

WebFOCUS

WebFOCUS New Features
Release 8.2 Version 02

May 22, 2018

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What's New In WebFOCUS Release 8.2 Version 02

WebFOCUS includes key features and enhancements across the product line.

Through continued innovation and the expansion of our unyielding commitments to support our customers, Information Builders will work in partnership to help ensure your success with WebFOCUS and beyond.

In this chapter:

- ❑ [WebFOCUS 8.2.02 Key Features Summary](#)

WebFOCUS 8.2.02 Key Features Summary

Use the table below for descriptions of the key features for WebFOCUS Release 8.2 Version 02.

| Category | Feature |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------|
| Web Development | Creating Responsive Pages Using the WebFOCUS Designer on page 17. |
| | Working With the Interactive WebFOCUS Home Page on page 17. |
| Desktop Development | Supporting Template Masters and Slide Layouts in App Studio-Generated Presentations on page 98. |
| | Setting a Date Range for a Target Calendar on page 81. |
| Visualization and Analytics | Using Insight to Analyze Dynamic Charts on page 119. |
| | Downloading Chart Plugins From the HTML5 Chart Extensions Page on page 109. |
| | Using Paper-Clipping to Group Dimension Values on page 111. |
| Reporting | Creating Thumbnails From Content on page 148. |
| | Using Pivot Tables With XLSX Templates on page 149. |

| Category | Feature |
|-----------------|-----------------------------------------------------------------------------------------------------|
| Scheduling | Using Parameter Values to Burst Active Dashboards and Compound Reports on page 168. |

Chapter 2

Web Development

In Release 8.2 Version 02, you can use the new interactive WebFOCUS Home page features, and WebFOCUS Designer for all your web development needs.

In this chapter:

- [Creating Responsive Pages Using the WebFOCUS Designer](#)
 - [Working With the Interactive WebFOCUS Home Page](#)
 - [Loading InfoAssist+ Charts](#)
 - [Magnify Search](#)
-

Creating Responsive Pages Using the WebFOCUS Designer

The WebFOCUS Designer is a web-based development tool that you can use to create interactive, responsive pages and meaningful InfoApps, using content that you or other members of your organization create. This content (reports, charts, documents, and more) can be added to a page using drag-and-drop actions. Using the interactive grid canvas, you can resize and rearrange resources with ease. The enhanced filtering functionality enables you to drill down into your data further.

Working With the Interactive WebFOCUS Home Page

The new interactive Home Page provides visual access to the tools, functions, properties, and features that WebFOCUS offers. This modern, mobile-friendly design utilizes an innovative user interface and intuitive layout, so that you can quickly view, sort, and edit your resources on any device. Every detail of the new Home Page has been created to provide maximum functionality with minimal distractions. It features one-touch content creation, a simplified Resources tree, search and filtering capabilities, alternating view of resources, and many other elements that enhance your WebFOCUS experience.

Loading InfoAssist+ Charts

You can select the container load method for InfoAssist+ charts by using the Advanced tab of the Properties Dialog box. The two load methods are:

- HTML iframe.** Isolates chart libraries from a page container. This method is the default setting.

- ❑ **HTML div.** Shares chart libraries across page containers. This method may result in better load performance.

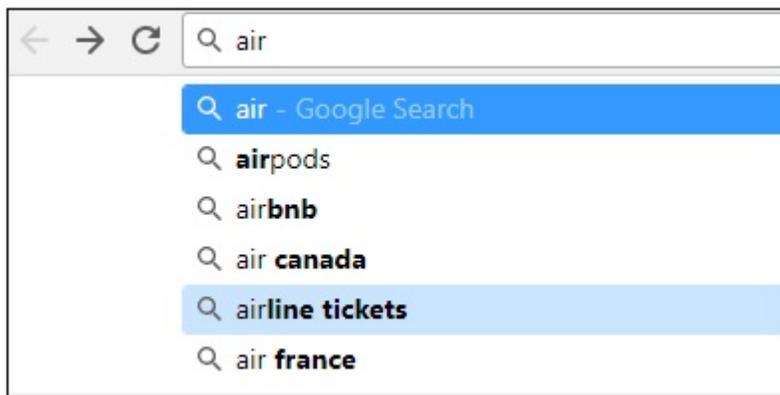
The option to select a load method is available for InfoAssist+ charts that run in basic or collaborative portal pages, and have the new attribute syntax applied. The new attribute syntax adds additional relevant field containers for these chart types. Chart attribute syntax differs, depending on the chart type.

Magnify Search

Magnify Search allows you to easily index and search any structured or unstructured data, regardless of its source or location. Magnify Search allows users to leverage a familiar and intuitive Google-like interface to instantly access detailed records, unstructured documents, aggregate summaries, and more.

Configuring Auto Complete for Magnify Search

Most search engines have the capability to present users with completed suggestions in their search field based on the initial letters of a term being specified. The following image shows an example from Google.com where a user is typing "air" into the search field. Several completed suggestions are generated, including "airline tickets", which is a popular search term for many users.



This functionality is now available with Magnify Search and is referred to as *Auto Complete*. When configured, a user can select a suggested term from the Auto Complete drop-down, which guarantees that search results will be found for the selected term. Since Magnify Search has been available long before the implementation of this new facility, users have the ability to enable Auto Complete on existing indices, as well as newly created indices. The implementation of Auto Complete is being handled as a separate Magnify Search index that contains the Auto Complete *suggestions*.

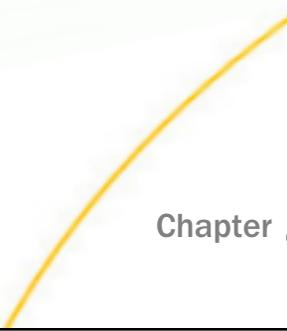
For more information on configuring and using Auto Complete, see the *Magnify Search Developer's Guide*.

Using the Crawler for Magnify Search

The Crawler is a useful addition to Magnify Search. This feature enables you to gather content from internal or external websites that you identify and allow this content to be searchable through Magnify. The Crawler is:

- A lightweight, standalone Java program that can be deployed on any platform and can be included in batch scripts for automation or be run as a service in the background.
- Highly efficient with options for running multiple threads in parallel.
- Highly flexible with configuration options in the following areas:
 - Logging levels.
 - URL filtering.
 - Meta tag injection.
 - Index name customization based on URL patterns.
 - Category injection based on URL patterns.

For more information on configuring and using the Crawler, see the *Magnify Search Developer's Guide*.



Chapter 3

Desktop Development

App Studio is a Windows-based GUI desktop product for creating WebFOCUS applications. App Studio provides innovative features and functions that simplify development, thereby allowing you to concentrate on interface design, business logic, and data manipulation. Features include data visualization, color exception reporting, intelligent drill-downs, and the ability to generate HTML pages without writing code.

In this chapter:

- [Environments and Data](#)
 - [Esri Mapping](#)
 - [General Functionality](#)
 - [HTML Canvas](#)
 - [Report Development](#)
-

Environments and Data

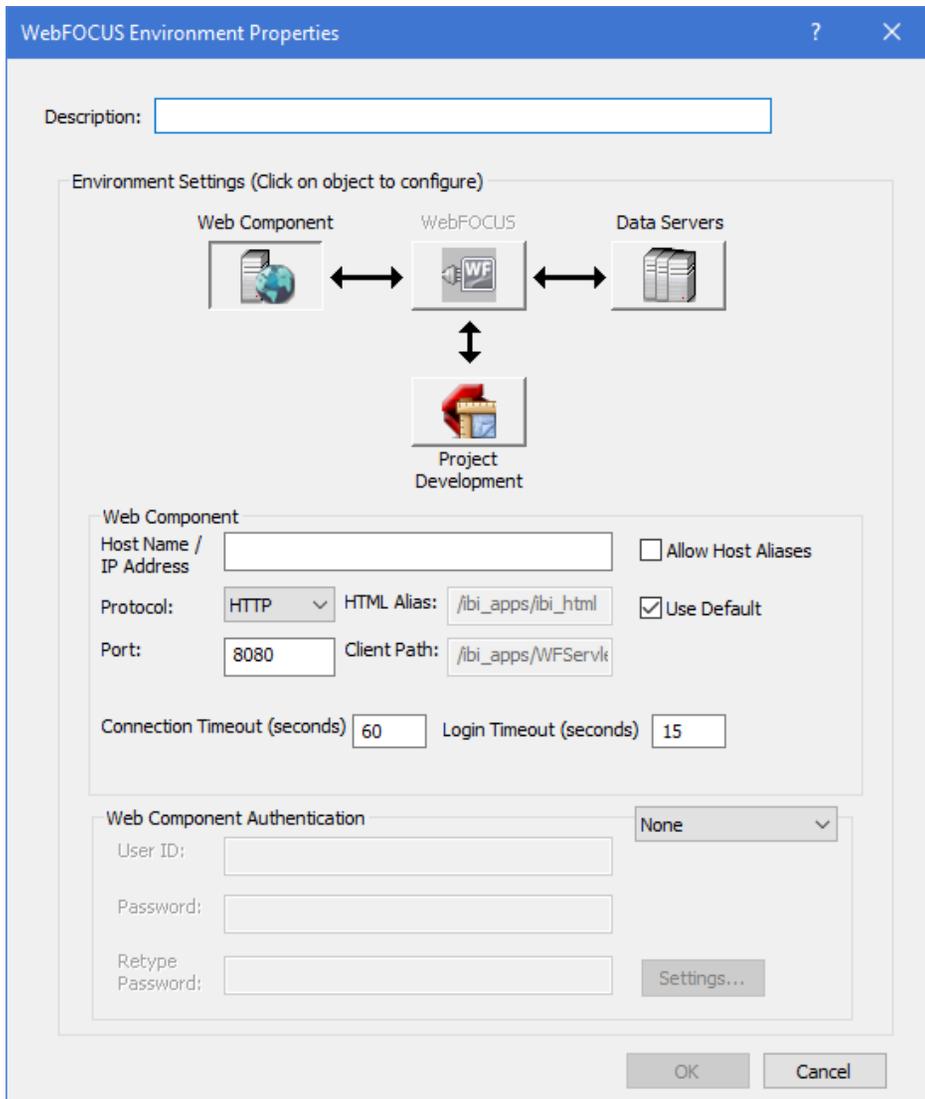
The following are new features and enhancements for environments and data in App Studio Release 8.2 Version 02.

New Options for Environment Properties

The Environment Properties dialog box now includes the following options:

- Allow Host Aliases.** If checked, enables you to configure multiple WebFOCUS instances that have been installed on the same host machine.
- Login Timeout.** Specifies how long App Studio should wait for the login credentials to be validated. The default time is 15 seconds. You can set this to a higher value, if necessary. You can configure this setting for each environment.

The following image shows the Allow Host Aliases and Login Timeout options within the Web Component properties.

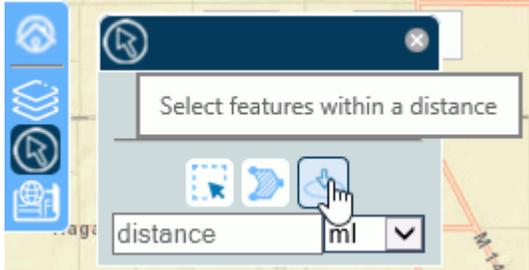


Esri Mapping

The following are new features and enhancements for Esri mapping in App Studio Release 8.2 Version 02.

Changing Default Distance Settings From Miles to Kilometers

In the Esri Viewer Selection widget, you can select features within a distance of a point you select on the map, as shown in the following image.



Although you can select either the miles or kilometers distance unit from the drop-down list in the widget, the default unit in which the distance is shown is determined by your browser locale settings. For example, if your browser language is United States English, the distance will be shown as miles, but if your language is Australian English or United Kingdom English, the distance will be shown as kilometers.

For information about configuring locale settings in your browser, see the help content for your browser.

This is a change in behavior from prior releases and will be implemented automatically when you run a map request.

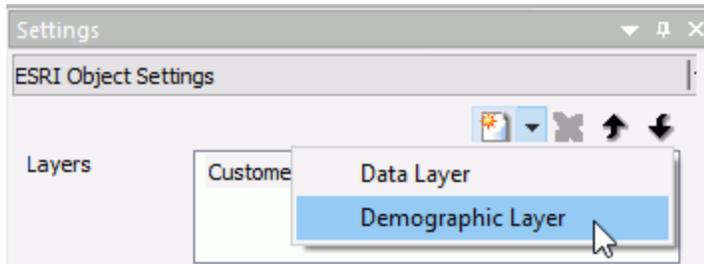
Adding a Demographic Layer to a Map

Esri demographic data enables you to add info-layers to a map that provide global demographic, spending, lifestyle, and business data on your map application.

Procedure: How to Configure a Demographic Layer on an Esri Map

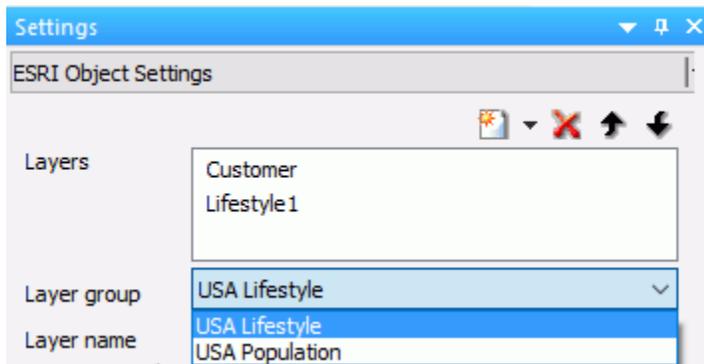
Once you have added an Esri map component to your HTML page, you can add one or more preconfigured demographic layers.

1. In the Settings panel for the Esri map component, click the arrow next to the New Layer icon and select *Demographic Layer*, as shown in the following image.

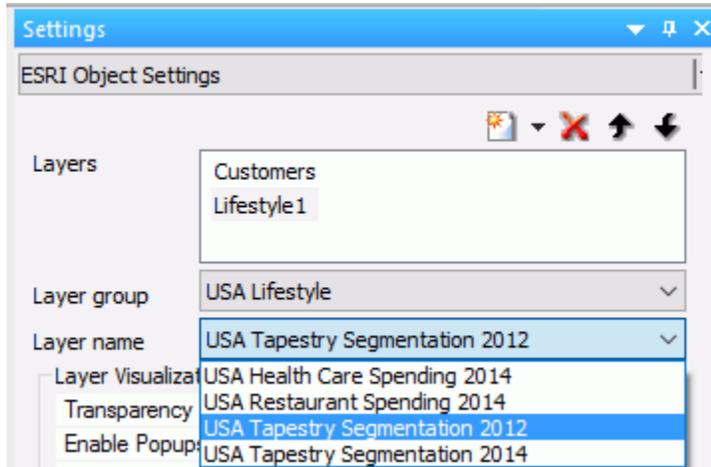


The layer is created with a default name. You can rename the layer by clicking in the default name and typing a new name.

2. Select a type of demographic layer from the Layer group drop-down list, as shown in the following image.



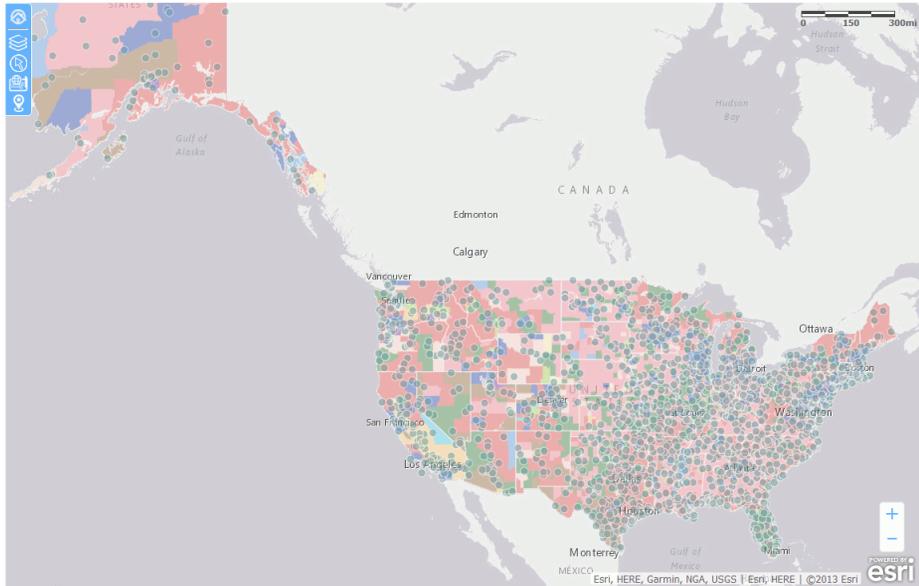
3. Select a layer name from the Layer name drop-down list, as shown in the following image.



Note: If the layer is not freely available from Esri, you will be asked to provide your Esri credentials before the layer can be added to the map.

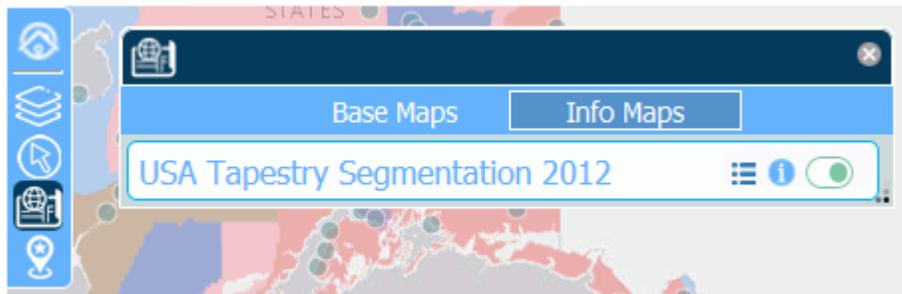
4. Configure the layer visualizations you require, such as the transparency of the layer and the default visibility.
5. Save the HTML page.

When you run the HTML page, the demographic layer is added to the map output, as shown in the following image.



Note: You may need to adjust the transparency values for each layer to make them all visible.

6. To open the demographic layer table of contents, open the *Change Base Maps* widget and select the *Info Maps* tab, as shown in the following image



The following options are available on the info Map table of contents.

| Description | Icon | Example |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| <p>Toggle Layer Legend</p> <p>This icon toggles the legend on and off.</p> |  |  |
| <p>Show Description</p> <p>This icon toggles a layer description on and off.</p> |  |  |
| <p>Visibility</p> <p>This icon toggles the layer visibility on and off.</p> |  | |

Retrieving the Esri Map Viewer Current Extent Coordinates as Variables

The current extent of an Esri map can be retrieved as map parameters and used for subsequent filtering of map layers and reports. The extent can be in any coordinate system and must be a simple polygon.

The names of the map extent variables are:

- &MINX, which defines the minimum longitude of the extent.
- &MINY, which defines the minimum latitude of the extent.
- &MAXX, which defines the maximum longitude of the extent.
- &MAXY, which defines the maximum latitude of the extent.

Example: Using the Current Extent Parameters in a Map

The following steps create a map with a procedure that shows the markers within the current extent when the map is refreshed.

1. Create a domain named RetailExtent.
2. Right-click the domain, point to *New*, and click *Procedure via Text Editor*.
3. Copy the following procedure, paste it into the text editor, and save it as retail_map.fex.

```
-DEFAULT &MINX=_FOC_NULL
-DEFAULT &MAXX=_FOC_NULL
-DEFAULT &MINY=_FOC_NULL
-DEFAULT &MAXY=_FOC_NULL

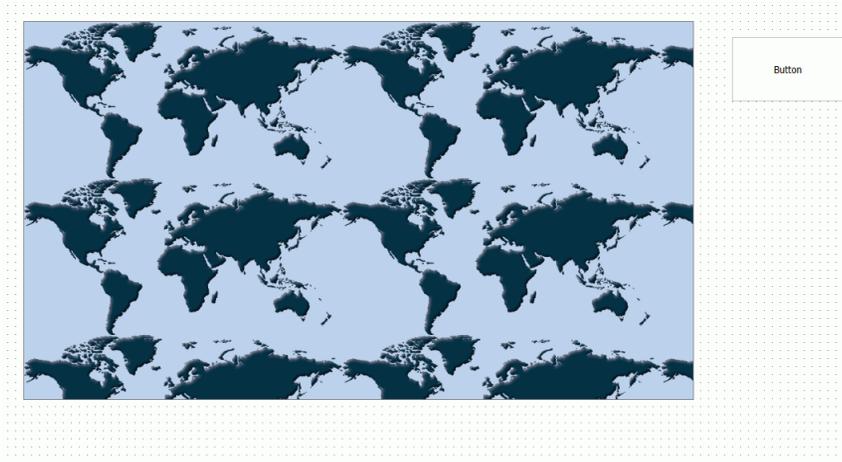
DEFINE FILE WF_RETAIL_LITE
LATITUDE = STATE_PROV_CAPITAL_LATITUDE;
LONGITUDE = STATE_PROV_CAPITAL_LONGITUDE;
END
TABLE FILE WF_RETAIL_LITE
PRINT
    ID_CUSTOMER
    QUANTITY_SOLD
    MSRP_US
    FST.LATITUDE
    FST.LONGITUDE

WHERE RECORDLIMIT EQ 250
WHERE COUNTRY_NAME EQ 'United States'
WHERE LATITUDE GE &MINY
WHERE LATITUDE LE &MAXY
WHERE LONGITUDE GE &MINX
WHERE LONGITUDE LE &MAXX
ON TABLE SET PAGE-NUM NOLEAD
ON TABLE SET ASNAMES ON
ON TABLE NOTOTAL
ON TABLE PCHOLD FORMAT XML
ON TABLE SET HTML EMBED IMG ON
ON TABLE SET HTML CSS ON

END
```

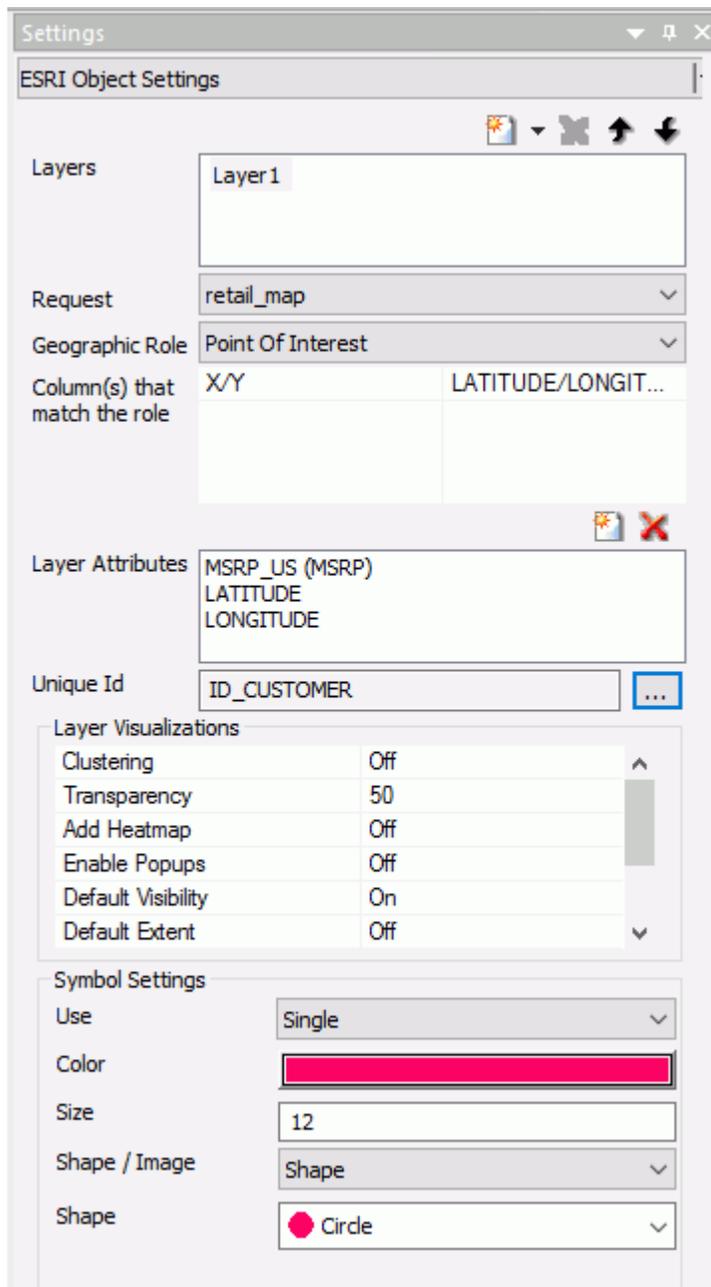
This procedure uses WHERE selection tests to show the markers only for the extent that is displayed.

4. Create a new HTML page and add a map object and a button, as shown in the following image.



5. In the Requests & Data Sources panel, open the drop-down menu next to the *New* icon, point to *External Request*, and click *WebFOCUS Procedure*. Select *retail_map.fex*.

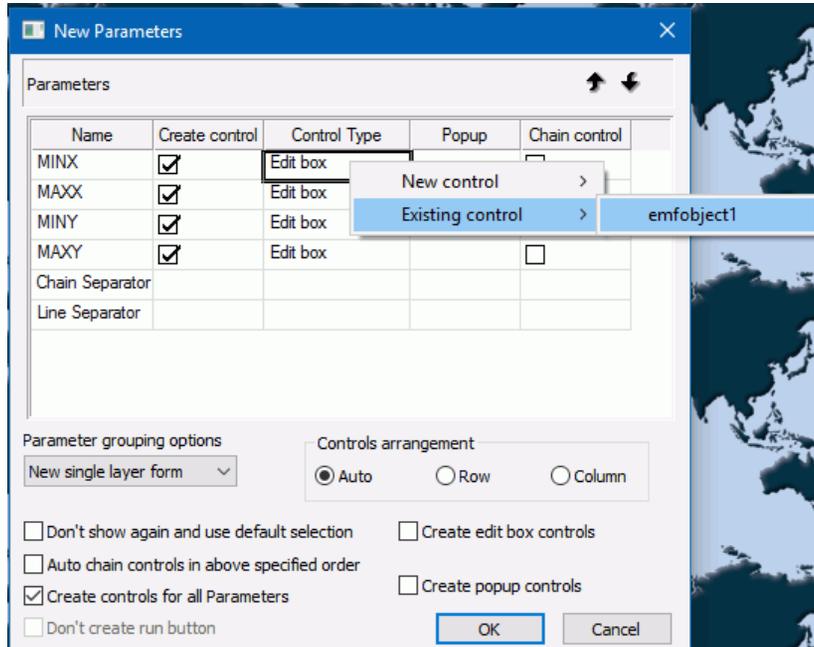
- Select the map and configure the Settings panel as shown in the following image.



- In the Requests & Data Sources panel, right-click the retail_map request and select *Create Controls for Parameters*.

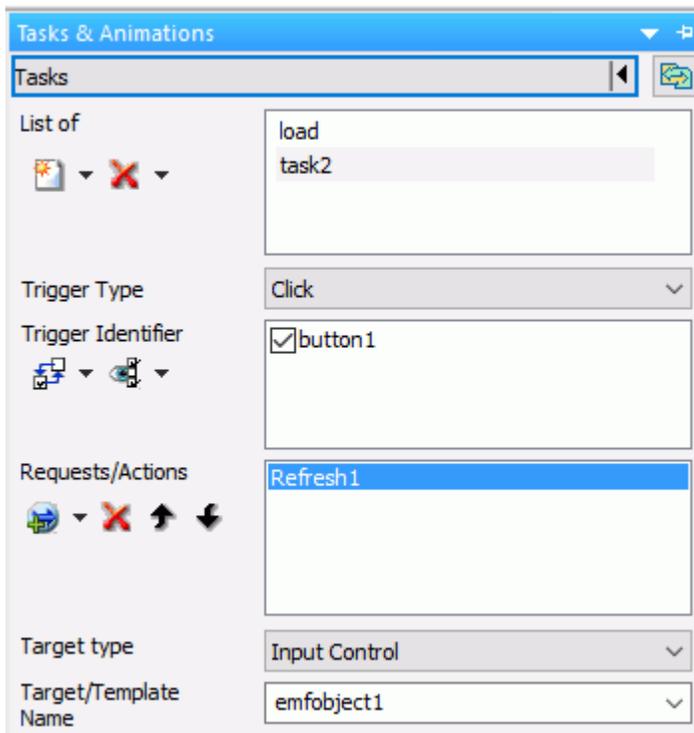
The New Parameters dialog box opens.

- Right-click the value in the first row of the Control Type column, point to *Existing Control*, and click *emfobject1*, as shown in the following image.



- Click *OK*.

10. Select the button and in the Tasks & Animations panel create a task that will refresh the map when the button is clicked, as shown in the following image.



11. Save the HTML page.

When you run the page, all of the markers are displayed on the map, as shown in the following image.



Zoom in and click the button. The map will be refreshed and only markers for that extent are displayed, as shown in the following image.



Refreshing Markers on an ESRI Map Without Refreshing the Entire Map

Markers on a Point of Interest layer may be used to represent the positions of objects (such as vehicles or incidents) whose location changes over time. You can update these markers without updating the entire map using the `lbComposer_refreshEsriMapLayer` JavaScript function in a control.

The refresh will do the following:

- Update the locations of the markers without refreshing the map layer or other map layers.
- Maintain the extent (zoom level) of the map layer.
- Maintain the symbols with which the map layer was configured.
- Maintain the visibility of the map layer.
- Allow infoWindows to be opened on click.

Syntax: **How to Refresh Map Markers Without Refreshing the Map**

Add the following JavaScript function call to the onclick event of the control created to refresh the markers.

```
IbComposer_refreshMapLayer("mapid", "layerid") ;
```

where:

"mapid"

Is a map ID (for example, "emfobject1").

"layerid"

Is a layer ID (for example, "Layer1").

Example: Refreshing Markers on an ESRI Map Without Refreshing the Entire Map

The following image shows a map layer that contains a map object and three buttons. The map ID is `emfobject1`, and the layer ID is `Layer1`, which are the default IDs.

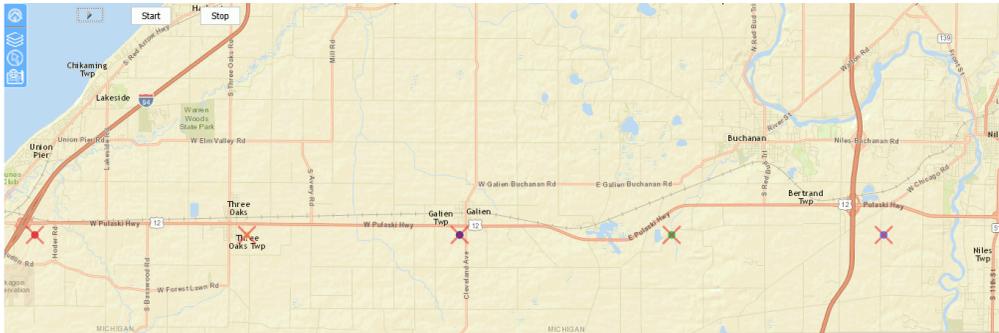


The WebFOCUS request associated with the map is fed the coordinates of the cars and prints each car ID and its latitude and longitude as the car positions change.

The button labeled *Start*, whose name is `button1`, has the `IbComposer_refreshMapLayer` function call in its `onclick` event, as shown on the Embedded JavaScript tab.

```
//Begin function button1_onclick
function button1_onclick(event) {
var eventObject = event ? event : window.event;
var ctrl = eventObject.target ? eventObject.target : eventObject.srcElement;
// TODO: Add your event handler code here
//IbComposer_refreshMapLayer("emfobject1", "Layer1") ;
//IbComposer_triggerExecution("task2",1);
if (glbInterval) return;
glbInterval = setInterval(doMapRefresh,1000);
}
//End function button1_onclick
```

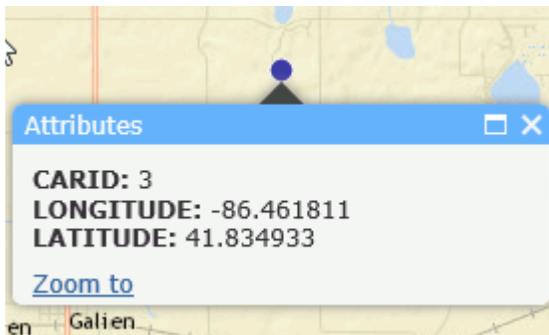
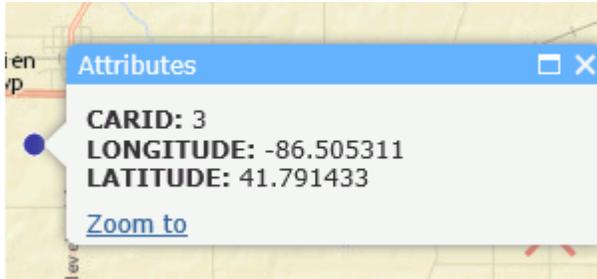
The following image shows the map output before the Start button is clicked. The circles that represent the map markers are in their starting positions within the large X's on the map.



After the Start button is clicked, the markers move on the map, but the map is not refreshed and its zoom and position remain unchanged, as shown in the following image.



Clicking a marker opens its InfoWindow. The values displayed in the InfoWindow update as the marker moves. The following images show an open InfoWindow for the same marker in two different locations.



Configuring the Map Menu

You can change background and hover colors of icons in the map menu by editing the .css classes that represent the menu components. To edit the .css class definitions, you can use the Embedded CSS tab on the HTML page that contains the map component or reference an external .css file.

Editing .css Class Definitions for the Map Menu

To embed .css classes in the HTML page, click the Embedded CSS tab at the bottom of the HTML page. The default embedded CSS tab is shown in the following image.

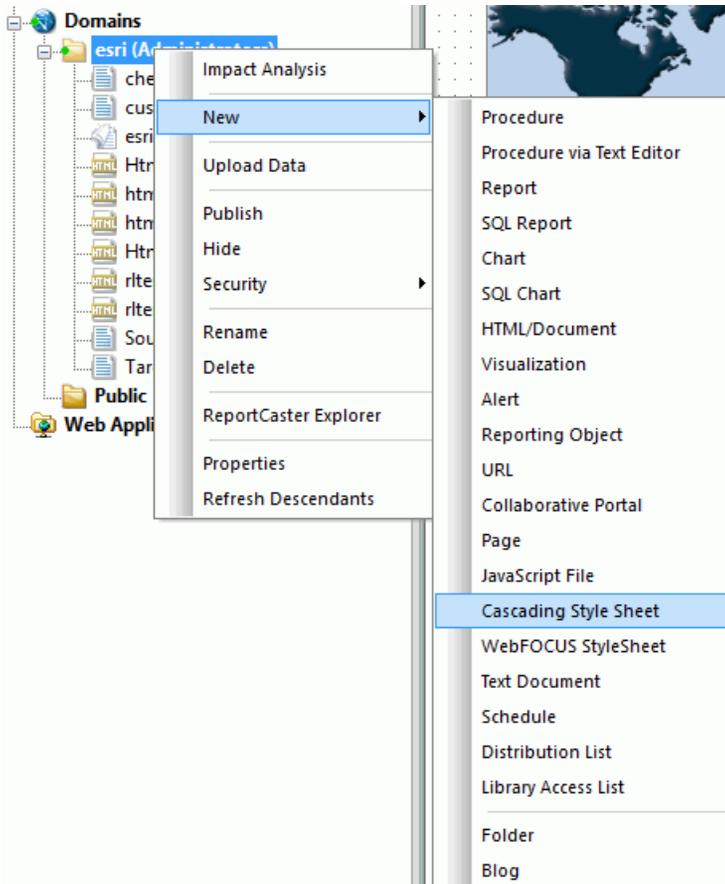
```

1 | .internal_default {
2 |   [
3 |   ]

```

Add your customized classes outside of the .internal_default class (for example, starting on line 3).

To create a new .css file, right-click an application in a domain, point to *New*, and select *Cascading Style Sheet* from the context menu, as shown in the following image.



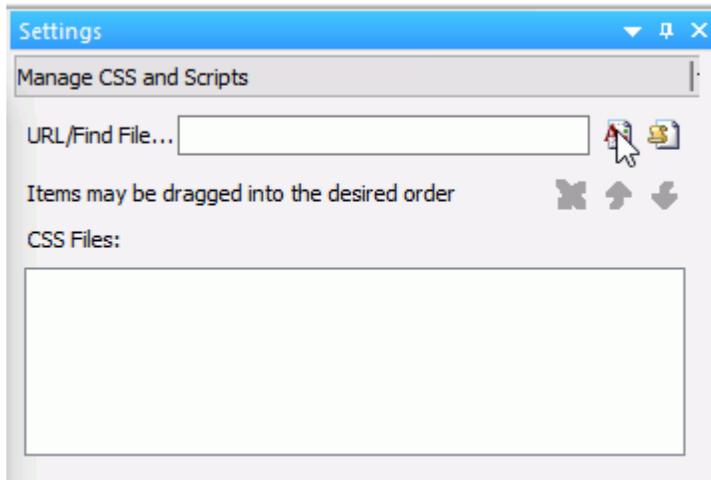
The new .css file opens, as shown in the following image.

```
1 <body>  
2 {  
3 }
```

Add your customized classes outside of the body tag (for example, starting on line 4).

After you save the .css file, you can reference it in the HTML page:

1. Click on the HTML page outside of any of its components.
2. Open the Settings panel and click the .css icon, as shown in the following image.



The Open File dialog box opens.

3. Navigate to the application that contains the .css file, select the .css file, and click *OK*.
The .css file is added to the CSS Files list in the Settings panel.

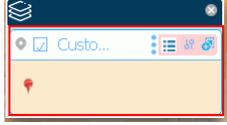
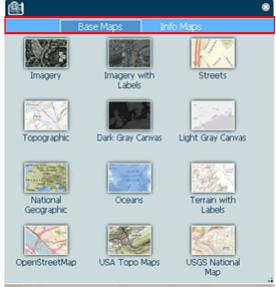
Map Menu Classes

This section describes the classes that color the map widgets. You can type them into the Embedded CSS tab of the HTML page that contains the map, or you can access an external .css file.

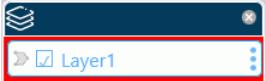
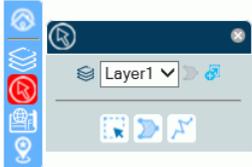
If you add them to an external .css file, place them outside of the body tag.

The following table lists the map menu classes with an image of the map menu component affected by that class. The affected areas are outlined in or colored red.

| Class Name | Class Description | Class Image (Outlined in or Colored Red) |
|------------------------------------|-----------------------------------------------|--------------------------------------------------------------------------------------|
| .mainMenuColor | Main menu container colors |  |
| .HomeButton | Home button hover color |  |
| .layersWidget | Layers (Table of Contents) button hover color |  |
| .selectionWidget | Selection button hover color |  |
| .basemapBtn | Basemap button hover color |  |
| .LocateButton .zoomLocateButton | Locate button hover color |  |

| Class Name | Class Description | Class Image (Outlined in or Colored Red) |
|----------------------|---------------------------------------------------------------|--------------------------------------------------------------------------------------|
| .lyrCheckBoxColors | Check boxes to turn layers on and off in Table of Contents |  |
| .lyrContainerColors | Color of each layer container in the Table of Contents widget |  |
| .optionsListColors | Layer options box container background color |  |
| .stContentColor | Selection tools content background color |  |
| .selectionInfoColors | Number of selected features box |  |
| .tabsHeaderColors | Background color of Basemaps and Info Maps tabs |  |

| Class Name | Class Description | Class Image (Outlined in or Colored Red) |
|---------------------|-------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| .imTabsTitlesColors | Button color of Basemaps and Info Maps tabs |  |
| .imContentColor | Background color of the Basemaps and Info Maps content area. |  |
| .imActive | Color of the active button, either the Basemaps and Info Maps tab |  |

| Class Name | Class Description | Class Image (Outlined in or Colored Red) |
|------------------------|------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| .dojoFloatingPaneTitle | Background and border colors of the title pane of all widgets |  |
| .esriPopup .titlePane | Background color of the title pane in the Esri pop-up window |  |
| .tocContentColor | Background color of the content area in the Table of Contents widget |  |
| .WidgetOn | Color of any button in the main menu when its corresponding widget is active |  |

Reference: Default Map Widget Class Definitions

The following syntax shows the .css definitions for the colors of the components in the map menu. You can replace any color definition using a hexadecimal color value, an RGBA color value, or a color name. Some classes contain multiple background color properties in order to support browsers that may require color definitions in different formats (hexadecimal or RGBA). The default color definitions are the same in both formats.

```
/*MAIN MENU STYLES*/

/*main menu container colors*/
.mainMenuColor{
    border-color: #FFFFFF;
    border-left-color: #66b2ff;
    background: #66b2ff;
}

/*Color of the home button in the main menu when mouse hovers*/
.HomeButton .home:hover {
    background-color: #5390cf;
    background-color: rgba(83, 144, 207,1);
}

/*Color of the button in the main menu that invokes the table of contents
widget when mouse hovers*/
.layersWidget:hover {
    background-color: #5390cf;
    background-color: rgba(83, 144, 207,1);
}

/*Color of the button in the main menu that invokes the selection widget
when mouse hovers*/
.selectionWidget:hover {
    background-color: #5390cf;
    background-color: rgba(83, 144, 207,1);
}
```

```

/*Color of the button in the main menu that invokes the basemaps widget
when mouse hovers*/
.basemapBtn:hover {
    background-color: #5390cf;
    background-color: rgba(83, 144, 207,1);
}

/*Color of the locate button in the main menu when mouse hovers*/
.LocateButton .zoomLocateButton:hover {
    background-color: #5390cf;
    background-color: rgba(83, 144, 207,1);
}

/*Color any button in the main menu when its corresponding widget is
active*/
.WidgetOn {
    background-color: #023858;
    background-color: rgba(2, 56, 88,1);
}

/*Color any button in the main menu when its corresponding widget is active
and mouse hovers*/
.WidgetOn:hover {
    background-color: #023858;
    background-color: rgba(2, 56, 88,1);
}

/*background color of the content area in the Table-Of-Contents widget*/
.tocContentColor{
    background-color: #c9dbdf;
}

/*style of each layer container in the Table-Of-Contents widget*/
.lyrContainerColors{
    background-color: white;
    border-color: #00b2f3;
    color: #66b2ff; /*text color. All child nodes will inherit this color*/
}

/*check boxes to turn On and Off layers in Table-Of-Contents widget*/
.lyrCheckBoxColors{
    border-color: #66b2ff;
    color: #66b2ff;
}

/* layer options box container background color*/
.optionsListColors{
    background-color: rgba(243, 10, 21, 0.19);
}

```

```
/*selection tools content background color*/
.stContentColor{
    background-color: #c9dbdf;
}

/*number of selected features box*/
.selectionInfoColors{
    color: #cd5c5c;
    border-color: #cd5c5c;
}

/*BASE MAPS WIDGET*/

/*basemaps and info-maps tabs background color */
.tabsHeaderColors{
    background-color: #66b2ff;
}

/*base-maps and info-maps tabs buttons colors*/
.imTabsTitlesColors{
    color: #ffffff;
    background-color: transparent;
}

/*base-maps and info-maps tabs buttons active colors*/
.imActive{
    background-color: #5390cf;
    border: 1px solid white;
}

/*base-maps and info-maps tabs buttons hover colors*/
.imTabsTitles:hover{
    background-color: #5390cf;
    background-color: rgba(83, 144, 207,1);
}

/*base-maps and info-maps content area background color*/
.imContentColor{
    background-color: #00ff00;
}

/*Title pane of all widgets*/
.dojoxFloatingPaneTitle {
    background-color: #023858;
    border-color: #ffffff;
}

/*title pane in the esri pop-up window*/
.esriPopup .titlePane{
    background-color: #66b2ff; !important;
}
```

Example: Changing the Map Menu Background Color

Place the following CSS commands above the `.internal_default` CSS command on the Embedded CSS tab of the map object to make the background color of the map menu cyan.

```
.mainMenuColor{
  border-color: #FFFFFF;
  border-left-color: #66b2ff;
  background: cyan;
}
```

The menu generated when you run the HTML page is shown in the following image.

**Example: Changing the Hover Color of the Home (Default Extent) and Layers Buttons**

The following `.HomeButton .home:hover` class changes the background hover color of the Home (Default Extent) button to orange and the `.layersWidget:hover` class changes the background hover color of the Layers (Table of Contents) widget to yellow.

```
.HomeButton .home:hover {
  background-color: orange;
}
.layersWidget:hover {
  background-color: yellow;
}
```

The following image shows the background hover color of the Home button:



The following image shows the background hover color of the Table of Contents button:

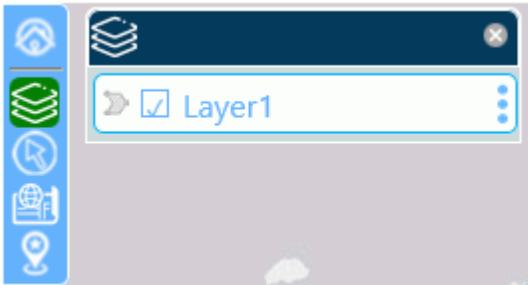


Example: Coloring a Button When its Widget is Active

The following `.WidgetOn` class makes any button green when its widget is active.

```
.WidgetOn {
  background-color: green;
}
```

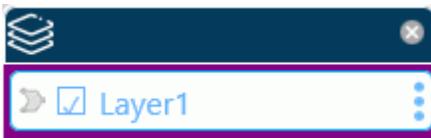
The following image shows that the Table of Contents widget is green when the Table of Contents is open.

**Example: Changing the Background Color of the Table of Contents Content Area**

The following `.tocContentColor` class makes the area directly around the layer container purple.

```
.tocContentColor{
  background-color: purple;
```

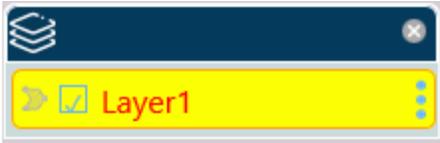
The following image shows the Table of Contents widget with the background color purple.

**Example: Styling the Layer Containers**

The following class definition makes the layer container background color yellow, the border orange, and the text red.

```
.lyrContainerColors{
  background-color: yellow;
  border-color: orange;
  color: red;
```

The following image shows a layer container whose background color is yellow, border color is orange, and text color is red



Example: Styling the Widget Title Panes

The following class definition makes the background color of the title pane burlywood and the border color navy.

```
.dojoFloatingPaneTitle {
  background-color: burlywood;
  border-color: navy;
```

The following image shows the selection widget. Its title pane has a navy border and burlywood background color.



Example: Changing the Background Color of the Pop-up Window Title Panes

The following class definition makes the background color of the pop-up window title panes magenta.

```
.esriPopup .titlePane{
  background-color: magenta;
  !important;
}
```

The following image shows a pop-up window with a magenta title pane.



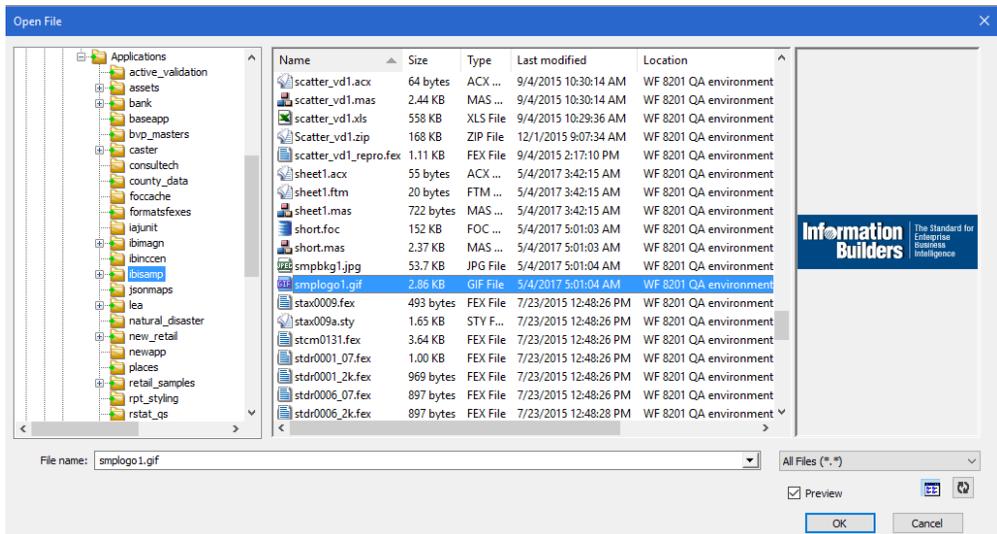
General Functionality

The following are new features and enhancements for general functionality in App Studio Release 8.2 Version 02.

Preview Option

The Preview option displays content for images, Master Files, Access Files, and procedure files in a re-sizable preview pane. The Preview option is available for the Open File, Save As, and Select Data Source dialog boxes.

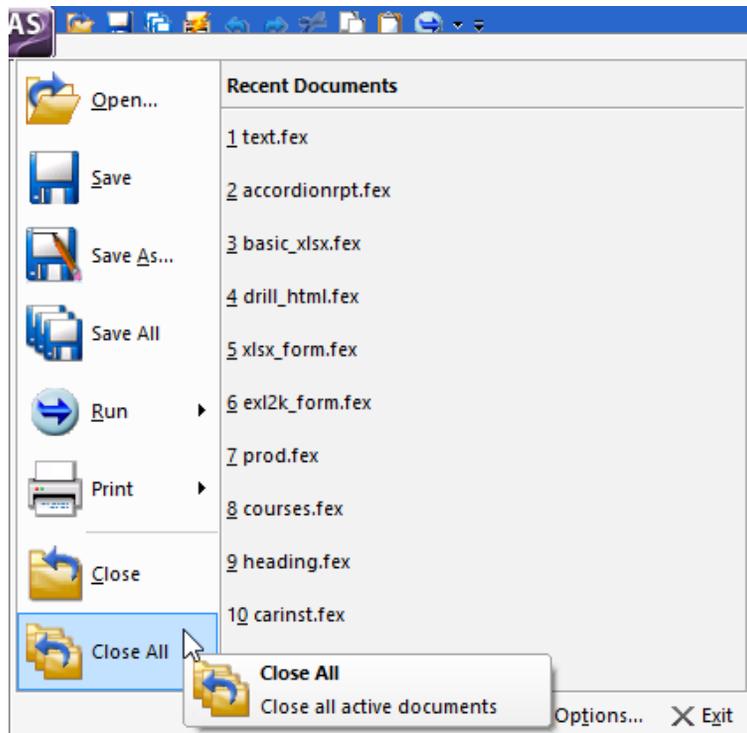
The Open File dialog box, with a thumbnail preview of an image in the preview pane, is shown in the following image.



Note: If you select the *Preview* check box on the Open File, Save As, or Select Data Source dialog box, the preview pane displays. The check box is selected, by default, and remains enabled for subsequent invocations.

Close All Option

The Close All option has been added to the App Studio Application menu of file-related commands, as shown in the following image.



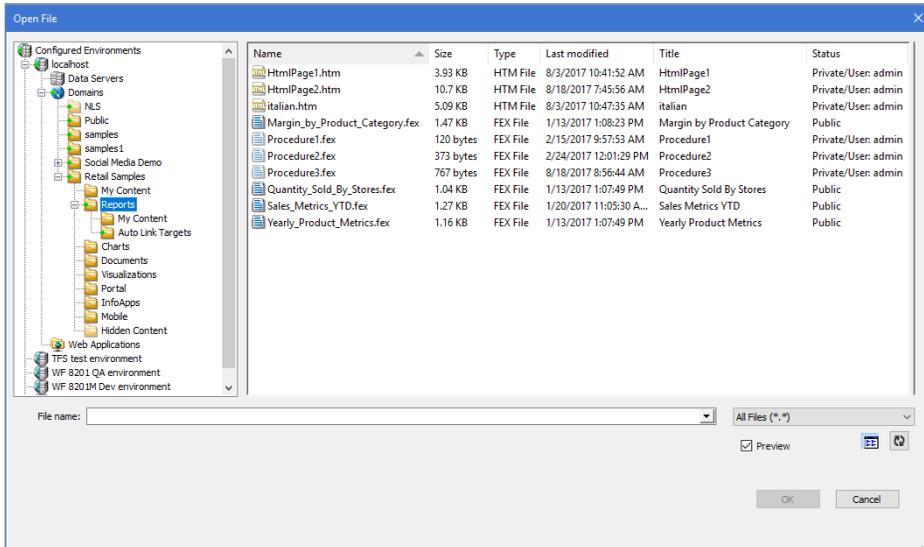
The Close All option closes all open documents. If changes were made to a file, you will be prompted to save the changes.

Title and Status Columns

When displaying files in the Environment Details view and File dialog boxes, the Title and Status columns are now available.

- The Title column displays the descriptive name of the item.
- The Status column contains information about whether the file is Public or Private. If Private, the column indicates the user name of the owner.

The Open File dialog box, with the Title and Status columns, is shown in the following image.



HTML Canvas

The following are new features and enhancements for the HTML canvas in App Studio Release 8.2 Version 02.

Creating a Widget to Autoplay Control Values

You can insert a widget on an HTML page to automatically submit values in a control at specific intervals. The control can be linked to a report, chart, or map.

You can enable the autoplay setting for the widget in the Tasks & Animations panel. The widget selected may require the following configurations:

- Setting the timing for the autoplay action to indicate the amount/length of time it should take for a value to change.
- Setting the play interval for a date slider to specify the interval in terms of days, weeks, months, or years.

Procedure: How to Create a Widget to Autoplay Control Values

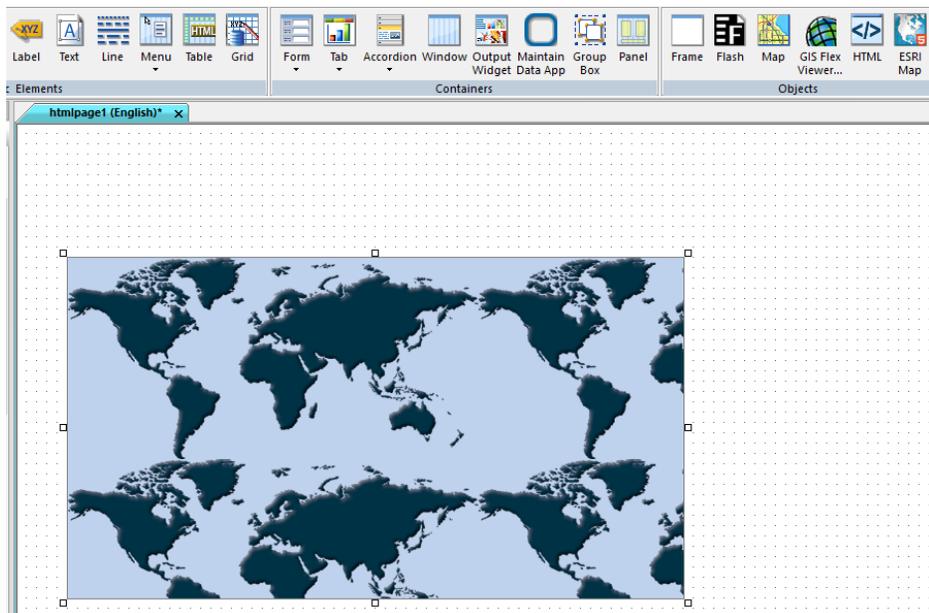
1. Create an XML parameter report to use for the map. For example:

```

TABLE FILE BASEAPP/WF_RETAIL_LITE
SUM
WF_RETAIL_LITE.WF_RETAIL_SALES.REVENUE_US
WF_RETAIL_LITE.WF_RETAIL_SALES.GROSS_PROFIT_US
BY WF_RETAIL_LITE.WF_RETAIL_GEOGRAPHY_STORE.COUNTRY_NAME
WHERE WF_RETAIL_LITE.WF_RETAIL_TIME_SALES.TIME_DATE_YEAR_COMPONENT EQ
&TIME_DATE_YEAR_COMPONENT.(FIND
WF_RETAIL_LITE.WF_RETAIL_TIME_SALES.TIME_DATE_YEAR_COMPONENT,
WF_RETAIL_LITE.WF_RETAIL_TIME_SALES.TIME_DATE_YEAR_COMPONENT IN
baseapp/wf_retail_lite|FORMAT=YMDy).Sale,Year:.QUOTEDSTRING;
ON TABLE SET PAGE-NUM NOLEAD
ON TABLE SET ASNAMES ON
ON TABLE NOTOTAL
ON TABLE PCHOLD FORMAT XML
ON TABLE SET HTMLCSS ON
END

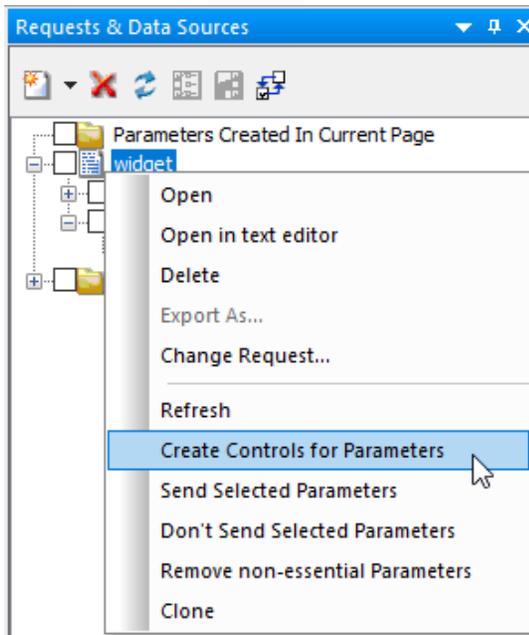
```

2. Create a new HTML page.
3. In the Objects group, click *ESRI Map* to draw an Esri map component on the canvas, as shown in the following image.



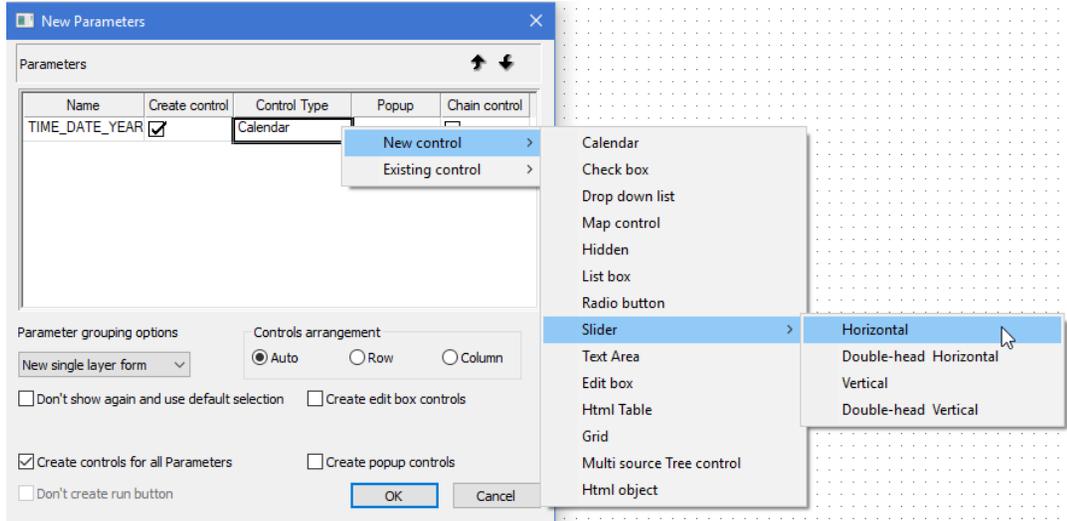
4. From the Requests & Data Sources panel, select the *New* drop-down arrow, point to *External Request*, and then click *WebFOCUS Procedure*.

5. Right-click the report in the Requests & Data Sources panel and click *Create Controls for Parameters*, as shown in the following image.



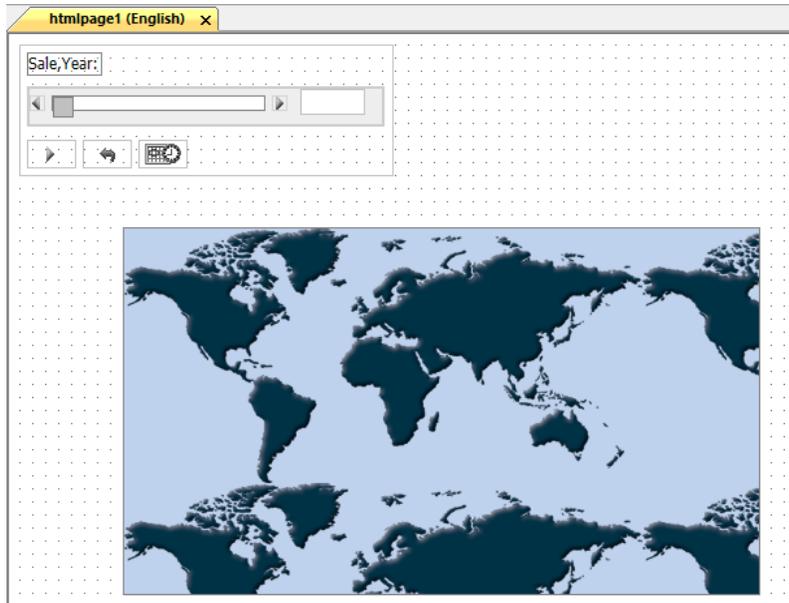
6. In the New Parameters dialog box:
 - a. In the Control Type column, right-click *Calendar*.
 - b. Select *New control*.
 - c. Select *Slider*.
 - d. Select *Horizontal*.

The populated New Parameters dialog box is shown in the following image.

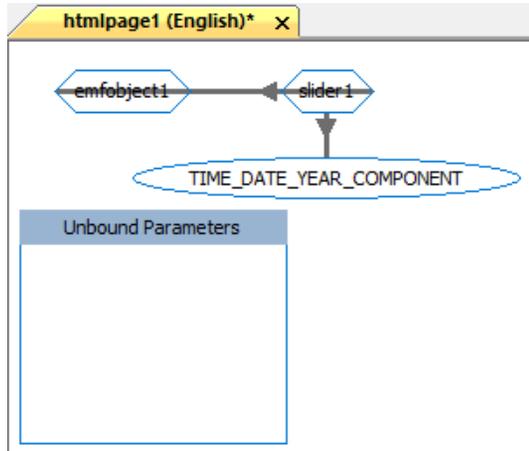


7. Click *OK*.

The horizontal slider is added to the HTML page, as shown in the following image.



8. Select the *Parameters* tab and drag the slider over emfobject1 (the map object) to draw a line to symbolize the chaining of objects. The arrow indicates the direction of the chaining, as shown in the following image.



9. Return to the Design tab, select the map object, and open the Settings panel.
10. On the Settings panel:
 - Select *Layer1*.
 - For the Request value, select the name of the XML report.
 - For the Geographic Role, select *Country (Name)*.
 - For the Column(s) that match the role, select *COUNTRY_NAME*.
 - For the Layer Attributes, select *REVENUE_US* and *GROSS_PROFIT_US*.
 - For the Enable Popups attribute, select *On*.
 - For the Default Extent attribute, select *On*.
 - For the Use attribute, select *Color*.
 - For the Using Field attribute, select *GROSS_PROFIT_US*.
 - For the Color Scheme attribute, select red to green.

The populated Settings panel is shown in the following image.

Settings

ESRI Object Settings

Layers: Layer1

Request: widget

Geographic Role: Country (Name)

| Column(s) that match the role | |
|-------------------------------|--------------|
| COUNTRY | COUNTRY_NAME |

Layer Attributes: REVENUE_US (Revenue), GROSS_PROFIT_US (Gross Profit)

Unique Id: [] ...

| Layer Visualizations | |
|----------------------|----|
| Transparency | 50 |
| Enable Popups | On |
| Default Visibility | On |
| Default Extent | On |

Symbol Settings

Use: Color

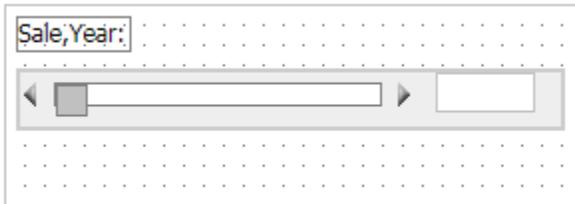
Using Field: GROSS_PROFIT_US ...

By: Natural Jenks

Number of classes: 5

Color Scheme: [Color Bar]

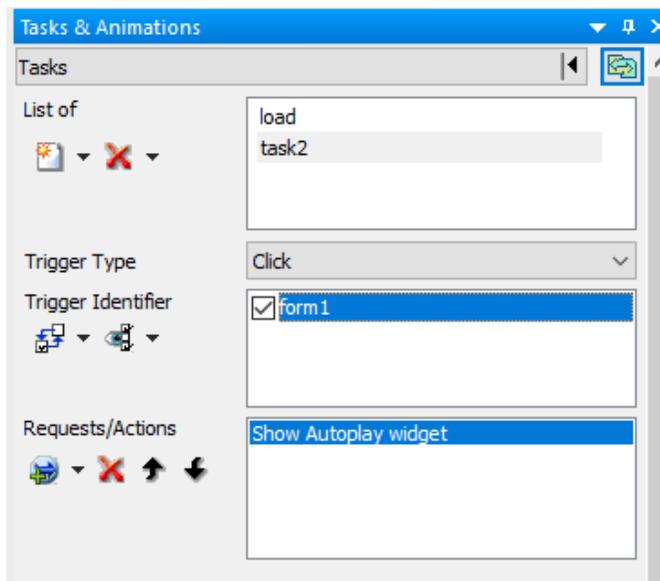
- Multi-select the Submit, Reset, and Schedule buttons in the form and delete them, as shown in the following image.



- On the Tasks & Animations panel:

- Delete task 2 and task 3.
- Create a new task.
- For the Trigger Type attribute, select *Click*.
- Select the form of the control to add the Trigger Identifier.
- Select *form1*.
- For the Requests/Actions attribute, select *Show Autoplay widget*.

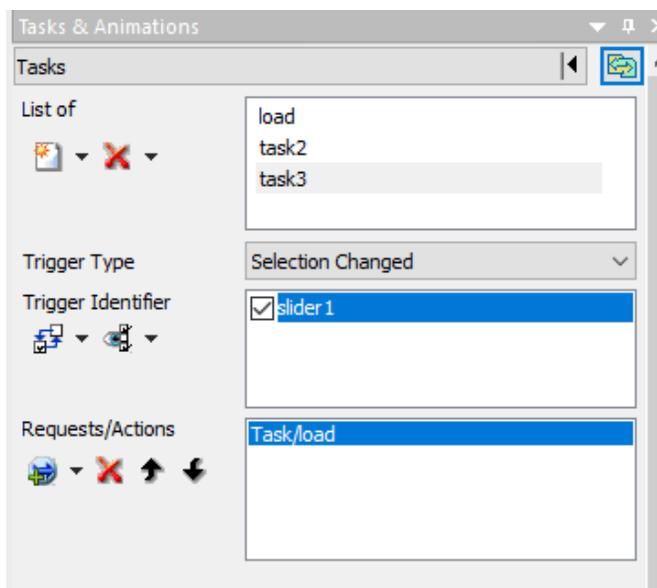
The populated Tasks & Animations panel is shown in the following image.



13. On the Tasks & Animations panel:

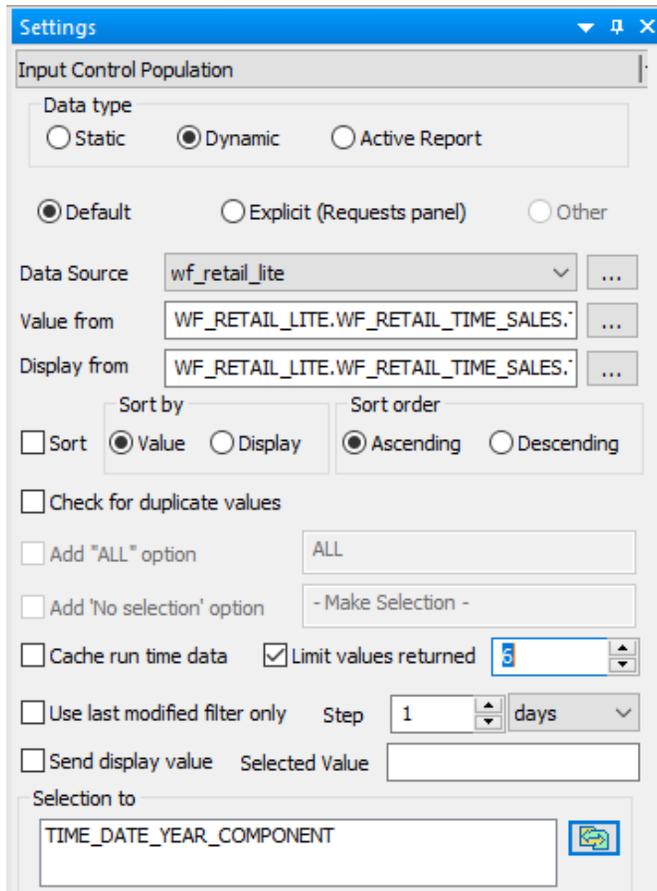
- Create a new task.
- For the Trigger Type attribute, select *Selection Changed*.
- Select the form of the control to add the Trigger Identifier.
- Select *slider1*.
- For the Requests/Actions attribute, select *Execute Task* and then select *load*.

The populated Tasks & Animations panel is shown in the following image.



14. Select the slider control in the HTML canvas.

15. On the Settings panel, select *Limit values returned* and change the value to 6, as shown in the following image.

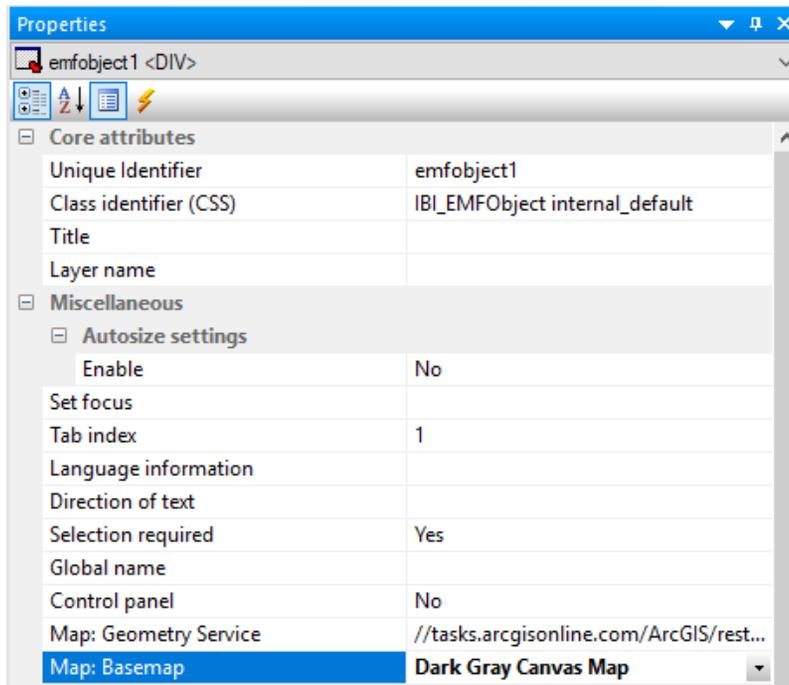


The image shows a 'Settings' dialog box with the following configuration:

- Input Control Population:** [Text field]
- Data type:** Static, Dynamic, Active Report
- Default, Explicit (Requests panel), Other
- Data Source:** wf_retail_lite
- Value from:** WF_RETAIL_LITE.WF_RETAIL_TIME_SALES.
- Display from:** WF_RETAIL_LITE.WF_RETAIL_TIME_SALES.
- Sort by:** Sort, Value, Display
- Sort order:** Ascending, Descending
- Check for duplicate values
- Add "ALL" option: ALL
- Add 'No selection' option: - Make Selection -
- Cache run time data, Limit values returned: 6
- Use last modified filter only: Step 1 days
- Send display value: Selected Value
- Selection to:** TIME_DATE_YEAR_COMPONENT

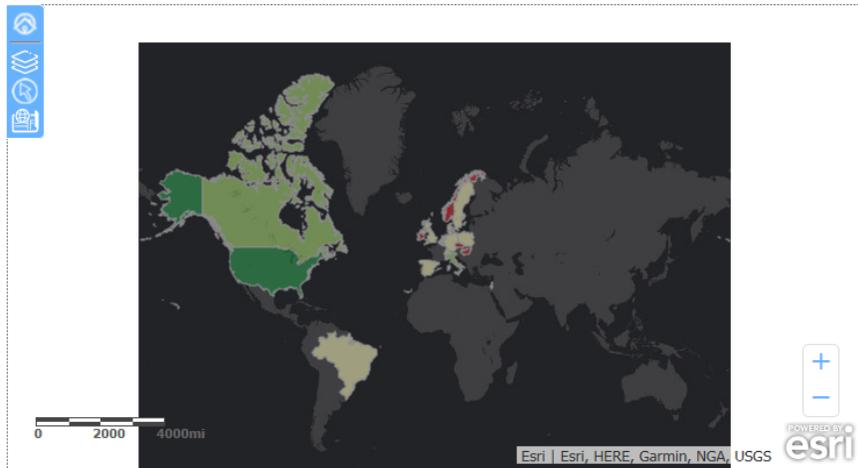
16. Select the map component in the HTML canvas.

17. From the Properties panel, change Map: Basemap to *Dark Gray Canvas Map*, as shown in the following image.



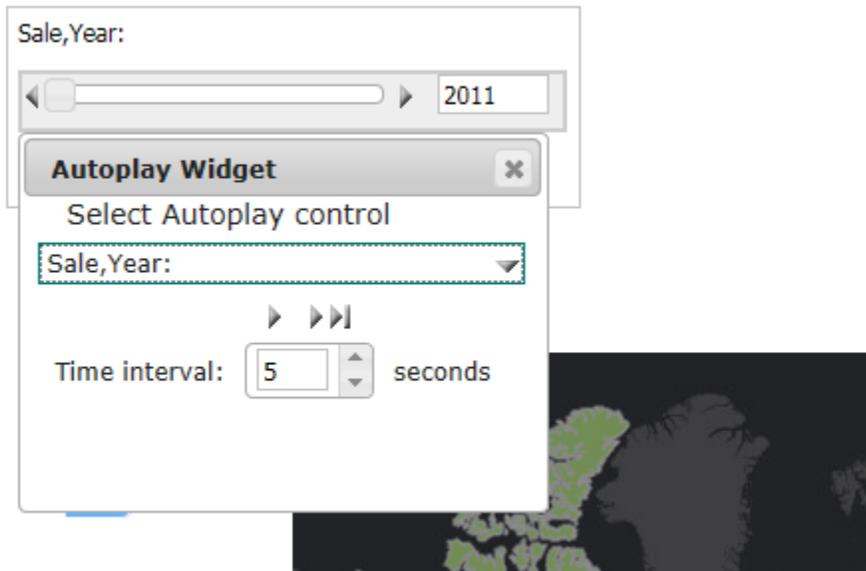
18. Run the HTML page, as shown in the following image.

Sale,Year:



19. Click within the slider form.

20. Select *Sale,Year:* from the Autoplay Widget drop-down list, as shown in the following image.



21. Drag to reposition the widget, so that it does not cover the map or the control.
 22. Click the play button.

Note: As the slider moves automatically, from year to year, the map is refreshed with the data for the corresponding year.

Parameterizing Properties in the Properties Panel

You can parameterize properties in the Properties panel for all objects in an HTML page. This enables you to add values to amper variables and pass these variables to the corresponding property settings in App Studio so the HTML page behaves a specific way.

You can pass values using the `!IBI.AMP.VarName` variable or a URL call.

Procedure: How to Parameterize Properties in the Properties Panel

The following procedure shows how to parameterize properties in the Properties panel, using the `!IBI.AMP.VarName` variable and a procedure call to the HTML page.

1. From the Environments tree, right-click a folder, point to *New*, and click *HTML/Document* to create a new HTML page.
2. On the *Components* tab, in the *Generic Elements* group, click *Button* and draw a button on the canvas.

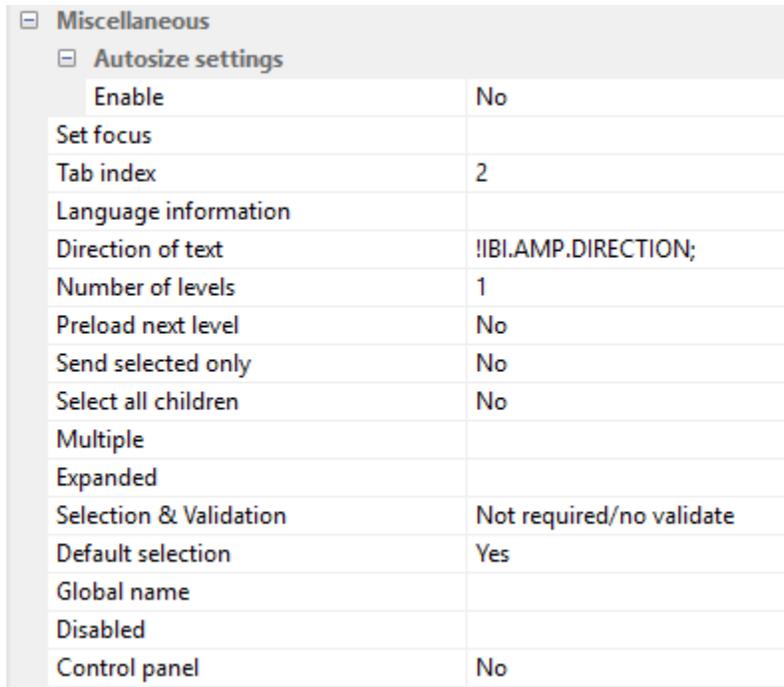
3. On the *Controls* tab, click the *Tree* drop-down arrow and select the *Multi source Tree control* option to draw the control on the canvas.
4. On the *Requests & Data Sources* panel, click the *New* drop-down arrow, and then click *Add Data Source*.
5. Navigate to the *ibisamp* folder and select a Master File. For example, *movies.mas*.
6. Select the button component on the HTML canvas.
7. On the *Properties* panel:
 - Next to the *Color* property, type `!!BI.AMP.MYCOLOR;`
 - Next to the *Background-color* property, type `!!BI.AMP.BCOLOR;`

The *Properties* panel with *Color* and *Background-color* values are shown in the following image.

| Style attributes | |
|------------------------------------|--------------------------------------------|
| Basic | |
| Location: Left; Top; Width; Height | 70; 150; 360; 80 |
| Color | <input type="checkbox"/> !!BI.AMP.MYCOLOR; |
| Font | |
| Font-size | |
| Background-color | <input type="checkbox"/> !!BI.AMP.BCOLOR; |
| Display | |
| Visibility | |
| Position | absolute |
| Left | 70px |
| Top | 150px |

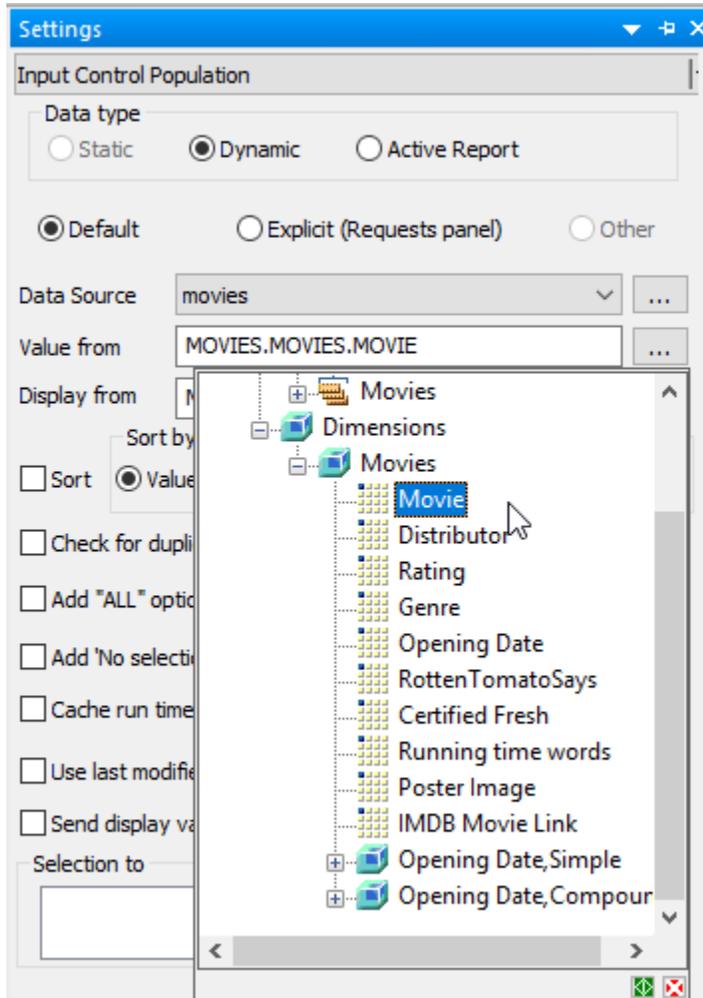
8. Select the *Multi source Tree control* on the HTML canvas. On the *Properties* panel, next to the *Direction of text* property, type `!!BI.AMP.DIRECTION;`

The Properties panel with the Direction of text value is shown in the following image.



| Miscellaneous | |
|------------------------|--------------------------|
| Autosize settings | |
| Enable | No |
| Set focus | |
| Tab index | 2 |
| Language information | |
| Direction of text | !!BI.AMP.DIRECTION; |
| Number of levels | 1 |
| Preload next level | No |
| Send selected only | No |
| Select all children | No |
| Multiple | |
| Expanded | |
| Selection & Validation | Not required/no validate |
| Default selection | Yes |
| Global name | |
| Disabled | |
| Control panel | No |

9. On the Settings panel, click the ellipsis for *Value from* and double-click *Movie*, as shown in the following image.

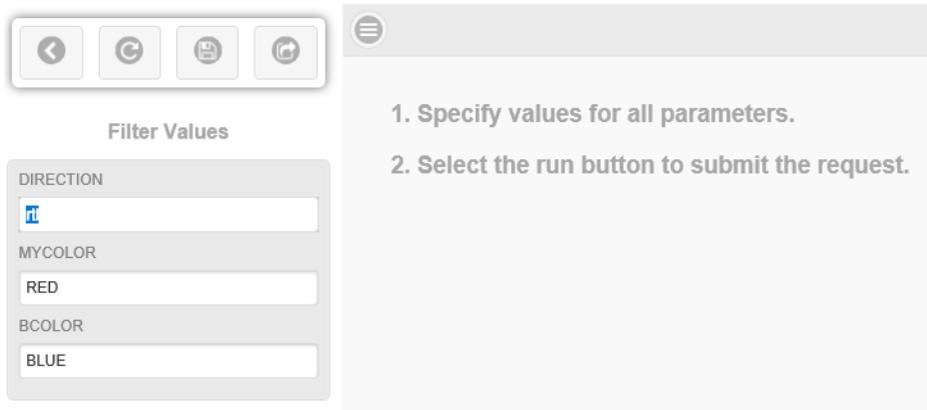


10. Save and close the HTML page.
11. From the Environments tree, right-click an application folder (for example, *baseapp*), point to *New*, and then click *Procedure*.
12. Type the following code:

```
-DEFAULT &DIRECTION='rtl';
-DEFAULT &MYCOLOR='RED';
-DEFAULT &BCOLOR='BLUE';
```

13. From the Procedure View panel, right-click *Comment*, point to *New*, point to *HtmlForm*, and then click *Referenced*.
14. Double-click the HTML page to reference.
15. Close the procedure and save the file.
16. From the Environments tree, right-click the procedure, and click *Run*.

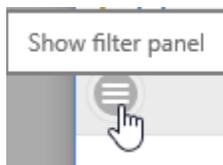
The following screen displays with the specified default values.



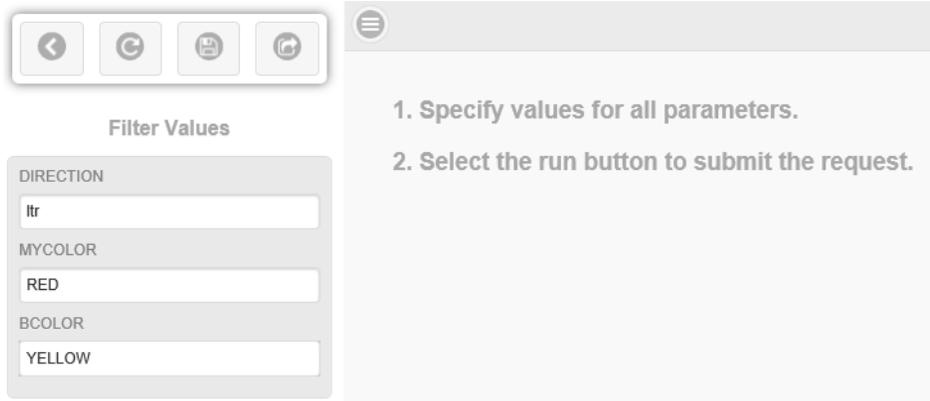
17. Click the Run icon.

Notice that the background color is blue, the button text is red, and the movie titles are right-justified.

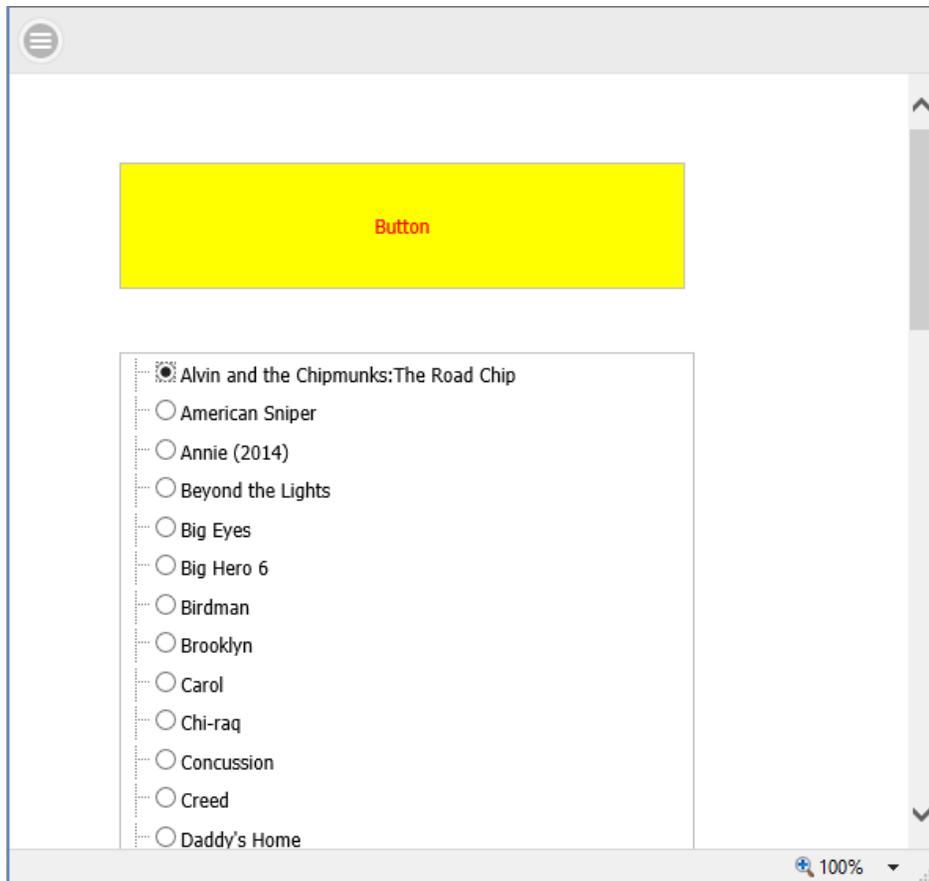
18. Click the Show filter panel icon, as shown in the following image.



19. Change the direction to ltr (left to right) and the background color to yellow, as shown in the following image.



20. Click the Run icon. Notice that the background color for the button is yellow and the movie titles are left-justified, as shown in the following image.



Note: You can also parameterize properties in the Properties panel using a URL in a browser. For example:

http://host:port/app_directory/htmlfilename.htm?bcolor=red

In this example:

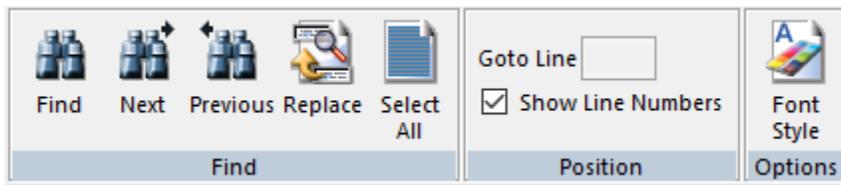
- `&Vname` (for example, `&bcolor`) must be added to the Properties panel for the parameter value.
- `bcolor` refers to the background color.

Font Size and Style for Text in the JavaScript and CSS Editor

You can change the default font size and style of the text in the Embedded JavaScript and Embedded CSS tabs of the HTML canvas, using the Font dialog box. This is available for new and existing files.

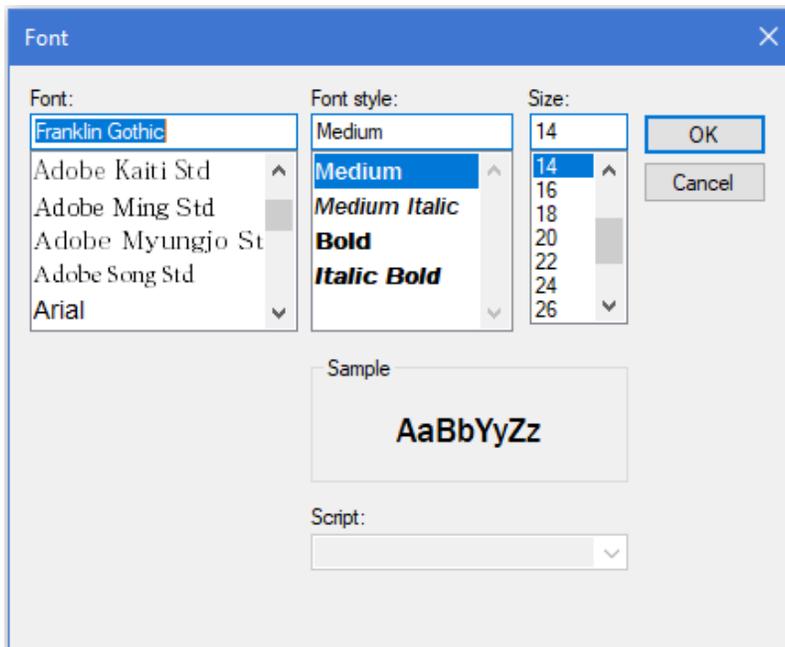
Procedure: How to Change the Font Size and Style for the Text in the JavaScript and CSS Editor

1. Select the *Embedded JavaScript* or *Embedded CSS* tab in the HTML canvas.
2. On the ribbon, in the *Options* group, click *Font Style*, as shown in the following image.



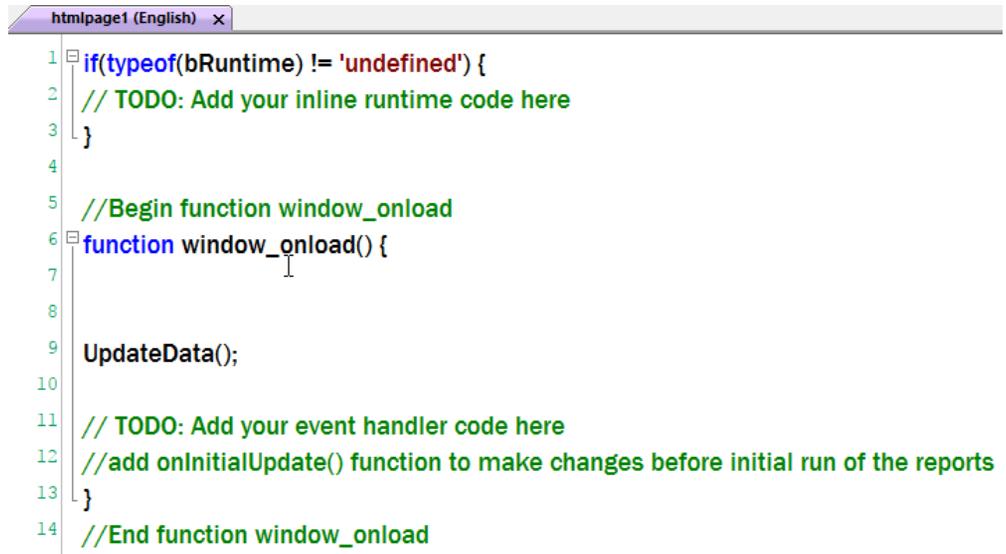
The Font dialog box opens.

3. Select a font, font style, and size (for example, *Franklin Gothic*, *Medium*, and *14*), as shown in the following image.



4. Click *OK*.

The updated font size and style of the text is shown in the following image.



```

1  if(typeof(bRuntime) != 'undefined') {
2  // TODO: Add your inline runtime code here
3  }
4
5  //Begin function window_onload
6  function window_onload() {
7
8
9  UpdateData();
10
11 // TODO: Add your event handler code here
12 //add onInitialUpdate() function to make changes before initial run of the reports
13 }
14 //End function window_onload

```

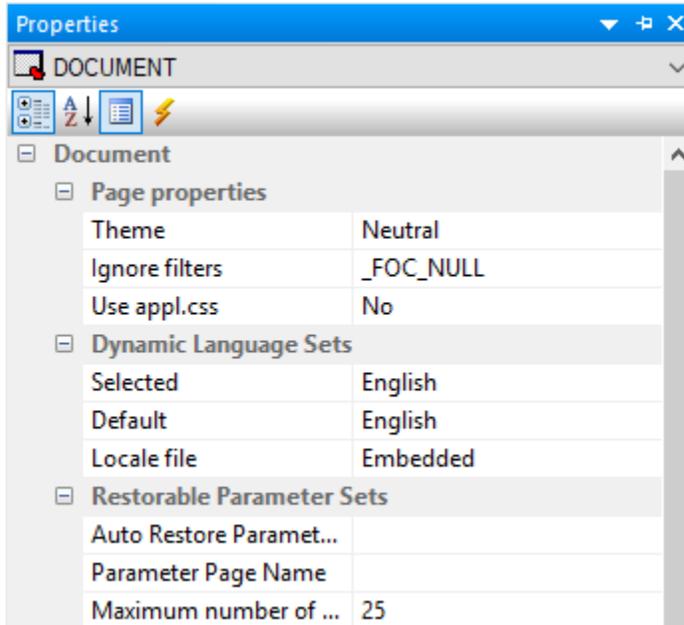
Displaying Applications in Different Languages

You can translate HTML pages within App Studio to display applications in different languages in the portal. A translation XML file can be an embedded file or a referenced file.

When creating an HTML page in the HTML canvas, you can use the Dynamic Language Sets group on the Properties panel for the DOCUMENT object to:

- Select a language, to allow for development.
- Select a default language for run time, if the selected language is not yet defined.
- Use an embedded or external file for translation.
- See a visual representation of the selected language. The open tab for the HTML file displays the language in parentheses next to the file name. This is for display purposes only. The file will not be saved with the additional language information.

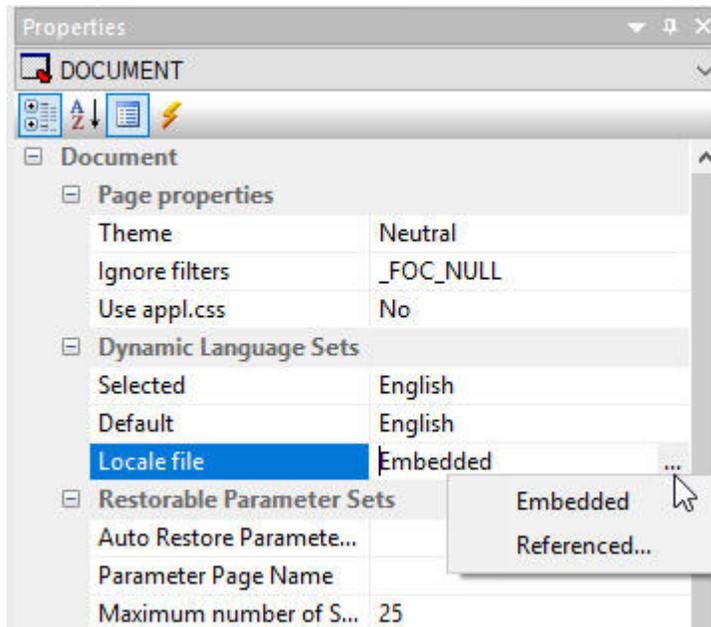
The Dynamic Language Sets group on the Properties panel for the DOCUMENT object is shown in the following image.



The Dynamic Language Sets properties are as follows:

- ❑ **Selected.** Is a drop-down list, which contains a list of WebFOCUS languages, as selected in the WebFOCUS Administration Console. This is based on the selected code page. The default value is the language that is set in the General section of the App Studio Options dialog box.
- ❑ **Default.** Is a drop-down list of the languages that will be available in the embedded or referenced file (XML). When you select a language in the Selected drop-down list, the language is added to the Default drop-down list and a section in the XML file is added for the language. If you run the page from the Web Console (BIP tree), and if the selected WebFOCUS language is not available for the HTML file, then the page runs in the language selected in the Default drop-down list. When a new value is selected in the Selected drop-down list, the Default will automatically be set for the Language drop-down list in the General section of the App Studio Options dialog box.

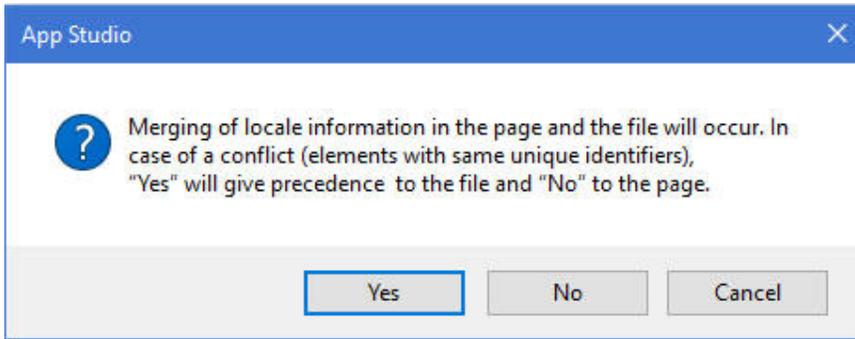
- ❑ **Locale file.** Indicates whether the translation XML file is an embedded file or a referenced file, as shown in the following image.



Possible values are:

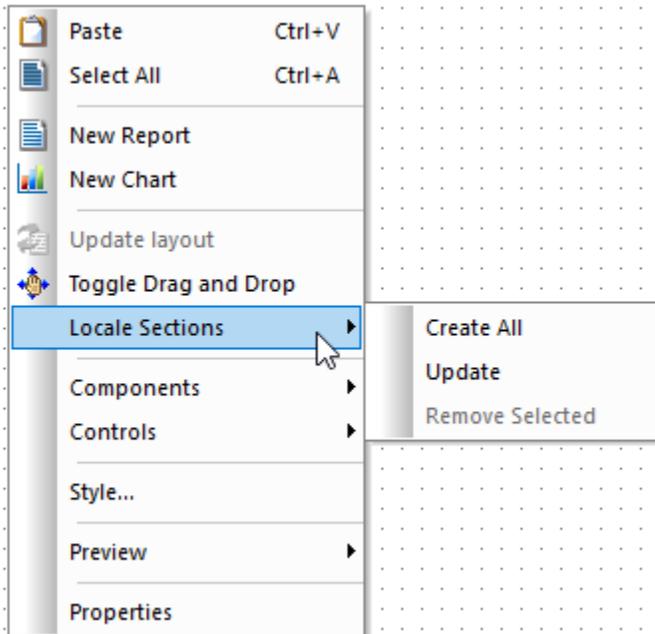
- ❑ **Embedded.** Indicates that all the XML language strings are written in the HTML file. This is the default value.
- ❑ **Referenced.** Prompts you to select an existing XML file from the Open File dialog box. You can type a name in the Filename field in order to create a new XML file. Selecting Yes in the App Studio dialog box creates a new file.

Note: When creating a locale file for the first time, the referenced file must be created as a new file.



Yes populates the page with the localized strings in the file. No writes the information in the page to the file at the time when the HTML file is saved.

You can also set Locale options by right-clicking the document and selecting *Locale Sections* from the right-click menu, as shown in the following image.



The following options are available:

Create All. Creates sections in the XML file for all languages listed in the Selected drop-down list in the Properties panel. All the languages will also be populated in the Default drop-down list. Once the Create All option is selected, it will be grayed out until a section is removed from the XML file.

Update. Updates sections in the XML file when you develop the HTML page and when saving the page.

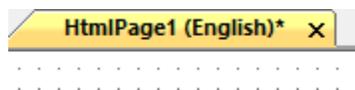
Note: If the XML file is not written for any sections in the HTML page, selecting *Update* will update the XML file sections for those missing sections.

Remove Selected. Removes the section in the XML file for the language in the Selected drop-down list. The value in the Selected drop-down list will be the default language. The language will also be removed from the Default drop-down list.

Procedure: How to Display Applications in Different Languages

1. Right-click a folder, point to *New*, and then click *HTML/Document* to create a new HTML page.

Notice that the open tab for the HTML file displays the default language in parentheses, as shown in the following image.



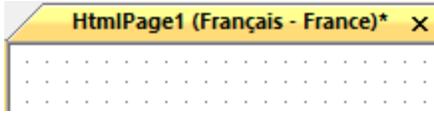
2. Add a report and a heading control to the HTML page, as shown in the following image. Type the text for the heading in English.

Margin Report for Product Categories

| Product Category | AVE Margin | | Revenue | | Cost of Goods |
|------------------|------------|--|------------------|--|------------------|
| Camcorder | 40.41% | | \$154,465,702.24 | | \$104,866,857.00 |
| Accessories | 36.51% | | \$129,608,338.53 | | \$89,753,898.00 |
| Computers | 35.63% | | \$103,316,482.12 | | \$69,807,664.00 |
| Video Production | 33.04% | | \$58,053,276.62 | | \$40,105,657.00 |

3. Save the HTML page.
4. In the Properties panel, click the Selected drop-down list and select a different language, for example, French, as shown in the following image.

Notice that the open tab for the HTML file changes to the selected language, as shown in the following image.



5. Type the text for the heading in French, as shown in the following image.

Rapport de marge pour les catégories de produits

| Product Category | AVE Margin | | Revenue | | Cost of Goods |
|------------------|------------|--|------------------|--|------------------|
| Camcorder | 40.41% | | \$154,465,702.24 | | \$104,866,857.00 |
| Accessories | 36.51% | | \$129,608,338.53 | | \$89,753,898.00 |
| Computers | 35.63% | | \$103,316,482.12 | | \$69,807,664.00 |
| Video Production | 33.04% | | \$58,053,276.62 | | \$40,105,657.00 |

6. Save the HTML page.
7. Select *English* for the Selected property in the Properties panel for the Document.
8. Run the HTML page. The report heading is in English, as shown in the following image.

Margin Report for Product Categories

| Product Category | AVE Margin | | Revenue | | Cost of Goods ^ |
|------------------|------------|--|------------------|--|------------------|
| Camcorder | 40.41% | | \$154,465,702.24 | | \$104,866,857.00 |
| Accessories | 36.51% | | \$129,608,338.53 | | \$89,753,898.00 |
| Computers | 35.63% | | \$103,316,482.12 | | \$69,807,664.00 |
| Video Production | 33.04% | | \$58,053,276.62 | | \$40,105,657.00 |

9. Select *French* for the Selected property in the Properties panel for the Document.

10. Run the HTML page. The report heading is in French, as shown in the following image.

Rapport de marge pour les catégories de produits

| Product Category | AVE Margin | | Revenue | | Cost of Goods ^ |
|------------------|------------|--|------------------|--|------------------|
| Camcorder | 40.41% | | \$154,465,702.24 | | \$104,866,857.00 |
| Accessories | 36.51% | | \$129,608,338.53 | | \$89,753,898.00 |
| Computers | 35.63% | | \$103,316,482.12 | | \$69,807,664.00 |
| Video Production | 33.04% | | \$58,053,276.62 | | \$40,105,657.00 |

HTML Alias Property

If you develop applications in the Data Servers area and need to deploy the application to an environment that has a different alias, it is necessary to use a Generic alias. For existing pages, open the HTML pages and change the alias. The pages will not work if you do not change the alias to Generic.

Note: This option is only applicable to the Data Servers area.

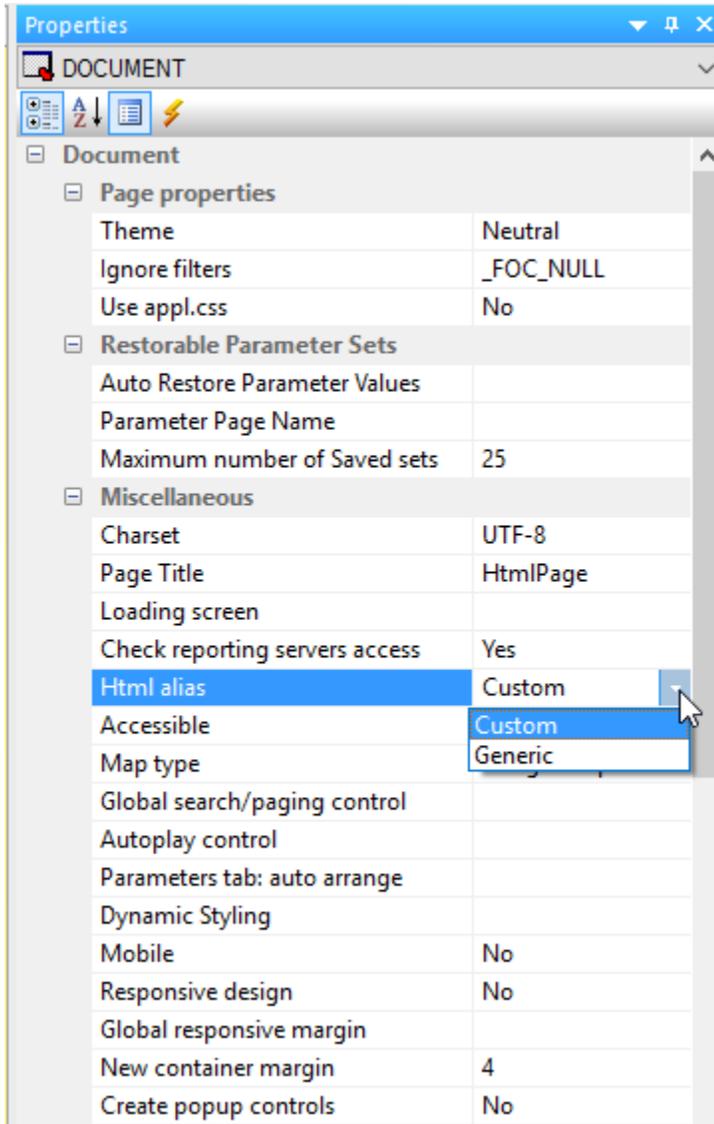
To set an alias for a new page or change the alias for an existing page, you can:

- Set the HTML alias property in the Properties panel for the DOCUMENT object.
- Set the HTML Alias property value globally in the HTML Page section of the App Studio Options dialog box.

For the DOCUMENT object, the HTML alias property on the Properties panel contains the following values:

- Custom.** In the HTML page, the alias (szHtmlAlias) will have the value of the HTML Alias from the settings in the WebFOCUS Environment Properties dialog box. Custom is the default value, since applications developed in the Data Servers area are meant for self-service applications.
- Generic.** In the HTML page, the alias (szHtmlAlias) will have a generic value. This allows for files to be moved from one environment to the other.

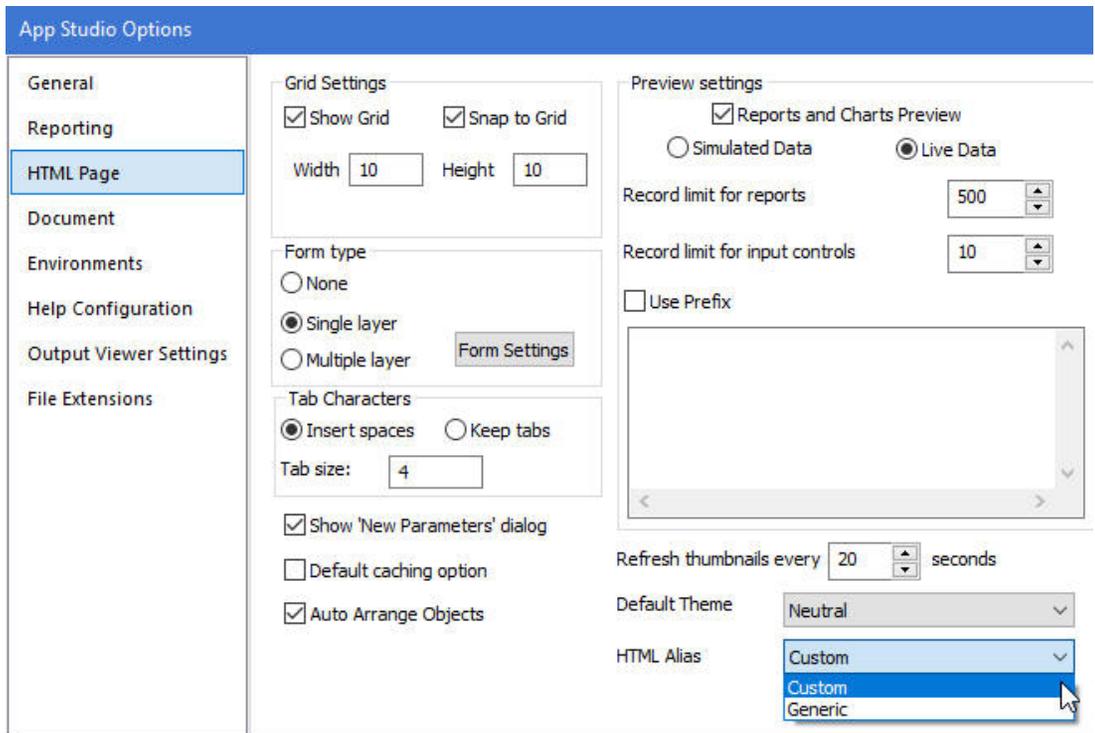
The HTML alias property on the Properties panel is shown in the following image.



The HTML Alias property on the HTML Page section of the App Studio Options dialog box has the same values and functionality as the Properties panel. When the value is changed for this property, new pages will inherit the setting from the App Studio dialog box. This option is global and will be available for each HTML page.

Note: For existing non-self-service applications that need to be moved from development to production, you can set the value of HTML Alias as Generic in the App Studio Options dialog box. All existing pages will have to be opened and then saved with this setting before they are moved to Production.

The HTML Alias property on the HTML Page section of the App Studio Options dialog box is shown in the following image.



Note: To test the property, open the HTML page in the editor and verify the value of the HTML Alias, `szHtmlAlias`. For Custom, the value should be the same as in the HTML Alias property in the Environments dialog box, for example, `szHtmlAlias=/ibi_apps/`. For Generic, the value should be `szHtmlAlias=/ibi_html/`.

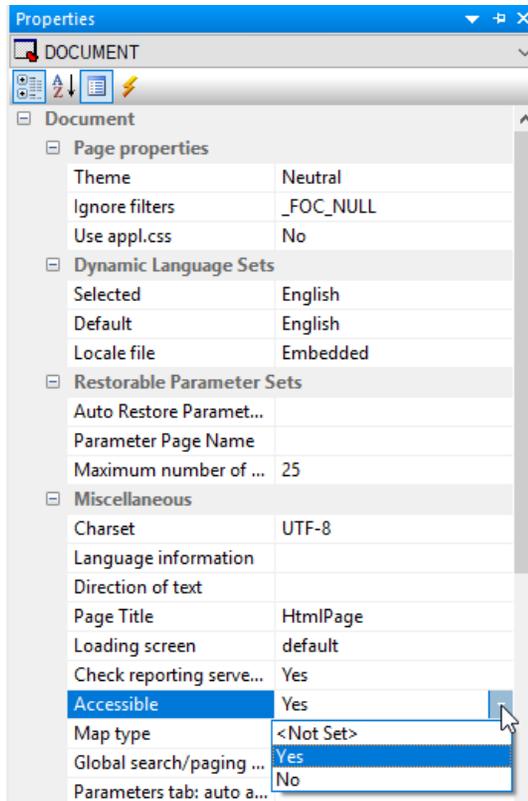
Displaying Objects in the Order of the Document Object Model

You can add elements/objects independently of screen reading order and then change the order later on during the development process.

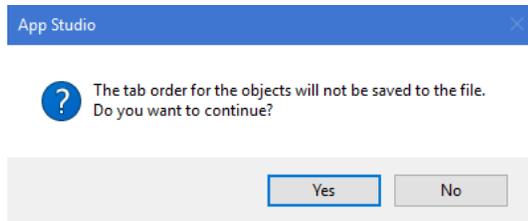
Using the Accessible property, available on the Properties panel for a document, you can indicate that the Document Object Model (DOM) should be rewritten in the order of objects on the page, left to right, top to bottom. In addition, all tab index values should be set to the value -1.

Procedure: How to Display Objects in the Order of the DOM

1. Create a new HTML page with multiple controls on the page.
2. On the Properties panel for the document, select Yes from the Accessible drop-down menu, as shown in the following image.



The following tab order warning message appears, as shown in the following image.



Note: The Warning message displays only once, when the Accessibility property is set to Yes.

Selecting Yes will write the tab order of objects on the page, left to right, top to bottom. Selecting No will keep the tab order in the page.

Learn More

For more information, see *Displaying Objects in the Order of the Document Object Model* in the *App Studio* technical content.

Setting a Date Range for a Target Calendar

The `IbComposer_setCalendarDatesRange` function sets the range for the target calendar, given the date on the source calendar and a range in days.

Syntax: How to Set a Date Range for a Target Calendar

```
IbComposer_setCalendarDatesRange(elementId, fromDate, toDate)
```

where:

elementID

Alphanumeric

Is the unique identifier of the target calendar control for which you want to set the date range.

fromDate

Date object

Is the value of the date from the source calendar.

Note: This can be obtained by using the `IbComposer_getCurrentSelection` function. This function should have the third parameter set to True to return a Date object.

toDate

Date object

This value must be calculated using fromDate and the number of days needed to show the range.

Example: **Setting the Date Range for a Target Calendar**

```
function button1_onclick(event) {
var eventObject = event ? event : window.event;
var ctrl = eventObject.target ? eventObject.target : eventObject.srcElement;
// TODO: Add your event handler code here
    var curDate = IbComposer_getCurrentSelection('calendar1', 0, true);
    var fromDate= new Date(curDate);
    var toDate = new Date();
    var nOfDays= IbComposer_getCurrentSelection('slider1');
    if (isNaN (nOfDays-0)&& nOfDays != null) {
        alert("Please enter a numeric value!!");
    }
    else {
        var time = fromDate.getTime()+(nOfDays*3600000 * 24);
        toDate.setTime(time);
        IbComposer_setCalendarDatesRange("calendar2", fromDate,
        toDate);
    }
}
```

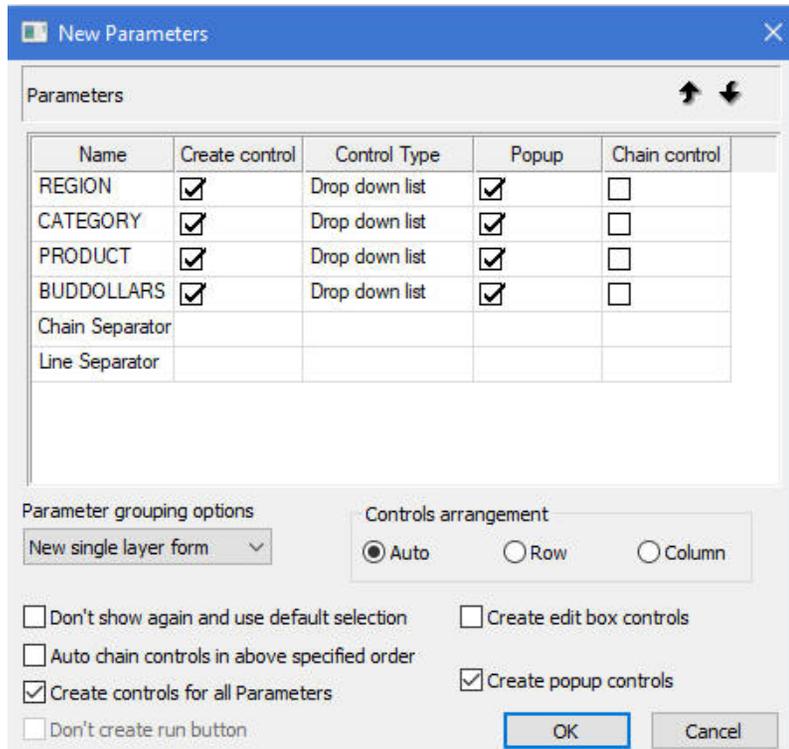
Learn More

For more information, see the *Function:IbComposer_setCalendarDatesRange* topic in the *App Studio* technical content.

Arranging Controls in the New Parameters Dialog Box

You can choose the arrangement of controls in the New Parameters dialog box, without any additional steps, after the parameter controls are generated. This gives you the flexibility to design your HTML page, without the need for moving the controls after creation.

The Controls arrangement option, as shown in the following image, indicates the placement of controls.



The following are possible values for the Controls arrangement option:

- Auto.** This value depends on the value in the Number of columns property in the Form settings dialog box. This dialog box is in the HTML Page section in the App Studio Options dialog box. Based on this value, the controls will fold to the next line. The valid values for Number of columns are 1 to 99. Auto is the default value.
- Row.** Places the controls horizontally within the form.
- Column.** Places the controls vertically within the form.

Sort Order for a Control for Active Formats

You can select the sort order of display for a control for Active formats in the HTML and Document canvas. You can select Ascending or Descending from the Sort order option in the Settings panel. Ascending is the default value selected. At run time, the values will be sorted based on the sort order selected.

Procedure: How to Select the Sort Order for a Control for Active Formats

1. Create an active report that includes a filter control (for example, a date filter).

When you run the report, as shown in the following image, notice that date values are sorted in ascending order. Ascending is the default value.

Select a Date:

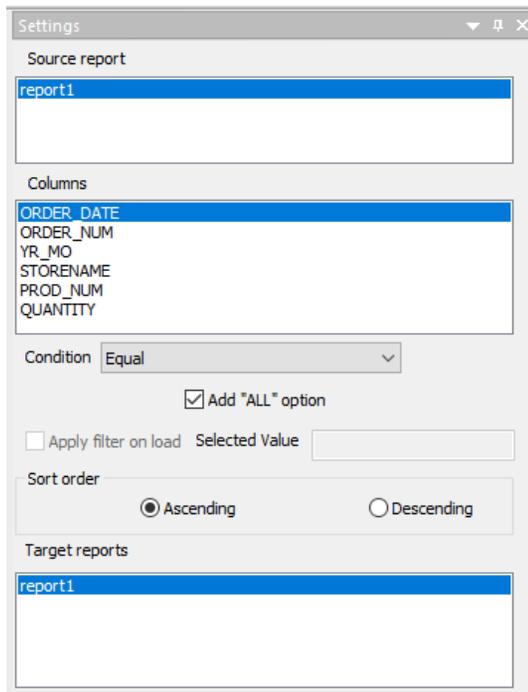
| Date | Order Number | Product Name | Product Number | Quantity |
|------------|--------------|----------------------|----------------|----------|
| 2000/12/31 | 68461 | Web Sales | 1030 | 5 |
| | 93820 | Radio Expert | 1036 | 2,019 |
| | 93900 | Radio Expert | 1034 | 1,122 |
| | 94200 | City | 1036 | 1,984 |
| | 94490 | Radio Expert | 1036 | 1,918 |
| 2001/01/01 | 48724 | Web Sales | 1034 | 5 |
| | 68651 | VideoTown | 1034 | 582 |
| | 74310 | City | 1034 | 1,123 |
| 2001/01/02 | 68606 | City | 1030 | 905 |
| | 93940 | Web Sales | 1036 | 14 |
| | 94000 | Consumer Merchandise | 1034 | 1,869 |
| | 94030 | City | 1034 | 417 |
| | 94270 | Web Sales | 1034 | 10 |
| | 94300 | Radio Expert | 1036 | 1,104 |
| | 94340 | City | 1034 | 1,297 |
| | 94380 | Radio Expert | 1034 | 1,165 |
| | 94410 | JAN, 2001 Web Sales | 1034 | 8 |
| | 94430 | JAN, 2001 Web Sales | 1036 | 10 |
| | 94460 | JAN, 2001 Web Sales | 1034 | 11 |
| | 94520 | JAN, 2001 TV City | 1034 | 945 |

- Open the report and select the control, as shown in the following image.

The image shows a report interface with a date selection control and a data table. The date selection control is a text box labeled "Select a Date:" with a dropdown arrow. Below it is a table with the following columns: Date Of Order, Order Number, YR_MO, Store Name, Product Number#, Product Number, and Quantity. The table contains 20 rows of data.

| Date Of Order | Order Number | YR_MO | Store Name | Product Number# | Product Number | Quantity |
|---------------|--------------|-----------|----------------------|-----------------|----------------|----------|
| 2001/01/12 | 48010 | JAN, 2001 | Consumer Merchandise | 1034 | 1034 | 850 |
| | 48070 | JAN, 2001 | Audio Expert | 1032 | 1032 | 947 |
| 2001/01/22 | 48048 | JAN, 2001 | eMart | 1032 | 1032 | 1,165 |
| | 48088 | JAN, 2001 | Consumer Merchandise | 1034 | 1034 | 850 |
| | 48108 | JAN, 2001 | Audio Expert | 1034 | 1034 | 850 |
| | 48134 | JAN, 2001 | Web Sales | 1034 | 1034 | 5 |
| | 48146 | JAN, 2001 | Audio Expert | 1034 | 1034 | 850 |
| 2001/01/26 | 48050 | JAN, 2001 | eMart | 1030 | 1030 | 1,194 |
| 2001/10/12 | 48005 | OCT, 2001 | eMart | 1034 | 1034 | 544 |
| | 48011 | OCT, 2001 | eMart | 1034 | 1034 | 544 |
| 2001/10/13 | 48053 | OCT, 2001 | Web Sales | 1034 | 1034 | 5 |
| | 48061 | OCT, 2001 | Web Sales | 1034 | 1034 | 5 |
| | 48064 | OCT, 2001 | Web Sales | 1034 | 1034 | 5 |
| 2001/10/16 | 48038 | OCT, 2001 | AV VideoTown | 1030 | 1030 | 675 |
| | 48073 | OCT, 2001 | Audio Expert | 1036 | 1036 | 1,292 |
| | 48093 | OCT, 2001 | eMart | 1030 | 1030 | 495 |
| | 48099 | OCT, 2001 | Web Sales | 1034 | 1034 | 5 |
| | 48105 | OCT, 2001 | Audio Expert | 1034 | 1034 | 544 |
| | 48109 | OCT, 2001 | eMart | 1034 | 1034 | 544 |
| 2001/10/17 | 48145 | OCT, 2001 | Web Sales | 1034 | 1034 | 5 |

- From the Settings panel, select *Descending* for the sort order, as shown in the following image.



When you run the report, as shown in the following image, notice that the date values for the control are now sorted in the descending order.

Select a Date:

| Date | Order Number | Product Name | Product Number | Product Number | Quantity |
|------------|--------------|----------------------|----------------|----------------|----------|
| 2000/12/31 | 68461 | Web Sales | 1030 | 1030 | 5 |
| | 93820 | Radio Expert | 1036 | 1036 | 2,019 |
| | 93900 | Radio Expert | 1034 | 1034 | 1,122 |
| | 94200 | City | 1036 | 1036 | 1,984 |
| | 94490 | Radio Expert | 1036 | 1036 | 1,918 |
| 2001/01/01 | 48724 | Web Sales | 1034 | 1034 | 5 |
| | 68651 | VideoTown | 1034 | 1034 | 582 |
| | 74310 | City | 1034 | 1034 | 1,123 |
| 2001/01/02 | 68606 | City | 1030 | 1030 | 905 |
| | 93940 | Web Sales | 1036 | 1036 | 14 |
| | 94000 | Consumer Merchandise | 1034 | 1034 | 1,869 |
| | 94030 | City | 1034 | 1034 | 417 |
| | 94270 | Web Sales | 1034 | 1034 | 10 |
| | 94300 | Radio Expert | 1036 | 1036 | 1,104 |
| | 94340 | City | 1034 | 1034 | 1,297 |
| | 94380 | Radio Expert | 1034 | 1034 | 1,165 |
| | 94410 | JAN, 2001 Web Sales | 1034 | 1034 | 8 |
| | 94430 | JAN, 2001 Web Sales | 1036 | 1036 | 10 |
| | 94460 | JAN, 2001 Web Sales | 1034 | 1034 | 11 |
| | 94520 | JAN, 2001 TV City | 1034 | 1034 | 945 |

Creating Pop-Up Controls

For a DOCUMENT object, you can use pop-up controls to:

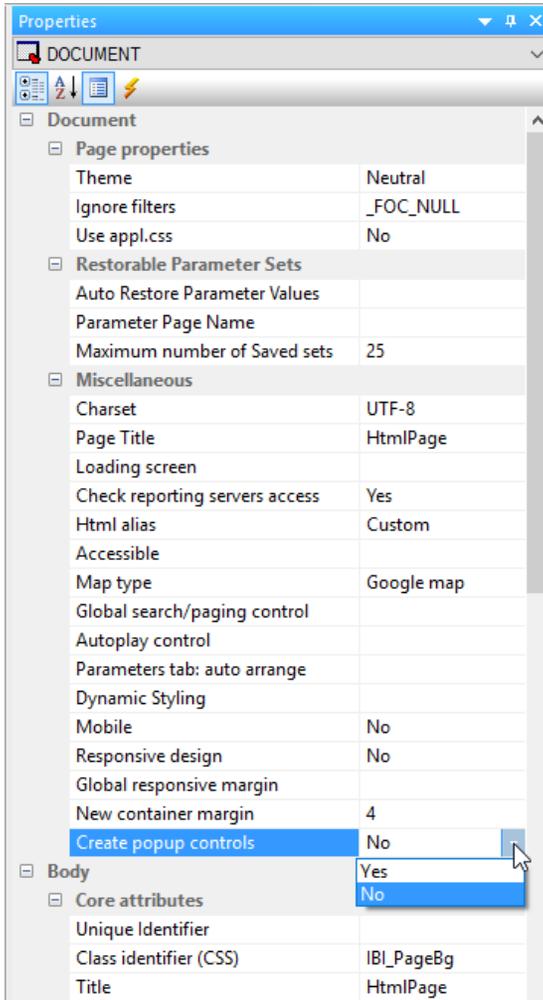
- Create modern looking controls that will run seamlessly on any device.
- Create controls that look the same, but offer different functionality based on single or multiple value selection.

To create pop-up controls, you can:

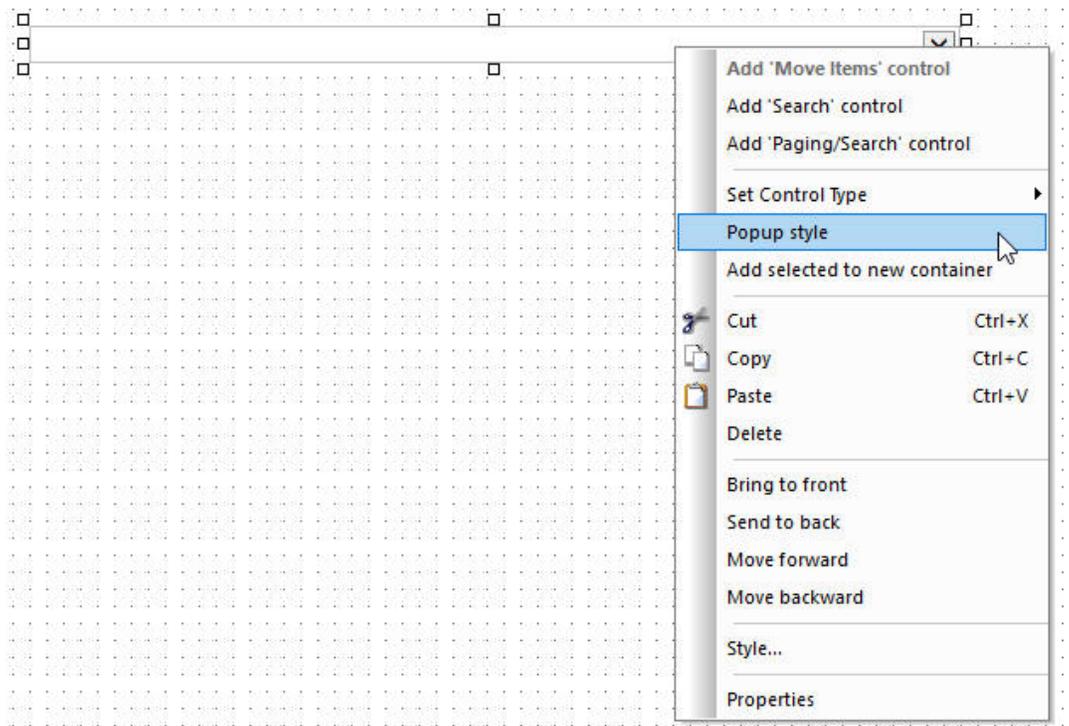
- Set the Create popup controls property on the Properties panel for the DOCUMENT object.
- Use the Popup style right-click shortcut option, which allows a control to be an original or a pop-up style control. (Disabled for Edit Box, Text Area, Calendar, and Slider).
- Use the New Parameters dialog box. This is available as:
 - An item in the Parameters grid as a check box (Popup).

- ❑ A check box to select all parameters in the grid to be a Popup Control (Create popup controls).

The Create popup controls property on the Properties panel is shown in the following image. Possible values are Yes and No. No is the default value.



The Popup style right-click shortcut option for a drop-down control is shown in the following image. (Disabled for Edit Box, Text Area, Calendar, and Slider).



The New Parameters dialog box is shown in the following image. This option is available in the Parameters grid as a check box (Popup) and also as a check box to select all parameters in the grid to be a Popup Control (Create popup controls).

| Name | Create control | Control Type | Popup | Chain control |
|-----------------|-------------------------------------|----------------|-------------------------------------|--------------------------|
| REGION | <input checked="" type="checkbox"/> | Drop down list | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| CATEGORY | <input checked="" type="checkbox"/> | Drop down list | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| PRODUCT | <input checked="" type="checkbox"/> | Drop down list | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| BUDDOLLARS | <input checked="" type="checkbox"/> | Drop down list | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Chain Separator | | | | |
| Line Separator | | | | |

Parameter grouping options:

Controls arrangement: Auto Row Column

Don't show again and use default selection Create edit box controls

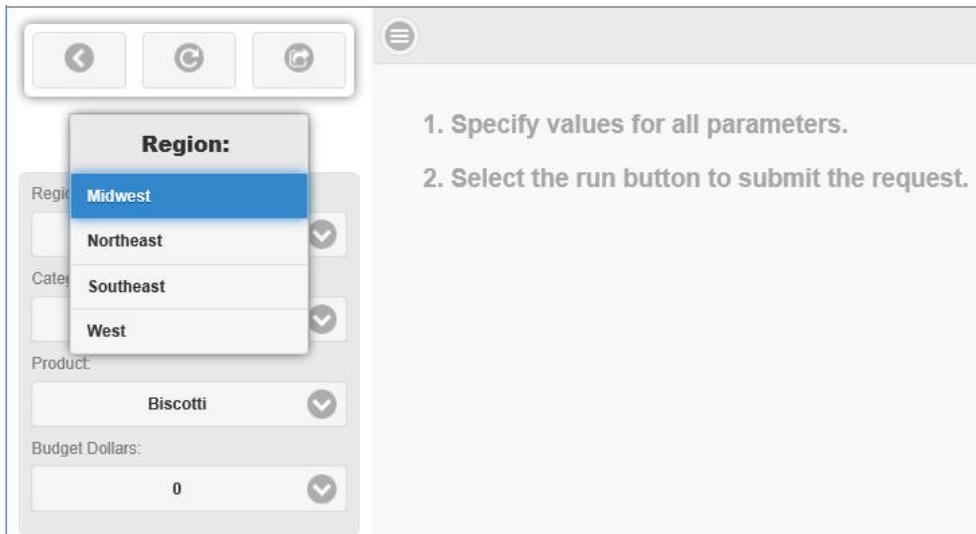
Auto chain controls in above specified order Create popup controls

Create controls for all Parameters

Don't create run button

OK Cancel

The following image shows an example of a pop-up control.



Loading a Saved Set of Parameters

You can add the ability to save parameters to any application. The parameters are saved in sets. For example, you have a page that contains three parameter prompts, and you want to let your users resolve their favorite choices in one action, and/or have a default.

The Saved Set of Parameters facility lets you:

- Load a default saved set of parameters on load of the HTML page.
- Create new saved sets of parameters without creating physical HTML files.
- Load different saved sets of parameters at run time.
- Manage the saved sets of parameters at run time.

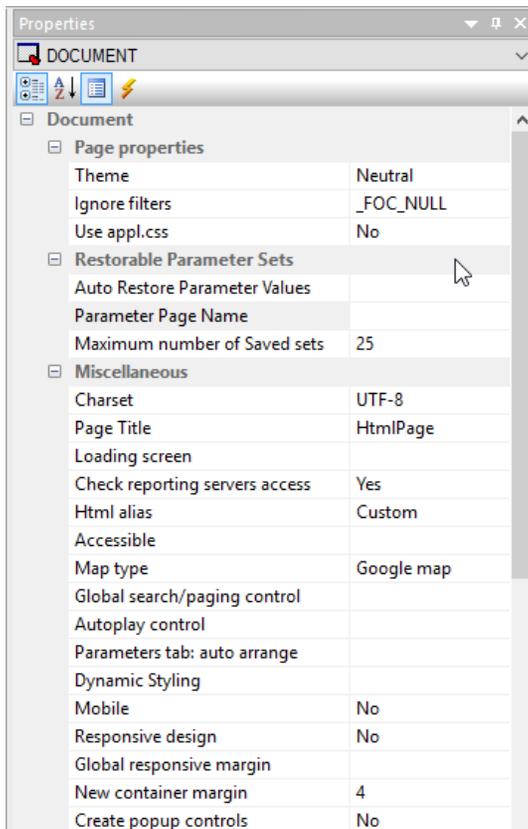
At design time, when creating an HTML page in the Content area, the following properties are available:

- Auto Restore Parameter Values.** Contains values of Not Set (that is, removes the attribute, as opposed to giving it a value), Yes, and No. Yes loads the latest saved set of parameters on load of the HTML page.
- Parameter Page Name.** Creates a folder name under the My Content folder of the running user. It defaults to the HTML page name, and cannot be blank. You can type a name, or use the default name.

Note: If the page name changes, the default will change. It is recommended that you use this setting.

- ❑ **Maximum number of Saved sets.** Specifies the maximum number of saved sets of parameters to save per user. The default is 25. You can change this value. The maximum value that can be entered is 999, and it cannot be a value of 0 or less.

The Restorable Parameter Sets category on the Properties panel is shown in the following image.



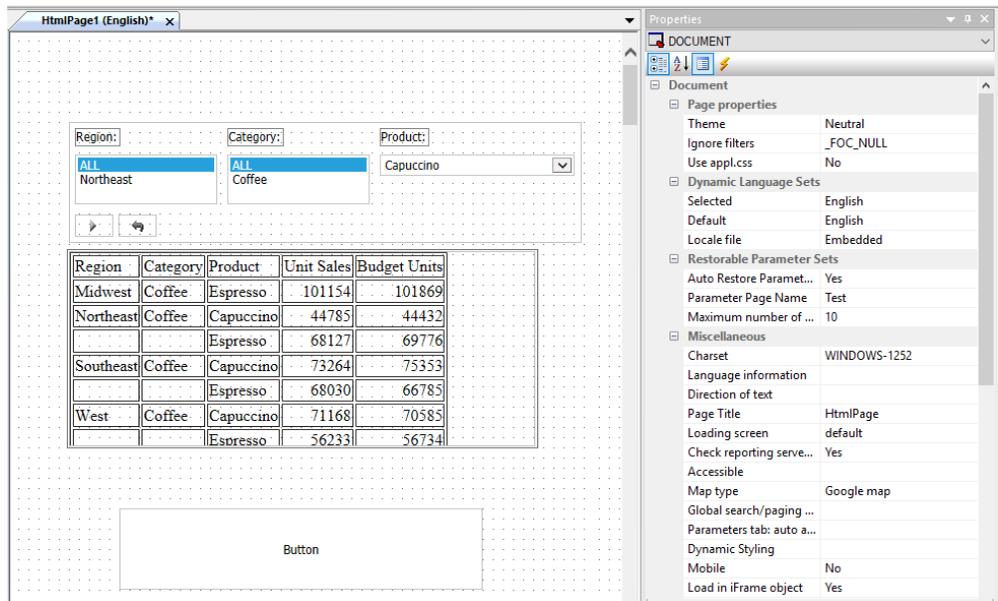
Note: If you want to associate a trigger to invoke a JavaScript control that manages the saved sets of parameters, you can use the Saved sets of Parameters Action type in the Tasks and Animations panel.

Procedure: How to Create a Saved Set of Parameters

1. Create a new HTML page.

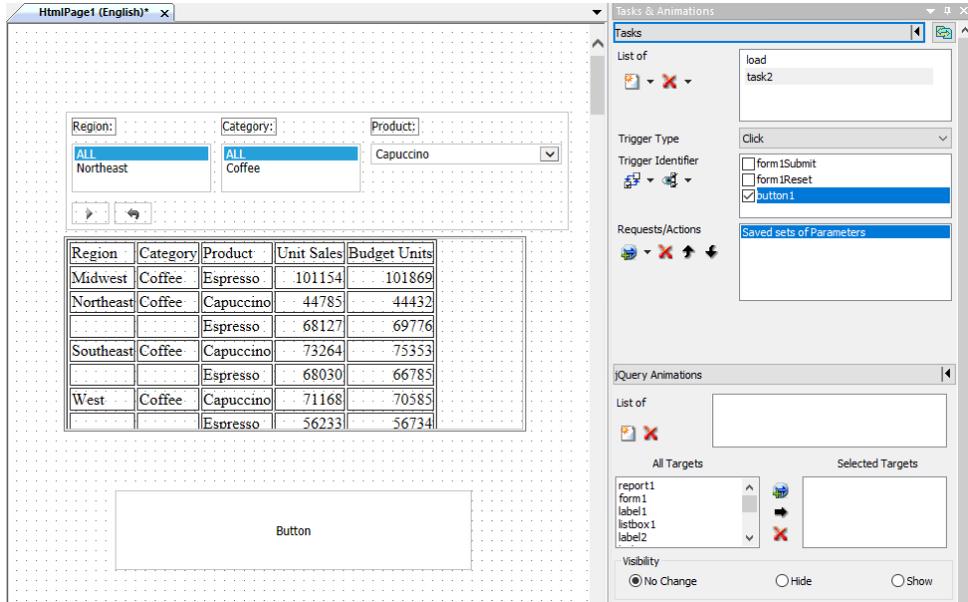
2. Open the Properties panel and pin it.
3. Add a report to the HTML page, right-click the report, and select *Import Existing Report* from the shortcut menu.
4. Select an existing report.
5. Click *OK* on the New Parameters dialog box.
6. Add a button to the HTML page.
7. On the Properties panel, set the restorable parameters, as follows:
 - a. Auto Restore Parameters Values to *Yes*.
 - b. Parameter Page Name to *Test*.
 - c. Maximum number of Saved sets to *10*.

The properties panel is shown in the following image.

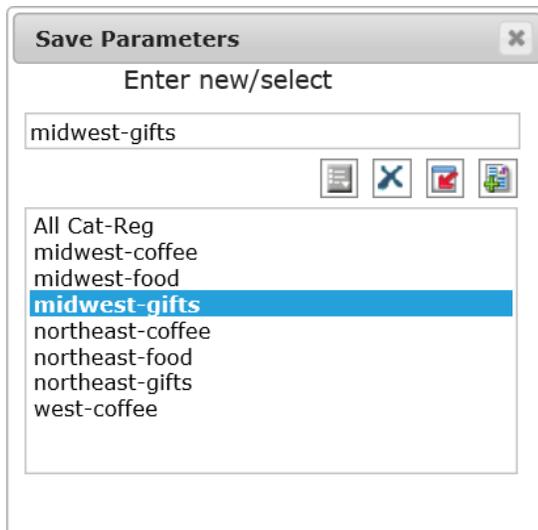


8. Open the Tasks & Animations panel and add a new task.
 - a. Set Trigger Type to *Click*.
 - b. Set Trigger Identifier to *button1*.
 - c. From the Requests/Actions drop-down menu, select *Saved sets of Parameters*.

The Tasks & Animations panel is shown in the following image.



9. Save and run the report.
10. Click the button.
11. Add eight new Save Parameter settings, as shown in the following image.



User Experience With the Save Parameters Dialog Box

- ❑ Any saved sets of parameters display in the list box section of the Save Parameters dialog box. The user can select one and click the *Load* button on the toolbar to load those values into the controls.
- ❑ Above the list box is an edit box where the user can type the name for the new saved sets of parameters to save, or existing saved sets of parameters to retrieve. Between the edit box and the list box is a toolbar with Save, Delete, Load, and Set buttons. The Set button is the default.
- ❑ If the user saves a new saved set of parameters, and the name already exists, a message displays informing the user that the named set already exists. The user can click *Yes* to overwrite the file with the new values.
- ❑ The user can select a saved parameter file in the list and click the *Set as default* button. This sets the default file to load when the page is invoked for the first time.

12. Select *midwest-gifts* and click *Set as default*.

13. Close the report and rerun it. Notice the default settings are Midwest and Gifts, as shown in the following image.

The image shows a control interface with three dropdown menus: Region, Category, and Product. The Region dropdown is open, showing options: Midwest (selected), Northeast, and Southeast. The Category dropdown is open, showing options: Coffee, Food, and Gifts (selected). The Product dropdown is closed and shows 'Biscotti'. Below the dropdowns are two buttons: a right-pointing arrow and a left-pointing arrow.

14. Change the default to northeast-gifts.

15. Close the report and rerun it. Notice the default settings are Northeast and Gifts.

16. Close the report.

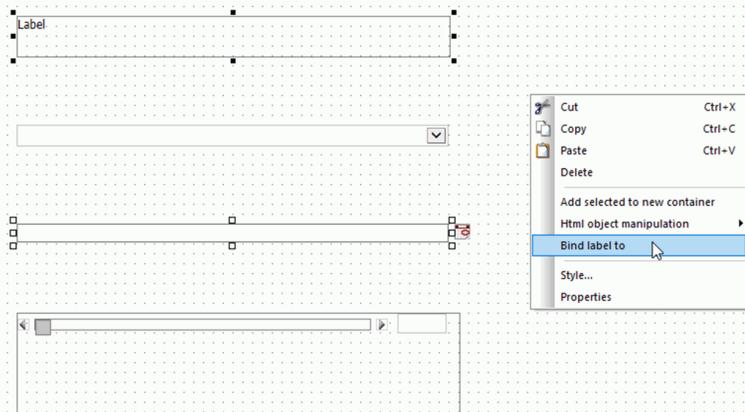
Associating a Label With a Control

You can associate a label with a control in an HTML page, using one of the following methods:

- ❑ The *HtmlFor* property in the Properties panel. The *HtmlFor* property is a drop-down list, which contains a list of the controls in the HTML canvas.
- ❑ A *Bind label to* option on the shortcut menu, when you select the label and the associated control together.

Procedure: How to Associate a Label With a Control Using the Bind label to Option

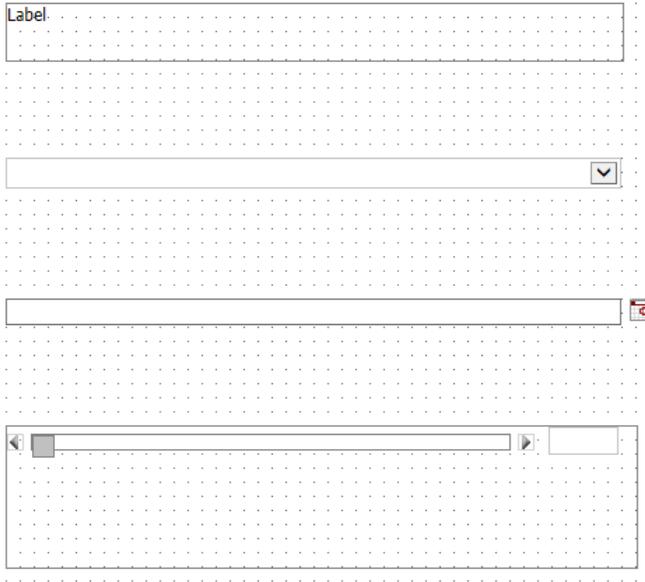
1. Create an HTML page with a Label component and three controls (for example, drop down, calendar, and slider).
2. Select both the label and the control to which you want to associate the label.
3. Right-click the canvas and select *Bind label to*, as shown in the following image.



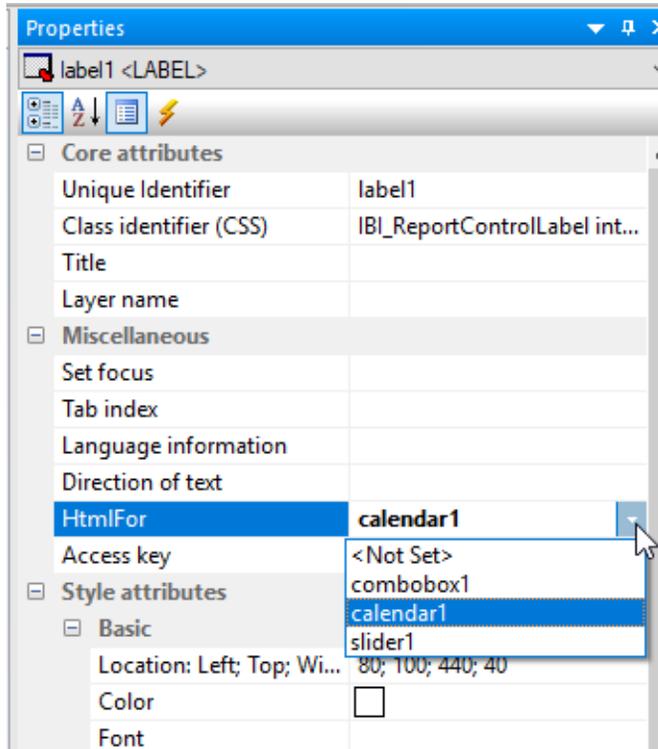
The label, label1, is now associated with the calendar1 control.

Procedure: How to Associate a Label With a Control Using the Properties Panel

1. Create an HTML page with a Label component and three controls (for example, drop down, calendar, and slider), as shown in the following image.



2. In the Properties panel for the label, from the HtmlFor property drop-down list, select the control to which you want to associate the label, as shown in the following image.



The label, label1, is now associated with the calendar1 control.

Report Development

The following are new features and enhancements for developing reports in App Studio Release 8.2 Version 02.

Supporting Template Masters and Slide Layouts in App Studio-Generated Presentations

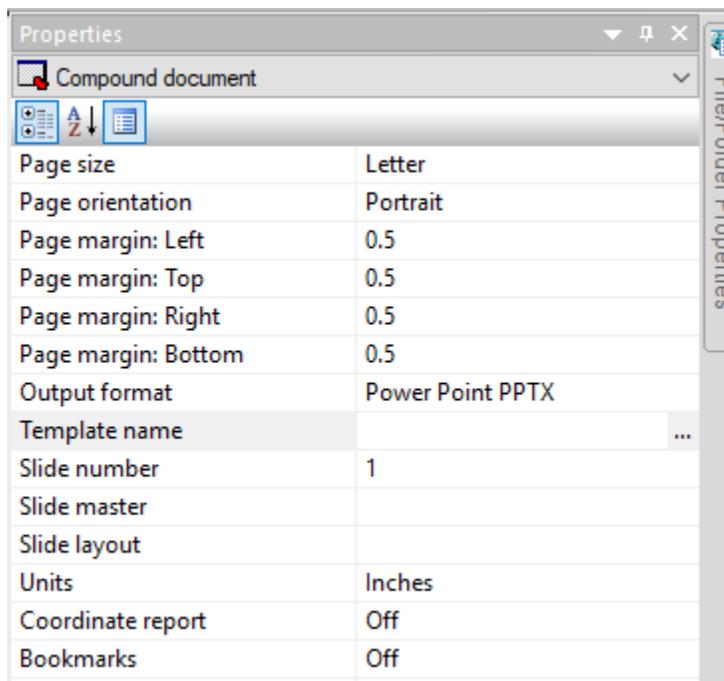
A Slide Layout is the style applied to a slide in a Microsoft PowerPoint template or presentation created in Microsoft PowerPoint 2007 and higher. The style may consist of images, background color, text, tables, or other objects. Slide Layouts are available in the Slide Masters of PowerPoint templates. You can also create custom layouts.

By default, the first Slide Layout in the first Slide Master is applied to slides on which WebFOCUS data is displayed. With this new feature, WebFOCUS enables you to select any Slide Layout in any Slide Master in a PowerPoint template (POTX/POTM) or Presentation file (PPTX/PPTM). One Slide Layout may be applied to slides displaying the output of a standard report, while one or different Slide Layouts may be applied to each Page Layout in a PPTX formatted Compound Document. The selected Slide Layout is applied to the slide displaying WebFOCUS output.

This feature enhances the output of WebFOCUS-generated presentations, as well as the integration of WebFOCUS with Microsoft PowerPoint features.

Procedure: How to Apply a Slide Layout to an Entire Document

1. Create a PowerPoint PPTX format document.
2. Import a report to the Document canvas (for example, rep_ggsales.fex).
3. On the Properties panel, select *Compound Document*, as shown in the following image.



4. On the Properties panel:
 - From the Page size drop-down list, select *Power Point Slide*.
 - From the Page orientation drop-down list, select *Landscape*.

- ❑ Click the ellipsis button next to Template name.

The Open File dialog box opens.

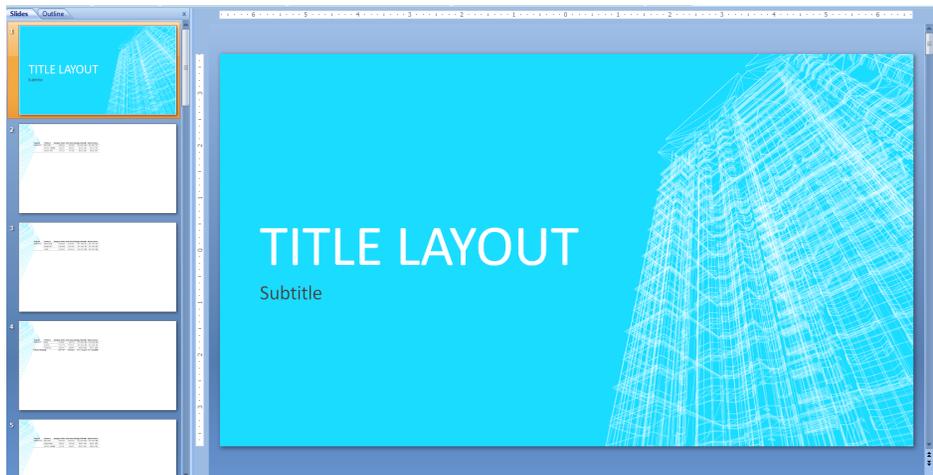
5. Navigate to the template file (for example, Title_layout.potx).

The Title_layout.potx template is added to the Properties panel.

6. Click the down arrow next to the Slide number property and select 2.
7. Click the down arrow next to the Slide master property, and select *TURQUOISE*.
8. Click the down arrow next to the Slide layout property, and select *TITLE AND CONTENT*.

Note: You must specify both a Slide Master and a Slide Layout.

9. Run the document and click *Open* to confirm that the slide layout is applied to the WebFOCUS output on slide #2, as shown in the following image.



10. Close the output and return to the Document canvas.
11. Click Save from the Quick Access Toolbar.
12. In the Save As dialog box, type *slides_entire_doc* for the file name.
13. Close the document.
14. If you want to see the syntax, in the Environments tree, right-click *slides_entire_doc* and select *Open in Text Editor*.

The syntax for the slide applied at the document level is as follows:

```
SECTION=section1:  
COMPOUNT LAYOUT PCHOLD FORMAT PPTX  
UNITS=IN  
SECTION=section1, LAYOUT=ON, SLIDE-MASTER='TURQUOISE', SLIDE-  
LAYOUT='TITLE AND CONTENT',
```

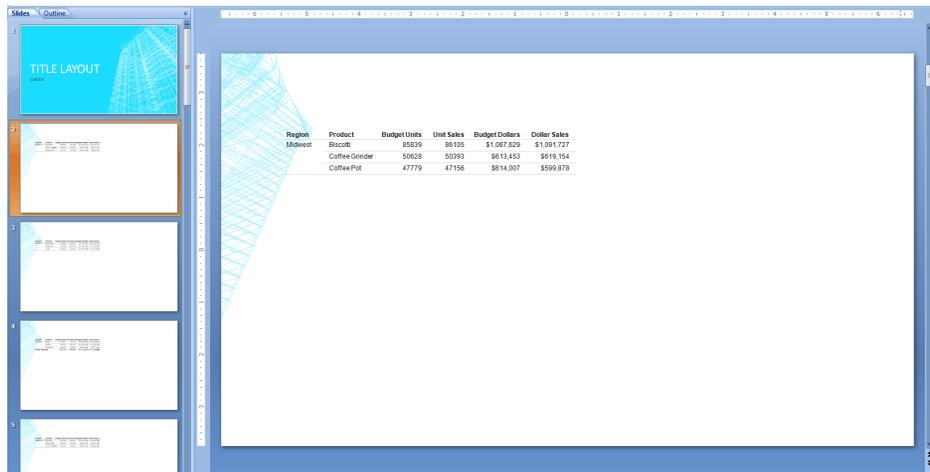
Note: In a Compound Document, if different Slide Layouts are applied to each Page Layout in a PPTX formatted Compound Document, the syntax is as follows:

```
PAGELAYOUT=n, NAME='Page layout (n)', SLIDE-MASTER='slidemaster_name',
SLIDE-LAYOUT='layout_name',
```

For more information on the syntax for Template Masters and Slide Layouts, see the *Creating Reports With WebFOCUS Language* manual.

15. Close the Text Editor.
16. Run the document.

The TITLE AND CONTENT Slide Layout is applied to the output on slide #2, as shown in the following image.



Learn More

For more information, see the *Supporting Template Masters and Slide Layouts in App Studio-Generated Presentations* in the *App Studio* technical content.

Displaying the Mini Styling Toolbar

The mini styling toolbar is available as a pop-up shortcut menu on a selection for report fields, report and page headers and footers, subheadings and subfootings, all totals, all sort orders, and on a right-click on the Report canvas.

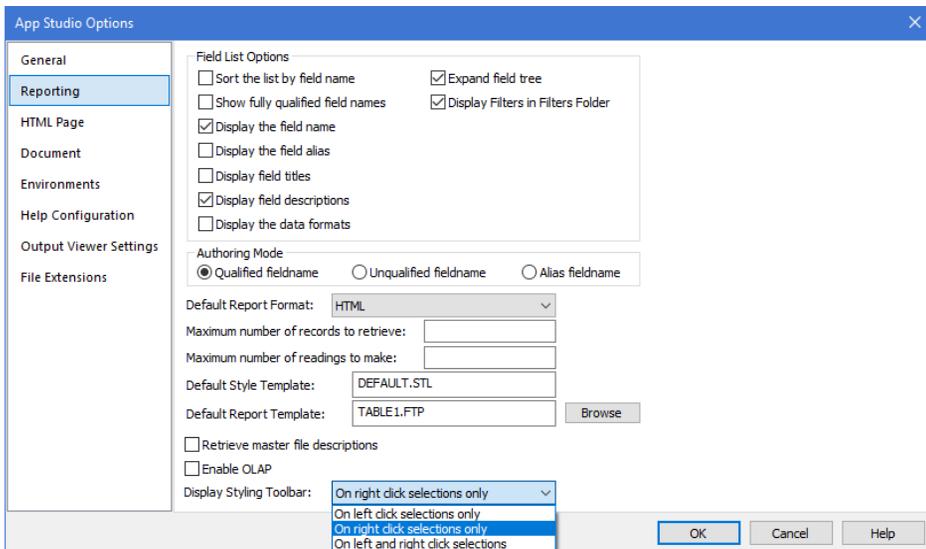
The mini toolbar, as shown in the following image, has the options to:

- Style the content.

- Select font type and size.
- Select justification options.
- Select font color and background color.
- Reset defaults.



You can select the click option to trigger the mini styling toolbar using the Display Styling Toolbar property in the Reporting section of the App Studio Options dialog box, as shown in the following image.



Possible values are:

- On left-click selections only.
- On right-click selections only. This is the default value.
- On both left-click and right-click selections.

Using the Continental Decimal Notation (CDN) Parameter

The Continental Decimal Notation (CDN) parameter specifies punctuation used in numeric notation. Continental Decimal Notation is supported for output in report requests. It is not supported in DEFINE or COMPUTE commands. The CDN parameter has been added to the Set canvas, as shown in the following image.

The screenshot displays the 'Set' canvas interface. At the top, there are two panels: 'Used Settings' and 'Current Value'. The 'Used Settings' panel contains a list with 'CDN' selected. The 'Current Value' panel shows a list with 'COMMAS_DOT' selected. Between these panels are navigation buttons: 'To Top', 'Up', 'Down', and 'To Bottom'. Below these is the 'Available Settings' section, which is a grid of parameters. 'CDN' is highlighted in the grid. To the right of the grid are buttons for 'Browse', 'Add', 'Delete', and 'Check'. At the bottom, there is a 'Set Help' section with a text box containing the description: 'Continental Decimal Notation. This numerical notation uses a comma to mark the decimal position in a number.'

| Available Settings | | | | | |
|--------------------|--------------|--------------|--------------|-------------|---------|
| ACCBLN | AUTOSTRATEGY | DEFINES | GRAPHENGINE | KEEPDEFINE | OVERFL |
| ACCESSHTML | BASEURL | DROPBLNLINE | GRAPHSERVURL | LANG | PAGE-NI |
| ACCESSIBLE | BOTTOMMARGIN | DUPLICATECOL | GRMERGE | LAYOUTGRID | PAGESI |
| ACCESSPDF | BYDISPLAY | EMBEDHEADING | GRWIDTH | LAYOUTRTL | PANEL |
| ACROSSLINE | BYPANEL | EMPTYREPORT | HDAY | LEADZERO | PASS |
| ACROSSPRT | CARTESIAN | ERROROUT | HIDENULLCRS | LEFTMARGIN | PCOMM |
| ACROSSTITLE | CDN | EXPANDBYROW | HNODEATA | LINES | POPUPC |
| ALL | CENT-ZERO | EXTSORT | HOLDATTR | LOOKGRAPH | PPTXGR |
| AREXPURE | COMPMISS | FIELDNAME | HOLDFORMAT | MESSAGE | PPTXGR |
| ARPASSWORD | COMPOUND | FILENAME | HOLDLIST | MULTIPATH | PRINT |
| ARUNITCALC | COMPUTE | FIXRETRIEVE | HOLDMISS | NODATA | PRINTD |
| ASNAMES | CSSURL | FOC144 | HOLDSTAT | NULL | PRINTPL |
| AUTODRILL | CURRSYMB | FOCEXURL | HTMLARCHIVE | OFFLINE-FMT | QUALCH |
| AUTOFIT | DBACSENSITIV | FOCFIRSTPAGE | HTMLCSS | ONFIELD | RIGHTM |
| AUTOINDEX | DEFCENT | FOCSTACK | HTMLENCODE | ONLINE-FMT | SAVEDM |
| AUTOPATH | DEFECHO | FOCTRANSFORM | JOINOPT | ORIENTATION | SAVEMA |

Possible values are:

COMMAS_DOT (alias OFF) turns CDN off. For example, the number 3,045,000.76 is represented as 3,045,000.76. COMMAS_DOT is the default value. COMMAS_DOT should be used for the USA, Canada, Mexico, and the United Kingdom.

DOTS_COMMA (alias ON) uses CDN. Sets the decimal separator as a comma and the thousands separator as a period. For example, the number 3,045,000.76 is represented as 3.045.000,76. DOTS_COMMA should be used for Germany, Denmark, Italy, Spain, and Brazil.

Note: Numeric parameters that use CDN DOTS_COMMA must be separated by a comma followed by a space in calls to functions.

QUOTES_COMMA (alias QUOTE) sets the decimal point as a comma and the thousands separator as an apostrophe. For example, the number 3,045,000.76 is represented as 3'045'000,76. QUOTES_COMMA should be used for Switzerland.

QUOTES_DOT (alias QUOTE_P) sets the decimal point as a period and the thousands separator as an apostrophe. For example, the number 3,045,000.76 is represented as 3'045'000.76.

SPACES_COMMA (alias SPACE) sets the decimal point as a comma, and the thousands separator as a space. For example, the number 3,045,000.76 is represented as 3 045 000,76. SPACES_COMMA should be used for France, Norway, Sweden, and Finland.

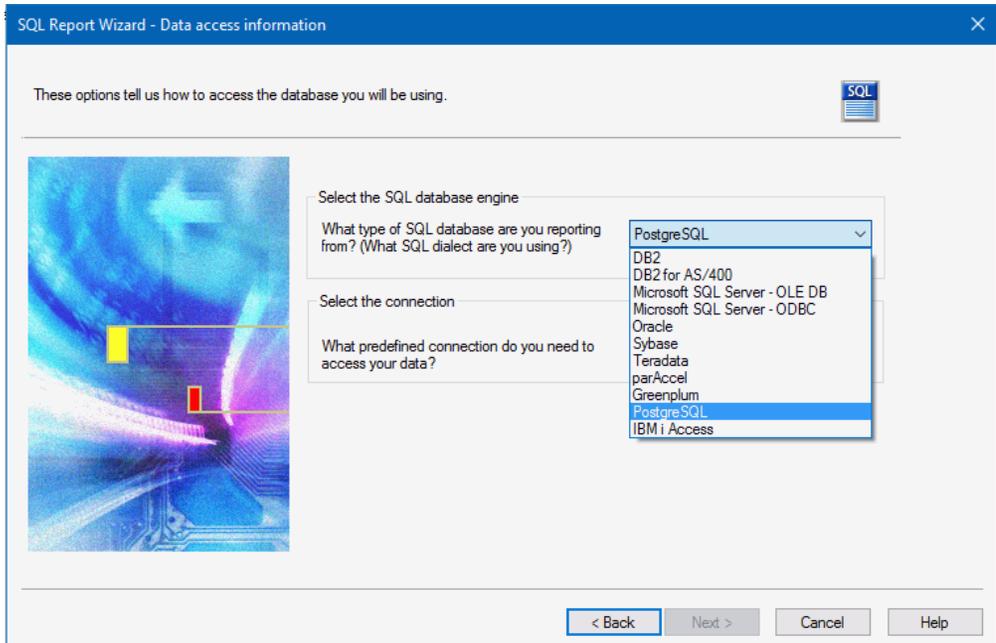
Note: If the display format of a report is Excel 2000 or later, Continental Decimal Notation is controlled by the settings on the computer. That is, numbers in report output are formatted according to the convention of the locale (location) set in regional or browser language options.

Learn More

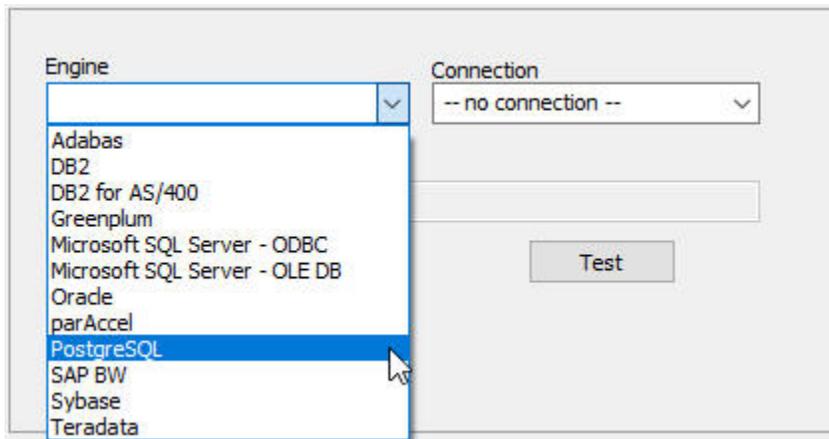
For more information, see the *CDN* topic in the *Developing Reporting Applications* technical content.

PostgreSQL Database Option

The PostgreSQL database option is available on the SQL Report Wizard and SQL Chart Wizard Data access information dialog boxes and in the Engine dialog box drop-down list in the Engine canvas. The SQL Report Wizard Data access information dialog box is shown in the following image. If the Adapter for PostgreSQL is not configured, you will receive a message with options to choose a different adapter or configure this adapter.



The Engine dialog box drop-down list in the Engine canvas is shown in the following image. The Connection drop-down list displays the list of connections available, or is disabled if there are no connections.

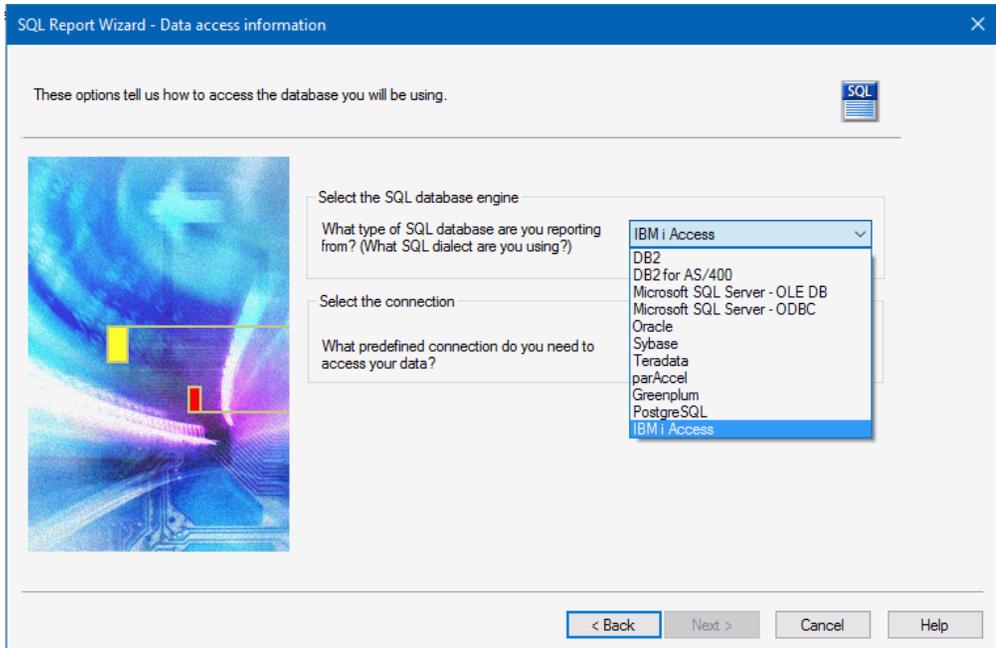


Learn More

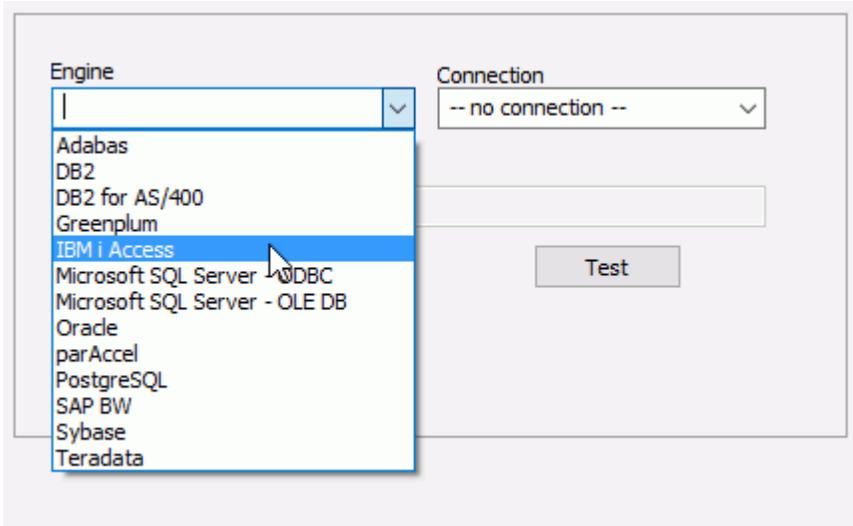
For more information on the Adapter for PostgreSQL, see the *Adapter Administration* manual in the Reporting Server Technical Library.

IBM i Access Database Option

The IBM i Access database option is available on the SQL Report Wizard and SQL Chart Wizard Data access information dialog boxes, and in the Engine dialog box drop-down list in the Engine canvas. The SQL Report Wizard Data access information dialog box is shown in the following image. If the Adapter for IBM i Access is not configured, you will receive a message with options to choose a different adapter or configure this adapter.



The Engine dialog box drop-down list in the Engine canvas is shown in the following image. The Connection drop-down list displays the list of connections available or is disabled if there are no connections.



Learn More

For more information on the Adapter for IBM i Access, see the *Adapter Administration* manual in the Reporting Server Technical Library.

Chapter 4

Visualization and Analytics

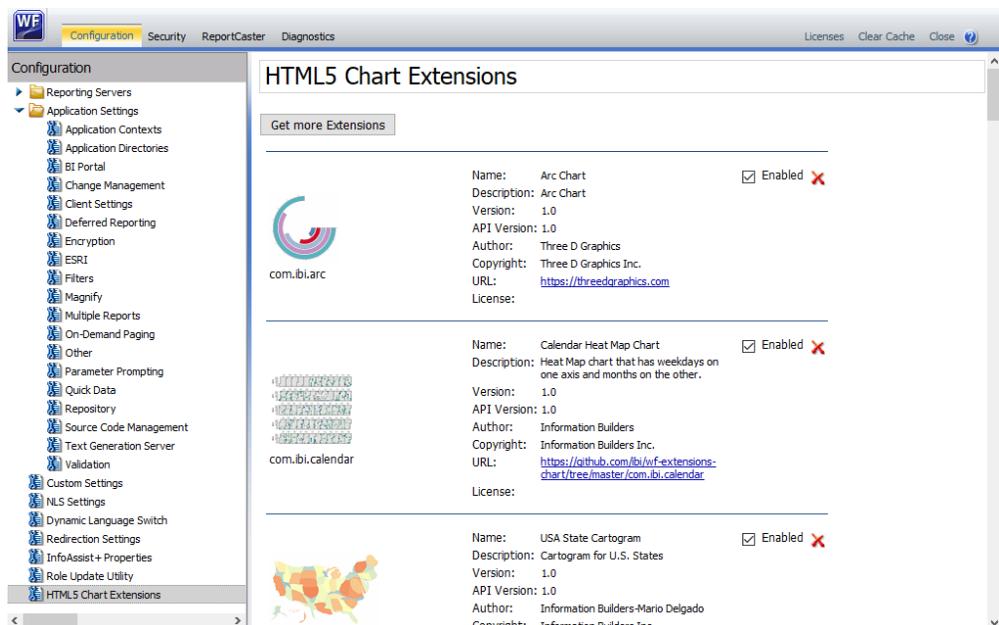
WebFOCUS allows all users to easily conduct data preparation, visually analyze complex data sets, and quickly generate compelling data visualizations, dashboards, and reports that can be shared with other users.

In this chapter:

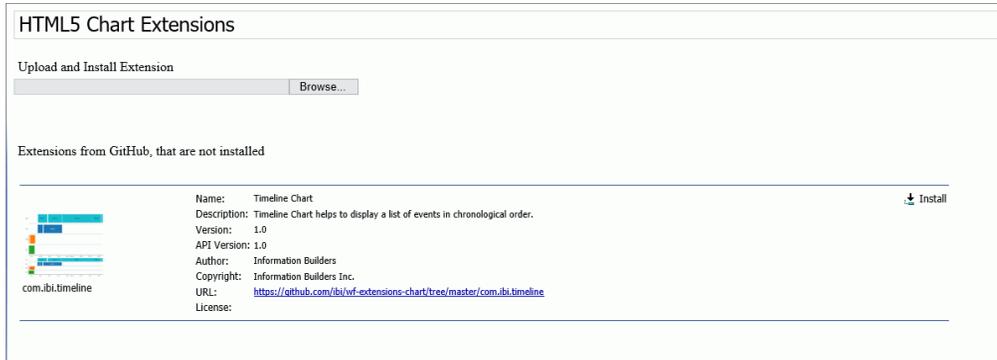
- ❑ [Downloading Chart Plugins From the HTML5 Chart Extensions Page](#)
- ❑ [InfoAssist+](#)
- ❑ [Charting With WebFOCUS](#)

Downloading Chart Plugins From the HTML5 Chart Extensions Page

The HTML5 Chart Extensions page contains all HTML5 chart extensions currently available for use in your local installation of WebFOCUS, as shown in the following image.



Features on this page enable administrators to make chart extensions available to InfoAssist+ developers for use in their chart customization and development, to remove them from InfoAssist+, and to uninstall them from WebFOCUS when no longer needed. The *Get more extensions* link connects to the Upload and Install Extensions page where Administrators can install locally-created HTML5 chart extensions or to upload publically available and supported chart extensions from the Information Builders Github web site that are not currently installed, as shown in the following image.



These two pages free administrators from the tasks of manually searching through the IBI Github webpage and downloading the zip file of the correct version of the chart extension plug-in they want to use, or manually transferring locally-developed files from their source location to the `drive:\ibi\WebFOCUS82\config\web_resource\extensions\` directory, editing the `html5chart_extensions.json` configuration file to include the new chart extension, and then running the *Clear Cache* command from the WebFOCUS Administration Console to complete the activation of the chart extension.

Learn More

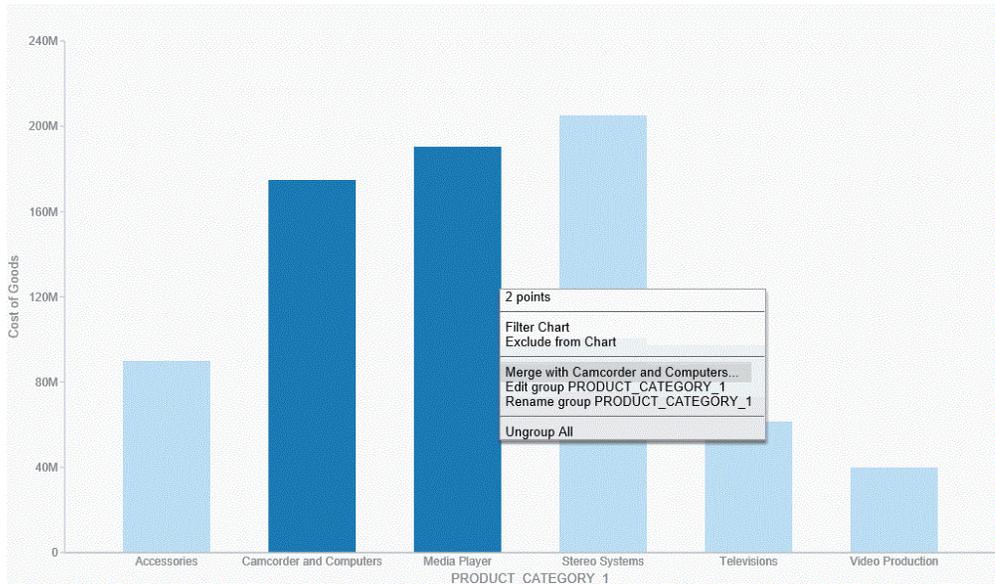
For more information, see the *Working With HTML5 Chart Extensions* topic in the *Security and Administration* technical content.

InfoAssist+

InfoAssist+ is a powerful report generation tool that enables business users to leverage ad hoc functionality. With InfoAssist+, you can generate highly complex reports, charts, and documents from any enterprise information source without IT intervention. You can also analyze multiple reports and charts simultaneously and output report data in a variety of formats.

Using Paper-Clipping to Group Dimension Values

Paper-clipping gives you the advantage of lassoing values in a visualization to create logical groups within your selected dimension. Paper-clipping uses the core functionality of dynamic grouping, giving you access to grouping capabilities that meet your business needs. You can also add additional groupings or fields to an existing group by merging the fields together, as shown in the following image.



You can also rename the groups and values, giving you control over how the information displays.

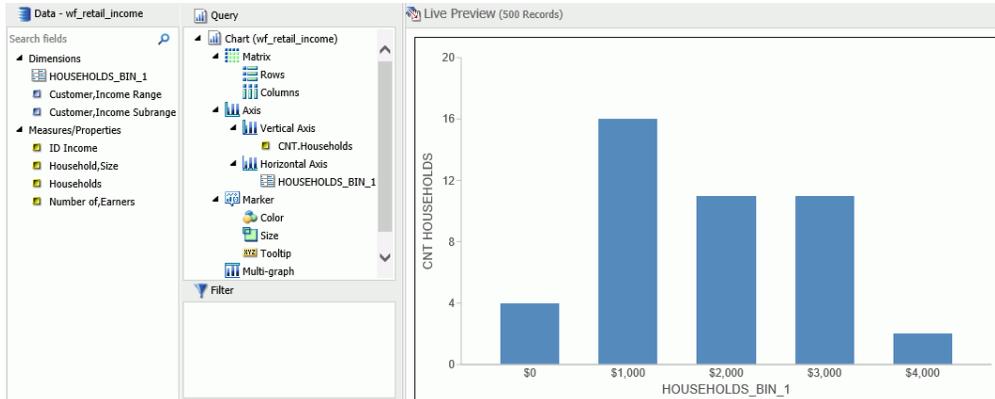
Learn More

For more information, see *Using Paper-Clipping to Group Values in a Visual* in the *InfoAssist+* technical content.

Binning

Binning enables you to determine the frequency of values across a bin or grouping, as defined by a subset of values. With binning, you can create discrete buckets of continuous data that control how groups of your data display. In addition, binning gives you the ability to review trends and spot outliers.

For example, you can review the range of expenses incurred by households. In the following example, these ranges are represented by bins that are grouped by \$1000. In this case, you can see that the largest number of households had the smallest expense (16) while the trend declines as the bin size gets larger. With binning, you can see the frequency of values across the different groupings, as shown in the following image.

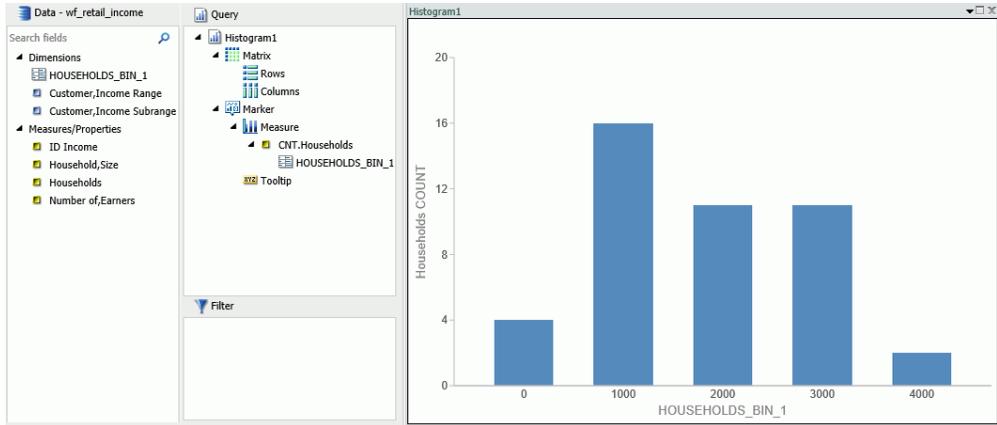


Binning Values in a Histogram

You can now create Histograms in Visualization mode. Histograms graphically represent the distribution of numeric data. They facilitate the identification and discovery of the underlying frequency distribution within a set of continuous data. You can use histograms to identify trends and illustrate categorizations, or groupings, also known as bins.

Binning is available in Chart and Visualization mode. Adding a measure to a histogram automatically creates bins with a default width of 10. This bin value is designated as a dimension field, since it is a limited field with a discrete set of possible values that was created from a field with an unlimited, continuous range of values. The measure displays as a count (.CNT) field and the related bin is created in the Query pane. You can right-click this bin field and click *Edit Bins* to change the value that dictates the width or format of the contents of the bin.

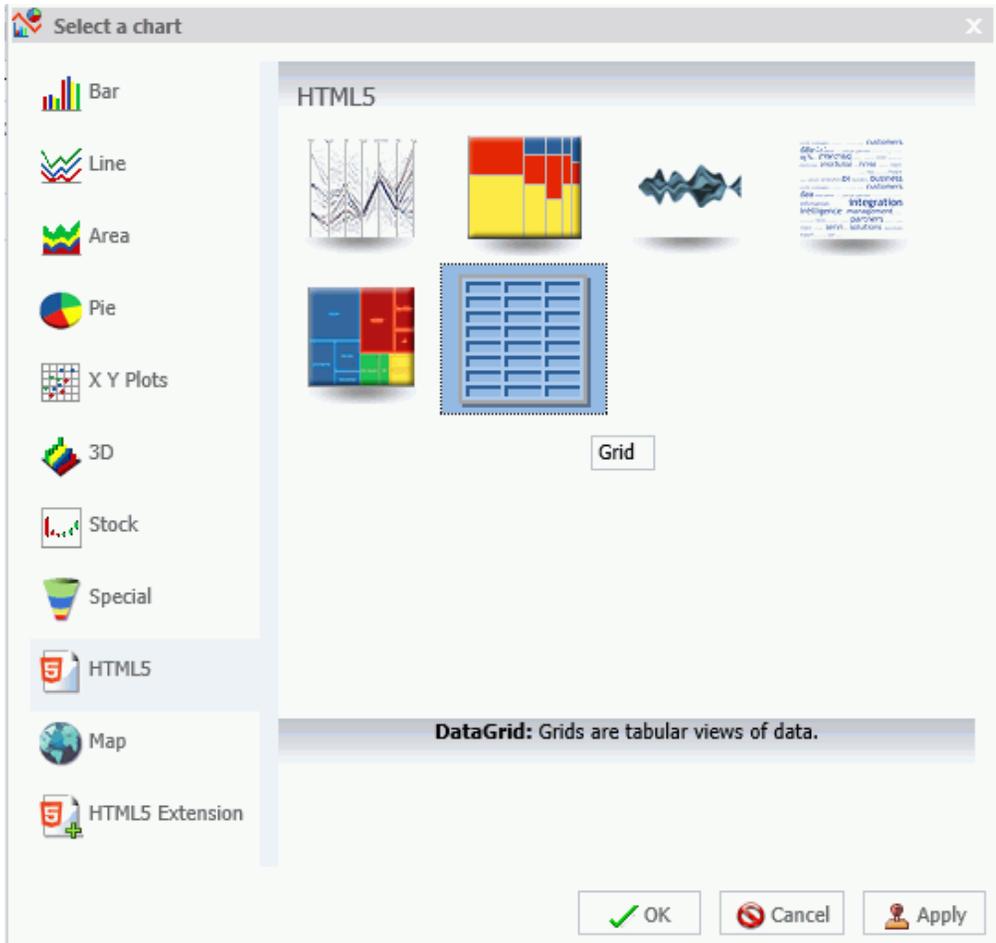
The bin automatically displays in the Query pane, as well as the under the Dimension group in the Data pane, as shown in the following image.



Grid Added as a New Chart Type

The ability to create a Grid chart type has been added. Accessible from the Other button on the Format tab in Chart mode, the Grid feature is part of the HTML5 group of charts.

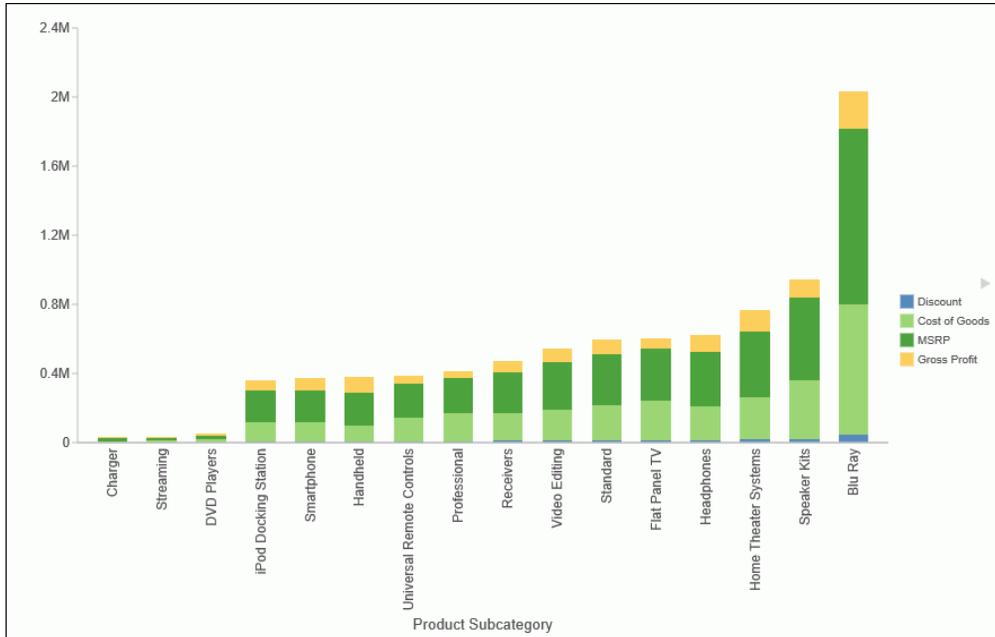
Grids allow you to display data in tabular format. As a new chart type, you can now display your data in a format that is similar to that of a typical report, as shown in the following image.



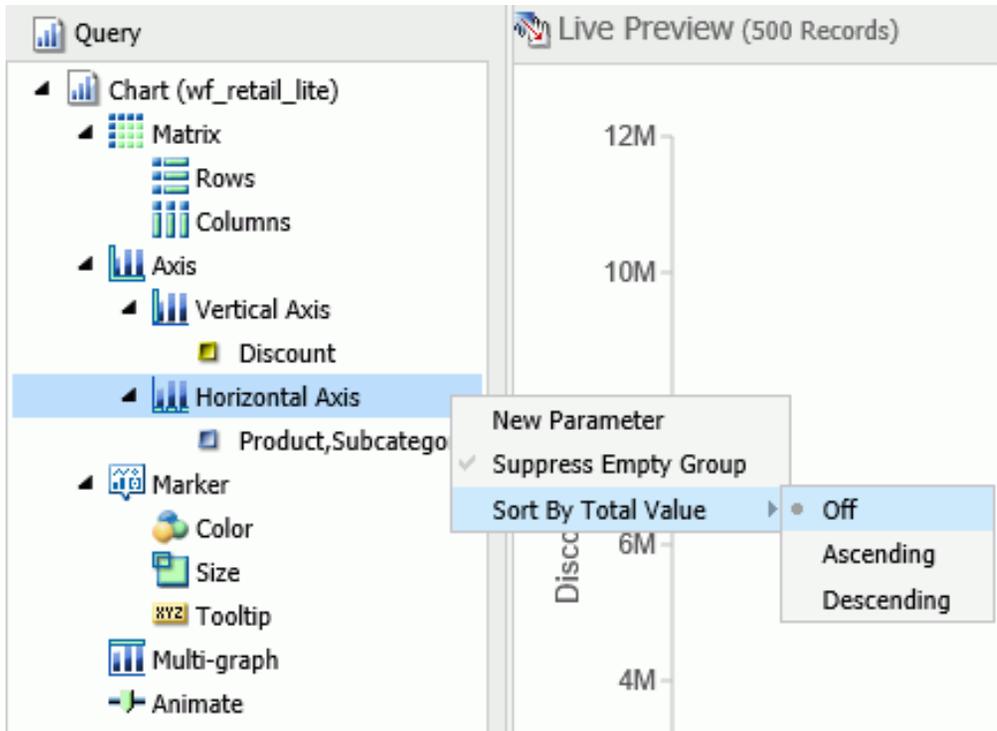
Note: Grids are also available in Visualization mode.

Sorting a Chart by Total Value

In Chart and Visualization mode, you can now sort your bar, line, and area charts by the total value. While this feature was implemented specifically for Stacked Bar charts, it also applies to other chart types. This feature enables you to view your data in numerical order, allowing you to identify trends and determine what data points are priorities. For example, the chart in the following image is set to *Ascending*, which sorts the chart from the lowest value to the highest value.



You can sort your charts in ascending or descending order using the Sort by Total Value option on the right-click menu of the Horizontal Axis, as shown in the following image.

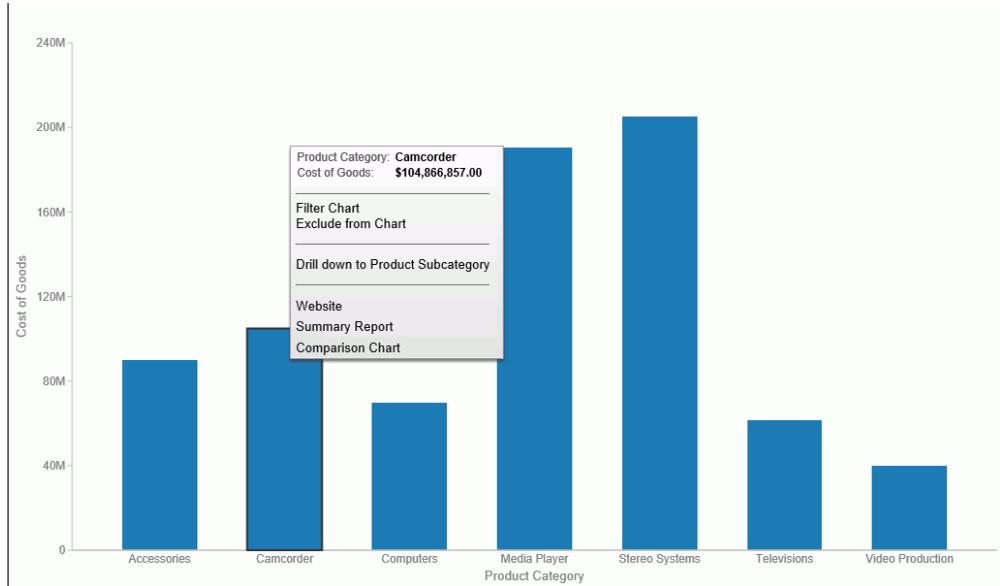


This option is turned off, by default.

Note: If you rotate your chart horizontally, the Sort By Total Value menu option displays on the Vertical Axis.

Using Multi Drill in Visualization Mode

You can now create multiple drill down links on a measure field in a visualization. This enables you to define custom links to other reports or websites, making it easy to link content from internal and external sources. Once defined, these links display on the shortcut menu that displays when you hover over a riser, as shown in the following image.



You create multiple drill downs using the Drill Down dialog box, which you can access from the Links group on the Field tab. In the Query pane, click a measure to enable the Field tab. In the Links group, click *Drill Down*. The Drill Down dialog box displays, as shown in the following image.

The screenshot shows a dialog box titled "Drill Down - Cost of Goods". It has a standard Windows-style title bar with a close button (X) in the top right corner. Below the title bar is a toolbar with icons for a search, a document, a delete (X), and a refresh. The main area of the dialog is divided into several sections:

- Report Type:** Three radio buttons are present: "Report" (selected), "Refresh BI Portal", and "Web Page".
- Report*:** A text input field containing an empty space, followed by a "Browse" button.
- Description:** A text input field containing the text "Drill Down 1".
- Target:** A dropdown menu currently showing "New Window".
- Parameters:** A section with a toolbar containing icons for a document, a search, and a delete (X). Below this is a table with two columns: "Name" and "Value". The table is currently empty.

At the bottom of the dialog, there is a note: "* Required Field". Below the note are three buttons: "OK" (with a green checkmark icon), "Delete all and exit" (with a trash can icon), and "Cancel" (with a red X icon).

Note: When creating a drill down in Visualization mode, the Auto Link Target option is not available.

Updates to Various Chart Types

The new chart attribute syntax has been applied to the following chart types: Dual Bar and Line, Tag Cloud, Streamgraph, Mekko, Funnel, and Pyramid. This process adds additional relevant field containers for these chart types, which can be used to specify fields in a specific area of the chart. For example, Horizontal Axis, Color, and Tooltip are field containers that are part of the new chart attribute syntax.

In InfoAssist+, specific field containers display for each chart type. For more information on the underlying syntax used to create each chart type, see the *Creating HTML5 Charts With WebFOCUS Language* manual. For information on the field containers for charts, see the *Field Containers for Charts and Visualizations* topic in the *Navigating the InfoAssist+ Interface* chapter.

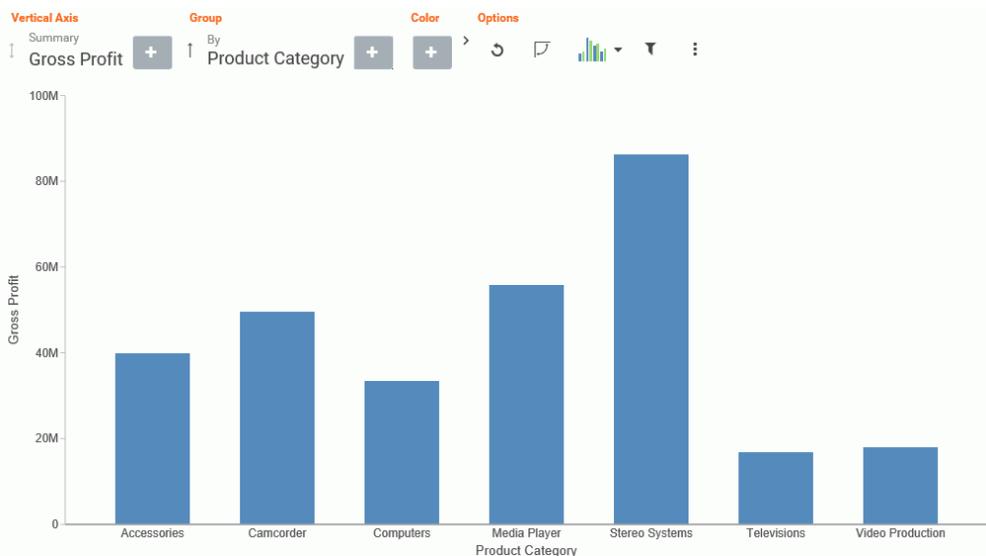
Using Insight to Analyze Dynamic Charts

Insight is a powerful visualization tool that allows for the interactive selection of measures and dimensions, enabling you to create dynamic charts in real time. This feature is available in Chart mode only.

Insight allows you to dynamically select fields, which makes it an ideal tool for comparing data values and reviewing scenarios. Depending on the data source, each group of measures and dimensions is presented in a list from which you can make a selection. Also, depending on your chart type, different buckets display, making it easy to quickly build your chart.

Insight gives you the tools you need to build dynamic charts that help you compare, contrast, and review scenarios to meet your needs. With intuitive options to make any necessary adjustments, you can quickly and easily develop effective charts that illustrate your data.

The layout of a simple Insight bar chart is shown in the following image.

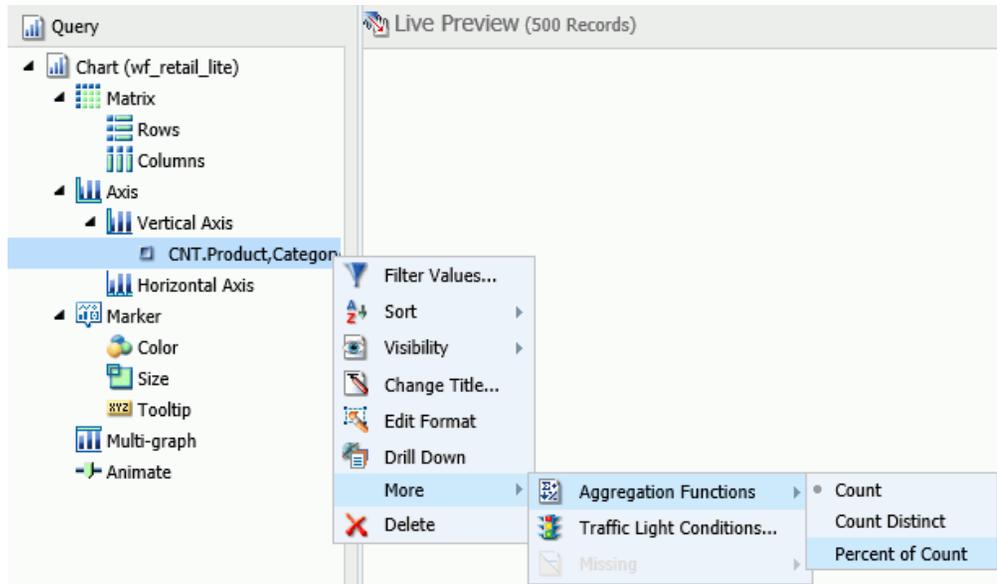


Learn More

For more information, see *Using Insight to Analyze Dynamic Charts* in the InfoAssist+ technical content.

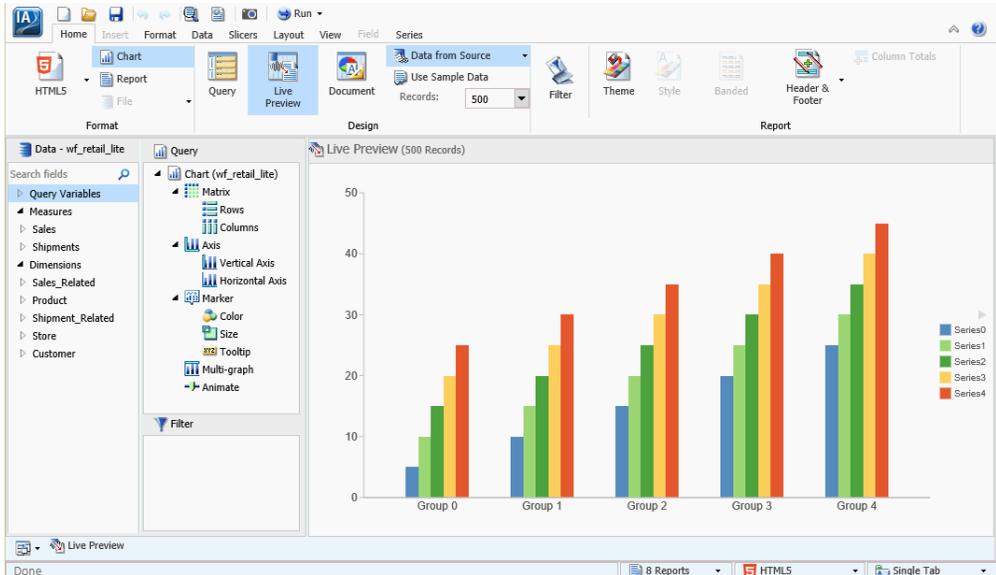
Percent Count Added as an Aggregation Option for Dimension (Non-Numeric) Fields

You can now use the Percent of Count aggregation on dimension (non-numeric) fields in a chart. This aggregation computes a field percentage, based on the number of instances found. In addition, you can use the Count or Count Distinct aggregation when working with dimension (non-numeric) fields. The Count aggregation counts the number of occurrences of a field. Count Distinct counts the number of distinct values within a field. When a dimension (non-numeric) field is placed in the Vertical Axis field container, it is converted to a Count field. You can subsequently change the aggregation to Count Distinct or Percent of Count, as shown in the following image.



New Default Theme (BIPNeutral) for InfoAssist+ and the WebFOCUS Home Page

A new, modern theme that colors the interface has been introduced. Using light blue to show the default values, the theme uses different shades of this color, as shown in the following image.



This theme is a contrast, based on previous gray-centric themes.

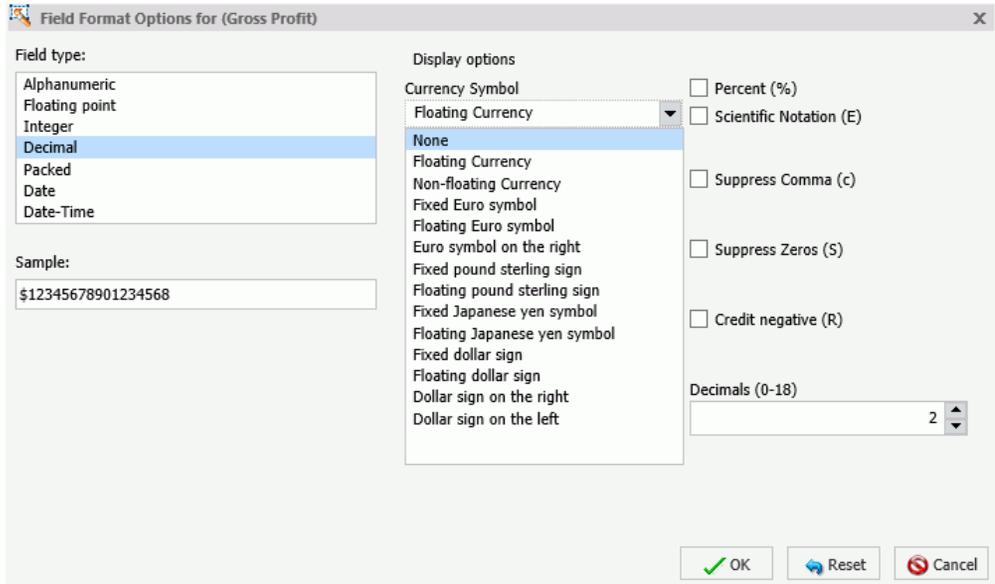
Some of the features of the theme include:

- On mouse over, the buttons in the ribbon and Quick Access Toolbar show with a light blue-gray background.
- Buttons with drop-down arrows display as blue on mouse over, but when you click a menu, the background opens with a white background, black text, and light blue hover color.
- All context menus show with white background, black text, and light blue hover color.

For more information, see the Changing InfoAssist+ User Preferences topic in the *InfoAssist+ User's manual* or the online help.

Extended Currency Options Added to Field Format Options Dialog Box

Additional currency options have been added to the Field Format Options dialog box. When editing the format of a field, you can select from a number of new currency symbols to enhance the format and display of your data. These new currency symbols are shown in the following image.

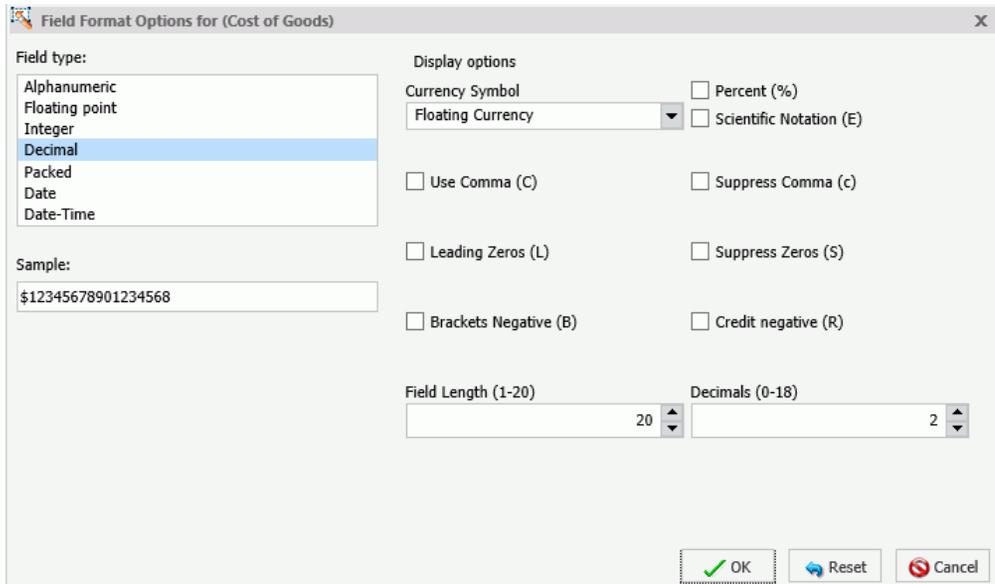


You can access the Field Format Options dialog box from the following locations:

- Define and Compute dialog boxes.
- Edit Format option when you right-click a measure in the Query pane (all modes), right-click a column in a chart, or a measure column in a report.
- Format group on the Field tab.

Editing the Format of a Field in Chart and Visualization Mode

Similar to Report mode, you can now edit the format of a measure field in Chart and Visualization mode. This feature allows you to access the Field Format Options dialog box, where you can modify the Field type (for example, Decimal or Alphanumeric) and change Display options (for example, Currency symbol or Percent). You can also set options for Field Length and specify the number of decimals to apply to the values in the selected measure, as shown in the following image.



You can access the Edit Format option from the menu that displays when you right-click a measure field in the Query pane. In addition, you can access the Field Format Options dialog box by selecting *More options...* from the Decimal drop-down menu in the Format group on the Field tab.

Charting With WebFOCUS

WebFOCUS charting options have been expanded to include more advanced properties, as well as a new output format that allows you to render a chart in the browser using a built-in JavaScript engine.

Using Template Macros in Data Labels

A template is a special string of characters that the chart engine will dynamically replace with chart component information when it renders the chart. A template is made up of macros. Macros are strings enclosed in a double set of curly braces. Each macro is parsed and replaced independently to build a final string. The chart engine includes many pre-defined macros.

When defining custom data text labels, you can use template macros to display chart component information.

For information about predefined macros, see the *Creating HTML5 Charts With WebFOCUS Language* manual.

Since data text labels are automatically populated with default values, you need to include the following properties to clear out the default formatting and you must place the custom dataLabels in a GRAPH_JS_FINAL block in the StyleSheet.

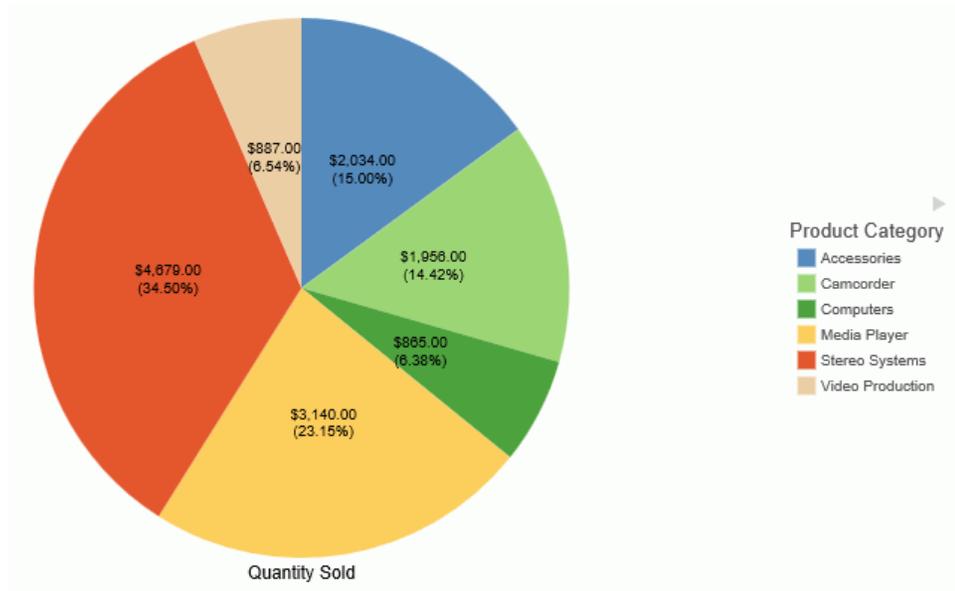
```
"dataLabels": {"visible":true,"formatCallback": null, "displayMode": null}
```

Example: Using a Template Macro in a Data Text Label

The following request generates a pie chart. The series data text labels display the sum of quantity sold as a number formatted with a dollar sign and two decimal places. It uses the HTML string \n to go to a new line and displays the percentage using the series_percent template macro.

```
GRAPH FILE WF_RETAIL_LITE
SUM QUANTITY_SOLD
BY PRODUCT_CATEGORY
WHERE PRODUCT_CATEGORY NE 'Televisions'
ON GRAPH PCHOLD FORMAT JSCHART
ON GRAPH SET LOOKGRAPH PIE
-*ON GRAPH SET AUTOFIT ON
ON GRAPH SET STYLE *
INCLUDE=IBFS:/FILE/IBI_HTML_DIR/ibi_themes/Warm.sty,$
TYPE=DATA, COLUMN=N1, BUCKET=color, $
TYPE=DATA, COLUMN=N2, BUCKET=measure, $
*GRAPH_JS_FINAL
"dataLabels": {"visible":true,"formatCallback": null, "displayMode": null},
"series":[{"series": "reset",
  "dataLabels":{"content": "{{value | formatNumber('$#,###.00')}}
\n({{series_percent}})"}]},
*END
ENDSTYLE
END
```

The output is shown in the following image.



Generating Curved Corners on Bar Chart Risers

By default, bar chart risers have square corners. You can use the series property `cornerRadius` to generate curved corners for a more modern look.

Note: Legend markers are not curved, even if the chart risers are curved.

Syntax: How to Generate Bar Chart Risers With Curved Corners

```
"series": number, "border": {"cornerRadius": {"x": value, "y": value}}
```

where:

```
"series": number
```

Specifies a series number for which the corners are being rounded, or "all", to apply the `cornerRadius` properties to all risers. The corner shape specified for series "all" is applied to any series that does not have its own `cornerRadius` property.

`"border"`

Defines the properties of the border around the riser.

`"cornerRadius": {"x": value, "y": value}`

Defines the properties of the corners of the riser.

The `cornerRadius` property can consist of one value or two values. A single zero (0) value generates square corners. This is the default corner shape. Rounded corners can be circular or elliptical. The `x` and `y` values denote the size of the circle radius or the semi-major and semi-minor axes of the ellipse, where `x` and `y` are orientation-aware and depend on chart orientation. `x` represents the ordinal axis, and `y` represents the numeric axis.

Valid values for `x` and `y` are:

- A number that specifies the radius of the corner in pixels.
- A percent string such as "20%", that represents a percentage of the ordinal or numeric axis of the riser.
- A CSS length string such as "5em" or "10px" that specifies the radius of the corner in pixels. For information about CSS length strings, see <https://developer.mozilla.org/en-US/docs/Web/CSS/length>.
- An object with "x" and "y" properties (where "x" and "y" can be any of the above) to specify the corner radius along the ordinal axis (x) and numeric axis (y) of the riser.

Example: Controlling Corner Shape of Bar Chart Risers

In the following request, series 0 (COGS_US) has elliptical corners, series 2 (REVENUE_US) has square corners, and series 1 (GROSS_PROFIT_US) has the round corners specified for series "all".

```

GRAPH FILE WF_RETAIL_LITE
SUM COGS_US GROSS_PROFIT_US REVENUE_US
BY PRODUCT_CATEGORY
ON GRAPH PCHOLD FORMAT JSCHART
ON GRAPH SET LOOKGRAPH BAR
ON GRAPH SET EMBEDHEADING ON
ON GRAPH SET STYLE *

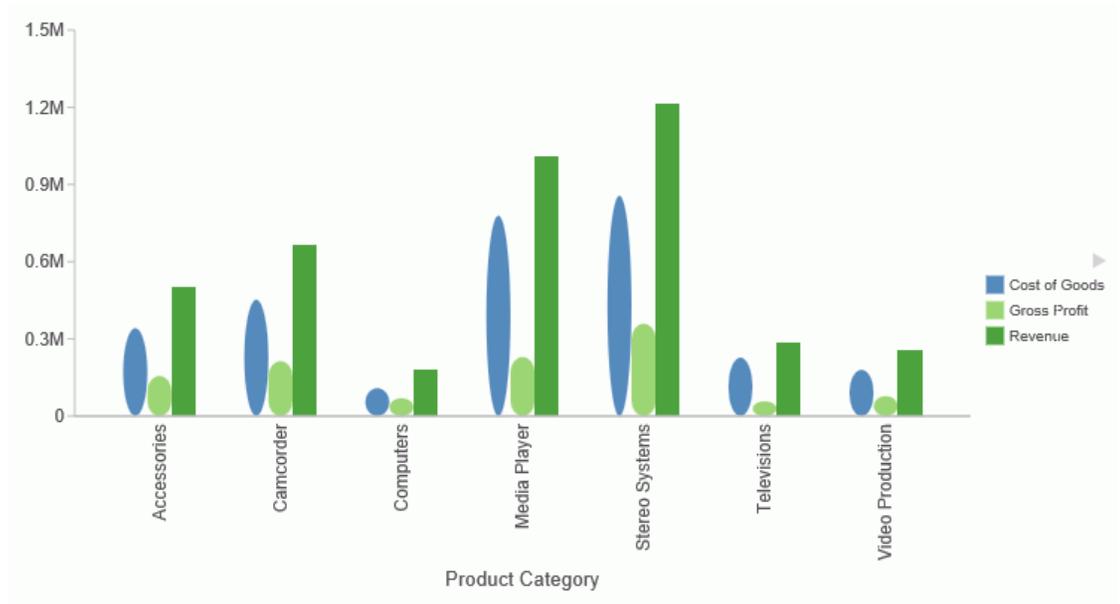
INCLUDE=IBFS:/FILE/IBI_HTML_DIR/ibi_themes/Warm.sty,$

TYPE=DATA, COLUMN=PRODUCT_CATEGORY, BUCKET=x-axis, $
TYPE=DATA, COLUMN=COGS_US, BUCKET=y-axis, $
TYPE=DATA, COLUMN=GROSS_PROFIT_US, BUCKET=y-axis, $
TYPE=DATA, COLUMN=REVENUE_US, BUCKET=y-axis, $

*GRAPH_JS
series: [{series: 'all', border: {cornerRadius: 10}},
{series: 0, border: {cornerRadius: {x: "10%", y: "30%"}}},
{series: 2, border: {cornerRadius: 0}}
]
*END
ENDSTYLE
END

```

The output is shown in the following image.



Binding Colors to Field Values in a Chart

Color binding enables you to associate (*bind*) BY field values to particular colors so that the same value will appear in the same color on different charts, regardless of the sequence or filter conditions. The BY field for which color binding is specified must be assigned to the *color* attribute category. For example, if the BY field is COUNTRY, that field should be assigned to the color attribute category. Then you can specify that the value *France* of the COUNTRY field should be red in every chart on every page of a report. The legend markers will also be bound to these colors.

Syntax: How to Bind a Color to a Field Value

```
type=data, marker-color=color, when=field eq value, $
```

where:

color

Specifies a color for the chart and legend marker when the condition in the WHEN phrase is satisfied. Color names, RGB color values, and hex color values are supported.

field

Is the name of the BY field that is assigned to the *color* attribute category whose values will be bound to specific colors.

value

Is the value that is bound to the color specified by the *marker-color* attribute.

Reference: Usage Notes for Color Binding

- ❑ Color binding is supported when only one field is assigned to the *color* attribute category.
- ❑ The only operator supported in the WHEN condition is EQ.
- ❑ Color binding is only supported with chart attribute syntax.
- ❑ The COLUMN attribute, which is generally required when applying conditional styling to charts, is optional for color binding, making it easier to reuse color mappings in separate procedures.
- ❑ If there are BY values for which no color is explicitly specified, their colors are whatever series color is specified by the StyleSheet (or by chart engine defaults, if there is no StyleSheet).

Example: Binding Field Values to Colors in a Bar Chart

The following request binds the field values of the PRODUCT_CATEGORY field to specific colors.

```
GRAPH FILE WF_RETAIL_LITE
SUM COGS_US
BY PRODUCT_CATEGORY
BY BUSINESS_REGION
WHERE BUSINESS_REGION NE 'Oceania'
ON GRAPH PCHOLD FORMAT JSCHART
ON GRAPH SET LOOKGRAPH BAR
ON GRAPH SET STYLE *
INCLUDE=IBFS:/FILE/IBI_HTML_DIR/ibi_themes/Warm.sty,$
TYPE=DATA, COLUMN=BUSINESS_REGION, BUCKET=X-AXIS, $
TYPE=DATA, COLUMN=COGS_US, BUCKET=y-axis, $
TYPE=DATA, COLUMN=PRODUCT_CATEGORY, BUCKET=COLOR, $
TYPE=DATA, MARKER-COLOR=red, WHEN=PRODUCT_CATEGORY EQ 'Accessories',$
TYPE=DATA, MARKER-COLOR=orange, WHEN=PRODUCT_CATEGORY EQ 'Camcorder',$
TYPE=DATA, MARKER-COLOR=yellow, WHEN=PRODUCT_CATEGORY EQ 'Computers',$
TYPE=DATA, MARKER-COLOR=green, WHEN=PRODUCT_CATEGORY EQ 'Media Player',$
TYPE=DATA, MARKER-COLOR=blue, WHEN=PRODUCT_CATEGORY EQ 'Stereo Systems',$
TYPE=DATA, MARKER-COLOR=purple, WHEN=PRODUCT_CATEGORY EQ 'Televisions',$
TYPE=DATA, MARKER-COLOR=gray, WHEN=PRODUCT_CATEGORY EQ 'Video Production',$
ENDSTYLE
END
```

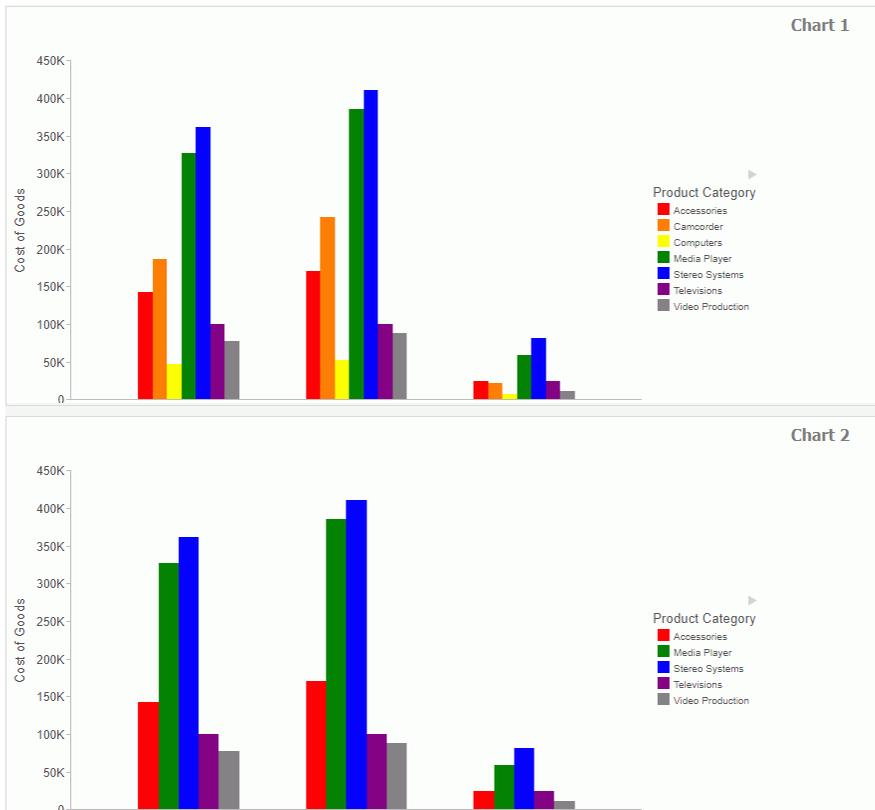
The following version of the request binds the field values of the PRODUCT_CATEGORY field to the same colors, but filters out the product categories that start with the letter C.

```

GRAPH FILE WF_RETAIL_LITE
SUM COGS_US
BY PRODUCT_CATEGORY
BY BUSINESS_REGION
WHERE PRODUCT_CATEGORY NOT LIKE 'C%'
WHERE BUSINESS_REGION NE 'Oceania'
ON GRAPH PCHOLD FORMAT JSCHART
ON GRAPH SET LOOKGRAPH BAR
ON GRAPH SET STYLE *
INCLUDE=IBFS:/FILE/IBI_HTML_DIR/ibi_themes/Warm.sty,$
TYPE=DATA, COLUMN=BUSINESS_REGION, BUCKET=X-AXIS, $
TYPE=DATA, COLUMN=COGS_US, BUCKET=y-axis, $
TYPE=DATA, COLUMN=PRODUCT_CATEGORY, BUCKET=COLOR, $
TYPE=DATA, MARKER-COLOR=red, WHEN=PRODUCT_CATEGORY EQ 'Accessories',$
TYPE=DATA, MARKER-COLOR=orange, WHEN=PRODUCT_CATEGORY EQ 'Camcorder',$
TYPE=DATA, MARKER-COLOR=yellow, WHEN=PRODUCT_CATEGORY EQ 'Computers',$
TYPE=DATA, MARKER-COLOR=green, WHEN=PRODUCT_CATEGORY EQ 'Media Player',$
TYPE=DATA, MARKER-COLOR=blue, WHEN=PRODUCT_CATEGORY EQ 'Stereo Systems',$
TYPE=DATA, MARKER-COLOR=purple, WHEN=PRODUCT_CATEGORY EQ 'Televisions',$
TYPE=DATA, MARKER-COLOR=gray, WHEN=PRODUCT_CATEGORY EQ 'Video Production',$
ENDSTYLE
END

```

Both charts are shown in the following image. Note that, although Media Player is represented by the fourth riser on chart 1 and the second riser on chart 2, it is green on both charts.



Defining Events and Tooltips for Annotations

Chart annotations support the ability to specify an arbitrary SVG object and define events and tooltips for the SVG object, enabling you to create your own interactive buttons and icons on the chart canvas.

You have to add a separate eventDispatcher object to the request in order to add interactivity to an annotation. For information, see the *Creating HTML5 Charts With WebFOCUS Language* manual.

Syntax: **How to Create an Interactive Annotation**

```

"annotations" = [{
  "position": {
    "parent": "string",
    "x": x,
    "y": y
  },
  "marker": {
    "visible": boolean,
    "shape": "svg code",
    "color": "string",
    "border": {"width": number,
               "color": "string",
               "dash": "string"}
  },
  "tooltip": "string"
}]

```

where:

`"position":`

Defines the position of the annotation marker.

`"parent": "string"`

Defines the chart object that the x and y values refer to. The default value is *undefined*. Can be one of the following.

- `"background"`, which measures the position from the lower left corner of the chart frame and places the annotation behind the chart. This is the default value.
- `"chart"`, which measures the position from the lower left corner of the chart draw area and places the annotation on the chart.
- `"legend"`, which measures the position from the lower left corner of the legend area and places the annotation in the legend area.

`"x": x`

Is the horizontal position for the annotation icon. A synonym for "x" is "left", which measures the horizontal position from the left edge of the frame. You can also use "right", which measures the position from the right edge of the frame.

The default value is *undefined*. Can be:

- A number. If the parent chart component is "chart", the number represents a value on a numeric axis. Otherwise, it represents a number of pixels from the left corner of the parent component for "x" or "left", or the right corner for "right".

- ❑ A series and group label for a horizontal chart (in the form {series:n,group:m}), which places the annotation on that series or group. This requires the parent component to be "chart".
- ❑ A percent string (for example, "40%"), which places the annotation at a point the specified percentage horizontally from the left corner of the parent component for "x" or "left", or the right corner for "right".
- ❑ A pixel string (for example, "40px"), which places the annotation at a point that number of pixels horizontally from the left corner of the parent component for "x" or "left", or the right corner for "right".

If you set multiple horizontal position properties, "x" takes precedence over either "right" or "left", and "left" takes precedence over "right".

"y": *y*

Is the vertical position for the annotation icon. A synonym for "y" is "bottom", which measures the horizontal position from the bottom edge of the frame. You can also use "top", which measures the position from the top edge of the frame.

The default value is *undefined*. Can be:

- ❑ A number. If the parent chart component is "chart", the number represents a value on a numeric axis. Otherwise, it represents a number of pixels from the bottom edge of the parent component for "y" or "bottom", or the top edge for "top".
- ❑ A series and group label for a vertical chart (in the form {series:n,group:m}), which places the annotation on that series or group. This requires the parent component to be "chart".
- ❑ A percent string (for example, "40%"), which places the annotation at a point the specified percentage vertically from the bottom edge of the parent component for "y" or "bottom", or the top edge for "top".
- ❑ A pixel string (for example, "40px"), which places the annotation at a point that number of pixels vertically from the bottom edge of the parent component for "y" or "bottom", or the top edge for "top".

If you set multiple vertical position properties, "y" takes precedence over either "bottom" or "top", and "bottom" takes precedence over "top".

`"marker"`

Defines the properties of the annotation marker or icon.

`"visible": boolean`

Defines whether the annotation icon is visible. Valid values are true, which makes the icon visible, and false, which does not make the icon visible. The default value is false.

`"shape": "svg code"`

Is the SVG path data string ('d' attribute) that defines the icon shape and size.

Note: Standard marker shapes such as "circle" or "diamond" are also supported for the marker:shape object.

`"color": "string"`

Is a string that specifies the color of the icon.

`"border"`

Defines the border properties of the icon.

`"width": number`

Is the width of the border in pixels.

`"color": "string"`

Is a string that specifies the color of the border.

`"dash": "string"`

Is a string that defines the dash style of the border. The default value is "" (a solid line). Use a string of numbers that defines the width of a dash in pixels followed by the width of the gap between dashes in pixels (for example, dash "1 1" draws a dotted line).

Multiple dashes can be defined within the dash string (for example, "2 4 4 2"), in which case the dash types will alternate along the border.

`"tooltip": "string"`

Is a string that defines a tooltip to appear when the mouse hovers over the icon.

Example: Defining an Interactive Annotation for a Chart

The following request creates an annotation that consists of a red icon with a navy dashed border. The event associated with clicking this icon opens the Information Builders home page. The tooltip displays the following text:

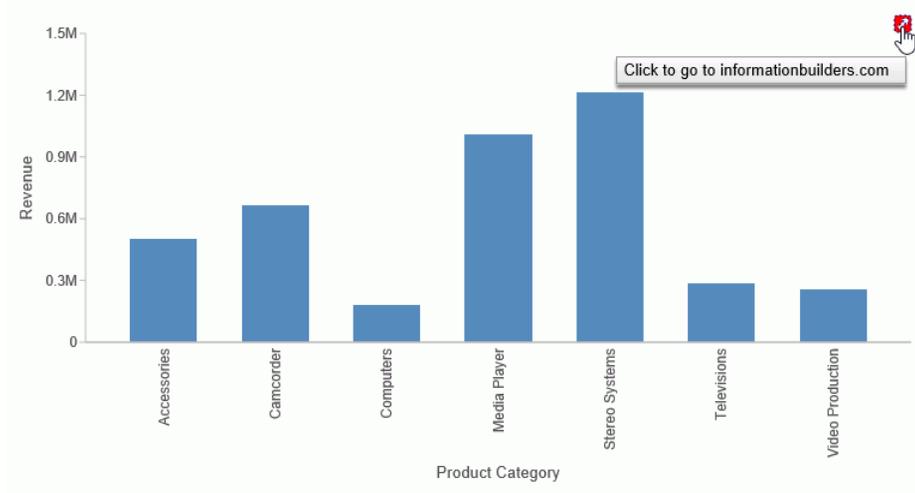
[Click to go to informationbuilders.com](http://informationbuilders.com)

```

SET PAGE-NUM=NOLEAD
SET HTMLENCODE=OFF
SET EMBEDHEADING=ON
GRAPH FILE wf_retail_lite
SUM REVENUE_US
BY PRODUCT_CATEGORY
ON GRAPH PCHOLD FORMAT JSCHART
ON GRAPH SET LOOKGRAPH BAR
ON GRAPH SET STYLE *
INCLUDE=IBFS:/FILE/IBI_HTML_DIR/ibi_themes/Warm.sty,$
TYPE=DATA, COLUMN=N1, BUCKET=x-axis, $
TYPE=DATA, COLUMN=N2, BUCKET=y-axis, $
*GRAPH_JS
  "eventDispatcher": {
    "events": [
      {
        // This will add a click event handler to the annotation
        "event": "click", object: "annotation", series: 0, url:
"http://informationbuilders.com", target: "_blank"
      }
    ]
  },
  annotations:[{
    "position": {
      "x": 750,
      "y": 12,
      "parent": "background"
    },
    "marker": {
      "visible": true,
      "color": "red",
      "border": {"width": 1, "color": "navy", "dash": "2 2"},
      "shape": "m 12.666667,8.291667 0,-4.375 c 0,-0.319084
-0.26425,-0.583334 -0.583334,-0.583334 l -4.3749997,0 C 7.4715,3.333333
7.2615,3.479167 7.1705,3.688583 7.0795,3.907333 7.125,4.16225
7.29825,4.32675 l 1.3125,1.3125 -4.8673333,4.867333 c -0.2280834,0.228084
-0.2280834,0.5926667 0,0.820167 L 4.67325,12.256583 c 0.2280833,0.228084
0.5926667,0.228084 0.8201667,0 L 10.36075,7.38925 l 1.3125,1.3125 c
0.109083,0.118417 0.2555,0.17325 0.410083,0.17325 0.07292,0
0.155167,-0.01808 0.228084,-0.0455 0.209416,-0.091 0.35525,-0.301
0.35525,-0.537833 z M 15,3.625 l 0,8.75 C 15,13.824 13.824,15 12.375,15 l
-8.75,0 C 2.176,15 1,13.824 1,12.375 L 1,3.625 C 1,2.176 2.176,1 3.625,1 l
8.75,0 C 13.824,1 15,2.176 15,3.625 Z",
      "tooltip": "Click to go to informationbuilders.com"
    }
  ]
}
*END
ENDSTYLE
END

```

The output is shown in the following image.



Sorting Stacked Bar Chart Risers

In a stacked bar chart, one riser represents the total value for all series in a group. You can use the axis sort property to sort these stacked risers in ascending or descending order of the numeric axis values.

Syntax: How to Sort Stacked Bar Chart Risers

```
"axisname": {"sort": {"order": "string", "by": "string"}}
```

where:

"axisname"

Is the axis along which the sorted risers will be drawn. Valid values are:

- xaxis
- yaxis
- zaxis

"sort"

Defines the sort properties.

"order": "string"

Defines how the risers will be sorted. Valid values are:

- "ascending"

- "descending"

The default is to not to sort the risers.

"by": "*string*"

Defines the numeric axis that represents the values to be sorted. Valid values are:

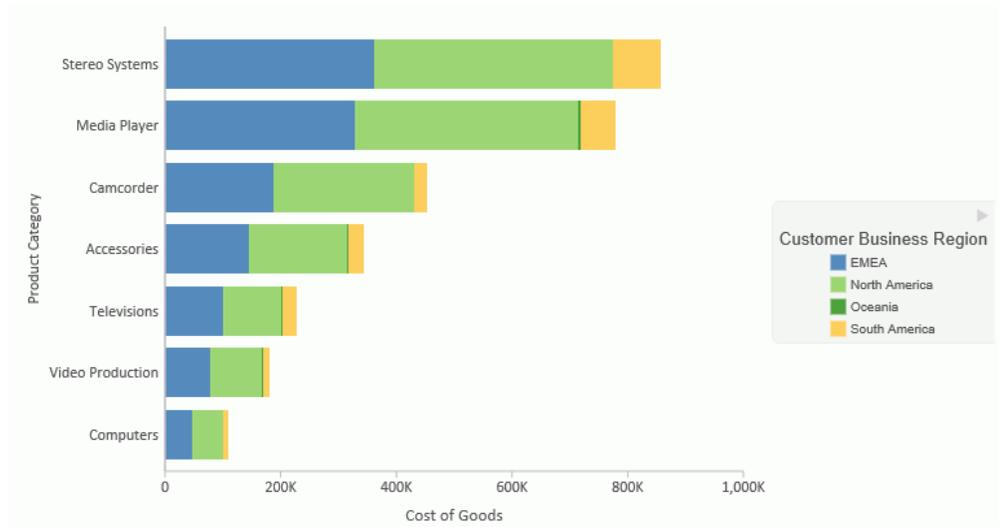
- "x"
- "y"
- "z"

Example: **Sorting Stacked Bar Chart Risers in Descending Order**

The following request generates a horizontal stacked bar chart with the risers sorted along the x-axis in descending order of y-axis values.

```
GRAPH FILE WF_RETAIL_LITE
SUM COGS_US
BY BUSINESS_REGION
BY PRODUCT_CATEGORY
ON GRAPH PCHOLD FORMAT JSCHART
ON GRAPH SET LOOKGRAPH BAR
ON GRAPH SET STYLE *
INCLUDE=IBFS:/FILE/IBI_HTML_DIR/javaassist/intl/EN/combine_templates/ENWarm.sty,$
TYPE=REPORT, CHART-SERIES-LAYOUT=stacked, CHART-ORIENTATION=horizontal, $
TYPE=DATA, COLUMN=COGS_US, BUCKET=y-axis, $
TYPE=DATA, COLUMN=BUSINESS_REGION, BUCKET=color, $
TYPE=DATA, COLUMN=PRODUCT_CATEGORY, BUCKET=x-axis, $
*GRAPH_JS
"xaxis": {"sort": {"order": "descending", "by": "y"}},
*END
ENDSTYLE
END
```

The output is shown in the following image.



Defining a Style for Cascading Menus in HTML Tooltips

You can use the `cascadeMenuStyle` properties to format cascading menus in HTML Tooltips.

Syntax: How to Define a Style for Cascading Menus in HTML Tooltips

```
"htmlToolTip": {
  "cascadeMenuStyle": {
    "label": {
      "font": "string",
      "color": "string"
    },
    "nameValue": {
      "name": {
        "font": "string",
        "color": "string"
      },
      "value": {
        "font": "string",
        "color": "string"
      }
    },
    "hover": {
      "fill": "string",
      "labelColor": "string"
    }
  }
}
```

where:

`"cascadeMenuStyle"`

Describes the properties of the tooltip menus.

`"label"`

Defines the properties of simple text in the tooltip.

`"font": "string"`

Is a string that defines the font of label text. The default value is undefined.

`"color": "string"`

Is a string that defines the color of label text. The default value is undefined.

`"nameValue":`

Defines the properties of the field names and field values in the tooltip.

`"name"`

Defines the properties of the field names in the tooltip.

`"font": "string"`

Is a string that defines the font of the field names. The default value is "9pt sans-serif".

`"color": "string"`

Is a string that defines the color of the field names. The default value is "#505050".

`"value"`

Defines the properties of the field values in the tooltip.

`"font": "string"`

Is a string that defines the font of the field values. The default value is "bold 9pt sans-serif".

`"color": "string"`

Is a string that defines the color of the field values. The default value is "black".

`"hover"`

Defines the properties when the mouse hovers over the tooltip.

`"fill": "string"`

Defines the hover fill color. The default value is "rgba(220,220,220,0.9)".

`"labelColor": "string"`

Defines the label hover color for a submenu. The default value is "black".

Example: Formatting Cascading Menus in HTML Tooltips

In the following request, series 0 has the default tooltip with drilldowns defined in the StyleSheet, while series 1 has a custom tooltip with a submenu. The field names are navy and their values are green. The labels are red. The hover fill color is yellow, and the hover label color for the submenu is brown.

```

GRAPH FILE wfretail82/wf_retail_lite
SUM COGS_US
GROSS_PROFIT_US
BY PRODUCT_CATEGORY
ON GRAPH PCHOLD FORMAT JSCHART
ON GRAPH SET LOOKGRAPH BAR
ON GRAPH SET AUTOFIT ON
ON GRAPH SET STYLE *
INCLUDE=IBFS:/FILE/IBI_HTML_DIR/ibi_themes/Warm.sty,$
TYPE=DATA, COLUMN=N1, BUCKET=x-axis, $
TYPE=DATA, COLUMN=N2, BUCKET=y-axis, DRILLMENUITEM='Go to Google',
TARGET='_blank', URL=http://www.google.com,
DRILLMENUITEM='Go to Information Builders Tech Library', TARGET='_blank',
URL=https://webfocusinfocenter.informationbuilders.com/wfbue/technical-
library.html, $
TYPE=DATA, COLUMN=N3, BUCKET=y-axis, $
*GRAPH_JS_FINAL
"series": [{
  "series": "reset",
  {"series": 1, "tooltip": [{
    "entry": "Group: {{group_label}}",
    "children": ["Series Label: {{series_label}}",
      "Series ID: {{series_id}} "]
    ]}
  }],
"htmlToolTip": {
  "enabled": true,
  "fill": "linear-gradient(to bottom, cyan 8%, lime 95%)",
  "border": {
    "width": 2,
    "color": "blue"
  },

```

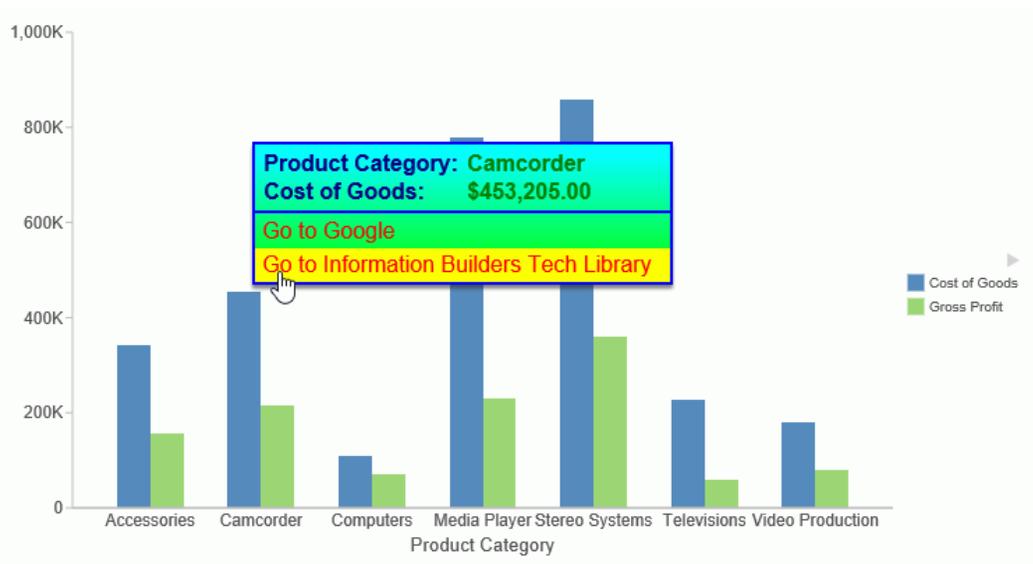
```

"cascadeMenuStyle": {
  "label": {
    "font": "12pt Arial",
    "color": "red"
  },
  "nameValue": {
    "name": {
      "font": "bold 12pt Arial",
      "color": "navy"
    },
    "value": {
      "font": "bold 12pt sans-serif",
      "color": "green"
    }
  },
  "hover": {
    "fill": "yellow",
    "labelColor": "brown"
  }
}
}

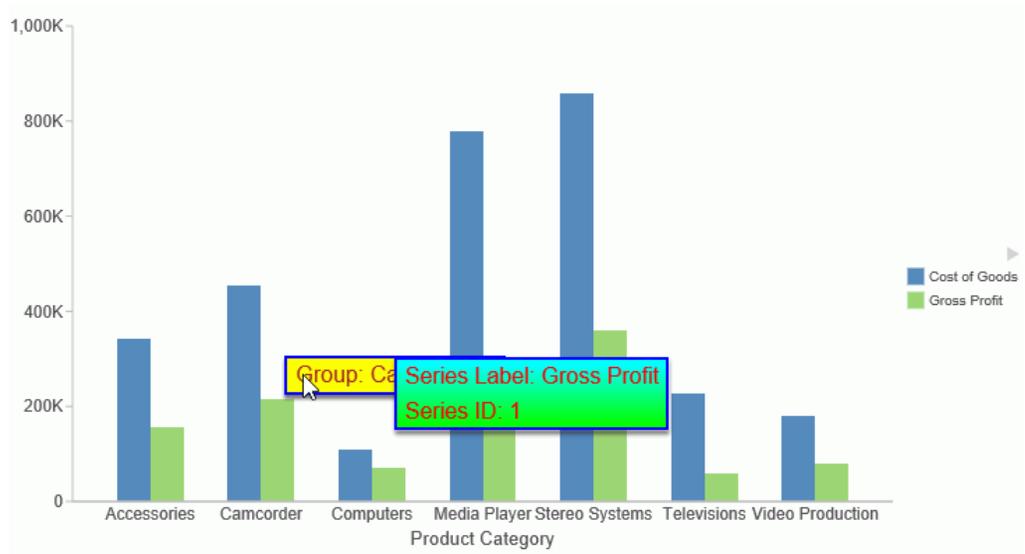
*END
ENDSTYLE
END

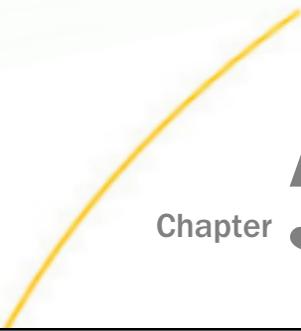
```

The following image shows the mouse hovering over the first drilldown for series 0.



The following image shows the mouse hovering over the submenu for series 1.





Chapter 5

Reporting Enhancements

Use the reporting capabilities available in WebFOCUS to add custom functionality and output formats to reports.

In this chapter:

- [InfoAssist+](#)
 - [Reporting Language Enhancements](#)
 - [Deferred Reporting](#)
-

InfoAssist+

InfoAssist+ is a powerful report generation tool that enables business users to leverage ad hoc functionality. With InfoAssist+, you can generate highly complex reports, charts, and documents from any enterprise information source without IT intervention. You can also analyze multiple reports and charts simultaneously and output report data in a variety of formats.

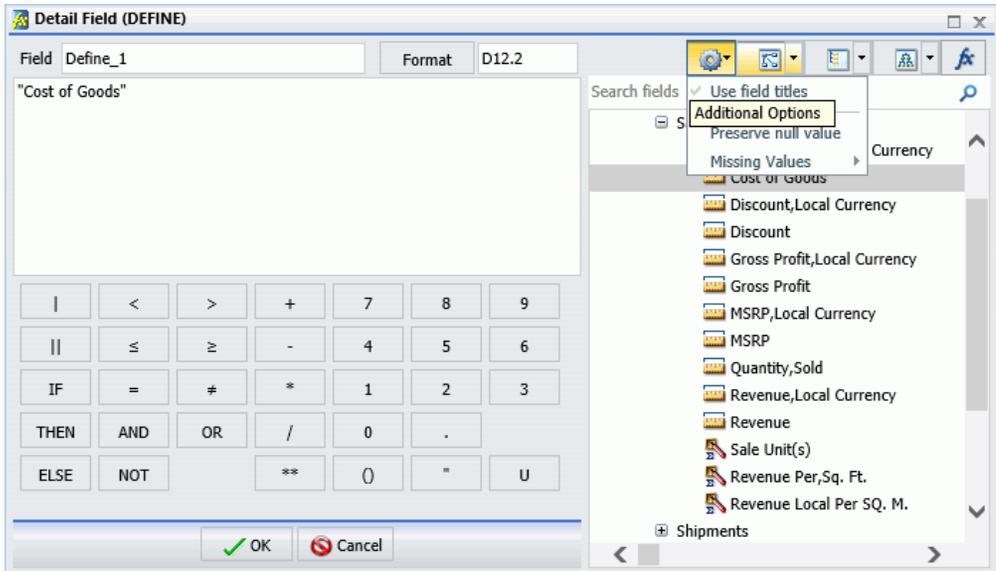
Using Field Titles in a Define or Compute

When working with Defines and Computes, field titles now automatically display as you build your criteria in the Define (or Compute) text area.

Field titles are an attribute of a field. They are defined in the metadata and display only when specified for the field that you select. If a field title has not been defined in the metadata, the title that displays will be the physical field name.

Note: If you specify a field with a duplicate field title, the fully qualified field name is used for the second (and any subsequent) instance.

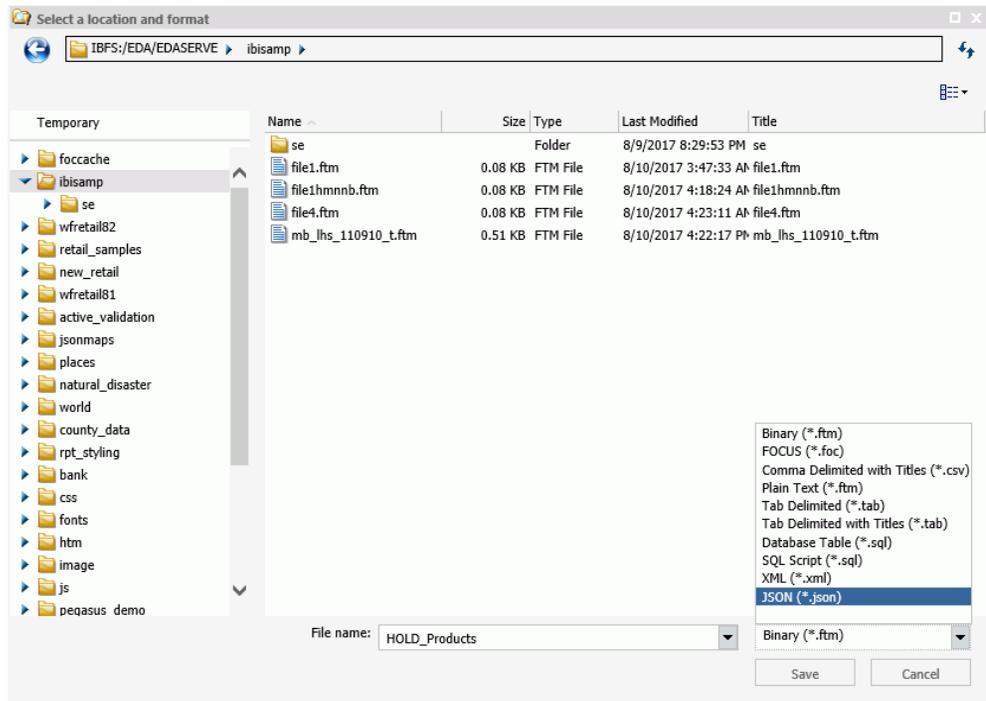
The Use field titles feature enables you to see the field title (for example, Cost of Goods) rather than the fully qualified name of the field (for example, WF_RETAIL_LITE.WF_RETAIL_SALES.COGS_US). This facilitates easy identification of field names while building your Define or Compute. You can switch between the display of field titles and fully qualified field names by unchecking the Use field titles option, which you can access by clicking *Additional Options*, as shown in the following image.



New JSON Output Format Added for HOLD Files

A new output format, JSON (*.json), has been added for HOLD files. This enables you to create a HOLD file and output it to a JSON object.

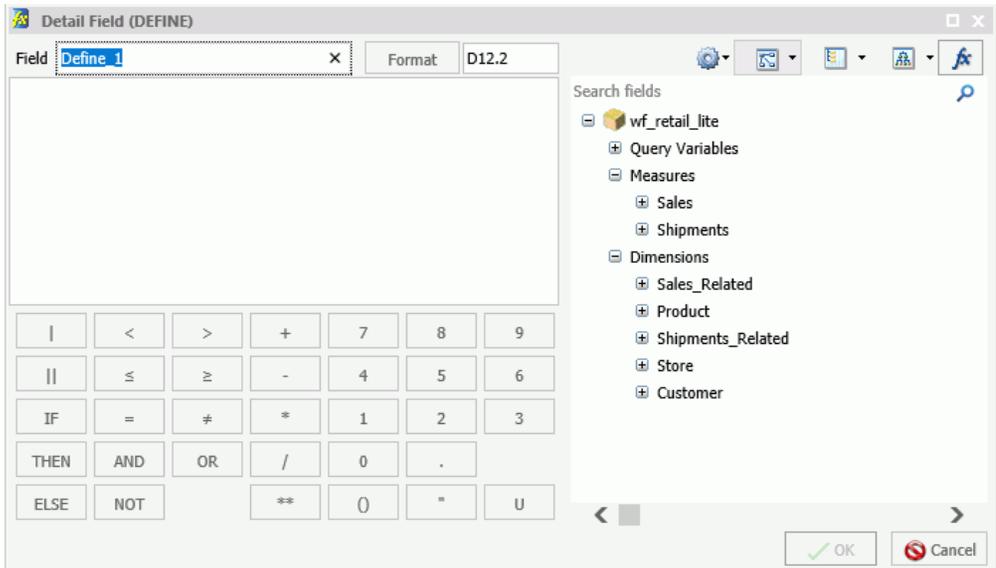
This option has been added to the list of available output formats, as shown in the following image.



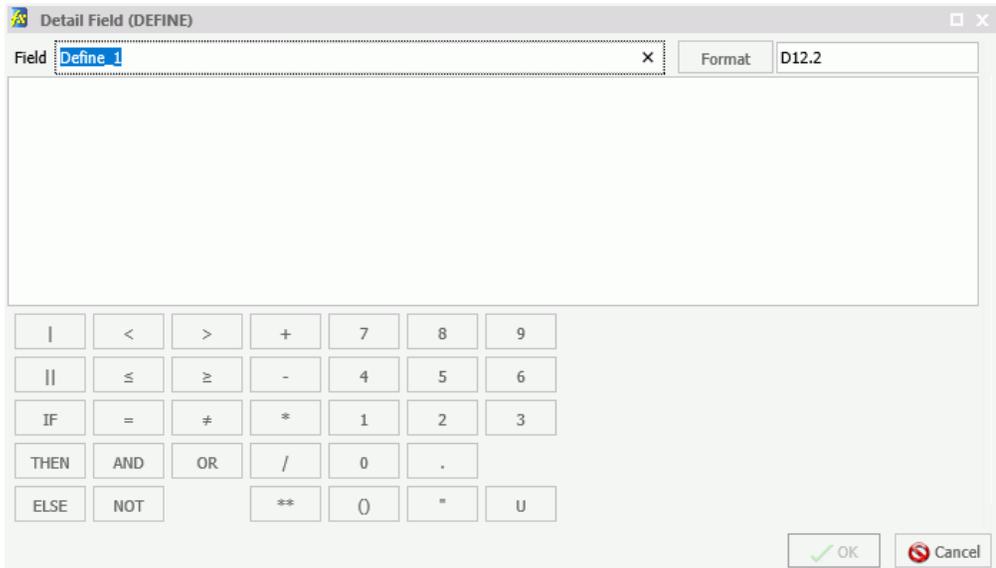
Resizing the Text Area of a Define or Compute

When working with Defines and Computes, you can now adjust the width of the text area to accommodate the size of the fields in your query. This is particularly useful when using fully qualified names or long formulas. Using your mouse, hover over the right border of the text area. When the double arrows display, click and drag the text area to the right to expand it.

In its original state, the text area is aligned with the calculator, as shown in the following image.



When fully expanded, the span of the text area replaces the entire metadata tree, as well as the toolbar icons that display, as shown in the following image.



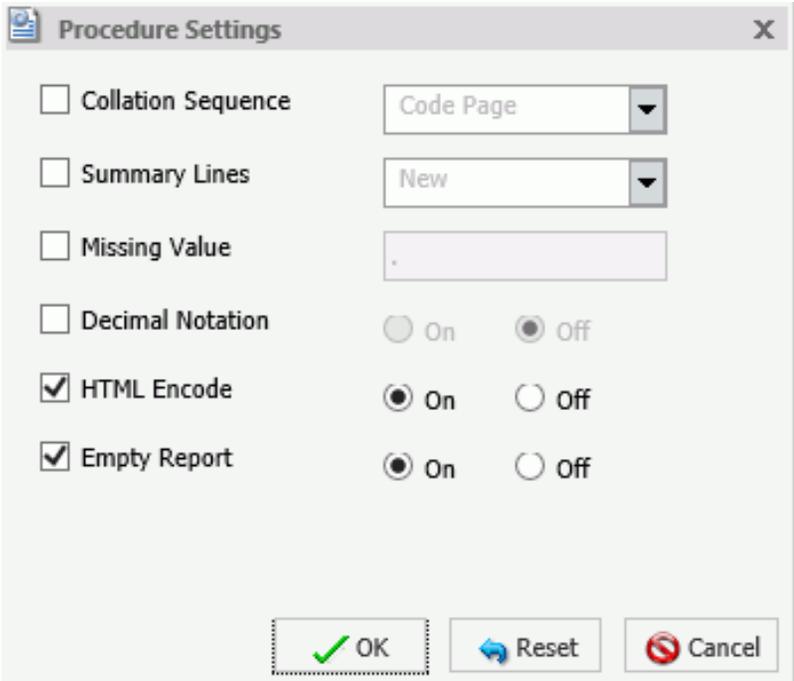
Addition of Procedure Settings to the Quick Access Toolbar

You can use Procedure Settings to specify and control items for inclusion in a procedure. Accessible from the Quick Access Toolbar, these options can be used to tailor your report, chart, or document presentation or content to meet your individual needs.

The procedure settings include:

- Collation Sequence (COLLATION)
- Summary Lines (SUMMARY LINES)
- Missing Value (NODATA)
- Decimal Notation (CDN)
- HTML Encode (HTMLENCODE)
- Empty Report (EMPTY REPORT)

The Procedure Settings dialog box is shown in the following image.



The screenshot shows the 'Procedure Settings' dialog box with the following configuration:

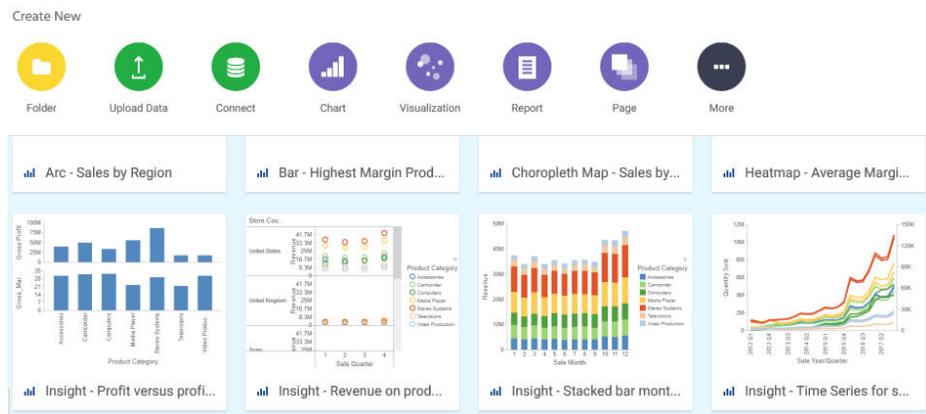
| Setting | Value |
|--------------------------------------------------|-----------|
| <input type="checkbox"/> Collation Sequence | Code Page |
| <input type="checkbox"/> Summary Lines | New |
| <input type="checkbox"/> Missing Value | . |
| <input type="checkbox"/> Decimal Notation | Off |
| <input checked="" type="checkbox"/> HTML Encode | On |
| <input checked="" type="checkbox"/> Empty Report | On |

Buttons at the bottom: OK (highlighted with a dashed border), Reset, and Cancel.

Creating Thumbnails From Content

In InfoAssist+, you can create and store thumbnail images for use in the WebFOCUS Home Page. Thumbnail images allow you to see a snapshot of a report or chart without opening the file. In InfoAssist+, you can create a thumbnail image by clicking on the Create Thumbnail icon, which is located on the Quick Access toolbar.

You can create thumbnail images when working in Report and Chart mode in InfoAssist+. These images are smaller renditions (220x160px) of your actual report or chart as it displays in Live Preview. Once you create the thumbnail and save the report or chart, you can access the thumbnail image from the file list on the WebFOCUS Home Page, as shown in the following image.



Note: Thumbnail images are stored as part of the procedure when it is saved in the repository.

Learn More

For more information, see *Using Thumbnails for Use With the WebFOCUS Home Page* in the *InfoAssist+* technical content.

Reporting Language Enhancements

WebFOCUS is a complete information control system with comprehensive features for retrieving and analyzing data. It enables you to create reports quickly and easily. It also provides facilities for creating highly complex reports, but its strength lies in the simplicity of the request language. You can begin with simple queries and progress to complex reports as you learn about additional facilities.

Using Pivot Tables With XLSX Templates

The WebFOCUS XLSX format can generate a workbook based on a template that contains predefined pivot tables. These pivot tables can be built based on data fed from a report and/or exist independently of the WebFOCUS data on other worksheets.

Example: Feeding Data From a WebFOCUS Report Into a Pivot Table and Pivot Chart

The following sample procedure shows how to feed data from a WebFOCUS report into a pivot table and pivot chart within an existing Excel template called *wf2pivot.xlsx*.

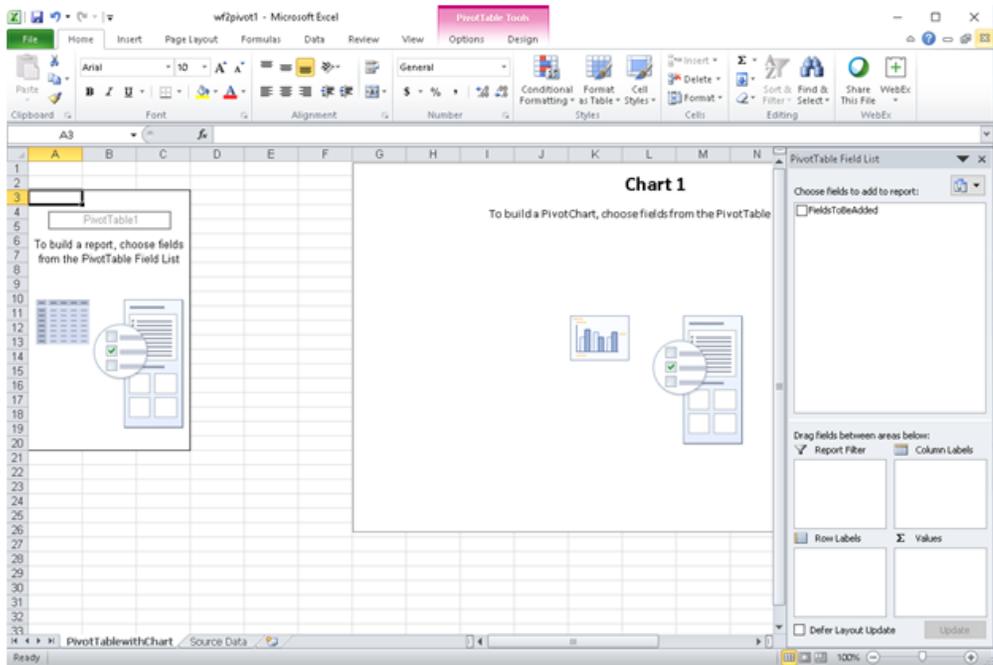
Note: Template names containing embedded blanks must be enclosed in single quotation marks.

```
TABLE FILE GGSales
PRINT
UNITS/D12C DOLLARS/D12CM
BUDUNITS/D12C BUDDOLLARS/D12CM
BY LOWEST REGION
BY LOWEST ST
BY HIGHEST CATEGORY
BY LOWEST PRODUCT
ON TABLE SET BYDISPLAY ON
ON TABLE PCHOLD AS PIVOTWITHCHART FORMAT XLSX TEMPLATE wf2pivot.xlsx
SHEETNUMBER 2
ON TABLE SET STYLE *
TYPE=DATA,IN-RANGES='DATAwithHEADERS', $
TYPE=TITLE,IN-RANGES='DATAwithHEADERS', $
ENDSTYLE
END
```

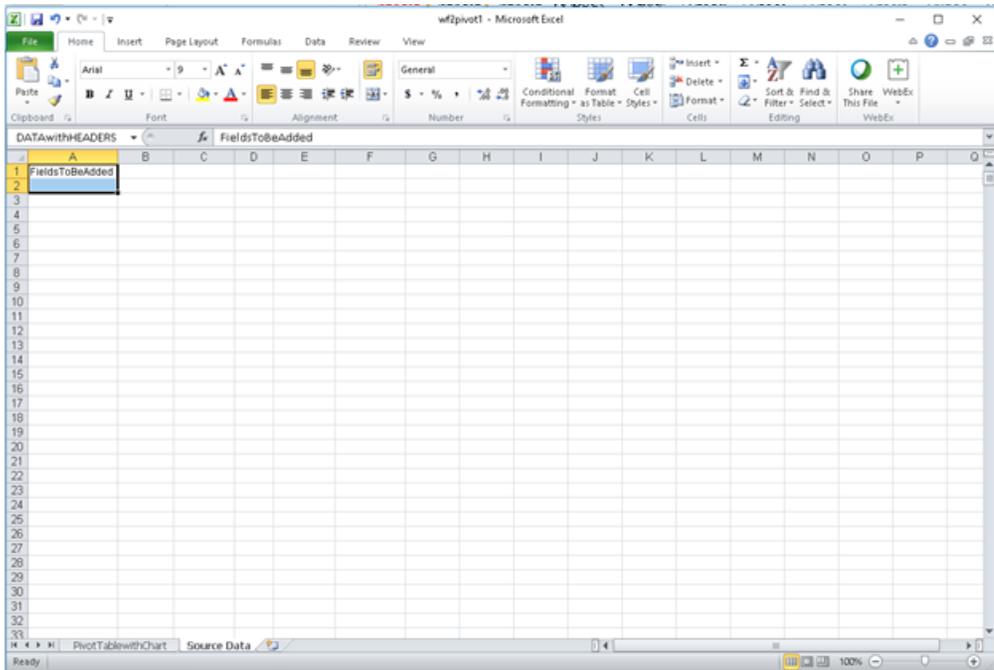
The wf2pivot.xlsx template file must be in the Reporting Server path. The following images show the default of the first and second worksheets in the wf2pivot.xlsx template, before executing the sample procedure.

Reporting Language Enhancements

The first worksheet, PivotTablewithChart, contains an empty pivot table and pivot chart. It also contains an empty PivotTableFieldList. The first worksheet is shown in the following image.



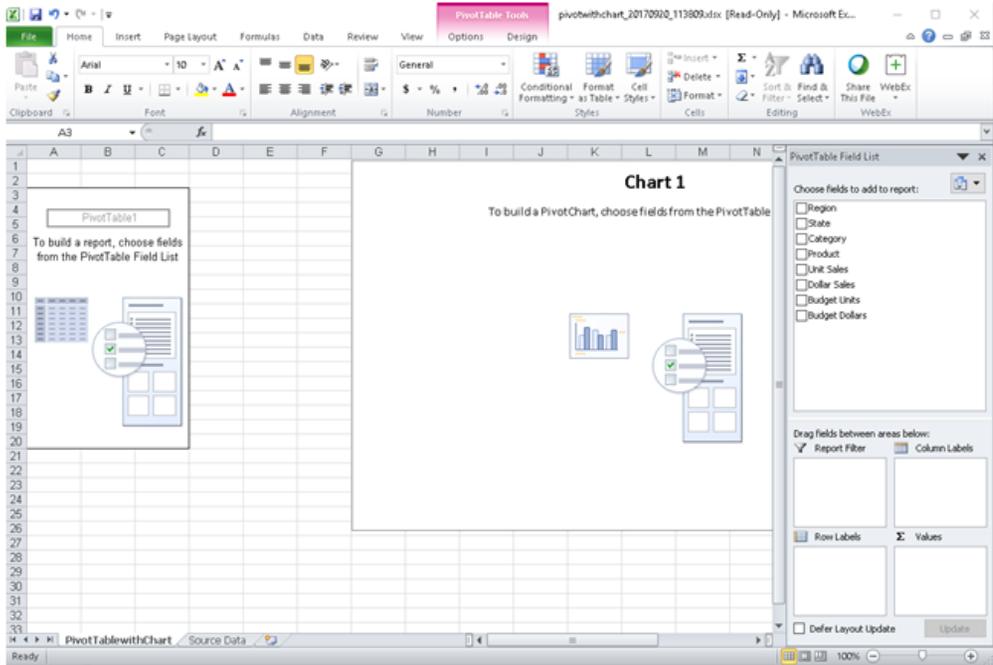
The second worksheet, Source Data, contains one column called FieldsToBeAdded, for which there is initially no data. The second worksheet is shown in the following image.



When you run the sample procedure, a pivotwithchart.xlsx workbook is generated, with the WebFOCUS report data stored in the second worksheet.

The following images show the first and second worksheets in the pivotwithchart.xlsx workbook after you run the sample procedure.

First Worksheet



Second Worksheet

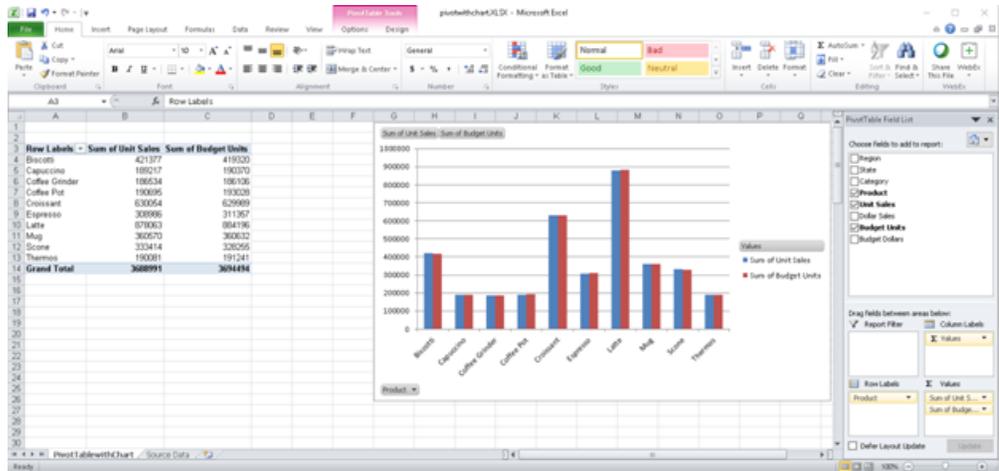
The screenshot shows a PivotTable in Microsoft Excel. The PivotTable is structured as follows:

| Region | State | Category | Product | Unit Sales | Dollar Sales | Budget Units | Budget Dollars |
|---------|-------|----------|----------------|------------|--------------|--------------|----------------|
| Midwest | IL | Gifts | Coffee Grinder | 1,168 | \$15,178 | 1,100 | \$13,195 |
| Midwest | IL | Gifts | Coffee Grinder | 1,098 | \$14,277 | 970 | \$14,553 |
| Midwest | IL | Gifts | Coffee Grinder | 949 | \$14,236 | 832 | \$9,987 |
| Midwest | IL | Gifts | Coffee Grinder | 1,108 | \$12,190 | 1,041 | \$14,571 |
| Midwest | IL | Gifts | Coffee Grinder | 1,084 | \$10,837 | 1,072 | \$13,934 |
| Midwest | IL | Gifts | Coffee Grinder | 1,051 | \$10,514 | 1,084 | \$13,005 |
| Midwest | IL | Gifts | Coffee Grinder | 859 | \$10,312 | 791 | \$9,496 |
| Midwest | IL | Gifts | Coffee Grinder | 805 | \$9,662 | 946 | \$9,464 |
| Midwest | IL | Gifts | Coffee Grinder | 904 | \$9,035 | 829 | \$10,776 |
| Midwest | IL | Gifts | Coffee Grinder | 717 | \$8,609 | 837 | \$11,716 |
| Midwest | IL | Gifts | Coffee Grinder | 566 | \$8,494 | 559 | \$7,267 |
| Midwest | IL | Gifts | Coffee Grinder | 3,609 | \$47,468 | 3,787 | \$48,036 |
| Midwest | IL | Gifts | Coffee Grinder | 772 | \$7,715 | 845 | \$9,293 |
| Midwest | IL | Gifts | Coffee Grinder | 762 | \$7,623 | 709 | \$9,924 |
| Midwest | IL | Gifts | Coffee Grinder | 680 | \$7,485 | 823 | \$9,876 |
| Midwest | IL | Gifts | Coffee Grinder | 490 | \$7,356 | 650 | \$6,501 |
| Midwest | IL | Gifts | Coffee Grinder | 581 | \$6,970 | 534 | \$6,941 |
| Midwest | IL | Gifts | Coffee Grinder | 506 | \$5,056 | 519 | \$5,706 |
| Midwest | IL | Gifts | Coffee Grinder | 409 | \$4,501 | 280 | \$4,198 |
| Midwest | IL | Gifts | Coffee Grinder | 276 | \$3,862 | 40 | \$0 |
| Midwest | IL | Gifts | Coffee Grinder | 256 | \$3,841 | 198 | \$2,970 |
| Midwest | IL | Gifts | Coffee Grinder | 358 | \$3,577 | 521 | \$6,778 |
| Midwest | IL | Gifts | Coffee Grinder | 196 | \$2,744 | 112 | \$1,346 |
| Midwest | IL | Gifts | Coffee Grinder | 135 | \$1,750 | 145 | \$2,178 |
| Midwest | IL | Gifts | Coffee Pot | 1,140 | \$17,107 | 1,243 | \$16,156 |
| Midwest | IL | Gifts | Coffee Pot | 1,144 | \$16,022 | 1,191 | \$14,296 |
| Midwest | IL | Gifts | Coffee Pot | 1,066 | \$15,989 | 1,026 | \$12,316 |
| Midwest | IL | Gifts | Coffee Pot | 1,174 | \$14,090 | 1,054 | \$13,702 |

In the PivotTablewithChart worksheet, note that the PivotTableFieldList is populated with the fields from the WebFOCUS report. There is one check box for each field in the report procedure. All the check boxes are not selected, by default.

The data used to populate the check boxes is obtained from the Source Data worksheet, where the data from the WebFOCUS report was saved upon executing the sample procedure.

To start building a pivot report and pivot chart, you can select the check boxes for the desired fields in the PivotTableFieldList. For example, selecting the check boxes for Product, Unit Sales, and Budget Units will automatically feed the data from the Source Data worksheet into the pivot table and pivot chart in the PivotTablewithChart worksheet. The resulting pivot table and pivot chart are shown in the following image.



The wf2pivot.xlsx template is provided, by default, with the WebFOCUS Reporting Server installation as part of the Legacy Samples. For information on how to download the Reporting Server Legacy Samples, see the *Server Administration* manual.

You can use the WebFOCUS XLSX template as is, or you can customize it to meet the your business requirements.

Note: The wf2pivot.xlsx template includes a pivot table and pivot chart on the same worksheet, but you can use a macro-enabled template to generate a pivot table and a pivot chart on separate worksheets, which are linked to a common data source.

Learn More

For more information, see the *WebFOCUS Pivot Support for XLSX* topic in the *Creating Reports With WebFOCUS Language* technical content.

Grouping Tables and Components in a PowerPoint Slide

When table elements are placed on a PowerPoint slide, the elements are placed in individual text boxes to allow for explicit positioning to match the other positioned drivers, such as PDF and DHTML.

The PPTXGROUP parameter enables you to group elements together in a PPTX report. You can rotate, flip, move, or resize objects within a group at the same time as though they were a single object. You can also change the attributes of all of the objects in a group at one time, including font, color, or size, and you can ungroup a group of objects at any time, and then regroup them later.

In WebFOCUS, grouping is done within each report component. Objects within the report component (or stand-alone report), including data, all headings and footings, and images, are grouped together. In compound reports, each component report is grouped individually and non-component elements, such as drawing objects, lines, and images, are not included in any group.

Syntax: **How to Group Tables and Components in a PowerPoint Slide**

```
SET PPTXGROUP = {ON|OFF}
```

The command can also be issued from within a report using:

```
ON TABLE SET PPTXGROUP = {ON|OFF}
```

In a StyleSheet:

```
TYPE=REPORT, PPTXGROUP = {ON|OFF}
```

where:

ON

Enables you to group elements together in a PPTX report.

OFF

Indicates no grouping of elements, which is the legacy behavior. OFF is the default value.

Example: **Displaying Group Tables and Components in a Standard Report**

In the following standard report (not Compound), the grouping is defined for the core report elements, excluding images and drawing objects, defined at the TYPE=REPORT level.

```
TABLE FILE GGSales
SUM DOLLARS/D12CM UNITS/D12C BUDDOLLARS/D12CM BUDUNITS/D12C
COMPUTE SHOWCAT/A100=CATEGORY||'.GIF';
BY REGION
BY CATEGORY
ON TABLE SUBHEAD
"Report Heading Here"
" "
" "
" "
HEADING
"Page Heading here"
FOOTING
"Page Footing here"
ON TABLE SUBFOOT
"Report Footing Here"
ON TABLE PCHOLD AS GROUPTTEST FORMAT PPTX
ON TABLE SET STYLE *
TYPE=REPORT, PPTXGROUP = ON, SQUEEZE=ON, FONT=TAHOMA,SIZE=12,
ORIENTATION=LANDSCAPE, $
TYPE=REPORT, OBJECT=LINE, POSITION=(9 1), DIMENSION=(1 5), COLOR=BLUE, $
TYPE=REPORT, IMAGE=IBILOGO, POSITION=(0 0), $
TYPE=TABLEHEADING, IMAGE=GGLOGO.GIF, POSITION=(6.5 .10), $
TYPE=DATA,COLUMN=SHOWCAT, IMAGE=(SHOWCAT), PRESERVERATIO=ON,
SIZE=(.5 .5), $
END
```

The output is:

| Report Heading Here | | | | | | |
|---------------------|----------|--------------|------------|----------------|--------------|---------|
| Page Heading here | | | | | | |
| Region | Category | Dollar Sales | Unit Sales | Budget Dollars | Budget Units | SHOWCAT |
| Midwest | Coffee | \$4,178,513 | 332,777 | \$4,086,032 | 335,526 | |
| | Food | \$4,338,271 | 341,414 | \$4,220,721 | 339,263 | |
| | Gifts | \$2,883,881 | 230,854 | \$2,887,620 | 232,318 | |
| Northeast | Coffee | \$4,164,017 | 335,778 | \$4,252,462 | 335,920 | |
| | Food | \$4,379,994 | 353,368 | \$4,453,907 | 351,431 | |
| | Gifts | \$2,848,289 | 227,529 | \$2,870,552 | 227,008 | |
| Southeast | Coffee | \$4,415,408 | 350,948 | \$4,431,429 | 355,693 | |
| | Food | \$4,308,731 | 349,829 | \$4,409,288 | 351,509 | |
| | Gifts | \$2,986,240 | 234,455 | \$2,967,254 | 235,045 | |
| West | Coffee | \$4,473,517 | 356,763 | \$4,523,963 | 358,784 | |
| | Food | \$4,202,337 | 340,234 | \$4,183,244 | 335,361 | |
| Page Footing here | | | | | | |

Example: Displaying Group Tables and Components in a Compound Report

In the following compound report, the grouping is defined for the component report. Additional objects on the page, including the chart image, logo image, lines, and text box are not included in the grouping.

```

SET HTMLARCHIVE=ON
SET PPTXGRAPHTYPE=PNG
SET PPTXGROUP=ON
COMPOUND LAYOUT PCHOLD FORMAT PPTX
UNITS=IN, $
SECTION=section1, LAYOUT=ON, MERGE=OFF, ORIENTATION=LANDSCAPE, PAGESIZE=PPT
Slide, $
PAGELAYOUT=1, NAME='Page layout 1', TEXT='Page layout 1', BOTTTMARGIN=0.5,
TOPMARGIN=0.5, $
OBJECT=STRING, NAME='text1', TEXT='<left>Grouping is supported within the
component reports of a compound report:
<ul type=disc>
<LI>Each table / report is grouped together. </LI>
<LI>Drawing objects such as images and lines are not included in any group.
</LI>
<LI>Charts are inserted as images.</LI></ul><div><br></div><br></left>',
POSITION=(2.764 4.958), MARKUP=ON, WRAP=ON, DIMENSION=(4.000 1.992),
FONT='TREBUCHET MS', COLOR=RGB(0 0 0), SIZE=10, $
COMPONENT='report1', TEXT='report1', POSITION=(1.028 2.083),
DIMENSION=(4.431 1.667), $
COMPONENT='chart2', TEXT='chart2', POSITION=(4.972 1.319), DIMENSION=(4.456
3.085), COMPONENT-TYPE=GRAPH, $
OBJECT=BOX, NAME='line1', POSITION=(0.498 6.500),
DIMENSION=(9.167 0.022), BACKCOLOR=BLACK, BORDER-COLOR=BLACK, $
OBJECT=BOX, NAME='line2', POSITION=(0.502 1.097),
DIMENSION=(9.167 0.022), BACKCOLOR=BLACK, BORDER-COLOR=BLACK, $
OBJECT=IMAGE, NAME='image4', IMAGE=ibologo.gif, ALT='',
POSITION=(0.502 0.499), DIMENSION=(1.861 0.506), $
END

SET COMPONENT='report1'
TABLE FILE GGSales
SUM
    GGSales.SALES01.DOLLARS
BY GGSales.SALES01.REGION
ACROSS LOWEST GGSales.SALES01.CATEGORY
ON TABLE SET PAGE-NUM NOLEAD
ON TABLE NOTOTAL
ON TABLE PCHOLD FORMAT PPTX
ON TABLE SET STYLE *
    INCLUDE=IBFS://FILE/IBI_HTML_DIR/ibi_themes/Warm.sty,$
$
ENDSTYLE
END

```

```

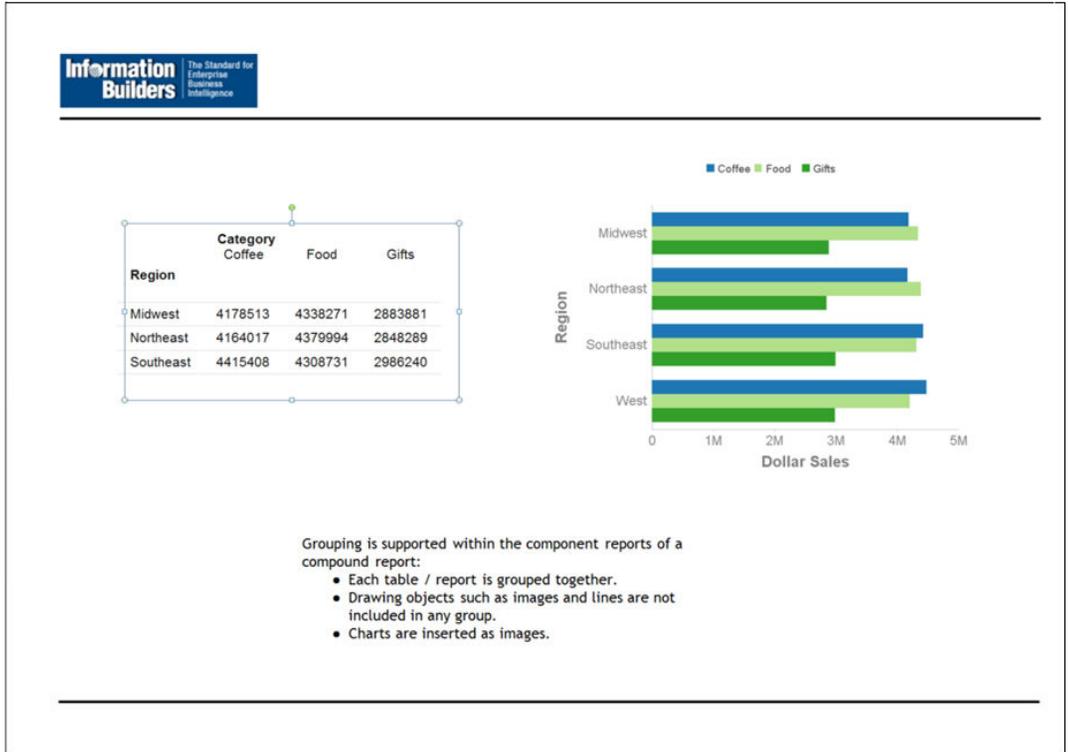
SET COMPONENT='chart2'
SET PAGE-NUM=NOLEAD
SET ARGGRAPHENGINE=JSCHART
SET EMBEDHEADING=ON
SET GRAPHDEFAULT=OFF
GRAPH FILE GGSales
SUM GGSales.SALES01.DOLLARS
BY GGSales.SALES01.CATEGORY
ACROSS GGSales.SALES01.REGION
ON GRAPH PCHOLD FORMAT HTML
ON GRAPH SET VZERO OFF
ON GRAPH SET GRWIDTH 1
ON GRAPH SET UNITS 'PIXELS'
ON GRAPH SET HAXIS 770.0
ON GRAPH SET VAXIS 405.0
ON GRAPH SET GRMERGE ADVANCED
ON GRAPH SET GRMULTIGRAPH 0
ON GRAPH SET GRLEGEND 1
ON GRAPH SET GRXAXIS 1
ON GRAPH SET LOOKGRAPH HBAR
ON GRAPH SET STYLE *

*GRAPH_SCRIPT
setPieDepth(0);
setPieTilt(0);
setDepthRadius(0);
setCurveFitEquationDisplay(false);
setPlace(true);
*END
INCLUDE=IBFS:/FILE/IBI_HTML_DIR/ibi_themes/Warm.sty,$
TYPE=REPORT, TITLETEXT='WebFOCUS Report', $
*GRAPH_SCRIPT
setLegendPosition(4);
*GRAPH_JS_FINAL
"blaProperties": {
    "orientation": "horizontal"
},
"agnosticSettings": {
    "chartTypeFullName": "Bar_Clustered_Horizontal"
}
*END
ENDSTYLE
END
-RUN

COMPOUND END

```

The output is:



Support for PNG Images in PDF Report Output

You can include a PNG image in PDF report output for a standard report and in Compound Report syntax.

Example: Adding a PNG Image in PDF Report Output

The image file for this sample is lbi_logo.png. The POSITION attribute places the image to the upper-left corner of the report page. The image is one inch wide and one-half inches high.

```

SET HTMLCSS = ON
TABLE FILE GGSales
SUM UNITS BY PRODUCT
ON TABLE SUBHEAD
"REPORT ON UNITS SOLD"
" "
" "
" "
" "
" "
ON TABLE SET PAGE-NUM OFF
ON TABLE PCHOLD FORMAT PDF
ON TABLE SET STYLE *
TYPE=REPORT, GRID=OFF, $
TYPE=TABLEHEADING, IMAGE=Ibi_logo.png, POSITION=(0 .30), SIZE=(1 0.5), $
ENDSTYLE
END

```

The output is:

REPORT ON UNITS SOLD



| <u>Product</u> | <u>Unit Sales</u> |
|----------------|-------------------|
| Biscotti | 421377 |
| Capuccino | 189217 |
| Coffee Grinder | 186534 |
| Coffee Pot | 190695 |
| Croissant | 630054 |
| Espresso | 308986 |
| Latte | 878063 |
| Mug | 360570 |
| Scone | 333414 |
| Thermos | 190081 |

Support for the Widescreen Slide Size

Support for the new widescreen default slide size (13.333 inches x 7.5 inches), introduced in Microsoft Office 2013, has been added to WebFOCUS. The new WIDESCREEN page size option was specifically designed for use with PowerPoint presentations, but you can use it with any output format.

You can define the page size for a standard report or Compound Report.

Example: Using WIDESCREEEN in a Standard Report

```
TABLE FILE GGSALES
HEADING
"New Widescreen Slide Size"
" "
SUM DOLLARS/D12CM UNITS/D12C
BY REGION
BY CATEGORY
ON TABLE PCHOLD FORMAT PPTX
ON TABLE SET STYLE *
TYPE=REPORT, PAGESIZE= WIDESCREEEN, ORIENTATION=LANDSCAPE,
SQUEEZE=ON, FONT='Arial', SIZE=24, COLOR=GRAY,
LEFTMARGIN=1, TOPMARGIN=0,$
END
```

Produces the following slide:

| New Widescreen Slide Size | | | |
|---------------------------|----------|--------------|------------|
| Region | Category | Dollar Sales | Unit Sales |
| Midwest | Coffee | \$4,178,513 | 332,777 |
| | Food | \$4,338,271 | 341,414 |
| | Gifts | \$2,883,881 | 230,854 |
| Northeast | Coffee | \$4,164,017 | 335,778 |
| | Food | \$4,379,994 | 353,368 |
| | Gifts | \$2,848,289 | 227,529 |
| Southeast | Coffee | \$4,415,408 | 350,948 |
| | Food | \$4,308,731 | 349,829 |
| | Gifts | \$2,986,240 | 234,455 |
| West | Coffee | \$4,473,517 | 356,763 |
| | Food | \$4,202,337 | 340,234 |
| | Gifts | \$2,977,092 | 235,042 |

Example: Using WIDESCREEEN in a Compound Report

```

COMPOUND LAYOUT PCHOLD FORMAT PPTX
SECTION=S1,LAYOUT=ON,MERGE=OFF,ORIENTATION=LANDSCAPE, PAGESIZE=WIDESCREEEN, $
PAGELAYOUT=1, $
COMPONENT=Sales, TYPE=REPORT, POSITION=(1 .75), DIMENSION=( * * ), $
COMPONENT=Units, TYPE=REPORT, POSITION=(8 .75), DIMENSION=( * * ), $
END
SET COMPONENT=Sales
TABLE FILE GGSales
"Sales in Dollars"
" "
SUM DOLLARS/F8M
BY REGION NOPRINT
BY ST
BY CITY
ON TABLE HOLD FORMAT PPTX
ON TABLE SET STYLE *
TYPE=REPORT, SQUEEZE=ON, FONT=TAHOMA, COLOR=GREEN, SIZE=18,$
END
SET COMPONENT=Units
TABLE FILE GGSales
"Sales in Units"
" "
SUM UNITS/D8C
BY REGION NOPRINT
BY ST
BY CITY
ON TABLE HOLD FORMAT PPTX
ON TABLE SET STYLE *
TYPE=REPORT, SQUEEZE=ON, FONT=TAHOMA, COLOR=BLUE, SIZE=18,$
END
COMPOUND END

```

Produces the following slide:

| Sales in Dollars | | | Sales in Units | | |
|------------------|---------------|--------------|----------------|---------------|------------|
| State | City | Dollar Sales | State | City | Unit Sales |
| IL | Chicago | \$3,924,401 | IL | Chicago | 307,581 |
| MO | St. Louis | \$3,761,286 | MO | St. Louis | 297,727 |
| TX | Houston | \$3,714,978 | TX | Houston | 299,737 |
| CT | New Haven | \$3,782,049 | CT | New Haven | 302,440 |
| MA | Boston | \$3,707,986 | MA | Boston | 301,909 |
| NY | New York | \$3,902,265 | NY | New York | 312,326 |
| FL | Orlando | \$3,923,215 | FL | Orlando | 310,302 |
| GA | Atlanta | \$4,100,107 | GA | Atlanta | 330,283 |
| TN | Memphis | \$3,687,057 | TN | Memphis | 294,647 |
| CA | Los Angeles | \$3,772,003 | CA | Los Angeles | 298,070 |
| | San Francisco | \$3,870,258 | | San Francisco | 312,500 |
| WA | Seattle | \$4,010,685 | WA | Seattle | 321,469 |

Deferred Reporting

A Deferred Report is a report that you can run as a background task, while continuing other work. Once you submit a report, you can continue working while WebFOCUS processes the report.

Running a Deferred Request With a URL

The URL Run option is enhanced to support submitting run deferred requests with or without the custom deferred report description parameter (IBFS_tDesc).

To run a report deferred, which requires user authentication with WebFOCUS security, use the following syntax:

```
http://host:port/ibi_apps/run/ibfs/WFC_path_to_item/item_name.fex?  
IBFS_action=runDeferred&IBFS_tDesc=Custom_Deferred_Report_Description  
&PARM1=value
```

where:

host:port

Is the server name and port of the local installation of WebFOCUS.

WFC_path_to_item

Is the full path to the report in the repository. For example, WFC/Repository/Domain/Report1.fex. You can obtain the full path to the report from the Properties option.

item_name.fex

Is the name of the report itself.

Custom_Deferred_Report_Description

Specifies the custom description assigned to the deferred report request. The IBFS_tDesc parameter is optional. You are prompted for the deferred report description when IBFS_tDesc is not included on the URL and the report item properties do not have the *Use Title for Deferred Report Description* option selected.

&PARM1=value

Optionally, specify amper variable and value pairs.

The following examples show how to code an HTML page relative link to run a deferred request:

- Without parameters.
- Passing values for amper variables.
- With the custom deferred report description.
- With the custom deferred report description and passing values for amper variables.

Note:

- The following examples each contain a single line of code.

Example: Running a Deferred Request Without Parameters

The following is a relative URL to submit a run deferred request without parameters:

```
<A HREF='/ibi_apps/run/ibfs/WFC_path_to_item/item_name.fex?
IBFS_action=runDeferred'> Run Deferred - Prompts for
Deferred Report Description with Title value of the report. </A>
```

Example: Running a Deferred Request Passing Values for Amper Variables

The following is a relative URL to submit a run deferred request passing values for parameters (amper variables):

```
<A HREF='/ibi_apps/run/ibfs/WFC_path_to_item/item_name.fex?
IBFS_action=runDeferred&PARM1=_FOC_NULL&PARM2=_FOC_NULL'>
Run Deferred - Prompts for Deferred Report Description
with Title value of the report. </A>
```

Example: Running a Custom Deferred Request With the Custom Deferred Report Description

The following is a relative URL to submit a run deferred request with the Custom Deferred Report Description parameter:

```
<A HREF='/ibi_apps/run/ibfs/WFC_path_to_item/item_name.fex?
IBFS_action=runDeferred&IBFS_tDesc=Custom Deferred Report Description'>
Custom Deferred Report Description parameter passed. </A>
```

Example: Running a Deferred Request With the Custom Deferred Report Description and Amper Variables

The following is a relative URL to submit a run deferred request with the Custom Deferred Report Description parameter and passing values for parameters (amper variables) referenced in the procedure (FEX).

In the following example, the default value `_FOC_NULL` is passed for two parameters (PARM1 and PARM2):

```
<A HREF='/ibi_apps/run/ibfs/WFC_path_to_item/item_name.fex?
IBFS_action=runDeferred&IBFS_tDesc=Custom Deferred Report
Description&PARM1=_FOC_NULL&PARM2=_FOC_NULL'> Custom
Deferred Report Description and parameters referenced in report passed.>
```

Scheduling and Distribution

ReportCaster is a scheduling and distribution application that centralizes the execution and distribution of WebFOCUS reports, the contents of URLs, and files. ReportCaster supports multiple administrators and provides a single point of control for managing information distribution within an organization.

In this chapter:

- Using Parameter Values to Burst Active Dashboards and Compound Reports
 - Using the Email of the Schedule Owner as the Default Reply Address
 - Using the WebFOCUS Schedule Task Type to Schedule Other Schedules
 - Cloning Tasks in the Advanced Scheduling Tool
 - Overwriting Reports Distributed to the Repository
 - Downloading ReportCaster Job Trace Files
 - Email Distribution Using the Cc and Bcc Email Options
 - Viewing and Downloading Configuration Files
 - Tracking User Access of Library Reports
 - Deleting All Inactive or Nonrecurring Schedules
 - Tracking ReportCaster Configuration Events
 - Using the Windows Command Prompt to Delete Inactive and Nonrecurring Schedules
 - Enabling and Disabling Schedules Using the Shortcut Menu Option
 - Applying Global Updates for Pre and Post-Processing Procedures
 - Ability to Enable or Disable Multiple Schedules
 - Restricting Distribution Server Console Access to an IP Address List
 - Using Cut and Paste to Move Library Reports
 - Restricting User Input of Email Addresses and Domains
-

Using Parameter Values to Burst Active Dashboards and Compound Reports

In addition to the ability to distribute sections of a single report to individual users using standard bursting, you can now use a parameterized filter to distribute sections of reports. This new feature allows you to burst reports that originally could not be burst, including active dashboards and Compound Reports in Excel format.

When scheduling a report that contains a filter with a static or dynamic multiselect parameter, access the Parameter options and select values from the multiselect parameter that you want to include in the distributed report or reports, using the Parameter Value for Amper Variable dialog box. In this dialog box, the Repeat Task for Each Selected Value check box displays, as shown in the following image.



Selecting the Repeat Task for Each Selected Value check box allows you to repeat a schedule task process for each selected parameter value. When the schedule is run, the recipient receives separate reports for each selected parameter value, as shown in the following image.



When you select the Repeat Task for Each Selected Value check box, you can select the Run Pre/Post-RPC Every Time check box to execute pre and post-processing procedures for each value you choose in your multiselect filter, as shown in the following image.



If the Run Pre/Post-RPC Every Time check box is not selected, pre and post-processing procedures will execute only once for all task repetitions.

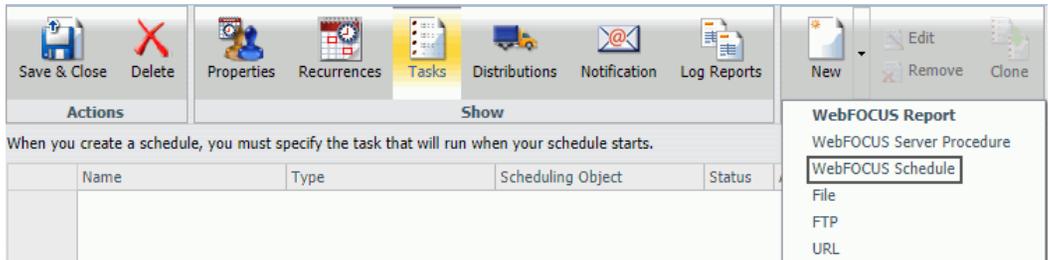
The Repeat Task for Each Selected Value check box must be selected before the Run Pre/Post-RPC Every Time check box can be selected.

Learn More

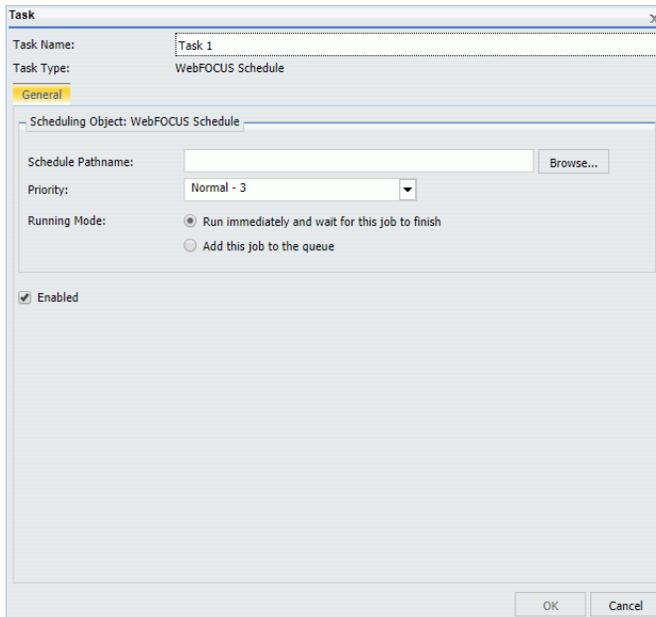
For more information, see the *Using Parameter Values to Burst Active Dashboards and Compound Reports* topic in the *ReportCaster* technical content.

Using the WebFOCUS Schedule Task Type to Schedule Other Schedules

The WebFOCUS Schedule task feature allows you to use a single schedule to initiate one or more schedules. You can set WebFOCUS Schedule tasks to run immediately before other schedules in the Distribution Server queue, or run independent of other schedules in the Distribution Server queue. The WebFOCUS Schedule task type is accessed through the Advanced Scheduling tool, as shown in the following image.



When *WebFOCUS Schedule* is selected, The WebFOCUS Schedule Task dialog box opens, as shown in the following image.

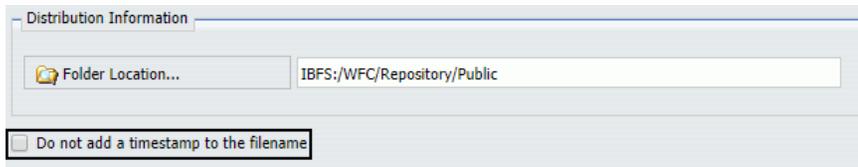


For more information, see the *ReportCaster Guide* technical content.

Overwriting Reports Distributed to the Repository

You can now overwrite a single report after each scheduled distribution. Instead of generating multiple timestamped files after each scheduled distribution, this feature provides the option to remove timestamps from the filename of reports distributed to the Repository or your file system.

To use this feature, create a schedule that uses Repository distribution. When setting distribution information in the Distribution tab, select the *Do not add a timestamp to the filename* check box, as shown in the following image.



For more information, see the *ReportCaster Guide* technical content.

Email Distribution Using the Cc and Bcc Email Options

You can now use the carbon copy and blind carbon copy email options for schedules that are configured to use email distribution. These options allow you to send copies of an email distribution to separate recipients, simplifying the creation of scheduled email distributions. If you use the Blind Carbon Copy field to send email distributions to individual recipients, each recipient will not see the other recipients of the email distribution.

To use this feature in the Basic Scheduling tool, right-click a report, chart, document, visualization, or portal, point to *Schedule*, and then select the *Email* distribution option. The Distribution tab displays, as shown in the following image.

The screenshot shows the 'Category Sales- Schedule (Basic)' dialog box. The 'Distribution' tab is selected, and the 'Email' distribution option is active. The 'Distribution Information' section contains the following fields:

- Type: Email Address(s)
- To: [Empty text box]
- From: Administrator
- Reply Address: [Empty text box]
- Subject: Category Sales

The 'Email Information' section contains the following options:

- Send the report as inline message
- Send all reports as attachments
 - Message: Please see attachment(s). [Browse...]
 - File: [Empty text box] [Browse...]
- Packet Email: Default (Yes)

The 'Report Compression' section contains the following options:

- Add Report to Zip File
- Zip File Name: [Empty text box]
- Zip Minimum Size: 0 KB (Override Default)

In the Distribution Information section, click the *To* button to open the Enter Email Addresses dialog box, as shown in the following image.

The screenshot shows the 'Enter Email Addresses' dialog box. It contains the following fields:

- To: [Empty text box]
- Cc: [Empty text box]
- Bcc: [Empty text box]
- Reply: [Empty text box]

Buttons: OK, Cancel

To use this feature in the Advanced Scheduling tool, click the *Distributions* tab, click the drop-down arrow on the *New* tab, and then click *Email*. The Distribution dialog box opens, as shown in the following image.

The screenshot shows the 'Distribution' dialog box with the following fields and options:

- Distribution Name:** Email
- Distribution Type:** Email
- General** (selected) / Options
- Distribution Information:**
 - Type: Email Address(s)
 - To...
 - From...: Administrator
 - Reply Address...
 - Subject:
- Email Information:**
 - Select one report as inline message
 - Send all reports as attachments
 - Message: Please see attachment(s).
 - File: Browse...
 - Packet Email: Default (Yes)
- Report Compression:**
 - Add Report to Zip File
 - Zip File Name:
 - Zip Minimum Size: 0 KB (Override Default)
 - Enabled

In the Distribution Information section, click the *To* button to open the Enter Email Addresses dialog box, as shown in the following image.

The screenshot shows the 'Enter Email Addresses' dialog box with the following fields:

- To:
- Cc:
- Bcc:
- Reply:

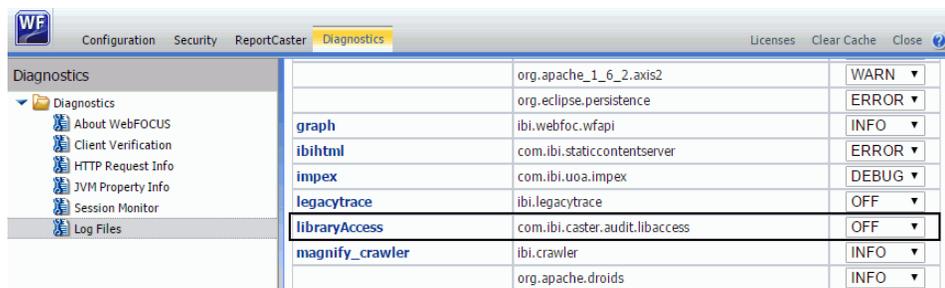
OK and Cancel buttons are located at the bottom right.

For more information, see the *ReportCaster Guide* technical content.

Tracking User Access of Library Reports

You can now track when users view Library reports. This feature enables you to keep a record of how often certain Library reports are accessed, and to comply with regulatory auditing requirements of your organization.

To access the libraryAccess log file, launch the Administration Console, click the Diagnostics tab, and then click *Log Files*. The following image shows the link you can click to view the libraryAccess log and the menu to set the Log Level option for the libraryAccess log.



When you access a Library report through the Resources tree, a portal, the ReportCaster Explorer, the ReportCaster API, a SOAP Web Service, or a RESTful WebService, a record of the event will be created in the libraryAccess.log file. Each line in a libraryAccess log file shows information in the following format:

```
[YYYY-MM-DD hh:mm:ss,sss] INFO [Thread Identifier] User_ID - FullPath:
IBFS_address; Description: Library_Report_Title; Version Number:
Library_Report_Version_Number
```

The following image shows two libraryAccess logs generated from one Library report.



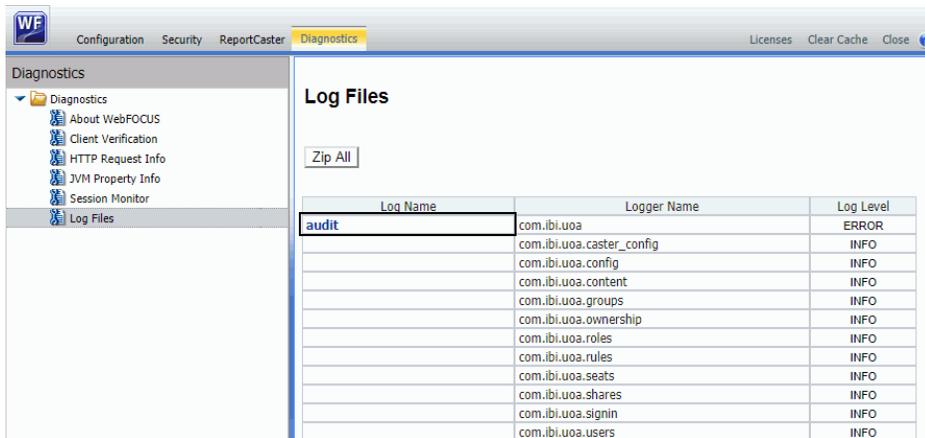
Note: The description information is to the right of the full path information.

For more information, see the *WebFOCUS Security and Administration* technical content.

Tracking ReportCaster Configuration Events

You can now track when ReportCaster Configuration settings are changed. This feature enables you to keep continuous records of how and when ReportCaster Configuration settings are changed, and to comply with any regulatory auditing requirements of your organization.

To access the audit log file, launch the Administration Console, click the Diagnostics tab, and then click *Log Files*. The following image shows the link that you can click to view the audit log.



When you change ReportCaster Configuration settings, a record of the event is created in the audit.log file in the following format:

```
[YYYY-MM-DD hh:mm:ss,sss] INFO caster_config monitor_ID user_ID old
CasterConfig file: dserver_file_ID.xml
```

The following image shows a ReportCaster Configuration log that is generated after a change to the ReportCaster Configuration settings.

```
[2017-08-17 13:02:17,756] INFO caster_config 92fd885c494e367 admin old CasterConfig file: dserver_1502989337756.xml
```

Before changes to the ReportCaster Configuration settings are saved, the previous settings of the ReportCaster Configuration tool are recorded in a timestamped *dserver.xml* file. This file is saved in the *...ibi\WebFOCUSnn* directory, where *nn* is the WebFOCUS release number.

For more information, see the *WebFOCUS Security and Administration* technical content.

Enabling and Disabling Schedules Using the Shortcut Menu Option

You can now enable or disable schedules using the shortcut menu options for a schedule in the Resources tree or ReportCaster Explorer. This method provides an option for changing the activation of a schedule without requiring you to open the schedule.

To use this option, right-click an enabled schedule in the Resources tree or ReportCaster Explorer and click *Disable*. If the schedule is already disabled, the menu option is *Enable*.

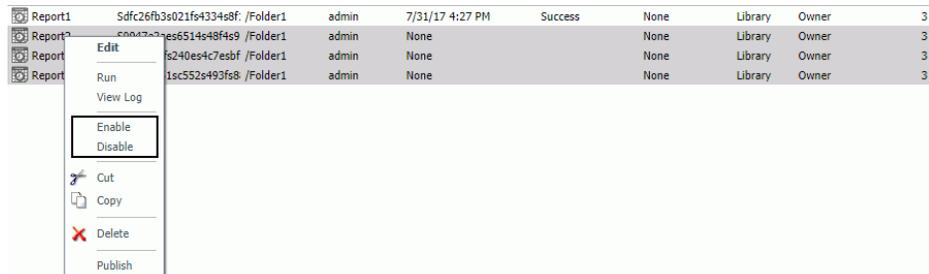
For more information, see the *ReportCaster Guide* technical content.

Ability to Enable or Disable Multiple Schedules

You can now enable or disable a group of schedules at the same time using a single multi-select action in the ReportCaster Explorer. This feature provides an additional option to enabling or disabling schedules individually.

To use this option, from the ReportCaster Explorer, select the schedules you want to enable or disable, right-click the schedules, and then click *Enable* or *Disable*.

The following image highlights the *Enable* and *Disable* options in the shortcut menu.

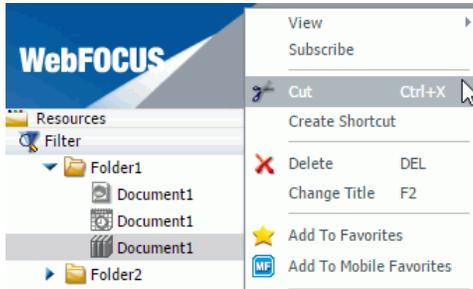


For more information, see the *ReportCaster Guide* technical content.

Using Cut and Paste to Move Library Reports

You can now use the Cut and Paste options to move Library reports between folders in the Repository. The ability to cut and paste a Library report is determined by your user permissions or privileges for the folder.

To use the Cut option, right-click a Library report, as shown in the following image.



To use the Paste option, right-click a folder after performing a cut, and click *Paste*.

For more information, see the *ReportCaster Guide* technical content.

Using the Email of the Schedule Owner as the Default Reply Address

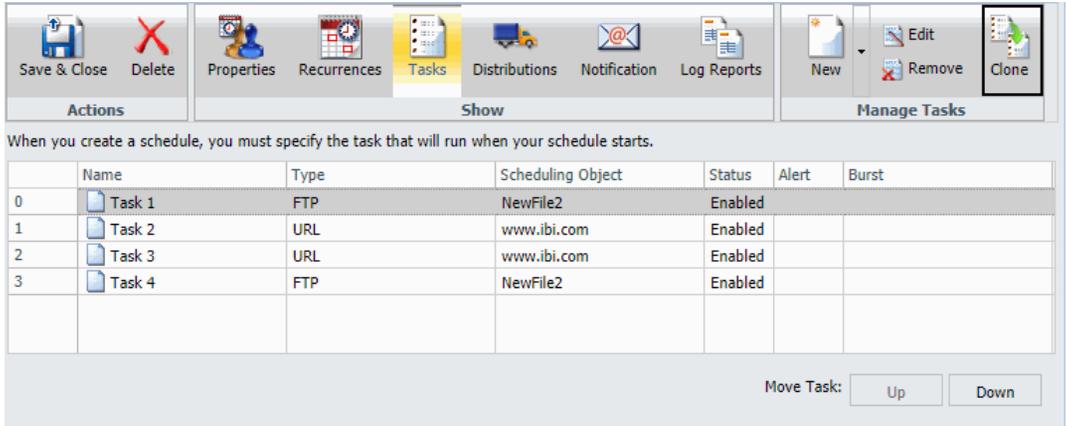
If a default Mail Reply Address is not provided in the ReportCaster Configuration tool, the email address of the user signed in to WebFOCUS becomes the default Reply Address used in the Basic and Advanced Scheduling tools. This feature provides another default option for the Mail Reply Address field. ReportCaster obtains the email address of the user from the WebFOCUS security system.

For more information, see the *ReportCaster Guide* technical content.

Cloning Tasks in the Advanced Scheduling Tool

You can now clone an existing task in the Advanced Scheduling tool. This feature allows you to make a copy of any task. When you clone a task, every option and setting from the existing task is present in the cloned task.

To use this feature, select a task in the Advanced Scheduling tool that you want to clone. Selecting a task activates the Clone button in the Manage Tasks group, as shown in the following image.



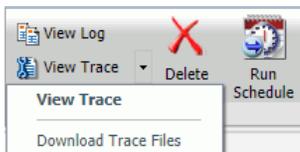
To clone your selected task, click the *Clone* button. The cloned task will appear in the task list. For more information, see the *ReportCaster Guide* technical content.

Downloading ReportCaster Job Trace Files

In addition to opening and viewing trace files in your browser, you can now download trace files created by ReportCaster jobs. This feature allows you to download trace files of any size, as a zip file.

To access this feature, navigate to the ReportCaster Console, and click the *Job Log* tab. Choose a folder in the left panel and click an existing job log generated from a job that has been configured to contain traces.

Navigate to the Manage Job Logs group on the ReportCaster Console ribbon and click the *View Trace* arrow button. The *Download Trace Files* option appears, as shown in the following image.

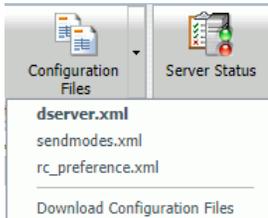


Click *Download Trace Files* to download the trace files as a zip file.

For more information, see the *ReportCaster Guide* technical content.

Viewing and Downloading Configuration Files

You can now use the Configuration Files button to view and download configuration files from the ReportCaster Console. The Configuration Files button is shown in the following image.



This feature allows you to view the following files:

- dserver.xml**. Contains a record of current ReportCaster configuration settings.
- sendmodes.xml**. Contains information about mime output file formats.
- rc_preference.xml**. Contains information about the display of options in the UI.

Clicking one of the file options displays the file information in a browser window. You can also click *Download Configuration Files* to download all files as a single zip file.

To access this feature, navigate to the ReportCaster Console and, in the Show group on the ribbon, click *Configuration*. The Configuration Files button appears on the ribbon, in the Manage Configuration group.

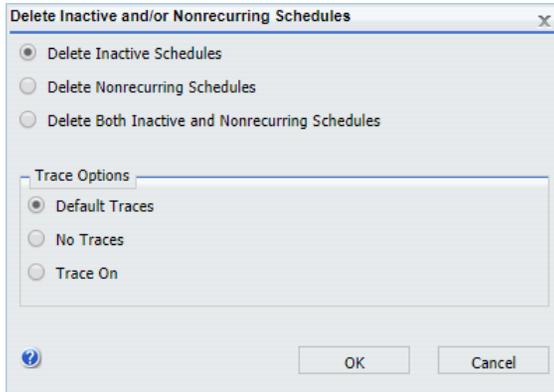
For more information, see the *ReportCaster Guide* technical content.

Deleting All Inactive or Nonrecurring Schedules

You can now delete all inactive or nonrecurring schedules in your repository. This feature allows you to delete unused schedules. Removing unused schedules also reduces the time and resources needed when performing migration or change management procedures.

To use this feature, navigate to *ReportCaster Status* from the Tools menu to open the ReportCaster Console. On the ribbon, in the Tools group, click *Delete Schedules*.

The Delete Inactive and/or Nonrecurring Schedules dialog box displays, as shown in the following image.



You can now choose to delete inactive schedules, nonrecurring schedules, or both inactive and nonrecurring schedules. You can also select trace options.

For more information, see the *ReportCaster Guide* technical content.

Using the Windows Command Prompt to Delete Inactive and Nonrecurring Schedules

You can now use the Windows command prompt `purgesched` utility to delete all inactive or nonrecurring schedules in your repository. The `purgesched` utility allows you to delete unused schedules. Removing unused schedules reduces the time and resources needed when performing migration or change management procedures. You can use the `purgesched` utility or the Delete Schedules feature in the ReportCaster Console to delete unused schedules.

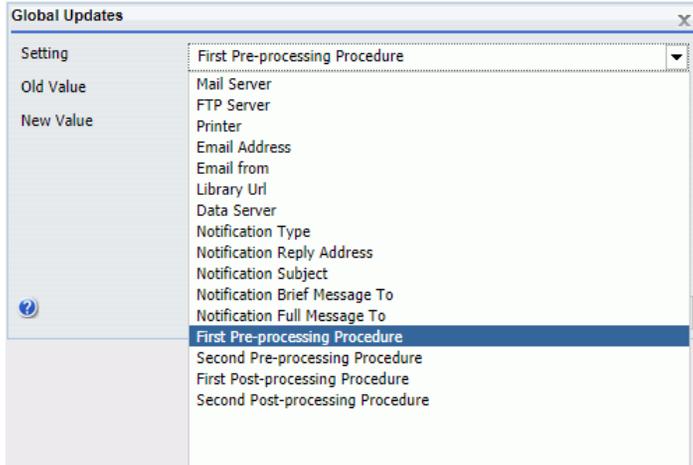
To access the `purgesched` utility, use the Windows command prompt to navigate to the `.../ibi/WebFOCUSnn/ReportCaster/bin` directory, where `nn` is the version number of your WebFOCUS software. After the `/bin` text, type `purgesched`, and press the Enter key to display the ReportCaster Schedule Purge Utility Operation options.

For more information, see the *ReportCaster Guide* technical content.

Applying Global Updates for Pre and Post-Processing Procedures

You can now update pre and post-processing procedures for all schedules at once using the Global Updates dialog box.

To use this feature, navigate to the ReportCaster Console. On the ribbon, in the Tools group, click the *Global Updates* tab. When the Global Updates dialog box appears, click the *Setting* drop-down list box to choose from the list of processing procedures, as shown in the following image.



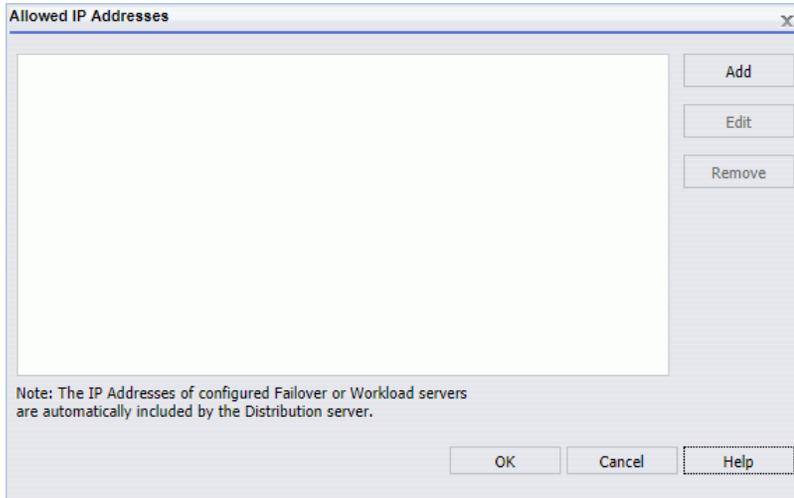
Once you select a processing procedure, type the old value in the *Old Value* field, and type the new value in the *New Value* field. Then click *Update* to update the value in all schedules.

For more information, see the *ReportCaster Guide* technical content.

Restricting Distribution Server Console Access to an IP Address List

You can now restrict Distribution Server access to one or more IP addresses to prevent denial of service (DoS) attacks against the server. A DoS attack is a malicious cyber-attack that overloads a server with requests from multiple IP addresses, which blocks legitimate addresses from accessing the server. This new feature enhances network security by configuring your Distribution Server to only accept TCP/IP requests from the IP addresses you provide.

To use this feature, access the ReportCaster Console Configuration tab and open the Distribution Servers folder from the Configuration pane. Click the *Restrict to IP Addresses* open folder button and add your selected IP addresses to the Allowed IP Addresses list, as shown in the following image.



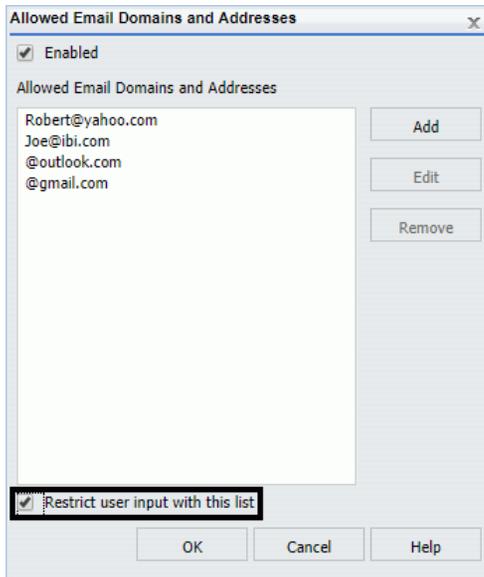
For more information, see the *ReportCaster Guide* technical content.

Restricting User Input of Email Addresses and Domains

You can restrict user input of email addresses and domains to those listed in the Allowed Email Domains and Addresses dialog box. Enabling this feature allows users to easily select email addresses and domains only from a pre-approved list, removing the need to add addresses manually.

To access the Allowed Email Domains and Address dialog box, navigate to the ReportCaster Console, click the *Configuration Tab*, click the *Email Distribution* folder, and then click the *Allowed Email Domains and Addresses* folder.

To activate this feature, select the *Enabled* check box, and then select the *Restrict user input with this list* check box, which is highlighted in the following image.



Once this feature is activated, users working with Email Distribution options, Notification Email options, Distribution Lists, Distribution Files, and Dynamic Distribution Lists can only use the email addresses and domains in this list.

For more information, see the *ReportCaster Guide* technical content.

Security and Administration

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

In this chapter:

- [New Setting Redirect /ibi_apps to Establish the Default Home Page](#)
 - [Magnify Search Administration Console Settings Transferred to the WebFOCUS Administration Console](#)
 - [Updates to Page Privileges](#)
 - [New Setting Technical Preview Features Activates Technical Preview Mode](#)
 - [New Search Fields in the Set Sharing Dialog Box](#)
 - [Localization Support](#)
-

New Setting Redirect /ibi_apps to Establish the Default Home Page

The new Redirect /ibi_apps to setting was added to the BI Portal page of the Administration Console Configuration tab. This setting is configured to display the New Home Page, developed for WebFOCUS Release 8.2 Version 02, by default. However, options in this setting enable administrators to replace the default display of the new home page with the Legacy Home Page, developed for WebFOCUS Release 8.2 Version 01, or a Custom Welcome Page, such as, a Portal, a Report, or a focexec-generated HTML page.

Magnify Search Administration Console Settings Transferred to the WebFOCUS Administration Console

To help consolidate system administration into a single location, general settings that appeared in the Feeding Concurrently and the Dynamic Partition Clean Up sections of the Magnify Console now appear on the Magnify page of the WebFOCUS Administration Console Configuration tab, as shown in the following image. These settings no longer appear in the Magnify Console. For more information about individual settings, see the *Magnify Settings* topic in Appendix A of the *WebFOCUS Security and Administration Guide*.

| Magnify | |
|-----------------------------------------------|------------------------------------------------------------------------|
| Configuration Directory | <input type="text" value="{IBI_DOCUMENT_ROOT}/config/magnify"/> |
| Index Directory | <input type="text" value="{IBI_DOCUMENT_ROOT}/magnify/lucene4_index"/> |
| Feed Cache Directory | <input type="text" value="{IBI_DOCUMENT_ROOT}/magnify/feedcache"/> |
| Collections File | <input type="text" value="collections.xml"/> |
| Maximum Number of Search Results. | <input type="text" value="300"/> |
| Enable Suggest Index Creation | <input type="checkbox"/> |
| Enable Feed | <input checked="" type="checkbox"/> |
| Feed minimum file threads | <input type="text" value="6"/> |
| Feed maximum file threads | <input type="text" value="25"/> |
| Feed minimum record threads | <input type="text" value="6"/> |
| Feed maximum record threads | <input type="text" value="25"/> |
| Feed keep alive duration (ms) | <input type="text" value="500"/> |
| Dynamic Partition clean up | <input type="checkbox"/> |
| Dynamic Partition clean up interval (minutes) | <input type="text" value="15"/> |
| Default partition size (GB) | <input type="text" value="10"/> |

Updates to Page Privileges

In order to give users access to the new WebFOCUS Designer tool, a new privilege, named Designer, was added to the Advanced Reporting privileges list with the following description: User can create and edit Pages (dashboards, prompts/forms, InfoApps).

In the Application Development privileges list, the description in the existing Portal Page Designer privilege was updated to replace the term Page Editor with Portal Page Designer. The description now states that it gives a user the ability to use the Portal Page Designer to create and edit Portal pages.

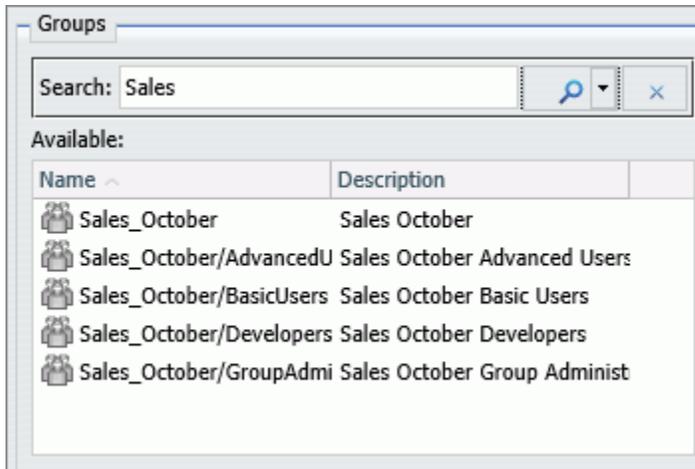
In the Basic Reporting privileges list, the scope of accessible resources granted by Run Procedures privilege was expanded from reports, graphs, and schedules to include pages and static content. To reflect this change, the Run Procedures privilege was renamed to Run Resources, and the following new description was assigned to it: User can run resources including reports, graphs, pages, schedules and access static content.

New Setting Technical Preview Features Activates Technical Preview Mode

The new Technical Preview Features (IBI_TECHPREVIEW_FEATURES) setting activates the technical preview mode, which enables users to view and evaluate specific features planned for an upcoming release. This setting is located on the Other Settings page of the Administration Console Configuration tab. When this setting contains a semicolon-delimited list of the code names of one or more of the technical preview features that are included in the product version that is currently installed, WebFOCUS activates the technical preview mode, and users can open and test the new features included in the list.

New Search Fields in the Set Sharing Dialog Box

Search fields were added to the Groups and Users lists in the Set Sharing dialog box in WebFOCUS Release 8.2 Version 02. Using these Search fields, you can locate groups or users without having to scroll through a list. The new Search fields limit the display of entries in the Available list to those groups or users that match the name or phrase you type in the search term, as shown in the following image.



Localization Support

NLV support for Australian, Canadian, and United Kingdom localizations of English is available for the Reporting Server and for the WebFOCUS Client. For more information, see the *Localization (NLV) and NLS Limitations* section in the *WebFOCUS Release Guide* for Release 8.2 Version 02.

Server Enhancements

This section describes new server features on the Web Console.

The server provides a wide range of capabilities and tools for adapter configuration, metadata creation, application and path management, security control, communications configuration, and for monitoring, tuning, and troubleshooting server performance. Authorized users can perform most server administration tasks from a graphical Web Console.

The server supports WebFOCUS reporting functions, extraction, load and transformation functions, and analysis and data access control functions.

In this chapter:

- [Applications](#)
 - [Configuration and Monitoring](#)
 - [Core Server and Clients](#)
 - [Diagnostics](#)
 - [Metadata](#)
 - [Security](#)
 - [Web Console](#)
 - [Adapters](#)
 - [DataMigrator](#)
 - [Resource Analyzer and Resource Governor](#)
-

Applications

This section provides detailed descriptions of new features for server applications.

Executing a Repository FOCEXEC From EDASPROF

In the current release, repository procedures can be executed, and Master and Access Files stored in a repository can be accessed, during server, group, and user profile execution after all DBMS connections and an APP MAP command to the repository have been executed.

For information about creating and managing an SQL Repository, see Chapter 3, *Managing Applications*, in the *Server Administration* manual.

Storing Deferred Reports in an Application Directory or an SQL Repository

Deferred requests and reports can be written to any application, including applications that are stored in an SQL repository.

To route deferred requests to any application:

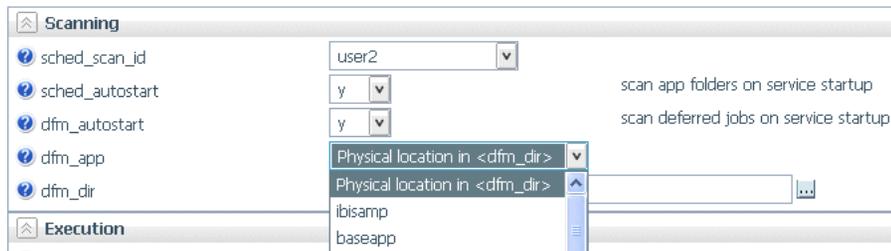
1. Sign on to the server with a server administrator ID.
2. On the Workspace menu, expand *Special Services and Listeners*.
3. Right-click *SCHEDULER*, and select *Properties* from the shortcut menu.

The Scheduler Configuration page opens.

By default, *dfm_app* is set to a physical directory location.

4. You can accept or edit the *dfm_dir* location or select an application from the *dfm_app* drop-down list, as shown in the following image.

Scheduler Configuration



If you select an application, it will override the directory identified in *dfm_dir*, and the *dfm_dir* text box will be hidden.

5. Click *Save and Restart Scheduler*.

Deferred requests and output will be returned to that application

Unification of Deferred and Schedule Processing

Deferred (DFM) execution functionality has been extended by unifying major features for deferred execution and scheduler processing. These extended features include the ability to send email notifications on start, completion, and failure of deferred jobs, deriving the email destination from the deferred job, deferred job settings, or the connected User ID, and unified logging. Scheduler and DFM properties have been restructured to reflect the unification of their configuration settings.

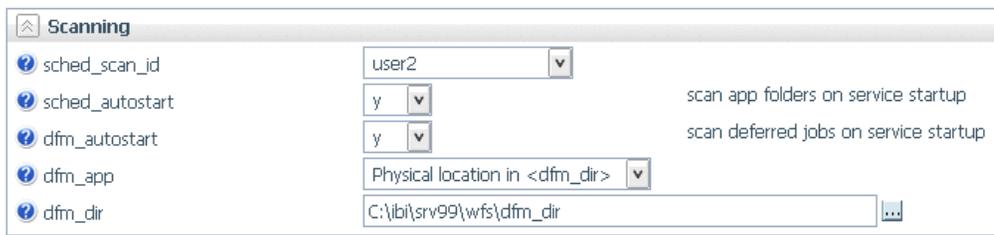
The new keywords `dfm_email` and `dfm_email_from_userid` were added for DFM jobs to provide a variety of email destinations.

To configure deferred and scheduler properties, right-click *SCHEDULER* in the Special Services and Listeners folder on the Workspace tab, and select *Properties*.

The Scheduler Configuration page opens. The page has Scanning, Execution, Logging and Output, and E-mail Notification sections.

Reference: Scheduler Scanning Properties

The Scheduler Scanning properties are shown in the following image.



`sched_scan_id`

Determines what user ID the Scheduler uses to scan the application path for scheduled flows. It can be used to restrict the set of application directories scanned by the Scheduler to a subset of the APP PATH of the effective administrator. The default value is the effective administrator ID of the server.

`sched_autostart`

If set to *y*, scanning for scheduled events is started when the DFM listener or a Scheduler service starts. If a service is not running, turning on `sched_autostart` will not make scanning available.

If set to *n*, a user may still start the scanning manually.

Depending on the number of files in the application path, `sched_autostart` may affect server performance.

The default value is *n*.

`dfm_autostart`

If set to *y* (the default), the DFM listener/Scheduler Service is started with the server. If it is set to *n* the Service does not start automatically on server start. The user can start the Scheduler manually.

`dfm_dir`

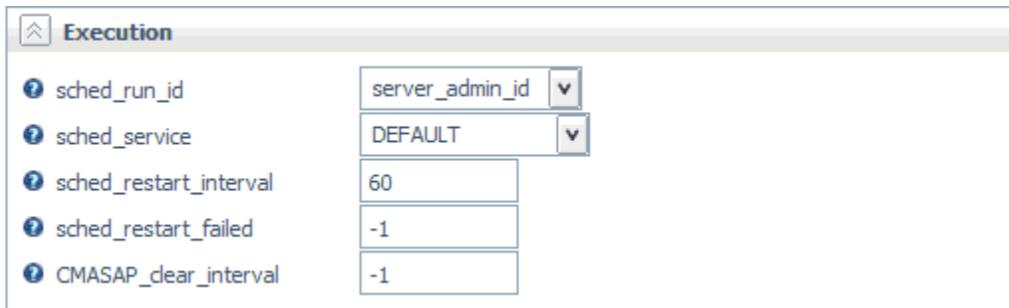
Defines the location where deferred requests and responses are stored. This is ignored if `dfm_app` is set.

`dfm_app`

Defines the application name where deferred requests and responses are stored.

Reference: Scheduler Execution Properties

The Scheduler Execution properties are shown in the following image.



| Property | Value |
|-------------------------------------|-----------------|
| <code>sched_run_id</code> | server_admin_id |
| <code>sched_service</code> | DEFAULT |
| <code>sched_restart_interval</code> | 60 |
| <code>sched_restart_failed</code> | -1 |
| <code>CMASAP_clear_interval</code> | -1 |

`sched_run_id`

Determines the user ID the a flow uses to run scheduled flows, either `server_admin_id` or user. The default value is `server_admin_id`.

Note: Flows submitted from the Data Management Console, the Web Console, or CMRUN are run under the userid that submits the specific flow.

`sched_service`

Defines the agent service that the Scheduler will use when running flows. If not set, the DEFAULT service will be used.

`sched_restart_interval`

Specifies the time interval in seconds between restart attempts for all restartable flows. The default value is 60 seconds.

`sched_restart_failed`

Determines whether scheduled agents will be restarted after they fail. The valid values are:

n - Failed agents will be restarted at most *n* times.

0 - Failed agents will not be restarted.

-1 - Failed agents will be restarted infinitely.

The default value is -1.

`CMASAP_clear_interval`

Specifies how often (in seconds) CMASAP agents are removed from the agents list. The default value is -1, meaning never.

Reference: Scheduler Logging and Output Properties

The Scheduler Logging and Output properties are shown in the following image.

| Logging and Output | |
|----------------------------------------|-------------------------------|
| <code>sched_log_lines</code> | 20 |
| <code>sched_standalone_log</code> | <input type="checkbox"/> |
| <code>sched_dmlog_app</code> | Default location in catalog ▼ |
| <code>sched_log_commit_interval</code> | 10 |
| <code>sched_log_commit_maxlines</code> | 1000 |
| Merge formatted output into log | <input type="checkbox"/> |
| <code>dfm_maxage</code> | 30 |
| <code>dfm_maxoutput</code> | 0 |

`sched_log_lines`

Defines the maximum number of lines per request that the Scheduler will write to the log. When this number of lines is reached, logging stops. Exceeding this limit for one request does not affect logging for other requests.

When set to -1, the number of lines is unlimited. When set to 0, logging is disabled. The default value is -1.

`sched_standalone_log`

If checked, generates a separate log file for each job.

`sched_dmlog_app`

Is the name of the application in which the scheduler separate log and statistics files are located.

`sched_log_commit_interval`

Specifies the maximum time interval in seconds that can elapse before log data is committed to the log. Used in conjunction with `sched_log_commit_maxlines`, these settings can fine-tune Scheduler logging behavior. The logging subsystem will commit data to the log whenever one of these maximums has been reached. Finding the best commit interval is a compromise among latency (the delay between the time a log message is received and when it is committed to the log database), reliability, and performance. Longer intervals enable greater I/O efficiency, but increase the potential amount of log information lost in a crash. The default value is 10.

`sched_log_commit_maxlines`

Specifies the maximum number of log lines to collect before committing them to the log. Used in conjunction with `sched_log_commit_interval`, these settings can fine-tune Scheduler logging behavior. The logging subsystem will commit data to the log whenever one of these maximums has been reached. Larger numbers enable greater I/O efficiency, but increase the potential amount of log information lost in a crash. The default value is 1000.

`Merge formatted output into log`

Changes value of `sched_log_output_destination` keyword.

When checked, it specifies that only the job Log is stored in the Scheduler log (`sched_log_output_destination=Log`). The output is stored in the `dfm_dir` location.

When unchecked, it specifies that the job Log and Output are stored in the Scheduler log (`sched_log_output_destination=LogAndOutput`).

`dfm_maxage`

Defines the maximum number of days that deferred reports are kept in the server after they are created. The value zero (0) means the age is unlimited. The default value is 30.

`dfm_maxoutput`

Defines the maximum size of a deferred report. Reports that over this limit will be removed.

On z/OS PDS deployment, the number represents a number of records. The valid value is any number between 0 and 15,728,688 inclusive.

On all other platforms, the number represents a number of kilobytes or megabytes with the suffix K or M. A valid value is any number between 0 and 65535 inclusive.

The default value is zero (0), which means the output is unlimited.

Reference: Scheduler E-Mail Notification Properties

The Scheduler E-Mail Notification properties are shown in the following image.

The screenshot shows a dialog box titled "E-Mail Notification". It contains the following elements:

- Three checkboxes: "On Start", "On Completion", and "On Failure", all of which are unchecked.
- A text field labeled "sched_email_address" which is currently empty, with a dropdown arrow on the right.
- A note below the text field: "Use a semicolon as the separator character for multiple email addresses (id@dom)".
- A checkbox labeled "dfm_email", which is unchecked.
- A dropdown menu labeled "dfm_email_from_userid" with the value "n" selected.

On Start

Sends email when the procedure starts.

On Completion

Sends email when the procedure completes.

On Failure

Sends email if the procedure fails.

sched_email_address

Defines the list of email recipients. The list can contain one or multiple email addresses and/or user IDs. Multiple entries should be separated by semicolons (;).

dfm_email

When checked, the scheduler email settings are applied to deferred requests. The default is unchecked, which does not apply the scheduler email settings to deferred requests.

dfm_email_from_userid

When the response of a deferred request is ready to be retrieved, an email notification can be sent to a specific email address. If this keyword is set to n, no email notification will be sent. If it is set to y and there is no email address specified in the deferred request, an email notification will be sent to the email address of the requestor specified in the admin.cfg configuration file or in the corresponding security provider. The default value is n.

The Application Path Configuration page opens as a double-list table. The left pane shows a list of all available applications, the right shows all applications in the active Application Path, as shown in the following image.

Application Path Configuration

Profile: edasprof

| Available Applications | | | | | Application Path | | | | |
|------------------------|--------|------------|-------------------|-------------|------------------|--------|------------|----------------------|----------------|
| Name | Type | File Count | Physical Location | Description | Name | Type | File Count | Physical Location | Description |
| app01 | aproot | 4 | C:\lbi\apps\app01 | | ibisamp | aproot | 967 | C:\lbi\apps\ibisamp | IBI Samples |
| app02 | aproot | 1 | C:\lbi\apps\app02 | | baseapp | aproot | 214 | C:\lbi\apps\baseapp | Default Direct |
| app03 | aproot | 2 | C:\lbi\apps\app03 | | samp2 | aproot | 34 | C:\lbi\apps\samp2 | |
| app04 | aproot | 6 | C:\lbi\apps\app04 | | wfretail | aproot | 9 | C:\lbi\apps\wfretail | |
| app05 | aproot | 0 | C:\lbi\apps\app05 | | ibincc | aproot | 103 | C:\lbi\apps\ibincc | New Centur |

- To add an application to the application path, drag it from the Available Applications list to any position on the Application Path list.

You can move applications up or down on the path by dragging them up or down on the list.

- To remove an application from the application path, drag it from the Application Path list to the Available Applications list.
- When you have finished, Click Save.

On both lists, you can

- Search for applications using the Binocular Search. For information about the binocular search, see [Using the Web Console Binocular Search](#) on page 237.
- Customize the columns displayed, or reset the display to its default, using the View icon.

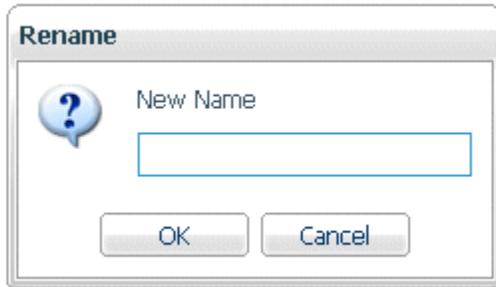
On the Application Path list, you can:

- Select a different profile.
- Preview the commands in the selected profile.
- Click the *Test* button to view the APP PATH command and the effective application path.

Renaming Applications and Application Files

Rename has been added as a right-click option for files and folders in the Web Console and Data Management Console.

Selecting *Rename* from the shortcut menu opens a dialog box in which you can enter a new name and click *OK*, as shown in the following image.



You cannot rename mapped applications (including SQL Repository apps), foccache, myhome, homeapps, or baseapp.

Note: If you rename an application that is directly under *aproot*, it will no longer be on the application path. You can manually add the renamed application to *APP PATH*, if you want it to be on the search path of the server.

Configuration and Monitoring

This section provides detailed descriptions of new configuration and monitoring features.

Forcing a Scheduler Scan

A scheduler scan is initiated on server startup, if *sched_autostart=y*. In addition, the scheduler is updated for a procedure if you edit schedule information for a procedure or DataMigrator job using *Manage Schedule and Email* from the Web Console or DMC. At other times, you can force scanning of scheduler and deferred jobs in the following ways.

- On the Applications page, click the *Schedule/E-Mail* button on the ribbon and select *Force Scheduler Scan*.
- On the Workspace page, open the Special Services and Listeners folder, right-click Scheduler, and select *Force Scheduler Scan*.
- Issue the following command in the server command window.

```
edastart -forcscan
```

Adding Cc and Bcc to Email Actions

On the Schedule and E-Mail, the Customizing Event Routing, and Customizing New Event Routing pages of the Web Console and Data Management Console, you can add carbon copy (Cc) and blind carbon copy (Bcc) email recipients, as shown in the following image.

Manage Schedule and E-Mail for procedure baseapp/across2

General

Schedule Status: No Schedule Enables/Disables Schedule

E-Mail On Start

Enable Send E-Mail on Start

Mail to: To

Cc

Bcc

Use a semicolon as the separator character for multiple email addresses (id@domain.com), user IDs (myid) or procedure names (%myfex).

Advanced Advanced E-Mail Settings on

E-Mail On Completion

Enable Send E-Mail on Completion

Mail to: To

Cc

Bcc

Use a semicolon as the separator character for multiple email addresses (id@domain.com), user IDs (myid) or procedure names (%myfex).

Advanced Advanced E-Mail Settings on

Create new server schedule object to submit this procedure

You can enter lists of email addresses by separating the addresses with semicolons (;).

Increase in Maximum Length of a Server Node Name

The maximum length of a server node name has been increased from eight characters to 16 characters.

Core Server and Clients

This section provides detailed descriptions of new features for the core server and clients.

Keeping Browser Cache Files Separate for Each Release

The Web Console browser cache files for each server build will be stored separately. This means that multiple Web Console sessions using the same browser will not impact each other. Therefore, you will not have to clear the browser cache to switch between multiple servers using the same machine and browser.

To implement separate cache files, each Web Console URL will automatically be invoked using a unique identifier. For example, if you enter the following URL:

<http://mypcname:8021/wc/bcstart.html>

The URL will automatically be issued with a unique identifier. For example:

<http://mypcname:8021/A4643588A8A7C435/wc/bcstart.html>

All other URLs generated by web connections to the server will use the same identification string.

Returning a JSON Answer Set Using the SOAP Listener

Using the Simple Object Access Protocol (SOAP) Listener, you can run report requests or DataMigrator flows using RESTful Web Service calls. The answer set is returned in JSON format.

The following steps describe how to configure and use the SOAP Listener to make the web service calls and return the answer set.

1. First, configure the SOAP Listener.

On the Workspace tab, right-click the *Special Services and Listeners* folder, point to *New*, and then click *SOAP*.

The Listener Configuration page opens, as shown in the following image.

Listener Configuration

The image shows a 'Listener Configuration' dialog box with two tabs: 'Basic' and 'Security'. The 'Basic' tab is active and contains three fields: 'NODE' with the value 'LST_SOAP', 'PORT' with the value '8050' and '(required)' next to it, and 'HOST' which is empty. Below the 'Basic' tab is the 'Security' tab. At the bottom of the dialog are two buttons: 'Save and Restart Listener' and 'Cancel'.

2. Enter the SOAP Listener port and click *Save and Restart Listener*.
3. Place the procedure to run in an application directory in the APP PATH of the Reporting Server.

Assuming you created the WebFOCUS Retail tutorial in the `ibisamp` application, the following FOCEXEC can be created in `ibisamp` to demonstrate the JSON Answer Set feature. If you created the WebFOCUS Retail tutorial in another application name, substitute application names where applicable.

```
TABLE FILE WF_RETAIL_LITE
SUM
  COGS_US
BY BRAND
BY PRODUCT_CATEGORY
BY PRODUCT_SUBCATEG
IF PRODUCT_CATEGORY EQ '&CATEGORY'
END
```

Note that the request has an IF test that requires a value for the variable `&CATEGORY`. You will supply the parameter name and value as part of the URL.

4. In a browser window, enter a URL in the following form.

```
http://host:port/rest/app/proc?param=value ...
```

where:

host

Is the Reporting Server host name.

port

Is the SOAP Listener port number.

app

Is the application that contains the procedure. This application must be on the APP PATH of the Reporting Server.

proc

Is the procedure name and extension.

param

Is a parameter name.

value

Is the parameter value.

For example, to run the `retail_ws.fex` procedure with the parameter `&CATEGORY=Accessories`, in the `ibisamp` application, on the host `localhost`, enter the following URL and press Enter.

```
http://localhost:8050/rest/ibisamp/retail_ws.fex?CATEGORY=Accessories
```

The following answer set is returned in JSON format. In this answer set, after the message header information and report statistics, each row is listed in an array named *rows*. The array of all rows is enclosed in square brackets ([]). Each row is enclosed in curly braces ({}) and separated from the other rows by a comma (,). The rows consist of *fieldname:value* pairs separated by commas. Alphanumeric values are enclosed in double quotation marks (").

```
{ "_ibi_Report" : {"Messages" : [ "0 NUMBER OF RECORDS IN TABLE=      10
LINES=      10"],
"rows" : [
  { "BRAND" : "Audio Technica" , "PRODUCT_CATEGORY" : "Accessories" ,
    "PRODUCT_SUBCATEG" : "Headphones" , "COGS_US" :      38000.00},
  { "BRAND" : "Denon" , "PRODUCT_CATEGORY" : "Accessories" ,
    "PRODUCT_SUBCATEG" : "Headphones" , "COGS_US" :      25970.00},
  { "BRAND" : "Grado" , "PRODUCT_CATEGORY" : "Accessories" ,
    "PRODUCT_SUBCATEG" : "Headphones" , "COGS_US" :      21930.00},
  { "BRAND" : "Logitech" , "PRODUCT_CATEGORY" : "Accessories" ,
    "PRODUCT_SUBCATEG" : "Universal Remote Controls" ,
    "COGS_US" :      61432.00},
  { "BRAND" : "Niles Audio" , "PRODUCT_CATEGORY" : "Accessories" ,
    "PRODUCT_SUBCATEG" : "Universal Remote Controls" ,
    "COGS_US" :      73547.00},
  { "BRAND" : "Pioneer" , "PRODUCT_CATEGORY" : "Accessories" ,
    "PRODUCT_SUBCATEG" : "Headphones" , "COGS_US" :      16720.00},
  { "BRAND" : "Samsung" , "PRODUCT_CATEGORY" : "Accessories" ,
    "PRODUCT_SUBCATEG" : "Charger" , "COGS_US" :      5405.00},
  { "BRAND" : "Sennheiser" , "PRODUCT_CATEGORY" : "Accessories" ,
    "PRODUCT_SUBCATEG" : "Headphones" , "COGS_US" :      78113.00},
  { "BRAND" : "Sony" , "PRODUCT_CATEGORY" : "Accessories" ,
    "PRODUCT_SUBCATEG" : "Charger" , "COGS_US" :      3168.00},
  { "BRAND" : "Sony" , "PRODUCT_CATEGORY" : "Accessories" ,
    "PRODUCT_SUBCATEG" : "Headphones" , "COGS_US" :      18592.00}
]
}
}
```

Automatic Java Lookup on Windows

The server has an automatic Java lookup feature on Windows to enable the Java Listener to start without any direct server configuration steps.

At server startup time, if no explicit JAVA_HOME or JDK_HOME variables are set either at the system environment level or in the server environment configuration file (EDACONF\bin\edaenv.cfg), the Windows registry will be searched for an applicable Java JDK or JRE release (currently 1.7 or higher) and the appropriate variable will be set.

This feature assumes that a Java installation has been done using the Oracle Windows JRE or JDK installation tool (which sets the Windows registry) prior to running the server (but the server itself requires no configuration).

EDAMAIL Support for Carbon Copy and Blind Carbon Copy

The EDAMAIL command now supports carbon copy (cc) and blind carbon copy (bcc) options.

The syntax is:

```
EDAMAIL to=tadrlist1,
[toaddr=tadrlist2],
[cc=cadrlist2,]
[ccaddr=cadrlist2,]
[bccaddr=bcadrlist,]
[from=fadr1],
[fromaddr=fadr2],
[replyto=radr],
[importance={low|normal|high}],
[subject=string],
[flags={a|A|i}],
[filetype=extension],
[filename=file],
[message=bodymessage]
```

where:

to=tadr1

Is the email recipient displayed by the user email client (and used in an email client Reply To All, if a *toaddr* header is not supplied). Multiple addresses are allowed, using a semi-colon as the address separator. A comma (,) is also allowed as a separator, if the overall address string is enclosed in single quotation marks (').

If the *to* parameter is used in conjunction with *toaddr*, the value of *to* may be an arbitrary string, such as "Group Managers", which most email clients will display as a pseudo title in the To field, without displaying the actual addresses used in the *toaddr* parameter. A forced blank can be supplied for the To field by using *to=""*.

toaddr=tadrlist2

Is the email recipient. If not supplied, SMTP servers will use the *to* header. Email clients will use the *toaddr* value in an email client Reply To All. Multiple addresses are allowed, using a semi-colon as the address separator. A comma (,) is also allowed as a separator, if the overall address string is enclosed in single quotation marks (').

cc=cadrlist1

Is the carbon copy recipient displayed by the user email client (and used in an email client Reply To All, if a *ccaddr* header is not supplied). Multiple addresses are allowed, using a semi-colon as the address separator. A comma (,) is also allowed as a separator, if the overall address string is enclosed in single quotation marks (').

If the `cc` parameter is used in conjunction with `ccaddr`, the value of `cc` may be an arbitrary string, such as "Group Managers", which most email clients will display as a pseudo title in the Cc field, without displaying the actual addresses used in the `ccaddr` parameter. A forced blank can be supplied for the Cc field by using `to=""`.

`ccaddr=cadrlist2`

Is the carbon copy recipient. If not supplied, SMTP servers will use the `cc` header. Email clients will use the `ccaddr` value in an email client Reply To All. Multiple addresses are allowed, using a semi-colon as the address separator. A comma (,) is also allowed as a separator, if the overall address string is enclosed in single quotation marks (').

`bccaddr=bcadrlist`

Is the blind carbon copy recipient. Email clients will use the `bccaddr` value in an email client Reply To All. Multiple addresses are allowed, using a semi-colon as the address separator. A comma (,) is also allowed as a separator, if the overall address string is enclosed in single quotation marks (').

`from=fadr1`

Is the email sender displayed by the email client (and used in an email client Reply, unless overridden by a `fromaddr` or Reply To header). If the `from` parameter is used in conjunction with `fromaddr`, the `from` value may be an arbitrary string, such as The Boss, which most email clients will display as a pseudo title in the From field, and will not display the actual address used in the `fromaddr` parameter.

`fromaddr=fadr2`

Is the email sender. If not supplied, most email clients will use the From header when doing a reply.

`replyto=radr`

Is the email sender. If not supplied, most email clients will use the `fromaddr` or `from` parameter value.

`importance={low|normal|high}`

Is the email importance level for email clients that support importance flags. Valid values are high, normal, and low.

`subject=string`

Is the email subject string. If the subject string contains a comma (,), the string must be enclosed in quotation marks (').

flags=value

If set to a or A, it indicates that a file specified with the filename and filetype parameters is to be sent as an attachment. If set to i, the file is included as the body of the email.

filetype=extension

Defines the data file type for an email message body that uses a file as an attachment. Any application file type or ddname is valid, including MASTER, FOCEXEC, HTML, TEXT, and so on. Leave the parameter out to use the inline email message body feature.

message=bodymessage

Is the inline data stream containing the email message body. If used, it must be the last parameter in the EDAMAIL command. To use the inline data stream feature, the filetype and filename parameters cannot be supplied. The data stream may also be spread onto multiple lines if EDAMAIL is used with the EX -LINES {n|*} feature.

If an inline data stream message body is spread across multiple lines in the procedure, the resulting email is a single line of output. Multi-line message bodies are respected when the message body from a file option is used.

Example: Mailing an HTML File as a Message Body Using Carbon Copy and Blind Carbon Copy

```
TABLE FILE file1
PRINT A B C
ON TABLE HOLD AS MYFILE FORMAT HTML
END
EX EDAMAIL to=Managers,toaddr=user1@corp1.com;user2@corp1.com,
cc=Subordinates,ccaddr=user3@corp1.com,bccaddr=boss@corp1.com,
from=support1@corp1.com,subject=File1 Report, filetype=HTML,
filename=MYFILE
```

Diagnostics

This section describes new diagnostic features.

Logging All Environment Variables in EDAPRINT

Starting with this release, the top of the EDAPRINT log file contains all environment variables. In addition, if JDK_HOME and JAVA_HOME are both not set, the following warning message displays in EDAPRINT:

```
W JDK_HOME= or JAVA_HOME= required for Java Listener start
```

The following example shows a sample of the top portion of the EDAPRINT log file:

```
02/24/2016 09:57:11.753 I Workspace initialization started
02/24/2016 09:57:11.753 I EDACONF=C:\ibi\srv99\wfs
02/24/2016 09:57:11.753 I EDAHOME=C:\ibi\srv99\home
02/24/2016 09:57:11.753 I Environment Variables...
02/24/2016 09:57:11.753 I ALLUSERSPROFILE=C:\Documents and Settings\All
Users
02/24/2016 09:57:11.753 I APPDATA=C:\Documents and Settings
\se02703\Application Data
02/24/2016 09:57:11.753 I CLASSPATH=.
02/24/2016 09:57:11.769 I C:\Program Files\Java\jre6\lib\ext
\QTJava.zip
02/24/2016 09:57:11.769 I CommonProgramFiles=C:\Program Files\Common Files
02/24/2016 09:57:11.769 I COMPUTERTNAME=INFORMAT-31B4D7
02/24/2016 09:57:11.769 I ComSpec=C:\WINDOWS\system32\cmd.exe
02/24/2016 09:57:11.769 I DEFLOGDIR=C:\Documents and Settings\All Users
\Application Data\McAfee\DesktopProtection
02/24/2016 09:57:11.769 I EDACONF=C:\ibi\srv99\wfs
02/24/2016 09:57:11.769 I EDAEXTSEC=OFF
02/24/2016 09:57:11.769 I EDAHOME=C:\ibi\srv99\home
02/24/2016 09:57:11.769 I EDAPRINT=C:\ibi\srv99\wfs
02/24/2016 09:57:11.769 I EDASHARE=C:\ibi\srv99\wfs
02/24/2016 09:57:11.769 I EDATEMP0=C:\ibi\srv99\wfs\edatemp
02/24/2016 09:57:11.769 I FP_NO_HOST_CHECK=NO
02/24/2016 09:57:11.769 I HOMEDRIVE=H:
02/24/2016 09:57:11.769 I HOMEPATH=\
```

Metadata

This section provides detailed descriptions of new server metadata features.

Business View Plus (BV+) Candidate for Release

Business View Plus (BV+) combines the power and capabilities of Business View (BV) and Dimension View (DV) into one feature that allows a customized view of the data source and enables the use of joins, measures, hierarchies, attributes, expressions, and filters. This allows for robust report, chart, document, and visualization development using a customized logical view of a data source.

A traditional Business View offered users a customized logical view of a data source by grouping related items into folders that reflect business logic for an application, rather than the physical position of items in the data source. However, the fields in these folders did not have any indication of their roles in a request.

A traditional Dimension View, on the other hand, categorized fields on the basis of their roles in a request. Measures were placed in measure groups, hierarchies were organized within dimensions, levels were organized within hierarchies, and attributes were organized within levels. Then, when a field was double-clicked in InfoAssist+ or dragged onto the report or chart canvas in App Studio, it was added as a sort field or aggregation field depending on its placement in the Dimension View structure. Dimension Views, however, offered no ability to create a custom logical view of the data source.

BV+ combines Business Views and Dimension Views by enabling you to group fields into folders and, for each field, assign a role that indicates its role in a request. The syntax is clear and simple, and it provides all of the functions of both traditional Business Views and Dimension Views. In addition, BV+ gives you total flexibility in creating folders anywhere in the structure, and in reusing fields in multiple folders.

For example, if you assign the role DIMENSION to a field, it will automatically be added to the By field container for reports and the horizontal axis for charts if you double-click or drag the field onto the report or chart canvas. If you assign the role Drill Level to successive fields in a folder and turn AUTODRILL on, automatic drilldowns will be generated from the top level to the bottom level on the generated output.

You can create or edit a synonym to use BV+ in the Reporting Server Web Console, the Data Management Console, or the App Studio Metadata Canvas.

Introduction to BV Namespace Modes

When you upload a file or create or open a synonym in the Reporting Server Web Console or Data Management Console, the synonym opens in one of two modes for creating a BV+ structure, BV_NAMESPACE=OFF mode or BV_NAMESPACE=ON mode. The mode in which the synonym opens determines the types of BV+ structures you can add to your synonym. It also controls the type of field name qualifiers that will be used, after the synonym is saved, when you create a request using the WebFOCUS tools.

You can set your Web Console preferences to open Data Assist, the wizards, the DMC, and the App Studio Metadata Canvas in your preferred BV Namespace mode by going to the *Workspace* tab, clicking *FOCUS Sets and Info*, clicking *Settings for Web Console Preferences*, and setting the parameter AUTO_BV_NAMESPACE to OFF (the default if you install a new server) or ON. If the synonym already contains a DV or BV structure, the presence of this existing structure will override your setting with BV_NAMESPACE=OFF or BV_NAMESPACE=ON, respectively.

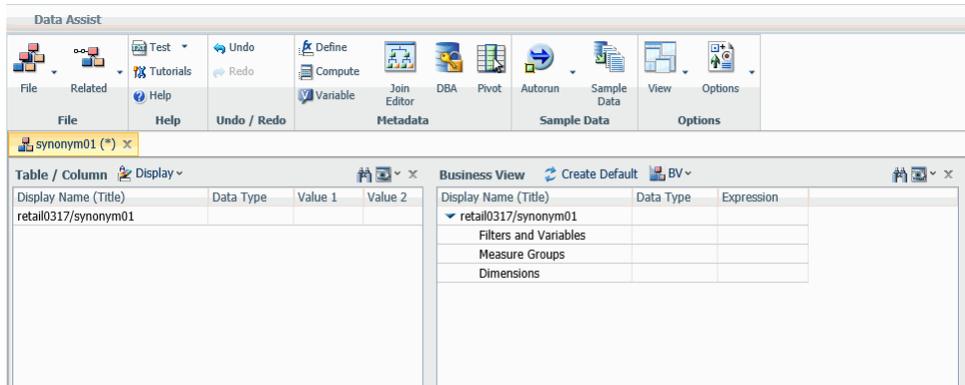
If you create a new synonym, or open an existing synonym that has no DV or BV, it will respect the setting you set in the Web Console. When you upload a file, the synonym has no existing DV or BV structure, so it respects the mode you set in the Web Console.

Reference: BV_NAMESPACE=OFF Mode

BV_NAMESPACE=OFF mode uses physical segment names to qualify field references in reports. If you open an existing synonym that has a DV, it will open in this mode, regardless of the setting you configured. In this mode, you can only add nodes that conform to the DV structure. That is, you can add new measure groups and dimensions under the existing measure group and dimension structure.

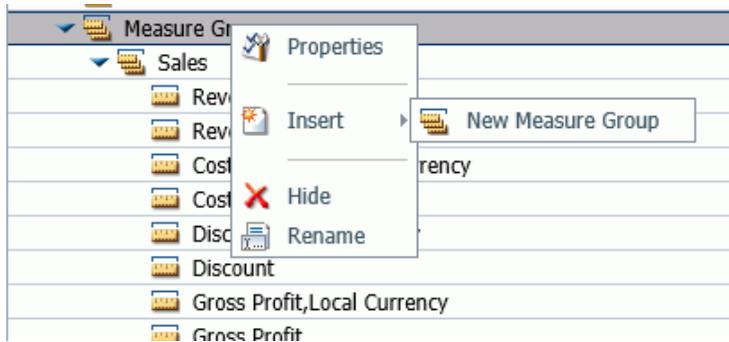
The following describes the structures and actions available in new or existing synonyms in BV_NAMESPACE=OFF mode:

- ❑ **Creating a new cluster synonym or opening an existing synonym that has no BV or DV.** If the synonym has no logical view defined, It opens with three default nodes in the Business View pane, Filters and Variables, Measure Groups, and Dimensions, as shown in the following image.



These nodes are based on a DV structure, and any edits you make to the synonym in this pane using BV_NAMESPACE=OFF mode must adhere to this structure. The right-click menu options provide only the structures available for a DV. You can insert a new measure group under the Measure Group node or a new dimension folder under the Dimensions node, but you cannot create a new node in the synonym. In a measure group folder, you can only place measures. In a dimensions folder, you can only place dimensions. Under a dimension, you can only add hierarchies, and under a hierarchy field, you can only add attributes.

- ❑ **Opening an existing synonym with a DV defined.** It opens showing the DV organization and icons in the Business View pane. The synonym syntax is converted to use BV+ folders with the DV structure. You cannot create new folders, you are limited to the structure already defined in the Business View pane. The right-click menu options provide only the structures available for a DV, as shown in the following image that shows the right-click options for the Measure Group folder.

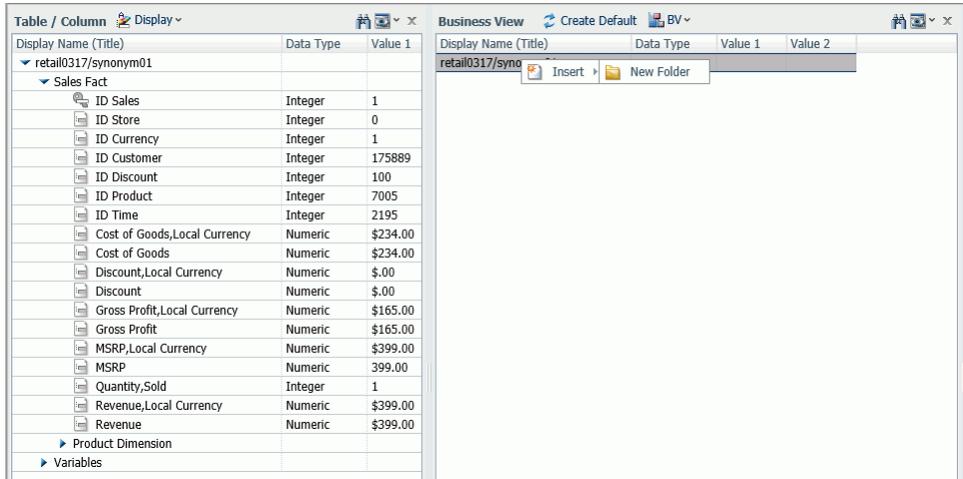


Reference: BV_NAMESPACE=ON Mode

BV_NAMESPACE=ON mode uses logical folder names to qualify field references in reports. If you open an existing synonym that has a BV, it will open in this mode, regardless of the setting you configured. In this mode, you can create your own logical view of the synonym. You are free to add new folders and assign DV roles to fields and folders.

The following describes the structures and actions available in new or existing synonyms in BV_NAMESPACE=ON mode:

- ❑ **Creating a new cluster synonym or opening an existing synonym with no DV or BV.** No nodes are pre-configured, as shown in the following image.



The right-click menu options provide all BV+ options.

- ❑ **Opening an existing synonym with a BV defined.** It opens in BV_NAMESPACE=ON mode. It will open showing the Business View structure defined within it. The right-click menu options provide BV+ options, as shown in the following image.

| Display Name (Title) | Data Type | Value 1 | Value 2 |
|------------------------------------------------|-----------|-------------|-------------|
| ▼ wfdemo_7706gen930/wf_retail_sales_product_bv | | | |
| ▼ WF_RETAIL_NAMESPACE | | | |
| Cost | Numeric | 234.00 | 46.00 |
| Cost | Numeric | \$234.00 | \$46.00 |
| Disco | Numeric | .00 | 20.00 |
| Disco | Numeric | \$.00 | \$20.00 |
| Gross | Numeric | 165.00 | 13.99 |
| Gross | Numeric | \$165.00 | \$13.99 |
| MSRP | Numeric | 399.00 | 79.99 |
| MSRP | Numeric | 399.00 | 79.99 |
| Quan | Integer | 1 | 1 |
| Rever | Numeric | 399.00 | 59.99 |
| Revenue | Numeric | \$399.00 | \$59.99 |
| ▼ WF_RETAIL_PRODUCT | | | |
| Brand | Character | BOSE | Roku |
| Brand Type | Character | Specialty B | Specialty B |
| Model | Character | BOSE V-S2 | N1000 |
| Price,Dollars | Numeric | 399.00 | 79.99 |

Reference: Usage Notes for BV_NAMESPACE Modes

- ❑ In BV_NAMESPACE=ON or OFF mode, the folder structure must include all of the fields referenced in the request, as fields not included in folders will not be accessible.
- ❑ In BV_NAMESPACE=ON mode, moving a field from one folder to another may also make the field inaccessible, as the request will not have the correct folder qualifier for the field.
- ❑ Synonyms in BV_NAMESPACE=OFF mode have the attribute BV_NAMESPACE=OFF on the file declaration.
- ❑ You can change BV Namespace modes in the Reporting Server Web Console by clicking the BV menu at the top of the Business View pane and selecting BV_NAMESPACE=ON or BV_NAMESPACE=OFF.
- ❑ If you generate a request using the WebFOCUS tools in one BV_NAMESPACE mode, it may not run if the synonym is converted to the other BV_NAMESPACE mode, as the field qualifiers will be incorrect for the new mode.

- If you change the BV_NAMESPACE mode, a popup window opens to warn you of the potential effects on existing requests.
- When you begin the cycle of developing reports and metadata in parallel, use BV_NAMESPACE=OFF mode to make sure that procedures developed earlier in the cycle will continue to run as changes are made to the metadata.
- Any changes to metadata should be thoroughly tested before use in production environments.

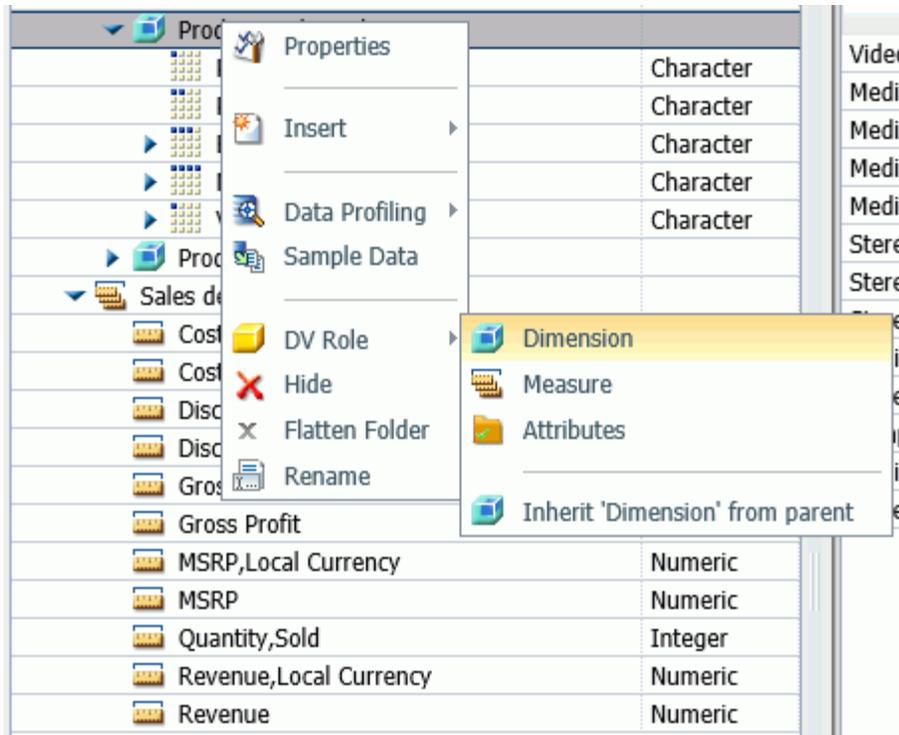
Assigning DV Roles

In BV+, you define folders, which function as segments to provide a view of the synonym and to define the accessible fields and their relationships. Folder relationships are the same as segment relationships, with parent folders, child folders, and sibling folders.

While you have total flexibility defining a structure using any fields from your data source, when you issue a report request against the synonym, the retrieval path for the data must conform to any constraints imposed by your DBMS entity diagrams and by the rules of WebFOCUS retrieval.

Only the folders will be displayed in the WebFOCUS tools, not the real segments, and only the fields within the folder structure will be accessible for reporting.

You can assign a DV role to a folder or field by right-clicking the folder or field and selecting a DV role. The following image shows the right-click options for a folder.



You can explicitly assign a DV role to a folder or field, or have it automatically inherit its role from its parent. If you explicitly assign a DV role, that role moves with the object if you drag it to another location within the BV+ structure. If you do not explicitly assign a DV role, the role changes as you move the object under a new parent, except if you drop it onto a field with the Drill Level role. If dropped onto a Drill Level field, the moved field inherits the Drill Level role.

The following DV roles can be assigned.

- Dimension.** A dimension field, when double-clicked or dragged onto the report or chart canvas in the WebFOCUS tools, will automatically be added to the request as a vertical (BY) sort field.

A folder can be assigned the role Dimension.

- ❑ **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.

For a folder or field assigned the DV role Measure, the following attribute is added to the folder or field declaration in the synonym.

`DV_ROLE=MEASURE`

- ❑ **Attribute.** 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.

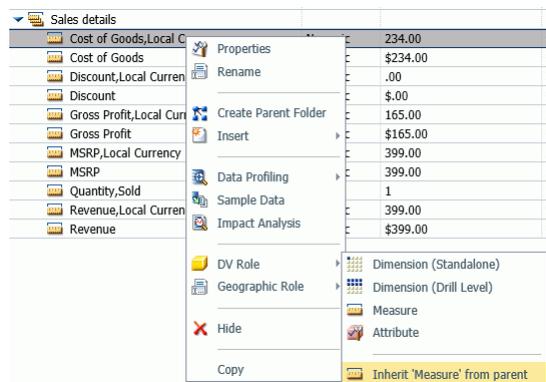
For a folder or field assigned the DV role Attribute, the following attribute is added to the folder or field declaration in the synonym.

`DV_ROLE=ATTRIBUTE`

- ❑ **Folder.** A folder is a virtual segment in a BV+. 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.

- ❑ **None.** If no role is assigned, the field or folder will inherit its role from its parent. If a role has been assigned, you can remove it by selecting the option to inherit its role from its parent, as shown in the following image.



Example: Sample BV+ Declarations

The following declarations show sample BV+ folder and field definitions. Note that the declaration for each field in a BV+ folder specifies the real segment it actually belongs to.

Sample Dimension Folder Declaration

The DV_ROLE for the PRODUCT_CATEGORY folder is DIMENSION.

```
FOLDER=PRODUCT_CATEGORY, PARENT=FOLDER1,
DV_ROLE=DIMENSION,
DESCRIPTION='Product and Vendor', $
```

Sample Attributes Folder Declared as a Child of a Field

The ATTRIBUTES1 folder has the DV_ROLE ATTRIBUTE. Its parent folder is PRODUCT_CATEGORY, and its parent field is MODEL.

```
FOLDER=ATTRIBUTES1, PARENT=PRODUCT_CATEGORY, PARENT_FIELD=MODEL,
DV_ROLE=ATTRIBUTE,
DESCRIPTION='Model Details', $
```

Sample BV+ Level Hierarchy and Standalone Dimension

The PRODUCT_CATEGORY folder has a hierarchy defined consisting of the PRODUCT_CATEGORY, PRODUCT_SUBCATEG, BRAND, and MODEL fields. The field VENDOR_NAME is a standalone dimension field.

```
FOLDER=PRODUCT_CATEGORY, PARENT=FOLDER1,
DV_ROLE=DIMENSION,
DESCRIPTION='Product and Vendor', $
FIELDNAME=PRODUCT_CATEGORY, ALIAS=PRODUCT_CATEGORY,
BELONGS_TO_SEGMENT=WF_RETAIL_PRODUCT,
DESCRIPTION='Product Category',
DV_ROLE=LEVEL, $
FIELDNAME=PRODUCT_SUBCATEG, ALIAS=PRODUCT_SUBCATEG,
BELONGS_TO_SEGMENT=WF_RETAIL_PRODUCT,
DESCRIPTION='Product Subcategory',
DV_ROLE=LEVEL, $
FIELDNAME=BRAND, ALIAS=BRAND,
BELONGS_TO_SEGMENT=WF_RETAIL_PRODUCT,
DESCRIPTION='Product Brand',
DV_ROLE=LEVEL, $
FIELDNAME=MODEL, ALIAS=MODEL,
BELONGS_TO_SEGMENT=WF_RETAIL_PRODUCT,
DESCRIPTION='Product Model',
DV_ROLE=LEVEL, $
FIELDNAME=VENDOR_NAME, ALIAS=VENDOR_NAME,
BELONGS_TO_SEGMENT=WF_RETAIL_VENDOR,
DESCRIPTION='Vendor Name',
DV_ROLE=DIMENSION, $
```

Sample Measure Field

The PRODUCT_COST field has been assigned the DV_ROLE MEASURE.

```
FIELDNAME=PRODUCT_COST, ALIAS=PRODUCT_COST,
BELONGS_TO_SEGMENT=WF_RETAIL_PRODUCT,
    DESCRIPTION='Product Cost',
    DV_ROLE=MEASURE, $
```

Data Assist

Data Assist is a unified environment for managing and enhancing synonyms. It is available on the WebFOCUS Reporting Server Web Console and is incorporated in the Upload Wizard.

Data Assist provides an extensive user interface using a ribbon and right-click sensitive paradigm for enhancing synonyms. You see the results of all changes in the tabbed output pane.

The following are some of the features you might want to add to the synonym to enhance your data access and reporting capabilities.

- Add virtual columns (DEFINE fields) and columns for aggregated values (COMPUTE fields).
- Apply functions to fields.
- Grouping, phonetic grouping, and binning field values.
- Add filters to specify data selection criteria.
- Change the format of fields (for example, the size of an alphanumeric field or the format of a date field).
- Create a cluster join view by linking available synonyms to create a multi-segment (multi-table) file for reporting.
- Create Business Views of the metadata in order to limit the fields available to any retrieval request that references the Business View and to group fields together based on their roles in an application.
- Pivot data, for example, pivot repeating columns or groups of repeating columns into rows.
- Define hierarchies for automatic drilldowns.
- Apply security rules for fields and values.

For more information, see the *Server Administration* manual.

LNGPREP Utility: Preparing Metadata Language Files

The LNGPREP utility extracts TITLE, DESCRIPTION, CAPTION, and PROMPT attribute values from application Master Files into specially formatted language translation files for each language you need. Once you have the contents of these language files translated, your users can run these applications in the language they choose.

LNGPREP does two things. It extracts attribute values from a Master File into language files, and it inserts or updates the TRANS_FILE attribute in the Master File with a value identifying the application folder where the language files reside and a prefix used for naming the set of language files. If the Master File is part of a cluster, LNGPREP will extract translatable strings from every Master File referenced in the cluster, and will update each with the same TRANS_FILE value.

LNGPREP requires an input file listing the three-character codes of the languages you need.

The name of each language file starts with the prefix specified in the TRANS_FILE value, followed by a three-character language code, and the extension *.lng*.

For example, assume the language input file contains the French and Spanish language codes:

```
fre  
spa
```

If the Master File specifies:

```
trans_file = xlate/xl_
```

The language translation files would be in the *xlate* application folder, named:

```
xl_fre.lng for French
```

```
xl_spa.lng for Spanish
```

Reference: The Base Language File

Each Master File must have a single base language in which the DESCRIPTION, TITLE, CAPTION, and PROMPT attributes are specified. This language need not be English.

LNGPREP extracts these attribute values into the base language file, whose language code, for historical reasons, is *eng*. In this case, *eng* does *not* mean English. It means *whatever language the Master File is written in*.

The base language file (*prefixeng.lng*) should *never* be hand edited. All other *.lng* files *must* be hand edited by translators, to translate the string values from the base language to the appropriate language.

Translating Applications into English

Since language code *eng* is reserved to mean base language, you cannot use it to contain English translations of an application whose base language is not English. In those cases, use any of the other English dialect language codes, such as AME, UKE, CAE, or AUE. For example, if the base language is German, specify AME in the languages file, run LNGPREP, and it will produce *prefixeng.Ing* and *prefixame.Ing* files, both in German. Translate the contents of *prefixame.Ing* into English. Leave *prefixeng.Ing* untouched.

Reference: How Translated Master File Attributes Are Displayed

Each language file contains a line for each attribute value from a related set of Master Files. Each attribute value has a unique index number assigned to it. For example, if the Master File contains FIELDNAME=PRODUCT_CATEGORY, TITLE='Product,Category', and that TITLE happens to be the 39th translatable attribute value, LNGPREP will produce Ing files all containing the line:

```
39 = Product,Category
```

Your French translator will edit *prefixfre.Ing*, leaving the index values unchanged while translating the string values, producing, in this case,

```
39 = Produit,Catégorie
```

At run time, when the TITLE for field PRODUCT_CATEGORY needs to be displayed, if WebFOCUS is configured for LANG=FRE, WebFOCUS looks up "Product,Category" in *prefixeng.Ing*, finds index value 39, looks up 39 in *prefixfre.Ing*, and displays the TITLE as "Produit,Catégorie."

LNGPREP Modes

You can run LNGPREP from the Web Console using the *Prepare Translation Files* option, or you can run it using syntax. In either case, you must first create a configuration file containing the three-character language codes for each translation file you need, one language code on each line. The first invocation of LNGPREP for a given Master File adds the TRANS_FILE attribute in that and all related Master Files, creates the base language file by scanning the Master Files for supported attribute values, and creates a copy of the base language file with the correct name for each additional language. Then, a translator has to translate the values in each additional language file from the base language to the correct language for that file.

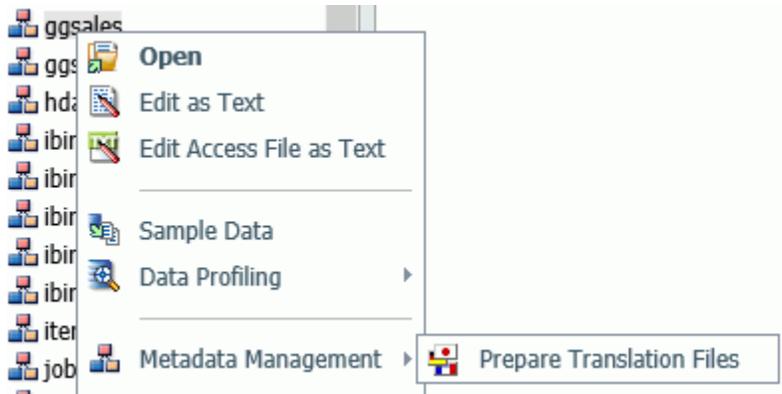
On each subsequent run, LNGPREP will check for updates to the list of related Master Files and attribute values and update the files as needed. Translators will then have to translate any attribute values added to the language files.

Reference: LNGPREP Best Practice

The recommended best practice is to create an app directory solely for the purpose of containing .lng files, and use this appname and a common prefix value for all LNGPREP commands. In addition, put the languages *fn.cfg* file in this app folder. This will create one set of .lng files for all apps, minimizing the time and effort spent on translation.

Procedure: How to Prepare Metadata Language Files Using the Web Console

1. Right-click a synonym, select *Metadata Management*, then *Prepare Translation Files*, as shown in the following image.



The Set Translation Files page opens, as shown in the following image.



2. Enter the following values or accept the defaults.

Application for Translation Files

Is the name of the application where the language files will be stored. You can click the ellipsis to select an application from the current application path. By default, it is the application where the synonym resides.

Prefix

Is the prefix value for the translation files for the selected synonym.

Languages File

Is the file containing the list of language codes for which translation files should be prepared. The file must have the extension `.cfg`, be stored in an application directory on the application path, and have one language code on each line. You can click the ellipsis to select the application where the languages file is stored.

3. Click *OK*.

The language files are prepared using the application, prefix, and languages configuration file you specified. A status page will open listing the language files created and the Master Files processed.

Syntax: How to Run the LNGPREP Command Using Syntax

```
LNGPREP FILE n_part_name LNGAPP appname LNGPREFIX prefix
          LNGFILE appname/fn
```

where:

n_part_name

Specifies the n-part (app1/app2...) name of a Master File.

appname

Specifies the location where `.lng` files will be written and updated.

prefix

Specifies the literal characters that will precede the three-character language code in the names of the `.lng` files.

appname/fn

Specifies the *appname* and *filename* of a user-created `.cfg` file containing the list of three-character language codes, one per line. For example, the following file named `langretail.cfg` contains language codes for American English, French, and Japanese:

```
ame
fre
jpn
```

Example: Sample LNGPREP Command

Assume the `lnglist.cfg` file contains the language codes `fre` (French) and `spa` (Spanish):

```
fre
spa
```

Issue the following LNGPREP command:

```
LNGPREP FILE weather/forecast LNGAPP xlate LNGPREFIX tq_ LNGFILE xlate/lnglist
```

Alternately, you can right-click the forecast synonym, point to *Metadata Management*, and select *Prepare Translation Files*. The *Set Translation File for weather/forecast.mas* page opens. Enter the values shown in the following image and click *OK*.

Set Translation Files for weather/forecast.mas

| | | |
|-------------------------------------------------------------------------|-----------------------------------------------|-----|
| Application for Translation Files: | <input type="text" value="xlate"/> | ... |
| Prefix: | <input type="text" value="tq_"/> | |
| Languages File: | <input type="text" value="xlate/Inglis.cfg"/> | ... |
| <input type="button" value="OK"/> <input type="button" value="Cancel"/> | | |

The following language files will be created:

- xlate / tq_eng.lng
- xlate / tq_fre.lng
- xlate / tq_spa.lng

The Master File weather/ forecast.mas will be updated with the following attribute

`TRANS_FILE= xlate/tq_`

Translators then have to translate the values in xlate/tq_fre.lng and xlate/tq_spa.lng.

Security

This section provides detailed descriptions of new security features.

Encrypting the admin.cfg File

The admin.cfg file contains the users and groups registered for the internal server security (PTH). To encrypt this file, do the following.

1. Connect to the Web Console as a Server Administrator.
2. On the Access Control page ribbon, click *Settings* and select *Encryption Settings*.
3. Select *y* from the encrypt_admincfg drop-down list.
4. Click *Apply and Restart Server*.

When the server restarts, admin.cfg will be encrypted.

Improved User Interface for Configuring an LDAP Security Provider

The user interface for configuring an LDAP security provider has been redesigned. The configuration parameters have been grouped into categories, and there are new buttons for retrieving sample lists of users and groups.

1. To configure a new LDAP provider, on the Access Control page, right-click *LDAP* under Security Providers and select *New* from the shortcut menu.

The following LDAP Security Provider Configuration page opens on which you configure the provider name and connection parameters.

LDAP Security Provider Configuration

The screenshot shows the LDAP Security Provider Configuration dialog box. At the top, the 'LDAP_PROVIDER' field is set to 'ldap02'. Below this, the 'Connection' section is expanded, revealing several configuration parameters:

- ldap_host:** An empty text input field with a 'Sample: medsun' label to its right.
- ldap_secure_connection:** A dropdown menu currently set to 'No'.
- ldap_port:** A text input field containing the value '389'.
- security:** A dropdown menu currently set to 'Anonymous or Windows security - NEGOTIATE'.
- ldap_search_timeout:** A text input field containing the value '60'.

At the bottom left of the dialog, there is a 'Next' button with a right-pointing arrow.

2. Configure the following connection parameters.

LDAP_PROVIDER

Specifies a name for this provider.

ldap_host

Is a host identifier consisting of a host name or an IPv4 dotted string representing the IP address of a host running the LDAP server to connect to.

Alternatively, it may contain a list of space-delimited host identifiers. Each host identifier may include a trailing colon and port number. In the case where more than one host identifier is specified, each host identifier in turn will be contacted until a connection can be established. For example:

```
directory.example.com
192.0.2.0
directory.example.com:1050 people.catalog.com 192.0.2.0
```

ldap_secure_connection

Specifies whether the server uses a *Secure Socket Layer (SSL) session with the LDAP server*. Select *No* or *Yes*. The server default is *No*.

An LDAP (Lightweight Directory Access Protocol) security provider supports Secure Sockets Layer (SSL) API calls to establish an SSL/TLS connection. Using server authentication only, the Reporting Server initiates API calls to verify that the LDAP server being connected to is the same server that provided certification.

You can set the LDAP secure connection from the Web Console:

- Select *No*, the default value, if you do not wish to enable SSL.
- Select *Yes* to enable an encrypted Secure Sockets Layer (SSL) session with the LDAP server.

If you have selected IBM, Sun, or Novell as the your `ldap_lib_vendor`, when you select *Yes* in the `ldap_secure_connection` field, additional options are added to the Connection tab:

- For Sun and IBM, `ldap_ssl_certificate` is added.
- For Novell, `ldap_ssl_certificate` and `ldap_ssl_certification_encoding` are added.

`ldap_ssl_certificate`. Enter the name of the LDAP attribute used by the API to establish the SSL/TLS connection. The server employs server authentication only, checking through API calls that the LDAP server you are connecting to is the one that provided the certificate. Values depend on the LDAP vendor, as follows:

- Novell API* specifies the file name, including path, of the Trusted Root Certificate that the LDAP server provided for authentication.
- Sun/Netscape API* specifies the path to `cert7.db`, Netscape certificate database, excluding the file name, that the LDAP server provided for authentication.
- IBM API* specifies the file name, including the path, for `ldapkey.kdb` (IBM key database file that the LDAP server provided for authentication). The `ldapkey.sth` password stash file should be in the same directory. Note that in addition to IBM LDAP client libraries, Global Security Kit libraries are needed to make SSL work. On Windows machines, GSK must be installed.
- Microsoft API* ignores the `ldap_ssl_certificate` configuration parameter since it is not used in an Active Directory. The server certificate should be installed in a certificate store.

`ldap_ssl_certificate_encoding`. For Novell, select the standard used to encode the certificate from the drop-down list. Encryption and file format depend on API vendor specifications. The options are B64 and DER.

`ldap_port`

Is a positive integer that defines the TCP port number used to connect to the LDAP server. Note that `ldap_port` is ignored for any host identifier which includes a colon and port number. The server default port is 389 or 636 (for SSL connection).

`security`

Determines the type of bind used. Can be one of the following.

`Anonymous`

The bind is performed using no credentials. This is the internal default value.

`Windows security (NEGOTIATE)`

The reporting server authentication is performed against Active Directory utilizing a Windows-specific API.

The bind is done under the Windows account that started the server.

The windows machine that hosts the reporting server should be in the same domain as Active Directory.

`Explicit`

The bind is performed under the account that is defined by configuration parameters `ldap_principal` and `ldap_credentials`.

Note: When connecting to Active Directory using *Explicit* or *NEGOTIATE*, `ldap_user_attribute` should have the value `sAMAccountName` or `userPrincipalName`.

`ldap_search_timeout`

Specifies the timeout in seconds for `ldap_search`. The server default value is 60 seconds.

3. Click Next.

The User Search category of parameters opens, as shown in the following image. The common parameters for User Search and Group Search are automatically populated.

LDAP Security Provider Configuration

LDAP_PROVIDER ldap02

⌵ Connection

⌴ User Search

 Sample: dc=ibi,dc=com
 ▾

 Optional User Information

⌵ Group Search

⌵ Trusted Connections

⌵ Environment

- Configure the following user search and group search parameters.

User properties

[ldap_user_base](#)

Specifies the DN of the entry that serves as the starting point for the search. Consists of attribute=value pairs, separated by commas. The server default is *dc=ibi,dc=com*.

[ldap_user_scope](#)

Specifies the scope with which the LDAP realm should search for users. Select *Subtree*, *Onelevel*, or *Base*:

Subtree scope indicates that the LDAP realm should search everything under the base DN.

Onelevel scope tells the LDAP server to only search entries one level down from the base DN.

Base indicates that the search should be done at the search base only.

The server default is *Subtree*.

`ldap_user_class`

Specifies the object class used when searching for user entries. The server default is *person*.

`ldap_user_attribute`

Specifies the LDAP attribute used when searching for user entries. *uid* is the default value for LDAP and *sAMAccountName* is the suggested value for Active Directory. One possible reason to change the default value would be to allow users to logon with an email address instead of a user ID. In this case, you might change the value to *mail* or *userPrincipalName* (if this corresponds with the name of the appropriate attribute in your directory).

`ldap_user_group_attribute`

Specifies the LDAP attribute used to identify a group in a user object.

The Active Directory standard is *Memberof*.

`ldap_user_description`

Optional. Specifies the name of the attribute whose value contains description of an object (user, group). The server default is *description*.

`ldap_user_email`

Optional. Specifies the name of the attribute whose value contains the user email address. The server default is *mail*.

Note: `ldap_user_class`, `ldap_user_attribute`, `ldap_group_class`, `ldap_group_attribute` are parameters that form a search filter.

The search filter standard syntax conforms to the following structure:

```
( & ( Property_Name=Property_Value ) ( Property_Name=Property_Value ) )
```

If you change value of the `ldap_user_class` and `ldap_group_class` parameters to an asterisk (*), the search filter syntax can be reduced to the following simplified form (although group support will not work properly):

```
( Property_Name=Property_Value )
```

By specifying an asterisk for these parameters, you achieve simplified search filter syntax, but in effect, disable group support.

Group properties

`ldap_group_base`

Specifies the DN of the entry that serves as the starting point for the search. The server default is the `ldap_user_base` value.

`ldap_group_scope`

Specifies the scope with which the LDAP realm should search for groups. Select *Subtree*, *Onelevel*, or *Base*:

Subtree scope indicates that the LDAP realm should search everything under the base DN.

Onelevel scope tells the LDAP server to only search entries one level down from the base DN.

Base indicates that the search should be done at the search base only.

The server default is *Subtree*.

`ldap_group_class`

Specifies the object class used when searching for *group entries*. The server default is *groupofuniquenames*. The Active Directory standard is *group*.

`ldap_group_attribute`

Specifies the LDAP attribute used to identify the name of the group. The server default is *cn*.

`ldap_member_attribute`

Specifies the LDAP attribute used to identify users in a group. The server default is *uniqueMember*. The Active Directory standard is *Member*.

`ldap_nested_groups`

Disables or enables LDAP nested groups support. Select *No* or *Yes*. The server default is *No*, which disables nested group support.

`ldap_group_description`

Optional. Specifies the name of the attribute whose value contains description of an object (user, group). The server default is *description*.

- Specify whether the server should accept trusted connections.

`trust_ext`

Specifies whether the server should accept trusted client connections. If there are multiple security providers, some may allow trusted connections and some may not. In these cases, if the trusted connection is made using a provider without the ability to accept trusted connections, the user will get an authentication error. The server default is *n*.

- To test the configuration, click *Test User Authentication*.

A *Testing LDAP Security* sign-in window opens.

Enter a valid user ID and password for this LDAP security provider and click *Continue*.

If your configuration and credentials are valid, a window opens telling you that you were successfully authenticated.

If they are not valid, you will get a corresponding message.

- To generate a sample user list, click *Sample User List*.

A partial list of users with their descriptions and group memberships opens.

- To generate a sample group list, click *Sample Group List*.

A partial list of groups with their descriptions and a partial list of members opens.

- To save this configuration, click *Save*. To go back to the first configuration page, click *Back*.

Support for OpenSSL Ciphers and DH and ECDH Key Exchange

The following parameters are now supported in the `edaserve.cfg` configuration file to support OpenSSL ciphers and Diffie-Hellman (DH) and Elliptic Curve Diffie-Hellman (ECDH) key exchange.

`ssl_ciphers`

Configures the list of supported cipher strings. For example, the following is the default.

```
ALL:!ADH:!LOW:!EXP:@STRENGTH
```

`ssl_dhparams_file`

Specifies the full path to the Diffie-Hellman (DH) parameters file. To create a DH key exchange with key size 1024 bits, issue the following command.

```
'openssl dhparam -outform PEM -out dhParam.pem 1024'
```

`ssl_ecdhcurve`

Specifies a curve name for a specific Elliptic Curve Diffie-Hellman key exchange. To list all available curves, issue the following command.

```
'openssl ecparam -list_curves'
```

Server-Wide Kerberos Support for Hive/Cloudera

Connections to a Hive server with Kerberos enabled can be run in one of two ways:

- ❑ **Server wide.** The same Kerberos credential is used for all connections. You must obtain a Kerberos ticket before starting the server.
- ❑ **Per user.** Each user connecting to the server connects to Hive using their own credentials from the Hive Adapter connection in the user profile.

To setup connections to a Kerberos enabled Hive instance:

1. The Reporting Server has to be secured. The server can be configured with security providers PTH, LDAP, DBMS, OPSYS, or Custom, as well as multiple security providers environment,
2. The following jar files have to be added to the server CLASSPATH or IBI_CLASSPATH variable. These are default locations and vary by distribution and release:

```
/hive_home/lib/hive-jdbc-standalone.jar  
/hadoop_home/hadoop-common.jar  
/hadoop_home/client/hadoop-auth.jar
```

Kerberos Server-Wide Requirements

In this configuration, all connections to the Hive instance will be done with the same Kerberos user ID derived from the Kerberos ticket that is created before the server starts.

1. Create Kerberos ticket using *kinit*:

```
kerbid01
```

where:

```
kerbid01
```

Is a Kerberos ID.

2. Verify Kerberos ticket using `klist`. The following message should be returned:

```
Ticket cache: FILE:/tmp/krb5cc_532
Default principal: kerbid01@REALM.COM

Valid starting Expires Service principal
04/29/16 16:26:50 04/30/16 02:26:53 krbtgt/REALM.COM@REALM.COM
renew until 05/06/16 16:26:50
```

3. Before configuring the Hive Adapter connection to a Kerberos enabled instance, the connection should be tested. Log in to the system running Hive and use Beeline, the native tool, to test it.
4. Start the server in the same Linux session where the Kerberos ticket was created. Log in to the Web Console and click the *Adapters* tab.
5. Right-click *Apache Hive also Cloudera Impala*. Use the following parameters to configure the adapter:

URL

Enter the same URL that you use to connect to the Hive Instance using Beeline.

```
jdbc:hive2://server:10000/default;principal=hive/server@REALM.COM
```

Security

Set to Trusted.

6. In the Select profile drop-down menu, select the *edasprof* server profile.
7. Click *Configure*.
8. Next, configure Java services. Click the *Workspace* tab and expand the *Java Services* folder.
9. Right-click *DEFAULT* and select *Properties*.
10. Expand the *JVM Settings* section. In the JVM options box, add the following:


```
-Djavax.security.auth.useSubjectCredsOnly=false
```
11. Restart Java services.

Once these steps are completed, the adapter can be used to access a Kerberos-enabled Hive instance.

Kerberos Per User Requirements

In this configuration, each connected user has a Hive Adapter connection with Kerberos credentials in the user profile.

1. Enable multi-user connection processing for Kerberos by adding the following line to your profile (edasprof.prf):

```
ENGINE SQLHIV SET ENABLE_KERBEROS ON
```

2. Configure the Hive Adapter Connection in the user profile using the following values:

URL

```
jdbc:hive2://server:10000/default;principal=hive/server@REALM.COM;  
auth=kerberos;kerberosAuthType=fromSubject
```

Security

Set to Explicit

User and Password

Enter your Kerberos user ID and password. The server will use those credentials to create a Kerberos ticket and connect to a Kerberos-enabled Hive instance.

Note that the user ID that you use to connect to the server does not have to be the same as the Kerberos ID you use to connect to a Kerberos enabled Hive instance.

Select Profile

Select your profile or enter a new profile name consisting of the security provider, an underscore and the user ID. For example, *ldap01_pgmxxx*.

3. Click *Configure*.

Using Kerberos for Single Sign-On on Linux

A server started with security provider OPSYS can be configured for Kerberos connections.

To implement the single sign on Kerberos security:

1. On the Access Control page, right-click the OPSYS provider, and select *Properties* from the shortcut menu.

The OPSYS Security Configuration page opens.

2. In the `krb5_srv_principal *` field, enter your server principal used for Kerberos security.

3. Click *Save*.

The `edaserve.cfg` file is updated with this attribute.

4. On the Workspace page, expand the Special Services and Listeners folder, right-click *TCP/HTTP*, and select *Properties of TCP*.
5. Check SECURITY=KERBEROS.
6. Click *Save and Restart Listener*.

The *odin.cfg* file is updated with this attribute.

When the server is started, a user can connect to the Web Console from Internet Explorer without a prompt for user ID and password. The *Login Info* shows connection type *Kerberos*. The connection is done using the Kerberos ticket from the browser. The connected user ID is derived from this ticket.

Connection to the server requires that there is a local OPSYS user ID with the same name as the Kerberos user ID on the operating system running the server. This user ID is used for *tscom3* process impersonation.

If a user signs off from the Kerberos connection, the user can make explicit connections with the local Unix user ID and password. Connection with another Kerberos user ID as an explicit connection will not work.

Upload Support for Validation of File Extensions

You can configure uploads to operate on a specific list of file extensions.

1. On the Applications tab, click the *Application Settings* button on the ribbon, or right-click the Application Directories tree and select *Application Settings* from the shortcut menu.

By default, the *upload_allowed* entry field contains a comma-separated list of all file extensions that the server can upload.

2. Edit the list to contain only the file extensions that should be allowed.
3. Click *Save and Restart Server*.

After the server has restarted, the Upload Wizard will not show files with unsupported extensions if you click *Select Upload File*. If you try to drag a file with an unsupported file extension to the Upload Wizard, a message will be displayed that it is an invalid type of file.

Encoding Passwords for a Custom Security Provider

You can configure Custom Provider authentication to encode passwords so that they cannot be viewed when they are passed as parameters to the authentication procedure.

1. On the Access Control tab, right-click a Custom Security Provider and select *Properties* from the shortcut menu, or right-click the *CUSTOM* folder and select *New* from the shortcut menu.

The *CUSTOM* Security Provider Configuration page opens.

2. Select *y* from the *cust_hashpasswd* drop-down list.
3. Click **Save**.

When a user is authenticated, the server will send SHA-256 hashed passwords to the authentication procedure. This means that the passwords will be transformed into values that will be unusable for signing in to the Web Console and server. The hashed values have to be stored as passwords in the SQL database being used for authentication. As an alternative, you can create a utility called from the CUSTOM provider authentication procedure that decodes hashed passwords before sending a request to the SQL database for authentication.

Support for One-Part or Two-Part Names for the Primary Security Provider

The server administrator can choose whether to register users and groups for the primary security provider with one-part or two-part names. With two-part names, the user ID or group name is prepended with the provider name and a backslash. For example:

```
OPSYS\user1
```

or

```
LDAP01\user2
```

By default, all users and groups are registered using two-part names. To configure one-part registrations:

1. On the **Access Control** tab, click *Settings* and then *Access Control Settings* on the ribbon, or right-click the **Access Control** tree and select *Settings* and then *Access Control Settings* from the shortcut menu.

- Select *n* from the *prepend_provider_name* drop-down list in the General section of the page, as shown in the following image.

Access Control Settings

^ **General**

Effective Server Administrator: user2

trusted_group_default_provider: PTH (does not accept trusted)

group_profile: primary

default_admin_role: Basic User

prepend_provider_name: **n**

^ **Web Console Anonymous Access**

anonymous_id:

anonymous_pass:

confirm password:

^ **Password**

password_change_delimiter: ,

password_change_wlogin: n

^ **IP/Provider Mapping**

Security provider will be selected automatically by client's IP address if provider name is not specified in the login ID

PTH: (example: 127.0.0.*, 127.*.1.1)

ldap01: (example: 127.0.0.*, 127.*.1.1)

- Click *Apply and Restart Server*.

The *prepend_provider_name=n* attribute is added to the *edaserve.cfg* file.

Simplified User Interface for Configuring Directory/File Privileges

The server administrator can now access Directory/File Privileges as a right-click menu option from any security subject (role, user, or group) on the Access Control tree.

The new Directory/File Privileges page enables the server administrator to configure privileges for all directories and files in those directories from a single page.

The new page has individual check boxes for Read, Write, and Execute privileges that can be changed on this page. The page is refreshed to update privileges for all inherited locations.

Each directory on the page has a right-click option to *Show All Directories/Files*. If this option is chosen, all nested folders and files are listed with their privileges.

Setting a Web Session Timeout Warning

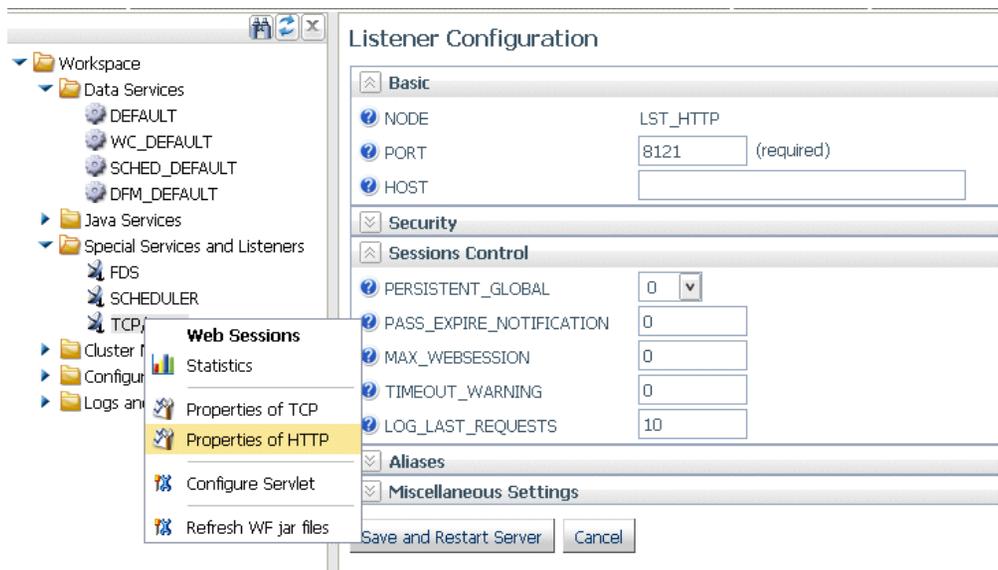
The server can post a warning about web session expiration before the session actually expires.

To set the number of minutes prior to session expiration that the warning displays:

1. On the Workspace tab, expand the *Special Services and Listeners* folder.
2. Right-click TCP/HTTP and select *Properties of HTTP* from the shortcut menu.

The Listener Configuration page opens.

3. Expand the *Sessions Control* group, as shown in the following image.



4. Enter a number of minutes, n , in the `TIMEOUT_WARNING` text box.

By default, the value is zero (0), meaning that no warning will be displayed.

5. Click *Save and Restart Server*.

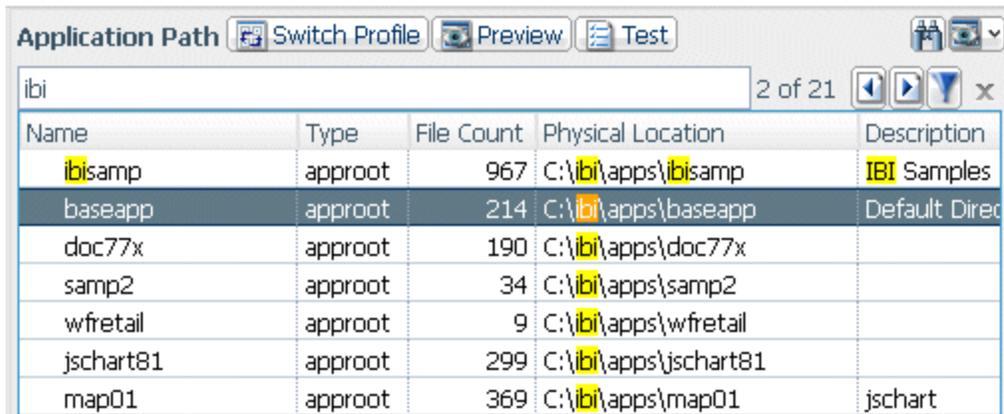
The `TIMEOUT_WARNING= n` attribute is added to the `odin.cfg` file.

Responding to the warning message resets the session expiration timer.

Using the Web Console Binocular Search

The binocular search is available on all web Console pages that display a list of files. For example, the binocular search is available on the Synonym Candidates pages, the Manage Files page, and the Application Path Configuration page.

Clicking the binoculars icon opens a Find box where you can enter characters, as shown in the following image.



The screenshot shows a web console interface with a search bar containing 'ibi' and a results table. The table has columns for Name, Type, File Count, Physical Location, and Description. The results are filtered to show only items containing 'ibi' in their names or locations. The 'ibi' in the search bar and the matching parts in the table are highlighted in yellow. The 'ibi' in the search bar is followed by '2 of 21' and navigation icons. The table has a header row and seven data rows.

| Name | Type | File Count | Physical Location | Description |
|-----------|---------|------------|----------------------|---------------|
| ibisamp | approot | 967 | C:\bi\apps\ibisamp | IBI Samples |
| baseapp | approot | 214 | C:\bi\apps\baseapp | Default Direc |
| doc77x | approot | 190 | C:\bi\apps\doc77x | |
| samp2 | approot | 34 | C:\bi\apps\samp2 | |
| wfretail | approot | 9 | C:\bi\apps\wfretail | |
| jschart81 | approot | 299 | C:\bi\apps\jschart81 | |
| map01 | approot | 369 | C:\bi\apps\map01 | jschart |

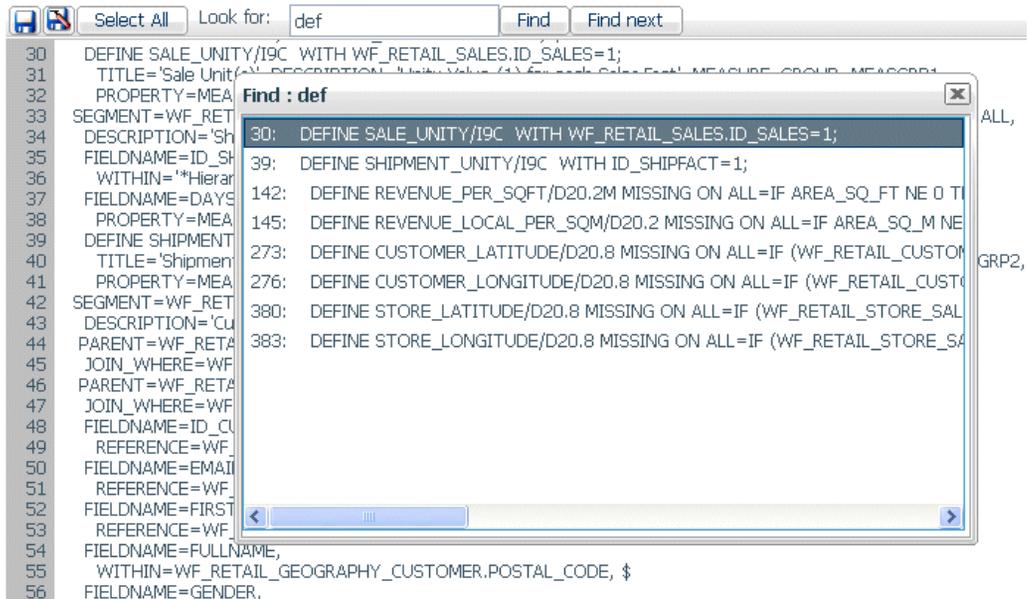
As you click on each row with a match, its number within the total number of matches is displayed in the form n of m .

All matching characters on the list will be highlighted. You can move from one matching row to the next or prior match using the arrow keys.

You can filter the list to display only the rows with matching characters by clicking the Filter icon. Clicking the Filter icon again restores the list.

Web Console Text Editor Enhancements

The Web Console Text Editor that is used to edit procedures, files, and server configuration files was enhanced with line numbers and an improved search facility. A search for characters in the *Find text* box opens a window with the list of lines matching the pattern, as shown in the following image.



As you click each line in the Find window, the Web Console text editor scrolls to display that line.

When you edit configuration files from the Workspace tab, the editor toolbar has new actions to:

- Refresh from disk.
- Reset to the server default settings.

Displaying the Connected User ID on the Web Console

When a server is running with security enabled, the upper right corner of the Web Console browser window displays the security provider (for two-part names) and the user ID of the connected user.

Adapters

This section describes new adapter features. All adapters can be used for WebFOCUS Reporting and SQL requests, and as sources for DataMigrator flows.

The server supports adapters designed to access a wide variety of data sources. Using the graphical Web Console, you can configure these adapters and create the metadata you need to seamlessly access the corresponding type of data.

On the Web Console, adapters are grouped as SQL, XML-based, ERP, OLAP, Procedures, Sequential and Indexed, DBMS, and Social Media.

All Adapters

This section provides descriptions of new features for all adapters.

Changing Common Adapter Settings

The Web Console Adapters page has a new button in the Troubleshooting group labeled *Change common adapter settings* that allows you to customize data type mappings and other miscellaneous settings that are common to all adapters.

Adapter-specific settings are customizable as well, and can be accessed by right-clicking a configured adapter folder and selecting *Change Settings* from the shortcut menu.

SQL Adapters

This section provides detailed descriptions of new features for SQL adapters.

All SQL Adapters

This section provides detailed descriptions of new features for all SQL adapters.

Optimization of Simplified Numeric Functions

The following new simplified numeric functions are optimized by the SQL adapters:

- CEILING.** Returns the smallest integer value greater than or equal to a value.
- EXPONENT.** Raises the constant e to a power.
- FLOOR.** Returns the largest integer less than or equal to a value.
- MOD.** Calculates the remainder from a division.
- POWER.** Raises a value to a power.

Optimization of Simplified Functions REPLACE, TOKEN, and POSITION

The following simplified character functions are optimized by the SQL adapters.

- ❑ **REPLACE.** Replaces all instances of a string.
- ❑ **TOKEN.** Extracts a token (substring) from a string.
- ❑ **POSITION.** Returns the first position of a substring.

Enhancement to the Optimization of LIKE for Fixed Length Fields

In prior releases, the LIKE operator was not optimized for those RDBMS engines (such as Db2) that count trailing blanks when comparing columns because the FOCUS LIKE operator is not sensitive to trailing blanks. Now, LIKE is optimized by removing trailing blanks in the SQL passed to those RDBMS engines using the RTRIM function. (`RTRIM(column) LIKE mask`).

LIKE optimization works as long as the mask does not end with an underscore character (`_`). Optimization does work when the mask starts or ends with a percent sign (`%`).

Example: Optimizing the LIKE Operator for Fixed Length Fields

The following request creates a fixed-length field named CATEGORY and uses it in a WHERE test with the LIKE operator.

```
SET TRACEUSER=ON
SET TRACEON=STMTRACE//CLIENT
SET TRACESTAMP=OFF
DEFINE FILE WF_RETAIL_LITE
CATEGORY/A10 = PRODUCT_SUBCATEG;
END
TABLE FILE WF_RETAIL_LITE
SUM COGS_US
BY CATEGORY
WHERE CATEGORY LIKE '%phone'
ON TABLE SET PAGE NOLEAD
END
```

The following SQL is generated, which trims trailing blanks from the CATEGORY column.

```
AGGREGATION DONE ...
SELECT
T7."PRODUCT_SUBCATEG",
SUM(T1."COGS_US")
FROM
D9990L29_wf_retail_sales T1,
D9990L29_wf_retail_product T7
WHERE
(T7."ID_PRODUCT" = T1."ID_PRODUCT") AND
(TRIM(TRAILING ' ' FROM T7."PRODUCT_SUBCATEG") LIKE '%phone')
GROUP BY
T7."PRODUCT_SUBCATEG"
ORDER BY
T7."PRODUCT_SUBCATEG"
FOR FETCH ONLY;
```

The output is shown in the following image.

| CATEGORY | Cost of Goods |
|------------|---------------|
| Smartphone | \$1,341.00 |

PERSISTENCE Option for HOLD FORMAT *sqlengine*

The PERSISTENCE option has been added to the HOLD command when it is used to create an SQL table.

This new command option allows you to generate intermediate tables of different types that will be used only during UPLOAD and EBL requests to accelerate performance by keeping all processing on the DBMS server instead of downloading data into a HOLD file. The actual type of the intermediate table will be determined at run time, based on specific DBMS-supported features and the data-populating mechanisms being used.

The syntax is:

```
HOLD FORMAT sqlengine PERSISTENCE {STAGE|PERMANENT}
```

where:

sqlengine

Identifies the relational DBMS in which to create the table.

STAGE

Will create either a Volatile or GLOBAL TEMPORARY table, for a DBMS that supports that functionality, currently HP Vertica, Db2, Oracle, Teradata, MS SQL, and MySQL. For a DBMS that does not support that functionality, a message will display and the table will not be created.

PERMANENT

Will create a regular SQL table with a uniquely-generated name that will be used in the request and will be available for further use after the request ends, but will be dropped at the end of the session. This is the default value for PERSISTENCE for HOLD FORMAT *sqlengine*.

Optimizing a Heterogeneous Join for a Qualified DBMS

Joins, including outer joins, between segments that belong to different SQL engines now are eligible for SQL optimization. The SQL adapters will optimize a join for segments that belong to the same engine, and then intermediate results from each engine will be combined on the server into one resulting join.

Enhanced BY Clause Optimization

The relational adapters now optimize reports that contain a BY field more efficiently, by no longer passing MAX(field) in the SELECT list to the RDBMS.

Tutorials Now Created With Foreign Key Constraints

When creating Star Schema or Retail Demo tutorial tables from the Web Console or Data Management Console, the fact tables now have foreign key constraints for each of the dimension tables. This facilitates building a cluster join from these tools. It also prevents loading rows in the fact table without corresponding rows in the dimension tables.

For example, the following is the Access File for the wf_retail_labor fact table, which has a foreign key constraint for the wf_retail_employee table.

```
SEGNAME=WF_RETAIL_LABOR,
  TABLENAME=wrд_wf_retail_labor,
  CONNECTION=wfretail,
  KEY=ID_LABOR, $
FOREIGN_KEY=fact_labor_id_employee_fk,
  PRIMARY_KEY_TABLE=wrд_wf_retail_employee,
  FOREIGN_KEY_COLUMN=ID_EMPLOYEE,
  PRIMARY_KEY_COLUMN=ID_EMPLOYEE, $
```

Creating Tutorials With Lowercase Column Names

Previously, column names for the tutorials were always created in uppercase. However, certain databases, such as PostgreSQL and those based on it (For example, Greenplum) expects column names to be lowercase.

Now, when the adapter setting `ALIAS_CASE` is set to `LOWER`, tutorial column names will be lowercase.

Saving Adapter Settings in a Profile or Stored Procedure

When you customize SQL adapter settings by right-clicking an adapter and selecting *Change Settings* from the shortcut menu, the top of the page lets you select either *Profile* or *Procedure* from the *Save settings in* drop-down list, as shown in the following image.

Change Settings for MS SQL Server

Save settings in Procedure Select 

If you select *Procedure*, a procedure is automatically generated with the settings you changed. You can accept the default application and procedure name, or you can select a different application in which to store the procedure and enter a file name for the procedure.

The procedure can be added to a Process Flow, making you able to define flow-level settings rather than global settings using the Web Console.

Mapping Spatial Data Stored in RDBMS Columns

The Adapters for MS SQL Server, Oracle, Teradata, and MySQL now support direct read from DBMS spatial columns that store Esri data.

The Access File contains the expression needed to retrieve the spatial data, which is different for each DBMS. The geographic data is returned as a Geometry object that can be used to render maps in WebFOCUS GRAPH requests.

For example, in the Following SQL Server Master File, the field GEO contains spatial data representing geographic areas. In SQL Server, the data type for this field is GEOMETRY or GEOGRAPHY. In the Master File, it is mapped as text, with a GEOGRAPHIC_ROLE attribute.

```
FIELDNAME=GEO, ALIAS=GEO, USAGE=TX50, ACTUAL=TX,MISSING=ON,
GEOGRAPHIC_ROLE=GEOMETRY_AREA, $
```

The following are the Access File attributes for this field.

```

IELD=GEO,
SQL_FLD_OBJ_TYPE=OPAQUE,
SQL_FLD_OBJ_PROP=GEOMETRY_SHAPE,
SQL_FLD_OBJ_EXPR='DB_EXPR("GEO".STGeometryType()
+ ',',''
+ CAST( "GEO".STSrid AS VARCHAR(10) )
+ ',',''
+ "GEO".STAsText())', $

```

The following request retrieves the GEO field.

```

TABLE FILE EUROPE_SWASIA
PRINT NAME GEO
WHERE NAME IN ('FRANCE', 'GERMANY', 'UNITED KINGDOM')
END

```

The SQL passed to SQL Server as a result of this request follows.

```

SELECT
T1."NAME" ,
(T1."GEO".STGeometryType() + ', ' + CAST(
T1."GEO".STSrid AS VARCHAR(10) ) + ', ' +
T1."GEO".STAsText())
FROM
EUROPE_SWASIA T1
WHERE
(T1."NAME" IN ('FRANCE', 'GERMANY', 'UNITED KINGDOM'));

```

The following are sample Access File attributes for Oracle.

```

SQL_FLD_OBJ_EXPR='DB_EXPR(CASE "GEO".Get_GType()
WHEN 1 THEN ''Point''
WHEN 2 THEN ''LineString''
WHEN 3 THEN ''Polygon''
WHEN 4 THEN ''GeometryCollection''
WHEN 5 THEN ''MultiPoint''
WHEN 6 THEN ''MultiLineString''
WHEN 7 THEN ''MultiPolygon''
WHEN 8 THEN ''PolyhedralSurface''
ELSE ''Geometry'' END
|| ',',''
|| CAST( "GEO".SDO_SRID AS VARCHAR(10) )
|| ',',''
|| "GEO".Get_WKT())', $
--Teradata:
SQL_FLD_OBJ_EXPR='DB_EXPR(Substring("GEO".ST_GeometryType() From
4)
|| ',',''
|| CAST( "GEO".ST_SRID() AS VARCHAR(10) )
|| ',',''
|| "GEO".ST_AsText())', $

```

Enhanced Messages About SQL Optimization

More descriptive messages have been developed when SQL Optimization is not done for a request. In some cases, a message will contain information about ways to possibly change the syntax so that optimization can be used.

Optimization of Function DTRUNC for First Day of Week

Calls to the DTRUNC function can be optimized when using the new WEEK parameter that returns the first day of the week in which the date occurs.

Optimization of Function DTRUNC for YEAR_END, QUARTER_END, MONTH_END and WEEK_END

Calls to the DTRUNC function can be optimized when using the new YEAR_END, QUARTER_END, MONTH_END and WEEK_END parameters that return the last day of the period in which the date occurs.

CONCAT Function Optimization

Simplified character function CONCAT is passed to the Relational Adapters in the generated SQL.

Optimization of the DT_CURRENT_DATE, DT_CURRENT_DATETIME, and DT_CURRENT_TIME Functions

The simplified functions DT_CURRENT_DATE, DT_CURRENT_DATETIME, and DT_CURRENT_TIME are passed to the Relational Adapters in the generated SQL request.

Example: Optimizing the DT_CURRENT_DATETIME Function

The following request calls the DT_CURRENT_DATETIME function.

```
SET TRACEUSER=ON
SET TRACEON=STMTRACE//CLIENT
SET TRACESTAMP=OFF
DEFINE FILE WF_RETAIL_LITE
CURRDT/HYMD5 = DT_CURRENT_DATETIME(SECOND) ;
END
TABLE FILE WF_RETAIL_LITE
SUM QUANTITY_SOLD CURRDT
BY PRODUCT_CATEGORY
ON TABLE SET PAGE NOLEAD
END
```

The following SQL is generated for Microsoft SQL Server.

```
SELECT
T7."PRODUCT_CATEGORY",
SUM(T1."QUANTITY_SOLD" ),
MAX(SYSDATETIME ())
FROM
( wrd_wf_retail_sales T1
LEFT OUTER JOIN
 wrd_wf_retail_product T7
ON T7."ID_PRODUCT" = T1."ID_PRODUCT" )
GROUP BY
T7."PRODUCT_CATEGORY"
ORDER BY
T7."PRODUCT_CATEGORY";
```

The output is shown in the following image.

| Product Category | Quantity Sold | CURRDT |
|------------------|---------------|---------------------|
| Accessories | 2,034 | 2016/03/25 14:03:54 |
| Camcorder | 1,956 | 2016/03/25 14:03:54 |
| Computers | 865 | 2016/03/25 14:03:54 |
| Media Player | 3,140 | 2016/03/25 14:03:54 |
| Stereo Systems | 4,679 | 2016/03/25 14:03:54 |
| Televisions | 362 | 2016/03/25 14:03:54 |
| Video Production | 887 | 2016/03/25 14:03:54 |

SQL Adapters Support CREATE FILE With FOREIGNKEYS

The CREATE FILE command now supports defining foreign key constraints to enforce referential integrity.

Syntax: How to Issue a CREATE FILE Command With Foreign Keys

```
CREATE FILE app/synonym [WITHFK [DROP]]
```

where:

app/synonym

Is the synonym that describes the table to be created.

DROP

Drops the table if it already exists and then creates it.

Application Access Control for HyperStage Tables

SQL Adapters Optimize Calls to the GIS_POINT Function in a DEFINE

Given a WKID (Well-Known ID) spatial reference, longitude, and latitude, the GIS_POINT function builds a JSON point defining a Geometry object with the provided WKID, longitude, and latitude. The function is optimized for those SQL engines that can build a JSON geometry object.

Example: Optimizing Calls to the GIS_POINT Function

The following request calls the GIS_POINT function in a DEFINE command. Note that the field WKID is defined in the WF_RETAIL_LITE Master File.

```
SET TRACEUSER=ON
SET TRACEON = STMTRACE//CLIENT
SET TRACESTAMP=OFF

DEFINE FILE wf_retail_lite
Point/A150 MISSING ON ALL=GIS_POINT(WKID, CONTINENT_LONGITUDE,
CONTINENT_LATITUDE);
END
TABLE FILE wf_retail_lite
PRINT Point
BY WF_RETAIL_GEOGRAPHY_STORE.CONTINENT_CODE AS 'Continent Code'
ON TABLE SET PAGE NOLEAD
END
```

The following SQL is generated.

```

SELECT
T1."ID_STORE",
T1."ID_CUSTOMER",
T2."ID_GEOGRAPHY",
T3."ID_GEOGRAPHY",
T3."CONTINENT_LATITUDE",
T3."CONTINENT_LONGITUDE",
T5."ID_GEOGRAPHY",
T6."ID_GEOGRAPHY",
T6."CONTINENT_CODE"
FROM
( ( ( wrd_wf_retail_sales T1
INNER JOIN
wrd_wf_retail_customer T2
ON (T2."ID_CUSTOMER" = T1."ID_CUSTOMER" ) )
LEFT OUTER JOIN
wrd_wf_retail_geography T3
ON T3."ID_GEOGRAPHY" = T2."ID_GEOGRAPHY" )
INNER JOIN
wrd_wf_retail_store T5
ON (T5."ID_STORE" = T1."ID_STORE" ) )
LEFT OUTER JOIN
wrd_wf_retail_geography T6
ON T6."ID_GEOGRAPHY" = T5."ID_GEOGRAPHY" )
ORDER BY
T6."CONTINENT_CODE";

```

The partial output is shown in the following image.

| Continent Code | Point |
|----------------|---------------------------------------------------------------------------------------------------------------------------------|
| NA | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": -57.11502100, "y": -22.83625000}}) |
| | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": 17.48000000, "y": 53.54999900}}) |
| | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": 106.45999900, "y": 36.41999800}}) |
| | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": -105.00000000, "y": 54.00000000}}) |
| | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": 17.48000000, "y": 53.54999900}}) |
| | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": 17.48000000, "y": 53.54999900}}) |
| | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": -57.11502100, "y": -22.83625000}}) |
| | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": 17.48000000, "y": 53.54999900}}) |
| | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": -105.00000000, "y": 54.00000000}}) |
| | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": -105.00000000, "y": 54.00000000}}) |
| | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": -105.00000000, "y": 54.00000000}}) |
| | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": -105.00000000, "y": 54.00000000}}) |
| | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": -105.00000000, "y": 54.00000000}}) |
| | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": 17.48000000, "y": 53.54999900}}) |
| | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": 17.48000000, "y": 53.54999900}}) |
| | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": -105.00000000, "y": 54.00000000}}) |
| | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": -105.00000000, "y": 54.00000000}}) |
| | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": 17.48000000, "y": 53.54999900}}) |
| | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": -57.11502100, "y": -22.83625000}}) |
| | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": -57.11502100, "y": -22.83625000}}) |
| | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": 17.48000000, "y": 53.54999900}}) |
| | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": 17.48000000, "y": 53.54999900}}) |
| | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": 17.48000000, "y": 53.54999900}}) |
| | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": 17.48000000, "y": 53.54999900}}) |
| | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": -105.00000000, "y": 54.00000000}}) |
| | ({"spatialReference": {"wkid": 4326}, "geometryType": "esriGeometryPoint", "geometry": {"x": 106.45999900, "y": 36.41999800}}) |

Enhanced Optimization of Selection Tests

In prior releases, all optimized selection tests were passed to the RDBMS and also re-evaluated when the answer set was returned to WebFOCUS. Starting in this release, individual tests passed to the SQL engines may be excluded from execution. This enhances performance and also allows tests to be optimized that are not totally compatible with how WebFOCUS evaluates them.

Optimization of the PARTITION_REF Function

Calls to the PARTITION_REF function in an aggregation request with a WHERE TOTAL phrase can be passed to SQL engines that have a LAG function, such as Db2, Oracle, Teradata, and Microsoft SQL Server.

Example: Optimizing the PARTITION_REF Function

The following request using the Adapter for Oracle calls the PARTITION_REF function, which displays values from prior rows.

```
TABLE FILE WF_RETAIL_LITE
SUM
  COGS_US  COMPUTE COGS1 MISSING ON = PARTITION_REF(COGS_US,TABLE, -1);
  BY PRODUCT_CATEGORY
WHERE TOTAL COGS_US GT 421;
ON TABLE SET PAGE NOPAGE
END
```

The following SQL is generated that calls the Oracle LAG function.

```
SELECT
"SK001_PRODUCT_CATEGORY",
"VB001_SUM_COGS_US",
"LAG002"
FROM (
SELECT
T7."PRODUCT_CATEGORY" AS "SK001_PRODUCT_CATEGORY",
SUM(T1."COGS_US") AS "VB001_SUM_COGS_US",  LAG( SUM(T1."COGS_US"), 1)
OVER( ORDER BY
T7."PRODUCT_CATEGORY") AS "LAG002"
FROM
( D99964R6_sales T1
LEFT OUTER JOIN
D99964R6_product T7
ON T7."ID_PRODUCT" = T1."ID_PRODUCT" )
GROUP BY
T7."PRODUCT_CATEGORY"
) X
WHERE ("VB001_SUM_COGS_US" > 421);
```

The output is shown in the following image.

| Product Category | Cost of Goods | COGS1 |
|------------------|---------------|----------|
| Camcorder | \$799.00 | 421.00 |
| Computers | \$1,936.00 | 799.00 |
| Media Player | \$3,506.00 | 1,936.00 |
| Stereo Systems | \$2,561.00 | 3,506.00 |

New Optimization Controls Using SET FEATOPT

The adapter SET FEATOPT command can be used to selectively disable optimization of specific WebFOCUS features when the results may be undesirable. The ability to disable IF-THEN-ELSE and IF TOTAL or WHERE TOTAL optimization has been added. By default, all optimization features are enabled.

FEATOPT settings are displayed in Web Console debug mode.

The SET OPTIFTHENELSE command has been deprecated.

Syntax: How to Control IF TOTAL and WHERE TOTAL Optimization

```
ENGINE sqlengine SET FEATOPT TOTALTEST {ON|OFF}
```

where:

sqlengine

Specifies the adapter.

ON

Passes the HAVING clause to the DBMS, as well as CASE logic, when applicable. The HAVING clause results from passing an IF TOTAL or WHERE TOTAL phrase from the WebFOCUS request. ON is the default value.

OFF

Suppresses adding the HAVING clause to the generated SELECT.

Example: Disabling WHERE TOTAL Optimization Using FEATOPT

The following request against SQL Server has a WHERE TOTAL test.

```
SET TRACEUSER=ON
SET TRACEON = STMTRACE//CLIENT
SET TRACESTAMP=OFF
TABLE FILE WF_RETAIL_LITE
SUM COGS_US GROSS_PROFIT_US
BY PRODUCT_CATEGORY
WHERE TOTAL COGS_US GT 400000
END
```

The default generated SQL follows. The WHERE TOTAL test has been passed to the DBMS as a HAVING clause.

```
SELECT
T7."PRODUCT_CATEGORY",
SUM(T1."COGS_US"),
SUM(T1."GROSS_PROFIT_US")
FROM
( wrd_wf_retail_sales T1
LEFT OUTER JOIN
wrd_wf_retail_product T7
ON T7."ID_PRODUCT" = T1."ID_PRODUCT" )
GROUP BY
T7."PRODUCT_CATEGORY" HAVING
( SUM(T1."COGS_US") > 400000)
ORDER BY
T7."PRODUCT_CATEGORY";
```

Adding the ENGINE SQLMSS SET FEATOPT TOTALTEST OFF command generates the following SQL. The WHERE TOTAL test has not been passed in the generated SQL and will be handled by WebFOCUS.

```
SELECT
T7."PRODUCT_CATEGORY",
SUM(T1."COGS_US"),
SUM(T1."GROSS_PROFIT_US")
FROM
( wrd_wf_retail_sales T1
LEFT OUTER JOIN
wrd_wf_retail_product T7
ON T7."ID_PRODUCT" = T1."ID_PRODUCT" )
GROUP BY
T7."PRODUCT_CATEGORY"
ORDER BY
T7."PRODUCT_CATEGORY";
```

Syntax: How to Control IF-THEN-ELSE Optimization

```
ENGINE sqlengine SET FEATOPT IFTHENELSE {ON|OFF}
```

where:

sqlengine

Specifies the adapter.

ON

Passes the IF-THEN-ELSE expressions used to create a DEFINE field to the DBMS as CASE logic, when possible. ON is the default value. This optimization is subject to the limitations on optimizing DEFINE fields. The DEFINE field must be an object of a selection test or an aggregation request.

OFF

Suppresses passing IF-THEN-ELSE expressions in the generated SQL.

Note: The SET OPTIFTHENELSE command has been deprecated.

Example: **Disabling IF-THEN-ELSE Optimization Using FEATOPT**

The following request against SQL Server has a DEFINE field created using IF-THEN-ELSE syntax.

```
SET TRACEUSER=ON
SET TRACEON = STMTRACE//CLIENT
SET TRACESTAMP=OFF
DEFINE FILE WF_RETAIL_LITE
DEF1 = IF (PRODUCT_CATEGORY EQ ' Accessories') AND (BRAND EQ 'Sony ')
AND (PRODUCT_SUBCATEG EQ 'Headphones') THEN 1 ELSE 0;
END
TABLE FILE WF_RETAIL_LITE
PRINT PRODUCT_CATEGORY PRODUCT_SUBCATEG BRAND
WHERE DEF1 EQ 1
END
```

The default generated SQL follows. The IF-THEN-ELSE syntax has been passed to the DBMS as CASE logic.

```
SELECT
T7."BRAND",
T7."PRODUCT_CATEGORY",
T7."PRODUCT_SUBCATEG"
FROM
wrd_wf_retail_product T7
WHERE
((CASE WHEN ((T7."PRODUCT_CATEGORY" = ' Accessories') AND
(T7."BRAND" = 'Sony ') AND (T7."PRODUCT_SUBCATEG" =
'Headphones')) THEN 1 ELSE 0 END) = 1);
```

Adding the ENGINE SQLMSS SET FEATOPT IFTHENELSE OFF command generates the following SQL. The IF-THEN-ELSE syntax has not been passed in the generated SQL and will be handled by WebFOCUS.

```
SELECT
T7."BRAND",
T7."PRODUCT_CATEGORY",
T7."PRODUCT_SUBCATEG"
FROM
wrd_wf_retail_product T7;
```

New SQL Functions

The SQL Functions MOD, CEIL, FLOOR, LEAST, and GREATEST are now supported.

MOD: Returning the Remainder of a Division

The SQL function MOD returns the remainder of the first argument divided by the second argument.

Syntax: How to Return the Remainder of a Division

`MOD(n, m)`

where:

n

Numeric

Is the dividend (number to be divided).

m

Numeric

Is the divisor (number to divide by). If the divisor is zero (0), MOD returns NULL.

Example: Returning the Remainder of a Division

MOD returns the remainder of *n* divided by *m*.

`MOD(N, M)`

For N=16 and M=5, the result is 1.

For N=34.5 and M=3, the result is 1.5.

CEIL: Returning the Smallest Integer Greater Than or Equal to a Value

CEIL returns the smallest integer value not less than the argument. CEILING is a synonym for CEIL.

Syntax: How to Return the Smallest Integer Greater Than or Equal to a Value

`CEIL(n)`

where:

n

Numeric or Alphanumeric

Is the value less than or equal to the returned integer. For exact-value numeric arguments, the return value has an exact-value numeric type. For alphanumeric or floating-point arguments, the return value has a floating-point type.

Example: Returning an Integer Greater Than or Equal to a Value

CEIL returns an integer greater than or equal to the argument.

`CEIL(N)`

For N=1.23, the result is 2.

For N=-1.23, the result is -1.

FLOOR: Returning the Largest Integer Less Than or Equal to a Value

FLOOR returns the largest integer value not greater than a value.

Syntax: How to Return the Largest Integer Less Than or Equal to a Value

`FLOOR(n)`

where:

n

Numeric or Alphanumeric

Is the value greater than or equal to the returned integer. For exact-value numeric arguments, the return value has an exact-value numeric type. For alphanumeric or floating-point arguments, the return value has a floating-point type.

Example: Returning an Integer Less Than or Equal to a Value

FLOOR returns an integer less than or equal to the argument.

`FLOOR(N)`

For N=1.23, the result is 1.

For N=-1.23, the result is -2.

LEAST: Returning the Smallest Value

With two or more arguments, LEAST returns the smallest (minimum-valued) argument. The arguments are compared using the following rules:

- If any argument is NULL, the result is NULL. No comparison is needed.
- If the return value is used in an INTEGER context, or all arguments are integer-valued, they are compared as integers.
- If the return value is used in a floating-point context, or all arguments are floating-point-valued, they are compared as floating-point values.

- ❑ If the arguments comprise a mix of numbers and strings, they are compared as numbers.
- ❑ If any argument is a character string, the arguments are compared as character strings. In all other cases, the arguments are compared as binary strings.

Syntax: **How to Return the Smallest Value**

`LEAST(value1, value2, ... , valuen)`

where:

`value1, value2, ... , valuen`

Numeric or alphanumeric

Are the values to be compared.

Example: **Returning the Smallest Value**

LEAST returns the smallest argument.

`LEAST(X, Y, Z)`

For X=2, Y=0, and Z=-1, the result is -1.

For X='B', Y='A', and Z='C', the result is 'A'.

GREATEST: Returning the Largest Value

With two or more arguments, GREATEST returns the largest (maximum-valued) argument. The arguments are compared using the following rules:

- ❑ If any argument is NULL, the result is NULL. No comparison is needed.
- ❑ If the return value is used in an INTEGER context, or all arguments are integer-valued, they are compared as integers.
- ❑ If the return value is used in a floating-point context, or all arguments are floating-point-valued, they are compared as floating-point values.
- ❑ If the arguments comprise a mix of numbers and strings, they are compared as numbers.
- ❑ If any argument is a character string, the arguments are compared as character strings. In all other cases, the arguments are compared as binary strings.

Syntax: **How to Return the Largest Value**

`GREATEST(value1, value2, ... , valuen)`

where:

value1, value2, ... , valuen

Numeric or alphanumeric

Are the values to be compared.

Example: Returning the Largest Value

GREATEST returns the smallest argument.

```
GREATEST(X, Y, Z)
```

For X=2, Y=0, and Z=-1, the result is 2.

For X='B', Y='A', and Z='C', the result is 'C'.

SQL Adapters Create Unique Keys for HOLD FORMAT SQL_SCRIPT

KEY information for SQL_SCRIPT files created using HOLD FORMAT SQL_SCRIPT is propagated to the Access File, which improves JOIN optimization.

Example: Propagating Key Information to the Access File Generated by HOLD FORMAT SQL_SCRIPT

The following request generates an SQL_SCRIPT file with two keys.

```
TABLE FILE WF_RETAIL_LITE
SUM MIN.COGS_US MAX.GROSS_PROFIT_US
BY BUSINESS_SUB_REGION
BY STATE_PROV_CODE_ISO_3166_2
WHERE BUSINESS_SUB_REGION EQ 'Midwest' OR 'East'
WHERE COUNTRY_NAME EQ 'United States'
ON TABLE HOLD AS RETAILS FORMAT SQL_SCRIPT
END
```

This request produces the following script file, `retails.sql`.

```

SELECT
T3."BUSINESS_SUB_REGION" AS "SK001_BUSINESS_SUB_REGION",
T3."STATE_PROV_CODE_ISO_3166_2" AS "SK002_STATE_PROV_CODE_ISO_3166",
  MIN(T1."COGS_US") AS "VB001_MIN_COGS_US",
  MAX(T1."GROSS_PROFIT_US") AS "VB002_MAX_GROSS_PROFIT_US
" FROM
wrđ_wf_retail_sales T1,
wrđ_wf_retail_customer T2,
wrđ_wf_retail_geography T3
WHERE
(T2."ID_CUSTOMER" = T1."ID_CUSTOMER") AND
(T3."ID_GEOGRAPHY" = T2."ID_GEOGRAPHY") AND
(T3."COUNTRY_NAME" = 'United States') AND
(T3."BUSINESS_SUB_REGION" IN('Midwest', 'East'))
GROUP BY
T3."BUSINESS_SUB_REGION",
T3."STATE_PROV_CODE_ISO_3166_2"

```

The RETAILS Master File follows.

```

FILENAME=RETAILS, SUFFIX=SQLMSS , $
  SEGMENT=RETAILS, SEGTYPE=S0, $
    FIELDNAME=BUSINESS_SUB_REGION, ALIAS=SK001_BUSINESS_SUB_REGION,
USAGE=A25V, ACTUAL=A25V,
  MISSING=ON,
  TITLE='Customer,Business,Sub Region', $
    FIELDNAME=STATE_PROV_CODE_ISO_3166_2,
ALIAS=SK002_STATE_PROV_CODE_ISO_3166, USAGE=A5V, ACTUAL=A5V,
  MISSING=ON,
  TITLE='Customer,State,Province,ISO-3166-2,Code', $
    FIELDNAME=COGS_US, ALIAS=VB001_MIN_COGS_US, USAGE=D20.2M, ACTUAL=D8,
  MISSING=ON,
  TITLE='Cost of Goods', $
    FIELDNAME=GROSS_PROFIT_US, ALIAS=VB002_MAX_GROSS_PROFIT_US,
USAGE=D20.2M, ACTUAL=D8,
  MISSING=ON,
  TITLE='Gross Profit', $

```

The RETAILS Access File contains the key information.

```

SEGNAME=RETAILS,
  CONNECTION=wfretail,
  DATASET=RETAILS.SQL,
  KEY=BUSINESS_SUB_REGION/STATE_PROV_CODE_ISO_3166_2,
  SUBQUERY=Y, $

```

Enhancement to SQL Adapter Native Messaging Interface

In prior releases, the messages returned by an SQL adapter were displayed as one long string, making them difficult to read and understand. Starting in this release, native SQL messages will be presented in readable blocks, each as a FOC1500 message on a separate line. For example:

```
(FOC1400) SQLCODE IS -1 (HEX: FFFFFFFF) XOPEN: 42000
(FOC1500) : Microsoft SQL Server Native Client 10.0: [42000] Syntax
error,
(FOC1500) : permission violation, or other nonspecific error
(FOC1406) SQL OPEN CURSOR ERROR. : __WF_RETAIL_WF_RETAIL_SALES
```

Improved Messaging for Environmental Problems

Messages that the SQL Adapters return to edaprint in case of a non-existent or incorrect path have been improved.

- Each environmental path is now clearly printed in edaprint.
- Those that do not exist are marked as follows.

```
----NOT FOUND
```

Random Data Sampling in SQL

Certain SQL Adapters such as Microsoft SQL Server, Oracle (ODBC and JDBC), and SAP HANA support random data sampling. For SAP HANA, sampling is only supported for column-based tables. A report can return a random sample of data from these RDBMSs using the following settings.

```
ENGINE engine SET TABLESAMPLING_TYPE {OFF|ROW|BLOCK}
ENGINE INT SET TABLESAMPLING_PERCENTAGE n
```

where:

engine

Specifies the adapter.

OFF

Turns off table sampling.

ROW

Uses row-based random sampling. This is the default value.

BLOCK

Uses page-based random sampling.

n

Is a number between 1 and 99 that specifies the percentage of records to be returned. The value blank, which is the default, indicates that sampling is not in effect.

For example, the following settings for SAP HANA return about 5% of the requested answer set.

```
ENGINE INT SET TABLESAMPLING_PERCENTAGE 5
ENGINE SQLHANA SET TABLESAMPLING_TYPE ROW
```

Consider the following request.

```
TABLE FILE filename WRITE D
END
```

The following SQL is generated as a result of these settings.

```
SELECT
T1."D" ,
SUM(T1."D" )
FROM tablename T1 TABLESAMPLE BERNOULLI(05)
GROUP BY
T1."D"
ORDER BY
T1."D";
```

Using BLOCK instead of ROW will generate native TABLESAMPLE SYSTEM(*n*) instead of BERNOULLI(*n*).

Optimization of Expressions on Partial Dates

Partial date formats such as YY, Q, D, and M, which are actually integer values, can now be optimized when used in expressions.

Adapter for Apache Drill

Apache Drill is a query engine for data managed by Hadoop in HDFS or MapR-FS, a variety of NoSQL databases including HBase and MapR-DB, and MongoDB, and other data sources. Drill can use Hive metadata or derive metadata from self-describing data files.

Adapter for Db2

This section provides detailed descriptions of new features for the Adapter for Db2.

Change to Multi-Row Inserts on z/OS

Db2 on z/OS changed the default behavior for multiple-row inserts from non-atomic to atomic. This feature resets the default behavior of the Adapter for Db2 back to non-atomic. Non-atomic maximizes the number of valid rows that are added to a table when a non-fatal error (such as duplicate insert) occurs.

Support for TIMESTAMP for CDC_START on z/OS

Db2 version 10 now supports the Timestamp value of a START parameter in a CDC synonym.

Conversion to ANSI Date, Time, and Timestamp Literals

When the Adapter for Db2 converts a request that contains a date, time, or timestamp literal to SQL, it converts the literal to ANSI standard format in the generated SQL.

For example, consider the following WHERE phrase:

```
WHERE DATECONST1 EQ '19010228'
```

The adapter will convert the WHERE phrase to the following predicate in the generated SQL:

```
WHERE
(T1."DATECONST1" = DATE '1901-02-28')
```

Support DECFLOAT Data Type as MATH and XMATH

The new Db2 data types MATH and XMATH support the necessary precision for compatible decimal computation. The Db2 data type DECFLOAT(16) can be mapped as ACTUAL format MATH or FLOAT, and the Db2 DECFLOAT(34) data type can be mapped as ACTUAL format XMATH or FLOAT using the following settings.

```
SQL DB2 SET CONV_DECFLOAT16 MATH
SQL DB2 SET CONV_DECFLOAT16 FLOAT
SQL DB2 SET CONV_DECFLOAT34 XMATH
SQL DB2 SET CONV_DECFLOAT34 FLOAT
```

The default precision is 18 and the default scale is 2 for the MATH data type. You can change these defaults using the following commands, where *p* is the precision and *s* is the scale.

```
SQL DB2 SET CONV_DECFM_PREC p
SQL DB2 SET CONV_DECFM_SCALE s
```

The default precision is 34 and the default scale is 2 for the XMATH data type. You can change these defaults using the following commands, where *p* is the precision and *s* is the scale.

```
SQL DB2 SET CONV_DECFX_PREC p
SQL DB2 SET CONV_DECFX_SCALE s
```

Adapter for C9 INC

This section provides detailed descriptions of new features for the Adapter for C9 INC.

New Setting Available for Temporal Lower Boundary Date

The TREND_LOW_BOUNDARY = YYYY-MM-DD setting provides a lower boundary for the temporal trending period that will be used when the lower boundary is not specified by a TABLE query FROM-TO clause.

The default c9 value is 1970-01-01. Historical data filtered by the following expression may be excessive and cause performance problems.

```
WHERE DAILY/MONTHLY/QUARTERLY/YEARLY_TREND FROM '1970-01-01' TO
CURRENT_DATE
```

This setting will relieve such problems.

Adapter for Cloudera Impala

The Adapter for Cloudera Impala provides for analysis of both structured and complex data. Impala provides a JDBC driver and the Hive Query Language, a SQL-like interface with a real time query capability that shares the metadata layer and query language with Hive.

Adapter for EXASol ODBC

The Adapter for EXASol ODBC is new in this release and can be found under SQL Adapters on the Web Console. The adapter provides read/write access to data stored in an EXASOL in-memory database is available on Windows and RH Linux. The adapter uses the EXASolution ODBC driver API.

Adapter for EXASol ODBC: Extended Bulk Load

An extended bulk load option is available that uses the IMPORT command for faster loading.

Adapter for Google BigQuery

The Adapter for Google BigQuery is new in this release and can be found under SQL Adapters on the Web Console. The adapter is used to load data into the Google BigQuery environment and report against the information that is residing in the Google BigQuery environment. BigQuery provides a REST-based API that requires all requests to be authorized by an authenticated user or a service account.

Adapter for Hive

This section provides detailed descriptions of new features for the Adapter for Hive.

Synonym Creation for SQL Strings

The adapter supports Create Synonym for an External SQL Script.

Insert/Update for ORC Files

As of Hive 0.14, the UPDATE operation is supported for data stored as Optimized Row Columnar (ORC) format. While not designed for OLTP, this does provide an option for dimension tables and for correcting data.

DataMigrator and MODIFY as well as SQL Pass through can take advantage of this capability.

When the Hive metadata is created it must contain these additional parameters:

```
CLUSTERED BY (column [,column..]) INTO n BUCKETS  
STORED AS ORC TBLPROPERTIES ('transactional'='true')
```

Where the number of buckets and one more column names that are used to cluster the data are specified.

Note that DataMigrator currently requires a key column to be identified to perform update operations. While Hive does not identify columns as keys, since bucketed columns cannot be updated, they should be so identified. Before creating a data flow to perform updates, edit the synonym for the target table and select the Key Component checkbox for the bucketed columns and any others required to uniquely identify the row.

Adapter for i Access

This section provides detailed descriptions of new features for the Adapter for i Access.

JDBC Adapter Configuration Available

A new SQLIIA JDBC-based adapter is available to enable access to the IBM i platform from UNIX, Windows, and Linux.

Adapter for Informix

This section provides detailed descriptions of new features for the Adapter for Informix.

Adapter for Informix Supports Extended Bulk Load

DataMigrator with a target table in Informix supports Extended Bulk Load using the native DBLOAD utility.

Adapter for Jethro

Jethro is an acceleration engine that makes real-time Business Intelligence work on Big Data. The adapter is available for ODBC (on Windows only) and JDBC (on Linux/Unix/Windows).

Adapter for MariaDB

The Adapter for MariaDB is new in this release and can be found under SQL Adapter on the Web Console. The adapter provides read/write access to data stored in the open source MariaDB database using the MariaDB Connector/J.

Adapter for MariaDB: Change Data Capture (CDC) Support

DataMigrator supports Change Data Capture (CDC) for MariaDB with Load Type IUD.

Adapter for Microsoft SQL Server

The following features are supported for Microsoft SQL Server in this release.

Adapter for Microsoft SQL Server: Support for Computed Columns as R/Only

Adapters for MS SQL (SQLMSS and MSODBC) now map SQL Server computed columns as read-only, with the FIELDTYPE=R attribute.

JDBC and ODBC Adapters for Microsoft SQL Server Support Version 2016

ODBC and JDBC Adapters for Microsoft SQL Server support the recently released Microsoft SQL Server version 2016, ODBC driver version 13, and JDBC driver version 6.

ODBC Adapter for Microsoft SQL Server Supported on Red Hat Linux

ODBC based access to MS SQL Server is provided from Linux Red Hat 6 on the Intel x64 platform. Performance savings for large answer set retrieval can reach 50% compared to JDBC access from Linux.

ODBC Adapter for Microsoft SQL Server Support for Extended Bulk Load

The Adapter for MSODBC Supports extended bulk loading via MS Bulk Copy utility on Windows and Linux.

ODBC Adapter for Microsoft SQL Server Supports Change Data Capture for NVARCHAR(MAX) Fields

When a column has the data type NVARCHAR(MAX), the Synonym Editor now creates the synonym with USAGE and ACTUAL formats A32765V when the Synonym Candidates are restricted to *Table Log Records*.

Note: The server must be configured for Unicode to properly report from National Fields.

If the length of the data is longer than 32765, the following message is generated:

```
(FOC1362) COLUMN name IS TRUNCATED IF DATA LENGTH EXCEEDS 32765
```

Adapter for MySQL

This section provides detailed descriptions of new features for the Adapter for MySQL.

Change Data Capture (CDC) Support

The Adapter for MySQL now supports Change Data Capture (CDC).

Adapter for Netezza

This section provides descriptions of new features for the Adapter for Netezza.

Adapter for Netezza: Support for Bulk Load

The Adapter for Netezza supports extended bulk loading using the nzload utility.

Adapter for ODBC

This section provides descriptions of new features for the generic ODBC Adapter.

Adapter for ODBC: Support for Wide API

The Generic ODBC Adapter has been upgraded to utilize the wide ODBC API.

Adapter for Oracle

This section provides detailed descriptions of new features for the Adapter for Oracle.

Support for Power Linux LE With Instant Client

The Adapter for Oracle is now supported on IBM Power Linux Little Endian systems using the Oracle Instant Client Basic package.

New Setting to Map FLOAT Data Type as DECIMAL

The following new Adapter for Oracle setting maps the Oracle FLOAT and FLOAT(126) data types to Float or to Decimal.

```
ENGINE SQLORA SET ORAFLOAT [FLOAT|DECIMAL[p s] ]
```

where:

FLOAT

Maps the Oracle FLOAT and FLOAT(126) data types to USAGE=D20.2, ACTUAL=D8. This is the default value

DECIMAL[*p s*]

Maps the Oracle FLOAT and FLOAT(126) data types to Decimal with precision = *p* and scale = *s*. If precision and scale values are omitted, the precision defaults to 33 and the scale to 2.

This setting is expected to be used on case-by-case basis after consulting with Information Builders Technical Support Services. It compensates for the Oracle proprietary implementation of FLOAT and FLOAT(126) data types that deviate from the IEEE 754 standard.

Note that Oracle BINARY_FLOAT and BINARY_DOUBLE data types are not affected by the setting since these types conform to the IEEE 754 standard.

Connection to Database Running on Amazon RDS

The Adapter for Oracle can access Amazon RDS running an Oracle DB instance. This is implemented by using a long connection string, such as the following, instead of a TNS alias.

```
(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=dns_of_db_instance)  
(PORT=listener_port))(CONNECT_DATA=(SID=database_name)))
```

where:

dns_of_db_instance

Is the DNS of the database instance.

listener_port

Is the Oracle TCP listener port number.

database_name

Is the database name.

Support for Extended Bulk Load

The Adapter for Oracle Supports Extended Bulk Load based on the Direct Path Load API.

Adapter for Oracle Reads XMLType Data Type Using DB_EXPR

The Oracle XMLType data type can be mapped with USAGE=TX50L, ACTUAL=TX. The Access File then specifies attributes needed for retrieving the data using the DB_EXPR function.

The following Master File declares a field named *xmltypefield* whose data type is XMLType:

```
FILENAME=ORAXML_SRZ, SUFFIX=SQLORA , $
SEGMENT=ORAXML_SRZ, SEGTYPE=S0, $
FIELDNAME=I, ALIAS=I, USAGE=I11, ACTUAL=I4,
MISSING=ON, $
FIELDNAME=xmltypefield, ALIAS=X, USAGE=TX50L, ACTUAL=TX,
MISSING=ON, $
```

The following Access File specifies the attributes for reading the XMLType field:

```
SEGNAME = segname, TABLENAME = tablename, $
FIELD=xmltypefield,
SQL_FLD_OBJ_TYPE=OPAQUE,
SQL_FLD_OBJ_PROP=,
SQL_FLD_OBJ_EXPR='DB_EXPR(XMLSERIALIZE(DOCUMENT "xmltypefield")')', $
```

where:

```
SQL_FLD_OBJ_TYPE=OPAQUE
```

Indicates that the field can be processed only through DB_EXPR.

```
SQL_FLD_OBJ_EXPR='DB_EXPR(XMLSERIALIZE(DOCUMENT "xmltypefield")')
```

Is the Oracle SQL Expression that reads the XML document stored in the field.

Example: Using an Oracle XMLType Field in a Request

The following request retrieves the XML document stored in column XMLTYPEFIELD for id=112.

```
TABLE FILE ORAXML_SRZ
PRINT XMLTYPEFIELD
WHERE I EQ 112
END
```

The following SQL is generated and passed to Oracle.

```
SELECT
T1."I",
(XMLSERIALIZE(DOCUMENT T1."XMLTYPEFIELD" ))
FROM
PODOC T1
WHERE
(T1."I" = 112);
```

Adapter for Oracle: Support for Long IN-list

The Adapter for Oracle now splits a long IN-list generated, for example, when BY HIERARCHY is used in reports. This enables it to overcome the Oracle limit of 1000 elements and pass optimized SQL to the DBMS.

Adapter for Apache Phoenix for HBase

Apache Phoenix provides SQL read/write access to Apache HBase (and MapR-DB) a NoSQL database distributed with Hadoop.

For full functionality this adapter requires Phoenix release 4.5.0 or later.

Adapter for SAP HANA

The following features have been added for the Adapter for SAP HANA.

Optimization of Simplified Functions POSITION and TOKEN

Simplified functions POSITION and TOKEN are optimized by the Adapter for SAP HANA.

Support for NCLOB/TEXT Data Types

The Adapter for SAP HANA supports the TEXT data type in HANA column mode as format NCLOB.

Adapter for Sybase

This section provides detailed descriptions of new features for the Adapter for Sybase.

Adapter for Sybase IQ Support for Unicode Extended Bulk Load

The Adapter for Sybase IQ supports Unicode Extended Bulk Load.

Adapter for Teradata

This section provides detailed descriptions of new features for the Adapter for Teradata.

Support for Wide ODBC API

A new interface for Teradata is introduced that is based on the wide ODBC API. This interface supports Unicode and offers better performance on some platforms (for example, Windows and Linux x64/x86) compared to the Teradata ODBC interface that is not utilizing the wide API. This wide ODBC API interface is supported with TTU v.15.0 or higher.

READONLY Fields in Extended Bulk Load

Loading into Teradata using Extended Bulk Load is now supported even when the server metadata contains READONLY fields. Such fields will be skipped and remained unchanged during loading.

Distinguishing Between Macros and Stored Procedures

The following Access File attribute has been introduced to identify whether the synonym represents a Teradata Macro or Stored Procedure.

```
STPTYPE = {MACRO|SP}
```

Support for Version 15.10

The Teradata CLI and ODBC adapters support Read/Write access to Teradata Version 15.10.

ERP Adapters

This section describes new features for ERP adapters.

Adapter for Microsoft Dynamics CRM

The Microsoft Dynamics CRM Online Adapter is new in this release and can be found under the ERP adapters. It allows reporting against the Microsoft Dynamics CRM Online environment, which is a customer relationship management software package that works in the Cloud. It enables companies to manage their prospect and customer account in a centralized way. The information that can be reported against includes account, account leads, campaign activity, contacts, contact orders, and workflow.

Adapter for SAP/R3

The following have been added for the Adapter for SAP/R3.

Enhanced Function Module Functionality

To prevent and avoid the malicious injection of ABAP code in the context of a WebFOCUS query, function modules provided by Information Builders (DYNAMIC_RUN, REP_CREATE, REP_GET_B_D, REP_RUN) are enhanced to perform whitelisting of the dynamically generated ABAP4 code, by default. (See the SEC_CHK function module for the list of permitted commands).

Any command not whitelisted will be denied execution.

In addition, the function modules provided by Information Builders are enhanced with user exits by inserting calls to customer defined function modules on start (USR_EXT_ENT*), and exit (USR_EXT_EXT*). These user exits will be called with the same set of parameters as the original calling function module (IMPORT/TABLES only). A dummy version is supplied by Information Builders.

* A customer can modify these user exit function modules and implement all additions and authorizations (SAP authority checks) that are required.

GIS Adapters

This section provides detailed descriptions of new features for GIS adapters.

Adapter for Esri ArcGIS

The Adapter for Esri ArcGIS provides access to the Esri cloud for the purposes of drawing maps and demographic layers, and also providing the following geometry functions that retrieve geometry data and geocode addresses:

- ❑ **GIS_DISTANCE.** Calculates the distance between two geometry points.
- ❑ **GIS_DRIVE_ROUTE.** Returns the driving route between two geometry points.
- ❑ **GIS_GEOCODE_ADDR.** Returns the geometry point for a complete address.
- ❑ **GIS_GEOCODE_ADDR_CITY.** Returns the geometry point for address, city, and state.
- ❑ **GIS_GEOCODE_ADDR_POSTAL.** Returns the geometry point for address, postal_code.
- ❑ **GIS_GEOMETRY.** Builds/converts a JSON geometry object given a geotype, WKID (Well-Known ID) spatial reference, and a initial JSON geometry.
- ❑ **GIS_IN_POLYGON.** Given a geometry point and a polygon definition, returns the value 1 (TRUE), if the point is in the polygon or 0 (FALSE), if is not.
- ❑ **GIS_LINE.** Given two geometry points or lines, GIS_LINE builds a JSON line defining a geometry line.

- ❑ **GIS_POINT.** Given a WKID (Well-Known ID) spatial reference, longitude, and latitude, returns a JSON point defining a geometry object.
- ❑ **GIS_SERVICE_AREA.** Calculates the geometry area with access boundaries within the given time or distance from the provided geometry point.
- ❑ **GIS_SERV_AREA_XY.** Calculates the geometry area with access boundaries within the given time or distance from the provided coordinates and WKID spatial reference.

For detailed information about the geography functions, see [BAD XREF HERE](#) "Reporting Language Enhancements

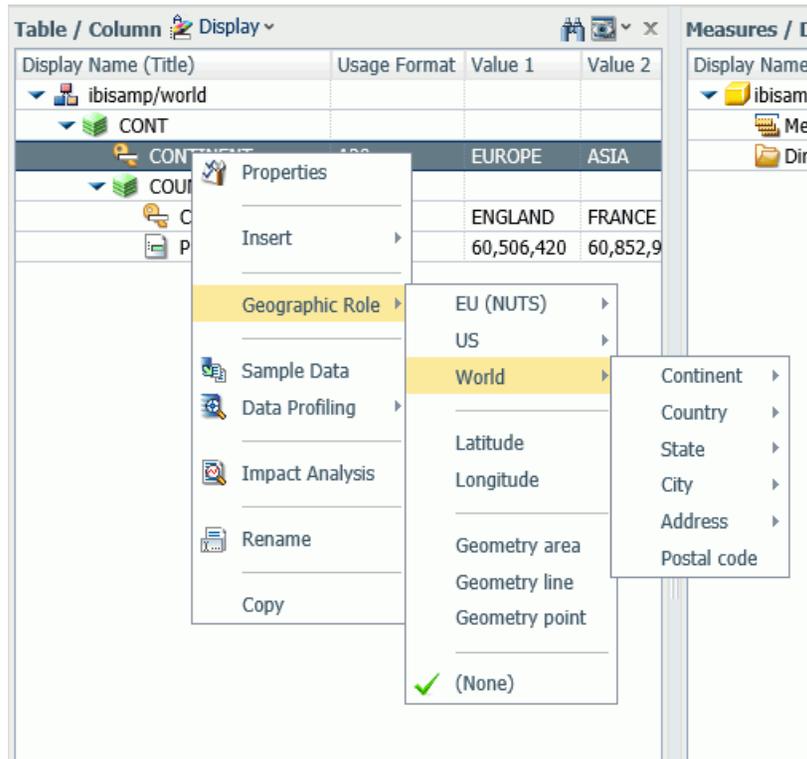
Unified Definition for ArcGIS Server URLs and Geographic Roles

The server comes with a file named `geo_services.xml` that configures all ArcGIS geographic services that are available out of the box when the server is installed.

In order to correctly retrieve and use location data in a request, the geographic roles for the fields that represent locations must be accurately defined in the request or the metadata. Geographic roles may be part of a hierarchy. For example, a city may be part of a state, and the state part of a country. The hierarchical relationships are needed in order to identify and retrieve the correct location data.

Hierarchy definitions also provide WebFOCUS with the information needed to perform AutoDrilling from a geographic role at a higher level of the geographic hierarchy to a geographic role at a lower level of the geographic hierarchy.

When you use the Web Console Data Assist tool to assign a geographic role to a field, the hierarchies display their member roles within the appropriate contexts. For example, the following image shows the hierarchies available by default, with the World hierarchy open to its first level of member roles.



Note that, by default, the available hierarchies are the EU hierarchy, the US hierarchy, and the World hierarchy.

Customers with Enterprise Data often have map layers that represent their territories, events or logistical information. These are published as Map Services to either a subscription based in the Esri Cloud (ArcGIS.com) or on an internal portal. In order for these customized geographic roles to be available through the server, they must be added to the `geo_services.xml` file.

Configuring Geographic Roles

The geographic configuration file, `geo_services.xml`, is located in the catalog directory under the server home directory:

`_edahome/catalog/`

The server builds the calls needed to retrieve geographic roles dynamically using this configuration file. Each role definition in the configuration file, when used in a WebFOCUS request, generates metadata and a request that is sent to Esri.

A geographic role can be part of a hierarchy. For example, the World geographic role is at the top of a hierarchy that contains continents, countries, states, and cities. These hierarchies are also described in the `geo_services.xml` file.

To add a custom geographic role, you must add the necessary parameters for the geography to this file.

Following standard xml syntax rules, each element is enclosed in element start and end tags (`<elementname>`, `</elementname>`), and attribute values are enclosed in double quotation marks ("").

Reference: Geographic Role Definitions

A geographic role is stored as `geo_role` element in the `geo_roles` object of the `geo_services.xml` file. A geographic role must be defined with:

- An ID that will identify the role in the configuration file.
- A format and length for the data to be returned.
- A role name.
- A display title for the role name (to appear as a selection in the front-end tools).
- An optional role format (if the role can have multiple formats, such as a name and an abbreviation).
- A display title for the format.
- A role type (GEOGRAPHY for polygons or GEOMETRY for points).
- An optional vocabulary rule element containing vocabulary elements for associating the role with a field in the metadata.

The following attributes define a geographic role.

id

Is an alphanumeric uppercase value, up to 50 characters, used to identify the geographic role.

type

Is the data type for the ID. Can be one of the following.

- "alpha"** for alphanumeric data, formats An or In.
- "integer"** for integer numeric data, format In.
- "numeric"** for fractional numeric data, formats Pn.m, Dn.m, or Fn.m.
- "text"** for text data, format TXn.

value_size

Is the optional number of characters in USAGE format length (any, if not set).

role_name

Is the name of the geographic role.

role_name_title

Is the title of the geographic role, to be displayed in the tools for selection.

role_format

Is an optional format for the geographic role, useful when the role can be referenced using multiple formats, such as a name, an ISO code, and an abbreviation.

role_format_title

Is an optional title for the format of the geographic role. It will be shown in parentheses along with the role title in the tools, for example, State (Abbreviation).

geo_type

Is one of the following predefined role types.

- "geography"**, for geographic objects such as country or state.
- "geometry"**, for geometry objects such as geometry point and geometry area.
- "coordinate"**, for coordinates such as latitude and longitude.

vocabulary_rules

Is an element that consists of a group of vocabulary elements that explicitly describe column names for the geographic role. These rules will be used to select the best geographic data for the role.

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 place holder 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.

Example: Sample Geographic Role Definitions

The following defines the State Abbreviation geographic role. The role ID is USSTATE_ABBR. The role name is USSTATE with a role format of ABBR. The titles that show in the tools are US state (Abbreviation). The format is A2, and the vocabulary rules specify that the characters *state* must be present, but the characters *iso*, *capital*, and *population* must not be present. The geo type is geography, indicating that the returned data will be a geographic area.

```
<geo_role
id="USSTATE_ABBR"
  value_size="2"
  type="alpha"
role_name="USSTATE"
role_name_title="US state"
role_format="ABBR"
role_format_title="Abbreviation"
  geo_type="geography">
<vocabulary_rules>
<vocabulary>+%state%-%iso%-%capital%-%population%</vocabulary>
</vocabulary_rules>
</geo_role>
```

The following is a role definition for latitude values. The role ID is LATITUDE. The role name is also LATITUDE. Its format is numeric. The title that displays in the tools is Latitude. The geo type is geometry, indicating that the returned data will be points or areas described using points. The vocabulary rules specify that the characters *latitude* must be present.

```
<geo_role
  id="LATITUDE"
  type="numeric"
  role_name="LATITUDE"
  role_name_title="Latitude"
  geo_type="geometry">
  <vocabulary_rules>
    <vocabulary>%latitude%</vocabulary>
  </vocabulary_rules>
</geo_role>
```

The following is the definition for the city role. The ID is CITY. The role name is also CITY. Its format is NAME. The title that displays in the tools is City (Name). The definition has a set of vocabulary elements. Only one of the elements in the list must be true. Therefore, the characters *city*, or *town*, or *country* plus *capital*, or *state* plus *capital* must be present.

```
<geo_role
  id="CITY"
  type="alpha"
  role_name="CITY"
  role_name_title="City"
  role_format="NAME"
  role_format_title="Name"
  geo_type="geography">
  <vocabulary_rules>
    <vocabulary>+%city%-%population% </vocabulary>
    <vocabulary>+%town%-%population% </vocabulary>
    <vocabulary>+%country%+%capital%-%population% </vocabulary>
    <vocabulary>+%state%+%capital%-%population% </vocabulary>
  </vocabulary_rules>
</geo_role>
```

Reference: Geographic Hierarchy Definitions

Some geographic roles exist as part of a hierarchy, and the data for the hierarchical roles are stored at the same map services endpoint (URL). Hierarchical role relationships are stored as *hier* elements in the `geo_services.xml` file.

Each hierarchy definition in `geo_services.xml` has the name of the hierarchy (attribute ID) and a group of LEV elements with the attributes `level`, `geo_role`, and, optionally, `value`. Not all defined roles can be used in hierarchies. The same role can be included in more than one hierarchy and may be on different hierarchical levels in each. However, the same role cannot be used more than once in the same hierarchy. Multiple geographic roles can be assigned to the same hierarchical level in a hierarchy.

Geographic hierarchies are defined with the following attributes:

id

Is a name of up to 50 alphanumeric characters used to identify the hierarchy.

level

Is a natural number (integer, starting with 1 for the top level) that specifies the level of the role within the hierarchy.

geo_role

Is the ID attribute of a geographic role (geo_role element).

value

Is an alphanumeric value, up to 50 characters, predefined for this geo role in this hierarchy.

Example: **Sample Geographic Hierarchy Definition**

The following element defines the world hierarchy. The top level is CONTINENT, both the Name role and the ISO code role. Level 2 has four COUNTRY geographic roles, corresponding to four different country formats. Level 3 contains three state formats, level 4 contains the city name, and level 5 contains two address formats and the postal code.

```
<hier id="World">
  <lev level="1" geo_role="CONTINENT" />
  <lev level="1" geo_role="CONTINENT_ISO2" />
  <lev level="2" geo_role="COUNTRY" />
  <lev level="2" geo_role="COUNTRY_FIPS" />
  <lev level="2" geo_role="COUNTRY_ISO2" />
  <lev level="2" geo_role="COUNTRY_ISO3" />
  <lev level="3" geo_role="STATE" />
  <lev level="3" geo_role="STATE_ISO_SUB" />
  <lev level="3" geo_role="STATE_FIPS" />
  <lev level="4" geo_role="CITY" />
  <lev level="5" geo_role="ADDRESS_FULL" />
  <lev level="5" geo_role="ADDRESS_LINE" />
  <lev level="5" geo_role="POSTAL-CODE" />
</hier>
```

Reference: **Adding the Federal Reserve Districts Geographic Role**

These steps describe how to add the Federal Reserve Districts geographic role to the geo_services.xml file.

1. Open the geo_services.xml file. The default location on Windows is:

`C:\ibi\srvnn\home\catalog\geo_services.xml`

where *nn* is your release of the server. For example, 77 for Release 7707.

2. Add the role to the end of the GEO_ROLES object:

```
<geo_role id="FED-DIST" value_size="50" type="alpha" role_name="FED-DIST" role_name_title="FED District" role_format="FR_District" role_format_title="FED District Name" geo_type="geography">
  <vocabulary_rules>
    <vocabulary>+%FR_District%</vocabulary>
  </vocabulary_rules>
</geo_role>
```

The ID is FED-DIST. The role name is also FED-DIST. Its format is FR_District. The title that displays in the tools is FED District. The definition has a vocabulary rule. The characters *FR_District* must be present.

3. Add this role to the US Hierarchy:

```
<hier id="US">
  <lev level="1" value="United States" geo_role="COUNTRY"/>
  <lev level="1" value="US" geo_role="COUNTRY_ISO2"/>
  <lev level="1" value="USA" geo_role="COUNTRY_ISO3"/>
  <lev level="2" geo_role="USSTATE"/>
  <lev level="2" geo_role="USSTATE_ABBR"/>
  <lev level="2" geo_role="USSTATE_FIPS"/>
  <lev level="3" geo_role="USCOUNTY"/>
  <lev level="3" geo_role="USCOUNTY_FIPS"/>
  <lev level="4" geo_role="USCITY"/>
  <lev level="4" geo_role="USCITY_FIPS"/>
  <lev level="5" geo_role="ADDRESS_FULL"/>
  <lev level="5" geo_role="ADDRESS_LINE"/>
  <lev level="5" geo_role="ZIP3"/>
  <lev level="5" geo_role="ZIP5"/>
  <lev level="6" geo_role="FED-DIST"/>
</hier>
```

4. Add the URI to the map server layer for this role at the end of the URIS object:

```
<uri description="FedReserve Districts">
  <returned_geometry>GEOMETRY_AREA </returned_geometry>
  <returned_georole>FED-DIST</returned_georole>
  <url type="esri" authorization="none" synonym="">
http://services7.arcgis.com/L95Wwv90jRQ0tjAs/arcgis/rest/services/FRDISTRICTS/FeatureServer/0</url>
  <parameters>
    <parm order="1" parm_name="FR_District" parm_georole="FED-DIST"/>
  </parameters>
</uri>
```

This role will now be available to use in a request and will display in the tools.

OLAP Adapters

This section provides detailed descriptions of new features for OLAP adapters.

Adapter for Essbase

The Adapter for Essbase now supports Essbase 11.1.2.3 and 11.1.2.4 on the Windows 64-bit platform.

Adapter for Microsoft SQL Server Analysis Services (SSAS)

You can use the DB_EXPR function to calculate temporary measures and use currency and percent display options for measures.

Creating Temporary Calculated Measures Using DB_EXPR

You can use the DB_EXPR function to generate a query-scope calculated measure as an MDX expression. The result of that expression must be type value. In the calculated measure expression, you can use any MDX function.

You are responsible for how the expression will work in the context of the whole generated MDX query. For example, note that if the expression references the [Calendar] hierarchy, the result will depend on which (if any) level of that hierarchy is referenced in a BY clause of the TABLE request. If the level is not taken into account, the query may produce unexpected results or errors.

Example: Using MDX Functions in a Calculated Measure

The following request references three MDX functions to define the ISA_YTD measure, one member type function (CURRENTMEMBER), and two value type functions (Sum, Ytd).

```
DEFINE FILE ADVENTURE_WORKS_MIXED_CASE
ISA_YTD/D20.2 WITH Internet_Sales_Amount =
DB_EXPR(Sum(Ytd( [Date].[Calendar].CURRENTMEMBER ),
[Measures].[Internet Sales Amount]));
END
TABLE FILE ADVENTURE_WORKS_MIXED_CASE
SUM Internet_Sales_Amount
ISA_YTD
BY Fiscal_Year NOPRINT
BY Fiscal_Quarter
ON TABLE SET PAGE NOPAGE
END
```

The following MDX request is generated, which includes the calls to the MDX functions.

```
WITH
MEMBER [Measures].[ISA_YTD] as '
Sum(Ytd( [Date].[Calendar].CURRENTMEMBER ),
[Measures].[Internet Sales Amount])'
SET H24 as '
[Date].[Calendar].[Calendar Quarter].ALLMEMBERS'
SET H33 as '
[Date].[Fiscal].[Fiscal Year].ALLMEMBERS'
SELECT {
[Measures].[Internet Sales Amount],
[Measures].[ISA_YTD]}
ON AXIS(0),
NON EMPTY CROSSJOIN(H24,
H33)
DIMENSION PROPERTIES
MEMBER_CAPTION
,[Date].[Calendar].[Calendar Quarter].[Fiscal Quarter] ON AXIS(1)
FROM [Adventure Works]
```

The output is shown in the following image.

| Fiscal Quarter | Internet Sales Amount | ISA_YTD |
|----------------|-----------------------|--------------|
| Q1 FY 2002 | \$1,453,522.89 | 1,453,522.89 |
| Q2 FY 2002 | \$1,812,850.77 | 3,266,373.66 |
| Q3 FY 2002 | \$1,791,698.45 | 1,791,698.45 |
| Q4 FY 2002 | \$2,014,012.13 | 3,805,710.59 |
| Q1 FY 2003 | \$1,396,833.62 | 5,202,544.20 |
| Q2 FY 2003 | \$1,327,799.32 | 6,530,343.53 |
| Q3 FY 2003 | \$1,413,530.30 | 1,413,530.30 |
| Q4 FY 2003 | \$1,623,971.06 | 3,037,501.36 |
| Q1 FY 2004 | \$2,744,340.48 | 5,781,841.84 |
| Q2 FY 2004 | \$4,009,218.46 | 9,791,060.30 |
| Q3 FY 2004 | \$4,283,629.96 | 4,283,629.96 |
| Q4 FY 2004 | \$5,436,429.15 | 9,720,059.11 |
| Q1 FY 2005 | \$50,840.63 | 9,770,899.74 |

The following request references three MDX functions to define the measure I_S_A_4_MONTHS_ROLLING_AVERAGE, two member type functions (CURRENTMEMBER and Lag), a range (:), and one value type function (Avg).

```

DEFINE FILE ADVENTURE_WORKS_MIXED_CASE
I_S_A_4_MONTHS_ROLLING_AVERAGE/D20.2M
WITH Internet_Sales_Amount =
DB_EXPR(Avg({ [Date].[Calendar].CURRENTMEMBER.Lag(3)
: [Date].[Calendar].CURRENTMEMBER },
[Measures].[Internet Sales Amount]));
END
TABLE FILE ADVENTURE_WORKS_MIXED_CASE
SUM Internet_Sales_Amount
I_S_A_4_MONTHS_ROLLING_AVERAGE AS 'Rolling Average'
BY Fiscal_Year NOPRINT
BY Fiscal_Quarter
ON TABLE SET PAGE NOPAGE
END

```

The following MDX request is generated, which includes the calls to the MDX functions.

```

WITH
MEMBER [Measures].[I_S_A_4_MONTHS_ROLLING_AVERAGE] as '
Avg({ [Date].[Calendar].CURRENTMEMBER.Lag(3)
: [Date].
[Calendar].CURRENTMEMBER },
[Measures].[Internet Sales Amount])'
SET H24 as '
[Date].[Calendar].[Calendar Quarter].ALLMEMBERS'
SET H33 as '
[Date].[Fiscal].[Fiscal Year].ALLMEMBERS'
SELECT {
[Measures].[Internet Sales Amount],
[Measures].[I_S_A_4_MONTHS_ROLLING_AVERAGE]}
ON AXIS(0),
NON EMPTY CROSSJOIN(H24,
H33)
DIMENSION PROPERTIES
MEMBER_CAPTION
,[Date].[Calendar].[Calendar Quarter].[Fiscal Quarter] ON AXIS(1)
FROM [Adventure Works]

```

The output is shown in the following image.

| Fiscal Quarter | Internet Sales Amount | Rolling Average |
|----------------|-----------------------|-----------------|
| Q1 FY 2002 | \$1,453,522.89 | \$1,453,522.89 |
| Q2 FY 2002 | \$1,812,850.77 | \$1,633,186.83 |
| Q3 FY 2002 | \$1,791,698.45 | \$1,686,024.04 |
| Q4 FY 2002 | \$2,014,012.13 | \$1,768,021.06 |
| Q1 FY 2003 | \$1,396,833.62 | \$1,753,848.74 |
| Q2 FY 2003 | \$1,327,799.32 | \$1,632,585.88 |
| Q3 FY 2003 | \$1,413,530.30 | \$1,538,043.84 |
| Q4 FY 2003 | \$1,623,971.06 | \$1,440,533.57 |
| Q1 FY 2004 | \$2,744,340.48 | \$1,777,410.29 |
| Q2 FY 2004 | \$4,009,218.46 | \$2,447,765.07 |
| Q3 FY 2004 | \$4,283,629.96 | \$3,165,289.99 |
| Q4 FY 2004 | \$5,436,429.15 | \$4,118,404.51 |
| Q1 FY 2005 | \$50,840.63 | \$3,445,029.55 |

Support for Display Options M, p, and %

The following display options are now supported and are used when generating synonyms for the sample data sources provided with SQL Server Analysis Services.

- M**, which places a floating currency symbol to the left of a measure.
- p**, which converts a measure to a percent by multiplying it by 100, and then displays it with a percent symbol on the right.
- %**, which does no conversion, but displays the existing measure with a percent symbol on the right.

Example: Using the Display Options M, p, and %

The following request prints INTERNET_SALES_AMOUNT twice, first with no currency symbol, and then with a currency symbol (M option). It prints GROSS_PROFIT_MARGIN three times, first as a number, then as a percent (p option), and last as a number with a percent symbol (% option).

```
TABLE FILE ADVENTURE_WORKS_UPPER_CASE
PRINT
INTERNET_SALES_AMOUNT/P20.2 AS 'P20.2'
INTERNET_SALES_AMOUNT/P20.2M AS 'P20.2M'
GROSS_PROFIT_MARGIN/F10.4 AS 'F10.4'
GROSS_PROFIT_MARGIN/F10.2p AS 'F10.2p'
GROSS_PROFIT_MARGIN/F10.4% AS 'F10.4%'
BY COUNTRY
ON TABLE SET PAGE NOPAGE
ON TABLE SET STYLE *
GRID=OFF,$
ENDSTYLE
END
```

The output is shown in the following image.

| <u>Country</u> | <u>P20.2</u> | <u>P20.2M</u> | <u>F10.4</u> | <u>F10.2p</u> | <u>F10.4%</u> |
|----------------|--------------|----------------|--------------|---------------|---------------|
| Australia | 9061000.58 | \$9,061,000.58 | .1143 | 11.43% | .1143% |
| Canada | 1977844.86 | \$1,977,844.86 | .1143 | 11.43% | .1143% |
| France | 2644017.71 | \$2,644,017.71 | .1143 | 11.43% | .1143% |
| Germany | 2894312.34 | \$2,894,312.34 | .1143 | 11.43% | .1143% |
| United Kingdom | 3391712.21 | \$3,391,712.21 | .1143 | 11.43% | .1143% |
| United States | 9389789.51 | \$9,389,789.51 | .1143 | 11.43% | .1143% |

Data Analysis Expression (DAX) Passthrough

A sample DAX query can be executed using the existing MDX Passthu mechanism. The recommended way is to place a DAX query into a file with extension .sql and create a synonym for it. The synonym can be further edited for attributes such as proper formatting. Reporting is then done against that synonym.

Adapter for TM1

The Adapter for TM1 is a special configuration of the Adapter for SQL Server Analysis Services. Configure the Adapter for TM1 by selecting *TM1OLAP Provider* on the *Change Settings for SQL Server Analysis Services* page of the Web Console. You must also provide the default database and, possibly, additional connection string parameters on the *Change Connect Parameters for SQL Server Analysis Services* Web Console page. The Adapter for TM1 supports Cognos Access Manager (CAM) authentication and Integrated Login.

CAM Authentication Support

To configure Cognos Access Manager (CAM) authentication, you must add the `CAMNamespace` parameter to the connection string.

You can configure this parameter on the Web Console. To configure the Adapter for TM1, use the *Add Connection* page for the Adapter for SQL Server Analysis Services, as shown in the following image.

The screenshot shows the 'Add Connection for SQL Server Analysis Services' page. Under 'Connect parameters', the following fields are visible:

- Connection Name: CON1
- Server: [Empty]
- Security: Explicit (dropdown)
- User: [Empty]
- Password: [Empty]
- Default Database: [Empty] (Note: Must be specified only when accessing Cognos TM1. Sample: SData)
- Additional connection string keywords (Optional): CAMNamespace=NTLM_NAMESPACE (TM1) (Note: Sample: EffectiveUserName=Domain\UserID (SSAS) or CAMNamespace=NTLM_NAMESPACE (TM1))

 Under 'Environment', 'Select profile' is set to 'edasprof' (type in a new one or select one from the list). Buttons for 'Cancel', 'Configure', and 'Test' are at the bottom.

For TM1, the catalog to be accessed must be part of the connection string. Enter the catalog name in the *Default Database* text box in order to add it to the connection string.

Enter the `CAMNamespace` parameter in the *Additional connection string keywords* text box. It will be added to the connection string as the `ProviderString` parameter when you press *Configure*. For example, if you enter `CAMNamespace=NTLM_NAMESPACE`, a connection string similar to the following is generated in the `edasprof.prf` server profile:

```
ENGINE SSAS SET CONNECTION_ATTRIBUTES CON1
SQL2012x64-02/user1,pwd1;SData:CAMNamespace=NTLM_NAMESPACE
```

The `ENGINE SSAS SET PROVIDER TM1OLAP` command must be in effect when using the Adapter for TM1. This command can be issued in `edasprof.prf` or in a `FOCEXEC`.

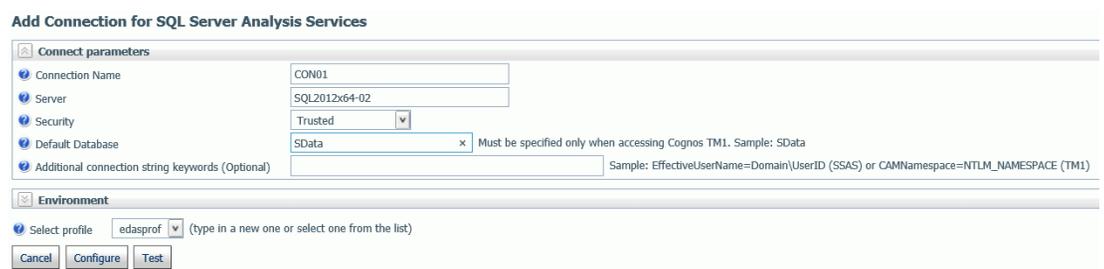
Integrated Login Support

Integrated Login enables you to use Microsoft Windows network authentication to control access to IBM Cognos TM1 data.

In this security model, user and group Microsoft Windows login information has to be moved into the Cognos TM1 database. Integrated Login matches the domain-qualified name you use to sign in to Microsoft Windows with a name stored in the internal database.

Integrated Login is supported on Microsoft Windows only.

You can configure Integrated Login in the Web Console, using the Add Connection page of the Adapter for SQL Server Analysis Services. When you configure the Adapter for TM1, select a trusted connection, as shown in the following image.



The connection string must specify the name of the TM1 catalog to be accessed. Enter the catalog name in the *Default Database* text box. A connection string similar to the following will be generated in the edasprof.prf server profile.

```
ENGINE SSAS SET CONNECTION_ATTRIBUTES CON1  
SQL2012x64-02 / ;SData
```

Since the connection is configured as trusted, no user ID or password is included in the connection string. The Integrated SSPI login causes the credentials from the Windows login to be used to access TM1.

The ENGINE SSAS SET PROVIDER TM1OLAP command must be in effect when using the Adapter for TM1. This command can be issued in the Server Profile or in a FOCUS procedure.

DBMS Adapters

This section provides detailed descriptions of new features for the DBMS adapters.

Adapter for Salesforce JOIN Support

Child-to-parent retrieval (reversed join) queries are now enabled for custom objects. This feature adds support for queries with multiple objects.

Procedures Adapters

This section provides detailed descriptions of new features for the Procedures adapters.

Adapter for REST

This section provides detailed descriptions of new features for the Adapter for REST.

Adapter for REST/WS: Pass Name:Value Pairs in the HTTP Header

Name:Value pairs can now be passed in the HTTP Header of a SOAP/REST request.

For a SOAP request, add the following attributes in the Access File.

```
FIELD=fieldname, PARAMSTYLE=header,
```

Note that the field belongs to the root segment, but *not* in the header group (unlike with the REST adapter). The fields in the header group will go to the SOAP header, not the HTTP header.

For the REST adapter, the fields in the header group, if specified as `PARAMSTYLE=header`, go to the HTTP header, otherwise they are added to the URL.

The field to be placed in the HTTP header should be positioned within the header group of the root segment.

The following Access File record indicates the header group.

```
HEADER=groupname
```

The following declaration indicates the field whose value is to be placed in the HTTP header.

```
FIELD=fieldname, PARAMSTYLE=header, $
```

In the Master File, identify the value to be placed in the header for the field.

For example, consider the following Access File.

```
SEGNAME=M6ILO,  
.....  
HEADER=GRHEADER,  
.....$  
FIELD=TOKEN, PARAMSTYLE=header, $
```

The Master File should contain the following attributes.

```
GROUP=GRHEADER, ELEMENTS=1, ACCESS_PROPERTY=(INTERNAL),  
TITLE='GRHEADER', $  
FIELDNAME=TOKEN, ALIAS=token, USAGE=A80, ACTUAL=A80,XDEFAULT='oxxxxx', $
```

This causes the following to be placed in the HTTP header.

```
token: oxxxxx
```

Adapter for REST: Support for GZIP Response Format

The Adapter for REST now supports responses in GZIP Format.

Adapter for REST: Support for Requests not Containing Service URL Extension

Support has been added for REST Web Services calls that do not have a service URL extension.

Adapter for REST: Support for Token as Attribute in Chained Authentication

Support has been added for retrieving a token from a Chained Authentication request when it resides as an attribute or as a child segment with multiple entries,

Adapter for REST/WS: Type Needed for Elements when OBJ_TYPES=NO

In the Web Services adapter, xsi:type will be sent for specific elements in the SOAP request based on the defined FIELDNAMES in the Access file, even though sending xsi:types is turned off in the Access file (OBJ_TYPES=NO).

Adapter for REST/WS: Support for Attribute Referencing

Create Synonym for the Web Services adapter now supports attribute referencing.

Adapter for RStat Predictive Analytics

The Adapter for RStat Predictive Analytics is new in this release and can be found under Procedure Adapters on the Web Console. The adapter allows RStat models to be deployed from the Reporting Server Console, in addition to model deployment from App Studio. A Master File and Access File are also created for the deployed model, enabling access through a Master File Join or the function DB_LOOKUP().

Adapter for Web Services

The following features were added for the Adapter for Web Services.

Microsoft Dynamics AX 2012 Integration

Microsoft Dynamics AX 2012 is an ERP system. It offers complete functionality for accounting, inventory control, warehouse management, transportation management, demand and supply chain planning, material requirements planning, production management, quality assurance, product lifecycle management, and asset management.

Using the Web Service adapter, reports can be created to report against the data within the Dynamics AX environment while respecting its security.

Sequential and Indexed Adapters

This section provides detailed descriptions of new features for the Sequential and Indexed adapters.

Reading Virtual Fields Through the File Listener

When using the File Listener with a pick up mode of MONITOR there are virtual fields available that in previous releases were only available with pickup strategy MONITOR, (which does not actually read the files). They are now also available when reading the file with pickup strategy IMMEDIATE.

Special Characters Supported With Upload Wizard

Upload Wizard now allows the special characters dot (.) and slash (/) when you explicitly redefine the target DBMS table name, in order to support multi-part schema/owner based names. The library specification (for example, mylib/mytable or mylib.mytable) separator is changed to an underscore (for example, mylib_mytable).

Adapter for Excel (via Direct Retrieval)

This section provides detailed descriptions of new features for the Adapter for Excel (via direct retrieval).

File Listener for Excel Worksheet

The File Listener component of DataMigrator can process Microsoft Excel workbooks that are delivered to a specified directory.

In addition to the synonym for the workbook as Excel (via direct read), this requires a synonym for a flat file with the normal file listener parameters specified. An additional segment contains a copy of the synonym for the Excel workbook.

Adapters for DFIX and Excel (via Direct Retrieval)

This section provides descriptions of features for the Adapters for DFIX and Excel (via direct retrieval).

Date and Date-Time Recognition With Patterns

Previously, when creating a synonym for a Delimited Flat File or Excel workbook using the direct read adapter, columns with timestamp or date-time values were created as alphanumeric fields.

Now such columns are recognized, and the synonym is created with appropriate USAGE and ACTUAL formats.

Adapters for Flat and Delimited Flat Files

The following features have been added for the Adapters for flat files and delimited flat files.

Adapter for DFIX: Respecting Server CDN option

The CDN parameter can be set in the server profile, in the Access File for a delimited data source, or in a request. When you upload a delimited file to the server, you can select the CDN option for that file from a drop-down list, and it is placed in the Access File. The supported CDN values are the following.

OFF

The thousands separator is a comma (,), and the decimal separator is a period (.). This is the default value.

ON

The thousands separator is a period (.), and the decimal separator is a comma (,).

SPACE

The thousands separator is a space, and the decimal separator is a comma (,).

QUOTE

The thousands separator is a single quotation mark ('), and the decimal separator is a comma (,).

QUOTE*

The thousands separator is a space, and the decimal separator is a period (,).

Adapter for RMS

The following features have been added for the Adapter for RMS.

Direct 64bit DEC TIMESTAMP Support

The OpenVMS Adapter for RMS now supports the direct read and write of native OpenVMS 64-Bit DEC TIMESTAMP data using H date-time formats for USAGE and ACTUAL formats when the following command is in effect.

```
SET VMSTAMP = VMS
```

This eliminates the need for the WRTSTIME() and CVTSTIME() subroutines in the writing and displaying of dates stored in this format in MODIFY and other applications.

Any H date is valid, but more commons ones follow.

The following displays as 2004/12/01 15:18:17.610.

```
... ,USAGE=HYYMDS ,ACTUAL=HYYMDS , ...
```

The following displays as 2004/12/01 15:18:17.

```
... ,USAGE=HYYMDS ,ACTUAL=HYYMDS , ...
```

The following displays as 01-Dec-2004 15:18:17.61.

```
... ,USAGE=HDMtYY-2 ,ACTUAL=HDMtYY-2 , ...
```

The format HDMtYY-2 most closely mimics the OpenVMS 64-Bit TIMESTAMP format (as displayed by commands such as DIRECTORY/DATE), except that the month is displayed in mixed case.

If your server application only uses RMS files, SET VMSTAMP = VMS command should be added to the server EDASPROF.PRF profile (which is in the EDACONF etc directory).

Some SQL examples follow.

```
SQL INTO MYTABLE
VALUES ('123456789','2015-07-08 12:08:07.12') ;
END
```

```
SQL UPDATE MYTABLE
SET SOLD_TIMESTAMP='2015-07-07 12:08:07.12'
WHERE ACCT='123456789' ;
END
```

SET INSERTSIZE=*n* for Insert and Update

Support for the command SQL SET INSERTSIZE=*n* for prepared SQL UPDATE, INSERT, and DELETE statements against non-SQL Data Adapters has been implemented to improve performance.

The feature is only active for prepared SQL logic, such as the following.

```
SQL PREPARE SQLIN FROM
INSERT INTO MYTABLE (FIELD_KEY,FIELD_A) VALUES (?,?)
END
SQL BIND SQLIN USING INTEGER, VARCHAR(10);
END
SQL
EXECUTE SQLIN USING 1, 'One';
END
```

Internally, records will be collected and then executed (under MODIFY) when the INSERTSIZE is reached, or sooner if a COMMIT, PURGE, or different SQL statement is encountered.

The feature is not active for non prepared SQL statements such as `INSERT INTO INTO MYTABLE VALUES (1,'One')`.

SQL requests sent using JLINK applications must also set `setAutoCommit(false)` on the Java connection to override the `java.sql.Connection` behavior of sending commits after each transaction.

Update Locking Behavior

The OpenVMS Adapter for RMS now allows the locked record wait period for `LOCKMODE=KEEP` to be set and, in order to match the behavior when `LOCKMODE` is not declared for the RMS file, the setting `LOCKMODE= REJECT` can be invoked. If an explicit wait period is not set for `KEEP`, the default wait period is 10 seconds, as it was prior to the implementation of this feature.

The syntax is

```
ENGINE RMS SET WAIT_LOCKED n
```

where:

n

Is the number of seconds to wait.

Social Media Adapters

This section provides detailed descriptions of new features for the Social Media adapters.

Adapter for Google Analytics

Enhancements have been made to the filtering capabilities within the Adapter for Google Analytics.

For example.

The following filter returns records where `/products` is at the beginning of the page path.

```
WHERE PAGEPATH LIKE '/products%'
```

The following filter returns records where `/products` is at the end of the page path.

```
WHERE PAGEPATH LIKE '%/products'
```

The following filter returns records where `/products` exists anywhere within the page path.

```
WHERE PAGEPATH LIKE '%/products%'
```

The following filter will not return records where /products is at the beginning of the page path.

```
WHERE PAGEPATH NOT LIKE '/products%'
```

The following filter will not return records where /products is at the end of the page path.

```
WHERE PAGEPATH NOT LIKE '%/products'
```

The following filter will not return records where /products exists anywhere within the page path.

```
WHERE PAGEPATH NOT LIKE '%/products%'
```

The following filter returns records where /products exists anywhere within the page path.

```
WHERE PAGEPATH CONTAINS '/products'
```

The following filter will not return records where /products exists anywhere within the page path.

```
WHERE PAGEPATH OMITTS '/products'
```

The following filter returns records where the USERS value is greater or equal to 30 and less than or equal to 800.

```
WHERE USERS FROM 30 TO 800
```

Adapter for Facebook: Enhanced Create Synonym Functionality

Version 2.7 of the Facebook API is now supported.

Social Media Demonstration Application

In WebFOCUS Release 8.2 Version 01M and higher, a social media demonstration (“demo”) application is available for deployment, which highlights the capabilities of WebFOCUS Social Media Integration when performing various levels of social media analysis.

The first level of analysis is known as the engagement level, where you analyze if, when, and how much activity took place. As companies mature, they start to focus on not just the activity but the actual conversations themselves.

WebFOCUS Social Media Integration offers techniques such as sentiment and word frequency analysis to help quantify and visualize this textual data to more effectively see trends and patterns in the data.

The second level of analysis is integrating your social data with enterprise data to better understand social impact on business outcomes. The data analysis that is used in this demo was obtained when Walmart was running a very specific campaign around their meat products. Note that the sales data was fabricated to provide better understanding, especially since there was no conclusive access to their real sales data. However, the social data is real.

The WebFOCUS social media demo files are located in the following folder of your WebFOCUS installation:

```
<drive>:\ibi\WebFOCUS82\samples\social_media_demo
```

For more information on installing and using the social media demo that is packaged with WebFOCUS, see the *WebFOCUS Social Media Integration Guide*.

XML-Based Adapters

This section provides detailed descriptions of new features for the XML-based adapters.

Adapter for JSON

The following features have been added for the Adapter for JSON.

Adapter for JSON Support for UPDATE

Using DataMigrator, data can be loaded into new JSON targets in a data flow.

Support for ON TABLE HOLD FORMAT JSON

A report can now save output in JSON (Java Script Object Notation) format.

```
ON TABLE HOLD [AS name] FORMAT JSON
```

A JSON file and accompanying synonym are generated.

Ability to Set Encoding in the XML Header for XML Write

Previously, the XML Write Adapter always created the XML file with encoding="UTF-8" in the XML header. Now encoding can be specified in the synonym and is written to the XML header.

Redirection Support for HTTP Status Codes 302, 303, and 307

Support has been added for HTTP calls made from the XML, Web Services, REST and Social Media adapters that require a redirection to a different URI. This support includes HTTP status code responses 302, 303, and 307.

DataMigrator

This section describes the new features for DataMigrator.

DataMigrator represents a broad category of tools designed to facilitate and automate the extraction and integration of data. From source extraction through target load, data is transformed through the application of business rules. Once the transformation is complete, the data is loaded into table structures that have been optimized for a particular application.

For more information on any of these new features, see the *DataMigrator User's Guide*.

Adapters

The following section provides descriptions of new features for adapters.

Change Data Capture for MySQL

The DataMigrator support for Change Data Capture now includes the MySQL database.

In order to use CDC with MySQL, you must install Java and MySQL client utilities on the system where the DataMigrator server is installed. Additionally, on that system, you must have the Environment Variable CLASSPATH pointing to the location where the Connector/J is installed.

Connection for [Delimited] Flat File Targets

In prior releases when using DataMigrator to write a Flat File or Delimited Flat file the first configured connection was always used.

There is now an option to select `<local>` for the local file system where the DataMigrator server is running. You can also select a connection that refers to an FTP or SFTP server that has been configured for the server.

Extended Bulk Load Availability

Extended Bulk Load is now available on EXASol, Informix, MS SQL Server, Netezza, ORACLE, and PostgreSQL.

Extended Bulk Load for Hive and Impala

Data can now be loaded to HDFS using Extended Bulk Load. When the Hive or Impala server is remote, FTP is used to move the file to load.

File Attributes from File Listener

There are now virtual fields available when using the File Listener with the MONITOR pick up mode. In previous releases, these fields were only available with a pickup strategy of MONITOR, which does not actually read the files. They are now also available when reading the file with a pickup strategy of IMMEDIATE.

The available virtual fields include:

INSTANCE_FULL

The full path and name of the file. This field cannot be used in conjunction with INSTANCE.

INSTANCE_SIZE

The size of the file in bytes.

INSTANCE_DATE

The date that the file was last modified.

INSTANCE_TIME

The time that the file was last modified.

Additional fields are available for UNIX and Linux systems.

Support SFTP Source from a DM Server on Windows

Unlike Linux, Windows does not include an SFTP client program. However, there are programs available that implement the protocol. You can use an SFTP server as a source or target from a DataMigrator Server running on Windows by installing a SFTP client program, such as PuTTY.

MS SQL Server ODBC Adapter in Linux

The MS SQL Server ODBC adapter is now supported on Linux Red Hat 6 Intel x64 platform, in addition to Windows.

Change Data Capture for MySQL and MariaDB

The DMC now supports Change Data Capture (CDC) for both MySQL and MariaDB adapters with a load type of IUD.

Calculators

The following section provides descriptions of new features for calculators.

Allow a Variable in WHERE Filter for IN

In the Data Management Console, you can now use a variable in a Data Flow with a WHERE filter that contains an IN clause. For example, you could create a WHERE filter such as:

```
PLANT IN (&PLIST)
```

When you run the flow, you could use the following values:

```
'BOS', 'ATL'
```

These values would be used to return rows with either value.

Notifications for Format Auto Correct

Under certain conditions, when working in the DMC Synonym Editor or a Data Flow calculator, the format of a new field is recalculated based on the expression. A new balloon tip has been added, which informs users that the format has been recalculated.

Enhanced DMTRUNC Function

The simplified function DTRUNC, which returns the first day of a time period (YEAR, MONTH, QUARTER), has been extended to return the first day of a WEEK and the last day of any time period.

Optimization of REPLACE Function

A new, simplified REPLACE function has been introduced. This function has the following syntax:

```
REPLACE ( string , pattern , replacement )
```

The function will replace or remove a substring within a string. The input parameters can have CHAR, VARCHAR, or TEXT as data types. The result is always VARCHAR, with a length that is determined from the input parameters.

Using a Regular Expression in a SQL WHERE Condition

A Regular Expression can now be used in WHERE conditions in a SQL SELECT statement. A Regular Expression, or regexp, is a special sequence of characters that describe a search string. The syntax is:

```
string [NOT] RLIKE regexp
```

Data and Process Flows

The following section provides descriptions of new features for data and process flows.

CMRUN on All Platforms

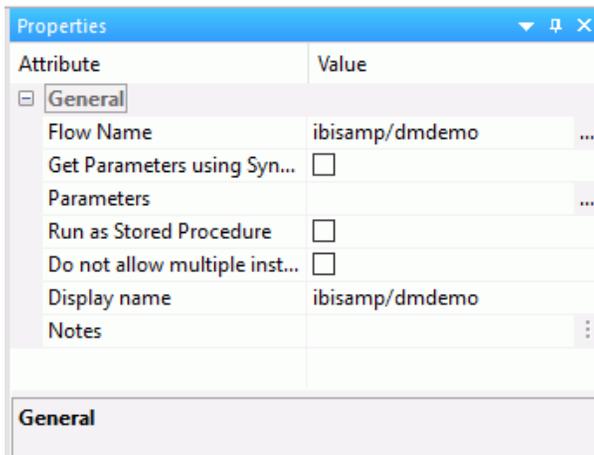
The CMRUN program, which DataMigrator uses to initiate flows or stored procedures, takes an optional parameter of x=filename. This parameter allows you to store the password in a protected file.

In previous releases, the parameter was a DDNAME and only used on IBM zSeries (MVS).

Now it can be used on any other platform, including Windows and UNIX, where it is specified as a file name in the current directory or as the relative or full path to a file name.

Disallowing Multiple Instances of a Flow

When working with a Process Flow that initiates another data flow, you can now prevent the called flow from starting if another instance of the flow is running, by selecting the *Do not allow multiple instances* check box. This option is available in the Properties pane of a flow object.



Expand and Collapse Functionality for Objects

In the DMC, when viewing a flow with expanded objects, multiple objects can be selected by pressing the Ctrl key while clicking them.

If there are no objects selected in either a data or process flow, the new Expand All or Collapse All options are available.

Long Names in Flows

In the Data Management Console, if the name of an object is too long to fully display, it is truncated and shown with ellipses. You can see the full name by hovering over the object.

Optimize Load Option to Support MERGE

DataMigrator has a new option that allows for faster loading when a source and target are in the same relational database, resulting in an increase in performance. When working with:

- Databases that support the MERGE command, the merge is generated and passed through to the database so that both the extract and load is done in a single SQL statement. This option allows specifying different calculations for insert and update operations. Updates can use values from both the source and target tables. Databases that support a SQL MERGE command include MS SQL Server 2008 and Db2 9.1 (and later).
- Insert only operations, an INSERT INTO ... SELECT command is generated and passed through to the relational database.

In either case, because all operations are done in the database, a much faster throughput is possible.

You can enable this option by opening the flow properties of a data flow and selecting the *Optimize Load* checkbox under the Execution section.

Note: Since the operation is done as a single SQL command rather than row-at-a-time processing, some capabilities are not available when this option is selected. These include Record Logging and use of VALIDATE to reject individual rows. Also, a count of the number of rows inserted, updated, or deleted is not available.

The user should consider both modes of operation to determine which is best suited for their application.

Specifying Display Name in Target Properties

Target Properties has a new attribute, Display Name, that allows user specification of the name that appears on the flow. The default is the application name, if enabled in flow properties, and the synonym name.

Updates to Email Functionality

The following new features are available for emails:

- Email File Types for a Process Flow**

Any file type can be attached to a DataMigrator process flow email.

Email Recipients

In previous releases, when sending email messages, all recipients appeared in the To line. Now, recipients can also appear on the Cc line, or hidden as Bcc.

Sending HTML Output on Message Failure

The Send HTML output as inline message located in the Properties panel of a Process Flow Start object now allows you to send HTML output from a report in an email message on failure, as well as on successful completion.

Updating Values in Target Transformations

You can now update, instead of replace, values in a target table using the On Match Expressions tab that can be found in the Transformations dialog box. For example, you can add the value from an incoming row to the value in the target table instead of replacing it completely.

Data Management Console

The following section provides descriptions of new features for the Data Management Console (DMC).

Downloading Files

A new Download option is available for all files on Application tree in the Data Management Console and Web Console. When a user downloads files, they are saved in the Downloads folder of their computer. In Windows, this location is C:\users*username*\Downloads, by default.

Improvements in Column Name Display Strategy

When the strategy is something other than *Name*, the header label now shows, for example *Display Name (Title)*. This ensures that the column name is clearly displayed. In addition, the field Name can now be displayed even when the display strategy is not *Name*.

Improvements to Text Editor

When using the Text Editor in the DataMigrator Console with a stored procedure (focexec) that has one more lines selected, new shortcut menu options allow for commenting or uncommenting multiples lines at once. The options are *Comment Selection* or *Uncomment Selection*.

Kerberos and Single Sign-On From DMC

A new Single Sign-On capability is now available when connecting from the Data Management Console to a DataMigrator or WebFOCUS Reporting Server on Linux with Kerberos enabled.

The IWA (Integrated Windows Authentication) that is available on the Server Node Configuration dialog box has been replaced with two new options: NTLM (NT Lan Manager) for Windows and Kerberos for use with Linux. When you select either of these options, you do not need to enter a user ID and password. The user ID and password you used to log in to Windows is used.

Once you connect to the DMC, a message appears in the console log indicating the authentication method and user ID that was used.

Using Find in Properties Panes

In the Data Management Console, you can right-click the Properties pane for a synonym or a flow and use the new Find option in the shortcut menu to search for text in the Attributes column.

Data Profiling

The following section provides descriptions of new features for data profiling.

Quick Copy

The following section describes the new feature for the Quick Copy tool.

Quick Copy Allows Delimited Flat File Targets

From the Data Management Console or Web Console, the Quick Copy facility can now be used to create delimited flat files, in addition to loading database tables.

Reporting

The following section provides descriptions of new features for reporting.

Synonym Editor

The following section provides descriptions of new features for the Synonym Editor.

Assigning SCD Columns on a Synonym

Previously, using the DataMigrator capability of loading a Slowly Changing Dimension (SCD) table required identifying the SCD type of each column in the target table. This was done in the Synonym Editor one column at a time.

A new dialog box provides a quicker, simpler way for assigning the SCD types. A new panel shows all the column names and folders for each SCD type. Columns can be assigned to the appropriate type by drag-and-drop.

Identifying Internal Fields

There are new icons in the Synonym Editor Field View that help to identify fields with types Internal and Needs Value. These field types do not allow sample data. The icons help to provide a visual indication that these fields are different.

In addition, the new Access Property column shows these values for fields with these properties. You can access this column by right-clicking the *Name* header in the Synonym Editor, pointing to *Customize*, and clicking *Access Property*.

New Parameterize Value Attribute

The new Parameterize Value dialog box allows you to overwrite the values for the CDC attributes with the existing, corresponding, CDC variables or with new variables.

Pivoting Columns and Rows

It is now simpler to edit a synonym to indicate that data should be pivoted, columns turned into rows or single column turned into multiple columns, for retrieval.

This can be done by either selecting a group of columns or a single character column that contains a delimited list of values or a JSON or XML document. A new dialog box allows specification for how the columns should be pivoted.

Also, data sources that support array structures in a field, such as Hive (for data managed by Hadoop) or MongoDB a synonym can now be created to represent an array so that the individual elements can be accessed.

Archiving Files on a Local Server

When the File Listener processes remotely located files, users can now archive these files on either a local or remote system by using the new ARCHIVE_LOCAL option that is available in the File Listener Attributes.

Enhanced DB Loaders Option to Support MERGE

DataMigrator has a new option that allows for faster loading when a source and target are in the same relational database, resulting in an increase in performance. When working with:

- Databases that support the MERGE command, the merge is generated and passed through to the database so that both the extract and load is done in a single SQL statement. This option allows specifying different calculations for insert and update operations; updates can use values from both the source and target tables. Databases that support a SQL MERGE command include MS SQL Server 2008 and Db2 9.1 (and later).
- Insert only operations, an INSERT INTO ... SELECT command is generated and passed through to the relational database.

In either case, because all operations are done in the database, a much faster throughput is possible.

You can enable this option by opening the flow properties of a data flow and selecting the *Use Enhanced in-database loaders* checkbox under the Execution section.

Note: Since the operation is done as a single SQL command rather than row-at-a-time processing, some capabilities are not available when this option is selected. These include Record Logging and use of VALIDATE to reject individual rows. Also, a count of the number of rows inserted, updated, or deleted is not available.

The user should consider both modes of operation to determine which is best suited for their application.

Resource Analyzer and Resource Governor

This section describes the new features for Resource Analyzer.

Resource Analyzer provides Information Systems (IS) organizations with the ability to manage the growing volume and unpredictable nature of ad hoc data access.

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

Together, Resource Analyzer and its partner product, Resource Governor, are designed specifically to help IS organizations analyze and control end user data access.

New Top n Reports

Resource Management has been enhanced with new Top *n* reports. These reports show the usage data for the top number of users, procedures, or data sources specified for the report. The available options for top number are 5, 10, 15, 20, and 25. The default value is 10.

New Field in SMCOLUMNS Table

A new field, called SMDVPROP, has been added to the Resource Management Repository to indicate if a field in the request has a Dimension View property. The value of this new field can be *M* for Measure, *D* for Dimension, or blank if it is not known or not part of a Dimension View. SMDVPROP has a format of A1 and is an attribute of the SMCOLNMS.SMCOLUMN table.

Converting Existing Repositories to New Repositories

A Repository conversion process has been added to allow FOCUS repository to be converted to an SQL adapter repository. This feature also allows an existing SQL repository to be converted to a new SQL adapter connection or to the same SQL adapter connection using a new owner name. The new SQL adapter connection can be any of the SQL adapters that are certified for Resource Management repository usage.

Vertica Now Supported

Vertica has been added to the list of supported environments that can be selected for the Resource Management Repository.

Special Characters Now Supported

The Add to Monitor page for Relational Data Sources has been enhanced to support: *{}>< √:|=!@#^%+?\$~ and blank special characters in the data source name. Any data source with special characters will be quoted using the RDBMS quoted identifier character. The data source will be stored as a 2 part name, owner.table, and monitored using uppercase characters, except for any quoted special characters.



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