values.

To sort the bars from high to low, right-click a measure value in the Horizontal bucket and click Sort descending.

The following display options are available for a horizontal bar chart:

- **Change chart orientation.** Switches the horizontal and vertical axes, making the bars vertical.

- **Clear buckets content.** Empties all buckets.

- **Stacked.** When selected, creates a horizontal stacked bar chart.
- **Side-by-Side.** When selected, creates a horizontal side-by-side bar chart, in which the series are placed side-by-side in groups.

- **Absolute.** When selected, creates a horizontal absolute bar chart, in which the series are layered in front of one another.

- **Percent.** When selected, creates a horizontal percent bar chart. Each series is stacked to show a proportion of each bar instead of their actual value.

**Note:** When sorting a bar chart, each series is treated as a unique bar. As a result, groups of series such as stacked bar segments, side-by-side groups, or absolute overlapping bars may be separated.

You can add fields to the following buckets for a horizontal bar chart:

- **Vertical.** The first field is added to the vertical axis to create a bar for each unique value. Additional fields create matrix rows. You can click the icon in the bucket field label to toggle between using the field as a vertical axis sort field or matrix row.

- **Horizontal.** The first field added to the vertical axis determines the height of each bar. Additional measures create additional series for each bar. Additional dimensions create matrix rows. You can click the icon in the bucket field label to toggle between using the field as a measure or a matrix column.

- **Size.** Controls the width of the bars based on a measure value.

- **Color.** If a dimension field is used, creates a new series for each value. If a measure field is used, applies a color scale to the bars.

- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.

- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.

- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket.

**Procedure:** **How to Create a Horizontal Bar Chart**

1. From the WebFOCUS Home Page, click the Designer tab, and then click Chart.
2. Choose a data source and click Select.
3. Add a measure and a dimension to the chart.

The horizontal bar chart refreshes with your selections, as shown in the following image.

4. You can perform the following tasks with your horizontal bar chart:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the legend).
5. Save your horizontal bar chart.

Creating Vertical Side-by-Side Bar Charts

Vertical side-by-side bar charts can be used to show additional measure or dimension values for each horizontal axis value using differing identifying colors. Side-by-side bar charts are useful to directly compare the values for different measures or categories within each horizontal axis sort value.

Note: This chart requires at least one measure and one dimension. Add measures as required to compare additional values.

The following display options are available for a vertical side-by-side bar chart:

- **Change chart orientation.** Switches the horizontal and vertical axes, making the bars horizontal.
- **Clear buckets content.** Empties all buckets.
- **Stacked.** When selected, creates a vertical stacked bar chart, in which each series forms a segment of each bar.
- **Side-by-Side.** When selected, creates a vertical side-by-side bar chart.
- **Absolute.** When selected, creates a vertical absolute bar chart, in which the series are layered in front of one another.

- **Percent.** When selected, creates a vertical percent bar chart. Each series is stacked to show a proportion of each bar instead of their actual value.

You can add fields to the following buckets for a vertical side-by-side bar chart:

- **Vertical.** The first field is added to the vertical axis to determine the height of each bar. Additional measures create additional bars for each horizontal axis value. Additional dimensions create matrix rows. You can click the icon in the bucket field label to toggle between using the field as a measure or a matrix row.

- **Horizontal.** The first field is added to the horizontal axis to create a bar for each unique value. Additional fields create matrix columns. You can click the icon in the bucket field label to toggle between using the field as a horizontal axis sort field or matrix column.

- **Size.** Controls the width of the bars based on a measure value.

- **Color.** If a dimension field is used, creates new bars for each value, placed in groups for each horizontal axis sort value. If a measure field is used, applies a color scale to the bars.

- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.

- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.

- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket.

**Procedure:** How to Create a Vertical Side-by-Side Bar Chart

1. From the WebFOCUS Home Page, click the Designer tab, and then click Chart.
2. Choose a data source and click Select.
3. Add one or more measures and dimensions to the chart.
The vertical side-by-side bar chart refreshes with your selections, as shown in the following image.

4. You can perform the following tasks with your vertical side-by-side bar chart:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the legend).

5. Save your vertical side-by-side bar chart.

Creating Ring Pie Charts

Use a ring pie chart when you want to review the value of each segment, which represents the measure value for the selected dimension, as it relates to the total for the selected measure. The total value represented by all segments displays in the middle of the ring pie chart.

**Note:** Ring pie charts require at least one measure (placed in the Measure bucket) and one dimension (placed in the Color bucket). Add additional measures as required to create a separate ring pie for each measure.

The following display options are available for a ring pie chart:

- **Change chart orientation.** Switches the fields in the Vertical and Horizontal buckets, reorienting matrix rows and columns.

- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets in a ring pie chart:

- **Vertical.** Enables you to specify a field to display row data in a matrix chart. The use of measure fields is supported. Row data is displayed on the left side of the chart, along the y-axis.
- **Horizontal.** Enables you to specify a field to display column data in a matrix chart. The use of measure fields is supported. Column data is displayed at the top of the chart, along the x-axis.

- **Measure.** Use this bucket to specify a measure that will define the size of segments in a pie chart. The Measure metric is used with the Color bucket for pie charts to create sections based on your field selections. Each field in the Measure bucket results in a separate ring pie chart.

- **Size.** When creating a matrix chart that contains ring pie charts, the size bucket controls the diameter of each chart based on a measure value.

- **Color.** Add a dimension field to the Color bucket to create a segment in the ring pie chart for each value.

- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.

- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.

- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket.

**Procedure: How to Create a Ring Pie Chart**

1. From the WebFOCUS Home Page, click the **Designer** tab, and then click **Chart**.
2. Choose a data source and click **Select**.
3. Add one measure and a dimension to the chart.

   The ring pie chart refreshes with your selections, as shown in the following image.
4. You can perform the following tasks with your ring pie chart:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the legend).

5. Save your ring pie chart.

Creating Absolute Line Charts

Use absolute line charts when you want to show trend data over time. For example, monthly changes in employment figures, or yearly sales of an item in your inventory.

**Note:** Absolute line charts require at least one measure and one dimension. Adding multiple measures or adding fields to the Color bucket will create additional lines on the chart.

The following display options are available for a line chart:

- **Change chart orientation.** Switches the vertical and horizontal axes so that the lines draw from top to bottom.

- **Clear buckets content.** Empties all buckets.

- **Stacked.** Stacks each line on top of the previous line, similar to a stacked bar chart. As a result, the value for each point on a line is a sum of the value represented by that point and all points for the same horizontal axis value below it.

- **Absolute.** Each point on each line represents an absolute value.

- **Percent.** When selected, the points in each line are stacked and represent a proportion of the total for each horizontal axis value instead of their actual value.

You can add fields to the following buckets for a line chart:

- **Vertical.** The first field is added to the vertical axis to determine the height of points on the line. Additional measures create additional lines. Additional dimensions create matrix rows. You can click the icon in the bucket field label to toggle between using the field as a measure or a matrix row.

- **Horizontal.** The first field is added to the horizontal axis to create a point on each line for each unique value. Additional fields create matrix columns. You can click the icon in the bucket field label to toggle between using the field as a horizontal axis sort field or matrix column.
- **Size.** Controls the thickness of the lines based on a measure value. The thickness changes at each point on the horizontal axis.

- **Color.** If a dimension field is used, creates additional lines for each value. If a measure field is used, applies a color scale to the lines.

- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.

- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.

- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket.

**Procedure:** How to Create an Absolute Line Chart

1. From the WebFOCUS Home Page, click the **Designer** tab, and then click **Chart**.
2. Choose a data source and click **Select**.
3. Add one or more measures and a dimension to the chart.

   The absolute line chart refreshes with your selections, as shown in the following image.

4. You can perform the following tasks with your absolute line chart:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the legend).
5. Save your absolute line chart.

Creating Vertical Stacked Area Charts

Use vertical stacked area charts when you want to distinguish your data more dramatically by highlighting volume with color. In a vertical stacked area chart, each area is stacked on top of the sections below it.

**Note:** Vertical stacked area charts require at least one measure and one dimension. Adding multiple measures will create additional shaded areas on the chart.

The following display options are available for an area chart:

- **Change chart orientation.** Switches the vertical and horizontal axes so that the lines draw from top to bottom.

- **Clear buckets content.** Empties all buckets.

- **Stacked.** Stacks each area on top of the previous area, similar to a stacked bar chart. As a result, the value for each point along the top of an area is a sum of the value represented by that point and all points for the same horizontal axis value in the areas below it.

- **Absolute.** Each point in each area represents an absolute value. Areas are layered in front of each other.

- **Percent.** When selected, the areas are stacked to fill the chart area and represent a proportion of the total for each horizontal axis value instead of their actual value.

You can add fields to the following buckets for an area chart:

- **Vertical.** The first field is added to the vertical axis to determine the height of points in the area chart. Additional measures create additional areas. Additional dimensions create matrix rows. You can click the icon in the bucket field label to toggle between using the field as a measure or a matrix row.

- **Horizontal.** The first field is added to the horizontal axis to create a point at the top of each area for each unique value in the field. Additional fields create matrix columns. You can click the icon in the bucket field label to toggle between using the field as a horizontal axis sort field or matrix column.

- **Color.** If a dimension field is used, creates additional areas for each value. If a measure field is used, applies a color scale to the areas.

- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.

- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket.

### Procedure: How to Create a Vertical Stacked Area Chart

1. From the WebFOCUS Home Page, click the Designer tab, and then click Chart.
2. Choose a data source and click Select.
3. Add one or more measures and a dimension to the chart.

   The vertical stacked area chart refreshes with your selections, as shown in the following image.

4. You can perform the following tasks with your vertical stacked area chart:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the legend).

5. Save your vertical stacked area chart.

### Creating Scatter/Bubble Charts

Scatter charts are used to show relationships between X and Y values. They compare two sets of numbers at once, which is useful for discovering patterns and trends.
A bubble chart is a chart in which the data points are represented by bubbles. Bubble charts can have two column fields representing X and Y data values, or have three column fields representing X, Y, and Z data values, in that order. The third variable (Z) represents size. The size of each bubble is used to show the relative importance of the data. A bubble chart can be used to effectively show the relationship between three measure fields.

**Note:** Scatter/bubble charts require at least two measures, one dimension, a color field, and at least one detail field. Optionally, add a dimension to the Size bucket to view the concentration of data.

The following display options are available for a scatter plot or bubble chart:

- **Change chart orientation.** Switches the vertical and horizontal axes.

- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a scatter plot or bubble chart:

- **Vertical.** Add a measure field to the vertical axis to determine the vertical position of points. Additional dimensions create matrix rows. You can click the icon in the bucket field label to toggle between using the field as a measure or a matrix row.

- **Horizontal.** Add a measure or dimension field to the horizontal axis to determine the horizontal position of points. Additional dimension fields create matrix columns. You can click the icon in the bucket field label to toggle between using the field as a horizontal axis field or matrix column.

- **Detail.** Use this bucket to add detail to your visual by adding a data field to it. For example, if you add Sale,Quarter to the Detail bucket in your Scatter plot, the points on the plot are quadrupled, one for each quarter. In addition, the field that you specify in the Detail bucket also displays on the hover menu for each point in the plot.

- **Size.** Controls the size of each bubble based on a measure value.

- **Color.** If a dimension field is used, creates points or bubbles for each value and determines their color. If you also add a dimension to the Detail bucket, the values in the detail field are used to create points, and the values in the color field determine the color of the points. If a measure field is used, applies a color scale to the points.

- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
Animate. Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.

MultiPage. Enables the creation of multiple graphs based on the field that you place in this bucket.

Procedure: How to Create a Scatter/Bubble Chart

1. From the WebFOCUS Home Page, click the Designer tab, and then click Chart.
2. Choose a data source and click Select.
3. Add one measure and one dimension to the chart. Also, add fields in the Detail and Color buckets.

The scatter/bubble chart refreshes with your selections, as shown in the following image.

4. You can perform the following tasks with your scatter/bubble chart:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the legend).
5. Save your scatter/bubble chart.

Creating Circle Plot Charts

Use circle plot charts to display differing values in rows, enabling you to draw inferences as to how the values overlap.
Note: Circle plot charts require at least one measure and one dimension, as well as one for the Detail and Color buckets. Optionally, add a dimension to the Size bucket to view the concentration of data.

The following display options are available for a circle plot chart:

- **Change chart orientation.** Switches the vertical and horizontal axes.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a circle plot chart:

- **Vertical.** Add a measure field to the vertical axis to determine the vertical position of points. Additional dimensions create matrix rows. You can click the icon in the bucket field label to toggle between using the field as a measure or a matrix row.
- **Horizontal.** Add a dimension field to the horizontal axis to determine the horizontal position of points. Additional dimension fields create matrix columns. You can click the icon in the bucket field label to toggle between using the field as a horizontal axis field or matrix column.
- **Detail.** Use this bucket to add detail to your visual by adding a data field to it. For example, if you add Sale,Quarter to the Detail bucket in your Scatter plot, the points on the plot are quadrupled, one for each quarter. In addition, the field that you specify in the Detail bucket also displays on the hover menu for each point in the plot.
- **Size.** Controls the size of each point based on a measure value.
- **Color.** If a dimension field is used, creates points for each value and determines their color. If you also add a dimension to the Detail bucket, the values in the detail field are used to create points, and the values in the color field determine the color of the points. If a measure field is used, applies a color scale to the points.
- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.
- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.
**MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket.

**Procedure:** How to Create a Circle Plot Chart

1. From the WebFOCUS Home Page, click the **Designer** tab, and then click **Chart**.
2. Choose a data source and click **Select**.
3. Add one measure, one dimension to the chart. Also, add a field into the Detail and Color buckets.

The circle plot chart refreshes with your selections, as shown in the following image.

4. You can perform the following tasks with your circle plot chart:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the legend).

5. Save your circle plot chart.

**Creating Treemap Charts**

Treemap charts can be used to display large amounts of hierarchically structured data. Using a set of nested rectangles to illustrate data relationships, sections of a treemap represent branches of a tree.

**Note:** Treemap charts require at least one measure and one dimension, to be placed in the Size and Color buckets. Groups are determined by those fields specified in the Grouping bucket.

The Clear buckets content display option is available for a treemap. It removes the fields from all buckets.
You can add fields to the following buckets for a treemap:

- **Group.** Enables you to specify dimension fields by which to present your data in nested categories or groups.

- **Size.** Use a measure field to determine the size of boxes in the treemap.

- **Color.** If a dimension field is used, creates boxes to contain values for the field in the Group bucket. If a measure field is used, applies a color scale to the boxes in the treemap.

- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.

- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.

- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket.

**Procedure: How to Create a Treemap Chart**

1. From the WebFOCUS Home Page, click the Designer tab, and then click Chart.
2. Choose a data source and click Select.
3. Add one measure, one dimension to the chart. Also, add a field into the Size and Color buckets.

The treemap chart refreshes with your selections, as shown in the following image.
4. You can perform the following tasks with your treemap chart:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the legend).
5. Save your treemap chart.

Creating Data Grids

Data grids can be used to present data in tabular form. For example, you can create a grid (table) that summarizes your data.

**Note:** Data grids require at least one measure and one dimension. Additional measures create unique columns. You can add multiple dimensions in the Row bucket to create customized rows based on the structure of your selection.

The following display options are available for a data grid:

- **Change chart orientation.** Switches the sort fields in the Row and Column buckets.
- **Clear buckets content.** Empties all buckets.

You can add fields to the following buckets for a data grid:

- **Measure.** Supplies the measure values to display in the cells of the data grid.
- **Row.** Use a dimension field to define the rows in the data grid, similar to the BY field in a report.
- **Column.** Use a dimension to provide an additional sort column for each value. Each measure column is nested within each column field value. The column bucket is similar to an ACROSS field in a report.
- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket.

**Procedure:** How to Create a Data Grid

1. From the WebFOCUS Home Page, click the Designer tab, and then click Chart.
2. Choose a data source and click Select.
3. Add one or more measures and dimensions to the chart.
The data grid refreshes with your selections, as shown in the following image.

4. You can perform the following tasks with your data grid:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the legend).

5. Save your data grid.

Creating Matrix Marker Charts

Matrix marker charts can be used to analyze one or two measures against a crosstab of two categorical dimensions. The result is a color scaled matrix chart that shows categorized trends.

Note: Matrix marker charts require at least two measures and two dimensions. It also requires a field in the Color and Size buckets, which allow you to see the concentration of data for that intersection of the chart.

The following display options are available for a matrix marker chart:

- **Change chart orientation.** Switches the vertical and horizontal axes.

- **Clear buckets content.** Empties all buckets.

- **Circle marker.** Uses circles as the markers. You can choose a different marker shape from the Style tab. On the Style tab, open the Quick Access menu and click Series. In the Shape section, select a shape from the drop-down menu.

- **Square marker.** Uses squares as the markers. You can choose a different marker shape from the Style tab. On the Style tab, open the Quick Access menu and click Series. In the Shape section, select a shape from the drop-down menu.
- **Fill marker.** The markers fill the grid, changing the chart into a heatmap. Instead of using the Size bucket, use the Color bucket to indicate measure values.

You can add fields to the following buckets for a matrix marker chart:

- **Vertical.** Add a dimension field to the Vertical bucket to set the vertical axis values for the matrix marker chart. Additional dimension fields are nested.

- **Horizontal.** Add a dimension field to the Horizontal bucket to set the horizontal axis values for the matrix marker chart. Additional dimension fields are nested.

- **Size.** Controls the size of each marker based on a measure value. Is not applied to matrix marker charts using the fill marker, or heatmap, display.

- **Color.** Use a measure field to apply a color scale to the markers.

- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.

- **Animate.** Enables you to animate time progression using a slider control. As you move the control along the slider bar, an animation effect results. The slider control has a Play button that allows you to play and pause the animation. When you click Play, the Pause option is activated, enabling you to pause the progression and analyze your data. Slider controls are limited to one sort field and should be time or sequence related, such as month or year.

- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket.

**Procedure:** How to Create a Matrix Marker Chart

1. From the WebFOCUS Home Page, click the **Designer** tab, and then click **Chart**.
2. Choose a data source and click **Select**.
3. Add two measures and two dimensions to the chart. Also, add fields to the Color and Size buckets.
The matrix marker chart refreshes with your selections, as shown in the following image.

4. You can perform the following tasks with your matrix marker chart:
   a. Add additional measures or dimensions to the chart, where applicable.
   b. Change the fields to obtain different information.
   c. Format the chart (for example, customize the header and footer or style the legend).
5. Save your matrix marker chart.

Creating Proportional Symbol Maps

Proportional symbol maps, or bubble maps, use symbols of different sizes to represent data associated with different areas or locations within the map.

**Note:** Proportional symbol maps require at least one measure and one Georole, which contains geographic location information. You can add a field to the Color bucket to color the map.

The Clear buckets content display option is available for a proportional symbol map. It removes the fields from all buckets.

You can add fields to the following buckets for a proportional symbol map:

- **Size.** Use a measure field to determine the size of bubbles on the proportional symbol map.

- **Color.** Use a measure field to apply a color scale to the bubbles on the proportional symbol map. You can also use a dimension to color the points on the map. Each point can show one color, so it is advisable to use overarching categories that apply to distinct sets of points. For example, you could use a country field in the Color bucket to categorize points representing states.
Geo. Enables you to specify a Geolocation field for use in a map. Each value from the field is plotted on the map if it is recognized. A proportional symbol map can plot geographic areas, such as cities, states, or countries, as well as individual point locations such as street addresses and geographic coordinates.

Note: Geolocation fields must be configured in the data source to use a corresponding geographic role. Values from the field are matched to values from the geographic role to plot them in the correct location. For example, if your field contains country names, use the Country Name geographic role.

Tooltip. The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.

MultiPage. Enables the creation of multiple graphs based on the field that you place in this bucket.

Procedure: How to Create a Proportional Symbol Map

1. From the WebFOCUS Home Page, click the Designer tab, and then click Chart.
2. Choose a data source and click Select.
3. Add a measure and one georole to the Geo bucket.

The proportional symbol map refreshes with your selections, as shown in the following image.

![Proportional Symbol Map Image]

Note: In this case, we have also added Product, Subcategory to add color to the map.

4. You can perform the following tasks with your proportional symbol map:
   a. Change the field in the Geo bucket to analyze other trends.
   b. Zoom in or out to see different views of the data.
5. Save your proportional symbol map.
Creating Choropleth Maps

Choropleth maps can be used to create geographically-based heat maps. They are useful for visualizing location-based data, trends, and distributions across a geographic area.

**Note:** Choropleth maps require at least one measure and one Georole, which contains geographic location information. You can add a field to the Color bucket to color the map.

The Clear buckets content display option is available for a choropleth map. It removes the fields from all buckets.

You can add fields to the following buckets for a choropleth map:

- **Color.** Use a measure field to apply a color scale to the areas on the choropleth map. You can also use a dimension to color the areas on the map. Each area can show one color, so it is advisable to use overarching categories that apply to distinct sets of points. For example, you could use a country field in the Color bucket to categorize states shown on the map.

- **Geo.** Enables you to specify a Geolocation field for use in a map. Each value from the field is plotted on the map if it is recognized. A choropleth can plot geographic areas, such as cities, states, or countries.

  **Note:** Geolocation fields must be configured in the data source to use a corresponding geographic role. Values from the field are matched to values from the geographic role to plot them in the correct location. For example, if your field contains country names, use the Country Name geographic role.

- **Tooltip.** The data placed in this bucket displays in the tooltip at run time. Can be used to make additional information available without changing the appearance of the chart.

- **MultiPage.** Enables the creation of multiple graphs based on the field that you place in this bucket.

**Procedure:** How to Create a Choropleth Map

1. From the WebFOCUS Home Page, click the Designer tab, and then click Chart.
2. Choose a data source and click Select.
3. Add a measure and one georole to the Geo bucket.
The choropleth map refreshes with your selections, as shown in the following image.

4. You can perform the following tasks with your choropleth map:
   a. Change the field in the Geo bucket to analyze other trends.
   b. Zoom in or out to see different views of the data.
5. Save your choropleth map.
Creating Charts Using a Chart Extension

WebFOCUS supports the ability to add new, custom chart types to its list of built-in charts. These custom chart types are called extensions or plug-ins. Once enabled on your WebFOCUS environment, any extensions that you have added are available on the chart picker, in the Custom section, as shown in the following image.
Each chart extension uses a set of buckets and properties unique to that extension. The liquid gauge chart extension uses the Tooltip, Value Bucket, and MultiPage buckets, as shown in the following image.

The chord diagram, on the other hand, uses the Source Nodes, Target Nodes, Node Link Values, and MultiPage buckets. It also indicates the type of field that should be used in each bucket, as shown in the following image.

Each of these buckets is configured to allow a certain number of fields, and certain types of fields.
Chart extensions also have a unique set of properties that can be applied to them. To access chart extension properties, on the Style tab, with the General option selected from the Quick Access menu, in the Other section, click *Extension properties*. This opens the Extension properties panel. The Extension properties panel opens on top of the Field and Format panels, and can be resized and moved within the browser window. If you click outside of the Extension properties panel, it closes, and any changes that you made to the chart properties are applied.

The Extension properties panel for a liquid gauge chart is shown in the following image.
Some of the properties on the Extension properties panel apply to specific elements of the chart extension. For example, in the following image, the color of the wave the in the liquid gauge chart has been changed to a darker shade of blue, and the number of waves has been increased from 1 to 3.

For more details about the buckets and properties used in specific chart extensions, see the page for each extension on the Information Builders GitHub site.

Procedure: How to Create a Chart Using a Chart Extension

1. From the WebFOCUS Home Page, click the Designer tab, and then click Chart.
2. Choose a data source and click Select.
   WebFOCUS Designer opens in chart mode.
3. Expand the Chart picker and, from the Custom section, select a chart extension with which to create your chart.
4. Add measure and dimension fields to the chart based on the available buckets.
5. Optionally, style the chart using the available extension-specific properties.

   a. Select the Style tab.

   b. If it is not already selected, open the Quick Access menu and select General.

   c. In the Other section, click Extension properties. The Extension properties panel opens.

   d. Make changes to the desired properties, and then close the Extension properties panel.

      The chart updates to reflect your changes to extension properties.

6. Save your chart.

Formatting Charts

Charts allow you to present information graphically, using such visual cues as color, size, and position to convey relationships between measures (numeric fields to be aggregated) and dimensions (categories) and to identify trends and outliers. You can create a wide variety of charts. For example, you can review your data (Gross Profit and Product Category) using different chart types (for example, bar chart, area chart, or line chart). The chart options give you an edge in deciding which chart to use.

Once you have created a chart, you can enhance it using various formatting tools. For example, bolding a legend, changing the color of an axis, or underlining a header to add emphasis. The chart formatting options allow you to specify how components display, enabling you to format your chart to suit your needs.

The formatting capabilities of WebFOCUS Designer let you indicate which aspects will display, how fonts are utilized, and which additional options will enable you to create an effective, styled chart. This allows you to control the display of your chart information, giving you every opportunity to create a chart that you can share, distribute, and reuse on pages.

Customizing Charts

As you work with your chart, you can make modifications that improve the display of your chart, highlighting the layout and presentation of the chart components. Some of the formatting options include:

- Controlling font display
- Customizing headers and footers
- Changing the format of your legend
- Formatting the axes of your chart
Formatting the series of your chart

Customizing the format of your matrix chart

Enhancing your grid

Adding a theme

Adding color to your chart

You can access the formatting options from the Style tab, as shown in the following image.

General options display, by default, as shown in the following image.
You can use the General menu to select a different aspect of your chart, for example, Legend, Axis, Series, or Matrix options, as shown in the following image.
Once you select an area of your chart to modify (for example, Axis), you can use the intuitive options and menus to make selections, as shown in the following image.

Note: If you are working with a map, reference lines, or data grids, additional tabs will display, enabling you to make formatting changes to these components. These tabs do not display, by default.

By streamlining formatting options in one place, you can quickly format charts to enhance the display of your data. Whether it be color-coding a series in a chart or changing the font size of your data labels, a customized, formatted chart is just a click away.
Controlling Font Display in a Chart

You can use the font formatter in WebFOCUS Designer to control how fonts are displayed in your chart. This is a quick way to apply styling, colors, or a specific font type for any text within your chart. The font formatter displays in different areas of the Style tab (for example, Legend, Axis, Series, and Matrix options). Depending on the chart type and what you want to format, you can use these options to enhance the fonts in your charts. The font formatter is shown in the following image.

You can also change the font of a header or footer in your chart. This allows you to control how a chart is labeled or highlighted, which is useful when the chart will be distributed. For headers and footers, you can:

- Change the font type and font size.
- Add bold, italic, and underline emphasis to your text.
- Set the justification of text in your header or footer. For example, left-aligned, centered, or right-aligned.
- Change the font color or background color.

These options are available along the top of the canvas, as shown in the following image.
When reviewing text that displays in your chart, you might want to increase the font size of the header text to enhance its visibility. Editing the font types and styles in your chart gives you more control over how information is displayed and presented.

**Procedure: How to Changing the Font Type in Your Chart**

Changing the type, size, and emphasis of a font improves the impact for the user that is analyzing this chart. To change the font of a chart header:

1. On the WebFOCUS Home Page, click the *Designer* tab.
2. Click *Chart*.
3. Choose a data source and click *Select*.
4. Add one or more measures and dimensions to your chart.
5. Double-click *Chart Heading* to enable it for formatting, and change this text to *Discount by Product Category*.

   The font formatting toolbar displays along the top of the screen, as shown in the following image.

   ![Font Formatting Toolbar](image)

6. Ensure the header *Discount by Product Category* is selected or highlighted.
7. From the font formatting toolbar, change the font type to Bookman, size 24, Bold.
The revised chart header displays and reflects the new font type and styling, as shown in the following image.

![Chart with revised header](image)

**Note**: You must select the text you want to modify in your chart before you apply any changes to the font.

**Adding Headings and Footings to a Chart**

You can use headers and footers to add key information, such as purpose of the chart and the audience. For example, if you have gross profit for different product categories, you can add a header to highlight this information in your chart.

You can add multiple lines of information into the heading and footing areas in a chart. This accommodates thorough explanations and additional information while offering the most readable presentation.
You add a new line in the heading and footing by pressing the Enter key. The number of lines of heading and footing you can add to a chart is only limited by the available real estate on the chart. The chart body will adjust to fit within the available space with the heading/footing lines inserted. You can change the font size or other presentation aspects using the editing toolbar that display. When you are finished editing the heading and footing and edit mode is closed, the chart canvas adjusts to ensure that all lines of the heading or footing are visible, as shown in the following image.

Headers and footers can contain the same type of information. Footers are not enabled, by default, but can be enabled on the Quick Access Toolbar, as shown in the following image.
You can make styling changes to the information in your headers and footers, which allows you to interactively style the text according to your preferences. Using a WYSIWYG canvas, it delivers formatting changes instantly, allowing you to see the results of your selections as you make them. When editing your header or footer, you can find the options at the top of the canvas, as shown in the following image.

You can change the font and font size using the drop-down lists. You can add bold, italic, and underline accents to your text. In addition, you can change the positioning of your text (left, center, and right). You can also customize the color of the text, as well as the background of the header or footer text area. When your formatting is complete, you can close the toolbar and continue working with your chart.

**Note:** You can double-click the heading or footing to resume modifications at any time.

**Procedure:** **How to Add Headings and Footings to a Chart**

You can add and style headings and footings in a chart.

1. On the WebFOCUS Home Page, click the *Designer* tab.
2. Click *Chart*.
3. Choose a data source and click *Select*.
4. Add one or more measures and dimensions.
5. On the Quick Access Toolbar, click *Show option* and select *Footer*, as shown in the following image.

![Footer option](image)

The headers and footers display, as shown in the following image.

![Footer display](image)

6. Double-click the heading and change it to *Gross Profit by Category*.

   The access options to edit the header and footer text are shown in the following image.

![Edit options](image)

7. Change the font color to grey and change the font size to 20, as shown in the following image.
8. Change the footer to read October, 2018.

9. Change the font size to 8 and right-justify it, as shown in the following image.

Using headers and footers, you can add the finishing touches on your charts, identifying them with useful information for your audience. For example, when sharing and distributing your charts, headers and footers can help identify and streamline your communication.

**Formatting Legends in a Chart**

In a chart, the legend identifies values according to the color-coded data values that display. The legend typically displays on the right side of the chart, but you can change the location using the formatting options available for legends. You can format a legend in any of the following ways:

- Turn the Legend On, Off, or set it to Auto
- Change the font features of the legend (for example, bold or a larger font size)
- Change the format of the title of the legend
- Access options to change background options, including setting the background color and setting the border line width, size, and color
- Set the display options for the legend.

To access the legend formatting options, click the Style tab. From the quick access list at the top of the tab, select Legend. The Legend formatting options display in the following image.
Use the On, Off, and Auto buttons to control how the Legend appears on your chart. You can optionally select On or Off, depending on whether you want to display the legend in your chart. The legend display setting is set to Auto, by default.

**Note:** Occasionally, charts are large and require additional real estate. Hiding the legend, or turning it off, enables you to preserve additional room as required by the chart.

Under Labels, you can choose format the font used in your legend. These include Font type, Style, Size, and Color.

Depending on the type of chart you use, adding data to a specific field automatically generates a title for the chart legend. For example, the following image displays a Circle Plot chart that allows you to compare the differences between values by circle size. Since the measure Gross Profit has been added to the Size bucket, the legend title for this chart shows as Gross Profit, which is highlighted in the following image.

Under Titles on the Style tab, you can choose to show or hide the legend title with the **Show Titles** check box. You can also choose the font style and formatting of the legend title.

Under Other on the Style tab, you can perform tasks such as changing the position, setting the background color, and setting the border line width, size, and color. You also have options to display the legend options in reverse order and set it as collapsible.
Using Axis Options in a Chart

Depending on the chart type (for example, bar chart), you can format the axes to customize the display of the information. This includes items such as labels, titles, and font formatting. For example, you can choose to hide the labels in your chart or format the font to add clarity to your chart. You can easily customize the X and Y axis with options that suit your needs.
You can rotate the labels in your axes as well as stagger them. This allows you to shift the display of information, which is particularly useful when your chart is very dense. You can also modify the lines for individual axes, enhancing the frame of the axis on the chart. You can also show ticks, which allows you to view milestones in your data. You can also change the position of an axis, enabling you to dictate where your axis information will display (for example, right). The options for formatting an axis are shown in the following image.

**Procedure: How to Format Axes**

You can format the axes of your chart to customize the display of information, including labels (rotated and staggered), titles, and axis-specific fonts.

1. Create a chart using WebFOCUS Designer, or open an existing WebFOCUS Designer chart.
2. On the Style tab, click General and then click Axis.
   The options for editing your axes display.

3. Optionally, select the Y-axis or accept the X-axis.
   **Note:** The axis selection determines where changes are applied.

4. On the X-axis, perform the following formatting tasks:
   a. Change the font format of the label to bold.
   b. Change the size of the font for the Title to 16. Change this to bold as well.

5. Select the Y-axis option and perform the following formatting tasks:
   a. Change the font format of the label to italic.
   b. Change the size of the font for the Title to 16. Change this to bold as well.

Information on the axes has been modified, giving you a custom look and feel for your chart, as shown in the following image.
6. You can rotate the labels on the X-axis. In the Labels group, use the Rotation option to rotate the labels by 45 degrees, as shown in the following image.

7. You can also modify the line size of the axes. In the Lines group, use the Axis lines option to change the line size for both axes to 5. Making the axes lines bigger creates a more definitive frame, as shown in the following image.
With the axes of your chart formatted, you can continue making modifications or apply similar formatting to the axes in other chart types.

**Formatting Series in a Chart**

A series, which is a set of data, represents the set of values for one field in the request (for example, a measure). These numbers are plotted in a chart. You can format the series in your chart, which includes font formatting, display options for labels, and other options, including the ability to hide overlapping labels. Using the Series options, you can select a specific series in a chart to which to apply changes, or you can select All Series, which applies changes to all series in the chart.
Having the ability to format by series gives you control over your content and allows you to customize display options at the series level. For example, you might want to color code a chart based on a range of values. You can also specify options for the data labels of the series. These are enabled by default, but can be turned on or off. You also have the standard suite of font options, as shown in the following image.
When working with series in a chart, you can also set an option to control the display of content in your chart. The default is Auto. This gives you the ability to specify how your data will be presented (for example, by Value or Percentage), which is particularly useful in cases where you want to save real estate when using data labels in your chart. You can click the drop down to access a full list of content options, as shown in the following image.
You can use the following terms to decide the best way to display your content.

- **Auto.** The chart engine decides what data label information to show. This is usually the value.

- **Label.** Shows the series label of the riser, marker, or slice (same as legend label)

- **Value.** Shows the value of the riser, marker, or slice, using the numeric format of the field. For example, if the field defined in the master file is US Currency with two decimal places of precision, then that is what the dataLabel will be ($123.45).

- **Percentage.** Shows the percentage of the riser/slice based on the group to which it belongs.

- **Value,Percentage.** Shows the value of the riser, marker, or slice, with numeric formatting and the percentage of the riser/slice based on the group to which it belongs.

- **Label,Value.** Shows the series label of the riser, marker, or slice (same as legend label) and the value of the riser, marker, or slice, with numeric formatting.

- **Label,Percentage.** Shows the series label of the riser, marker, or slice (same as legend label) and the percentage of the riser/slice based on the group to which it belongs.

- **Label,Value,Percentage.** Shows the series label of the riser, marker, or slice (same as legend label), as well as the value of the riser, marker, or slice, with numeric formatting. It also shows the percentage of the riser/slice based on the group to which it belongs.

You can also Wrap Data labels, which allows you to truncate available chart space or show your data on multiple lines. The following examples show how the wrapping option works.

Example of WrapDataLabel=True:

"France
$123.4
23.4%"

Example of WrapDataLabel=False:

"France, $123.4, 23.4%"
Specifically, the data label options allow you to determine what is shown when Show label is ON. For example, Label, Value, Percentage. If the option is set to Auto, the chart engine decides what it thinks is the best content to show. Typically, this is the value of the riser or slice. For example, on a basic pie chart, the Auto setting produces the following result.

You have additional content choices. For example, you can choose Label, which corresponds to the series label that is shown in the legend. When you select the Label option, you also have the option of turning the legend off, so as not to duplicate the information that is displaying in your chart. The Label option is shown in the following image.
You can also choose Percent, which shows the percentage of the whole for each riser or slice. This is very useful for a pie or stacked bar chart, as these are the charts that are best used to visualize the concept of percentage-related content, as shown in the following image.

You can also display the Value, which is the riser/slice value. This is often the same thing you will get if you choose Auto.
There are also options for you to combine three choices, such as Value, Label, and Percent. This allows you to display all three items, as shown in the following image.

By default, these items display on a single line. They are separated by a comma. If you want to display them in a word-wrapped format, click *Wrap Data Labels* to display the content on three separate, unique lines, as shown in the following image.

**Procedure:**  
**How to Format a Series**

1. On the WebFOCUS Home Page, click the *Designer* tab.
2. Click *Chart*.
3. Choose a data source and click *Select*.
4. Create a Vertical Stacked Area chart.
5. Specify three measures and one dimension, as shown in the following image.

6. On the Style tab, click **General** and then click **Series**.

7. In the Data labels section, in the Show label group, turn data labels on.

8. Format the labels with 10 point, red font.

   The values in the chart reflect your custom formatting, giving you a better view of your data, as shown in the following image.
Formatting Matrix Charts

If you are working with a chart type that supports a matrix format (for example, Matrix Marker), WebFOCUS Designer provides a selection of formatting options that you can use to customize and enhance the styling of your chart. A matrix format is a grid that contains values based on the intersecting data points, which is useful for reviewing changes and trends over time. Available formatting options for matrix charts include Headers and labels, and Lines, as shown in the following image.

You can customize the row and column headers and their corresponding values in a matrix chart. Specifically, you can change the font type, font size, and color. You can also change the emphasis of the font using bold or italic styling. You can also change the alignment of row values text.

When working with lines in your matrix chart, you can change the line style (for example, solid or dotted) and the thickness. These formatting options allow you to make visible enhancements that will improve the appearance and presentation of your matrix charts.
Procedure: How to Format a Matrix Chart

To format a matrix chart:

1. On the WebFOCUS Home Page, click the Designer tab.
2. Click Chart.
3. Choose a data source and click Select.
4. From the chart picker, select the Matrix Marker chart type.
5. Add two measures and two dimensions to the chart. These data fields should be placed in the Vertical, Horizontal, Size, and Color buckets.

Note: A Matrix Marker chart requires at least two measures and two dimensions.

6. On the Style tab, click General and then click Matrix options from the drop-down list, as shown in the following image.

7. Apply formatting changes for the matrix chart, including:
   a. Headers and labels, which allow you to customize the font options for row and column headers and values. Font options include font type, bold, italic, font size, and font color.
   b. Line style, which allows to adjust the type and size of the line for the matrix chart.
8. Change the font being used for row and column headers to bold, red, and size 16 font.
The updated matrix chart now displays customized row and column headers, as shown in the following image.

![Chart Image]

**Formatting Data Grids in a Chart**

A data grid is a type of chart that displays a tabular representation of your data, similar in structure to a tabular report. A data grid allows you to review data in a row and column format, similar to a printed report. Data grids are easy to create, and provide features such as a tooltip for each cell of the grid. WebFOCUS Designer provides numerous options to style and format a data grid.
Values in a data grid can be sorted, and data grids can be shared or saved for use on a page. A data grid is shown in the following image.

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Product Subcategory</th>
<th>Cost of Goods</th>
<th>Discount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media Player</td>
<td>Blu Ray</td>
<td>$181,112,921.00</td>
<td>$10,895,633.29</td>
</tr>
<tr>
<td>Stereo Systems</td>
<td>Speaker Kits</td>
<td>$81,306,140.00</td>
<td>$4,954,242.27</td>
</tr>
<tr>
<td></td>
<td>Home Theater Systems</td>
<td>$56,428,580.00</td>
<td>$3,943,920.23</td>
</tr>
<tr>
<td>Accessories</td>
<td>Headphones</td>
<td>$51,663,564.00</td>
<td>$3,516,513.33</td>
</tr>
<tr>
<td>Televisions</td>
<td>Flat Panel TV</td>
<td>$59,677,345.00</td>
<td>$3,475,828.52</td>
</tr>
<tr>
<td>Camcorder</td>
<td>Standard</td>
<td>$49,071,633.00</td>
<td>$3,214,786.74</td>
</tr>
<tr>
<td>Computers</td>
<td>Smartphone</td>
<td>$44,035,774.00</td>
<td>$2,790,775.51</td>
</tr>
<tr>
<td>Video Production</td>
<td>Video Editing</td>
<td>$40,105,657.00</td>
<td>$2,695,690.76</td>
</tr>
<tr>
<td>Stereo Systems</td>
<td>Receivers</td>
<td>$40,329,068.00</td>
<td>$2,543,045.36</td>
</tr>
<tr>
<td>Accessories</td>
<td>Universal Remote Controls</td>
<td>$36,637,623.00</td>
<td>$2,310,446.31</td>
</tr>
<tr>
<td>Computers</td>
<td>Tablet</td>
<td>$25,771,890.00</td>
<td>$2,018,194.59</td>
</tr>
<tr>
<td>Camcorder</td>
<td>Handheld</td>
<td>$20,576,916.00</td>
<td>$1,950,624.28</td>
</tr>
<tr>
<td></td>
<td>Professional</td>
<td>$35,218,308.00</td>
<td>$1,933,997.25</td>
</tr>
<tr>
<td>Stereo Systems</td>
<td>iRed Docking Station</td>
<td>$20,119,093.00</td>
<td>$1,920,925.29</td>
</tr>
<tr>
<td>Media Player</td>
<td>Streaming</td>
<td>$5,054,732.00</td>
<td>$333,559.94</td>
</tr>
<tr>
<td></td>
<td>DVD Players</td>
<td>$3,756,264.00</td>
<td>$268,592.13</td>
</tr>
<tr>
<td>Accessories</td>
<td>Charger</td>
<td>$2,052,711.00</td>
<td>$187,485.08</td>
</tr>
<tr>
<td>Televisions</td>
<td>CRT TV</td>
<td>$1,928,410.00</td>
<td>$110,654.68</td>
</tr>
<tr>
<td>Stereo Systems</td>
<td>Boom Box</td>
<td>$684,373.00</td>
<td>$62,739.36</td>
</tr>
<tr>
<td>Televisions</td>
<td>Portable TV</td>
<td>$545,340.00</td>
<td>$35,210.18</td>
</tr>
<tr>
<td>Media Player</td>
<td>DVD Players - Portable</td>
<td>$306,576.00</td>
<td>$28,356.05</td>
</tr>
</tbody>
</table>

You can format a data grid using the options on the Style tab 🆙. The Style tab contains two sets of options, General and Datagrid options, which you can access using the Quick Access menu, as shown in the following image.

The General section provides a set of options that are common to all chart types. These options are divided into three sections: Theme, Frame and background, and Other.

The Theme section provides a menu that allows you to select a StyleSheet to automatically format the data grid. You can select from a list of themes available with WebFOCUS, or click Custom to select a StyleSheet from the legacy templates or your repository.
The Frame and background section includes the following options:

- **Background.** Allows you to select a color for the background area behind the data grid.

- **Frame.** Allows you to select a color for the chart frame. This option allows you to change the data cell fill color in the data grid.

- **Frame Border.** The Frame Border settings are not applied to data grids. To style the borders in the data grid, use the Border style settings under Headers and values in Datagrid options.

The Other section includes the following options:

- **Fit to container.** This option does not apply to data grids. It is used for bar, line, area, and scatter plot chart types.

- **Hide null groups.** When selected, if any rows or columns in the grid do not contain any data, they are hidden at run time.

- **Show null as zeroes.** When selected, cells for which no data is returned show a value of zero (0). When not selected, cells with no data appear blank, which is the default.

You can also select styling options that are specific to data grids. These are listed when Datagrid options is selected from the Quick Access menu on the Style tab. These options are divided into three sections: Headers and values, Background and padding, and Other.

The Headers and values section allows you to define the styling properties of the item selected from the Headers and values menu. You can set these properties for the row headers, column headers, cell values, and column totals. The Headers and values section contains the following options for each area of the data grid.

- **Format.** Allows you to select the font, text formatting, font size and units, and text color.

- **Alignment.** Allows you to set the text alignment to the left, center, or right side of the cells.

- **Border style.** Allows you select the line style (for example, solid, dashed, or dotted), thickness, and color of the cell borders.

The Background and padding section allows you to style the cells in the data grid by adding bands and increasing the cell padding. Options in this section include the following:

- **Row color.** Allows you to add bands to the data grid to make the rows easier to distinguish. Select the *Alternate row color* check box to add alternating bands to the data grid and select a color from the Color picker to style them.

- **Vertical padding.** Allows you to set the vertical padding, in pixels, between the text and borders of each cell.
Horizontal padding. Allows you to set the horizontal padding, in pixels, between the text and borders of each cell.

The Other section allows you to add column totals to the data grid and freeze column and row headers. The options in this section are as follows:

Show column total. When selected, adds a column total row to the data grid. This row can be styled by selecting Totals in the Headers and values section. Show column total is not selected, by default.

Freeze column headers. When the data grid uses a vertical scrollbar, selecting Freeze column headers keeps the column headers in place while scrolling so that you can see which column each cell belongs to. When not selected, the column headers are not frozen when scrolling. Column headers are frozen, by default.

Freeze row headers. When the data grid uses a horizontal scrollbar, selecting Freeze row headers keeps the row headers in place while scrolling so that you can see which row each cell belongs to. When deselected, the row headers are not frozen when scrolling. Row headers are frozen by default.

Fit to container width. When this check box is selected, the grid spans the entire width of its container. When this check box is not selected, the grid width is only as wide as is needed to show each column header fully.

Procedure: How to Format Data Grids

You use the options on the Style tab to customize a data grid. These options allow you to style the data grid to match your preferences while maintaining the simplicity and clarity of the data grid chart format.

1. On the WebFOCUS Home Page, click the Designer tab.
2. Click Chart.
3. Select a the wf_retail_lite.mas data source and click Select.
   WebFOCUS Designer opens in Chart mode.
4. From the chart picker, select the data grid chart type.
5. Add fields to the data grid.
   a. In the Dimensions pane, expand Product and drag Product,Category to the Row field container.
   b. In the Measures pane, expand Sales and drag Cost of Goods and Revenue to the Measure field container.
c. In the Dimensions pane, expand Customer and drag Customer,Business,Region to the Column field container.

A basic data grid has been created, showing Cost of Goods and Revenue sorted by Product Category across Customer Business Region.

6. Add a header to the grid.
   a. Double-click the Chart Heading text.
      The text is highlighted and Rich Text Editor displays.
   b. Type Regional Sales into the chart heading area and press the Enter key.
      The chart header is changed to Regional Sales.

7. Open the Style tab.

8. Change the background color of the cells to sea foam green.
   a. In the Frame and background section of the Font Formatter, click the color sample under Frame.
      The color picker opens.
   b. Click More to access the color wheel. Select sea foam green by clicking on the wheel in a location between cyan and green, and then using the brightness slider to select a light sea foam green color. Alternatively, type a hex code value into the text box. For example, #adebcc.
   c. Click OK.
      The data cells in the data grid now have a sea foam green fill.

9. Access additional styling options for the data grid. Open the Quick Access menu and select Datagrid options.

10. Make the across column headers bold.
    a. From the Headers and values drop-down menu, select Column headers.
    b. Click the Bold button to make the text bold.

11. Add pink bands to the grid.
    a. Expand the Background and padding section.
    b. Select the Alternate row color check box.
       The rows now alternate between the sea foam green background and the default gray bands.
    c. Click the color sample under the Alternate row color check box.
       The color picker opens.
d. Select the pink color from the palette.

Now the data grid shows alternating sea foam green and pink rows.

12. Add column totals to the grid.
   a. Expand the Other section.
   b. Select the Show column total check box.

The column total row appears on the data grid.

13. Style the column row total by changing the text and border color to purple.
   a. From the Headers and values drop-down menu, select Totals.
   b. In the Format subsection, click the color sample to change the text color for the column totals.
   c. Click More to access the color wheel, then select a shade of purple.
   d. Click OK.

The column totals now show in purple text.

e. Add a purple border to the columns total row.

   In the Border style subsection, click the color sample to open the color picker. From the Custom Colors palette, select the same purple color that you used for the text. This color was automatically saved and added to the Custom Colors palette.

   f. Click OK.

The text and border for the column totals now use the same shade of purple.

14. Run the data grid to see how it looks at run time.

An example of what the grid may look like is shown in the following image.

<table>
<thead>
<tr>
<th>Regional Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Business Region</td>
</tr>
<tr>
<td>-------------------------</td>
</tr>
<tr>
<td>Product Category</td>
</tr>
<tr>
<td>Accessories</td>
</tr>
<tr>
<td>Camcorder</td>
</tr>
<tr>
<td>Computers</td>
</tr>
<tr>
<td>Media Player</td>
</tr>
<tr>
<td>Storage Systems</td>
</tr>
<tr>
<td>Televisions</td>
</tr>
<tr>
<td>Video Production</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
</tr>
</tbody>
</table>

**Adding a Theme to a Chart**

A theme is used to determine the coloring and hues that display in the charts you configure using WebFOCUS Designer. For example, the default border color and chart colors are determined by the theme.
The default theme is called Warm, but you can select a different theme as required. For example, you may want to apply a corporate standard theme to your chart. You can add and change themes to suit your requirements (for example, branding).

Available themes that are called by WebFOCUS Designer are located in the Global Resources domain, as shown in the following image.

![Folder structure for themes](image)

**Note:** This folder structure is present when adding a theme to your chart.

Supported formats for themes include .sty and .css. The theme used in a chart uses the .sty file type, while a .css file is used as a theme for a page. You can develop your own theme using a text editor such as Notepad and then upload it for use in WebFOCUS Designer.

**Tip:** You can use the code from an existing theme as a model when creating a new theme.
**Note:** Charts and reports created for use on pages that have colors applied to the component containers can use a transparent background to allow the defined background color of the page container to show through. The Midnight theme, provided as one of the Global Resources options, is an example of a page theme that contains darker background colors. When used in content such as a chart or report, the Midnight theme uses white text to create contrast with this darker background.

In the current release of WebFOCUS Designer, the chart and report canvases display a white background only. This means that if, in order to display on a dark colored page, the font color in the selected theme is defined as white and uses a transparent background then the text will not be visible on the white canvas. To view the white text, build your chart or report on the canvas and add it to a page container with a dark background.

**Procedure:**  
**How to Adding a Theme to a Chart**

You can add a theme to a chart to color the background and components of your chart. The default theme is called Warm. This theme uses blue to identify measures and dimensions, and standard coloring for chart components.

1. On the WebFOCUS Home Page, click the **Designer** tab.
2. Click **Chart**.
3. Choose a data source and click **Select**.

   The default theme is displayed in the canvas, as shown in the following image.

4. On the Style tab, under Theme, click **Warm**.
A list of available themes is displayed in a drop-down list, as shown in the following image.

5. Select another theme from the list (for example, Dark) to change the theme.
The color of the background and chart components changes based on the selected theme, as shown in the following image.

Adding Color to Charts

By adding color to your chart components, you can change the way information is perceived and plays a large role in the effectiveness of your chart.

Color adds contrast to your charts, giving you an advantage in presenting unique, well-balanced content. You can use color to highlight a specific aspect or outcome on your chart. WebFOCUS Designer provides a color picker to add color and style your chart.

You can access the color picker in two primary ways: on the Style tab and at the top of the canvas when formatting headers and footers. Using these options, you can style with color and make other color-based decisions. You can indicate color values and ranges to highlight data. You can color a chart component (for example, a header or axis), text, or even add colored lines to accentuate the background grid of your data. You can also change the theme, which changes the color palette and background of your chart.
The following image shows an example of color options that display on the Style tab (with the palette exposed), which you will also see in other areas where color formatting is supported:
The following image shows the options that display at the top of the canvas (with the palette exposed) when working with headers and footers.

Note: When specifying a theme, you can use the default or specify another one. The colors stored for the theme are part of the underlying .css or .sty file, which contains the color schemes.

In WebFOCUS Designer, the color picker supports a colorspace and a palette-based approach, as shown in the following image.

You can access the color picker from any of the sections on the Style tab. You can also access the color picker when working with headers and footers. When you access the color picker, the color picker displays the Palette tab, by default. From this tab, you can select from up to 20 pre-defined color options. You can also select the No Fill option, which displays the selected content as transparent. This is particularly useful in cases where you might want to prevent (or hide) the display of information.
The More tab allows you to choose a custom color by interacting with a hue wheel and the color value field, as shown in the following image.

You can specify an exact color code (hexadecimal or HTML) by entering it in the color value field located at the top of this tab, and also specify transparency by using the transparency slider.

**Note:** When a custom color is selected and you click OK, the color is automatically added to the Custom Colors section in the Palette tab.

You can also set a color range for a measure in your chart. This allows you to specify hues or ranges of color for use in your chart. In cases where Theme is not selected, the color specification overrides what is available in the theme. The color that you select dictates the legend, which in turn displays the various chart components, based on the colors and measurements specified.
To change the color scale options, right-click a measure in the Color bucket and select Set color ranges, as shown in the following image.

This invokes a new dialog box, Set Color Ranges, where you can select a color range for your chart, as shown in the following image.
When you make a selection, you can override the color schemes that are available from the theme of your chart. Theme is selected by default. You can select a different color range, such as Green or Red/Orange, from the list of options, which gives you more control over how color is used in your chart to create contrasts between various aspects. For example, if your chart displays different temperature values using a measure in the Color bucket, you may wish to use the Red/White/Blue option to intuitively show higher temperature values in red and lower ones in blue.

If you change the color range to something other than Theme, it is written as inline styling in the .fex file. Inline styling always overrides what is in the StyleSheet because it is listed after it in the .fex file. In this case, the last setting indicates which styling takes precedence. When the color range is set back to Theme, the inline styling is removed so the behavior returns to the theme’s settings.

This behavior does not affect your ability to change themes on the Style tab. However, if you change the theme with an inline setting in place, the settings of the Theme will still be overridden by the inline settings and the color scale in the legend will not be affected. The current procedure only respects the current theme’s settings if the color range setting is set to Theme.

In the Set Color Ranges dialog box, you can also select Continuous or Discrete to determine how the color scale is generated. When Continuous is selected, the color scale is a gradient, and each color in the color scale represents a different value. When Discrete is selected, the color scale is divided into segments. Each color in the color scale represents a range of values.
The following image shows a matrix marker chart that uses the Red/Yellow/Green color scale with the Continuous option selected.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Camcorder</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Computers</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Media Player</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Stereo Systems</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Televisions</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Video Production</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

The Continuous option creates a more granular color scale, allowing you to see slight differences between similarly colored chart components.
The following image shows the same chart, with the Discrete option selected.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>Camcorder</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>Computers</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>Media Player</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>Stereo Systems</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>Televisions</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
<tr>
<td>Video Production</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
<td>⬤</td>
</tr>
</tbody>
</table>

The Discrete option creates identifiable groups based on sections of the color scale.

When using the Theme color scale option, the default color scale type and number of segments in discrete mode are dependent on the values of the colorScale property in the theme that you are using. For example, if 5 colors are listed for the colorScale property in StyleSheet being used as your theme, then 5 colors display in the color scale when the discrete option is used.

**Procedure:** How to Adding Color to Your Chart

To add color to your chart:

1. On the WebFOCUS Home Page, click the **Designer** tab.
2. Click **Chart**.
3. Choose a data source and click **Select**.
4. Add one or more measures and dimensions to your chart.
5. On the Style tab, click General and then click Axis from the drop-down list, as shown in the following image.

![Axis drop-down list](image)

6. In the Font section, click Choose a color for your text. The color picker displays, as shown in the following image.

![Color picker](image)
The text color you select is displayed for the values on the specified axis (for example, x-axis), as shown in the following image.

**Procedure:** How to Change the Color Scale in a Chart

1. On the WebFOCUS Home Page, click the Designer tab.
2. Click Chart.
3. Choose a data source and click Select.
4. Add one or more measures and dimensions to your chart.
5. Add a measure to the Color bucket.
6. Right-click the measure field in the Color bucket and click Set color ranges. The Set Color Ranges dialog box displays, as shown in the following image.
7. From the list of colors, select a color range, as shown in the following image.

8. Optionally, select *Continuous* or *Discrete* to determine how the color scale is generated.
   - When Continuous is selected, the color scale is a gradient, and each color in the color scale represents a different value.
   - When Discrete is selected, the color scale is divided into segments. Each color in the color scale represents a range of values.

9. Click *OK*.
   Note the change in the color and hues in your chart.

**Creating Maps to Illustrate Trends**

You can create maps to identify patterns or trends in your data. By converting data into values that can be displayed on a map, you are able to visualize scenarios, illustrate hot spots, and identify potential problem areas. For example, a law enforcement agency may use mapping functionality to identify areas of higher crime within the locations they cover. You can also use maps to determine how places are related, understand where things are located, and identify the best actions to take. By illustrating trends on a map, a decision maker can identify patterns easily, and reach conclusions sooner.
You can access Map options from the Style tab, as a special tab is activated when a map is initiated. This tab is shown in the following image:

![Map options](image)

You can format maps to display areas of emphasis through the use of demographic and reference layers.

**A Brief History of Mapping**

An early example of how maps can be used to illustrate trends is the case of Dr. John Snow, an epidemiologist who was one of the first to use data to map occurrences of cholera to find the cause of infection. By plotting the cholera data on a map of a town, Dr. Snow was able to visualize a trend that showed higher incidences of cholera closest to water pumps. This example is shown in the following image.

![Cholera map](image)
Maps also allow you to measure size, shape, and distribution to detect and quantify patterns, and even perform predictive analytics. An example of how maps can help detect and quantify patterns is the scenario in which a state agency used a mapping application to solve a problem with their food stamp system. Using this application, odd food stamp redemptions, such as rounded numbers transactions, were discovered. By plotting those transactions on a map, the agency discovered that the redemptions appeared in the same geographic location. Upon further investigation, the agency identified that individuals were selling their food stamps at reduced prices, $50 worth of food stamps for $40 in cash, to others instead using them as intended. This map example is shown in the following image.

<table>
<thead>
<tr>
<th>Citizen</th>
<th>Date</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jane Smith</td>
<td>01/03/2015</td>
<td>35.26</td>
</tr>
<tr>
<td>Jane Smith</td>
<td>01/05/2015</td>
<td>44.12</td>
</tr>
<tr>
<td>Jane Smith</td>
<td>01/10/2015</td>
<td>12.42</td>
</tr>
<tr>
<td>John Wilson</td>
<td>01/02/2015</td>
<td>100.00</td>
</tr>
<tr>
<td>John Wilson</td>
<td>01/08/2015</td>
<td>50.00</td>
</tr>
<tr>
<td>John Wilson</td>
<td>01/11/2015</td>
<td>75.00</td>
</tr>
<tr>
<td>Mary Johnson</td>
<td>01/03/2015</td>
<td>23.24</td>
</tr>
<tr>
<td>Mary Johnson</td>
<td>01/06/2015</td>
<td>14.32</td>
</tr>
<tr>
<td>Mary Johnson</td>
<td>01/11/2015</td>
<td>34.88</td>
</tr>
</tbody>
</table>

When working with maps, the concepts of location intelligence and business intelligence are important to understand. A Geographic Information System (GIS) captures, stores, analyzes, manages, and presents data linked to a location, while Business Intelligence (BI) relies on the conversion of raw data into meaningful information. Location intelligence is the process of analyzing data to make better business decisions. It combines GIS and BI/Analytics to allow the recognition of patterns in your data, including the visualization and discovery of geospatial outliers, which would not be easily discovered if you use the technology independently and separately.

More specifically, maps use non-intrusive GIS workflows with existing data. You can view symbol layers for data bound to a geo-location, such as state, country, and ZIP code, in an integrated map viewer. Using metrics from your data, you can also visualize geographic roles or dimensions. Geographic roles, or dimensions, can be built directly into your Metadata or assigned to a data field when you create a map.
WebFOCUS Designer and Esri Integration

Using WebFOCUS Designer with the Esri integration, you can create maps that help you illustrate or identify trends so you can take action quickly. WebFOCUS architecture provides the framework in which this system operates. Using a JavaScript map viewer, you can navigate the interface easily, as shown in the following image.

In addition, this integration utilizes the capabilities of Esri by leveraging the ArcGIS JavaScript API and content. Specifically, you can integrate data into maps with published content in ArcGIS Online platform. For more information, see http://www.esri.com/software/arcgis/arcgisonline. Additionally, by using this integration, you can include information about demographics, spending habits, crime, and lifestyle to maps that contain your data. These maps include layers with extensive demographic or reference detail and topography and allow you to view information about people, businesses, climate, and much more.

You can create the following maps in WebFOCUS Designer:

- **Choropleth.** A common thematic map that uses geographical measures (for example, states and countries), representing the values aerially while employing a varying intensity of colors. It is useful for visualizing location-based data, trends, and distributions across a geographic area. The color hues for Choropleth maps are dictated by the legend, based on the selected measure, enabling you to determine data concentration across your map.
Proportional Symbol (Bubble). A map that represents coordinates, such as an address or intersection, using symbols of different sizes to represent any measure. These maps focus on specific areas, for which data concentrations may vary. When the data concentration is larger, the bubble will be bigger.

In addition, built-in zooming capabilities allow you to drill down to a specific geographic area of focus easily. This allows you to get a closer look at regional or local data, draw inferences, and make recommendations, without changing the initial view of your data.

Using the Esri integration in WebFOCUS Designer, you can also add the following layers to your map:

Backgrounds. Display a layer that positions data as it is located, in context to other geographical features, such as streets, terrain, and imagery. Some standard Background options may combine road, aerial, and topographic data using a variety of symbols. Hosted on ArcGIS, you can change your background at any time, to review your data in a different context.

When you apply a Background to your map, its appearance changes. You can then adjust the view of your data, showing different terrain or geographical views. Backgrounds provide at least 17 levels of zoom. For more information, see https://developers.arcgis.com/javascript/jsapi/esri.basemaps-amd.html.

The basemap options include:

- Light Gray Canvas Map
- Dark Gray Canvas Map
- World Imagery with Labels
- National Geographic World Map
- Oceans Map
- Open Street Map
- World Imagery
- World Street Map
- Terrain with Labels
- World Topographical Map
- **Reference Layers.** Display a layer of boundaries and locations that range from a continental scale to country, state, and even local neighborhood. For example, if you are viewing World data on electricity usage, you may want to add a Reference Layer that displays the borders and concentration of your data within each country.

- **Demographic Layers.** Display a layer of information about people and businesses in a specific demographic area. This includes the United States and 120 other countries. Demographic Layers are thematic maps that provide additional information about the location, such as spending habits, population, and lifestyles. You can add Demographic Layers to a map about sales data, to identify new locations for stores, based on the spending habits for a specific area.

Both mapextent and the Layers menu functionality are applied to your map when you select a Background, Reference Layer, or Demographic Layer. Mapextent is an automatic view of the map. Layers is a menu that appears on the map and provides access to options that allow you to adjust the information that is being displayed.

The map example in the following image shows the use of layers.

![Map Example](image)

**Note:** Backgrounds, Demographic Layers, and Reference Layers can be accessed from the Style tab. These layers are static, standard options that Esri provides for use with WebFOCUS Designer, and do not change based on the data source that you select.

**Reporting Server Configuration for Demographic Layers**

In order for Demographic Layers to draw, you must configure the Reporting Server to enable them.
**Procedure:** How to Configuring the Reporting Server to Enable Demographic Layers to Draw

1. From the WebFOCUS Home Page, click Administrator and then click Legacy Home Page.
2. From the Reporting Servers node, access the Reporting Server Console.
3. Click Adapters and then click New Datasource.
4. In the Available drop-down in the Adapter dialog box, select GIS and then click ESRI ArcGIS, as shown in the following image.

5. Right-click ESRI ArcGIS and then click Configure, as shown in the following image.

6. In the Environments section, click Configure, as shown in the following image.
Once this is configured, ESRI ArcGIS shows up under the configured adapters, as shown in the following image.

![Configured Adapters](image)

### Configuring an Esri On Premise Environment

The Esri On Premise functionality enables you to download and access mapping files through the use of a local Application Programming Interface (API). Once you download and configure the API, you do not need an internet connection to utilize the robust mapping features that Esri provides. For information on downloading and configuring the API that controls this feature, see *How to Download and Configure the ArcGIS JavaScript API* on page 308.

The Esri On Premise functionality provides you with local access to Esri mapping files. This is particularly useful if you are away from your office or without an internet connection. You may also be using a mobile device, such as an iPad or smartphone with a large screen, without an internet connection. The following mapping components are supported when using the Esri On Premise functionality:

- **Offline Basemaps.** Basemaps are an offering from ArcGIS. Standard basemaps are provided for your use offline. For example, there is an Oceans basemap and a Terrain with Labels basemap. These basemaps are also known as backgrounds. In an online setting, there are 10 basemaps available. In order to use offline basemaps you need to use a tiled mapservice published in the ArcGIS Server.
Offline Geographic Roles. Geographic Roles are used to visualize measures with commonly known dimensions (for example, Country, State, Cities, and so on). These provide the location information often in the form of (x/y) needed to plot on a map. Geographic roles are pre-defined for online users through ArcGIS Online. A geographic role defines the geographic component that you can select when creating a map (for example, State or Continent). For an offline user, the options that display can be customized in the geoservices.xml file. For more information, see Adding a Custom Geographic Role on page 320.

Note: Demographic Layers are not supported in an Esri On Premise environment.

Procedure: How to Download and Configure the ArcGIS JavaScript API

You can use this procedure to download and configure the API that controls the Esri On Premise environment.

1. In your browser, navigate to the following URL to download the API: https://developers.arcgis.com/downloads
2. Sign in to access the download options that are available to you.
3. Select Version 3.15 of the ArcGIS API for JavaScript, as shown in the following image.

![ArcGIS API for JavaScript](image)

4. Click API to download the API.
5. In drive:\ibi\config\web_resource, create a folder named arcgis_api.
6. Open the arcgis_js_v315_api.zip file downloaded in step 4 and navigate to arcgis_js_v315_api\arcgis_js_api\library\3.15\3.15.
7. Extract the files in that folder to the drive:\ibi\config\web_resource\arcgis_api folder.
8. Next, verify the path to the API in the Administration Console, as shown in the following image.
**Note:** This is the path to which you extracted the API files.

This field identifies the path to the internal ArcGIS Javascript API Source that develops ESRI-based maps. This setting is blank, by default, indicating that the use of the internal API source to develop ESRI maps is not activated. The API that is referenced is https://js.arcgis.com/3.15/, by default. To direct WebFOCUS Designer to use the internal ArcGIS Javascript API to develop ESRI maps, enter the path to the local API files that you extracted into this setting. For more information, see the WebFOCUS Security and Administration manual.

**Note:** This path should be a relative path that is accessible within the local install.

9. Click Save.

10. Next, open the following two local API files:

```plaintext
drive:\ibi\config\web_resource\arcgis_api\init.js

drive:\ibi\config\web_resource\arcgis_api\dojo\dojo.js
```

In both files, search for HOSTNAME_AND_PATH_TO_JSAPI. Replace `'/' + "[HOSTNAME_AND_PATH_TO_JSAPI]dojo" with `'/' + HOSTNAME_AND_PATH_TO_JSAPI + "dojo"

11. In the Administration Console, click Clear Cache to clear the browser cache. Your configuration is complete.

### Creating and Customizing Maps in WebFOCUS Designer

The following procedures provide step-by-step instructions on how to create and customize maps.
As you create your maps, you can use the following built-in map viewer features:

- You can use the plus (+) and minus (-) symbols, within the map to zoom in and out of different areas of the map. You can also click your left mouse button to zoom in to a specific location.

- Like all HTML5 visualizations, the highlighted markers and regions on a map support drill, multi-drill, auto-linking, and informational tooltip features.

- You can use the Pan / Selection button to alternate between the Pan and Selection controls. This option is in the upper-right corner of the map.

- Creating a map chart using the US Zipcode 5 Georole with more than 2000 polygons will fail to draw.

**Procedure: How to Create an Esri Choropleth Map**

**Note:** The default option of creating a map utilizes the ArcGIS JavaScript API that Esri provides.

1. Launch WebFOCUS Designer.
2. On the Designer tab, click Chart.
3. Select a data source and click Select.
4. On the Chart picker, select the Choropleth map chart type.

A blank map displays and the Geo bucket is enabled, as shown in the following image.

5. Add a Geolocation field to the Geo bucket.
This field, which already has a geographic role assigned, is denoted with a Geo icon, 🌍, in the Data panel, as shown in the following image. You can also hover over a data field to view the geographic role assignment.

For more information, see Geographic Roles on page 319.

The canvas refreshes, and your map displays.

6. Before saving your map, to add insight, you can also do following:

- Click Run, to preview your map.
- Add a measure or dimension to the Color bucket, to color your chart by that underlying data value. When you add a measure or dimension field to the Color bucket, a legend displays for that data value. If you specify a dimension in the Color bucket, the label changes to Color BY.
- Add a dimension or measure to the Tooltip bucket, which will display tooltip information when you place your mouse over an area of the map.
- Add a Background, Demographic Layer, or Reference Layer.

7. Click Save to save your map.

**Procedure:** How to Create an Esri Proportional Symbol (Bubble) Map

1. Launch WebFOCUS Designer.
2. On the Designer tab, click Chart.
3. Select a data source and click Select.
4. On the Chart picker, select Proportional Symbol for the map type.
   A blank map displays and the Geo bucket is enabled.
5. Place a data field with a defined geographic role in the Geo bucket.

This field, which already has a geographic role assigned, is denoted with a Geo icon, in the Data panel, as shown in the following image. You can also hover over a data field to view the geographic role assignment.

For more information, see Geographic Roles on page 319.
A basic bubble map displays, as shown in the following image.

6. Before saving your map, to add insight, you can also do following:
   - Click Run, to preview your map.
   - Add a measure or dimension to the Color bucket to color your chart by that underlying data value.
   - Add a measure to the Size bucket, to control the size of the bubbles on your map.
   - Add a measure to the Tooltip bucket, to display tooltip information when you place your mouse over an area of the map at run time.
   - Add a Background, Demographic Layer, or Reference Layer.

7. Click Save to save your map.

**Procedure: How to Change the Default Background of a Map**

1. Create a new map or open an existing map.
2. On the Style tab, on the Map options tab, select Base map and choose from the available options, as shown in the following image.

3. Select one of the following options:
   - World Street Map
   - Terrain with Labels
   - Oceans Basemap
   - OpenStreetMap
   - World Imagery
   - Imagery with Labels
Light Gray Canvas
National Geographic World Map
Dark Gray Canvas
None

**Note:** The Imagery with Labels Background provides the terrain for your map, ranging from land contours to city streets.

Once you make a selection, the background of the map refreshes. You can continue to change your background until it displays the desired information.

**Procedure:**  How to Add Demographic Layers to a Map

1. Create a new map or open an existing map.
2. On the Style tab, in the Map options group, click the Demographic layer drop-down and click **Demographic Layers**.
3. Select from various population and lifestyle groups, as shown in the following image.
**Note:** These are pre-defined demographic profiles, provided by ArcGIS. You can select multiple options in either category to gain additional insight into your data. Specifically, each Demographic Layer has its own profile and provides a layering option, when comparing values across different layers or profiles.

4. Click **OK**.

The Demographic Layers that you select are applied to your map. The map engine displays the different groups with unique hues and coloring. You can use the Table of Contents or Layers option, to toggle between the different layers that you have specified. The Layers option is shown in the following image.

![Layers](image)

**Note:** You can select and clear the check boxes to enable the display of one or more Demographic Layers to compare and contrast the different demographic scenarios.

**Procedure:** **How to Add Reference Layers to a Map**

1. Create a new map or open an existing map.
2. On the Style tab, in the Map options group, click the drop-down for Reference layer.
3. Select one or more Reference Layers, such as World Countries, to add to your map, and then click OK.
Your map refreshes, and the definitions and borders of the References Layers display on the canvas. You can use the Table of Contents or Layers option, to toggle different Reference Layers in your map. These options are shown in the following image.

**Reference:** Query Buckets by Map Type

This section presents the Query buckets that display, by map type.

<table>
<thead>
<tr>
<th>Query bucket</th>
<th>Choropleth Map</th>
<th>Proportional Symbol Map</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Geo.</strong> One data field, specifically a field containing location data (for example, State).</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Color.</strong> One data field.</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Tooltip.</strong> Up to one data field (not required).</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Multi-page.</strong> Up to one data field (not required).</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Size.</strong> One data field.</td>
<td>✗</td>
<td>✓</td>
</tr>
</tbody>
</table>
Reference: Geographic Roles

Note: Geographic roles are only available with Esri maps.

This section contains information on the geographic roles that are supported for Esri maps.

<table>
<thead>
<tr>
<th>Geographic Role</th>
<th>Description</th>
<th>Maps Supported</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTINENT</td>
<td>World Continents</td>
<td>Choropleth, Proportional Symbol</td>
</tr>
<tr>
<td>COUNTRY</td>
<td>World Countries</td>
<td>Choropleth, Proportional Symbol</td>
</tr>
<tr>
<td>STATE</td>
<td>World Admin Divisions</td>
<td>Choropleth, Proportional Symbol</td>
</tr>
<tr>
<td>CITY</td>
<td>World Cities</td>
<td>Proportional Symbol</td>
</tr>
<tr>
<td>COUNTY</td>
<td>World Counties</td>
<td>Choropleth, Proportional Symbol</td>
</tr>
<tr>
<td>POSTAL-CODE</td>
<td>Postal Code</td>
<td>Choropleth, Proportional Symbol</td>
</tr>
</tbody>
</table>

Note: This is a new, simplified list of geographic roles (dimensions) that you can utilize when creating a map chart. This unified list of roles provides worldwide mapping of administrative boundaries down to the postal code level. In WebFOCUS Designer, the new roles display, by default, when assigning a geographic role.

The following table illustrates the geographic roles and their dependencies. Level 1 indicates the highest level of hierarchy and level 5 is the lowest level of hierarchy.
<table>
<thead>
<tr>
<th>Region</th>
<th>Hierarchy Level</th>
<th>Geographic Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>1</td>
<td>CONTINENT</td>
</tr>
<tr>
<td>COUNTRY</td>
<td>2</td>
<td>COUNTRY</td>
</tr>
<tr>
<td>STATE</td>
<td>3</td>
<td>STATE</td>
</tr>
<tr>
<td>CITY</td>
<td>4</td>
<td>CITY</td>
</tr>
<tr>
<td>POSTAL CODE</td>
<td>5</td>
<td>POSTAL CODE</td>
</tr>
</tbody>
</table>

Adding a Custom Geographic Role

The GEO configuration editor in the Reporting Server Console provides a tool for editing or adding properties for geographic roles.

Click Workspace on the sidebar. Click Settings, point to Geo Services, then click Edit Configuration. The GEO configuration editor opens displaying the configured geographic roles, as shown in the following image.

Reference: Editing the List of Geographic Roles

The following standard unified geographic roles are configured by default and cannot be changed. These geographic roles create a hierarchy that can be used to drill down or up between levels of administration in maps, reports, or charts.

- CONTINENT.
- COUNTRY.
- STATE.
- COUNTY.
To add a geographic role to the configuration, you can add a new Esri map or a shapefile hosted by the Server and associate a geographic role with the new map. You can also implement NUTS geographic roles support.

**Configuring Properties of Geographic Roles**

The following describes columns for geographic roles in the configuration editor.

- **name**
  
  Is the unique name of the geographic role. It cannot have spaces, but it can have underscores (_).
  
  Next to the name is an indicator of whether the role is a standard role or a customized role.

- **title**
  
  Is the description of the geographic role that is displayed in reports and in drop-down lists in the WebFOCUS tools.

- **returned_geometry**
  
  Is the type of geographic data returned from the map service for rendering on the map.
  
  Valid values include:
  
  - GEOMETRY_AREA
  - GEOMETRY_POINT
  - GEOMETRY_LINE

When you have configured the properties, click OK to return to the Geo Configuration Editor. The new role will display on the list of roles. Click Save to save it in the geographic configuration.

**Adding a New Role for an Esri Map**

To add an Esri geographic role, click Add ESRI map on the Geographic Configuration Editor.
The *Create a new ESRI map role* dialog box opens, as shown in the following image.

Configure the following map service properties.

**name**

Is a name for the geographic role.

**title**

Is a title to display in the WebFOCUS tools.

**returned_geography**

Select the type of geometry that is returned from the map service for this role. Valid values are:

- **GEOMETRY_AREA.** Returns JSON polygon definitions.
- **GEOMETRY_LINE.** Returns JSON line definitions.
- **GEOMETRY_POINT.** Returns a JSON point.

**url**

Is the URL to the map service that provides the geographic data.
Click **Verify** after entering the URL to verify that the map service is available by going to the specified URL.

**Service Parameters**

Add as parameters any additional geographic roles needed to identify the exact location of the new role. For example, a city name needs state and country parameters.

**Example:** **Adding the WebFOCUS Regions Geographic Role**

The following properties add the WebFOCUS Regions role to the configuration.

**Note:** The **parameter name** corresponds to the field name in the FeatureLayer referenced in the following URL:

http://services7.arcgis.com/L95Wvw9OjRQ0tjAs/ArcGIS/rest/services/wfretail_sub_regions/FeatureServer/0

Click **OK** when you have finished configuring the properties.

The new role is added to the configuration as a customized role, as shown in the following image.

Click **Save** to save this role to the configuration.
The following request uses the WebFOCUS Regions geographic role in a map request.

DEFINE FILE WF_RETAIL_LITE

REGION/A50 (GEOGRAPHIC_ROLE=REGION) = BUSINESS_SUB_REGION;
END

GRAPH FILE WF_RETAIL_LITE
SUM COGS_US
BY REGION
WHERE COUNTRY_NAME EQ 'United States'
ON GRAPH PCHOLD FORMAT JSCHART
ON GRAPH SET LOOKGRAPH CHOROPLETH
ON GRAPH SET STYLE *
TYPE=REPORT, CHART-LOOK=com.esri.map, $
TYPE=DATA, COLUMN=N2, BUCKET=color, $
*GRAPH_JS_FINAL
"extensions": {
  "com.esri.map": {
    "overlayLayers": [
      {
        "ibiDataLayer": {
          "map-metadata": {
            "map_by_field": "REGION"
          }
        }
      }
    ],
    "baseMapInfo": {
      "customBaseMaps": [
        {
          "ibiBaseLayer": "gray"
        }
      ]
    }
  }
*END
ENDSTYLE
END
Adding a New Role for a Server-Hosted Map

A server-hosted map is based on a shapefile. You must upload the shapefile (.dbf) to an application folder accessible to the server. The server will transform it to ibjson format.

An ESRI shape file is actually a collection of at least four files:

- **.dbf file.** The .dbf file is a standard database file used to store attribute data and object IDs. A .dbf file is mandatory for shape files.

- **.shp file.** The .shp file is a mandatory Esri file that gives features their geometry. Every shapefile has its own .shp file that represents spatial vector data.

- **.shx file.** The .shx file is a mandatory Esri shape index position file. This type of file is used to search forward and backwards.

- **.prj file.** The .prj file is an optional file that contains the metadata associated with the shapefiles coordinate and projection system.

All files must have exactly the same name and to be located in the same directory. If they are not, the shapefile conversion will fail.

When there are several possible keys associated with a geometry, a drop down list of detected key names will be displayed. Select any one of these fields. No selection required when there is a single geometry key.

The shapefile should only be in the GCS_WGS_1984 - World Geodetic System 1984 (decimal degrees) coordinate system.
To add a geographic role for a Server-hosted map, click *Add WFRS map* on the Geographic Configuration Editor.

The *Add WFRS hosted map* dialog box opens, as shown in the following image.

Configure the following properties.

**role name**

Is a name for the geographic role.

**Geometry type**

Select either POLYGON or POINT from the drop-down list.

**Esri shape**

Enter the name of the application directory where the shapefile resides, or click the ellipsis (...) to navigate to the application directory. Then select the .dbf file for the role.

**Load to app**

Enter the name of the application directory where you want to place the ibijson file, or click the ellipsis (...) to navigate to the application directory.

**Quantization type**

Quantization is the process of transforming a large set of input values to a smaller set of values. When transforming the shapefile, the server will quantize points that are too close together in order to optimize map rendering performance. Two methods are available for quantization, LINEAR or GRID. The default is LINEAR.

**Quantization_X**

Is the threshold value for the x-axis.
Quantization\_Y

Is the threshold value for the y-axis.

If the map has multiple keys, a drop-down list displays so that you can select one.

Click OK when you have finished configuring the properties.

The new role is added to the configuration as a customized role, as shown in the following image.

Click Save to save this role to the configuration.

You can test the role by right-clicking the role in the configuration editor and clicking Test. A sample map will be generated, as shown in the following image.
Adding NUTS Support

Nomenclature of territorial units for statistics (NUTS) are geographic roles specific to the European Union.

To add NUTS geographic roles to the configuration, click Add NUTS support on the Geographic Configuration Editor.

The NUTS geographic roles are added, as shown in the following image.

![GEO configuration editor](image)

Click Save to save these roles to the configuration.

Adding Support for Extended Postal Codes

Click Add extended postal codes to add support for Level 1 and Level 2 postal codes used in certain countries.

Customizing Vocabulary Rules

For each geographic role, a set of vocabulary rules define how to recognize when a field name should automatically be assigned to that role. If you right-click a role, you can click Customize vocabulary from the shortcut menu.

Elements in a rule are connected by the Boolean logic operation OR (only one needs to be satisfied). Each vocabulary element contains words enclosed with special characters. Words in the rule element are connected by the Boolean logic operation AND (all need to be satisfied).

A word may be prefixed and/or suffixed with the percent character (%), which is a placeholder for any sequence of characters. If an element contains more than one word, each word has to be prefixed by the character plus (+) or minus (-). Plus indicates that the word must be found in the column name. Minus indicates that word must not be found in the column name.
For example, the following are the vocabulary rules for the role COUNTRY.

To add another rule, click Add optional.

When you are finished, click OK.

Click Save to save these rules to the configuration.

Reference: Customizing the List of Basemaps

You can edit an existing basemap definition or add a custom basemap.

Using Standard Basemaps

To add a new basemap or customize an existing basemap, select Basemap from the Object drop-down list.

Configuring Basemap Properties

The following is a description of the properties used for basemap configuration.

name

Is the name of the basemap.
Next to the name is an indicator of whether the basemap is a standard basemap or a customized basemap.

**icon**
Is the name of the thumbnail for the basemap (for a standard basemap) or the URL to the thumbnail (for a customized basemap) that will appear on the Basemap drop-down list in the WebFOCUS tools or the Change Basemap map widget.

**title**
Is a title to display on the Basemap drop-down list in the WebFOCUS tools or the Change Basemap map widget.

**url**
Is the URL to the map service that provides the basemap, for a customized basemap. The map service URL can be copied from the URL field on the page showing a custom basemap. For a standard basemap, the URL is already stored in the server geographic configuration file and is not displayed.

**type**
Valid values are tiled and vector.

**addon_json**
Specifies additional JSON properties for rendering the map.

**Editing the Properties of a Basemap**
To customize the properties of an existing basemap, right-click the basemap line and click **Customize BASEMAP**.
The Customize Basemap dialog box opens, as shown in the following image.

Edit the properties you want to change. If you change the URL, you can click Verify to make sure the map service is valid and accessible.

When you are finished, click OK, then click Save on the GEO configuration editor Basemaps page.

**Adding a Custom Basemap**

To add a new basemap to the configuration, click Add.
The Create a BASEMAP dialog box opens, as shown in the following image.

Enter a name for the basemap, a URL to the thumbnail, a title to display, and the URL to the map service that provides the basemap, and click Verify.

When you have configured the properties, click OK, then click Save on the GEO configuration editor Basemap page.

**Reference:** Customizing the List of Context Layers

To add a new context layer or customize an existing context layer, select ContextLayer from the Object drop-down list.
The following image shows the GEO configuration editor with the ContextLayer object selected.

### Configuring Context Layer Properties

Following is a description of the properties used for context layer configuration.

**name**

Is the name of the context layer.

Next to the name is an indicator of whether the context layer is a standard context layer or a customized context layer.

**authorization**

Is the type of authentication needed to access this context layer. Valid values are:

- **silent.** Credentials for your ArcGIS application are provided in the connection string of the Adapter for Esri ArcGIS.

  **Note:** For instructions for configuring the Adapter for Esri ArcGIS, see the Adapter Administration manual.

- **none.** No authorization is needed.

- **named.** User credentials are provided in the connection string of the Adapter for Esri.

- **on premises.** User credentials for a locally hosted ArcGIS server are provided in the connection string of the Adapter for Esri.

**layer type**

Is the type of context layer. For a cached layer, the layer type is tile. For a layer that is rendered dynamically, the layer type is featurelayer.
title

Is a title to display on the demographic layer drop-down list in the WebFOCUS tools.

uri

Is the URL to the map service that provides the context layer.

addon_json

Specifies additional JSON properties needed for rendering the context layer. For example, smartMapping properties define the border styles within the context layer.

Customizing the Properties of an Existing Context Layer

To customize the properties of an existing context layer, click the down arrow next to a context layer name or right-click the context layer line and click Customize context layer.

The Customize CONTEXTLAYER dialog box opens, as shown in the following image.

```
name: USA_Population_Density_2017
authorization: client
layerType: featurelayer

Verify
```

Edit the properties you want to change. If you change the URI, you can click Verify to make sure the map service is valid and accessible.
When you are finished, click OK, then click Save on the GEO configuration editor Context Layers page.

Adding a New Context Layer

To add a new context layer to the configuration, click Add.

The Create a Customized CONTEXTLAYER dialog box opens, as shown in the following image.

![Create a Customized CONTEXTLAYER dialog box](image)

Enter a name for the context layer, the authorization type, a layer type, a title to display, any additional JSON needed for rendering the context layer, and the URI to the map service that provides the context layer, and click Verify.

When you have configured the properties, click OK, then click Save on the GEO configuration editor Context Layer page.
Using Your Extension in a WebFOCUS Request

If you have installed and configured your extension as described, your extension will be available for use in the WebFOCUS tools as a chart type in the Other format category under HTML5 Extension, as shown in the following image.
When creating a chart using WebFOCUS Designer, chart extensions are available in the Custom category when you expand the chart picker, as shown in the following image.

The attribute categories you defined in the dataBuckets object of your extension are available in the Query pane in InfoAssist or Display panel in Designer.
Additionally, in WebFOCUS Designer, the properties defined in the propertyAnnotations object are available on the Format tab, in the Other section, when General is selected in the Quick Access menu. Clicking **Extension properties** opens the Extension properties panel, where you can make changes to the available properties, as shown in the following image, which shows properties for the liquid gauge chart extension.

The following syntax is added in the FOCEXEC:

- The LOOKGRAPH value is EXTENSION.
- The actual extension to use is identified in the chartType property of the *GRAPH_Js* block in the StyleSheet. For example, for a liquid gauge chart:
Each custom attribute category name is prepended with a greater-than character (>). For example, for a simple bar chart that has one label field and four value fields:

- \text{TYPE=DATA, COLUMN=N1, BUCKET= >labels, $}
- \text{TYPE=DATA, COLUMN=N2, BUCKET= >value, $}
- \text{TYPE=DATA, COLUMN=N3, BUCKET= >value, $}
- \text{TYPE=DATA, COLUMN=N4, BUCKET= >value, $}
- \text{TYPE=DATA, COLUMN=N5, BUCKET= >value, $}

Extension chart properties are listed under the extensions:extension\_name object. For example, for a liquid gauge chart with the number of waves set to 3 and the wave color set to a shade of dark blue, the properties appear as follows:

```
"extensions": {
  "com.ibi.liquid_gauge": {
    "waveCount": 3,
    "waveColor": "#083f9e"
  }
}
```

The following is a sample request using the liquid gauge extension.

```
GRAPH FILE wf_retail_lite
SUM PCT.WF_RETAIL_LITE.WF_RETAIL_SALES.QUANTITY_SOLD
BY WF_RETAIL_LITE.WF_RETAIL_GEOGRAPHY_CUSTOMER.BUSINESS_REGION
WHERE_GROUPED WF_RETAIL_LITE.WF_RETAIL_GEOGRAPHY_CUSTOMER.BUSINESS_REGION EQ 'North America'
ON GRAPH PCHOLD FORMAT JSCHART
ON GRAPH SET LOOKGRAPH EXTENSION
ON GRAPH SET AUTOFIT ON
ON GRAPH SET STYLE *
TYPE=DATA, COLUMN=N2, BUCKET= >value, $
*GRAPH_JS_FINAL
"chartType": "com.ibi.liquid_gauge",
"extensions": {
  "com.ibi.liquid_gauge": {
    "waveCount": 3,
    "waveColor": "#083f9e"
  }
}
*END
ENDSTYLE
END
```
Run the chart. The output is shown in the following image.

![Chart Image]

**Changing a Data Field Format in a Chart**

Changing the display or output format of measure fields that have been placed on the canvas or in field containers allows you to control how values in a field are interpreted and the styling that they use when displayed. This feature allows for field display formatting, which is essential for any data-based content design tool.

**Note:** These formatting options are applied when the WebFOCUS Reporting Server retrieves data from the data source. When that data is passed to the JavaScript chart engine to generate the chart, some formatting information may not be included and replaced with default settings. All formatting is still applied in a spreadsheet of your data created using the Export data option on the Application menu.
To change the format of a field in a bucket in the Display pane, right-click the field and point to *Format data*, as shown in the following image.

**Note:** When editing the format of a field, the only options available are those that are relevant to the selected field.
When creating or editing a calculated field, you can access Data Format options by clicking the Edit Format button, which appears with a different icon depending on whether the field is a number, character, or date field, and which is located above the Operator Selection pane next to the field name, as shown in the following image.

To edit the format of a field, first select the data type, then set details specific to that data type. In the following image, the numeric data type is selected, providing options for numeric fields.
You can select one of the following data types:

- Character format, for fields containing letters and numbers.
- Number format, for fields containing numbers that you want to sum or aggregate.
- Date format, for fields containing dates.
- Other format, for fields that have values that do not match one of the other formats, such as date-time fields or string fields, or are a variety of another type of field, such as packed decimal fields or Julian date fields.

When you select the character data type, you can specify character-specific formatting, as shown in the following image.

![Data type example](image)

You can use the Length option to select the number of characters to display in the field, and enable variable length. Variable length indicates that the number of characters can vary depending on the data that is stored in the field.
When you select the numeric data type, you can specify number-specific formatting, as shown in the following image.

You can choose whether or not to display decimals, and set the maximum number of digits to show before and after the decimal point. You can also choose how to format negative numbers, whether to show thousands separators, and whether to show a zero before the decimal point when the value is less than one.

You can also specify currency and percent variations, such as a different currency symbol or a change in the use of a percentage value. When you select the currency option under Type, the Currency symbol and Symbol position options appear, allowing you to select the currency symbol and how it displays.

**Note:** The Percent data format option automatically multiplies the field value by 100 so that decimal values are accurately converted to percentages. If your data values do not need to be multiplied by 100 and only need the percent symbol (%) added, select the custom format data type and manually enter a field format followed by %. For example, $12.2\%$. 
When your data type is a date field, you can make a selection from the supported date formats that are available for selection. The options for a date field are shown in the following image.

![Image of date format menu]

The Date format menu shows a list of date formats as applied to December 31 of the current year. You can select date formats that use separators or month names, or show a single date component.

When you select a date format that uses a separator, the Date separator menu is available. You can choose to use a slash (/), dash (-), dot (.), or space.
If you want to use a format not available in the character, number, or date sections, you can select the Other data type. Type a valid WebFOCUS field format into the Format text box. For example, the following image shows a field using the format HMDYYYS, which is a date-time format.

![Data type](image)

**Procedure:** How to Change the Number of Decimal Places in a Field

You can change the number of decimal places that display for a numeric field to show fewer or more decimal values. Showing more decimal values allows you to analyze your data with greater precision.

1. Create a chart using WebFOCUS Designer, or open an existing WebFOCUS Designer chart.

2. Change the chart type to data grid. In the Chart picker, click ![Chart type](image).

   Using the data grid chart type allows you to see all data values immediately. Other chart types show exact data values when you point to a section of the chart to display a tooltip.

3. Add a sort field, for example, Product Category, to the Row bucket and a measure field, for example, Revenue Per Sq. Ft., to the Measure bucket.
4. Change the format of the measure field to show four digits after the decimal point, by doing the following:
   a. In the Measure bucket, right-click a field and point to Format data, as shown in the following image.
b. If the field is not already in a numeric format, change the data type to numeric by clicking the number button in the Data type section, as shown in the following image.

![](image1.png)

- **Data type**
  - Abc
  - 123
  - 12/31/2018

- **Type**
  - 123
  - 11.11
  - $%

- **Max length**
  - 20

- **Decimal place**
  - 2

- **Negative number**
  - -123
  - (123)

- Checkboxes:
  - Show 1000 separator
  - Show leading zero

- **OK**
- **Cancel**

The field whose format you modified now shows the specified number of decimal points, as shown in the following image.

![](image2.png)

- **Product Category**
  - Accessories
  - Camcorder
  - Computers
  - Media Player
  - Stereo Systems
  - Televisions
  - Video Production

- **Revenue Per Sq. Ft.**
  - 24,903.9186
  - 29,664.6065
  - 18,510.8106
  - 47,720.1179
  - 55,985.4263
  - 15,276.0628
  - 11,110.4634
Changing Output Formats in a Chart

The output format of your content determines the type of file that is generated when that content is run. Different output types enable different levels of run-time interactivity, embedding behavior, and compatibility with outside programs, so you can change the output type depending on how you intend to use your content and who the intended audience is.

To change the output format of a chart created in WebFOCUS Designer, click the Style tab, and, with General selected in the Quick Access menu, in the Theme and Format section, select an option from the Output Format drop-down menu. The following options are available:

- HTML
- AHTML
- PDF
- PPTX
- XLSX
- Select at runtime

The HTML and AHTML options are browser-based formats, while PDF, PPTX, and XLSX output can be downloaded, distributed, and opened using standard office suite software. The Select at runtime option provides the ability to run a chart using any of the other output formats. Users can select a format at runtime in which to run the chart.
The HTML output format generates a basic chart, enhanced with JSON objects, that can be run in a web browser. The HTML chart format automatically generates tooltips for different sections of a chart, allowing you to see detailed information at run-time on top of the quick, broad intuitions that a chart communicates. These tooltips provide run-time access to interactive features such as Auto Drill, which allows you to drill into data hierarchies used in the chart, and Auto Linking, which allows you to connect content that uses shared parameters associated with sort fields in the chart. The following image shows a chart that uses the HTML output format and has Auto Drill and Auto Linking options available from the tooltip.

The HTML format also enables you to run your chart with Insight, which allows you to modify, filter, and reformat a chart at run-time.
Charts using the AHTML format can also be run in a web browser. AHTML is a format that allows you to perform offline analysis using in-document analytic features. The AHTML format includes Auto Drill and Auto Linking functionalities just like HTML. In addition to this, AHTML enables numerous features that allow you to reorganize and explore the data in your chart without directly accessing the data source on which it is based. This includes the ability to filter the chart by lassoing values, view the data in the chart using a different chart type, create a new chart using the same fields while still in run time, and more. Some of these options are available in menus that appear above the chart at run time, as shown in the following image.

You can also access your chart in common desktop tools by using the PDF, PPTX, or XLSX output formats.

When you run a chart that uses PDF, PPTX, or XLSX as the output format, an image of the chart is embedded in a .pdf, .pptx, or .xlsx file, respectively. The file opens in a browser viewer for that file type or is downloaded in the browser. The file can be opened using a tool compatible with the output file type. If the tool allows it, you can then right-click the image of the chart to save it as a separate file.

Certain features may not be available, depending on the file type. For example, the PDF, PPTX, and XLSX output formats do not support Auto Linking, Auto Drill, or any other tooltip-based behavior, since the chart itself is generated as an image.

Separate pages generated by the MultiPage bucket also behave differently, depending on the output file type. In PDF, a separate page is created for each multipage value, and in PPTX, a separate slide is created. In Excel, however, separate instances of a chart are output to the same worksheet, similar to how multipage values work in the HTML output format.
The following image shows an example of a chart created using the PDF output format viewed in a web browser.

The following image shows an example of a chart created using the PPTX output format viewed in Microsoft PowerPoint 2007.
The following image shows an example of a chart created using the XLSX output format viewed in Excel 2007.
You can use the Select at runtime option to enable any of these output formats. When a chart using the Select at runtime option is run, the Responsive Autoprompt page opens. You can select an output type from the drop-down menu, as shown in the following image.

When you click the Run button, the chart runs in the selected output format.

Using Insight to Analyze Dynamic Charts

Insight is a visualization tool that allows for the interactive selection of measures and dimensions, so you can create dynamic charts that refresh as you make changes.

With Insight, you can review and analyze a chart that shows the data fields that you choose in real-time. It even rebuilds as you select additional fields or specify filters.

You can make quick decisions regarding your data with Insight. Using logical menus and simple filtering, you can analyze charts interactively to suit your needs. As you select additional fields and create filters, your chart refreshes instantly, letting you see the results of your data choices as you use the tool.

Insight lets you build filters, as needed, to customize the data that displays. You can add and remove fields, at any time and in any pattern, to enhance your chart. You can take advantage of the customization options that are available to you right from the toolbar.

With Insight, the chart type determines the buckets that display. For example, if you are working with a pie chart, you can specify values for the following buckets: Measure, Rows, Columns, Color, Size, Tooltip, and Animate.
Available fields are organized into applicable Dimension and Measure categories. You can use the plus sign \( + \) to add additional fields to your chart. For example, if you want to create a bar chart that plots Gross Profit, Revenue, and MSRP for each Product Category, click the plus sign to add fields using the drop-down field selector. Once you choose the fields that you want to include, you can rearrange them by dragging and dropping them into the order that you prefer.

The resulting bar chart displays, as shown in the following image.

![Bar Chart Example](image)

**Note:** The Save icon only displays when running an existing Insight chart from the Home page.

You can use the navigational arrows in the interactive header to move between the available buckets in your chart. The following image highlights these arrows, which shift the focus of these buckets to the right or left.

![Navigational Arrows](image)

All charts support a bucket for Color, which adds contrast to your chart. Some charts also support the Size bucket, which binds a measure to the size of the markers rendered on the chart.
Once you have added fields to the relevant buckets, you can use the Sort arrows adjacent to each field to sort the data in ascending or descending order. This helps identify trends and priorities within your data. You can only sort one field at a time. Ascending order sorts your data from the smallest value to the greatest value, while descending order sorts your data from the greatest value to the smallest value, as shown in the following image.

When you select a sort order for a field, the field arrow changes color, appearing bolder than the unsorted fields. In the image below, a sort order was selected for MSRP, so the field arrow appears black.

Specify measures and dimensions for your chart in WebFOCUS Designer before using Insight. This pre-loads the Insight user interface (UI) with those selections. Optionally, you can use Insight without selecting any fields. In this case, the field selection options are broad, meaning that all fields will be presented. An example of an empty canvas is shown in the following image.
Procedure: How to Enable Insight From WebFOCUS Designer

1. On the WebFOCUS Homepage, open a domain, and then click Designer.
2. Click an existing chart, and then click Edit.

   Or

   In the Actions bar, click Chart, and create a chart in WebFOCUS Designer.

3. On the Menu bar, click More, and then click Run with Insight, as shown in the following image.

   ![Chart with Run with Insight option]

4. On the toolbar, click Preview.

   The Insight interface opens, and you can begin analyzing your chart.

Working With Charts in Insight

With Insight, you can choose individual fields for the buckets that you add. Whether you added fields into the buckets before running Insight or left them empty, creating a chart in Insight is streamlined to allow you to easily create a dynamic chart in real time. It also provides you with the flexibility of interactive comparison as you change your data selections rapidly and adjust the options for display.

You can use the default vertical bar chart or you can specify a different chart type using the Chart Picker in the Options toolbar.

In addition, you can re-order the display of fields in your chart. This allows you to change the placement of a particular field, giving you control over where the data for this component displays in your chart.
**Procedure:** How to Configure a Basic Bar Chart Using Insight

1. Click the plus icon under the Vertical Axis bucket.
2. Choose a measure field from the drop-down list.
3. Click the plus icon under the Horizontal Axis bucket.
4. Choose a dimension field from the drop-down list.

Your bar chart displays, as shown in the following image.

![Bar Chart Image]

**Procedure:** How to Change the Chart Type in Insight

1. On the Options toolbar, click Chart Picker.
The table of chart selections opens, as shown in the following image.

Options

2. Select a chart type.
   
   Your chart refreshes with the new chart type, and the Insight interface refreshes to display all of the buckets that are relevant to the current chart type.

Procedure: How to Delete a Field From a bucket

1. Add one or more fields to your chart.
2. Hover over the field that you want to delete and click X, as shown in the following image.

   Vertical Axis  Horizontal Axis  Size
   Summary  Revenue  +  +  +

The chart refreshes to reflect your selections.
Procedure: How to Reorder the Display of Fields in a Bucket

1. Add multiple fields to your chart, as shown in the following image.

```
Vertical Axis
Summary
Discount

Horizontal Axis
Summary
Quantity Sold
By
Product Category

Size
Color
Tooltip
Animate
Options
```

2. In the Vertical Axis grouping, drag the second bucket into the first position. The placement of the field is shown by a dark blue vertical bar, as shown in the following image.
The following image shows the newly ordered fields.
Searching for Fields

You can locate fields for your buckets using the search option. On the toolbar, click the plus sign. In the search field, start typing the field that you want to locate. You can type in whole words or partial words. The search identifies all fields that contain any instance of the characters that you specify, as shown in the following image.

![Search Field Example](image)

### Measures
- ID Product
- ID Product

### Dimensions
- ID Product
- Product Category
- Product Cost
- Product Description
- Product Filter
- Product Name
- Product Subcategory
- Product Weight
- Product Weight Units

Changing Summary Operators for the Field

When working with measure fields, you can change the summary operators for the field from Summary (default) to Average, Maximum, or Minimum. You can also change a Count field to Count Distinct, using a similar menu selection.
When you make a selection, the axis of the relevant measure updates in the chart, as shown in the following image.

Options for changing the Summary field are shown in the following image.
Filtering in Insight

To enable filtering, click the Show Filter icon, which is located in the Options section of the toolbar. This opens the filter shelf that renders above the bucket shelf, as shown in the following image.

Use the filter shelf to build your filter. The filter shelf must be visible in order to add or modify a filter. In addition, filters that were created in a procedure (.fex) or a WebFOCUS Designer session prior to launching Insight are applied, but do not show in Insight.

Additionally, query variables in are available in Insight and functional on the Filter shelf. Typically, query variables display in the Data pane, above the measure fields. The filter values display as True or False, rather than one and zero. In addition, you can only select one value, as shown in the following image.
Types of Filters

There are different types of filters in Insight. For example, if you are filtering with a date field, you can use a built-in calendar to select a date range, as shown in the following image.

If you are filtering on a numeric value, such as a measure value, you can filter on values that are specific to a field. In this scenario, when you define the filter, a slider control opens. You can adjust the range of values that you want to include, using the slider control options, as shown in the following image.
You can also filter on dimension values. You can select one or more values by simply clicking on multiple values. A check mark appears, indicating the values selected, as shown in the following image.

<table>
<thead>
<tr>
<th>Product Subcategory</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Blu Ray</td>
<td></td>
</tr>
<tr>
<td>Boom Box</td>
<td>✓</td>
</tr>
<tr>
<td>CRT TV</td>
<td></td>
</tr>
<tr>
<td>Charger</td>
<td></td>
</tr>
<tr>
<td>DVD Players</td>
<td></td>
</tr>
<tr>
<td>DVD Players - Portable</td>
<td>✓</td>
</tr>
<tr>
<td>Flat Panel TV</td>
<td></td>
</tr>
<tr>
<td>Handheld</td>
<td></td>
</tr>
<tr>
<td>Headphones</td>
<td>✓</td>
</tr>
<tr>
<td>Home Theater Systems</td>
<td></td>
</tr>
<tr>
<td>Portable TV</td>
<td></td>
</tr>
</tbody>
</table>
You can select all values for the dimension, select one or more, or clear all selected values, as shown in the following image.
Adding a Filter

You add a filter when you want to limit the display of your data, or drill down to focus on specific data values. For example, you may want to just display data for Camcorder and Televisions, rather than all Product Categories. You can do this by adding a filter for the Camcorder and Televisions, as shown in the following image.

Procedure: How to Add a Filter in Insight

1. In the Options toolbar, click Show Filter.
   The filter shelf opens.
2. Click the Show Filter icon.
3. From the drop-down list that opens, select the field on which to filter.
4. Click the identified field in the filter shelf to specify a value for the filter.
   A list displays, showing the values that you can select.
5. Click on the filter shelf to save your filtered items.
   Your chart refreshes.
Removing a Filter

To remove a filter, hover over it and click on the X, as shown in the following image.

![Filter Removal](image)

The chart refreshes and displays your data without any filter.

Using the Options Toolbar

The Options toolbar is located in the upper-right corner of the Insight interface. These options control your interactions with your data, including options such as pivoting and filtering. You can also change your chart type using the Chart Picker option.

Reference: Options Toolbar Icons

The following section describes the icons that display on the Options toolbar.

- **Reset**
  
  Returns the chart to its original state. Any filters, measures, dimensions that are added in the current Insight session are reverted. The chart type is reverted, as well.

- **Swap Axis**
  
  Swaps the x and y axis, placing the contents of the x axis on the y axis. You can click Swap Axis again to change the chart back to its original orientation.

- **Save**
  
  Available when running an Insight-enabled chart from the WebFOCUS Home Page. Allows you to save the Insight chart as a new file.
Chart Picker

Provides options for selecting different chart types, including:

- **Horizontal Bar.** Offers the capability of ranking data in descending order. This chart type can also be used when x-axis labels are too long to fit legibly side-by-side. The following buckets are available for this chart type: Vertical Axis, Horizontal Axis, and Color.

- **Vertical Bar.** Shows different measures per dimension component using different identifying colors. The following buckets are available for this chart type: Vertical Axis, Horizontal Axis, and Color.

- **Vertical Stacked Bar.** Stacks values per dimension component using differentiating colors. The following buckets are available for this chart type: Vertical Axis, Horizontal Axis, and Color.

- **Pie.** Presents values as part of a whole using colors to separate the segments. Pie charts emphasize where your data fits in relation to the larger whole. The following buckets are available for this chart type: Rows, Columns, Measure, Color, and Size.

- **Vertical Line.** Creates a line chart which is representative of the data. Line charts are useful for showing trends in numerical data. The following buckets are available for this chart type: Vertical Axis, Horizontal Axis, and Color.

- **Area.** Creates an area chart which is similar to a line chart except the area between the data line and the zero line (or axis) is usually filled with color. The following buckets are available for this chart type: Vertical Axis, Horizontal Axis, and Color.

- **Scatter.** Plots data using variable scales on both axes. The following buckets are available for this chart type: Rows, Columns, Vertical Axis, Horizontal Axis, Size, Detail, and Color.
**Note:** When working with Insight Scatter or Bubble Charts, the "Show Datalabels" ability is tied to the Size bucket. Therefore, you will only see datalabels if there is a measure in the Size bucket.

- **Circle.** Plots differing values in rows, enabling you to draw inferences as to how the values overlap. The following buckets are available for this chart type: Rows, Columns, Vertical Axis, Horizontal Axis, Size, Detail, and Color.

- **Treemap.** Displays large amounts of hierarchically structured data. This chart type uses sections to represent an aspect of the selected measure. The following buckets are available for this chart type: Grouping, Size, and Color.

- **Histogram.** Analyzes the distribution of a measure while assigning it to buckets based on the values you specify for the bins that are created. The default bin count is 10. The following buckets are available for this chart type: Rows, Columns, and Measure.

- **Table.** Presents data in tabular form, allowing you to compare various intersections in your data. The following buckets are available for this chart type: Rows, Columns, and Measure.

- **Matrix.** Analyzes one or two measures against a crosstab of two categorical dimensions. The following buckets are available for this chart type: Rows, Columns, Size, and Color.

- **Point Map.** Uses symbols of different sizes to represent data associated with different areas or locations within the map. The following buckets are available for this chart type: Layer, Size, and Color.

- **Choropleth Map.** Visualizes location-based data, trends, and distributions across a geographic area. These maps are geographically-based heat maps. The following buckets are available for this chart type: Layer and Color.
**Note:** The orientation of this chart icon changes if you swap an axis. In addition, the image that displays for the chart type changes, based on your selection.

**Show Filter**
Defines filters for your data. Select this icon, and using the filter shelf that opens above the bucket shelf, click the Show Filter icon to define a filter.

**Note:** To select one or more non-consecutive values, select each field. The selected values will display with a check mark to indicate that they have been selected.

**More Options**
Opens the following additional options:

- **Export Data.** Exports the underlying data of the current chart to an Excel file in LOCAL file storage. You will be alerted when the file appears in the bottom left corner, similar to any other file that you download.

- **Export Image.** Generates an image of the current chart, which is saved in PNG format to LOCAL file storage using the current width and height of the browser window.

- **Series Layout.** The bar, line, and area charts in Insight support several different sub-graph types (aka Layout). The supported graph types include: horizontal bar, vertical bar, vertical stacked bar, line, and area charts. For bar, line, and area charts, the Series Layout Options are as follows:
  - Horizontal Bar: Stacked, Side-by-Side, Absolute, Percent
  - Vertical Bar: Stacked, Side-by-Side, Absolute, Percent
  - Vertical Stacked Bar: Stacked, Side-by-Side, Absolute, Percent
  - Line: Stacked, Side-by-Side, Absolute, Percent
  - Vertical Stacked Area: Stacked, Side-by-Side, Absolute, Percent

- **Y-Axis Log Scale.** Adjusts the log scale on the y axis. This option is always unchecked, by default. The following chart types are supported:
  - Horizontal Bar
  - Vertical Bar
  - Vertical Stacked Bar
  - Line
Area charts
Scatter charts
Circle
Histogram

X-Axis Log Scale. Adjusts the log scale on the x axis. This option is always not selected, by default. The following chart types are supported:

Scatter
Bubble

Change Bin Size. Changes the size of the bin (numeric value only). This option is only available for histograms. Clearing the text box switches it back to automatic bin size generation.

Show Data Label. Turns numeric Data labels on/off on all charts, except Grids. The default for this setting is always Off except for Treemaps.

Show Totals. Turns the Summary Row Total on Data Grid on or off. The default for this setting is always False.

Marker Shape. Changes the marker shape used in the matrix marker chart. Options include: Circle, Square, or Fill.

Using Insight in Phone Mode

Phone mode, which is available in Insight, allows you to take advantage of the features of Insight on your phone. The interactive heading that is available in Insight on a tablet or desktop is replaced by a static heading that displays the field names in the chart, in blue text. These become summary fields that allow you to see what fields are included in the chart.

Insight is mobile aware and mobile friendly. Full functionality is available on tablet devices and other high-resolution touch displays. On smaller devices, such as an iPhone, Insight enters a special phone mode which has a useful, but more limited, set of options and features that are tuned for the small screen real-estate of the device. In this mode, you can add or modify filters to narrow your data as needed. You can also hover over data points to see the underlying data.
Measures are shown first. The first measure displays with a summation attribute (for example, Sum or Avg) and then displays of and then the name of the measure, as shown in the following image.

In the above image, area one is the static heading. Area two marks the filtering side option button. Lastly, area three shows the conbody of the chart.

Numeric measures are displayed after the measures in the order of Y-Axis and then X-axis. If you define fields in your Grouping bucket, they display after the collective measures and are preceded by the word by. If you have created a matrix marker chart, the relevant buckets for these display next. They also use the word by, as do any Detail buckets that are populated in the chart. If your chart specifies a field for color, Phone mode precedes the display of this item with color by. Lastly, if you have populated the Size bucket, this displays last and is introduced by size by.

User Options in Phone Mode

You have a number of options in Phone mode, including robust filtering and hover capabilities.
Filtering

In Phone mode, you can filter just like in regular desktop mode. The primary difference is that the filter shelf stacks the available filters in a vertical row, as shown in the following image.

You click the filter icon to bring up the filter shelf and then you click the X to close it. If you have defined filters, closing the filter shelf merely collapses it. The filters that you defined remain intact. To remove a filter, hover over it and click the X in the upper-right corner.

General Usability

Phone mode allows you to view your chart and filter it to refine it based on your own unique scenario.

You can hover over a data bar a segment of a chart to obtain additional, detailed information from the underlying data. The tooltips that display are based on your data selections.

You can also show and hide the legend using the right arrow above the legend. When you collapse the legend, you can see more of your chart.
The opportunities for dynamic charting are vast with Insight. Using dynamic menus, filtering options, and search features, you can quickly and effectively create charts that communicate your data.

**Configuring the Automatic Refresh Option for Charts**

WebFOCUS Designer allows you to integrate real-time streaming data with your charts using the Automatic refresh option. For example, for IoT analytics applications, if you configured a connection to a streaming data source using the Kafka adapter, the Automatic refresh option can be enabled to update your chart dynamically at a specified interval (in seconds). Depending on your specific use case or requirements, you can configure multiple charts using the Automatic refresh option and add them to a page, portal, or workbook. Each chart will refresh independently with updated data based on the specified refresh rate.

**Considerations**

As of WebFOCUS Designer 8206, the Automatic refresh option is supported for all chart types, except for maps (for example, Proportional Symbol and Choropleth maps). Support for maps will be provided in a future release. The Automatic refresh option is not available for reports in WebFOCUS Designer. In addition, this option is not included in InfoAssist.

**Procedure: How to Enable and Configure the Automatic Refresh Option for a Chart**

To enable and configure the Automatic refresh option:

1. From the WebFOCUS Home Page, click the Designer tab.
2. Click Chart.
3. Select an existing data source or connect to a new data source, and click Select.
4. Choose a chart type from the chart picker, as shown in the following image.

5. Add measures and dimensions according to your requirements by dragging them onto the canvas.

   **Note:** You can also double-click a measure or dimension to add it to the relevant bucket or drag it into the relevant bucket.

6. Apply any required formatting or styling to your chart (for example, adding a header or footer).
7. Click More from the WebFOCUS Designer toolbar and select Automatic refresh from the context menu, as shown in the following image.

By default, the Automatic refresh option is disabled (set to None).
8. Select *Refresh every* to enable the Automatic refresh option, as shown in the following image.

![Refresh Option](image)

9. Specify the refresh rate in seconds, which is the period of time to wait until the chart polls the corresponding data source to reflect any updated data.

   **Note:** You can specify a maximum value of 120 seconds (two minutes) as the refresh rate.

10. Click *OK*.

    You can continue to build and modify your chart as required.

    Before you save your chart, you can also create a thumbnail, which is used to show an image of the chart on the Home Page or when you create a page in WebFOCUS Designer. To create a thumbnail, on the WebFOCUS Designer toolbar, click *Thumbnail*.

11. When you are finished, click *Save* on the WebFOCUS Designer toolbar to save your chart.

12. To test and verify that your chart is being refreshed correctly, locate it on the Home Page, right-click it and select *Run* from the context menu.

    Observe your chart while it is running and make a note of any adjustments that should be made. For example, if the chart is being refreshed too quickly, then you should consider increasing the number of seconds specified for the Automatic refresh option.

**Procedure:**  How to Disable the Automatic Refresh Option for a Chart

To disable the Automatic refresh option:

1. Locate your chart on the Home Page, right-click it and select *Edit* from the context menu.

   Your selected chart opens in WebFOCUS Designer.
2. Click More from the WebFOCUS Designer toolbar and select Automatic refresh from the context menu, as shown in the following image.

3. Select None to disable the Automatic refresh option, and then click OK.
Creating Thumbnails of a Chart in WebFOCUS Designer

A thumbnail is an image associated with a file that can be used to visually identify it in your WebFOCUS repository. When you create a thumbnail for a chart in WebFOCUS Designer, the thumbnail shows a snapshot or small image of the chart that is then used on the WebFOCUS Home Page. The following image of the grid view on the WebFOCUS Home Page shows some files that use thumbnails created in WebFOCUS Designer, and some files that use the default thumbnail.
Before saving a chart in WebFOCUS Designer, you can create a thumbnail by clicking the Thumbnail button on the toolbar. This opens a preview, where you can see what the thumbnail will look like when the chart is saved. Accept the thumbnail, and then save the chart to apply it.

You can access the properties of the chart from the WebFOCUS Home Page to change the thumbnails you are using or select a custom image from your system or WebFOCUS repository. Thumbnail images are stored as part of the procedure when it is saved.

**Procedure:** How to Create a Thumbnail Image of a Chart in WebFOCUS Designer

1. Create a new chart or open an existing chart in WebFOCUS Designer.
2. When your chart is complete, click Thumbnail on the toolbar. The Save Thumbnail dialog box opens showing the thumbnail preview, as shown in the following image.

3. Click OK to accept the thumbnail, or click Cancel if you do not want to use the thumbnail.

4. Save your chart, and return to the WebFOCUS Home Page.
The chart that you saved now uses the thumbnail that you created for it, if you are viewing your content in the grid view, as shown in the following image.

If the file is published or saved to your My Content folder, the thumbnail shows in color. If the file is not published, the thumbnail appears in grayscale.

The same thumbnail is also visible in the Resource selector when creating a page in WebFOCUS Designer, as shown in the following image.
Procedure: How to View or Change the Properties of a Thumbnail

1. From the WebFOCUS Home Page, locate a chart thumbnail or chart procedure for which you want to view the thumbnail properties.

   Note: Thumbnails only display in the Grid view of the WebFOCUS Explorer on the Home Page.

2. Right-click the chart thumbnail or chart procedure and click Properties.

   The Properties panel opens.

3. Click the Advanced tab.

   The thumbnail displays in the Explorer/Portal Properties section of the panel, which allows you to control how your content is displayed and organized in the WebFOCUS Explorer, as shown in the following image.

![Thumbnail Example](image)

The Thumbnail property allows you to use the default icon for the chart type, choose an embedded image that can be a thumbnail or an image file on your machine, or link to an image saved in the WebFOCUS repository.

4. Select the Embedded radio button. Notice that the thumbnail defined in the procedure is an embedded image. To select a different embedded image from your machine, click Browse. Navigate to the image that you want to use, click it, and then click Open.
Adding Filters to Charts and Reports

As you create charts or styled tabular content in WebFOCUS Designer, you may want to narrow the display of information that is shown. You can do this by creating filters with data fields in your content. You can also use filters as a way to create custom displays of the data that you show in your content. For example, you may only want to show revenue information for specific product categories and models in a given year.

When you add filtered content to a page, the filters automatically appear on the page, and provide interactive controls that your users can choose from to change the view of data available to them. Filtered content can also be kept stand-alone, and you can choose to enable parameter prompting, which requires a user to make a selection before the content displays. There is no limit to the number of filters that you add, however, as you add more than five filters, all filters may not fit on your screen. You can use the arrow control to scroll over to see any filters that are not visible in the Filter toolbar, as shown in the following image.

You can add filters to a chart or styled tabular content in one of the following ways:

- Drag a data field to the filter toolbar above the canvas.
- Right-click a data field, and click Add to filter toolbar.

**Note:** You can add data fields to the filter toolbar even if you do not have it displayed in your view.

You can remove filters from the filter toolbar by clicking the X in the upper-right corner of the filter, or by right-clicking the filter and then clicking Delete.
Once you have created filters, you can edit them further to customize the data values and selection options that are available for each filter control. For example, when you create a filter using a dimension and open the control on the Filter toolbar, it lists the available data values. You can then select the data values that you want a user to choose from, as shown in the following image.

By default, the list filter control does not select any data values, and gives users the option to choose any value that is available. To select data values, you click the filter control, and begin clicking the data values that you want to add, then click outside the filter control area to apply the selection.

If you select one or two values, each selected value is listed by name in the filter control. If you select three or more values, the filter control shows the number of values selected out of the total number of available values. If all values are selected, the filter control says All.

The selected values are displayed in the chart at run time by default, and users can select other values to display them.

You can also choose to exclude data values from the list. To do this, right-click the filter and select Exclude. You can then click the filter control again, and begin clicking the data values that you want to exclude from the list. Once you have selected the data values that you want to exclude, your chart refreshes.
At run time, instead of choosing which values to display in the chart, users select values to exclude from the chart.

You can also set the filter to use a single value instead of multiple values. If you right-click a filter and click *Single*, when you click the filter control again, you are only able to select a single value.

If you add a filter using a numeric field, such as a measure, (for example, Cost of Goods), you can use a slider to adjust the range of data values that display, as shown in the following image.

![Filter Slider Image](image)

Click the filter, and use the slider options on either side to modify the range of data values. You can set a range using both ends of the slider.

The filter for a numeric field is a WHERE TOTAL filter. That means that the filter is applied after aggregation for all sort values in the chart instead of filtering each row of the data source before aggregation.

If you right-click a numeric filter and select *Greater than or equal* or *Greater than*, you can select a minimum value for the filter range. The upper limit on the slider is fixed and cannot be moved. Selecting *Greater than or equal* includes the value indicated by the slider in the filter, while selecting *Greater than* excludes this value. Similarly, if you right-click a numeric filter and select *Less than or equal* or *Less than*, you can select a maximum value to display. The lower limit on the slider is fixed and cannot be moved. Selecting *Less than or equal* includes the value indicated by the slider in the filter, while selecting *Less than* excludes this value. The slider displays the greater than (>), less than (<), greater than or equal to (≥), and less than or equal to (≤) symbols to differentiate your choices.

**Note:** Selecting the full range of values in the slider includes all values in the filter. The value indicated by the slider head is not excluded in this case, even if the *Greater than* or *Less than* filter options are used.
If you add a date field, you can use the date picker window to select a start or end date, range of dates, and more, as shown in the following image. You can use a default range available in the list on the left, or select your own dates from the calendar.

If you right-click a date filter and select **After** or **Before**, you are unable to select a range using either the preset or custom range options. Instead, use the calendar to select a start or end date for the filter.

Similar to filtering a numeric field, you can use the **On or after** and **On or before** options as an alternative to **After** or **Before** to include the start or end date selected in the calendar. The **After** and **Before** options do not include the selected date.

In addition to the options specific to each type of filter, you can right-click any filter and select **Require selection** to make the filter required. When a filter is required, the chart will not load until the user makes a selection for that filter.

**Summarizing Numeric Data in Charts Using Filters**

You can use the advanced Summary and Detail filter options to filter your data by aggregated values or by individual records. This enables you to review data from a high level or a more granular view. You can use these filter options to view summary or detailed information to make decisions and review different scenarios with your data, depending on how much information you want to see. You can also add additional fields or filters to expand your analysis.
The Summary option, which is the default, allows you to select records based on the aggregated value of a field.

**Note:** As sort fields change, the information that displays in your filter refreshes, allowing you to see the most up-to-date filter information.

You can also filter using the Detail view, which shows the individual breakdown of items in each row of your chart, and enables you to select only the data that you want by excluding all unwanted data.

When you place a measure on the filter shelf, right-click it and select *Filter on* to access the Summary and Detail filter options, which are shown in the following image.
You can change measures and add dimensions to see further detail in your chart.

In addition, when working with numeric filters, you can select the type of aggregation to be used in the Summary filter. By default, a Summary filter uses the sum aggregation. You can also apply any of the standard aggregation methods including average, count, count distinct, minimum, and maximum to your Summary filter.

**Note:** Summary filters take advantage of the enhanced filtering functionality of WHERE_GROUPED, enabling more efficient handling of pre and post processing aggregations.

**Using Prefix Operator Aggregation Functions**

You can use prefix operator aggregation functions to instantly apply a number of different aggregation operations to fields, unlocking significant insight into your data without writing your own calculations.

To apply a prefix operator, right-click a field in a measure bucket in a chart or report, point to **Aggregate**, and select one of the following options:

- **None.** Does not explicitly apply a prefix operator. In a chart, or when the Summary display option is selected in a report, the Sum aggregation is used. When the Count display option is selected in a report, the Count aggregation is used. When the Detail or Detail with counter display options are are used, no aggregation is used.

- **Sum.** Adds record values together for the selected field within each sort value.

- **Average.** Calculates the average of record values for the selected field within each sort value.

- **Count.** Provides the number of record values for the selected field within each sort value. If there are no missing values in the data source, the count aggregation returns the same value for every field.

- **Count distinct.** Provides the number of distinct record values for the selected field within each sort value.

- **Percent.** Calculates a percentage for each sort value based on the summed total value for the selected field.

- **Percent of count.** Calculates a percentage for each sort value based on total record count for the selected field.

- **Minimum.** Provides the minimum value for the field within each sort value.

- **Maximum.** Provides the maximum value for the field within each sort value.
Median. Provides the median field value with each sort value.

Mode. Provides the most common value of the field within each sort value.

The operation is instantly applied to the field, indicated by a prefix in the measure bucket.

When you add an alphanumeric field to a measure bucket, the only available aggregations are Count, Count distinct, and Percent of count. These options allow you to understand the distribution of values in alphanumeric dimension fields. When you add an alphanumeric dimension field to a chart as a measure, the Count aggregation is applied automatically in order to generate aggregated values for the chart.

When creating a report, most prefix operators work best when used with the Summary or Count display options, since prefix operators provide alternative methods to aggregate or summarize your measure data. The Count display option applies the Count prefix operator by default, but other operators, including Sum, can also be applied. When using the Detail and Detail with counter display options, measure values are not aggregated. As a result, most prefix operators are applied to individual values, and may not provide meaningful results.

You can use the same field multiple times in a chart or report with different prefix operators to enhance your understanding of your data set. For example, the report in the following image shows columns for average revenue and median revenue, which helps to understand the skewness of the data.

<table>
<thead>
<tr>
<th>Product Category</th>
<th>AVE Revenue</th>
<th>MEDIAN Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories</td>
<td>$231.90</td>
<td>$169.00</td>
</tr>
<tr>
<td>Camcorder</td>
<td>$415.82</td>
<td>$299.99</td>
</tr>
<tr>
<td>Computers</td>
<td>$301.13</td>
<td>$280.00</td>
</tr>
<tr>
<td>Media Player</td>
<td>$454.12</td>
<td>$382.49</td>
</tr>
<tr>
<td>Stereo Systems</td>
<td>$345.64</td>
<td>$251.99</td>
</tr>
<tr>
<td>Televisions</td>
<td>$1,227.71</td>
<td>$799.99</td>
</tr>
<tr>
<td>Video Production</td>
<td>$376.91</td>
<td>$299.00</td>
</tr>
</tbody>
</table>

Since the average revenue values for each product category are all greater than the median revenue values, we can see that the data is skewed to the right. This means there are a higher proportion of records with lower than average revenue, and that the average revenue is brought up by some outlying high revenue values.
Similarly, you can use the Count prefix operator in combination with the binning feature to see the distribution of your data, such as in a histogram, which is a good way to view the distribution of your data. To create a histogram, create a new chart, right-click a measure field in the Field panel, point to Bin values, set a bin size and labeling option, and click OK. The bins appear as a field in the Dimensions area of the Field panel. Drag the bin field into the sort bucket of your chart, such as the Horizontal bucket in a bar chart. Next, drag the same field for which you created your bins from the Measures area of the Field panel into the bucket used to aggregate measure data in the chart, such as the Vertical bucket in a bar chart. Finally, right-click that measure field, point to Aggregate, and click Count. The result is a histogram showing the distribution of values for the selected field, as shown in the following image.

Creating Calculations

When you create a chart, you are not restricted to the fields that exist in your data source. You can add calculations to automate summations and other mathematical tasks related to your data fields. You can specify operators, fields, variables, and functions when creating a calculation. If you can generate the information you want from the existing data, you can create a temporary field to evaluate and display it. A temporary field is a field whose value is not stored in the data source, but can be calculated from the data that is there. A temporary field takes up no storage space in the data source, and is created only when needed.
You can create two types of temporary fields (a virtual field and a calculated value), which differ in how they are evaluated:

- A virtual field (DEFINE) is evaluated as each record that meets the selection criteria is retrieved from the data source. The result of the expression is treated as though it were a real field stored in the data source.

- A calculated value (COMPUTE) is evaluated after all the data that meets the selection criteria is retrieved, sorted, and summed. Therefore, the calculation is performed using the aggregated values of the fields.

In addition to creating DEFINE and COMPUTE temporary fields, you can use Quick Transforms to apply analytical functions, such as standard deviation and correlation, to measure fields in your chart. Quick Transform calculations are performed using the aggregated values of the fields to create post-aggregation (COMPUTE) fields.

**Performing Basic Calculations**

You can use the Calculator to perform basic calculations on fields in your data hierarchy. When you create a calculated field, a new, unique field is created. It incorporates all of the data fields and expressions that you added to the calculation.

Once the calculation is complete, a new data field is created which can subsequently be used in your chart. This field is placed on the Data pane, using the label of the originating field on which you created the initial calculation. For example, you can perform an addition operation on two fields. This action sums the values of the fields, displaying the total of the two when the field is used in a chart. You can also perform more advanced calculations that can result in different outcomes.

Calculated fields include DEFINEs, COMPUTE, Aggregations, and other calculated fields. You also have access to WebFOCUS functions that can be used in a calculation to perform specific operations on character and numeric fields. These display in a list of available functions. They are separated into categories, listed in alphabetical order, and are case-insensitive.

A DEFINE field is evaluated before data aggregation, while a COMPUTE field is evaluated after data aggregation. This means that DEFINE fields are especially useful to sort the data in a chart or report, while a COMPUTE field is especially useful as a measure field.

You can determine whether a calculation will be created as a DEFINE or COMPUTE by noting whether or not the Calculate after aggregation check box is selected. When selected, a COMPUTE is created. When cleared a DEFINE is created.
Access the Calculation feature in one of the following ways:

- Right-click a field in the Field panel and click *New calculation*. This creates a DEFINE with the selected field added automatically to the calculation. The calculated field is added to the Data pane.

- Right-click a measure field in a bucket and click *New calculation*. This creates a COMPUTE with the selected field automatically added to the calculation. The calculated field is added to the bucket from which you accessed the calculator.

- Click the menu in the Dimensions area or Measures area of the Data pane, and click *New calculation*. This creates a DEFINE. The calculated field is added to the Data pane.

- When creating a report, click the menu for the Rows bucket or the Summary, Count, Detail, or Detail with counter bucket, and click *New calculation*. This creates a COMPUTE. The calculated field is added to the bucket from which you accessed the calculator.

- Right-click a calculated field that you created previously and click *Edit calculation*. This allows you to modify an existing calculated field. This option is available from the Field panel for DEFINE fields, and from a bucket for COMPUTE fields.

Using the calculator, you can create basic calculations, as shown in the following image.
The numbering in this image points out the different areas of the interface, as a guide.

1. **Title bar.** Shows context information about the current calculation. For example, New Calculation or Edit Calculation, along with the field name.

2. **Close button.** Closes the Calculator. Clicking this button performs the same function as the Cancel button.

3. **List chooser.** Allows you to select which list should be displayed in the Calculator. For example, functions.

4. **Search box.** Allows you to search for components across all subjects (Fields, Functions, and Variables). The search will find matches on contiguous text and performs a case-insensitive search. A flat list of matches is returned.
   - For Fields, matches are performed on Name, Title, and Positional (folder or segment) information in the hierarchy.
   - For Functions, matches are performed on Name, Category, Parameters, and Help text.
   - For Variables, matches are performed on Name.

5. **Field/Function/Variable list.** Lists the fields, functions, or variables that are available for selection and on which you can perform a calculation.

   The following considerations apply to Field/Function/Variable lists.
   - A Field list will always present with Single-list mode. It operates the same way as the Field List tab in the Field Tree.
   - The Function list displays a categorized list of WebFOCUS functions, sorted case-insensitive in alpha order (ascending or descending). You can use the drop-down menu to select the category of the function that you want to use, or you can search for a function. Double-click or drag and drop a function into the Canvas and then supply parameter values to use it.
     - You can still use a function, even if it is not listed, by typing it into the calculator canvas. See the Using Functions technical content for a complete list of available functions, including legacy functions.
   - A Variable list displays a list of system variables in WebFOCUS. The Variable list tab operates the same way as the Variable list tab in the Field Tree.

6. **Calculated field definition area.** Displays the field name for which an expression is being created. It displays an icon (separate) to allow its format to be set with the Data Format Selector.
   - **Format icon.** You can use the Format icon to change the target field format for the calculation.
Properties icon. Enables you to change the target field properties for the calculation.

7. Operator Selection pane. This pane displays a full, contextualized list of operators that are available in calculations. It also displays mathematical and logical operators. Additional statements (IF, THEN, ELSE) are also included.

8. Canvas/typing surface. This is where you build your calculation. It shows fields, aggregations, and other items related to the calculation you are creating. It also supports functions, variables, operators, values, and placeholders.

9. Function Help. When working with Functions, you may receive help messages, such as a description of the selected function and the values that you must supply.

10. Actions. The Actions area of the Canvas contains a Calculate after aggregation check box to indicate whether the calculation is a DEFINE evaluated before aggregation or a COMPUTE to be evaluated after aggregation. You can close, cancel, or commit the calculation to be performed.

**Procedure:** How to Create a DEFINE Field Using a WebFOCUS Function

A DEFINE is a virtual field that is evaluated as each record that meets the selection criteria is retrieved from the data source. The result of the expression is treated as though it were a real field stored in the data source.

You can use a WebFOCUS function in a DEFINE or in a COMPUTE to transform data from an existing field to create a new field. Each function accepts a different set of arguments that are added in parentheses after the function name.

DEFINEs are built from the field list in the data pane.

DEFINEs can be created in the following ways:

- **In a Master File.** These virtual fields are available whenever the data source is used.

- **In a procedure.** A virtual field that is created in a procedure lasts only for that procedure.

In this example, a new DEFINE field will be created that uses the DTRUNC function to supply the first day of the week for each sale date.

1. Create a new chart or report in WebFOCUS Designer, using wf_retail_lite.mas as the data source.

   On the WebFOCUS Home Page, on the Designer tab, click **Chart** or **Report**. In the Open dialog box, navigate to and select **wf_retail_lite.mas** and click **Select**.

   WebFOCUS Designer opens.

2. On the Field panel, right-click a field or click the menu next to the Dimensions area or Measures area, and then click **New calculation**.
3. In the Calculator dialog box, click the Functions tab $\text{fx}$. The Function list appears, and displays the first available function category. 

   **Note:** If you create the new calculation by right-clicking a field, that field is automatically added to the calculator text area. For the present example, delete this text before continuing.

4. Navigate to the DTRUNC function using one of the following methods:
   - In the search box, type `DTRUNC`.
   - Expand the function category drop-down menu, and select `Date/Date-Time`.
     Double-click the `DTRUNC` function, or drag it into the Calculator text area.

   The text area displays the function and identifies the required arguments, in this case, date and period. Notice that an example is provided in the space below the calculator text area.

5. In the text area, inside the parentheses after DTRUNC, select the word `date`.

6. In this space, specify the input date that will be used to provide the first day of the week. In this case, instead of a single date, provide an entire date field, so that the DEFINE field will generate a value for each input date value.

   Click the Fields tab $\equiv$ to access the Field list. Under Dimensions, expand `Sales_Related, Transaction Date, Simple, Sale,Day, and Sale Date Details`, then double-click `Sale,Date`.

   The Sale Date field is added as the first argument in the DTRUNC function, as shown in the following image.

   ![DTRUNC function example](image)

   `DTRUNC("Sale,Date", period)`

7. Replace the word `period` with the date component that you want the field to use as increments. In this case, it is the first day of each week. Type `WEEK` as the second argument in the DTRUNC function, in place of the `period` placeholder text. The completed function should resemble the following:

   `DTRUNC("Sale,Date", WEEK)`

8. Since the output of the DTRUNC function is a date field, the DEFINE field should use a date format.

   Click the `Edit format` button, change the Date type to a date format, and select an option of your choice from the Date format drop-down menu.

   Click `OK`. 

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**Creating Calculations**

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9. Optionally, double-click the name of the DEFINE field to change it.

10. Click OK.

    If you created the DEFINE by right-clicking a field in the Field panel, it displays at the bottom of the measure or dimension group where it was created from. If you have trouble locating your calculated field, type the name into the search box to find it.

11. Add the DEFINE to your chart or report as a sort field.

    You can use the calculated field from this example to create a chart or report that shows sales information for each week, as shown in the following image.

![Image of a chart showing sales information for each week.]

**Procedure:** How to Create a COMPUTE Field

COMPUTE fields are calculated fields whose values are evaluated after all of the data that meets the selection criteria is retrieved, sorted, and summed. The calculation uses the aggregated (total) values of the fields. For example, based on the values of Revenue and MSRP fields in your data source, you could calculate the discount percentage.
COMPUTE fields in a chart are built from fields that are located in the buckets. You can create a COMPUTE field in a report from a field in the report, or by clicking the menu next to the Rows bucket or the measure bucket.

1. Create a new chart or report in WebFOCUS Designer, using wf_retail_lite.mas as the data source.

   On the WebFOCUS Home Page, on the Designer tab, click Chart or Report. In the Open dialog box, navigate to and select wf_retail_lite.mas and click Select.

   WebFOCUS Designer opens.

2. On the Field panel, in the Measures area, expand the Sales folder, and double-click the Revenue field to add it to a measure bucket.

3. From the measure bucket, right-click the Revenue field and click New calculation.

4. In the Calculator dialog box, build the COMPUTE.

   **Note:** The field that you right-click to create the COMPUTE field is automatically added to the text area, as shown in the following image.

   ![New Calculation REVENUE_US_1](image)

   You can select another field or add fields from the data source tree that display.

   **Note:** For COMPUTEs, the Calculate after aggregation check box is selected, by default, indicating that the field values are evaluated after the chart or report has been sorted. This check box is enabled for COMPUTE fields only.
5. Type the mathematical expression to create a COMPUTE field to evaluate the discount percentage using the Revenue and MSRP fields:
   a. Click to place your cursor before the Revenue field in the text area, and type 1 - (.
   b. Click to place your cursor after the Revenue field, and type /.
   c. From the data tree, under Measure Groups, expand the Sales folder and double-click the MSRP field to add it to the expression.
   d. Type ) to close the expression The completed expression for the COMPUTE field should resemble the following:

   \[ 1 - \left( \frac{\text{Revenue}}{\text{MSRP}} \right) \]

   The following image shows this expression in the Calculator.

   ![](CalculatorExpression.png)

   **Note:** You can use the buttons in the Operator Selection area instead of typing some mathematical operators.

6. To show the discount percentage as percentage values instead of as a decimal, change the format of the calculation.
Click the Format icon to open the Format dialog box. Click the Percent Type option to change the field format to a percentage, as shown in the following image.

The percentage option automatically multiplies the values in the field by 100 to produce a percentage, so we do not need to perform this operation in the COMPUTE expression.

7. Click OK to accept the field format change.

8. Optionally, change the name of the COMPUTE field. It is assigned a default name based on where the COMPUTE field was created from. Unless you specify a different column title, this name appears in the bucket where the COMPUTE is used and in your content.

   Double-click the field name next to the Format icon, and type a new name for the field.

9. Optionally, change the column title that displays for the COMPUTE field when it appears in your content.
Click the **Field Properties** menu, and type a column title for the field, as shown in the following image.

10. Click **OK** to accept the new column title for the COMPUTE.

11. Click **OK** to finish creating the new COMPUTE field.

The field is added to the same bucket from which you created it. You can move it to a different bucket or delete the original field, Revenue, in this example, from which it was created.
The following image shows a data grid that displays the Revenue and the calculated Discount Percentage for different product models.

<table>
<thead>
<tr>
<th>Model</th>
<th>Revenue</th>
<th>Discount Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2100</td>
<td>$4,434,062.45</td>
<td>4.56%</td>
</tr>
<tr>
<td>4200</td>
<td>$1,957,114.64</td>
<td>4.75%</td>
</tr>
<tr>
<td>Audio Technica ATHW5000</td>
<td>$9,341,397.65</td>
<td>4.50%</td>
</tr>
<tr>
<td>AudioVox D1788PN</td>
<td>$148,343.05</td>
<td>4.21%</td>
</tr>
<tr>
<td>Audiovox VE727</td>
<td>$274,014.46</td>
<td>3.91%</td>
</tr>
<tr>
<td>B00D7MOHDO</td>
<td>$2,514,622.50</td>
<td>4.49%</td>
</tr>
<tr>
<td>BCG34HRE4KN</td>
<td>$1,508,212.41</td>
<td>4.39%</td>
</tr>
<tr>
<td>BOSE AM101IV</td>
<td>$15,009,325.65</td>
<td>4.50%</td>
</tr>
<tr>
<td>BOSE AM16II</td>
<td>$9,749,839.35</td>
<td>4.41%</td>
</tr>
<tr>
<td>BOSE V-S2</td>
<td>$14,194,157.90</td>
<td>4.47%</td>
</tr>
<tr>
<td>BOSE V-S2-P</td>
<td>$10,898,704.95</td>
<td>4.38%</td>
</tr>
<tr>
<td>C6506B</td>
<td>$8,159,907.03</td>
<td>4.41%</td>
</tr>
<tr>
<td>C6506S</td>
<td>$8,072,776.93</td>
<td>4.45%</td>
</tr>
<tr>
<td>C6506W</td>
<td>$8,095,460.35</td>
<td>4.47%</td>
</tr>
<tr>
<td>Canon FS300</td>
<td>$14,280,110.10</td>
<td>4.50%</td>
</tr>
<tr>
<td>Canon HFR11</td>
<td>$9,462,118.35</td>
<td>4.39%</td>
</tr>
<tr>
<td>Canon XHA1S</td>
<td>$10,676,938.80</td>
<td>4.52%</td>
</tr>
<tr>
<td>DC390/37</td>
<td>$6,091,014.89</td>
<td>4.45%</td>
</tr>
</tbody>
</table>

If you remove the COMPUTE field from your content, it is deleted permanently. COMPUTE fields are not stored in the Field panel.
**Procedure:**  How to Edit an Existing Calculation

Once you have created a calculated field (DEFINE or COMPUTE), you can edit it. This allows you to revise the calculation and in the field so that you can achieve the results you expect.

1. Create a new chart using WebFOCUS Designer or open an existing WebFOCUS Designer chart.
2. If you created a DEFINE field, the calculated field was added to the Field panel. In the Field panel, right-click the calculated field and click *Edit calculation*.
   If you created a COMPUTE field, the calculated field was added directly to a bucket in the chart or report. Right-click the calculated field in a bucket, and click *Edit calculation*.
3. Modify the calculated field.
4. Click OK.

   The revised field displays in the location from which you edited it.

**Using Quick Transforms to Apply Analytical Functions to Data Fields**

With Quick Transforms, you can easily apply the most commonly used analytical functions to measure fields in your chart. This allows you to quickly specify a function for a field as you create your chart, expanding your options for incorporating aggregated data.

Quick Transforms are robust and support a variety of functions. Quick Transforms create post-aggregation (COMPUTE) virtual fields. A calculated value (COMPUTE) is evaluated after all of the data that meets the selection criteria is retrieved, sorted, and summed. This means that the calculation is performed using the aggregated values of the fields.

For example, you can perform a rolling or moving aggregation or standard deviation (both COMPUTE) on a measure field. This makes it easy to perform the calculations you need to understand the distribution and patterns in your data with just a few clicks. To access these options, right-click a measure field in your chart or report, point to *Quick transform*, and then point to one of the quick transform options. Each quick transform allows you to configure how the calculation is performed.

You can do this from the shortcut menu for a measure field added to a non-sorting bucket in a chart or report, such as the Vertical bucket in a bar chart. Placing a measure in the Horizontal bucket, which is used to sort a bar chart, creates entries for each underlying value. In this case, you do not have access to the Quick transform option.
Other examples include the use of the correlation function, which calculates the correlation between two numeric fields. This is often used to display how strongly two variables are related to each other. In addition, the cluster (KMEANS) function partitions observations into a specified number of clusters based on the nearest mean value. The goal of cluster analysis is to group, or cluster, observations into subsets based on their similarity of responses on multiple variables.

Performing a basic aggregation with a Quick transform allows you to convert a field value from its raw state into a calculated field. With the Discount field, you can create a rolling Sum that shows the sum of the field as it exists in the chart. The Quick transform option is shown in the following image.

Note: You can perform multiple Quick Transforms using the same originating field.
Here, you can specify the type of aggregation (for example, Sum, Average, Count, or otherwise) and indicate whether you want to keep the original field. The Keep original field option is selected, by default, and serves the purpose of preserving the original field for other use in your chart. You can also choose to replace the field in favor of the transformed field, by deselecting this check box.

When you perform a Quick Transform on a field, a new, unique field is created and placed in the same bucket as the originating field, as shown in the following image.
The transformed field is now a COMPUTE, which is a post-aggregation function. It is a separate field, labeled with the aggregation that was applied. You can move the transformed field into a different measure bucket to make it easier to analyze your data. For example, the following image shows a scatter chart with Model values plotted based on Quantity Sold and MSRP values. The Cluster quick transform was performed on the MSRP field using the Average aggregation, creating four groups of models with similar average MSRP values. The cluster field has been moved into the Color bucket, making it easy to identify which cluster each model falls into.

**Procedure:** How to Apply a Rolling Aggregation to a Report Using Quick Transforms

A rolling aggregate, or cumulative moving aggregate, is a cumulative aggregation of values. The aggregation is recalculated for each data record, allowing you to see totaled or recomputed values at various points in a chart or report.

You can add a rolling sum to a report that is sorted by year, quarter, and month values, allowing you to see the total sales data for different points in time. You can also break the rolling sum on a lower level sort field, allowing you to view a separate rolling sum for different categories.

   
   On the WebFOCUS Home Page, click the Designer tab on the Action bar, then click Report.

   **Note:** Reports are available in WebFOCUS Designer as a Technical Preview. Contact an Information Builders representative for more information.
The Open dialog box opens, where you can select a data source.

2. Select `wf_retail_lite.mas` and then click Select.

WebFOCUS Designer opens in report mode.

3. In the Fields panel, in the Dimensions section, expand `Sales_Related` and `Transaction Date, Simple`, and double-click `Sale, Year`, `Sale, Quarter`, and `Sale, Month`, in order, to add them to the report in the Rows bucket.

4. In the Fields panel, in the Measures section, expand `Sales` and double-click `Revenue` to add it to the Summary bucket.

The report now shows Revenue by Sale Year, Sale Quarter, and Sale Month.

5. To see how the total revenue increased over time, add a rolling sum quick transform on the Revenue field.
   a. In the Summary bucket, right-click the `Revenue` field, point to Quick transform, and then to Rolling aggregate.
   b. Leave the selected Aggregation option as Sum.
      You can select a different aggregation option to recalculate that aggregation at each row of the report.
   c. Leave the Break on option set to None. The rolling sum will continue accruing throughout the entire report, without resetting.
   d. Leave the Keep original field check box selected, so that you will still be able to see the Revenue values for each month.
   e. Click OK.
The quick transform field, called Revenue rolling sum, by default, is added to the report. It displays the total revenue that has been accrued up to each month, as shown in the following image.

<table>
<thead>
<tr>
<th>Sale Year</th>
<th>Sale Quarter</th>
<th>Sale Month</th>
<th>Revenue</th>
<th>Revenue rolling sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>1</td>
<td>1</td>
<td>$3,874,651.96</td>
<td>$3,874,651.96</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>$3,592,608.63</td>
<td>$7,467,260.59</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>$3,977,546.75</td>
<td>$11,444,807.34</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>1</td>
<td>$3,648,111.77</td>
<td>$15,092,919.11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5</td>
<td>$3,704,586.77</td>
<td>$18,797,505.88</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td>$3,694,435.21</td>
<td>$22,491,941.09</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>1</td>
<td>$4,020,855.35</td>
<td>$26,512,796.44</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
<td>$4,126,310.80</td>
<td>$30,639,107.24</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9</td>
<td>$3,688,054.34</td>
<td>$34,327,161.58</td>
</tr>
<tr>
<td>4</td>
<td>10</td>
<td>1</td>
<td>$4,794,720.40</td>
<td>$39,121,881.98</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11</td>
<td>$4,574,636.32</td>
<td>$43,696,518.30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12</td>
<td>$5,268,550.91</td>
<td>$48,965,069.21</td>
</tr>
<tr>
<td>2015</td>
<td>1</td>
<td>1</td>
<td>$4,857,824.42</td>
<td>$53,822,893.63</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>$4,595,194.63</td>
<td>$58,418,088.26</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>$4,923,408.26</td>
<td>$63,341,496.52</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>1</td>
<td>$4,422,610.34</td>
<td>$67,764,106.86</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5</td>
<td>$4,586,992.98</td>
<td>$72,351,099.84</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td>$4,856,111.47</td>
<td>$77,207,211.31</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>1</td>
<td>$5,075,337.19</td>
<td>$82,282,548.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
<td>$5,133,075.08</td>
<td>$87,415,623.58</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9</td>
<td>$5,031,634.54</td>
<td>$92,447,258.12</td>
</tr>
<tr>
<td>4</td>
<td>10</td>
<td>1</td>
<td>$5,826,745.45</td>
<td>$98,274,003.57</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11</td>
<td>$5,788,867.16</td>
<td>$104,062,870.73</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12</td>
<td>$6,043,161.45</td>
<td>$110,106,032.18</td>
</tr>
</tbody>
</table>

6. Add a new rolling sum quick transform field that breaks on the Sale Year field, thereby showing the accrued revenue at different points within each year.
   a. In the Summary bucket, right-click the Revenue field, point to Quick transform, and then to Rolling aggregate.
   b. Open the Break on drop-down menu and select Sale,Year.
   c. Click OK.
A new quick transform field, called Revenue rolling sum Sale Year, by default, is added to the report. Notice that the values continue increasing until the end of each year, at which point they reset and start accruing again, as shown in the following image.

<table>
<thead>
<tr>
<th>Sale Year</th>
<th>Sale Quarter</th>
<th>Sale Month</th>
<th>Revenue</th>
<th>Revenue rolling sum</th>
<th>Revenue rolling sum Sale Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>1</td>
<td>1</td>
<td>$3,874,651.96</td>
<td>$3,874,651.96</td>
<td>$3,874,651.96</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>$3,592,608.63</td>
<td>$7,467,260.59</td>
<td>$7,467,260.59</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>$3,977,546.75</td>
<td>$11,444,007.34</td>
<td>$11,444,007.34</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>1</td>
<td>$3,648,111.77</td>
<td>$15,092,919.11</td>
<td>$15,092,919.11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>$3,704,568.77</td>
<td>$18,707,505.88</td>
<td>$18,707,505.88</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>$3,694,435.21</td>
<td>$22,491,941.09</td>
<td>$22,491,941.09</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>1</td>
<td>$4,020,855.35</td>
<td>$26,512,796.44</td>
<td>$26,512,796.44</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>$4,126,310.80</td>
<td>$30,639,107.24</td>
<td>$30,639,107.24</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>$3,638,054.34</td>
<td>$34,327,161.58</td>
<td>$34,327,161.58</td>
</tr>
<tr>
<td>4</td>
<td>10</td>
<td>1</td>
<td>$4,794,720.40</td>
<td>$39,121,881.98</td>
<td>$39,121,881.98</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
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<td>1</td>
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<tr>
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<td></td>
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<tr>
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<td></td>
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<td>$82,282,548.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>$5,133,076.08</td>
<td>$87,415,623.58</td>
<td>$87,415,623.58</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>$5,031,634.54</td>
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<td>$92,447,256.12</td>
</tr>
<tr>
<td>4</td>
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<td>$98,274,003.57</td>
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<tr>
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<td></td>
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<td>$110,105,032.18</td>
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<td>2016</td>
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<td>1</td>
<td>$7,528,276.32</td>
<td>$117,634,308.50</td>
<td>$117,634,308.50</td>
</tr>
</tbody>
</table>

Using this report, you can see when certain revenue goals and thresholds were met.

**Procedure:** How to Apply a Moving Average to a Chart Using Quick Transforms

You can use a rolling or moving average to smooth out the data in your chart or report, making it easier to identify trends and patterns.
While, a rolling aggregate is a cumulative aggregation of all of the values in a chart or report, a moving aggregate is a cumulative aggregation that is performed on a limited selection of the most recent values. As the moving aggregate proceeds through the sequence of values in your chart or report, earlier values are gradually discarded from the calculation as they fall outside the scope of the moving aggregation. A moving average, therefore, is an average that is recalculated at each value for that value and a specified number of prior values.

To create a moving average based on a measure field in your content:

1. Create a new chart using WebFOCUS Designer.
   - On the WebFOCUS Home Page, click the Common tab or the Designer tab on the Action bar, then click Chart.
   - The Open dialog box opens, where you can select a data source.

2. Select wf_retail_lite.mas and then click Select.
   - WebFOCUS Designer opens in chart mode.

3. Use the display options or the Chart picker to change the chart type to a vertical side-by-side bar chart.
   - The moving average will be added to the chart as a second measure, and since we want to compare it directly to the non-transformed field, the bars should be aligned side-by-side instead of stacked.

4. In the Fields panel, in the Dimensions section, expand Sales_Related and Transaction Date, Components, and double-click Sale,Year/Quarter to add the Sale Year/Quarter field to the chart in the Horizontal bucket.

5. In the Fields panel, in the Measures section, expand Sales and then double-click Revenue to add the Revenue field to the Vertical bucket.
The result is a bar chart showing revenue for each quarter of each year, as shown in the following image.
6. Right-click the measure field in the Vertical bucket, in this case, Revenue, and point to 
*Quick transform*, as shown in the following image.

7. To add a moving average to the chart, point to *Moving aggregate* and:
   a. From the Aggregation menu, select *Average*. You can alternatively create a rolling sum, 
      rolling count, and more.
   b. Since there is only one sort field in the chart, the Break on option is not available.
      If we had added a second field to the Horizontal bucket, you would be able to select a 
      field on which to break the moving average.
The default selection is None. When None is selected, the moving aggregation continues for every value, and never resets. If you have multiple sort fields in the chart, and you select a field to break on, the aggregation starts over for each new value of that field. You cannot break on the lowest sort field or the only sort field, since this would cause the rolling aggregation to reset on each value.

c. Set the Look back value to 8. The Look back value determines the number of past values to include when evaluating the moving aggregation. In this case, we will use the last two years of data to calculate the moving average.

Use a higher Look back value to make a smoother moving average. Using a lower value results in a less smooth moving average, but makes the moving average more responsive to changes to the data.

d. Leave the Keep original field check box selected. This check box controls if the original field on which you are basing the quick transform is retained in the bucket. This check box is selected, by default.

If you leave it checked, both the original field and the new calculated field will share the bucket from which the quick transform was created, if possible. If you do not want to keep the original field, you can replace the field with the quick transform field by deselected the box. Single-field buckets, such as Size or Color, always replace the original field, and do not provide this option.

8. Click OK.

The field is placed in the measure bucket and displays in your content, by default. The legend is also updated to reflect this new field, as shown in the following image.
Notice that since we used a fairly high Look back value of 8, the moving average bars have a smooth growth that allows us easily identify a general pattern in the data, but do not increase quite as quickly as the actual revenue values.

9. Optionally, you can change the moving average fields to display as a line instead of bars, more clearly differentiating the moving average from the actual revenue values.

In the Vertical bucket, right-click the moving average field, point to Shape, and click Line.

The moving average now displays as a line, as shown in the following image.

Note: For information on the PARTITION_AGGR functions, see the Developing Reporting Applications manual.

Creating Numeric Ranges With Binning

In WebFOCUS Designer, bins are used to group values by the increment you specify. This allows you to view large amounts of data across measures or calculated measures, enabling you to analyze trends and identify outliers. Data binning also allows you view your data as part of a larger group, displaying ranges of that data in manageable, visible bins.
For example, you might want to analyze Cost of Goods Sold against Discount to understand how discounts impact the cost of goods. First, you add the Discount measure to the Vertical field container. These values will be used as a guide for the comparative, grouped content in the bin. If you apply a bin width value of 250 to the Cost of Goods measure, your data values will be grouped into ranges of 250 (for example, 0 - 250, 250 - 500, 500 - 750). Finally, you add the new dimension (which is automatically generated by the bin process) to your chart. Your chart now displays the binned values against the Discount measure, as shown in the following image.

As you can see in this example, there is a direct correlation between Cost of Goods and Discount, with the smaller values (0 - 250) falling into the larger Discount ranges. From this example, it is evident that the smaller ranges of values for Cost of Goods apply to the larger Discount values. In this case, binning has allowed you to plot the frequency distribution of values in your data.

Bins are created on a numeric measure field (for example, Gross Profit), as shown in the following image.
Examples of numerical measure fields include Gross Profit or Discount. Once you create a bin, a new dimension field is automatically created, allowing you to plot values based on your bin specifications.

You can create or edit bins using the same options. Right-click a field that is not already binned, and click Bin values, or right-click a binned field and click Edit bin values. This opens a shortcut menu with the following options:

- **Bin width.** A standard text box that accepts any number greater than 0.
- **Show as.** Identifies the bin label type.
  - **Value.** Displays the alphanumeric representation of the numeric value containing the minimum value (FLOOR) of each bin. The format should be set to the data format of the source field.
  - **Range.** Displays the alphanumeric string representing the minimum and maximum range for each bin. The format should be set to the data format of the source field.
- **OK.** Creates a new dimension field based on the bin options that you selected. This dimension field is automatically added under your dimensions in the Fields tab.
- **Cancel.** Closes the shortcut menu and cancels the changes.
The following image displays bin values and bin ranges for the DEALER_COST field, using a bin width of 1000. It also shows how the data falls into the value and range properties.

You can also right-click an existing bin field that uses the Value option and click Create bins to create bins on that bin field. For example, you can use this capability to display a set of bins with a smaller bin width within a set of larger bins, allowing you to see a more granular breakdown of each one.
**Note:** Bin fields that display ranges, using the Show as Range option, use a character field format, while bin fields that display floor values, using the Show as Value option, use a numeric field format. As a result, when displaying ranges, bins with negative numbers display after bins with positive values. This is due to the sort sequence used for character fields. On the other hand, when displaying floor values, bins are sorted into numeric order, so negative value bins display before bins with positive values. Therefore, if the measure field that you are binning includes negative values, it is recommended to select **Value** as the Show as option.

**Editing an Existing Bin**

Once you have created a bin, you can edit it. This gives you the flexibility of changing the size of the bin or other related parameters.

You can edit an existing bin from the Data panel or if you have placed the bin in a bucket, by right-clicking the bin and selecting **Edit bin values**. The following image shows an example of how you edit a bin that was placed in a bucket.

![Editing an Existing Bin](image)

**Note:** Changes to the bin values appear in real time.

**Procedure:** How to Create Bins

1. From the WebFOCUS Home Page, click the **Designer** tab, and then click **Chart**.
2. As WebFOCUS Designer opens, choose a data source, and then click **Select**.
3. On the Fields tab, under Measures, select a numeric measure field and place it in the Vertical field container. You can also double-click the field, or right-click it and select **Add to chart**.
4. On the Fields tab, under Measures, right-click another numeric measure field and select **Bin values**.
5. Specify a numeric value in the Bin width field. For example, using the numeric value 100 creates bins that group values of 100 together.
6. Click **OK** to generate the bins for this numeric measure field.

   **Note:** The binned measure is added as a new dimension field that you can use in your chart.

7. From the list of dimension fields, locate the field that is suffixed by _US_BIN_1 (for example, DISCOUNT_US_BIN_1).

   **Note:** The binned field is placed under Dimensions on the Fields tab. If you are viewing these fields using the Folder view, it will be available under a folder with the same name used under Measures. You can also use the search feature to locate the new dimension field if needed.

8. Add this new dimension field to the Horizontal field container.

   The bins display in your chart, showing values in the range that you specified.

### Enabling Hierarchical Drilling in WebFOCUS Designer With Auto Drill

Auto Drill enables you to navigate through different levels within the dimension hierarchy of your data source. This allows you to review underlying data for a particular area, and move through the structure of your data source based on your informational needs.

To enable Auto Drill, on the WebFOCUS Designer toolbar, click **More**, and then click **AutoDrill**. Auto Drill is not available if your chart or report does not contain fields that are part of a hierarchy.

Once you have enabled Auto Drill, you can develop your report or chart and run it to activate the hyperlinks that Auto Drill creates. This enables you to navigate up or down through the related hierarchy of your data source by clicking the links that display.
In a chart, Auto Drill links are available from the tooltip that appears when you point to a section of a chart, as shown in the following image.
In a report, Auto Drill links are available when you click a data value hyperlink. The values are styled as hyperlinks to indicate that you can drill into them, as shown in the following image.

When you click a hyperlink, the option to drill up or drill down displays, depending on where you are in the hierarchy of your data. You can then select one of these options to begin navigating your data. For example, if you have Product,Category in your hierarchy, you would be able to drill down to Product,Subcategory. When you drill down, you can subsequently drill back up to the originating dimension sort field. If you have selected a data source that has multiple levels and your report or chart uses a component in the middle of the hierarchy, both the Drill up and Drill down options will display. Once you have started navigating your data using the Drill up and Drill down options, the Restore Original option displays, enabling you to start your data analysis over by re-executing the original Auto Drill request.

The drill up and drill down options are shown in the following image.
At run-time, the Auto Drill functionality displays a breadcrumb header. This defines your current location in the hierarchy of your data source and enables you to navigate back and forth between different levels in your data.

**Note:**

- The Auto Drill functionality is only available for data sources that have a dimension hierarchy. Dimension hierarchies are a capability of Business View Plus, and also of legacy Dimension View and Real Cube metadata.

- If you have Auto Drill enabled and you attempt to run your chart in deferred mode, the hyperlinks will not display. This is also true for Auto Drill enabled reports that are distributed through ReportCaster.

- Auto Drill is not supported for all HTML output format charts, or for HTML5 output format charts that do not support the new chart attributes syntax.
You must use dimension fields as a sorting field, either BY or ACROSS.

If you are creating a chart that has multiple dimension sort fields in the request and some of these belong to the same dimension hierarchy, you may encounter multiple links with the same label in the drill menu.

Auto Drill functionality is not available in reports distributed by ReportCaster, because Auto Drill uses live data, in an interactive session, for data drilling. Data values and totals may not be the same if the data has changed since the last distribution. Mixing past data with current data could impact data analysis.

When Auto Drill is enabled, Accessibility is disabled. When Accessibility is enabled, Auto Drill is disabled. In Chart mode, Accessibility is disabled, by default.

Auto Drill is not supported with Save Parameters reports.

**Procedure:** How to Use Auto Drill to Navigate the Hierarchy of Your Data Source

1. Select a data source that has a dimension hierarchy. For example, `wf_retail_lite.mas`.
2. Create a chart with one or more hierarchical fields (for example, Product, Category), as shown in the following image.
3. On the WebFOCUS Designer toolbar, click More and then click AutoDrill, as shown in the following image.

4. Click Preview.
   The chart displays.

5. Hover over a chart aspect (for example, a bar).
   A menu appears, as shown in the following image.
6. Select a hierarchical value to which to drill down to. Once you have drilled down on a field, you can subsequently drill up.

7. To return to the default state of the report or chart, click a hyperlink or hover over a chart aspect, and then click *Restore Original*, as shown in the following image.

**Procedure:** How to Use Auto Drill in a Report to Navigate the Hierarchy of Your Data Source

1. Select a data source that has a dimension hierarchy. For example, *wf_retail_lite.mas*.
2. Create a report with one or more hierarchical fields (for example, Product, Category or Sale, Year), as shown in the following image.

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Sale Year</th>
<th>Quantity Sold</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories</td>
<td>2014</td>
<td>20,152</td>
<td>$5,039,297.57</td>
</tr>
<tr>
<td></td>
<td>2015</td>
<td>31,396</td>
<td>$7,860,068.93</td>
</tr>
<tr>
<td></td>
<td>2016</td>
<td>46,735</td>
<td>$11,820,675.96</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>63,836</td>
<td>$16,060,415.69</td>
</tr>
<tr>
<td></td>
<td>2018</td>
<td>139,977</td>
<td>$35,619,872.81</td>
</tr>
<tr>
<td></td>
<td>2019</td>
<td>209,571</td>
<td>$53,208,007.57</td>
</tr>
<tr>
<td>Camcorder</td>
<td>2014</td>
<td>17,722</td>
<td>$5,878,431.53</td>
</tr>
<tr>
<td></td>
<td>2015</td>
<td>28,485</td>
<td>$9,673,248.16</td>
</tr>
<tr>
<td></td>
<td>2016</td>
<td>41,250</td>
<td>$13,971,708.11</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>56,782</td>
<td>$19,438,607.89</td>
</tr>
<tr>
<td></td>
<td>2018</td>
<td>123,972</td>
<td>$42,396,539.60</td>
</tr>
<tr>
<td></td>
<td>2019</td>
<td>187,033</td>
<td>$63,107,166.95</td>
</tr>
<tr>
<td>Computers</td>
<td>2014</td>
<td>6,730</td>
<td>$1,441,835.19</td>
</tr>
<tr>
<td></td>
<td>2015</td>
<td>12,239</td>
<td>$2,479,491.58</td>
</tr>
<tr>
<td></td>
<td>2016</td>
<td>19,820</td>
<td>$4,170,749.59</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>34,626</td>
<td>$7,857,928.55</td>
</tr>
<tr>
<td></td>
<td>2018</td>
<td>89,626</td>
<td>$24,176,475.33</td>
</tr>
<tr>
<td></td>
<td>2019</td>
<td>188,736</td>
<td>$63,190,001.88</td>
</tr>
</tbody>
</table>
3. On the WebFOCUS Designer toolbar, click More and then click AutoDrill as shown in the following image.

4. Click Preview.

The report displays. Notice that the values of fields that are part of data hierarchies are styled as hyperlinks.

5. Click a value in the report.
A menu appears, as shown in the following image.

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Sale Year</th>
<th>Quantity Sold</th>
<th>Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessories</td>
<td>2014</td>
<td>91,399</td>
<td>$7,000,008.93</td>
</tr>
<tr>
<td></td>
<td>2015</td>
<td>39,735</td>
<td>$11,820,075.96</td>
</tr>
<tr>
<td></td>
<td>2016</td>
<td>80,856</td>
<td>$10,060,415.09</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>93,977</td>
<td>$35,619,872.81</td>
</tr>
<tr>
<td></td>
<td>2018</td>
<td>190,571</td>
<td>$53,208,007.57</td>
</tr>
<tr>
<td>Camcorder</td>
<td>2014</td>
<td>17,722</td>
<td>$5,878,431.53</td>
</tr>
<tr>
<td></td>
<td>2015</td>
<td>28,485</td>
<td>$9,673,248.16</td>
</tr>
<tr>
<td></td>
<td>2016</td>
<td>41,250</td>
<td>$13,971,708.11</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>56,782</td>
<td>$19,438,607.89</td>
</tr>
<tr>
<td></td>
<td>2018</td>
<td>123,972</td>
<td>$42,396,539.00</td>
</tr>
<tr>
<td></td>
<td>2019</td>
<td>187,033</td>
<td>$63,107,166.95</td>
</tr>
<tr>
<td>Computers</td>
<td>2014</td>
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<td>2015</td>
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<td>$2,479,491.58</td>
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<tr>
<td></td>
<td>2016</td>
<td>19,820</td>
<td>$4,170,749.59</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>34,626</td>
<td>$7,857,928.55</td>
</tr>
<tr>
<td></td>
<td>2018</td>
<td>89,626</td>
<td>$24,176,475.33</td>
</tr>
<tr>
<td></td>
<td>2019</td>
<td>188,736</td>
<td>$63,190,001.88</td>
</tr>
</tbody>
</table>

6. **Click the drill down option in the menu.**

   Once you have drilled down on a field, you can subsequently drill up using the breadcrumbs or by clicking a drill-down link and selecting the option to drill up.
7. To return to the default state of the chart, click a hyperlink and then click *Restore Original*, as shown in the following image. Alternatively, click *Home* in the breadcrumb trail.

![Chart with hyperlinks](image)

---

**Enabling Automatic Content Linking in WebFOCUS Designer With Auto Linking**

Auto Linking makes it easy to connect reports and charts in your development environment, expanding the reporting capabilities of your organization. Using Auto Linking, you can dynamically link HTML5 charts with a single report or chart of any format, based on their common sort (BY) fields and parameters referenced in any filters. It is this commonality that dynamically links content in your WebFOCUS repository, allowing you to discover new possibilities in your data, and explore new relationships within your reporting enterprise. In addition, Auto Linking saves development time and effort, because drilldowns do not need to be manually created and maintained.
To use Auto Linking, you must use the AutoLink option in WebFOCUS Designer to set the reports or charts that can be autolinked. In addition, you must also set reports or charts to be Auto Link targets. The options to enable and disable Auto Linking and Auto Link target functionality are available on the More menu, located on the Designer toolbar in WebFOCUS Designer.

**Note:** You can open an existing chart and enable Auto Linking or set the item as an Auto Link target.

When Auto Link functionality is activated, your charts display a link for each sort (BY) field with qualifying target reports or charts at run time. In Auto Link enabled charts, you can add sort (BY) fields to the Vertical Axis, Horizontal Axis, or Color field containers.

To qualify a chart as an Auto Link target, you must include filters that contain the parameters that you selected as the sort field or fields in the enabled chart. The parameter names defined in these filters must be the same as the sort (BY) field names in the Auto Link enabled chart. When you select a chart as the Auto Link target, it specifies that the parameter information should be catalogued, and will be evaluated when an Auto Link enabled chart is run.

For an Auto Link enabled chart at run time, the target reports and charts are those that have filters with parameters for all sort fields. For run time for charts, the linked sort field values in the Auto Link enabled chart are passed to the Auto Link target report or chart so that it can be filtered by the sort (BY) field values.

For example, you may have an Auto Link enabled chart that contains sort (BY) fields, Product Category and Model, with a measure (Sum) field, Revenue. To qualify as an Auto Link target, other charts in your repository can contain a single filter with a parameter for Product Category, or two filters with parameters for both Product Category and Model. When you run the Auto Link enabled chart, the Product Category field will link to target reports or charts that have a filter with a parameter for Product Category, and the Model field will link to target reports or charts that have filters for both Product Category and Model.

You can access the target reports or charts from a tooltip option that displays when you point your mouse over an area of the chart, such as a bar that represents Revenue by Product Category and by Model.
Using Optional Parameters With Auto Linking to Enhance Drill-Down Results

In addition to the basic Auto Linking functionality that is available in WebFOCUS Designer, you can also add optional parameters to your Auto Link charts, extending the capability of this feature. An Auto Link enabled chart can link to any target content that you are authorized to access that satisfies the sort (BY) field to the Auto Link target report filter parameter requirement. Auto Link target reports that satisfy this requirement and also have optional filter parameters for other fields are included in the Auto Link target report evaluation, so that all possible combinations of run-time parameters are evaluated and available as links as you run the request. This may produce additional reports or charts in your list of available Auto Link targets, offering you access to an expanded network of related content.

Setting a parameter to optional is not required because the Auto Link enabled chart will pass the value for the fields being filtered to the Auto Link target report or chart. When a sort (BY) field value in an Auto Link enabled chart is selected, that value and the value of its parent sort fields are passed to the Auto Link target. When a measure value in a chart is selected, all sort (BY) field values for that measure are passed to the Auto Link target. If you select the Optional option, the Auto Link target report or chart can run on its own (from the Resources Tree or within InfoAssist) without being prompted by Autoprompt for a value for the parameter. This is because optional parameters are assigned a default value.

With Auto Linking, you can link as many reports and charts as you want, and Auto Link enabled charts can also be an Auto Link target which contributes to the development of a cascading linkage of charts.

**Note:**

- The linked reports and charts displayed are limited to those that you are authorized to run or run deferred.
- The Auto Link enabled and Auto Link target options can be set individually, or both can be set on the same chart if that item meets the Auto Linking requirements.
- Consideration should be given to how many reports or charts are indicated as Auto Link targets, as the run-time Multi-drill menu for the qualifying target reports or charts may become long in length. In these cases, some browsers may display a script processing warning message.
- Auto Linking utilizes the Multi-drill feature with cascading menus, except when running an HTML report with On-demand Paging enabled or a chart request that is a legacy graph format (PFJ-based formats, such as PNG and non-bucket HTML5), which will display a single-level list in the order the drilldowns are specified in the request.
The Multi-drill cascading menu displays:

- Horizontal lines to separate user-specified drilldowns and Auto Link navigation options.
- Auto Link target reports in a single-level list that is sorted alphabetically, first by folder, and then the Auto Link target reports and charts within the folder. This may differ from the sort order of the resource tree that also applies the Properties Sort order option when sorting folders and items within folders.

When drilling down through a list of Auto Link target reports and charts, a previously selected Auto Link target report or chart will be excluded so that the available Auto Link targets are reports and charts that you have not yet viewed.

**Procedure:** How to Set an Existing Report or Chart as Auto Link Enabled

1. On the WebFOCUS Home Page, click the Designer tab, and open the folder that contains the chart you want to work with.

   WebFOCUS Designer opens in the relevant mode.

2. In the content area, right-click the chart that you want to set as Auto Link enabled, and then click Edit.

3. Verify that there is a sort (BY) field in the report or chart.

   For charts, sort fields are added to the Vertical, Horizontal, or Color field containers.

4. On the Designer toolbar, click More, and then click AutoLink.

5. Save the report or chart.

   Your existing chart is now Auto Link enabled.

**Procedure:** How to Set an Existing Chart as an Auto Link Target

1. On the WebFOCUS Home Page, click the Designer tab, and open the folder that contains the chart you want to work with.

   WebFOCUS Designer opens in the relevant mode.

2. In the content area, right-click the chart that you want to set as Auto Link enabled, and then click Edit.

3. On the Designer toolbar, click More, and then click AutoLink target.

   **Note:** Selecting AutoLink target specifies that the parameter information for this chart will be stored, adding it to the repository of reports and charts that will be evaluated when an Auto Link enabled report is run.
4. Verify if the report or chart has an existing filter, as qualifying target reports are those that have filters with parameters for the sort (BY) fields in Auto Link enabled reports or charts. If a filter does not exist, add a filter with a simple parameter to the target report or chart.

a. From the Data pane, drag a sort (BY) field onto the Filter toolbar. You do not need to select a value.

   **Note:** When creating a parameter for a field, the parameter name defaults to the name of the field that you select. For example, if you create a filter for the Product Category field by dragging it to the Filter toolbar, the name of the resulting parameter is &PRODUCT\_CATEGORY, reflecting the field name PRODUCT\_CATEGORY. You can see the field name in the tooltip when you point to a field on the Fields pane.

5. Save the chart.

   Your existing chart is now set as an Auto Link target.

**Procedure:** How to Create a New Auto Link Enabled Chart

1. Open WebFOCUS Designer.
2. In the Actions bar, click Chart.
3. From the Open dialog box selection list, choose a data source, and then click Select.
4. On the Designer toolbar, click More and then click AutoLink.
5. Add fields to the report or chart, ensuring that one is a sort (BY) field.

   For charts, sort fields are added to the Vertical, Horizontal, or Color field containers.

6. Save the chart.
Procedure: How to Create a New Auto Link Target Chart

1. Open WebFOCUS Designer.
2. On the WebFOCUS Home Page, navigate to the domain and folder where you want to place the new chart, and then click the Designer tab.
3. In the Actions bar, click Chart.
4. From the Open dialog box selection list, choose a data source, and then click Select.
5. On the Designer toolbar, click More and then click AutoLink target.
   
   Note: Selecting AutoLink target specifies that the parameter information for this chart will be stored, adding it to the repository of reports and charts that will be evaluated when an Auto Link enabled chart is run.
6. Add fields to the chart.
7. Add a filter with a simple parameter to the target chart.
   a. From the Data pane, drag a sort (BY) field onto the Filters toolbar.
   
   Note: When creating a parameter for a field, the parameter name defaults to the field name that you select.
8. Save the chart.
   
   Your chart is stored as an Auto Link target.

Running an Auto Link Enabled Chart

AutoLink is supported from any WebFOCUS repository content, wherever it is run online.

Example: Launching an AutoLink Enabled Report From the WebFOCUS Home Page

From the WebFOCUS Home Page, right-click a chart that is Auto Link enabled, and then click Run.
**Example:** Using Hyperlinks to Link to Other Reports or Charts

Use the hyperlinks to link to other reports and charts, based on the following information:

- **Charts.** Displays with aspects over which you can hover (for example, a bar) in the chart. A tooltip displays with the Auto Link target reports and charts, as shown in the following image.

---

**Creating Workbooks**

A workbook is a compound page that makes it possible for users to create charts and incorporate these embedded charts along with external content into a compelling display. The ability to create workbooks extends the role of the advanced user, empowering this user to build data narratives while employing the powerful combination of chart and page modes of WebFOCUS Designer. Workbooks can be run as content items directly from a browser, they can be published or shared with specific users and groups.

**Procedure:** How to Create a Workbook in WebFOCUS Designer

1. On the Home Page, in the Resources tree, click a domain or folder, and then in the Actions bar click *Workbook*. 
The Open dialog box opens, as shown in the following image.

2. Make one of the following selections:

   - To create a workbook from a master file, select a master file that would serve as a data source for the embedded charts in your Workbook, and then click Select.

   **Note:** Alternatively, you can click Upload or Connect to upload or connect a new data file. To learn more about working with data, see the Working With WebFOCUS content.
To create a workbook from a reporting object or master file shortcut, select a reporting object or a master file shortcut on the Repository tab of the Open dialog box, shown in the following image, and then click Select.

You can add custom thumbnails and tags to help the user identify reporting objects and metadata shortcuts more easily.

**Note:** Another way to create a workbook from a reporting object is to right-click a reporting object in the Resources tree, point to New, point to Designer, and then click Workbook.

**Note:** The view of the Open dialog box may vary depending on your privileges. You can see the Server tab if you have the Designer Content from Metadata privilege. You can see the Repository tab if you have the Designer Content from Reporting Object privilege.

WebFOCUS Designer opens in chart mode.

3. Create an embedded chart as described in the *Creating Charts* topic.

You can reference your data source by clicking the Data tab, as shown in the following image. You can also use the Data tab to join two or more data tables, as described in *Joining Data Sources* topic.
**Note:** The data tab is only available when you create a workbook from metadata. It does not display when you create a workbook from a reporting object.

4. Click *New embedded chart* to add more embedded charts to your workbook, as shown in the following image.

![New Embedded Chart](image)

You can limit your workbook design to charts only. In this case, at run time, it will display your collection of charts in the carousel view. You can also add a single page to your workbook and use your embedded charts to populate a page layout.

5. To add a page, click *New embedded page*, as shown in the following image.

![New Embedded Page](image)

The New Page dialog box opens.

6. Click a template of your choice.

WebFOCUS Designer in page mode loads. Notice that the embedded charts are available in the Resource Selector in the Embedded Content area, as shown in the following image.

![Embedded Chart in Resource Selector](image)

7. Drag the embedded charts to the canvas to populate the page.

To learn more about working with pages, see *Creating Pages* topic.

8. To add external content, in the Resource Selector, in the Content area, navigate to an item of your choice and drag it to the canvas.
9. Save your workbook and exit WebFOCUS Designer.

Your workbook now displays in the Resources tree, you can run, edit, and share it with other users.

Creating Infographics

An infographic is a way to convey an idea or metric in a compelling visual format. It uses images to share information and present complex concepts, such as business analytics, in a simple and approachable manner. Through the narratives of infographics, you can go beyond dashboards and visualizations, and extend your communication to the level of data storytelling, increase understanding of the subject matter, and make a lasting impression.

This topic introduces WebFOCUS Infographics, and describes how to create and edit an infographic, as well as share it with relevant audiences.

Introducing WebFOCUS Infographics

When you pair infographics with the power and reporting capabilities of WebFOCUS InfoAssist, you can populate your visuals with data from your corporate sources and adopt key elements that are specific to different audiences. You can take full advantage of WebFOCUS Reporting Objects, which enable you to create all of your filters and WHERE conditions once and then quickly apply them to different data elements in your infographic. You can also reuse the same infographic template and modify it using different parameters in your Reporting Objects to quickly show changing data narrative. Finally, use WebFOCUS ReportCaster to distribute your message across different users, while automatically personalizing information, and applying security rules.
The steps that you can use to create WebFOCUS Infographics are outlined in the following image.

Your WebFOCUS Infographic begins as an outline. Once you have determined the information and story that you want to relay, you are ready to build a template, and create your infographic using WebFOCUS InfoAssist in Document mode.

As you modify your infographic template, you identify and mark objects within the design so that they can be linked to WebFOCUS data through report and chart components. When you upload your infographic template and open it in InfoAssist, you create your infographic as a compound document. Each object you marked in the template becomes available as a component of the compound document. You can also leverage InfoAssist functionality to customize your infographic further.
The final step is sharing your infographic with your target audience. You do this by scheduling your infographic procedure for distribution by email, FTP, to a printer, Report Library, or to the Repository. You can also distribute sections of the infographic procedure separately to the same or different destinations in your organization using the burst option in WebFOCUS ReportCaster. Bursting enables you to target relevant sections of a procedure to individual users. It uses data fields in the procedure that correspond to burst values that you specify in a Distribution List. For more information about bursting, see the ReportCaster Guide technical content.

For example, you may need to create and share an infographic to relay quarterly revenue, highlight the most successful months, and identify the products that were most profitable during that time. Using WebFOCUS Infographics, you can create an infographic similar to the one shown in the following image, and customize it for regional managers in your company.

![Quarterly Revenue Report](image)

Because the infographic is geared for multiple regions of a retail electronics company, when sent, it automatically shows different text and data metrics depending on the region to which it is sent.

This content provides steps that you can use to create and share a WebFOCUS Infographic, using sample retail data that is available to you with your installation of WebFOCUS.
Activating a WebFOCUS Infographics Account

Before you can begin creating infographic templates, you must first activate your WebFOCUS Infographics account. This activation requires you to register the site code associated with your Information Builders account that is licensed for WebFOCUS Infographics, as well as the corresponding email address and a password.

Procedure: How to Register a WebFOCUS Infographics Account

1. Access the WebFOCUS Infographics Sign In page in one of the following ways:
   - Sign in to WebFOCUS. From the WebFOCUS Home Page, click the User menu, point to Tools, and then click WebFOCUS Infographics, as shown in the following image.

   ![WebFOCUS Infographics Menu]

   - In a web browser, such as Google Chrome™, type the following address: https://webfocus.easel.ly.
The WebFOCUS Infographics Sign In page opens, as shown in the following image.

2. Under the Sign In button, click Register here, as shown in the following image.

3. When prompted, log in to the registration page using your Technical Support Center email address and password.

   **Note:** If you are already logged into the Technical Support Center or InfoResponse LIVE, you will not be prompted to log in again.
The WebFOCUS Infographics Registration page opens, as shown in the following image. Here, you can manage the site codes associated with your Information Builders account, and register the site codes that are licensed for WebFOCUS Infographics.

4. Click **Register Now** to register a site code that is licensed for WebFOCUS Infographics. These site codes are denoted with a checkmark.

5. Click **Manage Site Codes** to add a site code to your account. This opens a new window with options that you can use to register a new site code, as shown in the following image.
Once you have added your site codes, click Back to return to the WebFOCUS Infographics Registration page. The site codes that you added now display, and show those that are licensed for WebFOCUS Infographics, denoted with a checkmark.

6. Upon clicking Register Now, you will receive a confirmation message and email with details about your registration, as shown in the following image.

7. Close your browser window.

You will receive an email notification within 24 hours that provides the details you need to activate your account.
Procedure: How to Activate a WebFOCUS Infographics Account

1. Within 24 hours of registering your WebFOCUS Infographics account, you will receive an email notification similar to the one shown in the following image.

Activate Your WebFOCUS Infographics Account

Your WebFOCUS Infographics registration is complete. Click the link below to activate your account.

Activate My Account

Resources

Access all WebFOCUS Infographics resources, such as videos and getting started materials.

Contact Us

We are standing by to support your success with WebFOCUS Infographics. Contact us at Customer_Success@ibi.com

Cuano, 515 20th Ave NW, Gig Harbor, WA 98335, United States

You may unsubscribe or change your contact details at any time.
2. Click *Activate My Account* to access the Active Your Account page, which is shown in the following image.

3. Type the email address associated with your WebFOCUS Infographics site code, create a password, and click *Submit*. 
This launches the WebFOCUS Infographics powered by Easelly dashboard, where you can choose from a library of infographics templates and get started, as shown in the following image.

Outlining Your Infographic

Before you begin creating any infographic, you should outline the information you want to share, and build your story. This planning includes considering the following elements that contribute to the success of your message.

- **Target audience.** Define the intended recipient of your infographic, and adapt the message to their informational needs.
- **Main question.** Decide which question or questions your infographic answers.
- **Data sources.** Confirm that your data answers the main question or questions, and eliminate unnecessary information.
- **Logical flow.** Build your story from left to right and from top to bottom - the natural way most people consume information.
- **Focused view.** Limit your narrative to a single topic or idea.
- **Call for action.** Optionally, create a way for your audience to respond to your infographic with a specific action.
While developing your outline, collect any resources to support your infographic and make sure you have a good idea of the data that you intend to showcase. You can then create a wireframe of your infographic to help visualize the layout and aesthetics of the final product.

Once you have created your outline, you can build an infographic template that prepares it for use with WebFOCUS data.

**Creating a WebFOCUS Infographic Template**

You can begin creating your infographic template, once you have registered your WebFOCUS Infographics account. This allows you to access to WebFOCUS Infographics powered by Easelly, which provides a library of infographic templates, and a design tool that contains a WebFOCUS tag option and placeholder objects that can be linked to WebFOCUS charts once you upload your template into WebFOCUS.

You can access the Creation Tool in one of the following ways:

- From the WebFOCUS Home Page, click the User menu, point to Tools, and then click WebFOCUS Infographics.

- In a web browser, such as Google Chrome™, type the following address: [https://webfocus.easel.ly](https://webfocus.easel.ly).

When you sign in with your account, you can immediately begin using the extensive resource library of templates and user-created public visuals, as shown in the following image.

![Image showing a library of infographic templates](image-url)
You can choose any template and adapt it to fit your purpose. You can also select a blank canvas, and build your template from scratch. Once you select a template, the Creation Tool opens. The following image shows an example of the WebFOCUS Infographics Creation Tool view with the blank template.

You can begin to customize your infographic template using the options that are available to you on the ribbon, which is shown in the following image.

From the ribbon, you can:

- Change the default template.
- Add objects, icons, images.
- Add media, such as stock photos and videos.
- Customize the background.
- Draw lines and arrows.
- Add text components.
Add charts.

**Note:** The chart options include a WebFOCUS chart placeholder that you can fill with a WebFOCUS chart in InfoAssist.

Upload images and icons.

**Note:** The supported formats are .gif and .png.

Undo and restore your latest actions.

Display a grid for ease of formatting.

Preview your finished result.

You can use the File, Download, Share, and Resize menus, which are shown in the following image, to save your template to your own local directory, download it in various formats, resize it, share it, invite other users to collaborate with your design, view your template in the browser, export your template to WebFOCUS, and modify the size of your template.

The canvas is interactive. As you drag an object from the ribbon, the canvas automatically displays placement lines that you can use to position the object, as shown in the following image.
When you click an object on the canvas, the ribbon expands and shows additional options that you can use to modify the object. For example, if you click a text box, the following options become available.

The options available to you change, depending on the type of object you select. For example, these options may include:

- **Lock.** Locks the object and prevents you from accidently moving or deleting it. This option is especially useful when creating backgrounds and watermarks.

- **Opacity.** Controls transparency of the object.

- **Hyperlink.** Adds a link to an object, making it a click-through action for the recipient.
  
  **Note:** This option is not yet available for use with WebFOCUS data.

- **Text size and font.** Modifies the font type and size of the text.

- **Color.** Applies a custom color to an object.
   
  **Note:** The color option is only available for single-tone icons and images and text objects.

- **Text formatting and alignment options.** Customizes formatting and alignment of the text.

- **Position.** Controls how the object is layered in relation to other objects.

- **Copy.** Copies the object.

- **Delete.** Deletes the object.

- **WebFOCUS Tag.** Marks an object for data replacement in InfoAssist.

**Procedure:** How to Create a WebFOCUS Infographics Template

1. Sign in to WebFOCUS.
2. On the User menu, point to *Tools*, and click *WebFOCUS Infographics*.
3. In the browser window, sign in to WebFOCUS Infographics powered by Easelly.
   
   **Note:** If you have not registered your WebFOCUS Infographics account, click *Register here*.
4. Select a template that you want to adapt to your infographic.
   
   Alternatively, select *Blank Template*, if you want to build your own infographic template.

   The template opens in a new window with features that you can use to edit it.
5. Edit your template to fit your requirements.

Using the ribbon options, you can manipulate a template in the following ways:

- Add objects and media.
- Resize shapes, images, and text.
- Delete objects and sections.
- Change colors.
- Edit entries.

6. As you develop your infographic, decide which objects you want to replace with data in WebFOCUS. Click these objects, and then click WebFOCUS Tag, as shown in the following image.

   ![WebFOCUS Tag](image)

   The WebFOCUS Friendly Tag Name dialog box opens. Here, you can assign a name to the object. These names appear in the InfoAssist Query pane as components, such as charts or reports in the compound document. The more descriptive the tags, the easier it is to identify components, and connect your data to those components in InfoAssist.

   **Note:** You can add WebFOCUS tags to text, images, icons, or charts.

7. Type a name for the tag in the Enter Tag field and click Tag, as shown in the following image.

   ![WebFOCUS Friendly Tag Name](image)

   In our example, we define points of revenue for each consecutive year to ensure that the tag can be easily identified when we upload the template into InfoAssist. The tag, in this case, Revenue, is used as the name of the component in Document mode in InfoAssist.
A star appears next to the object that you tagged, indicating that the tag has been applied, as shown in the following image.

8. Tag any other text components that you want to fill with WebFOCUS data.

9. Add placeholders for WebFOCUS charts. On the ribbon, click Charts, and then drag the WebFOCUS chart icon onto the canvas. Use the placement lines to position your chart.

10. Optionally, add images from the library or upload your own images. You can upload images from your machine, or select from a large array of images available as part of the WebFOCUS Infographics toolset. To upload images, on the ribbon, click Upload, and then click Choose Files. Select the files on your machine, and close the window. These uploaded images are now available under the My images category of Objects. To add images from the library, click Objects and use the drop-down list to navigate through the available images and shapes.

In our example, we added four alternating map images as watermarks for each region title. In the template, however, we only needed one image as a placeholder. When you connect this object to data in InfoAssist, you can create a simple DEFINE expression to automate the changing images at run time. To add a watermark image to your template:

a. On the ribbon, click Upload.

b. Browse to a file from your machine or drag it to the Upload Files window.

c. Once you have selected the desired files, close the Upload Files window.

d. Click Objects, select My images from the drop-down list, and drag your image to the canvas. This image will serve as a placeholder for all alternating images that we will use in the infographic procedure.

   **Note:** You do not need to upload all your alternating images, but make sure they are approximately the same size.

e. Select the image on the canvas and change the opacity to be 40-50%.

f. Click Text and drag a Header object to the canvas.

g. Edit the text so it displays on top of the watermark image, by clicking the up Position arrow on the ribbon.

h. Add WebFOCUS tags to both the image and the header.

11. Add any extra elements that you want to include in your template, such as text objects, dividing lines, or icons.
The following image shows an example of a completed template.

12. Save your infographic with a meaningful name, in one of the following ways:

   a. Edit the name in the control at the top of your browser window, shown in the following image.

   Click outside the text box to save the edit.

   b. From the menu bar, click File, and then click Save As.

   Type a name for your template in the Enter a name field, and click Save.

   When you return to the Creation Tool, the new name of your infographic template appears.

13. In the header menu, click Download, and then click Export to WebFOCUS.
The pop-up message appears, informing you that the download is ready to import into WebFOCUS, as shown in the following image.

![Your Download Is Ready]

Note: When you download the infographic template for use in WebFOCUS, a copy of the template saves to the Downloads folder on your machine, following the standard of each individual browser. If you download the file more than once, it does not overwrite the previously downloaded version, and appends it with a number that increases each time you download it. For example, if you name your template Infographic, it saves as Infographic.ely. If you download the same template a second time, it saves as Infographic(1).ely. You can continue to enhance your template and infographic procedure by overwriting the old template with your updated download. As long as the template name remains the same, the linked infographic procedure will continue to reference it. To ensure this link stays in place, delete the previous .ely file from the Downloads folder before you issue a new download, or rename the template before uploading it.

Adding Data to an Infographic Template

You add data to your infographic template using WebFOCUS InfoAssist. When you open the infographic template in InfoAssist, it becomes a compound document. Specifically, each object that you marked with a WebFOCUS tag in the template becomes a component of the compound document, where you can add your data. Text objects become report components, where you can add the data field to the SUM field container or Header. Image objects become report components that are replaced by a binary large object (BLOB) database reference, a field reference that contains the name of an image file in a Reporting Server application path, or an external URL. Basic chart objects become WebFOCUS grid charts, and WebFOCUS chart objects become chart components that use the standard charting functionality available in InfoAssist.
You can add data to your infographic with InfoAssist in one of two ways:

- Beginning with a Reporting Object, which enables you to make all of the data preparation steps in a single place for all components in the compound document. This option enables you to reuse filters, and modularize the development of each component in the infographic. It also allows you to leverage a Reporting Object for reuse later.

- Starting with a Master File, where you add filters and Where conditions directly in the infographic template you open in InfoAssist. When you add data in this way, each component is automatically connected to the Master File you select. However, you can change the Master File for each individual component using the Add Data Source and the Switch Data Source options. When you coordinate and burst a compound document, each component does not need to be associated with the same Master File, but all components must have a common data key.

**Note:** In the example used throughout this topic, we used a Reporting Object to create Where conditions that narrowed down our data to only show a specific quarter and product category.

**Procedure: How to Add Data Using a Reporting Object**

1. Sign in to WebFOCUS.
   
   The WebFOCUS Home Page opens.

2. Navigate to the domain of your choice, and on the Action Bar, click **Upload File**.

3. Navigate to the WebFOCUS Infographic template on your machine and click **Open**.
   
   The file uploads to your domain folder.

4. In the same domain, on the Action Bar, click **Reporting Object**.

5. In the Open dialog box, select a Master File, and then click **Open**.
   
   In our example, we used *wf_retail.mas*. 
The Reporting Object interface opens, as shown in the following image.

Here, you can create Where statements and filtering conditions for your infographic. These Where statements are applied to the infographic, but remain invisible. Filters, instead, appear in InfoAssist, and can be manually included or excluded for each individual component.

6. Right-click the Where Statements node and click New.

The Create a filtering condition dialog box opens.

7. Create a Where statement with your data. For example, you can create a Where statement that specifies that a field, such as Sale,Year/Quarter, is equal to a constant value such as the first quarter of 2018. This Where statement would be Sale,Year/Quarter Equal to 20180101, as shown in the following image.
8. Click **New Filter** to add more Where statements, if you have another metric that applies to the entire infographic. For example, if your infographic highlights accessories, you can add a Where statement that narrows the **Product,Category** field down to **Accessories**, as shown in the following image.

9. After creating your Where statements, click **OK** to return to the Reporting Object interface.

10. Right-click the **Filters** node and then click **New**.

   The Reporting Object Filter Group dialog box opens.

11. Name the filter group and click **OK**.

   The filter group appears below the Filters node, as shown in the following image.

12. Right-click the filter group you created, and click **New**.

   The Reporting Object Filter dialog box opens.
13. Name the filter and click Add New.

The Create a filtering condition window opens.

14. Add one or more filters that you want to enable manually inside the infographic.

For example, if you want to refine the view of your data, you can create a filter to specify that Product Subcategory, when used, should equal Chargers, Universal Remote Controls, or Headphones. An example of these configured filters is shown in the following image.

15. Save the Reporting Object. On the Quick Access Toolbar, click Save.

16. In the Save As dialog box, name the Reporting Object, and click Save.

17. Close the Reporting Object interface and return to the Home Page.

18. On the Home Page, right-click your infographic template, point to New Infographic, and click Reporting Object.
The Reporting Object dialog box opens and displays the list of the available Reporting Objects, as shown in the following image.

19. Click your newly created Reporting Object, and click Select.

InfoAssist opens in Document mode, and your template loads on the canvas. Notice that the WebFOCUS-tagged objects on the canvas correspond to the components in the Query pane. In the following image, the Region Image object is selected, and is shown as a report component in the Query pane with Sum and Coordinated field containers that can accept data values.
You can now build a WebFOCUS procedure that connects the infographic with your data.

20. On the canvas, click an object to which you attached a WebFOCUS tag.

The data component for this object opens in the Query pane, as shown in the following image.

![Query pane showing Revenue report component](image)

21. Populate the component with appropriate data by dragging the field from the Data pane to the Query pane or to the component on the canvas. In our example, we dragged Revenue to the Sum field container of the Revenue report component.

When the canvas refreshes, it displays the data, as shown in the following image.

![Query pane showing Revenue component with data](image)

Notice that if you created Where statements in the Reporting Object, all your data is automatically narrowed down to those parameters.

22. Populate any remaining components with your data. In our example, we populated the three Subcategory Revenue components, Headphones, Universal Remote Controls, and Chargers, but we wanted to refine the data, so that it only showed the revenue for these specific accessories.
To do this, we enabled the individual filters in the Filter pane, as shown in the following image.

Note: In InfoAssist, you can aggregate measure fields so they display as percentages, sums, averages, or several other value types. To do this, right-click a measure field, point to More, point to Aggregation Functions, and then select one of the options.

23. Populate any chart placeholders with data that is relevant to your infographic. Both basic charts and WebFOCUS charts have corresponding field containers in the Query pane.

24. Optionally, you can change the styling of the WebFOCUS chart to fit your template.
   a. Right-click any chart component, and then click Series Color.

   The Color window opens.

   b. Select the desired color or complete the RGB information, and then click OK.

   An example of completed charts is shown in the following image.

25. Populate text components.
In our example, we highlighted Region on the canvas and dragged **Store, Business, Region** to Sum. The component now reflects the field data, as shown in the following image.

You can also modify the image that each user sees when you burst the infographic. For example, if you want to display an individual image for each region, you would create a **Define** that points to different image files that you upload to the Reporting Server application path.

26. Ensure that your images are uploaded to the Reporting Server. You can use the Legacy Home Page to upload them to the server path corresponding to the same domain in which the infographic resides.

27. On the **Data** tab, in the **Calculation** group, click **Detail (Define)**.

   a. In the **Define Field** dialog box, create an expression that links your image to a specific field value. For example, if you want to show images based on Business Region, you would create an expression to accomplish this, as shown in the following image.
b. After you create your Define, it appears in the Data pane. You can then add it to the Sum field container for an image component.

28. You can also modify portions of your text components and personalize them for bursting. Specifically, you can insert a variable value in a line or lines of text that are custom for each recipient.

For example, if you want to create a variable word in the introduction text component that changes for each region when the infographic is distributed, you can do this, using the following steps:

a. Select the intro text and click Header & Footer.

The Header & Footer dialog box opens.

b. Add the text that you want to modify, and drag the corresponding data field from the Data pane to the dialog box.

Drag any field from the data pane into the canvas to incorporate it into the text.

In our example, we replaced the word Region (variable) with the Store,Business,Region field, so the message reflected the region of our recipient, as shown in the following images.

c. Click OK.

d. Drag the same field to the Query pane, under the Sum bucket.

The text portion changes to reflect the field value, as shown in the following image.

29. Optionally, you can coordinate components of the infographic procedure for bursting. This means that when you apply a data value to all components, it customizes the output of information that you send to each recipient.
In our example, we wanted to coordinate our data by region, so each Regional Manager received a specific revenue report narrowed down to their area. To do this, we dragged Store,Business,Region in to a Coordinated field container in the Query pane.

30. Once you have populated your infographic with data, you can run it to preview the output. On the Quick Access Toolbar, click Run.

The infographic runs in the preview mode.

Since our example was created for bursting, the preview displays four versions of the infographic, one for each region. In each version, the values, headlines, and images relate to each of the four regions in our data, as shown in the following images.

You can use the same principle to generate bursts by any other field or metric, and distribute a different infographic to different stakeholders. For example, you could distribute new versions for each quarter, or change the Product Category represented to highlight other areas of the product line.

31. Save your infographic. On the Quick Access Toolbar, click Save, and then name your infographic.
You can now share your infographic with others by email, in a form of an email burst across different groups of stakeholders, as well as publishing or sharing it in the WebFOCUS Repository.

**Procedure: How to Add Data From a Master File**

1. Create an infographic template and upload it to WebFOCUS.

2. On the WebFOCUS Home Page, right-click the infographic template, point to New Infographic, and then click Master File.

   The Open dialog box opens and displays the list of Master Files that are available to you, as shown in the following image.

3. Select a Master File and click Open.

   The infographic template opens in InfoAssist Document mode, where you can connect it to your data.

4. Drag data fields from the Data pane to the Query pane to add data to your components.

5. Optionally, filter your data within the InfoAssist session in one of the following ways:
   a. Right-click a field in the Query pane, click Filter Values, and create a filtering condition of your choice.
   b. Drag a field from the Query pane to the Filter pane, and proceed with creating a filtering condition.
   c. Select a field in the Query pane, and on the ribbon, from the Data tab, click Filter, and then follow the steps to create a filtering condition.

6. Save your infographic procedure.

   You are now ready to share it with others.
Replacing Data in a WebFOCUS Infographic

You can modify your infographic at any time to reflect new data that is available to you. For example, you may create an infographic that sends information monthly or quarterly. Once you set up the initial infographic template, and Reporting Object, you can easily distribute an updated infographic.

In our example, we created an infographic for the first quarter of a year. You can reuse the same template and Reporting Object for subsequent quarters without making any extensive changes. All you need to do is modify the Reporting Object so it uses data for a new quarter.

Procedure: How to Replace Data in a WebFOCUS Infographic

1. On the Home Page, right-click the Reporting Object you used to create your initial infographic, and click Edit.

   The Reporting Object interface opens.

2. Expand the Where Statements node and double-click an existing Where statement.

3. Modify the Where statement so that it uses your new data values. For example, if you were creating an Infographic to reflect revenue for the second quarter, you would change the value to April of that year, as shown in the following image.

4. Click OK.

5. Save your Reporting Object with the same name, and return to the WebFOCUS Home Page.

   Note: If you rename your Reporting Object, the infographic will not run. If needed, create a backup of the Reporting Object before you edit it.

6. If your infographic contained any static text, headings, or images related to the data for a specific quarter, you must edit the Infographic in InfoAssist, and update those components accordingly.
Once you have edited your infographic, you are ready to share it with others.

**Sharing WebFOCUS Infographics**

You can make your newly created WebFOCUS infographic available to other users by publishing it in your repository, sharing it with specific users and groups, or by distributing it using WebFOCUS ReportCaster. You can also distribute it using the burst option, which enables you to share specific sections of the infographic procedure with different users, based on the coordinated field in our infographic compound document. The following steps outline how you can share your infographic by email or burst it to members of your organization.

**Procedure: How to Share Infographics**

1. On the Home Page, right-click your WebFOCUS Infographic, point to *Schedule*, and then click *Email*.

   The ReportCaster Basic Scheduling tool opens, and you can specify how you want to distribute your infographic. You can send the same infographic or infographics to everyone on a Distribution List or you can burst personalized instances of your infographic to different people, based on the values in your infographic.

   For more information on bursting, see the *ReportCaster Guide*. 
2. Click *Distribution*, and populate the *To* field with the email addresses of your intended recipients, as shown in the following image, or select a Distribution List.

![Distribution: Email](image)

3. If you want to burst your infographic to a Distribution List, you must have access to an existing list, or create a new one. For more information on Distribution Lists, see the *ReportCaster Guide*. You can send your infographic inline, or as an attachment, by selecting the corresponding option under the Email Information section.

4. Click *Recurrence* to specify the date and time that you want to distribute your infographic.

5. If it is not already configured, you may need to enter an Execution ID and password for the Reporting Server. Click *Task* to add this information.

6. On the Task pane, you must also select the *Burst Report* check box to distribute your infographic separately to the same or different locations.

**Note:** For the Burst Report to operate successfully, you must define a coordinated value in the infographic procedure you create in InfoAssist. Both the coordinated value and the Burst flag are required for successful distribution of the coordinated infographic.

7. Once you have specified how you want to distribute your infographic, click *Save & Close*. The Save As dialog box opens.
8. Enter the name of your schedule and click **Save**.

Your distribution schedule is now available from the WebFOCUS Home Page. You can edit it at any time, or view the log file to ensure that it was successfully distributed.

**Editing Source Code Files**

The Editor enables you to create, view, and edit the source code for WebFOCUS procedures (FOCEXECs), Master, HTML, JavaScript, WebFOCUS StyleSheet, Cascading Style Sheet, Text, SQL, R, and Python files.

Additionally, the Editor supports user-friendly features, such as syntax highlighting, code folding, line numbering, autocomplete, and display of a status bar and indent guides. These features speed productivity by enabling better clarity in helping you understand, debug, and work with your source code.

The Editor offers the ability to run WebFOCUS procedures (FOCEXECs) or HTML pages directly from the Editor. You can also save source code with a different name.

**Note:** If you create a chart or report in WebFOCUS Designer, you can edit it in the Editor, save it, and open it again in WebFOCUS Designer. Be aware, however, that if your changes are not compatible with WebFOCUS Designer, they may be reverted or cause issues on loading. In such cases, it is recommended to edit the item using only the Editor from that point forward.

**Accessing the Editor**

You can launch the Editor in one of the following ways:

- From the WebFOCUS Home Page, right-click a file you want to modify, and then click **Edit** or **Edit with text editor**.

- To create a new file, from the WebFOCUS Home Page, in the Action Bar, click the **Other** tab, and then click the **Text Editor** icon.

If you are creating a new file, you are prompted to select a file type in the New Text Resource pane. File types are grouped into the following three categories:

- **Content**
- **Web**
- **Data Science**
From the Content category, you can choose FOEXEC (fex), WebFOCUS Style Sheet (sty), Plain Text (txt), or SQL Script (sql), as shown in the following image.

From the Web category, you can choose HTML (htm), Cascading Style Sheet (css), or JavaScript (js), as shown in the following image.
From the Data Science category, you can choose R Script (r) or Python Script (py), as shown in the following image.

Once you choose a file type, the prompt closes and the Editor launches in a new browser tab or window, depending on your browser setting. Default file names begin with the word New, followed by the type of file, for example, New FOCEXEC File, New HTML File, and so on. Small glyphs consistent with the file type appear on the left side of the tab to help identify the type of file, as shown in the following image.
If you hover the mouse over a Title in a tab, the full path to the location of the file displays, as shown in the following image. This path is helpful in differentiating files of the same name and type, in different locations.

```
Gross Profits for New York City

IBFS:/WFC/Repository/Retail_Samples/gross_profits_for_new_york_city.fex

2  SORT GROSS_PROF_US COGS_US REVENUE_US
3    BY CITY_NAME AS 'City'
4  HEADING
5    '<STATEProv_NAME City Breakout'
6    WHERE COUNTRY_NAME EQ 'United States' AND STATEProv_NAME EQ 'New York';
7  ON TABLE NOTOTAL
8  ON TABLE SET SQUEEZE ON
9  ON TABLE SET STYLE 'N'
10  TYPE=REPORT, TITLETEXT='City Breakout',$
11    TYPE=HEADING, JUSTIFY=CENTER,$
12  ENDSUB
13  END
14
```
Navigating the Editor Interface

The main components of the Editor interface are shown in the following annotated image.

The Editor interface components are identified as follows:

- **Toolbar.** Contains common file tasks, such as Open, Close, Save, and Save As, as well as preferences, such as line numbering, code folding, autocomplete, status bar, and indent guides.

- **File Tabs.** When multiple tabs are open, clicking a file tab lets you select the file that you want to edit. You can close a tab by clicking the X to the right of the file name in the tab. There is an asterisk (*) next to the file name to indicate that changes have not been saved in the file. If you choose to save a file, the standard Save, or Save As for new files, logic is used. Closing the last open tab exits the Editor. There is no limit to the number of tabs that can be opened. If many files are being edited, and they overflow the boundaries of the screen, you can use the left (<) and right (>) arrows to display the hidden tabs.

- **Sidebar.** Displays line numbers and code folding controls, if these are on. If there is syntax validation, the Editor sidebar displays syntax error markers.
Canvas. The canvas is the main editing area. This is where you type code and see your enabled preferences. In addition to using the toolbar to select your task, you can also use right-click menus on the canvas to select tasks.

Status Bar. Displays contextual information about the file being edited, such as length in characters of the text, total number of lines, line number where the cursor is positioned, column number where the cursor is positioned, and keyboard input modes, such as Insert, Caps Lock, and Num Lock.

Using the Editor Toolbar

The Editor toolbar presents commonly used functions, organized into a series of menu groups. The toolbar is shown in the following image.

The following table lists and describes the functions that you can access from the Editor toolbar.

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Icon" /></td>
<td><strong>Editor Application menu.</strong> Opens a menu of file-related commands.</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td><strong>Save.</strong> Opens the Save As dialog box, where you can save a new file.</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td><strong>Reset.</strong> Reverts the contents of a tab to its last saved state.</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td><strong>Undo.</strong> Reverses the last action, such as typing, pasting, or deleting text.</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td><strong>Redo.</strong> Restores a previously undone action.</td>
</tr>
<tr>
<td><img src="image" alt="Icon" /></td>
<td><strong>Copy.</strong> Copies your selection to the clipboard.</td>
</tr>
<tr>
<td>Icon</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
</tr>
<tr>
<td><img src="icon" alt="Cut" /></td>
<td><strong>Cut.</strong> Deletes your selection and places it on the clipboard.</td>
</tr>
<tr>
<td><img src="icon" alt="Paste" /></td>
<td><strong>Paste.</strong> Pastes your selection from the clipboard to the location indicated by the cursor.</td>
</tr>
<tr>
<td><img src="icon" alt="Preview" /></td>
<td><strong>Preview.</strong> Runs and displays the output of a report or HTML page.</td>
</tr>
<tr>
<td><img src="icon" alt="Search" /></td>
<td><strong>Search.</strong> Opens the Search and Replace pane, where you can search for and replace text in a file.</td>
</tr>
<tr>
<td><img src="icon" alt="Help" /></td>
<td><strong>Help.</strong> Opens the Help system, which provides documentation on the Editor interface.</td>
</tr>
</tbody>
</table>

**Editor Application Menu**

The Editor Application menu opens a menu of file-related commands, as shown in the following image. The Editor icon is always active and is located in the upper-left corner of the Editor interface.
Editor options include:

- **New.** Displays a submenu of all file types that you can create in the Editor. You can create FOEXEC, HTML, JavaScript, WebFOCUS StyleSheet, Cascading Style Sheet, Text, SQL, R, and Python files, as shown in the following image.

![File Type Menu](image)

- **Open.** Opens an existing file.

  **Note:** You can open supported file types from the default Reporting Server or WebFOCUS Repository.

- **Save.** Saves the active file.

- **Save As.** Saves the active file, in one of several file types, with a new file name.

- **Close.** Closes the active file.

- **Exit.** Closes the active file and exits the Editor.
**Edit Group**

The Edit group on the toolbar is shown in the following image.

From the Edit group, you can perform the following actions:

- **Save.** Saves the active file.

- **Reset.** Reverts the contents of a tab to its last saved state. Clicking Reset displays a dialog box, warning that unsaved changes will be lost. Clicking OK on the dialog box confirms the reset action and unsaved changes are not applied. Clicking Cancel returns you to the page where recent changes are still available. The Reset option is not available when an existing file is unchanged or a new file has not been saved.

- **Undo.** Reverses the last action, such as typing, pasting, or deleting text. You can also press Ctrl+Z to undo the last action. If there are no changes to a page, the Undo option is not active. To undo multiple actions, including actions that have been saved, you can click the Undo option or press Ctrl+Z repeatedly.

- **Redo.** Restores a previously undone action. You can also press Ctrl+Y to restore a previously undone action. If the Redo option does not apply, the option is not active. To redo multiple actions, including actions that have been saved, you can click the Redo option or press Ctrl+Y repeatedly.

- **Copy.** Copies your selection to the clipboard. You can also press Ctrl+C to copy text.

- **Cut.** Deletes your selection and places it on the clipboard. You can also press Ctrl+X to delete text.

- **Paste.** Pastes your selection from the clipboard to the location indicated by the cursor. You can also press Ctrl+V to paste text.

**Preview Group**

The Preview group on the toolbar is shown in the following image.
Clicking the \textit{Preview} button runs and displays the output of a report or HTML page. This option is only available for FOEXEC files and HTML pages.

**Search Group**

The Search group on the toolbar is shown in the following image.

Clicking the \textit{Search} button opens the Search and Replace dialog box, where you can search for and replace text in the file you are currently editing.

**Options Group**

The Options group on the toolbar is shown in the following image.

Clicking the \textit{Options} button displays a submenu of preferences, which enable you to manage your code. Options include line numbering, code folding, autocomplete, status bar, and indent guides, as shown in the following image. You can selectively turn these features off or on in a file.
Help Group

The Help group on the toolbar is shown in the following image.

Clicking the Help button opens the Help system, which provides documentation on the Editor interface.

Syntax Highlighting

Syntax highlighting improves readability and makes debugging procedures easier. This color-coded highlighting is applied to the source code for WebFOCUS procedures to distinguish keywords, comments, functions, arithmetic and logical operators, constants, and quoted strings.

Highlighting is supported for HTML, JavaScript, CSS, R, Python, and SQL files.

The following image is an example of highlighting in a WebFOCUS procedure (FOCEXEC) that is opened in the Editor.

Saving Files

You can save a file in the Editor in one of the following ways:

- Click the Save button on the toolbar.
- Select Save or Save As from the Application menu.
Procedure: How to Save a Procedure File

1. Create a new procedure (FOCEXEC) in the Editor.
   The default file name is New FOCEXEC File *. Since the file has not been saved, an asterisk (*) appears to the right of the file name. When the file is saved, the asterisk is removed.

2. Click the Save button on the toolbar or select Save from the Editor Application menu.
   The Save As dialog box opens.

3. On the Save As dialog box, navigate to the WebFOCUS Repository or Reporting Server where you want to the save the file.
   - Select the Repository tab to navigate to an available domain for saving the file, as shown in the following image.
Select the Server tab to choose a Reporting Server application directory for saving the file, as shown in the following image.

Note:

- If you are accessing a Reporting Server configured as the default or a server assigned to the domain that requires credentials, you will be prompted for credentials when you:
  - Run an open file that has not been saved.
  - Save a file to the Reporting Server.
  - You can save supported file types to the default Reporting Server or WebFOCUS Repository.
  - You can open supported file types from the default Reporting Server or WebFOCUS Repository.

4. In the Title input box, type a title, which is the display name for the file. By default, the Name value is the Title value in all lowercase letters and underscores (_), instead of spaces. The Name value is processed by the Reporting Server.

5. From the Type drop-down list, select a file type. Supported file types are FOCEXEC, WebFOCUS StyleSheet, Cascading Style Sheet, HTML, SQL, JavaScript, Text, R, Python, and Properties.
Note: You can save a plain text file as a Properties file from the Save As dialog box. This file type is not available from the New file submenu.

The following image shows a Save As dialog box with the location of the file, Title and Name values, and FOCEXEC selected as the file type.

The Save As dialog box also contains the following:

- Search option to search the list of available files.
- View button to change from Tile view to List view. You can customize the columns displayed in the Tile or List view. Available columns are Title, Name, Summary, Last modified, Created on, Size, and Owner.
- Refresh option to refresh the display of the window.

6. Click Save.
When the file is saved, the Title displays on the tab and the asterisk (*) is removed, as shown in the following image.

![Gross Profits for New York City](image)

```
TABLE FILE retail_samples/wf_retail
SUM GROSS_PROFIT_US COGS_US REVENUE_US
BY CITY_NAME AS 'City'
HEADING
"<STATE_PROV_NAME City Breakout"
WHERE COUNTRY_NAME EQ 'United States' AND STATE_PROV_NAME EQ 'New York';
ON TABLE NOTOTAL
ON TABLE SET SQUEEZE ON
ENDSTYLE
END
```

**Note:** The Save icon and the Save option on the File menu are no longer active.

### Previewing Output

The Preview option on the Editor toolbar lets you run and display a preview of your report or HTML page. This option is only available for FOCEXEC files and HTML pages.

To run and preview the output of a procedure in the Editor, click the Preview button on the toolbar.
The procedure runs and the output displays, as shown in the following image.

<table>
<thead>
<tr>
<th>City</th>
<th>Product Category</th>
<th>Gross Profit</th>
<th>Cost of Goods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adams</td>
<td>Accessories</td>
<td>$1,173.16</td>
<td>$2,518.00</td>
</tr>
<tr>
<td></td>
<td>Camcorder</td>
<td>$2,092.79</td>
<td>$6,478.00</td>
</tr>
<tr>
<td></td>
<td>Computers</td>
<td>$560.05</td>
<td>$995.00</td>
</tr>
<tr>
<td></td>
<td>Media Player</td>
<td>$710.92</td>
<td>$1,782.00</td>
</tr>
<tr>
<td></td>
<td>Stereo Systems</td>
<td>$1,927.47</td>
<td>$5,020.00</td>
</tr>
<tr>
<td></td>
<td>Televisions</td>
<td>$585.33</td>
<td>$3,757.00</td>
</tr>
<tr>
<td>Addison</td>
<td>Accessories</td>
<td>$363.78</td>
<td>$1,086.00</td>
</tr>
<tr>
<td></td>
<td>Camcorder</td>
<td>$2,715.15</td>
<td>$6,555.00</td>
</tr>
<tr>
<td></td>
<td>Computers</td>
<td>$924.82</td>
<td>$1,957.00</td>
</tr>
<tr>
<td></td>
<td>Media Player</td>
<td>$1,016.88</td>
<td>$2,893.00</td>
</tr>
<tr>
<td></td>
<td>Stereo Systems</td>
<td>$1,396.15</td>
<td>$3,399.00</td>
</tr>
<tr>
<td></td>
<td>Televisions</td>
<td>$1,314.47</td>
<td>$4,260.00</td>
</tr>
<tr>
<td></td>
<td>Video Production</td>
<td>$109.00</td>
<td>$190.00</td>
</tr>
<tr>
<td>Afton</td>
<td>Accessories</td>
<td>$597.11</td>
<td>$1,230.00</td>
</tr>
<tr>
<td></td>
<td>Camcorder</td>
<td>$668.93</td>
<td>$1,337.00</td>
</tr>
<tr>
<td></td>
<td>Computers</td>
<td>$420.46</td>
<td>$870.00</td>
</tr>
<tr>
<td></td>
<td>Media Player</td>
<td>$1,304.32</td>
<td>$5,512.00</td>
</tr>
<tr>
<td></td>
<td>Stereo Systems</td>
<td>$940.67</td>
<td>$2,021.00</td>
</tr>
<tr>
<td></td>
<td>Televisions</td>
<td>$212.99</td>
<td>$387.00</td>
</tr>
<tr>
<td></td>
<td>Video Production</td>
<td>$337.08</td>
<td>$1,460.00</td>
</tr>
<tr>
<td>Akron</td>
<td>Accessories</td>
<td>$804.96</td>
<td>$2,083.00</td>
</tr>
<tr>
<td></td>
<td>Camcorder</td>
<td>$335.15</td>
<td>$665.00</td>
</tr>
<tr>
<td></td>
<td>Computers</td>
<td>$242.98</td>
<td>$329.00</td>
</tr>
<tr>
<td></td>
<td>Media Player</td>
<td>$1,174.07</td>
<td>$4,207.00</td>
</tr>
<tr>
<td></td>
<td>Stereo Systems</td>
<td>$2,640.07</td>
<td>$5,337.00</td>
</tr>
<tr>
<td></td>
<td>Televisions</td>
<td>$209.98</td>
<td>$640.00</td>
</tr>
<tr>
<td></td>
<td>Video Production</td>
<td>$330.00</td>
<td>$468.00</td>
</tr>
<tr>
<td>Albany</td>
<td>Accessories</td>
<td>$43,983.58</td>
<td>$102,489.00</td>
</tr>
<tr>
<td></td>
<td>Camcorder</td>
<td>$49,402.85</td>
<td>$101,705.00</td>
</tr>
<tr>
<td></td>
<td>Computers</td>
<td>$34,025.21</td>
<td>$65,100.00</td>
</tr>
<tr>
<td></td>
<td>Media Player</td>
<td>$64,799.74</td>
<td>$212,271.00</td>
</tr>
<tr>
<td></td>
<td>Stereo Systems</td>
<td>$80,896.88</td>
<td>$188,275.00</td>
</tr>
<tr>
<td></td>
<td>Televisions</td>
<td>$19,677.86</td>
<td>$65,376.00</td>
</tr>
<tr>
<td></td>
<td>Video Production</td>
<td>$14,979.52</td>
<td>$31,102.00</td>
</tr>
</tbody>
</table>

Preferences for Managing Code

The Options menu, invoked from the Options button on the toolbar, presents preferences that help you manage your code.
You can selectively turn these preferences off or on in a file, as shown in the following image.

Preferences include:

- **Line numbering.** Displays line numbers, including blank lines, in the sidebar. The default value is on.

- **Code folding.** Allows you to selectively collapse and expand sections of a currently edited file, so that you can look at the code structurally. The default value is on.

- **Autocomplete.** Allows progressive addition and suggestion of code as you type. Autocomplete is available for FOEXEC, HTML, JavaScript, CSS, and Python files. Autocomplete is not supported for SQL, R, STY, and TXT files. The default value is on.

- **Status bar.** Displays contextual information for the active file being edited. The default value is on.

- **Indent guides.** Visually displays indent levels in code. The Tab key moves four columns at a time, putting invisible tab characters into the file. The default value is on.

**Line Numbering**

The Editor supports line numbering, which displays line numbers for each line you create in the Editor, including blank lines. The line numbers appear in the sidebar. This is useful when you need to refer to specific lines in a file.

You can selectively turn line numbering off or on from the Options menu on the toolbar. The default value is on.
The following image displays a WebFOCUS procedure, with line numbers in the sidebar, for each line of code.

```
1  TABLE FILE retail_samples/wf_retail
2  SUM GROSS_PROFIT_US COGS_US REVENUE_US
3  BY CITY_NAME AS 'City'
4
5  HEADING
6  "<STATE_PROV_NAME City Breakout"
7
8  WHERE COUNTRY_NAME EQ 'United States' AND STATE_PROV_NAME EQ 'New York';
9
10  ON TABLE NOTOTAL
11  ON TABLE SET SQUEEZE ON
12
13  ON TABLE SET STYLE *
14  TYPE=REPORT, TITLETEXT='City Breakout',$
15  TYPE=HEADING, JUSTIFY=CENTE$
16  ENDSTYLE
17
18  END
19
20
```

**Code Folding**

The Editor supports code folding, which lets you selectively collapse and expand sections of code in a file you are currently editing. This is useful when you need to manage large amounts of code, and view only those subsections that are relevant.

You can selectively turn code folding off or on from the Options menu on the toolbar. The default value is on.

Code folding is supported in a FOCEXEC for WebFOCUS DEFINE, TABLE, GRAPH, Dialogue Manager, and inline Stylesheet code. It is also supported for JavaScript, CSS, HTML, and Python files. Code folding is not supported for SQL and R files.
The following image displays a WebFOCUS procedure, with the code-folding toggle icons included in the sidebar (lines 1, 14, 15, 23, 26, and 27).

To collapse the DEFINE statement, click the code-folding toggle icon on the DEFINE FILE command line (line 1). Note that lines 1 through 14 are collapsed, as shown in the following image.
To collapse the inline StyleSheet code, click the code-folding toggle icon on the ON TABLE SET STYLE command line (line 23). Note that lines 23 through 26 are collapsed, as shown in the following image.

To collapse the TABLE request, click the code-folding toggle icon on the TABLE FILE command line (line 15). Note that lines 15 through 27 are collapsed, as shown in the following image.
The following procedure shows the code folding icons on comment lines (lines 1 and 3) and Dialogue Manager commands (lines 4 and 6).

To collapse the comment lines, click the code folding icon on line 1. Note that lines 1 through 3 are collapsed, as shown in the following image.

To collapse the comment lines, click the code folding icon on line 1. Note that lines 1 through 3 are collapsed, as shown in the following image.
To collapse the Dialogue Manager commands, click the code folding icon on line 4. Note that lines 4 through 6 are collapsed, as shown in the following image.

Reference: Usage Notes for Code Folding

- The code folding icons appear if there is more than one line for a block of code or commands for which code folding is supported.

- To expand a section of code that is collapsed, you can click the code-folding toggle icon or the double-headed arrow icon at the end of the command line.

- Comment lines, which begin with a dash followed by an asterisk (-*), are collapsed separately from other Dialogue Manager commands.

- Adding a blank line between blocks of similar code, such as comment lines or Dialogue Manager commands, separates the block of code and a new segment for code folding is created.

- In files, where nested blocks of code are indicated by starting and ending curly brackets {}, such as JavaScript and CSS files, code-folding icons are enabled on the lines where the open and close curly brackets are displayed.

- If the cursor is currently in a block of code, you can press Alt+0 to collapse all other regions, except for the block of code currently in focus.

- You can also press Shift+Alt+0 to expand all regions of code.
When using Search and Replace features, if the search criteria is met within any collapsed lines, the lines are automatically expanded to show the search criteria found.

**Autocomplete**

Autocomplete is a function that allows progressive suggestion of code as you type.

You can selectively turn Autocomplete off or on from the Options menu on the toolbar. The default value is on.

When typing code, a list of suggestions will display below the text, in alphabetical order. You can use the up and down arrow keys to navigate to the desired value and press Enter to select the value.

The suggestion list displays one of the following labels, on the right of each suggestion:

- **WebFOCUS keyword.** Indicates that a command is a WebFOCUS keyword, such as CLEAR and COLUMN, in the following example.

- **local.** Is used for words that are not WebFOCUS keywords, such as CITY_NAME. The label, local, will be displayed on the second or later attempts to type the word.

**Note:** In the following example, the variables COG_US and CITY_NAME are not WebFOCUS keywords, they are local to the syntax. On the second attempt or later attempt to type the letter C, both variables display as local, as shown in the following image.

Autocomplete is available for FOCEXEC, HTML, JavaScript, CSS, and Python files. Autocomplete is not supported for SQL, R, STY, and TXT files.
Procedure: How to Create a Simple Procedure With Autocomplete

1. On the Editor toolbar, from the Options menu, select Autocomplete.
2. Create a new GRAPH request.
3. Type the letter G in the Editor.
   Note that the command GRAPH is suggested, as shown in the following image.

![Autocomplete Suggestion](image1)

Note also that GRAPH is a WebFOCUS keyword.

4. Scroll and press Enter to select GRAPH.
5. Type the letters FI in the Editor.
   Note that the command FILE is suggested, as shown in the following image.

![Autocomplete Suggestion](image2)

6. Scroll and press Enter to select FILE.
7. Type the name of the Master File.
   Note: Autocomplete is not supported for Master Files.
8. Type the letter P in the Editor.
   Note that the command PRINT is suggested, as shown in the following image.

9. Scroll and press Enter to select PRINT.
10. Type a field from the Master File, for example, CITY_NAME.
11. Press Enter to move to the next line and then type the letter E in the Editor.
12. The command END is suggested, as shown in the following image.

13. Scroll and press Enter to select END.

**Status Bar**

The Status bar displays contextual information for an open file at the bottom of the Editor.

You can selectively turn the status bar off or on from the Options menu on the toolbar. The default value is on.
**Note:** The Status bar is global for the Editor environment. If you uncheck the Status Bar option in one tab, this is applied to all open tabs, including any new tabs you create in the Editor.

The following values display in the Status bar:

- **Length.** Length, in characters, of the text in the active file.
- **Lines.** Total number of lines in the current file, including blank lines.
- **Line.** Line number of cursor position.
- **Column.** Column number of the cursor position.
- **Insert.** Indicates the status of insert or overtype mode. This setting is controlled by the Insert key on your keyboard. When the value for Insert is ON, your keyboard is in insert mode, and text is placed in front of the cursor position. When the value for Insert is OFF, your keyboard is in overtype mode, and existing characters are overwritten.
- **Caps Lock.** Indicates the status of Caps Lock. This setting is controlled by the Caps Lock key on your keyboard. No value is shown when Caps Lock is off. The value on the Status bar will not change when you press the Caps Lock key. The value is detected and changed to CAPS when you type a character on the keyboard.
- **Num Lock.** Indicates the status of Num Lock, when working with the numeric keypad. This setting is controlled by the Num Lock key on your keyboard. No value is shown when Num Lock is off. The value on the Status bar will not change when you press the Num Lock key. The value is detected and changed to NUM when you type a number using the numeric keypad.

The following image shows an example of values displayed in the Status bar.


**Indent Guides**

Indent guides are useful in helping you understand the structure of code by showing indentation levels and to quickly find where a block of code starts and ends.

You can selectively turn indent lines off or on from the Options menu on the toolbar. The default value is on.
Clicking the Tab key inserts a 4-space indent. The indent guides are represented by vertical light gray lines, as shown in the following image.

### Using Search and Replace

The Search button on the toolbar opens the Search and Replace pane, where you can search for and replace text in the file you are currently editing.

You can click the Search icon again to toggle the Search and Replace pane off or on. You can also close the Search and Replace pane by clicking the X in the upper-right corner of the screen.

The Search and Replace pane is shown in the following image.

The Search and Replace pane contains the following options:

- **Find.** Finds the search criteria specified in the Find input box.
Replace With. Replaces the search criteria specified in the Find input box with the criteria specified in the Replace With input box.

Match case. Locates the search criteria specified in the Find Input box when there is an exact match of the criteria and case in the Editor. This option is off, by default.

Match whole word only. Locates an exact match, whole word only, for the search criteria specified in the Find input box. This option is off, by default.

Wrap around. If the search reaches the bottom of the file, it automatically continues to search from the top of the file and ends at the current position of the cursor. If this option is not selected, search ends at the bottom of the file, regardless of where the cursor is located. This option is on, by default.

Find Next. Finds the next instance of the search criteria specified in the Find input box, using the selected options.

Replace. Finds the next instance of the search criteria specified in the Find input box, using the selected options. The search criteria is replaced with the criteria specified in the Replace With input box, and the next instance is highlighted.

Replace All. Finds all instances of the search criteria specified in the Find input box and replaces them with the criteria specified in the Replace With input box.

Note:

You can also press also Ctrl+F or Ctrl+H to open the Search and Replace pane.

If the search criteria is not found, a message displays, indicating that the text was not found.
Working With the Editor Canvas

The Editor canvas is the main editing area. This is where you type code and see your enabled preferences, if any. The right-click menu options only work in this area, but the shortcut keys are always available. The code canvas is shown in the following image.

```
New FDCEXEC File * X

1 - TABLE FILE retail_samples/wf_retail
2  SUM GROSS_PROFIT_US
3  BY CITY_NAME AS City
4  HEADING
5  "<STATE_PROV_NAME City Breakout"
6  WHERE COUNTRY_NAME EQ 'United States' AND STATE_PROV_NAME EQ 'New York';
7  ON TABLE NOTOTAL
8  ON TABLE SET SQUEEZE ON
9  ON TABLE SET STYLE -
10  TYPE=REPORT, TITLE="'City"
11  TYPE=HEADING, JUSTIFY=CENT
12  ENDS
13  END
```

Right-click menu options include:

- **Copy.** Copies your selection to the clipboard. You can also press Ctrl+C to copy text.

- **Cut.** Deletes your selection and places it on the clipboard. You can also press Ctrl+X to delete text.

- **Paste.** Pastes your selection from the clipboard to the location indicated by the cursor. You can also press Ctrl+V to paste text.

- **Select All.** Selects all text in the active file. You can also press Ctrl+A to select all text.

- **Clear.** Deletes the selected text. You can also use the Delete key to delete the selected text.
Undo. Reverses the last action, such as typing, pasting, or deleting text. You can also press Ctrl+Z to undo the last action. If there are no changes to a page, the Undo option is not active. To undo multiple actions, including actions that have been saved, you can click the Undo option or press Ctrl+Z repeatedly.

Redo. Restores a previously undone action. You can also press Ctrl+Y to restore a previously undone action. If the Redo option does not apply, the option is not active. To redo multiple actions, including actions that have been saved, you can click the Redo option or press Ctrl+Y repeatedly.

Uppercase. Changes selected lines of text from lowercase to uppercase. If the selected text is mixed case, all text is converted to uppercase. If the selected text is uppercase, no change occurs.

Lowercase. Changes selected lines of text from uppercase to lowercase. If the selected text is mixed case, all text is converted to lowercase. If the selected text is lowercase, no change occurs.

Comment/Uncomment. Adds the dash asterisk (-*) characters in a FOCEXC at the beginning of a line of syntax in which the cursor is inserted. These characters indicate a comment. When multiple lines of code are selected, the comment is inserted on each selected line. When the comment is selected a second time, comments on selected lines are removed.

Creating Blogs

You can create blogs and include them in your collaborative portals. A blog is an interactive content item that operates as commonly seen blogs on the internet, and allows users to post and view comments. Blogs abide by the same security rules that apply to other items in the repository. You can publish, unpublish, hide, and move blogs between domains or folders. You can also share blogs with other users and groups.

Procedure: How to Create a Blog

1. Select the domain or folder where you want your new blog to reside.

2. On the actions bar, click Blog ⬤.

   The New Blog dialog box opens.

3. Type the requested information in the dialog box, as follows.

   ❑ Title. Identifies the blog in the Resources tree.
Summary. Provides an optional explanation of the blog. It is displayed in the tool tip, when you hover over the blog.

4. Click OK.

The new blog item appears in the selected location.

5. Right-click your new blog, and then click Edit.

The Comments window opens.

6. Click the Add comment link to add a new comment.

7. Once you are done adding and editing comments, click Post, and close the Comments window.

8. You can optionally interact with comments using the following commands:

- Click the Refresh icon to refresh comments.
- Click the Search button, and type a keyword or words in the search field, to search through comments. You can specify the search criteria by clicking the drop-down arrow and selecting search criteria, such as user name, content, or meta tags.
- Click the Remove All button to remove all comments from all users. Remove All is only available to users with the Manage Comments privilege.

Creating URLs

You can create URLs to webpages and store them within the repository. These URLs can further enhance analytics, by providing an additional interactive context to your data. You can run a URL from the Home Page, use it in a portal, or add it to a personal page. If your URL is optimized for use in an iFrame, you can embed it within a container on a page. You can also publish and share a URL to make it available to other users and groups.

Note: Some web pages cannot be run inside an iFrame or inside the preview Run window on the Home Page. You can run these web pages in a new browser tab or window.

Procedure: How to Create a URL

1. Select the domain or folder where you want your new URL to reside.

2. On the actions bar, click URL.

The New URL dialog box opens.
3. Type a Title for the URL, type the address of the URL, and then click OK.
   The URL now appears in your selected location.

Procedure: How to Embed an iFrame-Optimized URL in a Portal or Page

1. Copy an iFrame-optimized URL from the web, as shown in the following image.

2. Select the domain or folder where you want your new URL to reside.

3. On the actions bar, click URL.
   The New URL dialog box opens.

4. Populate the Title field, and paste the copied URL in the URL field.
5. Remove any iFrame related syntax that surrounds your URL. Examples are shown in the following images.

![URL](iframe src=https://www.google.com/maps/embed?pb=!1m14!1m12!1m3!1d13147.15031249878!2d-77.0375806!3d38.905172!2m2!1i10!2i7!1s0x0:0x0!20!4e1!3m2!1m0!2m1!1s0x0:0x0!5e0!3m2!1si!2swu!4v1635266680572!5m2!1sws!2suw)

6. Click OK to close the New URL dialog box.

Your URL item is complete and ready to be displayed in a portal or page.

7. Using WebFOCUS Designer or the Portal Designer, add your new URL to a portal or page.

The URL content displays within the container, similar to other content items, as shown in the following image.

![URL](image.png)

**Note:** This procedure is applicable to WebFOCUS Designer pages and portal pages.

**Creating Shortcuts**

You can create shortcuts to repository files and Master files. Once a shortcut to a Master file is created, you can use it to build visualizations and reports. Once a shortcut to a repository file is created, you can copy, delete, edit, and run this item. You can also publish and share your shortcuts to make them available for other users and groups.

**Note:** Only users with the `opShortcut` privilege are able to create shortcuts. For more information on privileges, see the *WebFOCUS Security and Administration* technical content.
Procedure: How to Create a Shortcut to a Repository File

1. Select the domain or folder where you want your new shortcut to reside.

2. On the actions bar, click Shortcut.
   The New Shortcut dialog box opens.

3. Click Browse.
   The Select dialog box opens.

4. Using the Breadcrumb Trail, navigate to the resource of your choice, such as folder, report, chart, or visualization, and then click Select.
   The Title field populates with the name of the original item, and the word Shortcut. For example, if you create a shortcut to the item Chart1, the shortcut title will be Chart1 - Shortcut.

5. Optionally, you can edit the Title and populate the Summary field.

6. Click OK.
   The new shortcut appears in the selected location.

Procedure: How to Create a Shortcut to a Master File

1. Select the domain or folder where you want your new shortcut to reside.

2. On the actions bar, click Shortcut.
   The New Shortcut dialog box opens.
3. Click the Master file radio button, as shown in the following image

![New Shortcut dialog box](image)

4. Click Browse.

   The Select dialog box opens.

5. Navigate to the Master File you to which you want to create a shortcut, and then click Select.

   The Title field populates with the name of the original item.

6. Optionally, edit the Title and populate the Summary field.

7. Click OK.

   The new shortcut appears in the selected directory.

### Uploading Files

In addition to creating content using WebFOCUS, you can upload other files, such as images and documents. These files can be used to enhance visualizations and shared with other users and groups.

**Procedure:** How to Upload Files From The Actions Bar

1. Select the domain or folder where you want your uploaded file or files to reside.

2. On the actions bar, click Upload File.

   The Open dialog box opens.
3. Select one or multiples files from your machine and click Open. The file uploads to your selected directory, and the *Upload completed* message appears, as shown in the following image.

![Upload completed message example](image)

4. Close the *Upload completed* message and proceed with using the uploaded file.

**Note:** When you upload an image, such as a .bmp, .jpg, .jpeg, .gif, or .png file, to the repository, an embedded thumbnail of the image automatically generates in the WebFOCUS Explorer. To change the thumbnail that appears in the WebFOCUS Explorer, right-click the thumbnail, and open the Properties panel. Click the *Advanced tab*, and modify the thumbnail.

**Procedure:** How to Upload Files by Dragging to the Explorer

1. Select the domain or folder where you want your uploaded file or files to reside.
2. Drag one or multiple files from your machine directly to the WebFOCUS Explorer, as shown in the following image.

The file uploads to your selected directory and the *Upload completed* message shows the status of each uploaded file. If an upload fails, the error appears in red in the *Upload completed* message, as shown in the following image.

3. Close the *Upload completed* message and proceed with using the uploaded files.
Using Favorites

**Note:** When you upload an image, such as a .bmp, .jpg, .jpeg, .gif, or .png file, to the repository, an embedded thumbnail of the image automatically generates in the WebFOCUS Explorer. To change the thumbnail that appears in the WebFOCUS Explorer, right-click the thumbnail, and open the Properties panel. Click the Advanced tab, and modify the thumbnail.

**Using Favorites**

You can further customize your Home Page by using the Favorites feature. Favorites can be reports, graphs, hyperlinks, Reporting Objects, and other item types. The Favorites feature provides a convenient and fast way to find and use your favorite content, without having to search for it. You can interact with your favorite content and view its properties, and also access Favorites from a mobile device.

From the Home Page, Favorites appear in the Favorites area, as shown in the following image.

![Image of Favorites on Home Page](image1)

From the Legacy Home Page, Favorites appear in the Resources tree, as shown in the following image.

![Image of Favorites in Resources](image2)
Adding Content to Favorites

You can add items to Favorites from any workspace or folder if you have permission to do so. To designate an item as a Favorite, right-click the item, and click Add to Favorites. To remove an item as a Favorite, right-click the item and click Remove Favorite.

If you right-click the item from the Home Page, you can select from the following options, depending on file type:

- Click Run or select a different way to run the item by pointing to Run....
- Point to Schedule, and choose a scheduling option for the item.
- Click Edit or Edit with text editor to edit the item in the appropriate tool or text editor.
- Click Remove my customizations to remove customized item settings.
- Click Remove from Favorites to remove the item from the Favorites view.
- Click Properties to open the Properties panel, and edit the properties of the item.

If you right-click the item from the Legacy Home Page, you can select from the following options, depending on file type:

- Click Run or select a different way to run the item by clicking Run Deferred or Run With SQL Trace.
- Point to Schedule, and choose a scheduling option for the item.
- Click Edit or Edit With to edit the item in the appropriate tool or text editor.
- Click Remove My Customizations to remove customized item settings.
- Click Change Title to change the item title.
- Click Remove Favorite to remove the item from the Favorites view.
- Click Properties to open the Properties panel, and edit the properties of the item.

Accessing Favorites from a URL

You are not required to save items to Favorites to view them on mobile devices. The Home Page is optimized for viewing on mobile devices. It automatically adjusts to a smaller screen or browser width. There are several interface and functionality changes that occur when you switch from the full view to the mobile view.

You can create and share a URL to your Favorites, allowing you or other users to access your Favorites directly.
In a desktop or mobile browser, type the address below.

http://server:port/ibi_apps/favorites

where

server
  Is the name of the server on which WebFOCUS is installed.

port
  Is the port number on which the server is listening.

Assigning Tags to Content Items

To refine a search for content within a workspace or folder in your repository, you can assign tags to content items. These tags provide additional search criteria that you can use to identify related content items quickly. Tags are turned off by default, and display as a column in the list view of the WebFOCUS Home Page.
To test the tag you assigned to the item, perform a search. The tag and item should appear in the search results. An example of a Product tag is shown in the following image.

Using the Mobile Faves App

Mobile Faves is a simple, intuitive app that empowers users of iPad and iPhone devices, or Android phones and tablets, with robust, innovative, easy-to-use reporting and analysis. The app allows users to manipulate data from a variety of sources in an almost unlimited number of ways in just a couple of taps. Users can also manage their business dashboards and content for viewing and interactive analysis, even when they are not connected to the Internet.
Items must be tagged as FAVES to be viewed in the Mobile Faves app. Migrated Mobile Favorites created prior to WebFOCUS Release 8.2 Version 04 are automatically assigned a localized Mobile Faves tag during the migration process.

For more information on the Mobile Faves app, see Mobile Faves in the Technical Library: https://webfocusinfocenter.informationbuilders.com/wfappent/tl3s/tl_mobile/tech-library.html.

**Embedding Search and Navigation Widgets in Portals**

Available as a Technical Preview, you can use embeddable widgets to enhance your WebFOCUS experience. Embeddable widgets are URL-based items that you can integrate into your page or portal to create an app-like display with added functionality and navigation options.
An example of the Home widget is shown in the following image.

The Home widget allows you to search for items in your repository straight from the page or portal in which the widget is integrated. As you access and run content, it populates the Recents section of the widget, making it easy to come back to your search history. You can also save repository items as Favorites, in which case, they appear in the Favorites section. To designate an item as a Favorite, right-click the item, and select Add to Favorites. The Portals section of the widget displays all the existing portals in your repository.
An example of the Navigation widget is shown in the following image.

The Navigation widget lets you see the repository hierarchy, and navigate to folders and items within it. You can use the breadcrumb trail to navigate around your environment. Similar to the Home Page widget, you can search for specific items by typing a key word into the Search field.

**Note:** To enable and use the Navigation and Home widgets, you must activate this tech preview option. In the Administration Console, expand the **Application Settings** folder, click **Other** and, in the Technical Preview Features field, type **DesignerHome**.

**Procedure:**  **How to Integrate an Embeddable Widget Into a Page**

1. On the Home Page, in the Actions Bar, in the Other tab, click **URL**.
   
   The New URL dialog box opens.
2. In the New URL dialog box, populate the Title field.
3. In the URL field, type the URL for the widget that you are creating.

   For the Home widget, type the following URL:

   ```
   ./home_widget
   ```

   For the Navigation widget, type the following URL:

   ```
   ./navigation_widget
   ```
An example of the filled out New URL dialog box is shown in the following image.

![New URL dialog box](image)

4. Click OK.


7. Drag the URL item that you created onto the canvas.

8. Expand the URL item to fill the page.

9. In the Properties panel, hide the Title and Toolbar for both the page and the item.

10. Save your page and exit WebFOCUS Designer.
Your widget page is now complete and can be added to a portal. For more information on how to add pages to a portal, see *Defining a Portal Structure*. The following image shows an example of the Home widget inside a portal.

![Home widget inside a portal](image)

**Installing and Configuring Apache Solr as a Technical Preview**

Apache Solr is an open-source, high-performance, full-featured enterprise-search platform that must be configured to preview and use the Search function inside the Home and Navigation widgets. You must contact Information Builders Technical Support to obtain the two .zip files, `solr-8.0.0.zip` and `ibi-protected.zip`, needed to complete the installation and configuration of Apache Solr as a Technical Preview.

**Note:** Upon completion of the Solr installation and configuration process, your use InfoSearch may become disrupted. To switch back to your original InfoSearch configuration, you must remove the Solr configuration.

**Procedure:** How to Install and Configure Apache Solr

1. Navigate to the following directory.
For Windows:

`drive:\ibi\solr`

For UNIX:

`/install_directory/ibi/WebFOCUS82/solr/`

2. Unzip the solr 8.0.0.zip file.

3. Unzip the ibi-protected.zip file, and extract the contents to the following directory.

   For Windows:

   `drive:\ibi\solr\solr-8.0.0\solr-8.0.0\server\solr`

   For UNIX:

   `/install_directory/ibi/WebFOCUS82/solr/solr-8.0.0/server/solr/`

   This will create the following subfolder with data indexed for the WebFOCUS retail data sources.

   For Windows:

   `drive:\ibi\solr\solr-8.0.0\solr-8.0.0\server\solr\ibi_protected`

   For UNIX:

   `/install_directory/ibi/WebFOCUS82/solr/solr-8.0.0/server/solr/ibi_protected/`

4. Change the default 8983 startup port.

   a. Edit the script file.

      For Windows:

      `drive:\ibi\solr\solr-8.0.0\solr-8.0.0\bin\solr.in.cmd`

      For UNIX:

      `/install_directory/ibi/WebFOCUS82/solr/solr-8.0.0/solr.in.sh`

      b. Uncomment the following line:

      `REM set SOLR_PORT=8983`

      c. Specify the port, for example:

      `set SOLR_PORT=28983`
Note:

- To start or stop Apache Solr with the default port set in the script file (solr.in.cmd for Windows, solr.in.sh for UNIX), issue the following commands:

```
Solr start
Solr stop
```

For Windows, use a CMD window from the `drive:\ibi\solr\solr-8.0.0\solr-8.0.0\bin\` directory.

For UNIX, use a UNIX shell from the `/install_directory/ibi/WebFOCUS82/solr/solr-8.0.0/bin/` directory.

- To specify a custom port (for example, 28983) from the CMD window or shell, issue the following commands:

```
Solr start -p 28983
Solr stop -p 28983
```

5. Update Tomcat to include the required -D settings.

   a. From the Information Builders Program Group, open the Tomcat Configuration Utility.

   b. Click the Java tab.

   c. Add the following required -D settings to the Tomcat Java Options section, as shown in the following image.

```
-DIBI_InfoSearch_Engine=Solr
-DIBI_InfoSearch_Solr_Url=http://{solr_host_name}:{port}
```

For example:
If at any time you wish to switch back to using InfoSearch you must remove the following two -D lines from the Java tab of the Tomcat Configuration Utility:

-DIBI_InfoSearch_Engine=Solr
-DIBI_InfoSearch_Solr.Url=http(s)://server:port

After removing the lines, restart your application server.

**Searching Content Inside Embeddable Widgets**

Both Home and Navigation widgets offer a robust and intuitive search functionality that allows you to quickly access content across your repository. Using a simple text bar found on top of the Home or Navigation widget, you can enter a search term to quickly display all content items that match that term. The interactive search engine updates the suggestions as you type, so you can find the desired item fast. Alternatively, you can see the entire list of items that match a keyword in a comprehensive list view.

**Note:** To use the search functionality inside the widgets, you must configure the Solr search component.
**Procedure:** How to Search Content Inside an Embeddable Widget

1. Inside a Home or Navigation widget, in the Search field, start typing a keyword.

   The search drop-down list immediately offers suggestions based on the characters entered into the Search field, as shown in the following image.

   ![Search Suggestion Image]

   Notice that when the search query matches a tag or a summary text, a second line is added to a search result suggestion, indicating the source.

2. Click an item in the drop-down list.

   The item runs in the viewer.

3. To view all items that correspond to the search criteria, on the bottom of the drop-down list, click View All, as shown in the following image.

   ![View All Image]
All items that match the keyword display in a list view, as shown in the following image.

In this view, you can perform the following actions:

- Customize the number of columns displayed in the List view.
- Sort your results by clicking on the column title.
- Run items from the search results view.
- Switch to the Grid view by clicking the Grid icon in the upper right corner of the screen.
- Access context menu of the items that appear in the search results view.

4. To exit the search results view, click the Close icon in the upper-right corner of the widget.

Sharing Content With Users

Sharing is a feature that is generally used to enable users to share private content residing in their My Content folders with authorized colleagues.

WebFOCUS makes shared resources available to other appropriate users through a special Shared Content folder. The Shared Content folder is a virtual folder that appears automatically in a folder whenever there is shared content inside that folder.
There are two ways to share private resources from your My Content folder or folders within it. You can use the Share command to share a resource with everyone automatically, or you can use the Share With command and share the resource with a limited set of users or groups selected from the Share With dialog box. When you use the Share command, you share the resource with the EVERYONE group and grant basic user privileges to all users. When you use the Share With command, you share the resource with a limited number of selected users and groups, and grant privileges to them based on their role in the domain in which the resource appears. You can use the Share command to make a resource generally available while it is still in development, and use the Share With command to share resource development tasks with other users without making the resource generally available.

When you share a resource from your My Content folder or one of the folders within it, all users other than yourself will see it under a folder entitled Shared Content. When you open a Shared Content folder, you see a subfolder for each user who has shared content with you. This feature helps you distinguish between content you created, which appears in the My Content folder, and content created by others but shared with you. In the following image, the Administrator folder, which contains content the Administrator made available to an individual user, appears under the Shared Content folder as shown in the content view of the WebFOCUS Home Page, and in the Resources tree of the Legacy Home Page.

### Sharing Content in WebFOCUS

Each domain in the repository, except the Public domain, comes with the private My Content folder. Whenever you create content inside the My Content folder, this content remains private and only visible to you, unless you share it with other users and groups. You can share content in one of two ways:

- **Share with all users.** This method makes the content available to all users that have access to the domain.
Share with specific users and groups. This method allows you to choose which users and groups get access to your private content.

In both scenarios you can easily revoke access to your content by unsharing it.

Procedure: How to Share Content with All Users
1. In the Resources tree, navigate to a domain of your choice and open the My Content folder.
2. In the My Content folder, right-click the item that you want to share, and then click Share. The Share icon now displays next the default icon, as shown in the following image.

The item is now shared with all users that have access to this domain.
3. To unshare the item, right-click it, and then click Unshare.

Procedure: How to Share Content with Specific Users and Groups
1. In the Resources tree, navigate to a domain of your choice and open the My Content folder.
2. In the My Content folder, right-click the item that you want to share, and then click Share with. The Share with other dialog box opens.
3. In the Search field type the name of the user or group with which you want to share this item.
4. Click the correct entity from the drop down list, as shown in the following image.

The name now displays below the Search field. The item is shared.

5. Optionally, add more users or groups.

You can narrow your search by clicking an arrow and selecting Users or Groups, as shown in the following image.

6. Once you are happy with your choices, click OK.

The icon now indicates that the item is shared. You can unshare it at any time or go back to the Share with others dialog box and edit your choices.
Adding Content to Pages

Create pages in WebFOCUS Designer that you can add to a portal or portal page to share with other users in your organization. Pages that you create in WebFOCUS Designer can be run as content items from the Home Page or directly from a browser. Then, share the page as a stand-alone repository resource or a URL.

In this chapter:

- Creating Pages in WebFOCUS Designer
- Adding Content to a Page
- Editing Pages in WebFOCUS Designer
- Styling Pages
- Filtering Data on Designer Pages
- Enabling Content Customization
- Localizing Designer Pages
- Enabling and Sharing Personal Pages

Creating Pages in WebFOCUS Designer

You can create pages in WebFOCUS Designer that you can add to a portal or portal page to share with other users in your organization. Additionally, pages that you create in WebFOCUS Designer can be run as content items from the Home Page or directly from a browser. You can share a WebFOCUS Designer page as a stand-alone repository resource or a URL.

Procedure: How to Create a Page Using WebFOCUS Designer

1. Launch WebFOCUS Designer in one of the following ways:

   - From the WebFOCUS Home Page, in the Resources tree, select the domain or folder where you want to create the page, and then click Page.

   - From the Legacy Home Page, in the Resources tree, right-click the domain or folder where you want to create the page, point to New, and then click Page.
The New Page dialog box opens, as shown in the following image.

2. Select a template for your page. The options include Blank, Grid 2-1, Grid 2-1 Side, Grid 3-3-3, Grid 4-2-1, and InfoApp 1.

WebFOCUS Designer opens, and the canvas shows the template that you selected.

**Adding Content to a Page**

In WebFOCUS Designer, you can create interactive pages or InfoApps, using content that you create in InfoAssist as well as images and URLs to external content. You can also add content to these pages using content that was created by another user in your organization. You can access the content that is available to you from the Content tab in the Resource Selector.

**Procedure: How to Add Content to a Page**

1. From the Resources tree, in WebFOCUS Designer, drag a content item of your choice to the canvas, such as a chart.
As you drag the item to your canvas, a shaded placement area appears, as shown in the following image.

![Page Heading](image)

2. Repeat Step 1 to add more content to your page.

   After adding content to your page, you can resize or rearrange items, add a heading, or add filters. Before closing the page, be sure to save any changes.

   **Note:** When you add Insight-enabled content to a Designer page, it will run as a standard HTML5 chart. You can view the content in Insight mode by clicking the Explore with Insight icon. Content opens in a new browser tab.

**Editing Pages in WebFOCUS Designer**

After creating a page in WebFOCUS Designer, you can edit it at any time, in one of the following ways:

- From the WebFOCUS Home Page, select the domain or folder where the page resides. Right-click the page, and click *Edit*.

- From WebFOCUS Designer, click the Application Menu button, and then click *Open*. In the Open dialog box, click the name of the page, and then click *Open*.

- From the Legacy Home Page, in the Resources tree, select the domain or folder where the page resides, right-click the page, and then click *Edit*.

   **Note:** You can only use WebFOCUS Designer to edit pages that were created in this tool.
Styling Pages

A number of tools in WebFOCUS Designer support your efforts to apply pages styling. You can resize content, hide content from smaller devices if it interferes with a responsive layout, edit page, section and container properties, apply filters, themes and styles, and create custom templates.

Resizing Content on a Page

You can resize content on a page, at any time, using the sizing handles and the shaded placement area that appear on the canvas. When you hover over an item on the canvas, a series of handles appear. Drag a handle in the direction that you want to resize the item, as shown in the following image.

Hiding Content From Devices

You can choose to hide certain content items from smaller devices, especially when dealing with large or multi-faceted items like maps or visualizations. When an item is hidden from a device, the other items around it re-flow into the empty space and retain the responsive layout.

Procedure: How to Hide a Content Item From Devices

1. In WebFOCUS Designer, select a large item that you want to hide from small-screen devices.
2. In the Properties panel, in the Setting tab, under the Show On property, click the device icon to remove it from the list of devices on which this item will be shown.

Note: All three device buttons are selected, by default, making the item visible on all devices. Manually clear the buttons to hide the item from specific device types.
An example of hiding a large item from mobile phones and tablets is shown in the following image.

3. Save the page.
4. Run the page on a device, from which the item was hidden.
The item does not display. All remaining content items rearrange to cover the empty space, as shown in the following image.

---

**Editing Page, Section, and Container Properties**

The Properties panel displays the properties for the element that is selected. To access container properties, click a container or item with the Properties panel open. To access section properties, click the grid inside the canvas. To access page properties, click the page header or the toolbar. If the page header and the toolbar are hidden, you can access page properties by clicking the canvas outside a grid section.

The following properties are available for pages.

**Settings tab:**

- **ID.** Contains a read-only unique CSS identifier.

- **Classes.** Allows you to add one or more custom CSS classes that you can reference in custom JavaScript and CSS code.

- **Title.** Toggles between hiding and showing the title in the header.

- **Toolbar.** Toggles between hiding and showing the page toolbar.
Style tab:

- **Theme.** Allows you to select a theme for the page. The options are Designer 2018, Light, and Midnight. Administrators can configure additional themes that will be available to users from this property.

- **Margin.** Controls the size of the margin between the border of the page and the content.
  
  **Note:** If the margin property is set to 0, you cannot select a section on the page or access the section shortcut menu options. As a workaround, change the margin property value to 20px temporarily to gain access to the section and its options.

- **Maximum width.** Controls the maximum width of the page.

- **Page Heading Style.** Provides a selection of typeface styles for the page heading.

The following properties are available for sections.

Settings tab:

- **ID.** Contains a read-only unique CSS identifier.

- **Classes.** Allows you to add one or more custom CSS classes that you can reference in custom JavaScript and CSS code.

- **Collapsible.** Toggles between collapsible and noncollapsible modes of the selected section.

- **Row height.** Sets the height of the section that is currently selected on the canvas. The default value is 60px.
  
  **Note:** Changing the row height does not change the margin, which can be configured on the page level.

Style tab:

- **Section Style.** Allows you to choose a style for the selected section.

The following properties are available for containers.

Settings tab:

- **Container Settings.** Provides access to the following properties.

  - **ID.** Contains a read-only unique CSS identifier.

  - **Classes.** Allows you to add one or more custom CSS classes that you can reference in custom JavaScript and CSS code.

  - **Title.** Toggles between hiding and showing the title.
 Toolbar. Toggles between hiding and showing the container toolbar.

 Show On. Allows you to hide the selected container or item from displaying on specified devices. The options include desktop, tablet, and mobile.

 Autoplay interval. Available for carousel containers. Allows carousel slides to automatically cycle based on the selected interval, in seconds. When set to 0, autoplay is disabled.

 Rerun content. Available for carousel containers. When the Autoplay interval is set to a value higher than 0, the Rerun content option allows you to refresh the content on each slide of a carousel container when it appears. If Rerun content is not enabled, then the content on each slide only loads the first time it appears.

 Content Customization. Provides access to the following properties.

 Lock content. If disabled, allows users to change content in the panel at run time. This property is enabled by default.

 Path. Allows you to set the initial directory that users will see when they click the Add content button.

 Note: To see the full value displayed in the field, widen the Properties panel area by clicking the separator and dragging it the left.

 Lock path. When enabled, limits the content selection area to the directory that is specified in the Path property. This property is enabled by default.

 Flatten list. If enabled, hides the folder hierarchy and the breadcrumb trail within the directory that is specified in the Path property. This property is disabled by default.

 Note: This property is especially useful if you want to display different widgets to different users based on their roles. For example, you can create a series of subfolders with content and then apply security rules to show and hide these subfolders from users based on their group membership. Then you can configure the Path property to display the parent of these subfolders and flatten the list. Now each user can only see the widgets they are authorized to see in a simple list without any folders to navigate.

 Hide tags. If enabled, hides tag buttons in a flattened list. This property is disabled by default. It remains inactive when the Flatten list property is disabled.

 Initial view. Determines the initial view of the directory that users will see when they click the Add Content button. The options are Grid and List.

 Note: Users can change the view at run time inside the Select Item dialog box.
Content. Provides access to the following properties.

ID. Contains a read-only unique CSS identifier of the panel in which content runs. You can reference this ID in custom JavaScript and CSS code as well as drill-down targeting procedures.

Classes. Allows you to add one or more custom CSS classes that you can reference in custom JavaScript and CSS code as well as drill-down targeting procedures.

Style tab:

Container Style. Allows you to choose a style for the selected container or item.

Applying Themes And Styles to Pages

While customizing your page, you can apply themes and styles to various page elements. The general theme of the page is defined by the Theme setting, which you can configure in the Properties panel, on the page level. A theme affects the look of the entire set of elements on the page, including colors, opacity, and typeface styles. Themes also dictate the color scheme for the Styles setting, which you can configure in the Properties panel, on the section and container levels.

There are three themes that WebFOCUS Designer offers:

- Default
- Light
- Midnight

Once you select a theme, you can further modify it by configuring styles. You can also save your unique combination of a theme and styles as a custom theme.

Procedure: How to Apply a Theme to a Page

1. In WebFOCUS Designer, click the Page toolbar to select it, and then click the Properties button.

   The Properties panel opens.

2. Click the Style tab.

   The style properties appear.

3. Under the Page Style section, from the Theme property drop-down list, select the theme that you want to use.
The page refreshes with the new theme, as shown in the following image.

4. Save your changes.

**Procedure:** How to Apply Styles to Sections

1. In WebFOCUS Designer, click the canvas area.

2. Click the *Properties* button and then click the *Style* tab.

   The Style properties appear.

3. Click a style that you want to use.

   The page refreshes and applies the style to the section, as shown in the following image.
4. Optionally, add more sections and apply styles to them.

5. Click the new section and apply a style to it, as described in step 3.

The page refreshes and applies the new style. You can apply different styles to different sections, as shown in the following image.

![Image of section styles](image)

6. Save your changes.

**Procedure:** How to Apply Styles to Containers

1. In WebFOCUS Designer, add content or containers to a page.

2. Click a container, click the *Properties* button, and then click the *Style* tab.

   The Style properties appear.

3. Click a style that you want to use.
The page refreshes and applies the style to the container, as shown in the following image.

4. Optionally apply styles to other containers on the canvas.

   **Note:** To apply the same style to multiple containers, you can multi-select containers by holding the Ctrl key, and then clicking a style button.

5. Save your changes.

**Procedure: How to Create a Custom Theme**

1. Sign in to WebFOCUS as an administrator.

2. On the Home Page, from the Resources tree, expand the Global Resources folder, and then expand the Themes folder.

3. Click the Custom folder, and then click Folder in the actions bar.

   The New Folder dialog box opens.

4. Populate the Title field with the name of your custom theme, and click OK.

   The custom theme folder is created. Your theme CSS file will reside in this folder. If you know which CSS classes should be used for your theme, you can create a new text file, add your code, and save this file as a Cascading Style Sheet. Alternatively, you can modify an existing theme CSS file. In this example, we copy and modify the theme CSS file for the Light theme.

5. Expand the Standard folder, and then expand the Light folder.

6. Copy the theme CSS file, and paste it inside your new custom theme folder.
The following image shows the correct hierarchy of the custom theme file.

Note: Do not modify the name of the theme CSS file. It is imperative that it stays the same for all themes. The name of the folder in which the file resides, is the theme name that is available in WebFOCUS Designer.

7. Right-click the newly copied theme CSS file, and then click Edit.

The Text Editor window opens.

8. Modify the code to achieve the desired look of the theme.

In this example, the background color has been changed from white #fff to yellow #ffff00, as shown in the following image.

9. Save and close the Text Editor.
10. In WebFOCUS Designer, apply the new custom theme to a page, as described in How to Apply a Theme to a Page on page 535. An example of a new theme applied to a page, as shown in the following image.

11. Save your changes.

Creating Custom Templates

Aside from the default templates that WebFOCUS Designer offers, you can create custom templates that reflect your unique layout. They are a great way to add structural variation or highly customized layouts to your page. Custom templates are also useful for organizations that have a set style for all of their pages. You must have administrator access to WebFOCUS to deploy custom templates.

Procedure: How to Create a Custom Template for WebFOCUS Designer Pages

1. Sign in to WebFOCUS as an administrator.
2. On the Home Page, from the actions bar, click Page.
   WebFOCUS Designer opens.
3. Select one of the default templates that you want to use as the starting point for your custom template.

4. Modify the page layout to reflect your preferences. For example, insert new sections or customize the sizing of each row in the template.

5. Save your new page to any folder and exit WebFOCUS Designer.

6. Optionally, apply a custom thumbnail to your template page. If you do not assign a custom thumbnail, the default thumbnail WebFOCUS associates with pages will display.

7. On the Home Page, expand the Global Resources folder, and then expand the Page Templates folder.

   Two folders display inside the Page Templates folder: Standard and Custom.

8. Copy your new template page from its initial directory and paste it inside the Custom folder.

   The next time you launch WebFOCUS Designer, your custom template appears, as shown in the following image.

![Custom Template](image)

Once a custom template is created, you can configure access to it by using security rules to hide it from specific groups of users. To learn more about working with security rules, see the WebFOCUS Security and Administration manual.

**Applying Custom CSS and JavaScript to a Page**

You can apply custom cascading style sheet (CSS) properties and JavaScript code to a page, allowing you to significantly enhance the page with countless styling options and run-time behaviors.

This feature is intended for content developers with CSS and JavaScript coding experience. The CSS and JavaScript options are available to developers, administrators, and users with text editor access.
You can add custom CSS and JavaScript to a page by typing code into the CSS and Javascript tabs, respectively. To enable these tabs, select the entire page and, in the Properties panel, enable the CSS and Javascript options. The CSS and Javascript tabs appear below the canvas. Select one of these tabs to access a text editor where you can add your code.

**Note:** Custom CSS and JavaScript is not displayed in the page canvas or in preview mode. You must save and then run the page from the WebFOCUS Home Page to see the results of your custom code.

### Applying Custom CSS to a Page

Custom CSS can be applied to specific objects on a page by specifying a CSS class for the object, and then using a class selector in your CSS code.

To specify a CSS class for an object on a page, select the object and, on the Properties panel, type a class name into the text box for the Classes property. You can specify multiple classes for an object by separating the class names with spaces, and you are encouraged to use the same class names for multiple items on the page. When you assign attributes to a class in the CSS tab, they will affect all elements on the page that are assigned to that class.

**Procedure:** **How to Change the Color of a Panel Using CSS**

You can change the background color of a panel by assigning a class to the panel and then adding the background-color attribute to the class using CSS.

1. Create a page using WebFOCUS Designer.
   
   On the WebFOCUS Home Page, on the Common or Designer tab of the Action bar, click Page.

   WebFOCUS Designer opens.

2. Select a template for the page.
3. If you are using the blank template, add a panel to the page.
   
   Click the Containers tab and drag a panel container onto the page.

4. With the panel selected, open the Properties panel.
5. In the text box for the Classes property, type a class name of your choice, as shown in the following image.

6. Click the title bar or a blank area on the canvas to select the entire page.

7. In the Properties panel, enable the CSS property.

   The CSS tab appears below the canvas.

8. Select the CSS tab.

   The CSS tab text editor opens.

9. Add a CSS declaration to change the background-color attribute for the class used by the panel.

   a. Reference the class name that you specified in the Classes property.

      Type a period (.) followed immediately by the class name, then an opening curly bracket ({), and press the Enter key.

      The closing bracket is added automatically.

   b. Within the brackets, type background-color, followed by a colon and then a color string.

      For example, to make the color of a panel, for which panelclass is the value of the Classes property, to a bright blue, you could use the following CSS declaration.

      ```
      .panelclass {
        background-color: rgb(0,180,240);
      }
      ```
10. Save the page and close WebFOCUS Designer.
11. Run the page from the WebFOCUS Home Page.

   The custom CSS is applied.

**Applying Custom JavaScript to a Page**

You can use custom JavaScript to enhance the functionality of components on a page. Any component created on the page using the Designer canvas can be modified in the Javascript tab by referencing a CSS class name specified in the Classes field of the Properties panel for the object, or using the Designer JavaScript API, to standardized classes that correspond to different component types in a page or portal. Each component class can utilize a set of predefined methods in addition to custom JavaScript. You can even use JavaScript to add objects to a page entirely through code, without using the canvas at all.

**Procedure:** **How to Add a Button and a Menu Item to a Panel Container Using Custom JavaScript**

You can use custom JavaScript code to add a button and a menu item to a panel that you have added to a page. You can configure the button and menu item to execute a command of your choice, such as a URL call.

For information about different JavaScript object classes, see the *Designer JavaScript API Classes* on page 548 reference information below.

1. Create a page using WebFOCUS Designer.
   
   On the WebFOCUS Home Page, on the Common or Designer tab of the Action bar, click *Page*.

   WebFOCUS Designer opens.

2. Select a template for the page.

3. If you are using the blank template, add a panel to the page.
   
   Click the *Containers* tab and drag a panel container onto the page.

4. With the panel selected, open the Properties panel.

5. In the text box for the Classes property, type a class name of your choice.

6. Click the title bar or a blank area on the canvas to select the entire page.

7. In the Properties panel, enable the Javascript property.

   The Javascript tab appears below the canvas.

8. Select the Javascript tab.

   The Javascript tab text editor opens.
9. To have the button and menu item appear when the page loads, use the \texttt{iba\_pageloading} event listener by adding the following syntax:

\begin{verbatim}
window.addEventListener("iba\_pageloading", function (e){
   // The code to add a button and menu item will go within this event listener command.
});
\end{verbatim}

10. Add a button to the panel using JavaScript.
   a. First, within the \texttt{iba\_pageloading} event listener, create a variable to represent the panel, such as the following:

\begin{verbatim}
var panel = document.querySelector(".class").ibaObject;
\end{verbatim}

where:

- \texttt{panel} is the name of the variable that you define to represent the panel.
- \texttt{class} is the name you previously typed in the Classes property for the panel on the page.

b. After the panel variable, define the style and appearance of the button and add it to the panel, such as in the following syntax example. This example uses a home icon and places the button before the default resize button:

\begin{verbatim}
var button = panel.addButton(
   {
      "glyphClasses": "fa fa-home", "class": "buttonClass",
      "tooltip": "tooltip text"},
   ".pd-container-title-button-resize", true);
\end{verbatim}

where:

- \texttt{button} is the name of the variable that you define to represent the button.
- \texttt{panel} is the variable representing the panel, defined in step 10a.
- \texttt{fa fa-home} is a glyph class for a Font Awesome icon that looks like a house.
- \texttt{buttonClass} is a CSS class assigned to the button itself. You can use this to apply CSS styling to the button, or reference the button elsewhere in your JavaScript code.
- \texttt{tooltip text} is the text that you want to appear in the tooltip when you point to the button.
Is the class of the resize button on the panel. This is the sibling of the button you are currently adding.

When the value of the before property is set to `true`, the button is placed before the sibling. Otherwise, it is placed after the sibling. If no sibling is specified, it is ordered last.

c. After defining the panel button, create an event listener that allows the button to execute a specified action. The following example causes the button to open the Information Builders website in a new window when it is clicked.

```javascript
button.addEventListener("click", function()
    window.open("http://www.informationbuilders.com");
});
```

where:

- `button` is the variable name that you assigned to the button in step 10b.

11. Add a menu item to the panel’s run-time menu using JavaScript.

a. Create a variable to define the menu item, such as in the following example.

```javascript
var menu = panel.addMenuItem({
    "text": "Menu text", "glyphClasses": "fa fa-globe","class":
    "menu-class"},
    ".class>.ibx_menu_item", true);
```

where:

- `menu` is a variable name that you want to use to represent the menu item.
- `panel` is the name of the variable representing the panel to which the menu is added.
- `Menu text` is the text of the menu item.
- `fa fa-globe` is a glyph class for a Font Awesome icon that looks like the Earth.
- `menu-class` is a CSS class assigned to the menu item itself. You can use this to apply CSS styling to the menu item, or reference the menu item elsewhere in your JavaScript code.
".class>.ibx_menu_item"

Is a selector for the Refresh button in the panel menu, where class is the CSS class assigned to the panel using the Classes property.

true

When the value of the before property is set to true, the menu item is placed before the sibling, which in this case is the Refresh option. Otherwise, it is placed after the sibling. If no sibling is specified, it is ordered last in the menu.

b. After defining the menu item, create an event listener that allows the button to execute a specified action. The following example causes the menu item to run an HTML page in a new window through a URL call when it is clicked.

```javascript
menu.addEventListener("click", function(){
  window.open("http://localhost:8080/ibi_apps/run.bip?
  BIP_REQUEST_TYPE=BIP_LAUNCH&BIP_folder=IBFS%253A%252FWFC%252FRepository%252FPublic%252F2019%252FHTML%252F&BIP_item=html_page.htm");
});
```

where:

`menu`

Is the variable name that you assigned to the menu item in step 11a.

The complete custom JavaScript may resemble the following.

```javascript
window.addEventListener("iba_pageloading", function (e){
  var panel = document.querySelector(".map-panel").ibaObject;
  var ibsite = panel.addButton({
    "glyphClasses": "fa fa-home", "class": "ibButton", "tooltip": "Click to display help."},
    ".pd-container-title-button-resize", true);
  ibsite.addEventListener("click", function(){
    window.open("http://www.informationbuilders.com");});
  var runReport = panel.addMenuItem({
    "text": "Country Report", "glyphClasses": "fa fa-globe","class":
    "globemenu"},
    ".map-panel>.ibx_menu_item", true);
  runReport.addEventListener("click", function(){
    window.open("http://localhost:8080/ibi_apps/run.bip?
    BIP_REQUEST_TYPE=BIP_LAUNCH&BIP_folder=IBFS%253A%252FWFC%252FRepository%252FPublic%252F2019%252FHTML%252F&BIP_item=Basic_2_ctrl_page.htm");
  });
});
```

12. Save the page.

Changes made using custom CSS and JavaScript do not appear on the page at design time. To see the impact of your custom code, you must run the page from the WebFOCUS Home Page.
13. On the WebFOCUS Home Page, right-click the page that you just created and click *Run in new window*.

The page opens in a new browser tab or window, and the customized button and menu item are available. When clicked, they open the links you specified for them in a new tab or window.

**Designer JavaScript API Classes**

As part of the Designer JavaScript API, you can use the following predefined classes.

- **ibaObject**. The base automation object.
- **ibaAccordionContainer**. Accordion container automation object.
- **ibaCarouselContainer**. Carousel container automation object.
- **ibaContent**. Content panel automation object.
- **ibaPage**. Page automation object. The event `iba_pageloading` will be triggered on the global window object. `event.data` will be the `ibaPage` object.
- **ibaPanelContainer**. Panel container automation object.
- **ibaPortal**. Portal automation object.
- **ibaSection**. Page section automation object.
- **ibaTabContainer**. Tab container automation object.

A help plug-in with information about each class is packaged with your WebFOCUS installation. It is available through a URL at the following address:

`http[s]://hostname:port/context/web_resource/doc/automation/index.html`

where:

- **hostname**
  - Is the name of the machine on which the WebFOCUS Client is installed.
- **port**
  - Is the port number on which the server is listening.
- **context**
  - Is the context root of the WebFOCUS application. For example, `ibi_apps`.

**Class: ibaObject**

```
new ibaObject(element)
```
Is the base automation object. Automation objects are created internally by the system. You
never directly instantiate an automation object.

where:

element
   Is the node that is being automated.

Available methods include the following:

- **classList()**
  
  Returns a string, which is the unique, automatically generated class ID of the object being
  automated. It can be used to filter enumerations.

- **customClasses(classes, remove)**
  
  Returns a string. Sets or gets custom classes.
  
  where:

  classes
     String.

     Optional. A space-separated list of classes to be added or removed.

  remove
     Boolean.

     Optional. If true, remove the classes specified in classes, otherwise add them.

- **element()**
  
  Returns an element, the DOM node that is being automated by this object.

Class: ibaPage

new ibaPage(element)

Is the page automation object. Automation objects are created internally by the system. You
never directly instantiate an automation object. The event iba_pageloading will be triggered on
the global window object. event.data will be the ibaPage object.

where:

element
   Is the node that is being automated.
The following triggers can be used with the page object:

- **event:iba_pageloaded.** The page is loaded in the running state.
- **event:iba_beforecontentdescribe.** Before the page content filtering information has been retrieved.
- **event:iba_contentdescribed.** After the page content filtering information has been retrieved, but before it has been processed.
- **event:iba_beforecontentload.** Before the content of a panel is about to load.

These are used in the following JavaScript syntax example:

```javascript
window.addEventListener("iba_pageloading", function (e){
  var page = e.data;
  page.element().addEventListener("iba_pageloaded", function(e){
    var page = e.data;
  });
  page.element().addEventListener("iba_beforecontentdescribe", function (e){
    var describeInfo = e.data;
    var path = describeInfo.path; // The path to the content being described
    // e.preventDefault() will stop the describe from happening
  });
  page.element().addEventListener("iba_contentdescribed", function (e){
    var describeInfo = e.data;
    var path = describeInfo.path; // The path to the content being described
    var wfDescribe = describeInfo.wfDescribe; // The filtering information of the content being described
  });
  page.element().addEventListener("iba_beforecontentload", function (e){
    var loadInfo = e.data;
    var path = loadInfo.path; // The path to the content being described
    var defaultValues = loadInfo.defaultValues; // If default values are used to run the content
    // e.preventDefault() will stop the page from retrieving the content
  });
});
```

You can use the `context` member object to supply the context information for the page.

Available methods include the following:

- **addButton**(options, sibling, before)

  Returns an element, adding a button to the title bar of the page.

  where:

  - **options**
    Object.
One or more button options, which can include the following:

- **icon**. A URL to an image file in .jpeg, .png, or .gif format.
- **glyph**. A glyph or ligature, such as a Material icon.
- **glyphClasses**. Glyph classes. For example, 'material-icons'.
- **class**. Additional CSS classes.
- **tooltip**. A tooltip for the button.

```plaintext
sibling
Selector, element, or jQuery.
```

Optional. A sibling to add before or after. The default is Last.

```plaintext
before
Boolean.
```

Add button before or after the specified sibling.

- **addSection**(options, sibling, before)

Returns an element, adding a section to the page.

where:

```plaintext
options
Object.
```

One or more section options, which can include the following:

- **collapsible**. A Boolean value. When true, the section is collapsible.
- **collapsed**. A Boolean value. When true, the section is created in a collapsed state.

```plaintext
sibling
Selector, element, or jQuery.
```

Optional. A sibling to add before or after. The default is Last.

```plaintext
before
Boolean.
```

Add the section before or after the specified sibling.

- **buttons**(selector)

Returns the page title bar buttons as an array.
where:

`selector`

Selector, element, or jQuery.

Is the buttons selector. All is the default.

- **classList()**

  Returns a string, which is the unique, automatically generated class ID of the object being automated. It can be used to filter enumerations.

- **containers(selector)**

  Returns the page containers as an array.

  where:

  `selector`

  Selector, element, or jQuery.

  Is the containers selector. All is the default.

- **customClasses(classes, remove)**

  Returns a string. Sets or gets custom classes.

  where:

  `classes`

  String.

  Optional. A space-separated list of classes to be added or removed.

  `remove`

  Boolean.

  Optional. If true, remove the classes specified in `classes`, otherwise add them.

- **element()**

  Returns an element, the DOM node that is being automated by this object.

- **refreshFilters()**

  Use to redescribe the existing content and recreate filter panels.

- **removeButton(button)**

  Removes one or more buttons from the title bar of the page.
where:

**button**

Selector, element, or jQuery.
Optional. Is a button selector. All is the default.

- **removeSection(selector)**
  Removes one or more sections from the page.

  where:

  **selector**
  Selector, element, or jQuery.
  Optional. Is a section selector. All is the default.

- **sections(selector)**
  Returns the page sections as an array.

  where:

  **selector**
  Selector, element, or jQuery.
  Is the section selector. All is the default.

- **title(title)**
  Sets the title of the page. If title is not passed, the title of the container is returned as a string or jQuery.

  where:

  **title**
  String.
  Optional. Is the new title of the page.

**Class: ibaSection**

The ibaSection class extends ibaObject.

```javascript
new ibaSection(element)
```

Is the page section automation object. Automation objects are created internally by the system. You never directly instantiate an automation object.
where:

**element**

Is the DOM node that is being automated.

Available methods include the following:

- **addContainer**(type, title, col, row, colspan, rowspan)

  Adds a new container to the section.

where:

**type**

String.

Is one of the following container types:

- 'pane'
- 'tab'
- 'accordion'
- 'carousel'

**title**

String.

Is the container title.

**col**

Integer.

Optional. The column of the section to insert to. By default, the container is added to the first available column.

**row**

Integer.

Optional. The row of the section to insert to. By default, the container is added to the first available row.

**colspan**

Integer.

Optional. The width of the container in columns. 3 is the default.

**rowspan**

Integer.
Optional. The height of the container in rows. 5 is the default.

- **classId()**
  
  Returns a string, which is the unique, automatically generated class ID of the object being automated. It can be used to filter enumerations.

- **collapsed(collapsed)**
  
  Makes the section collapsed, or returns the current collapsed state or a chainable automation object.
  
  where:

  ```
  collapsed
  Boolean.
  
  Optional. If true, collapse the section. Otherwise, expand.
  ```

- **collapsible(collapsible)**
  
  Makes the section collapsible, or returns the current collapsible state or a chainable automation object.

  where:

  ```
  collapsible
  Boolean.
  
  Optional. If true, make the section collapsible.
  ```

- **containers(selector)**
  
  Returns the containers in the section as an array.

  where:

  ```
  selector
  Selector, element, or jQuery.
  
  An optional containers selector. All is the default.
  ```

- **customClasses(classes, remove)**
  
  Returns a string. Sets or gets custom classes.

  where:

  ```
  classes
  String.
  
  Optional. A space-separated list of classes to be added or removed.
  ```
remove
Boolean.
Optional. If true, remove the classes specified in classes, otherwise add them.

❑ element()
Returns an element, the DOM node that is being automated by this object.

Class: ibaContainer
new ibaContainer(element)
Is the container automation object. Automation objects are created internally by the system. You never directly instantiate an automation object.
where:
element
Is the DOM node that is being automated.
Available methods include the following:

❑ addButton(options, sibling, before)
Returns an element, adding a button to the title bar of the container.
where:

options
Object.
One or more button options, which can include the following:
❑ icon. A URL to an image file in .jpeg, .png, or .gif format.
❑ glyph. A glyph or ligature, such as a Material icon.
❑ glyphClasses. Glyph classes. For example, 'material-icons'.
❑ class. Additional CSS classes.
❑ tooltip. A tooltip for the button.

sibling
Selector, element, or jQuery.
Optional. A sibling to add before or after. The default is Last.

before
Boolean.
Add button before or after the specified sibling.

- **addContent(path, description, replaceExisting)**

  Returns elements. Adds new content by replacing the content in the current content panel or adding a sub-panel.

  **where:**

  **path**
  - String.
  - Path of the content being added.

  **description**
  - String.
  - Description of the content being added.

  **replaceExisting**
  - Boolean.
  - Optional. When true, replace the existing content. When false, which is the default, add new content.

- **addMenuItem(options, sibling, before)**

  Returns an element, adding a menu item to the container menu.

  **where:**

  **options**
  - Object.
  - One or more menu item options, which can include the following:

    - **text**. The menu item text.
    - **icon**. A URL to an image file in .jpeg, .png, or .gif format.
    - **glyph**. A glyph or ligature, such as a Material icon.
    - **glyphClasses**. Glyph classes. For example, 'material-icons'.
    - **class**. Additional CSS classes.

  **sibling**
  - Selector, element, or jQuery.
  - Optional. A sibling to add before or after. The default is Last.
before
Boolean.
Add the menu item before or after the specified sibling.

- `addMenuSeparator(options, sibling, before)`
  Returns an element, adding a separator to the container menu.
  where:
  - `options` Object.
    Menu separator options. You can use the class property to specify additional CSS classes.
  - `sibling` Selector, element, or jQuery.
    Optional. A sibling to add before or after. The default is Last.
  - `before` Boolean.
    Add menu separator before or after the specified sibling.

- `buttons(selector)`
  Returns the container title bar buttons as an array.
  where:
  - `selector` Selector, element, or jQuery.
    Is the buttons selector. All is the default.

- `classList()`
  Returns a string, which is the unique, automatically generated class ID of the object being automated. It can be used to filter enumerations.

- `contents(selector)`
  Returns the content panels in the container as an array.
  where:
  - `selector` Selector, element, or jQuery.
Is the content selector. All is the default.

- **customClasses**(classes, remove)

  Returns a string. Sets or gets custom classes.

  where:

  - **classes**
    - String.
    - Optional. A space-separated list of classes to be added or removed.

  - **remove**
    - Boolean.
    - Optional. If true, remove the classes specified in `classes`, otherwise add them.

- **element()**

  Returns an element, the DOM node that is being automated by this object.

- **removeButton**(button)

  Removes one or more buttons from the title bar of the container.

  where:

  - **button**
    - Selector, element, or jQuery.
    - Optional. Is a button selector. All is the default.

- **removeContent**(selector)

  Removes content from the container.

  where:

  - **selector**
    - Selector, element, or jQuery.
    - Optional. Is a content selector. All is the default.

- **removeMenuItem**(selector)

  Removes one or more menu items from the container menu.

  where:

  - **selector**
    - Selector, element, or jQuery.
    - Optional. Is a menu item selector. All is the default.
removeMenuSeparator(selector)

Removes one or more separators from the container.

where:

selector
   Selector, element, or jQuery.
   Optional. Is a menu separator selector. All is the default.

title(title)

Sets the title of the container. If title is not passed, the title of the container is returned as a string or jQuery.

where:

title
   String.
   Optional. Is the new title of the container.

Class: ibaAccordionContainer

The ibaAccordionContainer class extends ibaContainer.

new ibaAccordionContainer(element)

Is the accordion container automation object. Automation objects are created internally by the system. You never directly instantiate an automation object.

where:

element
   Is the DOM node that is being automated.

Available methods include the following:

addButton(options, sibling, before)

Returns an element, adding a button to the title bar of the accordion container.

where:

options
   Object.
   One or more button options, which can include the following:

   icon. A URL to an image file in .jpeg, .png, or .gif format.
A glyph or ligature, such as a Material icon.

Glyph classes. For example, 'material-icons'.

Additional CSS classes.

A tooltip for the button.

Sibling
Selector, element, or jQuery.
Optional. A sibling to add before or after. The default is Last.

Boolean.
Add button before or after the specified sibling.

Returns elements. Adds new content by replacing the content in the current content panel or adding a new accordion tab.

String.
Path of the content being added.

String.
Description of the content being added.

Boolean.
Optional. When true, replace the existing content. When false, which is the default, add new content.

Returns an element, adding a menu item to the accordion container menu.

Object.
One or more menu item options, which can include the following:

- **text.** The menu item text.
- **icon.** A URL to an image file in .jpeg, .png, or .gif format.
- **glyph.** A glyph or ligature, such as a Material icon.
- **glyphClasses.** Glyph classes. For example, 'material-icons'.
- **class.** Additional CSS classes.

**Sibling**
Selector, element, or jQuery.

Optional. A sibling to add before or after. The default is Last.

**before**
Boolean.

Add the menu item before or after the specified sibling.

- **addItemSeparator(options, sibling, before)**
  Returns an element, adding a separator to the accordion container menu.

  where:

  **options**
  Object.

  Menu separator options. You can use the class property to specify additional CSS classes.

  **sibling**
  Selector, element, or jQuery.

  Optional. A sibling to add before or after. The default is Last.

  **before**
  Boolean.

  Add menu separator before or after the specified sibling.

- **buttons(selector)**
  Returns the container title bar buttons as an array.

  where:

  **selector**
  Selector, element, or jQuery.
Is the buttons selector. All is the default.

- **classId()**

  Returns a string, which is the unique, automatically generated class ID of the object being automated. It can be used to filter enumerations.

- **contents(selector)**

  Returns the content panels in the container as an array.

  where:

  - `selector`  
    Selector, element, or jQuery.
    Is the content selector. All is the default.

- **customClasses(classes, remove)**

  Returns a string. Sets or gets custom classes.

  where:

  - `classes`  
    String. Optional. A space-separated list of classes to be added or removed.

  - `remove`  
    Boolean. Optional. If true, remove the classes specified in `classes`, otherwise add them.

- **element()**

  Returns an element, the DOM node that is being automated by this object.

- **removeButton(button)**

  Removes one or more buttons from the title bar of the container.

  where:

  - `button`  
    Selector, element, or jQuery. Optional. Is a button selector. All is the default.

- **removeContent(selector)**

  Removes content from the container.
where:

`selector`

Selector, element, or jQuery.
Optional. Is a content selector. All is the default.

- **removeMenuItem(selector)**

Removes one or more menu items from the container menu.

where:

`selector`

Selector, element, or jQuery.
Optional. Is a menu item selector. All is the default.

- **removeMenuSeparator(selector)**

Removes one or more separators from the container.

where:

`selector`

Selector, element, or jQuery.
Optional. Is a menu separator selector. All is the default.

- **selectContent(selector)**

Returns an element. Selects a content pane in the accordion container.

where:

`selector`

Selector, element, or jQuery.
Optional. Is a content selector. All is the default.

- **title(title)**

Sets the title of the container. If `title` is not passed, the title of the container is returned as a string or jQuery.

where:

`title`

String.
Optional. Is the new title of the container.
**Class: ibaCarouselContainer**

The `ibaCarouselContainer` class extends `ibaContainer`.

```
new ibaCarouselContainer(element)
```

Is the carousel container automation object. Automation objects are created internally by the system. You never directly instantiate an automation object.

where:

- `element`
  Is the DOM node that is being automated.

Available methods include the following:

- **addButton**(*options*, *sibling*, *before*)
  Returns an element, adding a button to the title bar of the carousel container.
  
  where:

  - `options`
    Object.
    
    One or more button options, which can include the following:

    - **icon**. A URL to an image file in .jpeg, .png, or .gif format.
    - **glyph**. A glyph or ligature, such as a Material icon.
    - **glyphClasses**. Glyph classes. For example, 'material-icons'.
    - **class**. Additional CSS classes.
    - **tooltip**. A tooltip for the button.

  - `sibling`
    Selector, element, or jQuery.
    
    Optional. A sibling to add before or after. The default is Last.

  - `before` Boolean.
    
    Add button before or after the specified sibling.

- **addContent**(*path*, *description*, *replaceExisting*)
  Returns elements. Adds new content by replacing the content in the current content panel or adding a new carousel slide.
where:

**path**

String.

Path of the content being added.

**description**

String.

Description of the content being added.

**replaceExisting**

Boolean.

Optional. When true, replace the existing content. When false, which is the default, add new content.

- **addMenuItem**(options, sibling, before)**

Returns an element, adding a menu item to the carousel container menu.

where:

**options**

Object.

One or more menu item options, which can include the following:

- **text**. The menu item text.
- **icon**. A URL to an image file in .jpeg, .png, or .gif format.
- **glyph**. A glyph or ligature, such as a Material icon.
- **glyphClasses**. Glyph classes. For example, 'material-icons'.
- **class**. Additional CSS classes.

**sibling**

Selector, element, or jQuery.

Optional. A sibling to add before or after. The default is Last.

**before**

Boolean.

Add the menu item before or after the specified sibling.

- **addMenuSeparator**(options, sibling, before)**

Returns an element, adding a separator to the carousel container menu.
where:

- **options**
  - Object.
  - Menu separator options. You can use the class property to specify additional CSS classes.

- **sibling**
  - Selector, element, or jQuery.
  - Optional. A sibling to add before or after. The default is Last.

- **before**
  - Boolean.
  - Add menu separator before or after the specified sibling.

- **buttons(selector)**
  - Returns the container title bar buttons as an array.
  - where:
    - **selector**
      - Selector, element, or jQuery.
      - Is the buttons selector. All is the default.

- **classId()**
  - Returns a string, which is the unique, automatically generated class ID of the object being automated. It can be used to filter enumerations.

- **contents(selector)**
  - Returns the content panels in the container as an array.
  - where:
    - **selector**
      - Selector, element, or jQuery.
      - Is the content selector. All is the default.

- **customClasses(classes, remove)**
  - Returns a string. Sets or gets custom classes.
where:

`classes`

String.

Optional. A space-separated list of classes to be added or removed.

`remove`

Boolean.

Optional. If true, remove the classes specified in `classes`, otherwise add them.

- **element()**
  
  Returns an element, the DOM node that is being automated by this object.

- **removeButton(button)**
  
  Removes one or more buttons from the title bar of the container.

  where:

  `button`
  
  Selector, element, or jQuery.
  
  Optional. Is a button selector. All is the default.

- **removeContent(selector)**
  
  Removes content from the container.

  where:

  `selector`
  
  Selector, element, or jQuery.
  
  Optional. Is a content selector. All is the default.

- **removeMenuItem(selector)**
  
  Removes one or more menu items from the container menu.

  where:

  `selector`
  
  Selector, element, or jQuery.
  
  Optional. Is a menu item selector. All is the default.

- **removeMenuSeparator(selector)**
  
  Removes one or more separators from the container.
where:

\[ \text{selector} \]

Selector, element, or jQuery.
Optional. Is a menu separator selector. All is the default.

- **selectContent(selector)**

Returns an element. Selects a content pane in the carousel container.

where:

\[ \text{selector} \]

Selector, element, or jQuery.
Optional. Is a content selector. All is the default.

- **title(title)**

Sets the title of the container. If title is not passed, the title of the container is returned as a string or jQuery.

where:

\[ \text{title} \]

String.
Optional. Is the new title of the container.

**Class: ibaPanelContainer**

The ibaPanelContainer class extends ibaContainer.

\[ \text{new \ ibaPanelContainer(element)} \]

Is the panel container automation object. Automation objects are created internally by the system. You never directly instantiate an automation object.

where:

\[ \text{element} \]

Is the DOM node that is being automated.

Available methods include the following:

- **addButton(options, sibling, before)**

Returns an element, adding a button to the title bar of the panel container.
where:

- **options**
  - Object.
  - One or more button options, which can include the following:
    - **icon.** A URL to an image file in .jpeg, .png, or .gif format.
    - **glyph.** A glyph or ligature, such as a Material icon.
    - **glyphClasses.** Glyph classes. For example, 'material-icons'.
    - **class.** Additional CSS classes.
    - **tooltip.** A tooltip for the button.

- **siblings**
  - Selector, element, or jQuery.
  - Optional. A sibling to add before or after. The default is Last.

- **before**
  - Boolean.
  - Add button before or after the specified sibling.

- **addContent(path, description, replaceExisting)**

  Returns elements. Adds new content by replacing the content in the current content panel or adding a new panel.

  where:

  - **path**
    - String.
    - Path of the content being added.

  - **description**
    - String.
    - Description of the content being added.

  - **replaceExisting**
    - Boolean.
    - Optional. When true, replace the existing content. When false, which is the default, add new content.
addMenuItem\(\text{\(\text{options}, \text{sibling}, \text{before}\)}\)\)

Returns an element, adding a menu item to the container menu.

where:

\(\text{\textit{options}}\)
Object.

One or more menu item options, which can include the following:

- \textit{text}. The menu item text.
- \textit{icon}. A URL to an image file in .jpeg, .png, or .gif format.
- \textit{glyph}. A glyph or ligature, such as a Material icon.
- \textit{glyphClasses}. Glyph classes. For example, 'material-icons'.
- \textit{class}. Additional CSS classes.

\(\text{\textit{sibling}}\)
Selector, element, or jQuery.

Optional. A sibling to add before or after. The default is Last.

\(\text{\textit{before}}\)
Boolean.

Add the menu item before or after the specified sibling.

addMenuSeparator\(\text{\(\text{\(\text{options}, \text{sibling}, \text{before}\)}\)}\)\)

Returns an element, adding a separator to the container menu.

where:

\(\text{\textit{options}}\)
Object.

Menu separator options. You can use the class property to specify additional CSS classes.

\(\text{\textit{sibling}}\)
Selector, element, or jQuery.

Optional. A sibling to add before or after. The default is Last.

\(\text{\textit{before}}\)
Boolean.
Add menu separator before or after the specified sibling.

- **buttons(selector)**
  Returns the container title bar buttons as an array.
  
  where:

  - *selector*
    Selector, element, or jQuery.
    Is the buttons selector. All is the default.

- **classList()**
  Returns a string, which is the unique, automatically generated class ID of the object being automated. It can be used to filter enumerations.

- **contents(selector)**
  Returns the content panels in the container as an array.
  
  where:

  - *selector*
    Selector, element, or jQuery.
    Is the content selector. All is the default.

- **customClasses(classes, remove)**
  Returns a string. Sets or gets custom classes.
  
  where:

  - *classes*
    String.
    Optional. A space-separated list of classes to be added or removed.
  
  - *remove*
    Boolean.
    Optional. If true, remove the classes specified in *classes*, otherwise add them.

- **element()**
  Returns an element, the DOM node that is being automated by this object.

- **removeButton(button)**
  Removes one or more buttons from the title bar of the container.
where:

**button**

Selector, element, or jQuery.
Optional. Is a button selector. All is the default.

- removeContent*(selector)*

Removes content from the container.

where:

**selector**

Selector, element, or jQuery.
Optional. Is a content selector. All is the default.

- removeMenuItem*(selector)*

Removes one or more menu items from the container menu.

where:

**selector**

Selector, element, or jQuery.
Optional. Is a menu item selector. All is the default.

- removeMenuSeparator*(selector)*

Removes one or more separators from the container.

where:

**selector**

Selector, element, or jQuery.
Optional. Is a menu separator selector. All is the default.

- title*(title)*

Sets the title of the container. If *title* is not passed, the title of the container is returned as a string or jQuery.

where:

**title**

String.
Optional. Is the new title of the container.
**Class: ibaTabContainer**

The ibaTabContainer class extends ibaContainer.

```
new ibaTabContainer(element)
```

Is the carousel container automation object. Automation objects are created internally by the system. You never directly instantiate an automation object.

where:

- **element**
  - Is the DOM node that is being automated.

Available methods include the following:

- **addButton(options, sibling, before)**
  - Returns an element, adding a button to the title bar of the tab container.
  - where:
    - **options**
      - Object.
      - One or more button options, which can include the following:
        - **icon**. A URL to an image file in .jpeg, .png, or .gif format.
        - **glyph**. A glyph or ligature, such as a Material icon.
        - **glyphClasses**. Glyph classes. For example, 'material-icons'.
        - **class**. Additional CSS classes.
        - **tooltip**. A tooltip for the button.
    - **sibling**
      - Selector, element, or jQuery.
      - Optional. A sibling to add before or after. The default is Last.
    - **before**
      - Boolean.
      - Add button before or after the specified sibling.

- **addContent(path, description, replaceExisting)**
  - Returns elements. Adds new content by replacing the content in the current content panel or adding a new tab.
where:

*path*

String.

Path of the content being added.

*description*

String.

Description of the content being added.

*replaceExisting*

Boolean.

Optional. When true, replace the existing content. When false, which is the default, add new content.

- addMenuItem(options, sibling, before)

Returns an element, adding a menu item to the tab container menu.

where:

*options*

Object.

One or more menu item options, which can include the following:

- **text.** The menu item text.
- **icon.** A URL to an image file in .jpeg, .png, or .gif format.
- **glyph.** A glyph or ligature, such as a Material icon.
- **glyphClasses.** Glyph classes. For example, 'material-icons'.
- **class.** Additional CSS classes.

*sibling*

Selector, element, or jQuery.

Optional. A sibling to add before or after. The default is Last.

*before*

Boolean.

Add the menu item before or after the specified sibling.

- addMenuSeparator(options, sibling, before)

Returns an element, adding a separator to the tab container menu.
where:

`options`  
Object.

Menu separator options. You can use the class property to specify additional CSS classes.

`sibling`  
Selector, element, or jQuery.

Optional. A sibling to add before or after. The default is Last.

`before`  
Boolean.

Add menu separator before or after the specified sibling.

- **buttons(selector)**

  Returns the container title bar buttons as an array.

  where:

  `selector`  
  Selector, element, or jQuery.

  Is the buttons selector. All is the default.

- **classId()**

  Returns a string, which is the unique, automatically generated class ID of the object being automated. It can be used to filter enumerations.

- **contents(selector)**

  Returns the content panels in the container as an array.

  where:

  `selector`  
  Selector, element, or jQuery.

  Is the content selector. All is the default.

- **customClasses(classes, remove)**

  Returns a string. Sets or gets custom classes.
where:

*classes*

String.

Optional. A space-separated list of classes to be added or removed.

*remove*

Boolean.

Optional. If true, remove the classes specified in *classes*, otherwise add them.

- **element()**
  Returns an element, the DOM node that is being automated by this object.

- **removeButton(button)**
  Removes one or more buttons from the title bar of the container.
  where:

  *button*
  Selector, element, or jQuery.
  Optional. Is a button selector. All is the default.

- **removeContent(selector)**
  Removes content from the container.
  where:

  *selector*
  Selector, element, or jQuery.
  Optional. Is a content selector. All is the default.

- **removeMenuItem(selector)**
  Removes one or more menu items from the container menu.
  where:

  *selector*
  Selector, element, or jQuery.
  Optional. Is a menu item selector. All is the default.

- **removeMenuSeparator(selector)**
  Removes one or more separators from the container.
where:

\[ \text{selector} \]

Selector, element, or jQuery.
Optional. Is a menu separator selector. All is the default.

- **selectContent(selector)**

Returns an element. Selects a content pane in the tab container.

where:

\[ \text{selector} \]

Selector, element, or jQuery.
Optional. Is a content selector. All is the default.

- **title(title)**

Sets the title of the container. If title is not passed, the title of the container is returned as a string or jQuery.

where:

\[ \text{title} \]

String.
Optional. Is the new title of the container.

**Class: ibaContent**

The ibaContent class extends ibaObject.

new ibaContent(element)

Is the content panel automation object. Automation objects are created internally by the system. You never directly instantiate an automation object.

where:

\[ \text{element} \]

Is the DOM node that is being automated.

Available methods include the following:

- **classId()**

Returns a string, which is the unique, automatically generated class ID of the object being automated. It can be used to filter enumerations.

- **customClasses(classes, remove)**
Returns a string. Sets or gets custom classes.

where:

- `classes` String.
  Optional. A space-separated list of classes to be added or removed.

- `remove` Boolean.
  Optional. If true, remove the classes specified in `classes`, otherwise add them.

- `element()`
  Returns an element, which is the DOM node that is being automated by this object.

- `path()`
  Returns the path of the content as a string.

Filtering Data on Designer Pages

WebFOCUS Designer filter controls are versatile and allow you to facilitate multiple filtering scenarios. Depending on the needs of your enterprise and on the specifics of the data that you are using, you can configure filter controls to fit your unique needs. Examples below show you different types of controls and how to use them.

Adding Filters to Pages in WebFOCUS Designer

Creating a page filter in WebFOCUS Designer is a quick and intuitive process. Whenever you add parameterized content item to the canvas, such as a report with parameters or chart with parameters, Designer recognizes the parameters and creates filters for them automatically. The tool then notifies you of any available filters with a notification, and a badge count is overlaid on the Quick Filter button, as shown in the following image.
After you add filters to a page, you can edit filter parameters, customize your filter grid, and change the types of your filter controls.

There are three ways to add filters to a page in WebFOCUS Designer:

- Automatically, by clicking the Quick Filter button.
- Manually, by creating an empty filter bar or filter modal window and populating it with select filters.
- Manually, inside a Grid container.

**Procedure: How to Automatically Add Filters to a Page Using the Quick Filter Button**

1. In the Resource selector, drag a parameterized item of your choice from the Resources tree to the canvas.

   The Quick Filter button appears on the toolbar with the badge icon showing the number of unbound filters.

2. Optionally, add more content.

   **Note:** The quickest way to create parameterized content featuring the same set of parameters is to start by creating a Reporting Object with desired parameters, and then using the Reporting Object to create content. To do so, right-click your Reporting Object, point to New, and then click Chart or Report.

3. Click the Quick Filter button.

   The filter bar with all available filters appears above your content.

4. Optionally, customize your filter bar as described below.

   - Right-click a cell to access shortcut menu options, as shown in the following image.
The available options are:

- **Add filter controls.** Opens the Add Filter Controls dialog box, where you can choose from the list of available controls and add them to the filter grid.
  
  **Note:** If all available filters display on the page, the Add Filter Controls setting is inactive.

- **Insert row above.** Inserts an empty row above the current row in the filter grid.

- **Insert row below.** Inserts an empty row below the current row in the filter grid.

- **Style.** Opens the Properties panel, where you can customize the grid style and cell alignment.

- **Delete cell.** Deletes the current cell.

- **Delete grid.** Deletes the entire filter bar.

- Right-click a control to access shortcut menu options, as shown in the following image.

![Shortcut Menu Options](image)

The available options are:

- **Edit label.** Makes the label of the control an editable text.
  
  **Note:** Another way to edit a control label is to double-click the field, type the new text, and press Enter.

- **Convert.** Opens the Convert Control To dialog box, where you can choose between various control types.

- **Settings.** Opens the Properties panel, where you can customize label position, label alignment, and control object width.

- **Style.** Opens the Properties panel, where you can customize cell styling options.

- **Delete control.** Deletes the current control.
Dr. any filter cell to a new location in the grid.

- Multi-select two controls, right-click one of them, and then click Combine to combine the two controls into one. An example of two combined controls is shown in the following image.

The Combine option only applies to dates and sliders.

- Drag a control into a cell with other controls. This action puts two separate controls into one cell. The drag marker is shown allowing you to position one control in front or behind another control. You can separate the controls again by dragging one control out of the cell.

5. Save your changes.

**Procedure: How to Add Filters to a Page Manually**

1. In the Resource selector, drag a parameterized item of your choice from the Resources tree to the canvas.

   The Filter button appears on the toolbar, with the badge icon showing the number of available filters.

2. Optionally, add more content with the same set of parameters.

3. Click the **Page filter configuration** button.

   The Page Filter Configuration dialog box opens.

4. Click **Create empty filter bar**, as shown in the following image.

   ![Page Filter Configuration dialog box](image)

   **Note:** If you prefer a floating modal window instead of a filter bar, click **Create empty filter modal window**.
5. Right-click inside any filter cell, and then click *Add filter controls*.

   The Add Filter Controls dialog box opens, and lists all available controls selected by default, as shown in the following image.

   ![Add Filter Controls Dialog Box](image)

6. Clear the controls that you want to exclude.

7. Optionally, change types of your controls where applicable by selecting a desired option in the Control column, as shown in the following image.

   ![Control Types](image)

   **Note:** When working with button sets, keep in mind that they look best when positioned in a single line.

8. Click *Add filter controls*.

   The controls are added to the filter bar.

9. Save your changes.

**Procedure:** **How to Add Filters to Page Using a Grid Container**

1. In the Resource selector, drag a parameterized item of your choice from the Resources tree to the canvas.

   The Filter button appears on the toolbar, with the badge icon showing the number of available filters.
2. Optionally, add more content with the same set of parameters.

3. In the Resource selector, click the Containers button.

4. Drag the Grid container onto the canvas.

5. Right-click inside the grid container, and then click Add filter controls.
   
The Add Filter Controls dialog box opens, and lists all available controls selected by default.

6. Clear the controls that you want to exclude.

7. Click Add filter controls.
   
The controls are added to the grid container.

   **Note:** You can also drag a control from the filter bar to a grid container directly, if the filter bar is open and populated with controls.

8. Optionally, move and resize your grid container and content to achieve the desired alignment.

   An example of a simple layout featuring a grid container with filter controls is shown in the following image.

   ![Example Image]

9. Save your changes.

**Configuring Filter Control and Filter Grid Properties**

You can configure the properties of the filter grid using the Properties panel, which is context-sensitive. For example, when you click a filter cell, the cell style properties open in the Properties panel. When you click a filter control, the general and style properties for this control open in the Properties panel.
The Properties panel for a cell is shown in the following image. When you configure these properties, you modify the alignment of content within a cell or change the style layout of the filter grid.

The properties for a grid cell are:

- **Cell Content Alignment**: Controls the alignment of the label and control inside the cell. The options include top, middle, bottom, left, center, and right.

- **Grid Type**: Controls the grid layout of the filter bar. The options include 1-Column, 2-Column, 3-Column, 4-Column, and 6-Column.

- **Grid Style**: Controls the style of the filter grid.
The Properties panel for a filter control is comprised of two tabs: general and style properties. The Settings tab is displayed in the following image. Using these properties, you can view the type of filter control that shows on the page, add a tooltip or placeholder text, and set the default value.

The Settings tab contains the following properties:

- **General Settings.** This section includes the following options:
  - **Type.** Displays the type of the control.
  - **Tooltip.** Displays a tooltip when you hover over the filter control.
  - **Global name.** Designates a global name to the control.

- **Control Settings.** This section includes the following options:
  - **Optional.** Toggles between optional and required control.
  - **Allow reordering.** If selected, allows you to reorder values inside the control at run time. The default order is alphabetical. This property is only available for check box controls.
- **Placeholder text.** Enables a configurable placeholder text that you can show users inside a required control when it has no value. The default text is *Make a selection*. This property is only available for drop-down list controls.

  **Note:** The Placeholder text property is only used for required controls. The placeholder text appears before a selection has been made. To change the default text for an optional control, enable the *Show All option* property and type a value for the Display text property. The display text option in the control represents all values.

- **Search.** Adds a search field to the filter drop-down menu. This option is available for drop-down list, check box, and radio button controls.

  **Note:** If the select list contains 50 or more values the Search option is enabled automatically.

- **Selection controls.** Adds *Select all* and *Clear* buttons to the filter drop-down menu. This property is only available for multiple select lists and check box controls.

  **Note:** The Selection controls and Show All options cannot be selected at the same time.

- **Data Settings.** This section includes the following options:

  - **Show All option.** Adds an All option to the control that the user can select.

    **Note:** Choosing this option results in the parameter receiving a _FOC_NULL value. If this parameter is used in a WHERE condition, it results in the WHERE condition being removed from the request and all data values for this field displaying the page.

  - **Display text.** Allows you to specify a custom value for the Show All option in the control. The default text is *All*.

    **Note:** The Display text property is available when *Show All option* is selected. The display text option in the control represents all values. To supply a placeholder value for required controls that appears before a selection is made, use the Placeholder text property.

  - **Default value.** Displays the default value of the control. For optional parameters you can edit this field and override the control value.

  - **Parameters.** Shows the name of the parameters that are associated with this control.
The style tab is displayed in the following image. Similar to the properties of a cell, you can modify the positions of labels in a control, define the alignment, and set the object width.

The style properties are:

- **Label Position.** Controls the position of the filter label in the relation to the control. The options are above, right, left, and no label.

- **Label Alignment.** Controls the alignment of the filter label. The options are left, right, and center.
- **Direction.** Controls the alignment of the elements inside the control. This property is available for radio button, checkbox and button set controls. The options are horizontal and vertical. The vertical option is enabled, by default, when the control has five or more values.

- **Label/Control Split.** Controls the space ratio between the label and control inside the cell. This option is only available when the label position is set to right or left.

- **Control Object Width.** Sets the width of the control in relation to the filter cell. The options are:
  - **Auto.** Adjusts the width of the control automatically to accommodate the name of each value.
  - **Max.** Fills the entire filter cell. This is the default value.
  - **Percentages.** Set the control width to various percentages, as they relate to the filter cell.

- **Control Object Height.** Sets the maximum height of the control. If the list of elements exceeds the maximum height of the control, a scrollbar is added to this control. This property is available for radio button, checkbox and button set controls when their Direction property is set to vertical. The default value is 150px. You can change this value as necessary.

### Choosing an Event Model for Your Page Filter

WebFOCUS Designer supports two event models for passing parameters to your page content:

- **On-selection Change.** Whenever you change a value of any filter control on the page, parameterized content refreshes to reflect your selection. This model is enabled, by default.

- **Submit Button.** After you make all desired changes to filter controls on the page and click the Submit button, parameterized content refreshes to reflect all your selections. This model can be enabled by dragging a Submit button control into the filter grid.

### Procedure: How to Use On-selection Change Filters

1. Add filters to a page as described in *Adding Filters to Pages in WebFOCUS Designer* on page 579.
2. Click the Preview button.
The preview mode is activated, allowing you to interact with content and filters. If your page content contains default values, page filters and page content run in parallel, which results in a faster loading time.

3. Make filter selections.

Each time you make a selection, the content refreshes to reflect it.

**Note:** Notice that the filter controls are chained in such a way that each selection automatically reflects the available choices in other filters. In our example, we set Category to Televisions. Now, the Product Model filter only shows models of televisions, as shown in the following image. WebFOCUS Designer chains controls automatically, if the parameters are defined in the metadata layer with the WITHIN keyword to relate them.

![Image of Sales Dashboard](image)

4. Exit the preview mode and save your changes.

**Procedure:** How to Use Filters With a Submit Button

1. Add filters to a page, as described in *Adding Filters to Pages in WebFOCUS Designer* on page 579.

2. From the Resource selector, click the Controls tab, and then drag the Submit button onto the filter grid.

   The Submit and Reset buttons display in the filter grid.
3. Optionally, customize the Submit and Reset buttons in any of the following ways:

- Align the Submit and Reset buttons by selecting the cell in which the buttons reside and customize the Cell Content Alignment option on the Style tab of the Properties panel. In this example, we selected Align control bottom and Align control center.

- Add a tooltip to the buttons by selecting each one and populating our the Tooltip field on the Settings tab of the Properties panel.

- Customize the width of the buttons in relation to the filter cell by selecting one of the options under the Control Object Width property. In this example we selected 50%.

**Note:** You can delete one or both buttons by right-clicking them and clicking Delete.

4. Click the **Preview** button.
   The preview mode is activated, allowing you to interact with content and filters.

5. Make filter selections and click **Submit**.
   The content refreshes to reflect all your selections upon clicking the Submit button, as shown in the following image.

6. Click **Reset**.
   The filters return to their default values.

7. Optionally, click **Submit** again to refresh the content with the default values.
Note: If you deleted the Reset button in the previous step, you must select default values manually, and then click Submit to return to the default state.

8. Exit the preview mode and save your changes.

**Working With Required Parameters**

When you have required parameters in your content, WebFOCUS Designer interprets them as required filter controls. Required controls are marked in red, prompting you to make a selection for the request to be processed. The image below shows an example of a required filters control.

With a required parameter in place, your content does not refresh until you select filter values. There are two ways to create a required filter control:

- By adding a required parameter to a chart or report in InfoAssist.
- By converting an optional control to a required one in WebFOCUS Designer.

**Procedure:** How to Add a Parameter to a Content Item

1. On the WebFOCUS Home Page, on the actions bar, click Report or Chart.
   - The Open dialog box opens.
2. Select a data source in the Open dialog box and click Open.
   - InfoAssist opens.
3. Create a report or chart.
   To learn more about creating content in InfoAssist, see the WebFOCUS InfoAssist User's Manual.

4. On the Data tab, click Filter.
   The Create a filtering condition dialog box opens.

5. Double-click the Double-click or press F2 to edit text, select a field, leave the condition at Equal to, and then click Value.
   The drop-down dialog box opens.

6. Set the Type field to Parameter and select the Dynamic radio button.

7. Optionally, select the Select multiple values at runtime check box to create a multiple select filter control and Optional check box to create an optional filter control.
   In our example, we are creating a multiple select required control. An example of a complete configuration is shown in the following image.

8. Save your changes and exit InfoAssist.

9. In WebFOCUS Designer, in the Resource selector, drag your new content item to the canvas.
   The content item does not load. Instead, a blank container displays a message: A required parameter is missing. The Quick Filter button appears on the toolbar with the badge icon showing one available filter.
10. Click the Quick Filter button.
   The filter bar with one filter appears above the content item. The filter control is marked in red and the Make a selection text displays inside the control field.

11. Click the Preview button.
   The preview mode opens.

12. Select one or more values from the list.
   The filter control is no longer red. It displays your selections. The content refreshes to reflect the filter values, as shown in the following image.

13. Exit the preview mode and save your changes.

**Procedure:** How to Convert an Optional Filter Control to a Required One

1. In WebFOCUS Designer, add filters to a page, as described in *Adding Filters to Pages in WebFOCUS Designer* on page 579.

2. Click an optional filter control and then click the Properties button.
   The Properties panel opens.

3. In the Settings tab, disable the Optional setting and then disable the Show All option setting.
   The filter control is marked in red and the Make a selection text displays inside the control field.
4. Click the Preview button.
   The preview mode opens. The content does not refresh.
5. Select a value for the required filter control.
   The content refreshes to reflect your selection.
6. Exit the preview mode and save your changes.

Working With Single and Multiple Select Lists

There are two types of list controls in WebFOCUS Designer:

- **Single Select List.** Allows you to pick a single value at run time.
- **Multiple Select List.** Allows you to pick multiple values at run time.

An example of a single select list control is shown in the following image.

Once you have made a selection in a single select list, your content instantly refreshes to reflect that selection.

An example of a multiple select list control is shown in the following image.

Once you have made all your selections in the multiple select list, you must click outside of the control for the content to refresh.
You can customize your list controls with the search feature by enabling the *Search* setting in the Properties panel. Once enabled, it adds the search field to your list and allows you to quickly navigate to a specific value. Simply start typing any word or syllable and all values that contain it will display. When a list contains 50 or more values, the search feature is enabled automatically. You can disable it at any time by disabling the *Search* setting in the Properties panel.

If a list contains 200 or more values, the paging feature is added to the bottom of the control. When paging is active, 10 values display per page. An example of a long list with the paging feature enabled is shown in the following image.

![Example of a long list with paging feature](image)

You can further enhance a multiple select list by enabling the *Selection controls* option in the Properties panel. Once enabled, it adds the *Select all* and *Clear* buttons to the list. This feature is especially useful when you need to eliminate just a few values from your results. You can click *Select All*, clear the values that you need to eliminate, and click outside of the control to refresh your content.
If the *Selection controls* and *Search* features are enabled at the same time, you can use the *Select all* button to select all search results, as shown in the following image.

![Product Model:](image)

**Working With Slider Controls on a Page**

A slider control is a horizontal track with a marker that you can slide between a minimum and maximum value. This versatile control is often used to choose a numeric value within a fixed range. An example of a slider control is shown in following image.

![Min MPG:](image)

**Procedure:** How to Create a Slider Control Using WebFOCUS Designer

1. On the WebFOCUS Home Page, on the Common tab or Designer tab of the Actions bar, click *Chart*.
2. Select a data source in the Open dialog box and click *Select*.
   WebFOCUS Designer opens in chart mode.
3. Create a chart.
   To learn more about creating charts in WebFOCUS Designer, see the *Creating Charts* on page 219 topic.
4. Drag a measure field into the Filter toolbar.
A control appears, allowing you to select default values for the filter parameter, as shown in the following image.

5. Set the default range of values for the filter.
6. Optionally, right-click the control on the Filter toolbar and click Greater than or Less than to select only the minimum or maximum value for the filter.

When a parameter using one of these options is added to a page in WebFOCUS Designer, the control is a slider with a fixed start or end point.

7. Save your changes and exit WebFOCUS Designer.
8. On the WebFOCUS Home Page, on the Common tab or Designer tab of the Actions bar, click Page.

WebFOCUS Designer opens in page mode.

9. In WebFOCUS Designer, select a page template and then, from the Resource selector, drag your new chart to the canvas.

The Quick Filter button appears on the toolbar with the badge icon indicating that filters are available. If the parameter used the range option, the Quick Filter button indicates that two parameters are available, resulting in a slider where you can adjust both heads. If the parameter used the Greater than or Less than option, the Quick Filter indicates that one parameter is available, resulting in a slider where you can adjust either the minimum or maximum slider head.

10. Click the Quick Filter button.
The slider control displays in the filter grid, as shown in the following image.

![Slider Control Image]

**Procedure:** How to Create a Slider Control Using InfoAssist

1. On the WebFOCUS Home Page, on the actions bar, select the *InfoAssist* tab and then click *Report* or *Chart*.
   
The Open dialog box opens.

2. Select a data source in the Open dialog box and click *Open*.
   
   InfoAssist opens.

3. Create a report or chart.
   
   To learn more about creating content in InfoAssist, see the *WebFOCUS InfoAssist User's Manual*.

4. On the *Data* tab, click *Filter*.
   
The Create a filleting condition dialog box opens.

5. Create two parameters representing minimum and maximum values and make them optional.
In this example we create the minimum and maximum parameters for the MPG field in the car report. An example of the completed filtering condition is shown in the following image.

6. Save your changes and exit InfoAssist.

7. On the Home Page, right-click your new content item, and then click Edit with text editor. The Text Editor window opens.

8. Edit the syntax by providing the data range values.
An example of the modified syntax is shown in the following image.

```
ENGINE int CACHE SET ON
SET FACE=NONE
SET SQUIZZLE=ON
-DEFAULT wf_htmlencoding=cs;
SET HTMLENCODING=wf_htmlencoding

SET HTMLCSS=ON
-DEFAULT wf EMPTYREPORT=ON;
SET EMPTYREPORT=wf EMPTYREPORT

-DEFAULT wf SUMMARY='Summary';
-DEFAULT wf TITLE='WebFOCUS Report';
-DEFAULT MIN MPG = 10;
-DEFAULT MAX MPG = 40;
TABLE FILE sharemp/car
   SUM CAR_SPECS.MPG
   BY CSR,COMP,CAR
   BY CAR,CAR,MODEL
WHERE CAR_SPECS.MPG GE MIN MPG, (FROM 1 TO 20) FORMAT=D6. Max MPG,
WHERE CAR_SPECS.MPG LE MAX MPG, (FROM 2 TO 30) FORMAT=D6. Max MPG,
ON TABLE SHOW, FORMAT HTML
ON TABLE HORIZONTAL ON
ON TABLE SHOW TOTAL
ON TABLE SHOW LINES 100
ON TABLE SHOW GROUP ON
ON TABLE SHOW STYLE 4
   INCLUDE=INF/FILE/IBI_HTML_DIR/ibi_themes/Warm.strftime,
   TYPE=REPORT, TITLE=wf TITLE.QUOTESTRING, SUMMARY=wf SUMMARY.QUOTESTRING,
   ORIENTATION=LANDSCAPE, BOUNDING=OFF,
   STYLE=IN
END
```

9. Save your changes and exit the Text Editor.

10. In WebFOCUS Designer, in the Resource selector, drag your new content item to the canvas.

The Quick Filter button appears on the toolbar with the badge icon showing two available filters.

11. Click the **Quick Filter** button.
The slider controls display in the filter grid, as shown in the following image.

12. Optionally, combine two controls together. Multi-select both controls, right-click one of them, and then click *Combine*.

Your controls are combined. You can edit the label to reflect your new combined control. An example of the combined slider control is shown in the following image.

13. Save your changes.
Working With Date Controls

Parameters that contain dates are recognized by WebFOCUS Designer as date controls. An example of the date controls on the page is shown in the following image.

In this example, each of the controls is associated with a distinct parameter. One parameter uses the Greater Than WHERE condition, the other parameter uses the Less Than WHERE condition.

The calendar feature inside a date control allows you to select a specific date value. Once you pick a specific date, it is always spelled out, so that it can be supported by all internationalized applications.
Optionally, you can combine two date controls into one date range control. To do so, multi-select two date controls and then click Combine. An example of a combined date range control is shown in the following image.

![Date Range Control Example](image)

The user can select a custom range of dates, as shown in the image, or use any of the presets to select a more general date period.

The calendar feature inside a date control allows you to select a specific date value. Once you pick a specific date, it is always spelled out, so that it can be supported by all internationalized applications.

Using Global Name to Synchronize Filter Controls

The Global Name property is a powerful tool that allows you to quickly synchronize filter control values between different pages. The Global Name property is configured on the Settings tab of the Properties panel for a filter control. Once enabled, it allows you to match your filter selections across multiple pages at run time within the same browser session.

**Procedure: How to Configure Global Name Filter Control Property**

1. In WebFOCUS Designer, add filters to a page, as described in Adding Filters to Pages in WebFOCUS Designer on page 579.

2. Click a filter control that you want to synchronize and then click the Properties button.

   The Properties panel opens.
3. In the Settings tab, populate the Global Name field, as shown in the following image.

![Image](image.png)

**Note:** You can choose any text as a global name for your control. Combined controls, such as date ranges and slider controls, have a single global name property.

4. Optionally, repeat step 3 for all the filter controls that you want to synchronize.

5. Save the page.

6. Create a second page, populate it with parameterized content, and add the same set of filter controls as you did in step 1.

   **Note:** To streamline this process, you can use the Save As option to create a new version of the existing page, leave the configured filters intact, and replace the content on the canvas. Make sure the Global Name values are identical between the filter controls on both pages.

7. Save the second page and exit WebFOCUS Designer.

8. Run one of your newly created pages.

9. Select filter control values.
An example of the filter control selections is shown in the following image.

10. Run the second page.

The page runs with the same filter control values as the ones you have selected on the previous page, as shown in the following image.

Note: If your page was created prior to the WebFOCUS Release 8205 and it uses the Global Name feature and contains default content, you must save it again using WebFOCUS Designer to ensure optimal performance.
11. Optionally, change the filter control values on the second page and see how they synchronize with the ones on the first page.

Personalizing Default Values for Filter Controls

You can personalize default values for filters in a page based on users or conditions. This feature uses the amper (&&) global variable to specify the default option for a filter control. For example, you can set the Region value for a user, using the && global variable, and link it to the filter control to show their region as the selected value.

Procedure: How to Personalize Default Values for Filter Controls

1. Start by creating a FOCEXEC which specifies the global variable and the default values. In this example, we are setting default values for different users for the Region control.

   1. On the Home Page, in the Action bar, click the Other tab, and then click Text Editor.

      The New Text Resource dialog box opens

   2. Add the following FOCEXEC code to set the global variable:

      ```
      - &&DEFREGION
      -SET &&DEFREGION= IF &FOCSECUSER EQ user1 THEN 'North America' ELSE IF &FOCSECUSER EQ user2 THEN 'EMEA' ELSE 'South America'
      ```

   3. Save your changes and close the Text Editor.

   4. Publish the FOCEXEC.

2. Bring the global variable in effect by either running the FOCEXEC or mapping its path in the Administration Console for it to be run when the user signs in.

To map the FOCEXEC you just created in the Administration console, add the focexec path to the Paths to be executed on user Sign-in field in the Other section under Application Settings. The focexec path name can be copied from the Properties panel in the Home page.

Note: If you are setting the focexec to be executed on sign in, make sure that the WebFOCUS user credentials are passed to the server. One way to do that is to set the server connection to Trusted and select the Pass WebFOCUS User ID and other Groups radio button. For more information on how to use Administration Console, see the WebFOCUS Security and Administration technical content.

3. Create a Designer page, as described in Creating Pages in WebFOCUS Designer on page 527.

4. Populate your new page with the content that features the Region parameter and add the Region filter to the canvas, as described in Adding Filters to Pages in WebFOCUS Designer on page 579.
5. Click the Region filter, open the Properties panel and, in the Settings tab, under Data Settings, type the default value variable that you created in the FOCEXEC (in this case, &&DEFREGION).

The following image shows an example of the Default value property populated with the variable.

6. Save, publish, and run your page.

The default value for the Region filter control is North America, as shown in the following image.
7. Sign in to WebFOCUS as one of the users mentioned in the FOCEXEC.
8. Run the same page.

The following image shows an example of the user with the username user1 running the page. The default Region value now is EMEA.

Enabling Content Customization

As an alternative to pre-defined content, you can enable users to customize content at run time, which can make portal pages more engaging, useful, and interactive. With this feature you can also control which items users can access, by assigning a specific path to the Add content button in the Properties panel. This feature can be used with panel, tab, carousel, and accordion containers. If you enable this feature on a multi-content container, the Add content button automatically appears on every new tab, slide, or area.

Procedure:  How to Configure the Content Customization Properties

1. In WebFOCUS Designer, drag an empty panel on the canvas.

   Note: If you want to display initial default content and let users change it at run time, drag a content item on the canvas.
2. With the panel or content item selected, in the Properties panel, on the Settings tab, disable the *Lock content* option.

   If you used an empty panel, the *Add content* icon displays in the middle of the selected panel.

3. If you want to direct your selection to a specific area in the repository, click the ellipses next to the *Path* property to select a domain or folder that you want to display in your selection area at run time.

4. Keep the *Lock path* option selected, if you want to limit your selection to the path specified in the previous step.

5. Optionally, select the *Flatten list* option, if you want to hide the folder hierarchy inside your selection area and only display items.

6. Optionally, select the *Hide tags* option, if you want to hide all tags from your selection area.

7. Configure the *Initial View* option, choosing between Grid and List.

   **Note:** Users can change the view at run time inside the Select Item dialog box.

   The following image shows an example of the configured Container Customization properties.

![Content Customization](image)

8. Save the page.

**Procedure: How to Select Content at Run Time**

1. Run the page that features interactive panels.
2. Click the *Add content* button, as shown in the following image.

If you used a content item, click the Options menu and then click *Replace*, as shown in the following image.

The Select Item dialog box opens.

If the *Lock path* option is disabled, you can navigate between domains using the breadcrumb trail.

If the * Flatten list* option is disabled, you can navigate between the folders within the selection area hierarchy.

You can also use the search function, toggle between the Grid and List views, and refresh your selection area.
3. Make a selection and click Add.
   The selected item displays inside the panel.

4. To go back to the initial view of the interactive panel, click Options, and then click Remove, as shown in the following image.

   ![Interactive Panel](image)

   The item is removed from the panel, and the Add content button displays.

5. To replace an item with another item, click Options, and then click Replace.
   The Select Item dialog box opens where you can make a new selection.

   **Note:** When the page is used in a portal, content customization changes that the user makes at run time to unlocked containers is remembered if the user has the Save Portal Customization privilege. If the user does not have this privilege or if the content customization changes are made to a standalone page, these changes are not remembered by WebFOCUS.

---

**Localizing Designer Pages**

You can translate pages created in WebFOCUS Designer to reflect a specific language preference. This localization includes text strings shown in the page heading, container titles and control labels.

When working with Western European languages you may leave the WebFOCUS client code page and your application server JVM file encoding set to their default values of 1252/Cp1252. If you plan to support double-byte languages, such as Japanese or Chinese, you must use Unicode/UTF-8 for the WebFOCUS code page and UTF8 for the JVM file encoding.
**Note:** Contact customer support for assistance with translating Designer pages if any of the following apply to you:

- You are changing the WebFOCUS code page or JVM file encoding settings in an environment that is already being used in production. This may result in certain repository data being misread by WebFOCUS.

- You need to allow non-Administrators to import page translation property files. This can be accomplished with custom security rules.

- You are downloading translation property files for a page that has special characters in its IBFS path, such as in its name or in the names of any of its parent folders. WebFOCUS creates the download zip file correctly and Winzip expands the zip correctly, but Winzip does not properly zip the edited files back up correctly because of the special characters in the folder path. As a workaround you can use a zip program that supports UTF8 folder name encoding or you can move the unzipped translation folder structure to the `WebFOCUS\cm\import` folder.

**Procedure:** How to Translate a Designer Page

1. In the Administration Console, enable the Dynamic Language Switch and choose the languages you plan to support.
   
   **Note:** This step must be performed by a WebFOCUS Administrator.

2. Create a new WebFOCUS Designer page, or locate the existing WebFOCUS Designer page that you want to customize.

3. On the Home Page, right-click your Designer page, and then click `Download translations`.
   
   The archive file, which includes translation property files for each of the languages configured on your WebFOCUS environment, downloads to your machine.

4. Unzip the archive file in your preferred directory.

5. Expand the `root_content, WFC, Repository`, and other folders until you reach the folder that matches the name of your page.
   
   The properties files for each language that you enabled in the Dynamic Language Switch setting are available in the folder for your page.

6. Open the language property file that you want to modify in a text editing tool that supports editing of UTF-8 encoded files, such as Notepad++.

7. Supply a translation for all your custom elements.
An example of the translated terms is highlighted in the following image.

![Translation Example](image)

**Note:** WebFOCUS will escape certain special characters with a backslash (\), including the colon (:), the equal sign (=), and the backslash. Leave these escape characters in place if you encounter them in the property files.

8. Save your changes and close the text editing tool.

9. Create a new zip archive for the edited property files.

   It is important to preserve the folder structure of the property files as well as the other files originally included in the zip file.

   Steps 2-9 can be performed by any user who has the WebFOCUS Designer privilege.


    **Note:** You must select *Add New and Update Existing Resources* in the Import Package dialog box to ensure that the property files are saved.

    To learn more about WebFOCUS Change Management, see the *WebFOCUS Security and Administration* manual.

    The strings inside the page are now localized.

    **Note:** This step must be performed by a WebFOCUS Administrator or a user who has been granted appropriate security privileges.

11. To localize the page title displayed on the Home Page, right-click your page on the Home Page, and then click *Properties*.
The Properties panel opens.

12. Next to the Language property, click View All.

The Language Properties dialog box opens.

13. Populate the Title field for your new language with the localized title.

The following image shows an example of the customized language preferences.

```
<table>
<thead>
<tr>
<th>Default Language</th>
<th>Title</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>My Page</td>
<td></td>
</tr>
<tr>
<td>Spanish</td>
<td>Mi Página</td>
<td></td>
</tr>
</tbody>
</table>
```

14. Click OK, and then click Save on the Properties panel.

The page title is now localized.

15. In the banner menu, click Preferences.

The My Preferences dialog box opens.

16. Change Language to the one for which you performed your translation, and click OK.

The Home Page reloads using the new language.

17. Right-click your page, and then click Run, or the equivalent of this option in your new language.

The page runs and displays your localized custom elements, as shown in the following image.

![Image of localized custom elements]
Enabling and Sharing Personal Pages

Personal pages are created at run time by the user and allow the new level of versatility in a way users organize and use portals. Personal pages remain visible only to the user that created them, unless the user shares them. Personal pages reside inside the My Pages folder in the repository.

Procedure: How to Enable Personal Pages

1. From the WebFOCUS Home Page, in the Resources tree, select the domain or folder where you want to create the portal, click the Designer tab in the Content Explorer, and then click Portal.

   The New Portal dialog box opens.

2. Select Create My Pages menu.

3. Make the remaining selections for the new portal, and then click Create.

   The new portal is created in the specified domain or folder.

4. Publish the portal.

   Note: This step is crucial for activating the My Pages menu.

   The personal pages are now enabled and can be added by users at run time.

Procedure: How to Use Personal Pages

1. Run the portal in which personal pages are enabled.

2. Click My Pages, and then click the + icon to add a new page.

   Note: Depending on your navigation layout, the My Pages area can display as a tab or as a banner link.

   The New Page dialog box opens, as shown in the following image, where you can select a template and link to an existing standalone page in the repository.
3. Click a template of your choice.

The page displays a series of interactive panels, as shown in the following image.

4. Add content to the panels as described in *How to Select Content at Run Time* on page 610.

5. If parameterized content is added to a page, optionally, click the *Show filters* button to display available filters.

The Selections dialog box opens where you can apply filters to your content.

6. Double-click the Page Heading and type a new title for your personal page.

7. Optionally, double-click the page title in the sidebar and type a new title.

8. To share the page with other users, click the *Share* button.

The Share with Others dialog box opens.

9. Type the names of users and groups with which you want to share your personal page and click *OK*.

The page is now available to the specified users and the Share button changes color to blue.

10. To revoke access to the page, click the *Share* button again.

The Share with Others dialog box opens where you can remove users or groups from the sharing list.
**Note:** If your sharing privilege does not allow you to open the Share with Others dialog box, you can share or unshare your personal page simply by clicking the Share button. In this case, the page is shared with every user that has access to the domain in which the portal resides.

11. To delete the page, click the Delete button 🗑️.
Building Portals

The new generation Business Intelligence (BI) Portal is an analytical content management and deployment system that provides a flexible and interactive environment for both authors and consumers of data analytics. It allows users to access and share content, customize their portal experience, collaborate, and build sophisticated structures for data storytelling.

In this chapter:

- Creating Portals
- Customizing Portals
- Applying Themes to Portals
- Adding Icons to Portal Levels
- Using Drilldowns to Refresh and Filter Items in a Portal

Creating Portals

The new generation Business Intelligence (BI) Portal is an analytical content management system that provides a flexible and interactive environment for both authors and consumers of data analytics. It allows users to access and share content, customize their portal experience, collaborate, and build sophisticated structures for data storytelling.

The key benefits of the BI portal are:

- Multi-level page navigation, which is especially useful in organizing large numbers of pages.
- Flexible page layout options for dashboards and InfoApps.
- Mobile-friendly design that ensures responsive behavior on any device and with any type of content.
- Built-in page filter that is automatically enabled whenever users display parameterized content on a personal page.
- Modern styling featuring clean and streamlined UI and interchangeable themes.

You can create a portal structure in your repository, which you can populate by adding pages and workbooks. You can also configure the option for users to create personal pages.
Procedure: How to Create a Portal

1. From the WebFOCUS Home Page, in the Resources tree, select the domain or folder where you want to create the portal, click the Designer tab in the Content Explorer, and then click Portal.

   The New Portal dialog box opens.

2. Populate the fields.

   The following fields are available:

   - **Title.** The title of the portal.
   - **Name.** The name of the portal. This field is populated automatically to match the Title field. You can edit the field with a custom name, if you want.
   - **Alias.** Creates an alias for your portal.
   - **Banner.** Activates the banner for your portal. This option is enabled, by default.
     
     **Note:** It is recommended to disable the banner if you plan to embed your portal into a third-party application.
   - **Show portal title in banner.** When selected, displays the title of the portal in the banner.
   - **Logo.** Allows you to customize a logo to customize your portal.
   - **Navigation.** Provides layout selection for your portal. The options are two-level side, three-level, and two-level top.
   - **Maximum width.** Controls the maximum width of the portal, which includes the banner, all pages, and side navigation. If specified, overrides the Maximum width property set for pages in the portal.
     
     **Note:** The placeholder text changes to a pixel value when you enter a number.
   - **Show top navigation in banner.** If selected, displays the folder structure as banner links rather than tabs. This option is only available for three-level and two-level top layouts.
   - **Theme.** Allows you to select themes that can be customized.
   - **URL.** A read-only field that displays the URL for the portal.
     
     **Note:** When you type an Alias value, the URL field automatically changes to reflect the new location.
Create My Pages menu. If selected, enables users to create personal pages at run time.

Note: This option is not available in the Edit Portal dialog box.

An example of the New Portal dialog box that has been populated with information shown in the following image.

3. Click Create.

The new portal structure is created in the specified domain or folder. It is now ready to be populated with folders, workbooks, pages, and shortcuts that serve as links to other workbooks and pages.

4. To edit your portal, right-click it in the Resources tree or inside the WebFOCUS Explorer, and then click Edit.

The Edit Portal dialog box opens, where you can change your selections.
Working With Personal Pages

Personal pages are created at run time by the user and allow the new level of versatility in a way users organize and use portals. Personal pages remain visible only to the user that created them, unless the user shares them. Personal pages reside inside the My Pages folder in the repository.

Procedure: How to Enable Personal Pages

1. From the WebFOCUS Home Page, in the Resources tree, select the domain or folder where you want to create the portal, click the Designer tab in the Content Explorer, and then click Portal.
   The New Portal dialog box opens.
2. Select Create My Pages menu.
3. Make the remaining selections for the new portal, and then click Create.
   The new portal is created in the specified domain or folder.
4. Publish the portal.
   Note: This step is crucial for activating the My Pages menu.
   The personal pages are now enabled and can be added by users at run time.

Procedure: How to Use Personal Pages

1. Run the portal in which personal pages are enabled.
2. Click My Pages, and then click the + icon to add a new page.
   Note: Depending on your navigation layout, the My Pages area can display as a tab or as a banner link.
   The New Page dialog box opens, as shown in the following image, where you can select a template and link to an existing standalone page in the repository.
3. Click a template of your choice.

The page displays a series of interactive panels, as shown in the following image.

![Interactive Panels Image]

4. Add content to the panels.

5. If parameterized content is added to a page, optionally, click the Show filters button to display available filters.

   The Selections dialog box opens where you can apply filters to your content.

6. Double-click the Page Heading and type a new title for your personal page.

7. Optionally, double-click the page title in the sidebar and type a new title.

8. To share the page with other users, click the Share button.

   The Share with Others dialog box opens.

9. Type the names of users and groups with which you want to share your personal page and click OK.

   The page is now available to the specified users and the Share button changes color to blue.

10. To revoke access to the page, click the Share button again.

    The Share with Others dialog box opens where you can remove users or groups from the sharing list.
Note: If your sharing privilege does not allow you to open the Share with Others dialog box, you can share or unshare your personal page simply by clicking the Share button. In this case, the page is shared with every user that has access to the domain in which the portal resides.

11. To delete the page, click the Delete button.

Defining a Portal Structure

Each portal is a conglomerate of various parts that you can use to make your portal a comprehensive representation of your data narrative. For example, you can add pages and workbooks to your portal to showcase data. You can create sections and sub-sections to better organize your content. The structure of a portal can be as simple or as complex as required by your specific purpose. There are four content types that you can add to a portal:

- Folder
- Workbook
- Page
- Shortcut to a page or workbook

You can use these elements to define a portal structure by building a simple folder hierarchy.

Procedure: How to Define a Portal Structure Using Content

1. Create a portal as described in How to Create a Portal on page 620.
2. On the Home Page, in the Resources tree, select the portal you want to modify.
3. Using the actions bar, add content to create a portal navigation layout of your choice.

You can create pages, workbooks, and folders to populate your portal. You can also use the Shortcut feature to link existing standalone pages to your portal.
The images below show an example of the initial view of the portal that consists of pages and folders.

**Portal Navigation at Design Time**

**Portal Navigation at Run Time**
When tabs or links overflow beyond the width of a page, an ellipsis icon displays allowing you to access the entire list of tabs or links, as shown in the following image.

4. Optionally, add more folders, subfolders, and pages to your portal.
The images below show an example of how folders, subfolders, and pages make up the structure of a portal.

5. Once your portal is complete, you can publish it and make it available to other users.

**Procedure: How to Use Shortcuts to Add Pages to a Portal**

1. On the Home Page, select a portal you want to modify.
2. Navigate to the level inside the portal where you want to add a page.
3. From the actions bar, click **Shortcut**.
   
   The Select dialog box opens.
4. Using the breadcrumb trail, navigate to the page you want to add to your portal and click it. Notice that the Title and Name fields are inactive, as shown in the following image.

5. Click Select.

The page displays inside the portal structure with the Shortcut icon added to its page icon.

6. To change the page title, right-click the page, click Properties, edit the Title field in the Properties panel, and then click Save.

The new page title displays.

Customizing Portals

All users can remove their own customizations from a portal. Developers and administrators can also remove customizations for all users. Customizations are made when users customize unlocked content inside base portal pages. Personal pages and edits to personal pages are not considered customizations and, therefore, they are not removed.

Procedure: How to Remove Customizations From a Portal in the Repository

1. On the Home Page, right-click a portal.

2. Point to Customizations and click one of the following options:

   - Remove my customizations. Removes your own customizations from a portal.
Remove customizations for all users. Removes all user customizations that were made to the interactive base pages in the portal.

Procedure: How to Remove Customizations From a Portal at Run Time
1. From the Menu Bar of a portal, click your username.
2. Click Remove my customizations.
   The customizations are removed from the interactive base pages in the portal.

Applying Themes to Portals
You can apply themes to a WebFOCUS BI portal to customize its look and feel. Themes can be applied to new portals inside the New Portal dialog box or to existing portals inside the Edit Portal dialog box. A theme affects the look of the entire set of elements of the portal, including colors, opacity, and typeface styles.

There are three themes that WebFOCUS offers:

- Designer 2018
- Light
- Midnight

Additionally, you can create your unique custom theme and apply it to a portal.

Procedure: How to Apply a Theme to a Portal
1. On the Home Page, in the WebFOCUS explorer, right-click a portal that you want to modify, and then click Edit.
   The Edit Portal dialog box opens.
2. Select a theme of your choice from the Themes drop-down list, as shown in the following image.
Applying Themes to Portals

**Procedure: How to Create a Custom Portal Theme**

1. Sign in to WebFOCUS as an administrator.

2. On the Home Page, from the Resources tree, expand the Global Resources folder, and then expand the Themes folder.

3. Click the Custom folder, and then click Folder in the actions bar.

   The New Folder dialog box opens.

4. Populate the Title field with the name of your custom theme, and click OK.

   The custom theme folder is created. Your theme CSS file will reside in this folder. If you know which CSS classes should be used for your theme, you can create a new text file, add your code, and save this file as a Cascading Style Sheet. Alternatively, you can modify an existing theme CSS file. In this example, we copy and modify the theme CSS file for the Light theme.

5. Expand the Standard folder, and then expand the Light folder.

6. Copy the theme CSS file, and paste it inside your new custom theme folder.

   The following image shows the correct hierarchy of the custom theme file.

   ![Theme File Hierarchy](image)

**Note:** Do not modify the name of the theme CSS file. It is required that it stays the same for all themes. The name of the folder in which the file resides is the theme name that is available in WebFOCUS Designer. You can also localize the name of your theme. For more information on localization, see *Localizing Designer Pages* on page 612.
7. Right-click the theme CSS file that you copied, and then click *Edit*.
   
The Text Editor opens in the new browser tab.

8. Modify the code to achieve the desired look of the theme.
   
   In this example, we changed the side bar, banner, and background colors, as shown in the following images.

   ![CSS Code Example](image1)

   ![CSS Code Example](image2)

9. Save and close the Text Editor.

10. On the Home Page, apply the new custom theme to a page, as described in *How to Apply a Theme to a Portal* on page 629.

11. Run your portal to view the new theme.
An example of a new theme applied to a porta is shown in the following image.

![Image of porta](image)

**Note:** You can control access to themes, both standard and custom, by configuring the List And Read security rule for the theme folder. To learn more about security rules, see the *WebFOCUS Security and Administration* technical content.

### Adding Icons to Portal Levels

You can further customize your portal by adding icons to pages and folders.

**Procedure:** How to Add Icons to Folders and Pages Inside a Portal

1. Create a WebFOCUS Portal, as described in *Creating Portals* on page 619.
2. Select the level to which you want to add icons, and locate its parent level.
   
   In our example, we are enabling icons for the top level of navigation, so we will be configuring the portal folder itself.
3. Right-click the portal folder and then click *Properties*.
   
   The Properties panel opens.
4. Navigate to the *Advanced* tab, select the *Show menu icons for children* check box, and click *Save*.
   
   Now, any icons added to the top level pages and folders are visible.
5. Without closing the Properties panel, click the page or folder to which you want to add an icon.
6. In the Menu Icon field, type the CSS class of an icon you want to add. The following image shows an example of adding an icon to the Marketing folder.

![Example of adding an icon to the Marketing folder](image)

You can reference available icons and their CSS classes in the following websites:

- [https://fontawesome.com/icons/](https://fontawesome.com/icons/)
- [https://material.io/tools/icons/?style=baseline](https://material.io/tools/icons/?style=baseline)

Click an icon that you want to use in your portal and copy its CSS class. If you are using icons from the fontawesome.com website, your CSS class should look similar to the following:

```css
far fa-circle
```

**Note:** WebFOCUS no longer supports the 4.7 version of Font Awesome icons. If you used those icons previously, they will not display in the current version of WebFOCUS. To restore the icons, navigate to the Font Awesome version 5 gallery by following the link above and replace your old CSS classes with the current ones. If you have a license for the Font Awesome Pro icon packs, you can use CSS classes for your Pro icons instead.

If you are using icons from the material.io website, your CSS class should look similar to the following:

```css
material_icons pie-chart
```

7. Repeat the process for other folders and pages of your choice, making sure that the parent folder has the *Show menu icons for children* property selected.
**Note:** Depending on the type of your navigation layout, certain levels do not display icons. The second level of the two-level side navigation layout does not display icons. The third level of the three-level navigation layout does not display icons. All layouts display icons for the top level of navigation. Responsive menus on mobile devices display icons for all levels of navigation.

8. To see the icons applied, run your portal.

The following image shows the three-level navigation layout with icons added to the top and second levels.
When you resize the window, the same icons display in the side menu, as shown in the following images.

Using Drilldowns to Refresh and Filter Items in a Portal

You can use the Refresh BI Portal drill-down option when creating content in InfoAssist to refresh and filter items in a portal, providing dynamic content with consistent behavior across an application.

To enable this behavior, you need to perform the following steps:

1. **Create drill-down links in a chart or report.** Create drill-down links in a chart or report, which you will configure to pass values to parameterized content in a portal.

2. **Create parameterized content.** Create charts and reports that will be refreshed and filtered based on the selected drill-down link.

3. **Add your content to pages.** Create pages containing the chart or report with the drill-down links and the target items.

4. **Create a portal to refresh.** Add these pages to a portal, which refreshes with parameter values applied when you select a drill-down link.

**Procedure:** How to Create Drill-Down Links in a Chart or Report

In this step, you will create a simple report with hyperlinks, which you will later configure to refresh and set parameter values in a portal.

1. Sign in to WebFOCUS as a developer or administrator.
Using Drilldowns to Refresh and Filter Items in a Portal


   InfoAssist opens in a new browser tab, and the Open dialog box appears.

3. Select a data source and click OK.

   The Report canvas loads.

4. Drag fields from the Data pane onto the canvas or into field containers in the Query pane to create a report.

5. Right-click the field whose values you will turn into drill-down links, and click Drill Down. Alternatively, select the field by clicking it on the canvas or in the Query pane, and, on the Field tab, in the Links group, click Drill Down.

   At runtime, clicking a link from the selected field will pass the associated value to other filtered content in the portal.

6. The Drill Down dialog box opens.

7. Select the Refresh BI Portal radio button.

8. From the Refresh menu, select All Pages to pass the selected values to all pages in a portal, or select Current Page to apply the selected value only to content on the same page as the drill-down report.

9. Optionally, type a description for the drilldown. The description appears in the tooltip when there are multiple drill-down options on a single column of a report or section of a chart.

10. Click the Add Parameter button.

11. Type a name for the parameter.

    **Note:** Remember this name. You will use it in subsequent steps. Specifically, it is used to pass the value of the selected drill-down link to the parameter filters in the target content.

12. From the Type menu, select Field.

13. From the Value menu, select the field whose values you want to use to filter the target content in the portal. Typically, this is the field to which you are adding the drill-down links, but it does not have to be.
The following image shows an example of the Drill Down dialog box, where Country is the name of the parameter.

14. Click OK.

Note: The links remain inactive and evoke no error messages until the target value is configured.

15. Save the report.

Procedure: How to Create Parameterized Content

In this step, you build parameterized reports and charts that will be filtered and refreshed when a drill-down link is clicked.

1. From InfoAssist, click the Application button, then click New.
2. Click Build a Report.
3. Select the same data source that you used for the initial report, then click OK.
4. Drag fields from the Data pane onto the canvas or into the field containers in the Query pane to create a report.
5. From the Data tree, navigate to the same field for which the hyperlinks in the drill-down report are parameterized, and drag it into the Filter pane.

The Create a filtering condition dialog box opens.

Alternatively, on the Data tab, in the Filter group, click Filter, then select that field from the Field drop-down list.

6. If it does not open automatically, open the Value menu. Make the following changes:

- Change the Type to Parameter.
- Change the default parameter Name to the same name that you provided for the drilldown, if they are not already the same.
- Keep the Simple radio button selected.
- Select the Optional check box.

The name of the filter must match the name of the drilldown parameter for values to be passed between them. Selecting Optional allows your content to load with all values before you select a drill-down link to filter it.

The following image shows an example of the filtering condition, where Country is the name of the parameter.
7. Click OK.

8. Save the second report and close InfoAssist.
   You can repeat steps 1-8 to create more content.

**Procedure: How to Add Your Content to Pages**

In this step, you will create pages and add the drill-down report and target report to them. These pages will later be added to a portal.

1. Create a new page. On the WebFOCUS Home Page, click the **Designer** tab, then click **Page**.
   WebFOCUS Designer opens in a new tab.

2. Select a page template to continue. If you prefer to size the content on the page yourself, select **Blank**.

3. On the Resources tree, navigate to the drill-down report that you created, and drag it onto the page.
   A new container appears with the report inside it.

4. Optionally, resize the drill-down report container, and add more content to the page.

5. Save the first page.

6. Create a second page with the target report. If you selected **All Pages** as the refresh option for the drill-down links, this page will refresh when selections are made in the drill-down report.
   Click the Application menu, then click **New**.

7. Select a page template for the second page.

8. On the Resources tree, navigate to the target report, which has a parameter filter that can be set by the drilldowns, and drag it onto the page.
   The Quick Filter button appears with a label indicating the number of unprompted parameters on the page, allowing you to generate controls for them. Do not click this button. The drill-down report will act as the control for this page.

9. Optionally, resize the target report container, and add more content to the page.

10. Save the second page and exit WebFOCUS Designer.
Procedure: How to Create a Designer Portal With Drill-Down Content

In this step, you will create a portal and add your pages to it. When the portal is run, clicking a drill-down link in the drill-down report will update content on all pages of the portal with the selected filter value. When you switch pages to view the target report, the filter is applied.

1. Create a new portal. On the WebFOCUS Home Page, click the Designer tab and then click Portal.

   The New Portal dialog box opens.

2. Provide a title, optional alias, and other configuration settings, then click Create.

   The portal appears as a new folder in the WebFOCUS Explorer.

   For more information on creating portals, see Creating Portals on page 619.

3. Add the pages created earlier to the portal in one of the following ways

   - On the WebFOCUS Home Page, drag each page into the portal folder. The pages are now saved in the portal.

   - Double-click the portal folder to open it. On the Action bar, click Shortcut and navigate to each page. The pages are still saved outside the portal, which can be useful if you plan to use them in multiple portals.

4. Optionally, reorder the pages in the portal. On the WebFOCUS Home Page, double-click the portal to enter its folder structure, then right-click a page and click Properties. Click the Advanced tab in the Properties panel and type a number in the Sort order text box to set a sort order. Pages with lower sort orders appear first.

   Click Save to apply your sorting changes.

5. Run the portal to see its behavior. Return to the workspace or folder containing the portal, right-click the portal, and click Run. The portal runs in a new browser tab.

6. Test the refresh behavior. First, select the page with the target report. See that it has not been filtered. Return to the page with drill-down report and click a drill-down link. The page refreshes. Return to the page with the target report, and notice that it is now filtered for the value that you selected from the drill-down report.
Scheduling and Distributing Content

Learn how you can use schedules to distribute content to multiple recipients, create a distribution list to issue content to multiple recipients, create event-based schedules using alerts, and share your content right from the WebFOCUS Home Page.

In this chapter:

- Creating Schedules and Distribution Lists
- Creating Event-based Schedules
- Sharing Content in WebFOCUS

Creating Schedules and Distribution Lists

Once you create content, for example, a report, you can use WebFOCUS to schedule and distribute your content to multiple recipients across your organization. Schedules allow you to specify when the report is run, the format in which the report is output, and how you want to distribute it. You can create basic and more advanced schedules, maintain saved schedules, and review schedule information before and after the distribution of your report.

You can distribute a scheduled report through email, send it directly to a designated FTP server, on-demand printing, to a location in your repository, as well as to your repository as a Report Library item. Using a Distribution List is an easy way to send content to multiple recipients. You can also specify the name of a distribution list stored in the Repository that contains the individual recipients, rather than entering each recipient separately into a schedule. You can also share distribution lists with other users or change its ownership to be managed or published.

For more information on distribution lists and scheduling reports, see the ReportCaster technical content.

Creating Event-based Schedules

In the business climate today, cutting costs and increasing profitability are critical. Organizations create and distribute reports for evaluating and taking action when management-defined conditions are not met. The evaluation can largely be automated using Alert reporting.
Alert reporting automates the evaluation of a defined condition to determine whether or not a report should be submitted. Recipients of the report know before they open it that they are receiving this report because there is an exception in their area of responsibility. This topic introduces and describes how you can create Alerts in WebFOCUS.

**Alert Reporting**

A data-driven Alert is an event that is prompted by a guideline that you define. This guideline can vary from the simple to the complex. For example, a simple guideline is to alert a sales manager when an order that exceeds $1 million is entered. An example of a more complex guideline is to alert a department manager when cumulative expenses exceed budget for any category. The report sent to the manager as a result of the Alert might show the most recent transactions, the amounts, and the sources.

Alert reporting is an integrated feature of WebFOCUS Managed Reporting and ReportCaster. An Alert report can be run interactively or by authorized users. You can use ReportCaster to schedule and distribute an Alert report. Burst capability can send targeted information to the people who need it, so that there is less information for each person to analyze.

Alerts work with all email clients. They are supported on the following mobile devices: iPhone®, iPad®, and email enabled mobile phones. Alerts can also be sent to any PC or laptop computer with email capability.

Alerts provide the following:

- **Alert tools.** Using Alert Assist, you can quickly set up test conditions (rules) that determine if an Alert condition should be triggered (true). This is called the Alert test. When the Alert test is triggered (true), the Alert result is run. An Alert result can be an existing report procedure or you can create the Alert result using InfoAssist.

- **Scheduling flexibility.** Optionally, you can schedule an Alert to run as often as every minute to evaluate the Alert test conditions.

**Components of an Alert**

The Alert feature requires the following components:

- **WebFOCUS Reporting Server.** This server is responsible for processing the procedure, accessing and retrieving the requested data, and creating the report when the Alert test is triggered (true).

- **Managed Reporting.** This environment is used to create and manage Alerts in the WebFOCUS repository.
An Alert consists of the following:

- Alert test
- Alert result

An Alert test is required to check whether or not a set of defined test conditions (rules) is met (true or false). An Alert test can be a WebFOCUS Test, which is a simple TABLE request that you create to define the condition to test for. Alternatively, an Alert test can be a Test for File Existence, which checks for the existence of a file that is accessible to the WebFOCUS Reporting Server to which the Alert test is submitted. The file does not need to be in the APP PATH. It just needs to be in a location where it can be found by the Reporting Server.

The Test for File Existence file does not need to be an actual file with an extension. Testing for the existence of a folder is also valid.

If the Alert test is triggered (true), returns records, the Alert result request is processed. You have the option of creating the result report or selecting an existing report stored in the WebFOCUS repository that you are authorized to run.

**Alerts Created in the Browser**

When you select a new Alert from the Legacy Home Page or WebFOCUS Home Page, the WebFOCUS Alert Assist tool opens for the creation of components. Alert Assist is a Bindows™ application that is launched in a separate browser window.

The browser tab uses the generic name Alertn, where n is an index number starting at 1. All subsequent Alerts increase by 1. If you save the Alert, the dialog box is automatically set up with this generic name. However, you can change the name as desired.

If you select WebFOCUS Test in the browser, you are prompted to create the Alert test using InfoAssist. The version of InfoAssist that is invoked does not have field styling, heading, footing, or report options, such as OLAP and On-Demand Paging. The Alert test determines whether or not a specified condition is true. It is not the report that is displayed as the result of the Alert.

You can create the Alert result using InfoAssist, this time with all the available styling and report options. Alternatively, you can select an existing report stored in the WebFOCUS repository that you are authorized to run.

**Note:** It is recommended that you select an existing report for the Alert result request, as it is available to edit, run interactively, or schedule independently of the Alert. If you create the Alert result using InfoAssist within Alert Assist, you need to use Alert Assist and select the open option again to edit the request, because the Alert test and the report to be run are contained within the Alert procedure.
Alert Assist Sample Code Created With InfoAssist

In the sample code that follows, both the Alert test and the report to be run (Alert result) are created with InfoAssist. To keep the sample code simple, styling and report options, such as report headings and conditional styling, are not included in this request.

Notice that after the first TABLE request, there is a –IF statement that checks if the number of lines in the Alert test is equal to zero (IF &LINES EQ 0). This test condition determines if the second TABLE request, to execute the report, should be triggered (true).

If the number of lines is greater than zero, then there are records that satisfy the Alert test, and the report is run. If the number of lines is equal to zero, then there are no records that satisfy the Alert test, and the report is not run.

```plaintext
*- Created by Alert Assist
*- start of the test report
ENGINE INT CACHE SET ON
-DEFAULT &WF_SUMMARY='Summary';
-DEFAULT &WF_TITLE='WebFOCUS Report';
TABLE FILE ibisamp/wf_retail
SUM WF_RETAIL.WF_RETAIL_SALES.COGS_US
WF_RETAIL.WF_RETAIL_SALES.REVENUE_US
BY WF_RETAIL.WF_RETAIL_PRODUCT.PRODUCT_CATEGORY
BY WF_RETAIL.WF_RETAIL_PRODUCT.BRAND
WHERE WF_RETAIL.WF_RETAIL_SALES.COGS_US GT
WF_RETAIL.WF_RETAIL_SALES.REVENUE_US;
ON TABLE HOLD
ON TABLE NOTOTAL
ON TABLE SET PAGE-NUM NOLEAD
ON TABLE SET SQUEEZE ON
ON TABLE SET EMTPYREPORT ON
ON TABLE SET HTMLECSS ON
ON TABLE SET HTMLENCODE ON
ON TABLE SET CACHELINES 100
END
*- end of the test report
```
- * start of the test
- RUN
- IF &LINES EQ 0 GOTO ALERTEXIT;
- * end of the test
- * start of the output report
ENGINE INT CACHE SET ON
- *COMPONENT=Define_wf_retail
DEFINE FILE ibisamp/wf_retail
Loss/D12.2=WF_RETAIL.WF_RETAIL_SALES.REVENUE_US -
WF_RETAIL.WF_RETAIL_SALES.COGS_US ;
END
-DEFAULTH &WF_SUMMARY='Summary';
-DEFAULTH &WF_TITLE='WebFOCUS Report';
TABLE FILE ibisamp/wf_retail
SUM WF_RETAIL.WF_RETAIL_SALES.QUANTITY_SOLD
Loss
BY WF_RETAIL.WF_RETAIL_PRODUCT.BRAND
ACROSS WF_RETAIL.WF_RETAIL_TIME_SALES.TIME_QTR
WHERE WF_RETAIL.WF_RETAIL_SALES.COGS_US GT
WF_RETAIL.WF_RETAIL_SALES.REVENUE_US;
ON TABLE SUBHEAD
"Brand Revenue Loss"
ON TABLE PCHOLD FORMAT HTML
ON TABLE NOTOTAL
ON TABLE SET CACHELINES 100
ON TABLE SET PAGE-NUM NOLEAD
ON TABLE SET SQUEEZE ON
ON TABLE SET HTMLCSS ON
ON TABLE SET HTMLENCODE ON
ON TABLE SET EMPTYREPORT ON
ON TABLE SET GRWIDTH 1
ON TABLE SET STYLE *
INCLUDE=IBFS:/FILE/IBI_HTML_DIR/javaassist/intl/EN/ENIADefault_combine.sty,$
TYPE=REPORT, TITLETEXT=&WF_TITLE.QUOTEDSTRING,
SUMMARY=&WF_SUMMARY.QUOTEDSTRING, HFREEZE=OFF, $
TYPE=TABHEADING, LINE=1, JUSTIFY=CENTER, $
TYPE=TABHEADING, LINE=1, ITEM=1, OBJECT=TEXT, SIZE=14, STYLE=BOLD+ITALIC, $
ENDSTYLE
END
- * end of the output report

- * start of the options
- * end of the options
- ALERTEXIT
- * Finished by Alert Assist

**Procedure:** How to Launch WebFOCUS Alert Assist

1. Sign in to WebFOCUS as an administrator or developer.
2. Launch WebFOCUS Alert Assist in one of the following ways:
   - From the Legacy Home Page, in the Resources tree, right-click the workspace or folder where you want the alert to reside, point to New, and then click Alert.
The Tool Setup dialog box opens. It provides options for selecting a Reporting Server and Application Paths.

**Note:** User access to the Tool Setup dialog box to specify Reporting Server properties is controlled by a WebFOCUS security privilege. For information on WebFOCUS security privileges, see the WebFOCUS Security and Administration manual.

3. Select a Reporting Server and Application Paths when not using the default Reporting Server specified in the WebFOCUS Client configuration or the default application path for that Reporting Server, as shown in the following image.

![Tool Setup Dialog Box](image)

**Note:** The Tool Setup dialog box is only available on the Legacy Home Page. On the WebFOCUS Home Page, you must set a Reporting Server and Application Paths on the folder level in the Properties prior to creating content.

4. Click OK.

5. WebFOCUS Alert Assist opens.
Alert Assist Overview

When you create an Alert in the web browser, it invokes Alert Assist and then InfoAssist. Alert Assist has a user interface similar to InfoAssist. The following image shows the WebFOCUS Alert Assist interface.

Alert Assist Main Menu

In the upper-left corner of the browser window is the Application button, which provides access to the Alert Assist Main Menu. This menu contains the Save, Save As, Run, Close, and Exit options. Some of these options are also on the Alert Assist Quick Access toolbar.
The following image shows the expanded Alert Assist Main Menu.

**Save**

Saves the Alert. This option is disabled until both parts of the Alert are created.

**Save As**

Saves the current Alert with a new name. The Save As dialog box displays a field where you can type the new name. This option is disabled until both parts of the Alert are created.

**Run**

Submits the Alert procedure to the Reporting Server. This option is active when both parts of the Alert have been created. The output always opens in a new browser.

**Close**

Closes the current Alert and prompts you to save any changes.

**Exit**

Exits the Alert Assist and prompts you to save any pending changes to the open Alert.
Alert Assist Quick Launch Toolbar

The Alert Assist Quick Launch toolbar contains the following buttons.

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Save" /></td>
<td>Saves the Alert. This option is disabled until both parts of the Alert are created.</td>
</tr>
<tr>
<td><img src="image" alt="Undo" /></td>
<td>Reverts back by undoing one action.</td>
</tr>
<tr>
<td><img src="image" alt="Redo" /></td>
<td>Moves forward by redoing one action.</td>
</tr>
<tr>
<td><img src="image" alt="Code" /></td>
<td>Displays the Alert procedure code in a read-only window.</td>
</tr>
<tr>
<td><img src="image" alt="Run" /></td>
<td>Submits the entire Alert procedure to the Reporting Server. This option is active when both parts of the Alert have been created. The output always opens in a new browser.</td>
</tr>
</tbody>
</table>

Ribbon

Under the Alert Assist Quick Access toolbar is a ribbon. When Alert Assist first opens, none of the ribbon options are activated.
You must select the Test node or Result node to activate the New option, as shown in the following image.

You must create a Test to activate the remaining options, as shown in the following image.
The ribbon contains the following options:

**Navigation Group**

**New**
Displays a menu from which you can choose to create a new WebFOCUS report or WebFOCUS test, open an existing report, or test for file existence. This button is active when the Test node or Result node is selected. You can also find these options in the shortcut menus for the Test node and Result node.

**Open**
Invokes InfoAssist so that you can make changes to the report when an Alert test or Alert result is selected. The Open option is only activated after a report test is created.

**Edit**
Opens the report on FILENAME data source dialog box when an Alert test or Alert result is selected. You can then edit the report in a text editor.

**Run**
Runs the report in a new browser window when an Alert test or Alert result is selected.

**Delete Group**

**Delete**
Removes the report from the Test or Result node.

**The Life of an Alert**
Authorized users can run an Alert test interactively and optionally schedule it to be distributed by ReportCaster.
1. The developer, using Alert Assist or the Alert Wizard, creates an Alert test and designs the report that is run if the Alert condition is true.

2. If the Alert test is true, the WebFOCUS Reporting Server runs the Alert result.

3. If the Alert test is false, the Alert result is not run.
The following image shows scheduled Alert processing.

1. The developer, using Alert Assist or the Alert Wizard, creates an Alert test and designs the report that is run if the Alert condition is true.

2. If desired, an Alert schedule is created using ReportCaster.


4. When the ReportCaster Distribution Server processes a scheduled Alert procedure, it is submitted to the Reporting Server to evaluate if the Alert test is true.
   a. If the Alert test is false, the Alert is returned to the queue for the next scheduled time.
   b. If the Alert test is true, the WebFOCUS Reporting Server runs the Alert result and returns the results to the ReportCaster Distribution Server. The ReportCaster Distribution Server distributes the Alert result to the recipients, as specified in the schedule.

Creating and Scheduling an Alert

The following procedures describe how to create an Alert test, and Alert result using Alert Assist, and how to schedule an Alert with ReportCaster.
Procedure: How to Create an Alert Test

1. In the Alert Assist main window, right-click the Test node, and then point to New, as shown in the following image.

2. Select one of the following options:

   - **WebFOCUS Test.** Allows you to create a new report in a scaled-down version of InfoAssist. Proceed to step 3.

   - **Test for File Existence.** Allows you to select an existing report. Proceed to step 6.

   **Note:** The scaled-down version of InfoAssist is used to create basic TABLE requests with HOLD (not PCHOLD FORMAT) statements. It generates procedure syntax that is written to the Alert the same way as in earlier WebFOCUS releases. The Edit option on the ribbon allows you to open the editor and manually enter the procedure code or edit existing procedure code. When the test is saved from the editor, the syntax needs to be validated as having an ON TABLE HOLD statement, a prerequisite for an Alert test.

3. When you select *WebFOCUS Test*, InfoAssist opens. Select a Master File from the Open dialog box.
4. Create your report as desired, and then save it.

5. Close InfoAssist to return to Alert Assist.

6. When you select *Test for File Existence*, type the full path to the file accessible to the Reporting Server that you want to check exists. Do not use a file name or folder path that includes spaces.

   Testing a folder for existence is also valid. Type the full path to the folder accessible to the Reporting Server. If the file is located, the Alert is triggered (true) and the Alert result report is run.

7. Click *OK* to save the Alert test.

**Procedure: How to Create an Alert Result**

1. In the Alert Assist main window, right-click the *Result* node, and then point to *New*, as shown in the following image.

![Alert Assist main window](image)

2. Select one of the following options:

   - **New Report.** Allows you to create a new report, chart, document, or dashboard, using the full version of InfoAssist. Proceed to step 3.
**Existing Report.** Allows you to choose from the existing reports in the tree. Proceed to step 5.

3. If you select *New Report*, the Open dialog box opens. Select a Master File.

   InfoAssist opens, and you can create the report that will be run when the Alert test is triggered (true).

4. Save your report, and close the InfoAssist window to return to Alert Assist. Proceed to step 9.

5. If you select *Existing Report*, the Open dialog box opens. Select a report you are authorized to run from the tree.

6. Click **Open**.

   The Open dialog box closes and the selected report appears under the Result node.

7. Select **Save** from the Alert Assist menu. The Save As dialog box opens.

8. Type the Alert Title, and click **OK**.

9. Close Alert Assist to return to the Home Page.

   The Alert result is automatically run if the Alert test report is triggered (true). If you are authorized to schedule reports for distribution, you can optionally schedule the Alert.

   **Note:** As you use Alert Assist to create reports, you may see messages that state Report Saved. Your changes to the report have been saved, but they are not written to the WebFOCUS Repository until the Alert is saved. If you exit Alert Assist before you click **Save** in the Alert Assist menu, the Alert is not saved.

**Procedure:** How to Schedule an Alert

1. Access the scheduling tool in one of the following ways:
   
   - From the Legacy Home Page, in the Resources tree, click the domain or folder where the Alert resides. In the WebFOCUS Explorer, click the Alert and then click **Schedule**. Select how the Alert report will be distributed when the Alert test is triggered (true).
The ReportCaster Basic Scheduling tool opens in a new browser window, as shown in the following image.

For more information on the Basic Scheduling tool and distribution options, see the ReportCaster Guide.

2. Click Alert.

The Alert Options dialog box opens, as shown in the following image.
3. Select one of the following Alert Options:

- **Automatically Reset.** This option continues to run the schedule at the specified time and checks to confirm that the Alert test is no longer true before the Alert test is evaluated again. It is best to use this option when you do not want to receive the Alert result again until after the exception condition has been addressed and occurs again. For example, when the quantity in inventory is greater than 20,000, the Alert is triggered. You do not want to receive the report again until after the inventory is less than or equal to 20,000 for all products and then goes back over 20,000 again.

- **Continue After Alert.** This option continues to run the schedule at the specified time and distribute the report each time that the Alert test is true. It is best to use this option when you want to be notified at the interval specified in the schedule that the Alert test is true.

- **Deactivate Schedule After Alert.** This option deactivates the schedule after the Alert is triggered. The schedule has to be activated again for the Alert test to run after the Alert is triggered. It is best to use this option for one-time Alert tests. This is the default value.

- **Delay.** This option is best used when you want to allow a specific period of time to address the Alert test but want to be notified again if the Alert test has not been met. You can restart the Alert after a maximum of 99 hours, days, weeks, months, or years. For more information, see the ReportCaster Guide technical content.

As you complete the creation of the schedule, remember to consider the burst option to distribute specific report values, instead of the entire report. When a report is burst, the distribution information must be provided in a distribution list, distribution file, or dynamic list for email distribution and an access list for library distribution. The email and library distribution options are the most effective for Alert reports because of the push versus pull notification through email. For more information on using the burst option in ReportCaster, see the ReportCaster Guide.

4. Select the **Properties** tab and type a title and summary for the scheduled report.

5. Click **Recurrence** and specify when and how often to run the schedule.

   For more information on Recurrence options, see the ReportCaster Guide.

6. Click **Distribution** and specify the destination information for where you want the report to be distributed. For more information on specifying schedule distribution information, see the ReportCaster Guide.

7. If you wish to receive notifications of the Alert distribution, click **Notification** and specify the destination information for where you want the notification to be sent.
8. If your Alert uses parameters, check Parameters to review and specify parameter values. Ensure that you have the correct Path, Procedure, and Server Name. For more information on specifying parameter values when scheduling a report procedure (FEX), see the ReportCaster Guide.

9. Click Save and close the ReportCaster Basic Scheduling tool.

The schedule report now appears in the repository, and you can access it from the Home Page.

Checking Scheduled Alerts

When an Alert test is false (and therefore not activated), the Alert result report is not run. When an Alert schedule runs, information about the Alert test evaluation (true or false) and any error or warning messages that occur during schedule or Alert processing are written to the log file.

In order to track the completion of a scheduled Alert, or errors that occurred during processing without checking the log report for the Alert schedule, we recommend that you use the Schedule Notification option.

In the Scheduling tool, the Notification tab allows you to specify:

- The terms for supplying notification (Never, which is the default value, Always, or On Error).
- The level of detail in the notification (full notification or brief notification).
- The email addresses to distribute the notification information to.

Using Sample Data to Create and Schedule an Alert

A data-driven Alert is an event that is prompted by a guideline that you define. This guideline can vary from the simple to the complex. The following tutorial describes how to create a simple Alert that is triggered when the cost of goods exceeds the revenue for a brand. This type of Alert could help a company decide whether they should continue to carry a specific brand, based on the money loss throughout a given timeframe.

To follow this tutorial, you must have access to the WebFOCUS Retail sample data source.

Example: Creating and Scheduling an Alert

1. Sign in to WebFOCUS as an administrator or developer.
2. Launch WebFOCUS Alert Assist in one of the following ways:
From the Legacy Home Page, in the Resources tree, right-click the domain or folder where you want the alert to reside, point to New, and then click Alert.

The Tool Setup dialog box opens. It provides options for selecting a Reporting Server and Application Paths.

**Note:** User access to the Tool Setup dialog box to specify Reporting Server properties is controlled by a WebFOCUS security privilege. For information on WebFOCUS security privileges, see the *WebFOCUS Security and Administration* manual.

3. In the Tool Setup dialog box, select the server where the sample data is loaded, and assign the Application where your data resides.

**Note:** The Tool Setup dialog box is only available on the Legacy Home Page. On the WebFOCUS Home Page, you must set a Reporting Server and Application Paths on the folder level in the Properties prior to creating content.

4. Click OK.

The Alert Assist tool opens in a new browser window, as shown in the following image.

5. Click the Test node.


WebFOCUS InfoAssist opens.

7. From the Open dialog box, choose the wf_retail Master file.
8. Add the following fields to your report:
   - Product Category
   - Brand
   - Cost of Goods
   - Revenue

   Before you complete your report, you must add the Where condition that defines the criteria that you want to be met.

   
   The Create a filtering condition dialog box opens.

10. Double-click the Double-click or press F2 to edit! text.

   The drop-down menus for Fields and Subqueries, Operators, and Values open.

11. Make the following selections:

    - In the Field drop-down menu, click Cost of Goods.
    - In the Operators drop-down menu, click Greater than.
    - In the Value drop-down menu, click Field, and then select Revenue.

   The following image shows the finished Where condition.

![Create a filtering condition dialog box](image)

12. Click OK.
13. Save your report and close InfoAssist.

Your report now shows under the Test node in the Alert Assist browser window.


WebFOCUS InfoAssist opens.

Since your Alert Test is checking for revenue loss, in this tutorial you want the final report to have a field that highlights the loss. This field is not available by default. You can create it.

15. From the Open dialog box, choose the wf_retail Master file.

16. On the Data tab, in the Calculation group, click Detail.

The Detail Field (Define) dialog box opens.

17. In the Field input box, type Loss.

18. In the expressions field, create the following expression, as shown in the image below:

   \[ \text{WF\_RETAIL.WF\_RETAIL\_SALES.REVENUE\_US} - \text{WF\_RETAIL.WF\_RETAIL\_SALES.COGS\_US} \]

You can type the expression directly into the expression field or choose the fields from the data tree.

19. Click OK.
The Data pane refreshes and now displays the new field, Loss.

20. Add the following fields to your report:
   - Brand
   - Quantity,Sold
   - Loss
   - Sale,Quarter

   To ensure that the Alert Result generates the correct report when the test criteria is met, you must add the same Where condition as the one you added to the Alert Test.

21. Repeat steps 8-11 to add the Where condition.

   You can style the report that gets distributed by adding a header.


   The Header & Footer dialog box opens.

23. Type Brand Revenue Loss 2015.

24. Click OK, and close the Header & Footer window.

25. Save your report, and close InfoAssist.

   Once both Test and Result are completed, you can save the Alert procedure.

26. In the Alert Assist browser window, click the Save button.

   The Save As dialog box opens.

27. In the Title field, type Brand Revenue Loss Alerts, and then click Save.

   Your new Alert now displays in the Resources tree and can be scheduled.

   You can schedule the report to be distributed through email, FTP server, report library, repository, or sent directly to a printer. In this tutorial, you want a monthly email to be sent.

28. From the WebFOCUS Home Page or Legacy Home Page, right-click the Alert that you created, point to Schedule, and then click Email.
The ReportCaster Basic Scheduling tool opens, as shown in the following image.

29. Under the Scheduling Object area, click **Alert**.

   The Alert Options dialog box opens.

30. Click **Continue After Alert** and then click **OK**.

   This means that the schedule continues to run at the specified time and distribute the report each time that the Alert test is true. Other options include Automatically Reset, Deactivate Schedule After Alert, and Delay. For more information about these options, see the *ReportCaster Guide*.

31. Click **Properties**.

32. In the Summary area, type *This Alert procedure monitors the revenue loss by brand*. 
33. Click **Reoccurrence**. In this example, you want to schedule the Alert procedure to run monthly on the last day of every month, as shown in the following image.

34. Click **Distribution**.

35. Complete the To, From, and Reply Address fields with the email addresses. In this tutorial, you can use your own email address to test the Alert. In the Subject field, type *Brand Revenue Loss Alerts*. 
The following image shows an example of the Distribution tab.

Additionally, you can set notifications of the Alert distribution. Click Notification and fill in the fields, as required.

36. Click Save.

The Save As dialog box opens.

37. In the Title field, type Brand Revenue Loss Alert Schedule and click OK.

The Alert Schedule now displays in the Resources tree.

38. Close the ReportCaster Basic Scheduling Tool.

39. To test the Alert, before it is scheduled to run, right-click the Alert Schedule, and then click Run.

A prompt will ask you if you want to run the schedule.

40. Click OK.

The email addresses that you identified earlier will receive the Alert Report, shortly.
The following images show examples of the Alert email and Alert report.

Sharing Content in WebFOCUS

Each workspace in the repository, except the Public domain, comes with the private My Content folder. Whenever you create content inside the My Content folder, this content remains private and only visible to you, unless you share it with other users and groups. You can share content in one of two ways:

- **Share with all users.** This method makes the content available to all users that have access to the workspace.
Share with specific users and groups. This method allows you to choose which users and groups are able to access to your private content.

In both scenarios, you can revoke access to your content by unsharing it.

Procedure: How to Share Content with All Users

1. In the Resources tree, navigate to a workspace of your choice and open the My Content folder.
2. In the My Content folder, right-click the item that you want to share, and then click Share.
   The Share icon now displays next the default icon, as shown in the following image.

The item is now shared with all users that have access to this domain.
3. To unshare the item, right-click it, and then select Unshare.

Procedure: How to Share Content with Specific Users and Groups

1. In the Resources tree, navigate to a workspace of your choice and open the My Content folder.
2. In the My Content folder, right-click the item that you want to share, and then select Share with.
   The Share with Others dialog box opens.

   Note: If your sharing privilege does not allow you to open the Share with Others dialog box, you can share or unshare your item by clicking the Share option. In this case, the item is shared with every user that has access to the domain in which the item resides.
3. In the Search field, type the name of the user or group with which you want to share this item.
4. Click the correct entity from the drop-down list, as shown in the following image.

The name now displays below the Search field. The item is shared.

5. Optionally, add more users or groups.

You can narrow your search by clicking an arrow and selecting Users or Groups, as shown in the following image.

**Note:** You can also share the item with all users by selecting the Share with everyone check box.

6. Once you have selected your options, click OK.
The icon now indicates that the item is shared. You can unshare it at any time or go back to the Share with others dialog box and edit your choices.
Searching Content

See how you can use WebFOCUS' built-in search capabilities to easily find content in your folders using a variety of different criteria. Using a simple text bar found on the WebFOCUS Home Page, you can enter a search term to quickly display all content items that match that term. If you want to help narrow down your search results, you can also use the available search options to display all content items that match both that term and the criteria specified, making it easier to find exactly the piece of content that you need.

In this chapter:

- Searching in WebFOCUS
- WebFOCUS InfoSearch

Searching in WebFOCUS

WebFOCUS provides built-in search capabilities that make it easy to find content in your folders using a variety of different criteria. Using a simple text bar found on the WebFOCUS Home Page, you can enter a search term to quickly display all content items that match that term. If you want to help narrow down your search results, you can also use the available search options to display all content items that match both that term and the criteria specified, making it easier to find exactly the piece of content that you need.

Understanding Search Options

You have access to advanced search options when searching folders, which allows you to identify your content quickly and easily.

On the WebFOCUS Home Page, when you select a folder in the tree, the name of this folder is automatically populated in the Search text box. If you select a different sidebar, the name of the sidebar displays in the Search text box. When you enter a value in this text box, the search is conducted in that folder, or for that sidebar only.

Search Options allow you to be more specific in your search. You can specify search criteria, such as Title or Type. This gives you more control over your search, giving you greater precision in your search results. For example, using these Search Options would allow you to find all procedures that contain information by region in one search, without having the need to go through various folders.
The Search options are available by clicking the highlighted drop-down arrow next to the search text box, as shown in the following image.

The Search options tooltip displays when you hover over the drop-down arrow, as shown in the following image.

**Procedure:** How to Use the Search Options to Perform a Search

1. Enter text inside the Search text box, as shown in the following image.

   Note: When you type within the search field, an X icon displays next to the Search options drop-down arrow. Click the X to clear the Search text box.

2. Click the Search options drop-down arrow.
3. Select search criteria from the Search options menu, as shown in the following image.

![Search Options Menu]

4. Once you have specified search criteria, click outside the Search options area to perform the search.

   **Note:** If the Search text box is empty, the search will not be performed.

5. Click the **Reset** button to reset all search option setting defaults and clear any text entered in the Search text box.

   Defaults are also reset when you sign out and sign back in. Search option settings are stored per session.

### Using the Search Setting

Search setting options allow you to find content by searching for your term in various fields. These setting options are single-select and include: Title, Name, Summary, and Tag. The default option is Title, as shown in the following image.

![Search Setting Options]

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Using WebFOCUS Designer 673
Using the Type Setting

Type setting options allow you to specify the type of content you want to find. These settings options are multi-select and vary depending on the sidebar view.

Setting the Content View

Type setting options for the Content View sidebar include the following: Any, Procedure, Page, Collaborative Portal, Portal Page, Link, Data Source (Reporting Object, Master File), HTML File, URL, Document (PDF, Word Doc), Spreadsheet (Excel), PowerPoint, Image, Schedule, Access List, Distribution List, Library Report, and Folder. Setting this option to Page will only return content items that were created as a Page.
The default option is Any, as shown in the following image.

Setting the Portals View

Type setting options for the Portals View sidebar include: Any, Collaborative Portal, and Basic Portal.
The default option is Any, as shown in the following image.

**Note:** Basic portals are searched by Title and Name only. If the title and name options are cleared in the Search settings list, Basic portals will not be returned in the search.

### Setting the Favorites View

Type setting options for the Favorites View sidebar include the following: Any, Procedure, Page, Collaborative Portal, Data Source (Reporting Object, Master File), HTML File, URL, and Library Report.

The default option is Any, as shown in the following image.
Using the Matching Behavior Setting

Matching Behavior setting options allow you to specify how to use your search term to find content. These setting options are single-select, and include the following: Contains, Starts with, Ends with, and Exact match. For example, if you set this option to Exact match, only content that exactly matches the search term will be found.

The default option is Contains, as shown in the following image.

Assigning Tags to Content Items

To refine a search for content within a domain or folder in your repository or in the Ask WebFOCUS view, you can assign tags that appear with your search results. These tags provide additional search criteria that you can use to drill down and identify related content items quickly. You can also assign tags to collaborative portals to ease navigation in the Portals view. Tags are turned off by default. To select a tag, click it. Tags are available in the grid view, and can be displayed as a column in the list view.
When you use tags in the Portals or Ask WebFOCUS views, where searches may bring results from different domains, the domains may be listed in two ways. When all your results come from a single domain, only the blue tags display, and the domain name appears in orange text inside the thumbnail, as shown in the following image.

If content is found in two or more domains, then green domain-specific tags display, allowing the user to filter the content by domain, as shown following image.

**Note:** Green domain-specific tags only display if two or more domains are present in a search or list. A single domain-specific tag is never displayed. Unlike a single blue content-specific tag, which filters results to that value, a single green tag would not alter the display of search results.

**Procedure:** **How to Assign Tags to Content**

1. In the WebFOCUS Explorer, right-click a content item that you want to assign to a tag, and then click *Properties*.
   
   The Properties panel opens.

2. Click the *Advanced* tab.

3. In the Tags field, type the name of your tag, and then click *Save*. 
To test the tag you assigned to the item, perform a search. The tag and item should appear in the search results. An example of a Product tag is shown in the following image.

![Example of a Product tag](image-url)

You can assign multiple tags to a single item, by separating them with a comma, as shown in the following image.

![Tags](image-url)

**Using Shared and Personal Tags**

On the WebFOCUS Home Page, you can use tags to categorize your content. This is particularly useful when reviewing lists of content with multiple tags. It also lets you choose which tags to apply to your repository item.

The Shared tag helps you filter just the content that is specific to you. The Personal tag makes it easy for you to filter just your personal My Content.

The Shared and Personal tags are shaded in purple, and display when the folder search is initiated at a domain level or the root node above domains. They are the first two tags that display in your tag list, as shown in the following image.
WebFOCUS InfoSearch

With WebFOCUS InfoSearch, you can quickly find the BI content you need through simple, Google-style searches, without having to search through various folders for information. It enables you to search existing content items, such as procedures, charts, and other data elements using natural language processing and a type-ahead search index. To initiate a search, a user just types or speaks an actual value, such as the name of a specific customer.

WebFOCUS InfoSearch combines with several WebFOCUS technologies to enable users to quickly find related reports, charts, and dashboards that are indexed from key data elements in your BI content. For example, you can use WebFOCUS InfoAssist or WebFOCUS Designer to create content with the dimensions that will be loaded into a searchable index. InfoSearch also integrates with ReportCaster, a scheduling and distribution application that centralizes the execution and distribution of WebFOCUS reports, to schedule your dimensional data procedure to run at specified times. The combination of these technologies provides users with an easier way to locate, view, and retrieve their content, while searching multiple data values at the same time and ensuring that your latest data will always be available in your searches.

Once enabled and configured, using InfoSearch is simple. You can access it from the WebFOCUS Home Page by clicking Ask WebFOCUS. Here, you can either begin to type in your search, or tap the microphone and speak it. InfoSearch will use that search term to return results that include every piece of content in the repository, and display the results as thumbnails.
For example, what if you are a regional sales manager for North America and you want to find all of your BI content for Canada. Instead of spending time clicking through folders and trying to remember which reports contain this information, you can use InfoSearch to immediately locate all content items for this term, as shown in the following image.

![Image of InfoSearch interface]

**Getting Started With WebFOCUS InfoSearch**

Before you can begin to interact with InfoSearch, the WebFOCUS Administrator or Domain Developer in your organization must ensure that the InfoSearch settings are enabled correctly, and identify the data values that will be indexed for your queries, so that at least one domain has a corresponding index with dimensional data. A WebFOCUS software license that includes InfoSearch is also required.

There are three different types of users that can support or interact with InfoSearch:

1. **Administrator.** Configures global settings and manages your WebFOCUS installation. Administrators also have access to core WebFOCUS functionality that enables them to troubleshoot any issues related to InfoSearch.

2. **Domain Developer.** Identifies the parameters that should be loaded in the dimensional data procedure so that users in your organization can interact with InfoSearch. They are also responsible for scheduling future index updates, deciding which domains require indexes, and optionally indexing Report Library output.

3. **End User.** Interacts with InfoSearch and performs search queries for BI applications such as reports, charts, and dashboards.

In some organizations, an Administrator and Domain Developer may be the same person.
In order to use the voice search capability through your desktop, your Administrator must configure SSL with your WebFOCUS installation, and you must access InfoSearch through a Google Chrome browser with HTTPS.

To access and view information through the Ask WebFOCUS user interface, you must first use the InfoSearch Index Builder to create a dimensional data procedure that defines the dimensions in your data that can be used to run searches in InfoSearch. Once that dimensional data procedure gets loaded into the search index of the domain, you can access the Ask WebFOCUS user interface from the WebFOCUS Home Page.

You can begin to interact with InfoSearch by signing in to WebFOCUS. From the WebFOCUS Home Page, click Ask WebFOCUS to open the Ask WebFOCUS user interface, as shown in the following image.

Here, you can run searches in your repository content by either typing or speaking search terms. InfoSearch will return results that include every piece of content contained in the repository that corresponds to that search term, regardless of what type of content it is.

**Understanding InfoSearch Privileges**

The first step in using InfoSearch is understanding its privileges, and ensuring that they are enabled correctly. After a new WebFOCUS installation or upgrade, the Enable InfoSearch check box is enabled by default. This check box is located on the Magnify page of the WebFOCUS Administration Console Configuration tab. As a result, the Display Ask WebFOCUS menu (opInfoSearch) privilege in the Edit Role dialog box, accessed from the WebFOCUS Security Center Roles tab, is enabled for the following three principal domain user roles:

- DomainBasicUser
- DomainAdvancedUser
- DomainDeveloper

It is important to note that even when both the Enable InfoSearch check box and the Display Ask WebFOCUS menu (opInfoSearch) privilege are enabled, the Ask WebFOCUS view and the Ask WebFOCUS user interface are only available when the Repository has a domain with an index.

Clearing the Enable InfoSearch check box disables InfoSearch and hides it from all users. When this check box is cleared, the Display Ask WebFOCUS Menu (opInfoSearch) privilege is removed from the Security Center Roles dialog box, making InfoSearch unavailable. Administrators should not clear this check box unless they intend to remove the ability to use InfoSearch from all users. To re-establish this setting, an administrator must select the Enable InfoSearch check box again.
The ability to use InfoSearch for queries throughout the Repository is limited to customers who have purchased it as a separate product. However, InfoSearch is available and the Ask WebFOCUS view and user interface are visible to users, regardless of whether it has been purchased or not. This configuration enables customers who have not purchased InfoSearch to use it when working with the Retail Samples demo.

**Note:** Users can only search in domains for which they have permission to access.

**Setting Up Your WebFOCUS Content to Work With InfoSearch**

The next step is to ensure that your content will work with InfoSearch. When performing a search query, InfoSearch can only retrieve report procedures that have defined parameters. These parameters are then used by InfoSearch to correctly display all of the content that is related to your search query.

In the following example, we create a sample report in InfoAssist that shows the full name of a customer, and the revenue associated with their purchases.

**Example: Creating a Parameterized Report in InfoAssist**

1. Load the WebFOCUS Retail sample data to a Domain, where you can create content.
2. From the WebFOCUS Home Page, select the Domain where you want to create your content.
3. Add the following data fields. You can double-click these fields or drag them to the canvas:
   a. Revenue
   b. Full,Name
   c. Customer,City
4. On the Data tab, in the Filter group, click **Filter**. The Create a Filtering Condition dialog box opens.
5. Double-click **Double-click or press F2 to edit!** to open the drop-down menus that you can use to create a filter.
6. Use the Field drop-down menu to select a field from the Master File. For this example, we will use *Full,Name*.

7. Click OK.
8. In the <Value> drop-down menu, select the value from the Master File. For this example, select *Parameter* from the Type drop-down menu, and select the *Dynamic* radio button. This creates a dynamic parameter for Full Name.

There are two options you can choose from when creating the parameters that InfoSearch will use for your content:

a. Keep the parameter value required, which is the default. Doing so requires the user to enter a value for the required parameter when performing a query in InfoSearch. In this example, using Full Name as the required parameter means that a user has to enter a customer name in the search box for InfoSearch to produce the proper results.

b. Set the parameter to optional, by selecting the *Optional* check box. Doing so means the user has a choice in whether or not they search for that value in InfoSearch. For example, if both Full Name and Customer City are set as optional, either of these values can be used in an InfoSearch query to locate that content.
Note: You can use a combination of parameters in your content to help you perform InfoSearch queries. Adding both required and optional parameters to your content will only produce search results if a value for the required parameter is specified.

9. Click OK to complete your filter.

10. Once you are done creating your filters, click OK to close the Create a filtering condition dialog box.

11. Save your report with a meaningful name, such as Customer Revenue.


Indexing Report Library Output

In addition to searching for parameterized reports, you can optionally enable Report Library output data for indexing and search InfoSearch. Unlike report procedures (FEX), a Report Library output does not need to contain a parameter to be found in InfoSearch.

When the Index Library Output check box is selected and saved in the ReportCaster Console, all subsequent Report Library distributions will be indexed and made searchable by InfoSearch.

Note:

- HTML5 charts that output into a Report Library cannot be indexed.
- Existing Report Library items are not indexed.

Procedure: How to Enable Indexing of Report Library Outputs

1. From the WebFOCUS Home Page, navigate to the WebFOCUS Administration Console.

2. On the ReportCaster tab, in the Show group, click Configuration.

3. On the Configuration pane, expand the Report Library folder, and then click the Additional Library Settings folder.

4. In the center pane, navigate to the InfoSearch section and select the Index Library Output check box.

5. Save and restart the ReportCaster Console.

   All subsequent Report Library distributions will be indexed and made searchable by InfoSearch. Existing Report Library items are not indexed.
When a schedule distributes content to the Report Library, the Job Process Log Report for the schedule indicates that the output has also been fed into the search tool utilized by InfoSearch. The log is shown in the following image.

The following image shows an example of a Report Library file found in InfoSearch by searching for the data value *Florida*. 
The Report Library file is found because the data value Florida is found in at least one report stored in the Report Library, as shown in the following image.

![Report Library Image]

**Enabling Voice Capabilities for InfoSearch**

To interact with InfoSearch using voice commands, you must also follow these steps:

- Enable SSL for WebFOCUS. This ensures that you can use the voice API software with a microphone and is typically set up by an Administrator. For more information, see the *WebFOCUS Security and Administration* technical content.

- Connect to your WebFOCUS environment through a Google Chrome browser with HTTPS.
Enable Google Chrome to have access to your microphone, if you have not done so already.

Using the InfoSearch Index Builder

In order to access the Ask WebFOCUS user interface and perform InfoSearch searches, there must be at least one dimensional index present in the WebFOCUS software that corresponds to at least one domain. This is done by creating a dimensional data procedure in each domain that defines the dimensions that will be used to search your repository content.

Dimensional data procedures must contain the following components:

- Dimension names drawn from a Master File.
- Corresponding data values that those dimensions may have.
- An internal field name, if there are display values and internal values.

**Note:** You can only add non-numeric fields to a dimensional data procedure.

To create a dimensional data procedure, you must select the domain in which you are defining data for the dimensional data procedure, a Master File that provides dimension values, and the fields that you want to include. When you build the dimensional data procedure, you must select a Field Name and Title for each value that you define. Note that if there is already a value for Title in your Master File, the Title box automatically populates with that information.

While you are building the components of your index, you may come across the following issues that should be taken into consideration:

- Synonyms in your data that may not easily be recognized by voice or text, such as "1st" versus "First".
- Multiple data values with the same stem or root word, such as "television" and "televisions".

With your WebFOCUS installation you have access to WebFOCUS Magnify search technology, an Information Builders enterprise business intelligence search tool that you can use to create and find business content across an organization. Whether or not you have a WebFOCUS Magnify license, you can use components of this technology to enhance the InfoSearch experience for your users.

For more information on using Magnify technology to configure how synonyms are recognized, see the Configuring Synonyms topic in the Magnify Search Security and Administration technical content.
For more information on using Magnify technology to configure multiple data values with the same stem word, see the Magnify Analyzers topic in the Magnify Search Security and Administration technical content.

While creating an index in the InfoSearch Index Builder, you may want to add a qualifying name to an index entry so InfoSearch can discern between two or more similar data values. To use the Qualifying Name feature, the data you select must have multiple matching values that can be filtered by another value.

For example, if you are indexing data that contains information about two cities with the same name, such as Kansas City, you can use the Qualifying Name field to add the ability to select data for Kansas City, Kansas and Kansas City, Missouri.

Alternatively, when you retrieve a data value as a search result, you may also want to display the code name assigned to your data. For example, if your search term is Newark Liberty International Airport, and the designated code name for this value is EWR, you can configure your index to display the EWR value next to Newark Liberty International Airport when you open a search result.

To expand search and index capabilities beyond a single domain, you must copy the same dimensional data procedure to each domain that shares the data that you want to index. Optionally, you can create new dimensional data procedures for each additional domain, meaning each domain will have a separate dimensional index.

If needed, you can delete indexes. This can be done from your file system or by accessing the Magnify Console, a component of Magnify Search. Contact your administrator to confirm the best approach.

**Note:** Turn off the application server before deleting index files.

**Example:** Using Qualifying Names to Differentiate City-State Index Entries

In this example, a dimension data procedure is created with the goal of indexing reports that contain data about two cities named Portland. Using the Qualifying Name field in the Index Builder allows the ability to search for data specifically for Portland, Oregon, and Portland, Maine.
The following image shows the InfoSearch Index Builder with values already assigned.

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Title</th>
<th>Qualifying Name</th>
<th>Code Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Store,City</td>
<td>Store,City</td>
<td>Store,State,Province</td>
<td>No Selection</td>
</tr>
<tr>
<td>No Selection</td>
<td>Title</td>
<td>No Selection</td>
<td>No Selection</td>
</tr>
</tbody>
</table>

The Domain that uses this index is Folder 1. The Master File assigned to this domain is `wf_retail`. The first dimensional data procedure entry is Store,City, which contains data about cities named Portland. The Qualifying Name value for the same entry is the Store,State,Province data. Designating this data as a qualifying value will allow users to differentiate Store,City data by State and Province.

After the dimension data procedure is saved and run, the search index for the Folder1 domain updates. When you type *Portland* in the InfoSearch search bar, if reports that contain parameters for Portland, Oregon and Portland, Maine have been saved in the Folder1 domain, the option to search for reports which contain the values Portland (Oregon) or Portland (Maine) is made available, as shown in the following image.
Example: Viewing Code Names in Your Search Results

The following image shows a report created in InfoAssist that displays a list of employees, their employee IDs, and the department of each employee. Parameter options for the Broker Employee ID data have been added to the report, as displayed in the Filter dialog box.

This report is then saved in the Repository so it can eventually be found by InfoSearch. The following image shows the saved report and the domain of the saved report.
The following image shows the InfoSearch Index Builder. To create an index procedure that will display Employee IDs for all employees, the Code Name field for the Broker,Name data has the option Broker, Employee ID (A5) assigned to it.

Selecting this option means that all employee search results will have their corresponding employee ID displayed next to their name. Changing the name of the Title of the data, which is how the data collection will be titled in search results, is optional.

When this dimensional data procedure is saved and run, The Employee List report will be indexed, meaning it will now be searchable by InfoSearch.

The following image displays a search request for employee Jeffrey W. Simmons.
Clicking the search result, and then clicking the magnifying glass on the search bar, displays a single search result, the report that contains information about Jeffrey W. Simmons. Clicking this tile displays the name and user ID of the employee, as shown in the following image.

Since the Code Name field in the dimensional data procedure was set so that Employee ID numbers would be displayed, Employee ID numbers now appear next to the name of every employee when a search is initiated.
Clicking the blue box displays the full report for the employee, shown in the following image.

![Broker List (Com & Gov)](image)

**Procedure:** How to Create a Dimensional Data Procedure Using the InfoSearch Index Builder

1. In your browser, navigate to the InfoSearch Index Builder page, using the following link:

   ```
   https://host:port/ibi_apps/ibxtools/explore/dimidxbuilder.jsp
   ```

   where:

   - **host**
     - Is the name or IP address of the host used to access WebFOCUS.
   - **port**
     - Is the number of the port on which the Web Server or Application Server listens.

   This value is optional, and it should be excluded if the URL uses the default port for the protocol it uses in the scheme, which is port 80 for URLs using the http protocol or port 443 for URLs using the https protocol.

**Note:**

- You must be signed in to your WebFOCUS environment in order to access the InfoSearch Index Builder.
- When typing the link to navigate to the InfoSearch Index Builder page, you can use both https:// and http://.
- To use the voice feature, you must be signed in to a secure HTTPS site via Google Chrome.
The InfoSearch Index Builder is shown in the following image.

2. In the Domain and Master File lists, select the values that you want to use by clicking Select.

3. In the Field Name column, click the drop-down list to display the Master File data values that you can select. Select a data value to add it to your index.

   Once you select a value from the drop-down list, an additional row of potential dimensional data values displays. Creating additional values is optional.

4. In the Title field, type a title for your dimensional data value. By default, the name of the data you selected for the Field Name is added as the title for this value.

5. Optionally, select a Qualifying Name and Code Name for your dimensional data value.

6. Optionally, repeat steps 3 to 5 to create additional dimensional data values.

7. Once you add your values, click the Save button.

   The Save Index dialog box displays.

8. Choose a domain that will contain your new dimensional data procedure.

9. In the Title and Name fields, type the Title and Name of your procedure file.

10. Click the Save button to save your procedure into your selected domain.
If there is a need for using fields not in the data source, once a dimensional data procedure is saved, you may want to use a DEFINE field. To do so, you must edit the procedure manually in the Text Editor and add any of the required DEFINE fields that will be loaded into the search index before it is run. You will need to add the DEFINE field syntax, and then add the call to the DimensionLoad1.fex, while making sure to qualify the DEFINE field with its associated segment.

11. Navigate back to the WebFOCUS Home Page.

12. Right-click the dimensional data procedure and click Run. Optionally, point to the Run… option and click Run in New Window.

After loading your dimensional data, your index generates. A message appears and a folder containing information about your index is created in drive:\ibi\WebFOCUSnn \magnify\ibi-protected, where nn is release number of your WebFOCUS software.

The following image shows an example of a dimensional data procedure message, which explains that the index was generated successfully, and displays the file system location of the new index.

You can now use Ask WebFOCUS to search for the data values that are referenced in your index.

13. Optionally, schedule your dimensional data procedure to update your search index on a regular basis. For more information, see Scheduling Index Updates.
14. Optionally, enable future Report Library outputs to be indexed and made searchable by InfoSearch. For more information, see *Indexing Report Library Output* on page 686.

Customizing Your InfoSearch Index Location

InfoSearch provides you with the ability to customize the location where your index data is saved. Typically, you would customize this location when using a Docker container, so that the index data is stored outside of the container and you can prevent the loss of any data. This feature is enabled through your WebFOCUS Client application server that is configured with your WebFOCUS environment. The following procedure outlines how to configure your index location using Tomcat.

**Procedure:** How to Configure Your Index Location

1. From the Start menu, click *Information Builders*. Then, click the *Tomcat* folder.
2. Double-click the *Tomcat Configuration Utility*.
   
   The Apache Tomcat for WebFOCUS Properties dialog box opens.
3. Click the *Java* tab.
4. Type the following line in the Java Options section, as shown in the following image.
where:

host
Is the name or IP address of the host used to access WebFOCUS.

dimdirectory
Is the location where the index will be saved.

Note: If this variable is not defined, the default location will be:

```
ApplicationValues.getIBIInitParameter("IBI_DOCUMENT_ROOT") + '/' + "magnify" + '/' + "ibi-protected";
```

5. Click OK.
6. Recycle the application server so that the changes take effect.
Any index created from InfoSearch will now be read from this location.

Performing InfoSearch Searches

Your content is now ready to be used with InfoSearch. To perform a search, from the WebFOCUS Home Page, click Ask WebFOCUS to display the Ask WebFOCUS user interface, as shown in the following image.

When you first access InfoSearch, no search results or questions are listed under the Last Viewed Questions area, which identifies the most recent searches that users have asked. As you begin to use InfoSearch more frequently, the screen will display previous searches, as shown in the following image.

You can quickly click on a tile to run a search on that item. To clear this list of search terms, just click the Click button.

All of your InfoSearch queries are performed from the search bar in the Ask WebFOCUS user interface. Here, you can either type your search term, or click the microphone icon to speak it. For example, you can search for all reports that have data for customers with the first name Aaron. As you enter your search term, a list of all possible search terms displays.
If you know the exact field that you are looking for, you can click on it from the list and then either press the Enter key or click the magnifying glass icon to initiate your search. But what if you are not sure what the exact name of the customer is that you are looking for? In this situation, you can just enter the term that you do know and initiate a search. InfoSearch will display all of the content that is related to your search term as tiles. Clicking a tile displays all available links for the content item, as shown in the following image.

Note: While Magnify gives you ability to set a limit to the maximum number of search results, this parameter will not affect your InfoSearch results. All available reports that match your search query will be returned.
These links accept your data value search term as an input parameter value. When you click one of the links inside the tile, the content item executes using the data value search term as the parameter value in the procedure. In this example, clicking the tile for Aaron Markley in the Purchase Details report runs a report that contains only his information.

Note: Click an expanded tile to return the tile to its original display size.

You can also combine your search terms and retrieve information about two or more data values simultaneously by using the word and. The word and must be placed between each data value and does not need capitalization.

Initiating a search using and can retrieve the following types of search results:

- A repository item that contains all your search terms.
- A repository item that contains just one of your search terms.
- A repository item that contains your search terms in any combination.

Note: InfoSearch is not compatible with traditional Boolean search operators.
For example, you can run a search to compare the total year-to-date sales revenue for the North American state Florida and the European city London. In the search bar, enter London and Florida to perform your query. A list of tiles opens that match these search terms, as shown in the following image. Clicking on the Business Region Revenue YTD tile shows you the various combinations of the search terms you entered.
The results show a combination of the parameters that were entered. Since we wanted results for both Florida and London, click the tile that shows both parameters to open a filtered version of the Business Region Revenue TYD chart that shows information about both London and Florida on the same chart, as shown in the following image.

Note: You cannot perform voice search for more than one parameter at a time.
InfoSearch also gives you the ability to search for content using a date value. To do so, you must create a Define field that will index the date value as a string by manually adding it to the procedure. For example, let's say we have a simple report that shows the quantity of items sold on a particular date. In this example, you would add the following line to the dimensional data procedure:

```
DEFINE FILE retail_samples/wf_retail_lite
MY_DATE_STRING/A30=EDIT2(WF_RETAIL_LITE.WF_RETAIL_TIME SALES.TIME_DATE, 'MtrDYY');
```

This will create a Define field that will take the date field in your report, translate it to Month Day Year format, and save it as a string. Once the Define is created, you must index it, as shown in the following image.

Once the Define field is indexed, you must change the parameter name in your report to match the name of the field that is being indexed, as shown in the following image.

```
SUM WF_RETAIL_LITE.WF_RETAIL SALES.QUANTITY_SOLD
BY WF_RETAIL_LITE.WF_RETAIL_TIME SALES.TIME_DATE_DAY_COMPONENT
WHERE WF_RETAIL_LITE.WF_RETAIL_TIME SALES.TIME_DATE_DAY_COMPONENT EQ $MY_DATE STRING.Date:.QUOTEDSTRING;
```

You can now search for date fields in InfoSearch, by either typing or speaking the date in the following format: *February 15 2013*.

Once you perform a search, you may notice different colored boxes above your content tile results. These boxes are filters that allow you to drill down even further into your content. In the following image, which shows all content related to Canada, there are a number of boxes with different names directly above the content tile results.
The green boxes indicate the domains that contain the displayed search results. In this example, there are three domains that contain content with information on Canada: Public, Retail Samples, and Store Sales. The blue boxes show you search results that are associated with that particular attribute. Selecting any combination of these boxes applies multiple filters to your search results. In the following image, we have filtered out content for Canada that is in the Retail Samples domain to show both Customer and Product information.
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