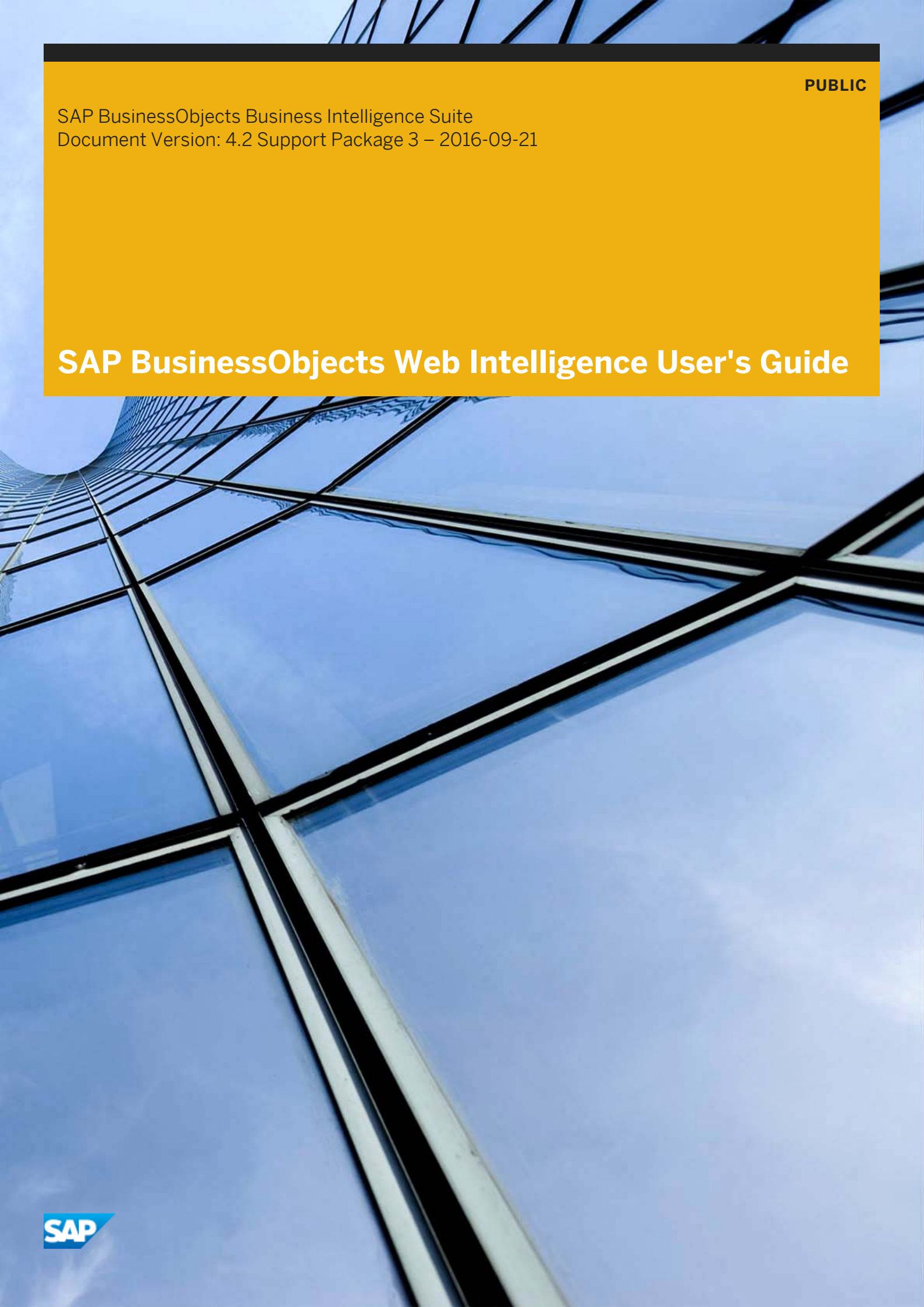

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SAP BusinessObjects Business Intelligence Suite
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SAP BusinessObjects Web Intelligence User's Guide

Content

1 What's new, how and where to get help

1.1 Documentation for SAP BusinessObjects Web Intelligence

The Web Intelligence documentation provides complete instructions for performing interactive analysis on data from the BI launch pad using the SAP BusinessObjects Web Intelligence HTML or Applet interfaces, or using SAP BusinessObjects Web Intelligence Rich Client which can be launched and installed from the BI launch pad.

The table below provides an easy access to sections of the documentation you might be interested in.

Table 1:

	For more information about	Read
Building queries	Universes	Building queries on universes [page 66]
	Data files	Building queries on data files [page 94]
	BEx queries	Building queries on BEx queries [page 97]
	SAP HANA views	Building queries on SAP HANA views with SAP HANA Direct Access [page 128]
	SAP HANA Online mode	Building queries on SAP HANA views in SAP HANA Online mode [page 133]
	Free-Hand SQL	Building queries on relational connections using Free-Hand SQL statements [page 141]
	Analysis views	Building queries on Analysis View data sources [page 146]
	Web services	Building queries on web service data sources [page 147]
Formatting data	Charts	Chart types [page 342]
	Linking data	Linking to other documents [page 396]
	Ranking data	Ranking report data [page 248]
	Merging data	Merging data from dimensions and hierarchies [page 257]
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	Conditional formatting	Highlighting data using conditional formatting [page 244]
	Enhancing reports with calculations and variables	Enhancing reports with calculations, formulas and variables [page 282]

	For more information about	Read
	Sections, breaks and sorts	• Using sections to group data [page 329] • Using breaks [page 334] • Using sorts to organize data in reports [page 338]
Filtering and analyzing data	Drilling	Drilling on report data [page 431]
	Query filters and prompts	• Filtering data using query filters [page 168] • Filtering data with query prompts [page 186] • Filtering data with prompts [page 462]
	Subqueries	Filtering data using subqueries [page 197]
	Input controls	Filtering data using input controls [page 467]
	Groups of input controls	Filtering data dynamically with groups of input controls [page 475]
Collaborating	Commenting	Commenting on report data [page 415]
	Shared elements	Using shared elements to share report parts [page 423]

1.2 What's New in 4.2 SP3

This release of Web Intelligence has been dedicated to feature completeness.

Web Intelligence 4.2 SP3 extends the possibilities of features introduced in Web Intelligence 4.2 by removing numerous limitations. The HTML client has also been greatly improved to be on par with the Java applet and now offers increased functionalities.

The sections below detail the new functionalities for each feature.

Client parity

The Web Intelligence HTML client has been greatly improved to align its functionalities with that of the Java applet. The following functionalities are now available in the HTML client:

- Save as
- Format Number
- Conditional Formatting

- Create documents with BEx queries and Excel spreadsheets as data sources
- Create ranking, subqueries, and complex filters
- Change Source Wizard

About the Web Intelligence interfaces [page 22]

Custom Elements

Additional settings have been added in the formatting options so that you can fine-tune how custom elements are displayed in reports. A new *Palette & Style* menu offers increased possibilities to customize custom elements.

Custom Elements [page 354]

SAP HANA Direct Access

Up until now, input parameters and variables were prompted only at refresh time. A variable manager for documents based on SAP HANA views has been introduced so that you can answer prompts, input parameters, and mandatory variables before selecting objects in the query panel. With the variable manager, view available data source variables, set or edit values for every data source variable and fix or prompt values of data source variables upon refresh. With this latest addition, report designers can answer variables before querying an SAP HANA view, but also manage these variables in the *Query Panel*.

The change source workflow is now available for documents based on SAP HANA Direct Access and BEx universes. You can change to or from both data sources.

Managing mandatory variables with the Variable Manager [page 132]

SAP HANA Online mode

Partial results are more visible in documents with an icon displayed on each block whose data have been partially retrieved. This addition allows you to check on the data status and integrity, especially if you are using the *Max Rows* and *Query Execution Timeout* options.

Navigation paths can now be displayed so that you can check how Web Intelligence performs drilling operations and navigates through SAP HANA objects.

Retrieving partial results [page 139]

Displaying online query statistics per block [page 140]

Navigation paths [page 139]

SAP BW

- Web Intelligence now supports linked nodes.
- SAP BW InfoProvider's last data update date can be retrieved using the QuerySummary() function.
- For SAP BW authored universe, usage statistics are also sent to SAP BW.

QuerySummary [page 619]

Geomaps

Geomap charts have been improved and you can now geo-qualify merged objects and variables, as well as geo-qualify objects using longitude and latitude coordinates. This new geo-qualification method is less error prone when it comes to matching and offers better results when trying to bind a value with a location.

Matching values of a merged object with a location [page 360]

To match values of an object using latitude and longitude coordinates [page 362]

Shared Elements

Shared elements capabilities have been enhanced with this new release of Web Intelligence. Shared elements now support geomaps, custom elements, embedded pictures, categories, and comments. In addition, a new automatic cleaning mechanism that remove useless queries whenever a shared element is added to a report to increase overall performance.

When publishing a shared element, it is also possible to directly link it to its source report element. A new document option is available to automatically update shared elements in the document when opening it, if new updates are available.

Using shared elements to share report parts [page 423]

Group of input controls

Until now, filters and input controls were independent, leading to inconsistent selections and a complex experience when selecting values from large lists that couldn't be restricted progressively.

With Web Intelligence 4.2 SP3, reports designers can now create groups of input controls that interact with one another, enabling report consumers to define progressive selections by restricting the lists of values of an input control based on the selection made for a previous input control.

These groups can be based on a traditional reporting structure as well as larger and heterogeneous groups facilitating exploration. Groups of input controls use what is called a filter path that reflects the successive selections you've made in a particular group to make for a better data refinement. Using the filter path, you can modify or reset values at any level. You can also completely or partially reset the filter path by excluding an input control from a group to support a fixed hierarchical structure as well as an exploratory scenario.

This solution guarantees flexibility to report consumers in terms of data discovery and filtering.

Filtering data dynamically with groups of input controls [page 475]

References

References are shortcuts to cells whose data you want to reuse. They have been introduced to provide more flexibility when designing reports. You can use references anywhere in a report or in a formula. As an example, you can use reference to create a summary report that references figures from other reports. At refresh time, references are replaced by the content of their target cells. References can be consumed in an entire document and used for conditional formats or any other calculation.

Using references to reuse data [page 288]

Comments

A series of enhancements has been brought to the commenting feature. You can now comment on specific report elements such as charts and tables, but also on individual cells within a table. An icon is displayed next to each block or cell that contains comments. Comments are now also scheduling and publishing compliant, and can be saved along with the document.

Commenting on report data [page 415]

Refresh queries in parallel

The parallel data provider refresh feature now supports BEx queries, and new settings have been added in the Central Management Console and the information design tool to let you fine-tune parallel queries at a connection level. As a result, you can manage the maximum number of queries refreshed in parallel per document for OLAP, BEx or relational connections. You can also decide whether you want to enable parallel query processing during scheduling operations.

Refreshing queries in parallel [page 165]

Sets

You can now consume sets which are used as pre-defined complex query filters in Web Intelligence. A Set is a strucure that contains multiple lists of values for key enabled dimensions in the business layer. The sets can contain static or calendar based data. You can publish your sets to the repository and they are available as Set filters when the associated universe is used as a data source in the *Query Panel*. Although, there are consumed in Web Intelligence, sets are designed and defined in the Information Design Tool. For further information on how to design sets, refer to the *Information Design Tool User Guide*.

Sets [page 175]

Merge variables

You can now merge dimension variables coming from two different queries. With this addition, you can clean up your data using variables and merge them. For maximum efficiency, use the *Arranged by: Query* view to make sure that you select the right objects to merge.

To merge variables [page 287]

Change Source

Additional change source scenarios are now available, and you can now change source to or from SAP HANA Direct Access or BEx .UNX universes.

Changing the data source of a query [page 158]

Publishing & scheduling

Web Intelligence now supports recipient delivery rules, making it possible to send the publication only if it contains data or if it has been fully refreshed.

Delivery rules [page 762]

New MemberAtDepth() function

You can now retrieve members of a hierarchy at a chosen depth using the new MemberAtDepth() function, and display the hierarchy as a foldable tree.

MemberAtDepth [page 673]

Miscellaneous

- New *Data Source* view in the *Available Objects* pane.
- New *Query* view in the *Available Objects* pane.
- New possibility to display both value and percentage in Pie charts.
- New StatusOfData paramater for the QuerySummary() function to get the last update date of a BW Info Provider.
- New DPI parameter when exporting to PDF and Excel.

1.3 To access online help

1. Open Web Intelligence.
2. From the *Help* button dropdown list in the application toolbar, select *Help Contents*.

1.4 To access the Web Intelligence guide via the internet

You can find Web Intelligence guides on the SAP Help Portal.

At the SAP Help Portal (http://help.sap.com/) the following guides are available:

- *SAP BusinessObjects Web Intelligence User's Guide* - a complete guide to working with corporate data from the BI launch pad using the Web Intelligence Applet, Web Intelligence HTML, and Web Intelligence Rich Client interface.
  The Web Intelligence Rich Client (Desktop interface) allows you to perform analysis offline as well as with corporate data. This interface can be installed and accessed in the following ways:
  - via the BI launch pad
  - as a part of the BI platform

  > **Note**
  >
  > As of BI 4.1 Support Package 5, the *SAP BusinessObjects Web Intelligence Rich Client User's Guide* and online help and the *Building SAP BusinessObjects Web Intelligence queries based on BEx queries* guide have been merged into the *SAP BusinessObjects Web Intelligence User's Guide*.
- *Using Functions, Formulas and Calculations in Web Intelligence* - detailed information on the formula language and advanced calculation-related topics such as calculation contexts and smart measures.

2 About Web Intelligence

Web intelligence provides business users with flexible, intuitive ad hoc reporting tools and interactive analytics – on the Web, desktop, or mobile device.

You can also:

- Deliver personalized business intelligence to your colleagues, customers, and partners
- Improve productivity by giving users an intuitive tool and clearing IT backlogs
- Get the insights you need, when you need them, no matter where you are

Security rights

Depending on your license, user, and security rights, you can analyze the data in reports. For example, you can perform the following actions:

- Filter data
- Drill down on data to reveal more details
- Merge data from multiple data sources
- Display and view data in charts

Customized interface

The Central Management Console (CMC) administrator can customize the user interface by hiding elements, such as panels, panes, toolboxes, menus, and menu items. If a user interface element that you need is not available, contact your CMC administrator.

Data sources

Data in Web Intelligence documents can come from:

- Universes, which organize data from relational or OLAP databases into objects or hierarchies
- Personal data providers (such as Microsoft Excel or `.csv` files), BEx queries based on SAP Info Cubes, web services, or Analysis View workspaces
- Relational database queries via Free-Hand SQL statements
- You can connect to the HANA (High-Performance Analytical Appliance) data source to use in-memory computing. HANA universes based on HANA views with variables are supported in Web Intelligence.

> **Note**
>
> Web Intelligence supports Hadoop data sources, but Custom SQL is not supported.

You build data providers to retrieve data from data sources and create reports from the data in data providers.

2.1 Getting to know Web Intelligence and the BI Launch Pad

2.1.1 About the Web Intelligence interfaces

Three interfaces are available for Web Intelligence documents.

You select the interface you prefer in BI launch pad Web Intelligence preferences.

Via the BI launch pad, you can use the Web Intelligence HTML interface and Web Intelligence Applet interface to create documents that analyze data. You can also use Web Intelligence Rich Client to perform data analysis, however Web Intelligence Rich Client allows you to work locally without a connection to a repository.

The interface launched when you open a document to *View* or *Modify* in the BI launch pad depends on your Web Intelligence BI launch pad *Preferences* settings.

Client parity in 4.2 SP3

The 4.2 SP3 release introduces new functionalities to the HTML client so that it is aligned with the capabilities offered by the Java applet. The following functionalities are now available in the HTML client:

- Save as
- Format Number
- Conditional Formatting
- Create documents with BEx queries and Excel spreadsheets as data sources
- Create ranking, subqueries and complex filters
- Change Source Wizard

Table 2: Web Intelligence interfaces

Interface	Description
Web Intelligence HTML interface	Also sometimes referred to as the DHTML interface. You launch this interface in the BI launch pad. Depending on your permissions, you can do the following: • Create and edit queries based on *No data source*, `.unx`, and `.unv` universes, SAP HANA views, BEx queries, and Excel files. • View, create, edit and refresh all types of reports.

Interface	Description
Web Intelligence Applet interface	Also sometimes referred to as the Java applet. You launch this interface in the BI launch pad. Depending on your permissions, you can do the following: • Create and edit queries based on *No data source*, `.unx` and `.unv` universes, SAP HANA views, BEx queries, FHSQL queries, Analysis views (Analysis View workspaces), and Excel files. • View, create, edit and refresh all types of reports.

<table>
<tr><th>Interface</th><th>Description</th></tr>
<tr><td>Web Intelligence Rich Client</td><td>
Web Intelligence Rich Client, also referred to as Desktop, is a version of Web Intelligence that is installed on your computer and allows you to create and edit queries, and view, create, edit and refresh reports. There are two ways to have Web Intelligence Rich Client installed on your computer:

From BI launch pad.
As part of a BI platform installation.

Note
When you have launched Web Intelligence Rich Client once and closed it, the quick start icon is available in the Microsoft Windows toolbar. This quick start icon allows you to launch the interface rapidly.

Both versions of Web Intelligence Rich Client can be used to create and edit queries based on no data source, <code>.unx</code> and <code>.unv</code> universes, SAP HANA views and Excel and text files.

Table 3: Data sources you can access depend on the connection mode
<table>
<tr><th>Data source</th><th>Standalone</th><th>Offline</th><th>Connected</th></tr>
<tr><td>.unv universe</td><td>No</td><td>Yes*</td><td>Yes</td></tr>
<tr><td>.unx dimensional universe</td><td>No</td><td>Yes*</td><td>Yes</td></tr>
<tr><td>.unx relational universe</td><td>No</td><td>Yes*</td><td>Yes</td></tr>
<tr><td>.unx multi-source universe</td><td>No</td><td>Yes*</td><td>Yes</td></tr>
<tr><td>SAP HANA views</td><td>No</td><td>No</td><td>Yes</td></tr>
<tr><td>BEx query</td><td>No</td><td>No</td><td>Yes</td></tr>
<tr><td>Free-hand SQL query</td><td>No</td><td>No</td><td>Yes</td></tr>
<tr><td>Analysis Views and Microsoft Analysis Services 2005</td><td>No</td><td>No</td><td>Yes</td></tr>
<tr><td>Excel file</td><td>Yes **</td><td>Yes **</td><td>Yes</td></tr>
<tr><td>text file</td><td>Yes **</td><td>Yes **</td><td>Yes</td></tr>
<tr><td>CSV file</td><td>Yes **</td><td>Yes **</td><td>Yes</td></tr>
<tr><td>Web Services</td><td>No</td><td>No</td><td>Yes</td></tr>
</table>
* In this case, you have imported the universe, and you still need to enter a CMS password to access the universe.

** Locally installed only.
</td></tr>
</table>

Tip

In the BI launch pad preferences, you can choose in which Web Intelligence interface to open documents when you right-click a document and select *View*. When you right-click a document and *Modify*, a different Web

Intelligence user interface appears. For example, you can link cells to documents in the Web Intelligence HTML interface only, but you can work with queries based on QaaWS (Query as a Web Service) data sources only in the Web Intelligence Applet or Rich Client interfaces.

You may need to use two Web Intelligence interfaces—one for viewing and one for modifying documents. In that case, use the Web Intelligence HTML interface to view documents and the Web Intelligence applet or rich client interface to modify documents.

Feature differences between the Web Intelligence interfaces

This section provides you with an overview of the main functional differences that exist between all the Web Intelligence interfaces as of BI 4.1 Support Package 03. The availability of certain features depends on which interface you are using.

Table 4: Setting up and using the Web Intelligence interfaces

Feature	Web Intelligence HTML	Web Intelligence Applet	Web Intelligence Rich Client
Use Web Intelligence locally and offline			Yes *
Use Right To Left (RTL) alignment based on the Preferred viewing locale setting		Yes	Yes
User Prompt Input appears in the side panel	Yes		Yes

* You can install Web Intelligence Rich Client from the BI launch pad or the administrator can install the BI Platform, which includes Web Intelligence Rich Client, on your computer from the *SAP Software Download Center*.

Creating and working with documents in each interface

Table 5:

Feature	Web Intelligence HTML	Web Intelligence Applet	Web Intelligence Rich Client
Select a folder in which local documents and universes are stored by default on your local machine		Yes	Yes
Edit and refresh a document using a SAP HANA view data source	Yes	Yes	In Connected mode only.
Edit and refresh a document using a BEx query	Yes	Yes	Yes
Edit and refresh a document using a Free-hand SQL query	Refresh only	Yes	Yes
Edit and refresh a document using an Analysis View data source	Refresh only	Yes	Yes
Edit and refresh a document using a text source	Refresh only *	Refresh only *	Yes

Feature	Web Intelligence HTML	Web Intelligence Applet	Web Intelligence Rich Client
Edit and refresh a document using a web service data source		Refresh only	Yes
Send a Web Intelligence document to another user in the CMS	Yes	Yes	
Send a Web Intelligence document by FTP	Yes	Yes	
Export a document as a CSV file	Yes	Yes	Yes
Export a document as a CSV archive file	Yes		
Save a document as a CSV archive file		Yes	Yes
Export a document as a PDF, text, Excel or Excel 2007 file	Yes		
Save a document as a PDF, text, Excel or Excel 2007 file		Yes	Yes
Save a document to the corporate repository	Yes	Yes	Yes
Autosave documents to My Favorites folder	Yes	Yes	

* If the file has previously been copied into the BusinessObjects Enterprise Platform.

Building queries

Table 6:

Feature	Web Intelligence HTML	Web Intelligence Applet	Web Intelligence Rich Client
Build queries on an Analysis View data source		Yes	Yes
Build queries on Excel files saved locally		Yes	Yes
Build queries on Excel files saved to the CMS *		Yes	Yes
Build queries on SAP HANA views	Yes	Yes	In Connected mode only.
Build queries on BEx queries	Yes	Yes	Yes
Building queries on Free-hand SQL queries	Refresh only	Yes	Yes
Build queries on text files			Yes
Access Data mode		Yes	Yes
Access the Change Source options in the Data Access table	Yes	Yes	Yes
Change the data source of queries based on text and Excel files.			Yes

Feature	Web Intelligence HTML	Web Intelligence Applet	Web Intelligence Rich Client
For OLAP .unx universes, when filtering on measures, you can only type a constant.		Yes	Yes
Select all the members at a level in a hierarchy that is organized into levels	Yes only for OLAP .unx	Yes	Yes

* Excel files have to be exported first into the BI launch pad for Life Cycle management.

Creating reports

Table 7:

Feature	Web Intelligence HTML	Web Intelligence Applet	Web Intelligence Rich Client
Access a "Highlight All" button in the "Find" box to highlight all occurrences of a text string in a report page.		Yes	Yes
Create and edit conditional formatting	Yes	Yes	Yes
View the alignment grid from the report editor		Yes	Yes
View the "More on this function" button in the formula editor		Yes	Yes

Publishing, formatting and sharing reports

Table 8:

Feature	Web Intelligence HTML	Web Intelligence Applet	Web Intelligence Rich Client
Set a hyperlink to another document in the CMS	Yes, with a wizard	Yes, no wizard	Yes, no wizard
Publish content as a web service		Yes	Yes
Print documents directly from the interface	Export to PDF first	Yes	Yes

Related Information

Changing the data source of a query [page 158]

2.1.2 Application components

Web Intelligence offers several components that you can use to create, edit and navigate documents.

The application has the following components:

Table 9:

Component	Description
The main toolbar	You use the main toolbar to open, save and print documents, track data changes and display the report outline. The main toolbar appears in the *File* tab when the application is in *Design* mode.
Toolbars	You work with data providers and perform report design and analysis tasks using the toolbars. Toolbars appear at the top of the application in *Data* and *Design* mode only. In *Data* mode, only those toolbars related to working with data providers are active.
Side Panel	The Side Panel groups several panes that provide different views of the current document.
File and *Properties* tabs	The *File* and *Properties* tabs are only available in *Design* and *Data* mode. The *File* tab contains the main file menu tools. The *Properties* tab allows you to set *View*, *Document*, and *Application* properties.
Report Panel	The *Report Panel* displays the reports in a document.
Status Bar	The *Status Bar* appears beneath the *Report Panel* and allows you to perform actions such as activating data tracking or changing the display mode. It can be activated and deactivated in the *View* menu of the *Properties* tab.
Report Filter toolbar	This toolbar is used to add simple filters to reports.
Drill toolbar	When *Drill* is activated in a document, this toolbar appears. It shows the active drill objects.

Related Information

To create simple report filters [page 460]
Side Panel tabs in Web Intelligence [page 29]
Drilling down on report data [page 438]

2.1.2.1 Side Panel tabs in Web Intelligence

The tabs available in the Side Panel depend on the Web Intelligence interface you are using and the mode in which you are viewing the document.

Table 10: Web Intelligence interfaces and document modes

	Web Intelligence Applet			Web Intelligence HTML		Web Intelligence Rich Client		
Mode	Data	Design	Reading	Design	Reading	Data	Design	Reading
Document Summary		Yes	Yes	Yes	Yes		Yes	Yes
Navigation Map				Yes	Yes			
Report Map		Yes	Yes				Yes	Yes
Input Controls		Yes	Yes	Yes	Yes		Yes	Yes
User Prompt Input				Yes	Yes			
Shared Elements		Yes	Yes	Yes	Yes		Yes	Yes
Comments		Yes	Yes	Yes	Yes		Yes	Yes
Available Objects		Yes		Yes			Yes	
Document Structure and Filters		Yes		Yes			Yes	
Web Service Publisher		Yes					Yes	
Data	Yes					Yes		

The tabs allow you access to panes in which you can view and configure document information and objects.

- The *Document Summary* pane provides an overview of the document properties.
- The *Navigation Map* and *Report Map* panes list all the reports in a document.
- The *Input Controls* pane allows you to add and edit input controls applied to the document.
- The *Web Service Publisher* pane lists the BI services published from the document.
- The *Available Objects* pane lists the data providers and objects available for inclusion in reports.
- The *Document Structure and Filters* pane displays the structure of the document in a tree view, and displays filters applied to different report elements.
- The *Data* pane appears only in *Data* mode and allows you to navigate the data providers in a document.
- The *User Prompt Input* pane lists the default values for a prompt. You can also enter text in the values text box. Multiple items are separated by a semi-colon (;).
- The *Shared Elements* pane lists all the shared elements used in the document.
- The *Comments* pane lists all the comments in the document.

2.1.3 Understanding the BI launch pad

The BI launch pad consists of the following areas:

- Toolbar
- *Home* and *Documents* tabs

- *My Applications* Icons

Toolbar

The *Applications* menu allows you to start Web Intelligence.

The *Preferences* menu allows you to set the following application preferences:

- General preferences
- Password
- Locale and time zone preferences
- The Web Intelligence preferences

BI launch pad panes

The BI launch pad consists of the following objects:

The main tabs: *Home*, *Documents*, and any open documents.

Table 11: BI launch pad panes

Tab pane	Description
Home	Shows recently viewed documents, unread messages, unread alerts, and recently run documents.
Documents	Allows you to navigate through the available folders and documents. Click on a folder tab to display any documents in that folder. You can view, organize, and manage documents in this pane.
Web Intelligence documents	One tab for each open document.

Related Information

About setting Web Intelligence preferences [page 44]

2.1.3.1 To log into the BI launch pad

To access Web Intelligence via the BI launch pad, you need to log in.

Before you can perform interactive analysis from the BI launch pad, you need the following information:

- a URL to the BI launch pad (for example `http://[hostname]:8080/BOE/BI`).
- your user name and password
- your authentication, which controls the resources available to you

Contact your administrator for these details if you do not already know them.

> **Note**
>
> By default the server name is not displayed on the BI launch pad log on page.

To launch SAP BusinessObjects Web Intelligence:

1. Launch a web browser.
2. Point your browser to the BI launch pad bookmark or URL.
   The login page appears.
3. If the *System* box is blank, type the name of the server followed by a colon (:), and then type the port number.
4. In the *Username* box, type your user name.
5. In the *Password* box, type your password.
6. In the *Authentication* box, select the authentication provided to you by your administrator.
7. Click *Log On*.
   The BI launch pad home page appears.

2.1.3.2 To log out of the BI launch pad

You need to log out when you have finished working in the BI launch pad instead of simply closing your web browser.

Logging out ensures that any preferences you modified during your session are saved.

BI administrators can track how many users are logged into the system at any given time and use this information to optimize system performance.

Click *Log off* on the BI launch pad toolbar.

2.1.3.3 To start Web Intelligence in the BI launch pad

You can launch Web Intelligence in more than one way.

To start Web Intelligence, in the BI launch pad, do one of the following:

- Click *Applications* > *Web Intelligence*.
- Select *Web Intelligence* in the application shortcuts.
- Open a Web Intelligence document.

Web Intelligence starts. The *Web Intelligence* tab is active in the main pane. To check which interface has started (Web Intelligence HTML, Web Intelligence Applet, or Web Intelligence Rich Client), click *Preferences* and select *Web Intelligence*.

Related Information

Building queries in Web Intelligence [page 56]
Choosing the viewing and design interfaces [page 44]

2.1.3.4 To open a document from the repository

You can open a document from the corporate repository.

1. In the BI launch pad, click the *Documents* tab to show the documents available in the repository.
2. Click the *Folders* tab, and navigate to the folder containing your document.
3. Select the document, right-click and select *View* to open the document in *Reading* mode, or *Modify* to open the document in *Design* mode.

   The version of Web Intelligence that opens depends on the *View* and *Modify* settings in the BI launch pad Web Intelligence preferences.

> **Note**
>
> When the *Refresh on open* document property is selected in the document properties, the document displays the latest information each time you open it. The *Refresh on open* option is dependent on the following settings in the CMC (configured by the BI administrator):
>
> - In *Applications* > *Web Intelligence*, from the *Manage* list, select *Properties*. In the *Automatic Document Refresh on Open Security Right Setting* section, the property *Automatic Refresh* security setting is enabled.
> - In *Applications* > *Web Intelligence*, from the *Manage* list, select *User Security*. When you select a user profile and click *View Security*, verify that the *Document - disable automatic refresh on open* security right is disabled.

Related Information

Choosing the viewing and design interfaces [page 44]

2.1.3.5 To delete a document from the repository

You can delete a document from the corporate repository, if you have been granted the permission to do so.

1. Log into the BI launch pad
2. Click the *Documents* tab to show the documents available in the repository.
3. Navigate to the folder that contains the document you want to delete.
4. Right-click the document that you want to delete and click *Organize*.

5. Click *Delete*.

2.2 Configuring Web Intelligence Rich Client

You can use SAP BusinessObjects Web Intelligence Rich Client to work with secured or unsecured documents, with or without a connection to a Central Management Server.

The Web Intelligence Rich Client interface lets you create documents and edit, format, print, and save them. The following are common scenarios for using this interface:

- You do not want to install a CMS or an application server.
- You cannot connect to a CMS while traveling or working in a location without network access.
- You want to work with documents continuously, if there are server-side interruptions or performance issues.
- You want to improve calculation performance.

You can install Web Intelligence Rich Client interactively from the SAP BusinessObjects Business Intelligence launch pad, or the administrator can install the BI Platform, which includes Web Intelligence Rich Client, on your computer from the *SAP Software Download Center*.

2.2.1 To install Web Intelligence Rich Client from the BI launch pad

You can download Web Intelligence Rich Client to your computer from the BI launch pad.

1. Log into the BI launch pad.
2. Click *Preferences*.
3. Click *Web Intelligence*.
4. In the *Modify* section, click *(installation required)* after *Desktop (Rich Client, Windows only, installation required)*.
   A panel appears asking you if you want to run or save `WebSetup.exe` on your computer.
5. Click *Run*.

   Web Intelligence Rich Client is downloaded to your computer and launched when you launch the application from the BI launch pad. Due to the file size, this process might take a few minutes.
6. Click *Save & Close*.
7. If you receive HTTP connection errors in the report pages, refer to the following topic and then contact your BI administrator to obtain the information required to define your proxy settings: Defining the Proxy Settings in Web Intelligence Rich Client [page 41].

> **Note**
>
> When you install Web Intelligence Rich Client to your local computer, the online help system is also installed to your local computer.

Related Information

Connection modes [page 36]
About the Web Intelligence interfaces [page 22]

2.2.2 To install Web Intelligence Rich Client from the SAP Software Download Center

When you install the BI platform on your computer, you also install Web Intelligence Rich Client.

You have access to the *SAP Software Download Center* and have administrator rights to install applications on your computer.

1. Refer to the following guides on the SAP Help Portal (http://help.sap.com/):
   - For BI Platform installation instructions: the UNIX or Windows version of the *Business Intelligence Platform Installation Guide* for SAP BusinessObjects Business Intelligence platform 4.2
   - For information on installing and configuring Web Intelligence Rich Client on your computer: the *Web Intelligence Rich Client Installation Guide*
2. To download the BI Platform, go to the *SAP Software Download Center* (https://support.sap.com/swdc)

2.2.3 Online help in a Web Intelligence Rich Client installation

If you install Web Intelligence Rich Client from the BI launch pad, the online help system is installed to your computer.

Every time you open Web Intelligence Rich Client, and regardless of which work mode you are in, the help that appears when you click the *Help* icon is that which was installed on your computer.

> **Note**
>
> To update the Web Intelligence Rich Client interface and its help on your computer, you can re-install this interface from the BI launch pad preferences or ask the administrator to install the BI Platform, which includes Web Intelligence Rich Client, on your computer.

You can make help available by specifying a local folder or a URL where Web Intelligence Rich Client can access the help.

Related Information

Connection modes [page 36]

2.2.3.1 To specify the folder or URL for online help

You can select either select a folder for Web Intelligence online help or enter a URL.

1. Launch Web Intelligence Rich Client.
2. Click the *Options* button in the upper right corner, or when a document is open, click *Properties* > *Application*.
3. In the *Web Intelligence Options* dialog box, select the *General* tab.
4. Click *Browse* next to *Help* and select a folder.
   You can also type a URL as the location of the online help.
5. Click *Open*, then *OK*.

2.2.4 Web Intelligence Rich Client processes

You can manage certain notification processes for Web Intelligence Rich Client.

Windows Notification Area

Any time you open the Web Intelligence Rich Client, an icon appears in the Windows notification area and remains during a Windows session. The icon represents the processes of Web Intelligence that continue running in the background.

You use the Web Intelligence Rich Client notification icon to do the following:

- Launch the application in a new window.
- Exit Web Intelligence Rich Client.

2.2.4.1 To activate and deactivate the Web Intelligence Rich Client background process

You can activate or deactivate the Web Intelligence Rich Client background process.

If you activate the Web Intelligence Rich Client background process, you improve the loading time of documents.

1. Launch the Web Intelligence Rich Client.
2. Click the *Options* button in the upper right corner, or when a document is open, click *Properties* > *Application*.
3. In the *Web Intelligence Options* dialog box, select the *General* tab.
4. In the *Web Intelligence Rich Client process* section, do one of the following:
   - To activate the background process, select *Keep process active after closing last window*. This is the default setting.

- To deactivate the background process, deselect *Keep process active after closing last window*. This will also close the quick start icon.

5. Click *OK*.

2.2.5 Connection modes

Web Intelligence Rich Client uses different connection modes.

You can use Web Intelligence Rich Client in the following connection modes: *Connected*, *Offline*, or *Standalone*.

2.2.5.1 About connection security rights and working locally

BI administrators can use the *Download connection locally* security right in the CMS to control connection security rights in Web Intelligence Rich Client.

When the *Download connection locally* security right is granted to connection objects a local refresh is performed if the middleware is correctly installed and configured. When the security right is denied, no local refresh is executed. The refresh is delegated to the server side. Query creation and modification is possible only for queries not using secured connection.

When working with a document from BusinessObjects XI 4.0 or earlier, save the document and reopen it. The security right will be correctly applied.

> **Note**
>
> The BI administrator must define the security associated with the data source connection, for example the sensitive data source connection information that can be downloaded locally and by which users.

When the security option has been activated:

- No connection information transit is allowed to the client side (extra secure mode).
- In a limited offline mode, it is not possible to refresh locally.
- In a fully offline mode, reports can be opened, viewed and modified, but not refreshed, and the query cannot be modified.

> **Note**
>
> When working with multiple queries in a document, the refresh action works only for non-secured data source connections. A warning is displayed when at least one query is using a secured data source connection.

2.2.5.2 Connected mode

In *Connected* mode, you work while connected to a SAP BI BusinessObjects CMS (Central Management Server).

You can work with documents on the CMS or with local secured or unsecured documents. According to your security rights in the CMS, you can do the following:

- import documents and universes from the CMS
- open, create, edit, and refresh local documents
- save documents locally
- export documents to the CMS

Security in Connected mode

When you work with documents in *Connected* mode, the security rights of your user account are applied by the CMS.

Connecting to the CMS in Connected mode

There are two ways of launching Web Intelligence Rich Client, and each connects to the CMS differently:

- When you launch Web Intelligence Rich Client from the BI launch pad, it connects to the CMS within the same BI launch pad session, so no login is required. Communication with the CMS goes through HTTP to an application server, which reroutes the calls to the CMS and repository. No local middleware is required.
- When you launch Web Intelligence Rich Client locally via the Windows Start menu or by double-clicking a `.wid` document, Web Intelligence Rich Client connects to the CMS in client-server mode using the OCA/CORBA framework of the Enterprise SDK. You need the appropriate database middleware on your local machine.

> **Note**
>
> In order to connect to an Essbase OLAP data source from SAP BusinessObjects OLAP products including universe design tool, Web Intelligence Rich Client and Web Intelligence, ensure that Essbase Client middleware is properly installed and configured on machines hosting those SAP BusinessObjects OLAP products. Specifically, ensure that Essbase Client environment variables `ARBORPATH` and `ESSBASEPATH` are created and set as Windows system environment variables instead of Windows user environment variables.

Related Information

To work on an existing document locally in Connected mode [page 38]
To work in Connected mode from the BI launch pad [page 38]

2.2.5.2.1 To work in Connected mode from the BI launch pad

In *Connected* mode, security is handled by the CMS. You work with documents as you do when working in the BI launch pad.

You do not need database middleware on your local machine when you launch Web Intelligence Rich Client from the BI launch pad.

1. Log into the BI launch pad.
2. Click *Preferences* at the top of the BI portal.
3. In the *Preferences* dialog box, select *Web Intelligence*.
4. In the *Modify* section, select *Desktop*.
5. Click *Save & Close* to close the *Preferences* dialog box.
6. In the BI launch pad, click the *Documents* tab.
7. Right-click a document and select *Modify*.

   Web Intelligence Rich Client is launched on your computer in the *Connected* mode. If it is not yet installed on your computer, it is installed from the BI launch pad.

   If Web Intelligence Rich Client was already running on your computer, launching from the BI launch pad opens a new instance of the application. The document is not opened in the application instance that was already open.

Related Information

Connection modes [page 36]

2.2.5.2.2 To work on an existing document locally in Connected mode

You can launched Web Intelligence Rich Client in *Connected* mode.

To launch Web Intelligence Rich Client in *Connected* mode locally, it must be installed on your computer. You must have already connected at least once to the CMS you want to work with using Web Intelligence Rich Client from the BI launch pad.

You need to have the middleware required to connect to the CMS installed on your computer. In the *Connected* mode, security is handled by the CMS.

1. Launch the Web Intelligence Rich Client from the Windows *Start* menu.
2. Select a document from the *Recent Documents* dialog box.
3. In the *User Identification* dialog box, enter a valid user name and password.
4. Select an authentication mode from the list.

   Do not choose *Standalone* from the *System* dropdown list if you want to work in *Connected* mode. When you choose standalone authentication you work in *Standalone* mode, with no CMS connection.

5. Click *Log in*.

If Web Intelligence Rich Client was already running on your computer, launching it again opens a new instance of the application.

Related Information

Connection modes [page 36]

2.2.5.3 Offline mode

In *Offline* mode, you are not connected to a CMS but CMS security still applies.

You can work with local documents and universes that are secured by the CMS you select at login, or with unsecured local documents and universes. You can do the following:

- open local documents
- create documents (requires local universe and local connection server)
- edit documents
- refresh documents (requires local universe and local connection server)
- save documents locally

In Offline mode, you cannot import documents from or export documents to a CMS.

Security in Offline mode

When you connect to a CMS in *Connected* mode, your security rights in that CMS are downloaded to your computer. Each document and universe downloaded from a CMS contains within it an access control list identifying groups and users that have access rights to the document. In *Offline* mode, CMS security rights are applied by matching the access rights for the document or universe against the locally stored security file. For example, if a document was downloaded from a CMS to your local machine, and you do not have the right to open the document in the CMS from which it was downloaded, you cannot open the document on your local machine. If the security settings on objects do not allow working in offline mode, those objects cannot be included when the document is used later.

Before you can work in *Offline* mode with documents or universes secured by a CMS, you must first have connected to that CMS at least once in *Connected* mode. This causes in the CMS security information to be downloaded to your local machine and the CMS appears as a choice in the *System* dropdown list on the *User Identification* page. You can then log in in *Offline* mode and work with no CMS connection because the CMS security information is readable from the local file.

When working in *Offline* mode, you must have the appropriate universes and database middleware installed on your machine to be able to create or refresh documents. If you do not, you can still open, edit, and save documents locally as long as you have the appropriate security rights.

The security information for a CMS is stored in a local security information file with the LSI extension. One computer can store LSI files for multiple CMSs.

2.2.5.3.1 To work in Offline mode

There are a few ways you can work in Web Intelligence Rich Client in offline mode.

You must have already connected at least once to the CMS from which the document you want to work was exported, by launching Web Intelligence Rich Client from within the BI launch pad and opening the document in it.

1. Launch Web Intelligence Rich Client.
2. Do one of the following to open a document:
   - In the *Recent Documents* list of the *Open Document* pane, select a document exported from the CMS whose security details are stored on your local machine.
   - Click *Open* in the toolbar, then browse to and double-click a `.wid` file.
3. In the *User Identification* dialog box, select the CMS from the *System* dropdown list.
4. Type your username and password.
5. Select the authentification method from the *Authentification* dropdown list.
6. Select *Use in Offline mode*.
7. Click *Log On*.

2.2.5.3.2 To select default folders for local documents and universes

In Web Intelligence Rich Client, you can select a folder where local documents and universes are stored by default on your local machine.

1. In a Web Intelligence document in *Design* mode, click *Application* in the *Properties* tab.
2. In the *Web Intelligence Options* dialog box, select the *General* tab.
3. Next to *User documents*, click *Browse*, and select a folder for documents.
4. Next to *Universes*, click *Browse*, and select a folder for universes.
5. Click *OK* to close the *Web Intelligence Options* dialog box.

2.2.5.4 Standalone mode

In *Standalone* mode, you are not connected to a CMS and no security is enforced.

You can work with local, unsecured documents and universes only. You can do the following:

- open, create, edit, and refresh documents
- save documents locally

You cannot import documents from or export documents to a CMS.

The middleware required to create and refresh local, unsecured documents with local, unsecured universes must be installed on the computer on which you run Web Intelligence Rich Client.

2.2.5.4.1 To work in Standalone mode

You can work on documents in Web Intelligence Rich Client in Standalone mode.

Any middleware required to work with unsecured documents and universes must be installed on your computer.

1. Launch Web Intelligence Rich Client.
2. Select *Open* from the menu, navigate to and double-click a `.wid` document.
3. In the *User Identification* dialog box, select *Standalone* from the *System* dropdown list.
4. Click *Log On*.

2.2.5.5 Defining the Proxy Settings in Web Intelligence Rich Client

You define the proxy settings when you use an internet proxy server to access any URLs or images in your reports.

You do not need to define these settings for images that are embedded in a report. Check the settings on your internet browser or contact your BI administrator to obtain the information required to define your proxy settings.

To define the proxy settings, perform the steps below:

1. Launch Web Intelligence Rich Client.
2. Click the *Options* button in the upper right corner, or when a document is open, click *Properties* > *Application* .
3. In the *Web Intelligence Options* dialog box, click the *Proxy* tab.
4. Define your *Http Proxy Host*.
5. Define the *Http Proxy Port*.
6. Define your *Https Host and Port Settings*, or select *same as Http Proxy*.
7. Click *OK* to save the settings and close the *Web Intelligence Options* dialog box.

2.2.6 Connection modes in Web Intelligence Rich Client

The connection mode in which you work in Web Intelligence Rich Client determines the actions you can complete within a document.

The following topics explain the different connection modes.

2.2.6.1 Working with universes in Connected mode

When you perform desktop data analysis in *Connected* mode, you access CMS universes remotely.

The CMS applies the security rights directly, exactly as if you were performing data analysis from the BI launch pad.

2.2.6.2 Working with universes in Offline mode

You cannot access universes on the CMS remotely, because in *Offline* mode you are working without a CMS connection.

To create or refresh a document in *Offline* mode, you must have first connected to the CMS in *Connected* mode so that a local security information (LSI) file containing your security rights to the resources in the CMS is downloaded to your computer.

When you create or refresh a document in *Offline* mode, you can use:

- locally installed universes that are not secured by the CMS
- locally installed universes which you are authorized to access, as verified by the LSI file

2.2.6.3 Working with universes in Standalone mode

In *Standalone* mode in Web Intelligence Rich Client, you can work with a local universe, without need of a connection to the CMS.

In *Standalone* mode, you cannot access local, CMS-secured universes. You must access the CMS universes remotely. You can only work with unsecured, locally installed universes.

The middleware required to create and refresh local, unsecured documents with local, unsecured universes must be installed on the computer where you perform desktop analysis.

When you copy the universe file locally, it should be saved in the following folder:

```
<install_path>\SAP BusinessObjects\SAP BusinessObjects Enterprise XI 4.0\Universes.
```

2.2.7 To set the default universe for a document

You can set the default universe in the *Web Intelligence Options* dialog box.

1. Open a Web Intelligence document in *Design* mode.
2. Click the *Options* button in the upper right corner, or when a document is open, click *Properties* > *Application*.
3. In the *Web Intelligence Options* dialog box, select the *General* tab.
4. In the *Select default universe* section, click *Select a universe*.

5. Click *Browse*.
6. In the *Universe* dialog box, select a universe and click *Select*.
7. Click *OK* to close the *Web Intelligence Options* dialog box.

2.2.8 To set viewing preferences

You can set Web Intelligence Rich Client viewing preferences in the *Web Intelligence Options* dialog box.

1. Launch Web Intelligence Rich Client.
2. Click the *Options* button in the upper right corner, or when a document is open, click *Properties* > *Application*.
3. In the *Web Intelligence Options* dialog box, select the *Viewing* tab.
4. Select a measurement unit for report display in the *Measurement unit* section.
5. To display a grid for the alignment of report elements, select *Show grid*.
6. To align report elements to the grid automatically, select *Snap to grid*.
7. To set the amount of space between the lines in the grid, set the value in *Grid spacing*.
8. Click *OK* to close the *Web Intelligence Options* dialog box.

2.2.9 To change your password

You can change your password in the BI launch pad preferences.

1. Launch Web Intelligence Rich Client from the Windows *Start* menu and connect to the server so that you are in *Connected* mode.
2. Select *Preferences* from the BI launch pad toolbar.
3. Select *Change Password*.

> **Note**
>
> If this option is grayed out, then your ability to change your password has been disabled by the BI Administrator.

4. Type your current password in the *Old Password* box.
5. Type your new password in the *New Password* box.
6. Type your new password again in the *Confirm New Password* box.

Your password is changed to the new password.

Related Information

To work on an existing document locally in Connected mode [page 38]

2.3 Setting up preferences, the interface and the document locale

2.3.1 About setting Web Intelligence preferences

Use the *Preferences* tab of the BI launch pad to do the following:

Table 12: Preferences pane items

Option	Description
General	Set the user default settings. These are Administrator defined.
Change Password	Change your password. Enter your old password, then enter the new password twice.
Locales and Time Zone	Set the *Product Locale*, *Preferred Viewing Locale*, and *Current Time Zone*.
Analysis edition for OLAP	Set the *Accessibility* mode. (Not described here.)
Web Intelligence	Choose the interfaces you want to use for *View* and *Modify* modes. Select a default universe. Set the drill options. Set the saving priorities when saving as Excel. Select your preferred document orientation.
BI workspaces	Set a default style. (Not described here.)
Crystal Reports	Set Crystal Reports options. (Not described here.)

Related Information

Understanding the BI launch pad [page 29]

2.3.1.1 Choosing the viewing and design interfaces

You can set options to determine how you view and explore existing documents and how you create documents or edit and analyze existing documents.

You set these options in the *Preferences* panel in the BI launch pad.

Depending on your permissions and the Web Intelligence interface that you are using, you have a choice of *Reading* mode, *Design* mode, and *Data* mode.

> **Note**
>
> Your choice of interface can be further restricted by your security profile.

When you right-click the title of existing document from the list of corporate documents and select *View* from the shortcut menu, the document opens in *Reading* mode.When you create a document, or right-click the title of an existing document and select *Modify*, the document opens in *Design* mode.

In the BI launch pad, you have the following choice of *View* interfaces:

Interface	Description
HTML (no download required)	You view documents using the Web Intelligence HTML interface within the BI launch pad.
Applet (download required)	You view documents using the Web Intelligence Applet interface, also known as the Java applet, within the BI launch pad. **Note** This interface requires the download of a Java applet.
Desktop (Rich Client, Windows only, installation required)	You view documents using Web Intelligence Rich Client, a standalone interface that works outside the BI launch pad and allows you to work with documents without being connected to a corporate repository. **Note** Web Intelligence Rich Client must be installed on your local machine.
PDF	You view documents statically in PDF format.

In the BI launch pad, you have the following choice of *Modify* interfaces:

Interface	Description
HTML (no download required)	You create, edit and analyze documents using the Web Intelligence HTML interface within the BI launch pad.
Applet (download required)	You create, edit and analyze documents using the Web Intelligence Applet interface within the BI launch pad. You can select *Design* or *Data* mode. **Note** This interface requires the download of a Java applet.
Desktop (Rich Client, Windows only, installation required)	You create and edit documents using Web Intelligence Rich Client, also known as Desktop, a standalone interface that works outside the BI launch pad and allows you to work with documents without being connected to a corporate repository. You can select *Design* or *Data* mode. **Note** Web Intelligence Rich Client must be installed on your local machine.

Once you open a document in a specific interface, you remain in that interface for the rest of your session. For example, if you select *HTML* as your *Read* interface and Web Intelligence Applet as your *Modify* interface, you remain in the Web Intelligence HTML interface even if you switch to *Design* mode (which uses the *Modify* interface) within the application.

Also, if you open a document using the *Modify* command with a specific interface chosen, the document will continue to open in that interface, even if you change the modify selection. This is important if you are using a feature that is available in one Web Intelligence interface, but not another, as in the case of documents based on BEx queries.

Related Information

About Web Intelligence [page 21]

2.3.1.1.1 To change the document view settings in the BI launch pad

In the BI launch pad preferences, you can select the type of document view and the Web Intelligence version that appears when you open a document to read or modify.

1. Click *Preferences* in the BI launch pad to open the *Preferences* dialog box.
2. Click *Web Intelligence* in the *Preferences* list.
3. Select the viewing interface from the *View* options.

   This setting determines which version of Web Intelligence opens your document in *Reading* mode.
4. Select the design interface from the *Modify* options.

   This setting determines which version of Web Intelligence opens your document in *Design* modes.
5. Click *Save and Close*.

   These changes take effect the next time you open a Web Intelligence document.

2.3.1.2 Setting application modes

Depending on the Web Intelligence application mode you are in, you can build queries, documents and reports and analyze the data in reports.

Table 13: Application modes described

Application Mode	Description
Data	In *Data* mode, you can do the following: • Create, edit and manage queries that supply data to reports. • Add and rename data providers. • Change the source from which a data provider draws its data. All the data providers used by the current document appear in a list in *Data* mode, and all toolboxes not related to working with data providers are disabled. ⚠ Restriction The *Data* mode is not available in the Web Intelligence HTML interface.
Reading	*Reading* mode allows you to do the following: • View reports. • Track changes in and drill down on report data. The main application toolbar and the Side Panel are available in *Reading* mode. Toolboxes are not available.
Design	*Design* mode allows you to do the following: • Perform a wide range of analysis tasks. • Add and delete report elements such as tables or charts. • Apply conditional formatting rules. • Enhance reports with formulas and variables. • Work with the report structure or with the report populated with data. Working with the report structure only allows you to make modifications without accessing the server. When you work with reports populated with data, each change you make is applied on the server. ➔ Tip If you are making numerous modifications, we recommend that you work with the report structure, and to populate the report with data when you have finished your modifications.

2.3.1.2.1 To switch between application modes

Depending on the mode you choose, the toolboxes and toolbars relevant to the mode are made available and other toolboxes and toolbars are either invisible or disabled.

In a Web Intelligence document, do one of the following:

- To work in *Data* mode, click *Data*.

  > **Note**
  >
  > *Data* mode is only available in Web Intelligence Applet interface and Web Intelligence Rich Client.

- To work in *Reading* mode, click *Reading* in the top corner of the toolbar.
- To work in *Design* mode with only the report structure showing, click the arrow on the *Design* button and select *Structure Only* from the dropdown list.
- To work in *Design* mode with report data, click the arrow on the *Design* button and select *With Data* from the dropdown list.

2.3.2 Interface and document locales

Locales determine the appearance of the application interface (for example, menu items and button text) and data (for example, date and number formatting) in relation to local preferences.

The locales used by Web Intelligence are:

Table 14:

Locale	Description
Product locale	The language and interface alignment control of the Web Intelligence application interface. This locale can be selected in the following locations: • In the Web Intelligence HTML or Web Intelligence Applet interface, the setting is in the BI launch pad preferences. • In the Web Intelligence Rich Client, the setting is in the Application Properties.
Preferred viewing locale	The preferred locale for displaying document data. This locale can be selected in the following locations: • In the Web Intelligence HTML or Web Intelligence Applet interface, the setting is in the BI launch pad preferences. • In the Web Intelligence Rich Client, the setting is in the Application Properties.
Document locale	The date and number locale in the document. • In the Web Intelligence HTML or Web Intelligence Applet interface, this locale cannot be selected. • In the Web Intelligence Rich Client, the *Permanent regional formatting* setting is available in the Document Properties.

Right to left alignment in Web Intelligence

In the Web Intelligence Applet interface and Web Intelligence Rich Client, the alignment of the application interface is from right to left (RTL) when you select Arabic or Hebrew. As of Web Intelligence 4.2, any document can be viewed from right to left or left to right. To specify the orientation used by default, you can:

- set a user preference for every document in the BI Launch Pad *Preferences* menu,
- set a preference for the current document only in the *Document Summary*.

You can set a parameter that overrides the document settings to define the default orientation of every Web Intelligence document. Depending on this parameter, a document created with a left-to-right alignment for instance can be viewed with a right-to-left alignment.

> **Caution**
>
> The user interface, the printouts, the output generation (PDF and Excel files) and scheduled documents inherit the orientation set by default. If you create a document with a right to left orientation, the generated PDF will have the same orientation.

The parameter defined in the BI Launch Pad menu overrides the parameter defined for the document. If you have not defined a default orientation in the BI Launch Pad, the document will be displayed according to the parameter set at the document level.

> **Note**
>
> In *Connected* mode, Web Intelligence Rich Client does not take into account user preferences defined in the BI Launch Pad. You have to change the document orientation manually at document level in the *Document Summary*.

Product locale and Right to Left interface alignment

When you choose Arabic or Hebrew for the *Product locale*, the Web Intelligence application interface elements are always right to left (RTL), in effect mirroring the left to right (LTR) alignment. For example, the side panel for an RTL locale is on the right, whereas in an LTR locale, the side panel is on the left.

Preferred viewing locale and Right to Left Alignment

When you choose Arabic, Hebrew, Farsi, Urdu or Divehi for the Preferred viewing locale, depending on the system settings selected by the BI administrator, the elements and data in documents created in this locale may be right to left (RTL). For example, in a cross table, in an LTR locale the side header column is on the left. In an RTL locale, the side header column is on the right.

> **Note**
>
> Charts are LTR, per the SAP Globalization product standards.

Related Information

To set the Product locale in the BI launch pad [page 50]

To link the current document locale to a document in the BI launch pad [page 51]
To set the Preferred viewing locale in the BI launch pad [page 52]
To set the Product locale in Web Intelligence Rich Client [page 50]
To associate a locale with a document in Web Intelligence Rich Client [page 51]
To set the Preferred viewing locale in Web Intelligence Rich Client [page 52]
To set the document orientation from right to left in the current report [page 53]
To set the document orientation from right to left in all reports [page 53]

2.3.2.1 The Product locale

The Product locale controls the user interface.

For example, the Product locale determines the menu items and button text.

2.3.2.1.1 To set the Product locale in Web Intelligence Rich Client

You can set the Product locale for Web Intelligence Rich Client in the *Web Intelligence Options* dialog box.

1. Open a Web Intelligence document in *Design* mode.
2. In the *Properties* tab, click *Application*.
3. In the *Web Intelligence Options* dialog box, select the *Locale* tab.
4. Choose a locale from the *Product locale* list.
5. Click *OK* to close the *Web Intelligence Options* dialog box.
6. Close and relaunch Web Intelligence Rich Client.

2.3.2.1.2 To set the Product locale in the BI launch pad

In the BI launch pad preferences, you can choose the product locale.

1. Click *Preferences* on the BI launch pad toolbar to open the *Preferences* dialog box.
2. Click *Locales and Time Zone* in the *Preferences* list to display the available options.
3. Select the product locale from the *Product Locale* list.
4. Click *Save and Close*.

2.3.2.2 The document locale in documents

The document locale, generated by Web Intelligence, formats the data in documents.

For example, the document locale determines the display of dates and numbers.

By default, the browser locale is used. You can permanently associate the current document locale with a document by saving the document with the *Permanent regional formatting* option selected in the *Document Summary* dialog box. When you select this option the document data is always formatted using the document locale you have set. This applies to all users who view the document, not just the user who activates *Permanent regional formatting*.

In Web Intelligence Rich Client, if the *Use the document locale to format the data* setting is selected in the application properties, the document locale determines how date and number formats.

Related Information

To associate a locale with a document in Web Intelligence Rich Client [page 51]

2.3.2.2.1 To associate a locale with a document in Web Intelligence Rich Client

You can associate a locale with a document in Web Intelligence Rich Client.

This task does not work in the Web Intelligence HTML interface or Web Intelligence Applet interface.

1. In a Web Intelligence document in *Design* mode, click *Document* on the *Properties* tab.
2. In the *Document Summary* dialog box, select *Permanent regional formatting*.
3. Click *OK* to close the *Document Summary* dialog box.
4. Save the document.

2.3.2.2.2 To link the current document locale to a document in the BI launch pad

In the BI launch pad preferences, you can choose the locale language for open documents in Web Intelligence.

1. Click *Preferences* on the BI launch pad toolbar to open the *Preferences* dialog box.
2. Click *Web Intelligence* in the *Preferences* list.
3. In the section *When viewing a document*, select one of the following:
   - *Use the document locale to format the data*
   - *Use my preferred viewing locale to format the data*
4. Click *Save and close*.

Related Information

The Preferred viewing locale [page 52]

To set the Preferred viewing locale in the BI launch pad [page 52]

2.3.2.3 The Preferred viewing locale

The *Preferred viewing locale* is the locale you select that affects the display of document data.

When you create a document, your *Preferred viewing locale* is always assigned as the initial document locale, whether or not the locale settings give the *Preferred viewing locale* priority.

> **Note**
>
> If the settings do not give your *Preferred viewing locale* priority, the data is formatted according to the document locale saved with the document.

In Web Intelligence Rich Client, if the locale settings give your *Preferred viewing locale* priority through the *Use the Preferred viewing locale to format the data* setting in the application properties, the document locale is set to the *Preferred viewing locale* when you open a document. When you save the document, this document locale is saved with the document.

2.3.2.3.1 To set the Preferred viewing locale in Web Intelligence Rich Client

You can set the Preferred viewing locale for Web Intelligence Rich Client in the *Web Intelligence Options* dialog box.

1. Open a Web Intelligence document in *Design* mode.
2. In the *Properties* tab, cllick *Application*.
3. In the *Web Intelligence Options* dialog box, select the *Locale* tab.
4. Select a locale from the *Preferred viewing locale* dropdown list.
5. Click *OK* to close the *Web Intelligence Options* dialog box.
6. Close and reopen any open documents so that the locale setting is changed in the documents.

2.3.2.3.2 To set the Preferred viewing locale in the BI launch pad

In the BI launch pad preferences, you can choose a *Preferred Viewing Locale* language for Web Intelligence.

1. Click *Preferences* on the BI launch pad toolbar to display the *Preferences* dialog box.
2. Click *Locales and Time Zone* in the *Preferences* list to display the available options.
3. Select the preferred viewing locale from the *Preferred Viewing Locale* list.
4. Click *Web Intelligence* to display the Web Intelligence options.

5. If you want data to be formatted using the preferred viewing locale, click *Use my Preferred Viewing Locale to format the data* beneath *When viewing a document*.
6. Click *Save and Close*.

2.3.2.4 The Preferred document orientation

The document orientation parameter enables you to define a default orientation for a single document, or every document.

When you create a document, you can select its orientation. You can also set this paramater for every document you open or edit in Web Intelligence via the BI Launch Pad.

Use this paramater whenever you need to change a document's orientation. For instance, if you are viewing a document that has been created using the Arabic or Hebrew locale, you can set the document's orientation from left to right without altering the original document.

2.3.2.4.1 To set the document orientation from right to left in the current report

The parameter in the *Document Summary* only applies to the document you are currently working on.

To edit this parameter, make sur you are in *Design* mode.

1. In the *Document Summary*, click *Edit*.
2. To view the document from right to left, check *Right to Left Content Alignement*.
3. Click *OK*.

2.3.2.4.2 To set the document orientation from right to left in all reports

The BI Launch Pad orientation parameter overrides the document orientation preference defined when the document was created.

When you set a default orientation in the BI Launch Pad preferences, it applies to all reports.

1. In BI Launch Pad, click *Preferences* > *Web Intelligence*.
2. Optional: In Web Intelligence Rich Client interface, click *Tools* > *Options* > *Locale*.
3. In *Select your preferred document orientation*, select the default document orientation you want to use.
4. Click *Save & Close*.

2.3.3 Selecting the measurement unit

The measurement unit parameter enables you to select the unit in which measurements should be done in Web Intelligence.

This parameter is useful when you have a specific amount of space in you report to allocate to specific report elements, such as a header of a footer for example. The parameter is available in the *Applications* tab of the properties. You can also find it in the *Tools* > *Options* menu in the Applet and Rich Client interfaces.

By default, the measurement unit is inches in the HTML interface, and centimeters in the Applet and Rich Client interfaces.

2.3.4 Increasing or decreasing the display size of a report in Web Intelligence

You can zoom in and out in Web Intelligence reports using the zoom percentage list box on the bottom toolbar.

You can decrease and enlarge the report size from 10% to 500%.

In the Web Intelligence HTML interface, you can use the browser zoom feature to increase or decrease the display size. However, the text size setting within a browser does not change the size of text in a Web Intelligence report.

> ⚠ Restriction
>
> Microsoft Windows allows users to change the display size of text and other items on the computer screen using a magnifier tool. This tool is not supported in the Web Intelligence interfaces.

3 Building and running queries

3.1 Introduction to query building

In Web Intelligence, every reporting or analysis operation is done on what is called a query.

A query is a business question you ask to the application, and the application uses it in return to retrieve data. To help you phrase your business question correctly, the query uses elements called objects that contain pre-defined data.

In your company, the data are stored in storage units to which you go to find specific and meaningful information about customers, revenues, products and so on. In Web Intelligence, these storage you units are called data sources. You run queries on top of them to retrieve data. When you run a query, it searches the data source to answer your business question. For example, you can use a query to ask for the sales margins per product over a time period.

The following sections provide information on the different objects available to create queries, the various types of data sources supported in Web Intelligence and how you can create queries on top on them.

Table 15:

To know more about	Read
Objects	• Objects available in queries [page 57] • Classes and subclasses [page 57] • Analysis dimensions [page 58] • Dimensions [page 58] • Attributes [page 59] • Hierarchies [page 60] • Level objects [page 61] • Members [page 61] • Named sets [page 62] • Calculated members [page 62] • Measures [page 62]

To know more about	Read
Data sources	• Building queries in Web Intelligence [page 56] • Building queries on universes [page 66] • Building queries on data files [page 94] • Building queries on BEx queries [page 97] • Building queries on SAP HANA views with SAP HANA Direct Access [page 128] • Building queries on SAP HANA views in SAP HANA Online mode [page 133] • Building queries on relational connections using Free-Hand SQL statements [page 141] • Building queries on Analysis View data sources [page 146] • Building queries on web service data sources [page 147] • To create a query on a different data source in an existing document [page 151]

3.2 Building queries in Web Intelligence

You build queries using the Web Intelligence *Query Panel*.

The data sources you can use for a query depend on the interface you are using.

Table 16: Available data sources for the Web Intelligence interfaces

Data source	Web Intelligence HTML	Web Intelligence Applet	Web Intelligence Rich Client
No data source	Yes	Yes	Yes
Universe (`.unx` or `.unv`)	Yes	Yes	Yes
BEx query	No	Yes	Yes
HANA Views	Yes	Yes	Yes
Free-hand SQL query	No	Yes	Yes
Analysis View	No	Yes	Yes
Text, Excel or CSV file	No	No	Yes
Web Services	No	No	Yes

You run the query to return data in a report which you can then analyze further by, for example, filtering or ranking its data.

Measures are common to all queries. Measures return data, often numeric, that is calculated based on the other objects in the query (dimensions or hierarchies). For more information on measures, see Measures [page 62].

Queries based on universes can be hierarchical or non-hierarchical. Non-hierarchical queries organize data in dimensions which have no hierarchical relationship. For example, a query containing a customer dimension and a revenue measure calculates revenue per customer. For more information on universe queries, see Building queries on universes [page 66].

Hierarchies organize data into hierarchical relationships. For example, a geographical hierarchy can contain data about countries, states and cities (different levels of the hierarchy). A query containing a geographical hierarchy and a revenue measure calculates revenue at the different levels of the hierarchy (country, state, city). For more information on hierarchies, see Hierarchies [page 60].

Whether a universe query is hierarchical or non-hierarchical depends on the database from which the universe retrieves its data.

> **Note**
>
> - You can create a blank document that does not use a data source.
> - To connect to an Essbase OLAP data source from SAP BusinessObjects OLAP products including universe design tool, Web Intelligence Rich Client and Web Intelligence via the BI launch pad, the BI administrator must ensure that Essbase client environment variables `ARBORPATH` and `ESSBASEPATH` are created and set as Windows system environment variables on machines hosting those SAP BusinessObjects OLAP products .

3.2.1 Objects available in queries

You can use a variety of objects in Web Intelligence queries.

The following objects can be used in Web Intelligence queries:

- classes and subclasses
- dimensions
- attributes
- hierarchies
- level objects
- members
- named sets
- calculated members
- measures

Objects are displayed in the *Available Objects* pane. Objects can be arranged by:

- Alphabetical order
- Query
- Data Source
- Navigation paths

3.2.1.1 Classes and subclasses

A class is a folder containing objects. A sub-class is a sub-folder.

The role of classes is to organize the objects into logical groups. When you create queries on the universe, classes help you to find the objects that represent the information that you want to use in a query.

Related Information

Building queries in Web Intelligence [page 56]

3.2.1.2 Analysis dimensions

An analysis dimension contains a collection of related hierarchies.

Analysis dimensions do not appear as result objects in queries. If you select an analysis dimension, its default hierarchy appears in the query.

Analysis dimensions use the following icon: 

Related Information

Hierarchies [page 60]

3.2.1.3 Dimensions

A dimension can represent non-hierarchical data in a report.

For example, in a query containing a non-hierarchical [Customer] dimension and the [Revenue] measure, the results show the revenue generated by each customer in non-hierarchical columns.

In hierarchical data sources, hierarchies appear beneath the dimensions on which they are based in the list of available objects. When you include the dimension in a query hierarchical data is returned.

Dimensions use the following icon: 

> **Restriction**
>
> Web Intelligence only supports dimensions and hierarchies based on STRING data types in reports on the top of OLAP connections. If your OLAP dimensions and hierarchies are based on other data types such as DATE or INTEGER, their data will be converted as STRING.

Related Information

Hierarchies [page 60]

3.2.1.4 Attributes

An attribute is an object attached to a parent object that provides additional descriptive information about the parent. Age for instance can be an attribute of the Customer dimension.

An attribute can be associated with dimensions, hierarchies, measures and levels. There is no notion of hierarchy between an attribute and its parent object, both objects remain independent.

Each value of a parent object can have only one associated value of any attribute. Using the example in the above topic, each Customer value can have only one associated value in the Age attribute.

If, due to incorrect universe design, an attribute tries to return multiple values for one parent object value, its cell displays a `#MULTIVALUE` error message.

Attributes use the following icon: 

> **Note**
>
> For `.unv` universes, created with the universe design tool, attributes are referred to as details, and apply to relational data sources.

Measure Attributes

In an OLAP business layer, measure attributes provides additional information about the formatted value. Measure attributes were originally created to support BEx queries formatted values. Formatted values usually consist of strings made of number with formatted characters such as currency symbols, for instance. Because of this specificity, the way measure attributes are processed varies depending on how you use them.

In an explicit aggregation, measure attributes are processed like dimensions. If you use the SUM function in a table footer for instance, Web Intelligence aggregates the unique values of the measure attribute and then proceeds to count them. However, if you use a measure attribute in a default aggregation, the aggregation is delegated to its data source. This happens when you drop a measure attribute in the body of a table for instance.

Related Information

Dimensions [page 58]
Measures [page 62]
Default aggregation [page 220]
Explicit aggregation [page 221]
Examples of default and explicit aggregation [page 222]

3.2.1.5 Hierarchies

A hierarchy is a set of data members arranged in levels or parent-child relationships.

For example, a [Geography] hierarchy might contain the [Country], [State] and [City] levels. Hierarchical objects are used in BEx, OLAP and relational data sources.

Hierarchies produce hierarchical columns in the result set produced by the query. You can expand the items in the hierarchy to explore its data. For example, you can expand the [California] level in a [Geography] hierarchy to explore data related to California.

You can select which members appear in the result set by using the *Member Selector* dialog box accessed via the *Query Panel*.

In hierarchical data sources, hierarchies are associated with a dimension and appear beneath the dimension with which they are associated in the list of available objects. The following information is also displayed with the hierarchy objects:

Table 17:

Display object	Description
	This is the Web Intelligence default hierarchy, it is the placeholder for the retrieved hierarchy.
	A white checkmark (V) in a black circle. This is the validation or toggle, and indicates that this object is the 'active' hierarchy in BEx, Microsoft Analysis Services (MSAS), and Essbase. In MSAS, the term default is used to describe the active hierarchy.
[n] where 'n' is an integer	This applies to BEx queries. This is the version number of the SAP BW hierarchy that was used at design time. For these hierarchies, Web Intelligence now displays the version of the hierarchy after the hierarchy name. For example: Country hierarchy [2]. The BEx query designer can prepend a string before the version number for clarity, for example: [version 2]. This version is also displayed in the report table header.

⚠ Restriction

Web Intelligence only supports dimensions and hierarchies based on STRING data types in reports on the top of OLAP connections. If your OLAP dimensions and hierarchies are based on other data types such as DATE or INTEGER, their data will be converted as STRING.

Related Information

Dimensions [page 58]
Hierarchical queries [page 63]

3.2.1.6 Level objects

A level is a set of members in a hierarchy at the same distance from the root of the hierarchy.

For example, [City] might be a level in a [Geography] hierarchy which contains members such as [Los Angeles] and [San Francisco]. The level names are prepended by their depth. The numbers are contiguous, and always start from the root with the number 1 as follows:

1 - Level a

2 - Level b

3 - Level c

Levels produce flat columns in the result set generated by the query. For example, a query containing the [Country] level and [Revenue] objects produces a result such as the following:

Table 18:

Country	Revenue
US	10,123,121
France	8,232,231
Germany	7,342,342
UK	9,343,092

Not all hierarchies contain levels. Levels are not available in hierarchies in BEx queries.

Levels use the following icon:

Related Information

Building queries on BEx queries [page 97]
Hierarchies [page 60]

3.2.1.7 Members

A member is an individual data item in a hierarchy.

For example, the [Geography] hierarchy can contain members such as [France] at the [Country] level, or [Las Vegas] at the [City] level.

You select individual members from a hierarchy for inclusion in the query result if you do not want to include all members in the hierarchy. You can also define a named set containing a set of members.

Related Information

Hierarchies [page 60]
Named sets [page 62]

3.2.1.8 Named sets

A named set is a named expression that returns a set of members.

Named sets can be defined in OLAP databases, or in universes based on relational or OLAP databases.

3.2.1.9 Calculated members

Calculated members are members returned by a Multidimensional Expression (MDX) statement.

MDX is the language used to access hierarchical data in OLAP databases.

The administrator of an OLAP database can create calculated members that are available to MDX queries that access the database.

Calculated members use the following icon: 

3.2.1.10 Measures

Measures are objects composed of numeric data that represent calculations and aggregate functions that map to statistical and analytic data in the database. In a business layer, measures represent the factual information (data).

Measures return results based on the objects with which they are associated in a query. For example, a query containing the [Customer] dimension and [Revenue] measure returns revenue by customer. A query containing the [Geography] hierarchy and [Revenue] measure returns revenue calculated for all the different aggregations possible in the hierarchy.

Aggregating the information must make sense for the object to be a measure. For example, [Revenue] is the calculation of the number of items sold multiplied by item price. Measures are often located in a Measures class.

By default, measures are calculated by aggregating detailed values returned from the database.

Smart measures are a special kind of measure that are calculated by the database itself and returned by the query already aggregated. In certain situations, smart measures impact the way in which calculations are displayed. For more information on smart measures, see the *Using functions, formulas and calculations in Web Intelligence* guide.

Measure objects use the following icon:

Related Information

Hierarchies [page 60]

3.2.2 About query and document user rights

Rights are defined by BI administrators.

BI administrators can view and edit queries even when the access rights have been limited to a restricted sub-set of users. Whether you can view, create, modify, or delete queries and their related objects, documents or reports, depends on your assigned user rights.

3.2.3 Non-hierarchical queries

You build a non-hierarchical query using dimensions, attributes and measures.

Dimensions represent business objects such as customers or cities. Measures derive results, usually numerical, from the dimensions you include in the query. For example, a query containing the [Customer] dimension and the [Revenue] measure returns revenue by customer.

Non-hierarchical queries produce result sets in which dimensions are not related. Each object in the query produces one flat column in the result set.

Non-hierarchical queries do not include the following objects: hierarchies, levels, members or named sets.

Related Information

To build a query on a universe [page 67]
Measures [page 62]
Hierarchies [page 60]
Hierarchical member selection and query filters [page 69]

3.2.4 Hierarchical queries

A hierarchical query contains at least one hierarchy object.

You can build hierarchical queries on universes that support hierarchical data or on BEx queries which access SAP Info Queries directly. Hierarchical data can come from relational or OLAP databases, depending on how the data is structured in the universe.

Note

A relational data source is not a true hierarchy; it is a defined path between attributes.

You can include hierarchies either as result or filter objects. When you build a hierarchical query, the Web Intelligence *Query Panel* provides you with additional features for working with hierarchical data.

For example, if you include a hierarchy as a result object, you have the ability to choose members from the hierarchy to appear in the result. The features available in the hierarchical query panel also depend on the source of the hierarchical data you are accessing.

The result set generated by a hierarchical query allows you to perform hierarchical data analysis. Each hierarchy object in the query produces a hierarchical column in the report. You can expand members to reveal their child members.

Example

If you expand the [US] member to reveal US states in a [Geography] hierarchy, then measures in the block are aggregated depending on the member with which they are associated.

A hierarchical query containing the [Customers] hierarchy and the [Unit Sales] and [Store Cost] measures gives the following result set:

Table 19:

Customers			Unit Sales	Store Cost
All Customers			364,707	371,579
	US		276,773	234,555
		CA	45,506	67,999
		OR	32,104	56,700
		Albany	10,324	12,325

Related Information

Hierarchical member selection in BEx queries [page 72]
Measures [page 62]
Hierarchies [page 60]
Hierarchical member selection and query filters [page 69]
Selecting members of a hierarchy [page 68]

3.2.4.1 Including multiple hierarchies in a query

When you combine multiple hierarchies in a query, the results for all the combinations of members in the different hierarchies appear in the resulting document.

Example

Including two hierarchies in a query

You have two hierarchies, [Gender] (containing the members [All], [Male] and [Female]) and [Customer Geography]. Combined in a query with a measure, the two hierarchies give the following result:

Table 20:

Customer Geography			Gender	Internet Sales Amount
All Customers			All Gender	$29,358,677
			Female	$10,000,000
			Male	$19,358,677
	France		All Gender	$2,644,017
			Female	$1,058,677
			Male	$1,285,340
		Pierre	All Gender	$1,249
			Female	$1,249
		Alain	All Gender	$1,155
			Female	$1,155

3.2.5 To create a document without a data source

You can create a document without selecting a data source.

One reason you might want to create a document with no data source is if you want to create a "template" document that contains the standard title page as the first report, standard copyright text as the second report, and so on. You can set the header and footer layouts, and even include empty tables and charts that are formatted. Later on, you can connect the document to a data source using a query.

Note

The rights set for you by the BI administrator determine your access to data sources and ability to create documents in Web Intelligence.

1. Open Web Intelligence.
2. Do one of the following:
   - In *Reading* mode, click the *New* icon in the toolbar.
   - In *Design* or *Data* mode, in the *File* tab, click the *New* icon.

> **Note**
>
> If you have just launched Web Intelligence Rich Client, click *Blank Document* in the *New Document* dialog box.

3. Select *No data source*, and click *OK*.

A blank document opens. The *Available Objects* pane contains no objects.

Related Information

Building queries on universes [page 66]
Building queries on BEx queries [page 97]
Building queries on SAP HANA views with SAP HANA Direct Access [page 128]
Building queries on data files [page 94]
Building queries on web service data sources [page 147]
Building queries on Analysis View data sources [page 146]
Building queries on SAP HANA views in SAP HANA Online mode [page 133]

3.2.6 Building queries on universes

Universes present data from relational or OLAP data sources as collections of related objects.

Universes contain the following types of data:

Table 21:

Data Type	Description
Relational	Relational data is organized as a collection of related objects (dimensions, details and measures). You combine universe objects in a query which you run to generate a report. For example, a query containing the Customer dimension and the Revenue measure generates a report showing revenue generated by customer.
Hierarchical	Hierarchical data is organized as members in related hierarchies. For example, a Geography hierarchy can contain levels showing countries, states and cities. A query built on the Geography hierarchy and Revenue measure generates a report showing revenue generated at different levels of the hierarchy (revenue by country, by state and by city). The query automatically calculates the revenue values at different levels of the hierarchy.

> **Note**
>
- In queries based on .unv or .unx universes, Web Intelligence only takes into account the following display properties that are set in the information design tool *Format Editor*:
  - .unx format universes: only properties defined in the *Data* tab are supported.
  - .unv format universes: only properties defined in the *Number* tab are supported.
- You can set the default universe for Web Intelligence documents in the BI launch pad preferences. If you select a default universe for universe-based queries, then when you create a document, the *Select a*

universe dialog box shows the default universe. For more information on setting a default universe, consult the *Business Intelligence Launch Pad User Guide*.

Related Information

Hierarchies [page 60]

3.2.6.1 To build a query on a universe

You can build a query using a universe as a data source.

1. Open Web Intelligence and click the *New* icon in the *File* toolbar.
2. Select the universe on which you want to create a document.

   If you are using the Web Intelligence Rich Client, click *Select* .

   > **Note**
   >
   > You can set the default universe for Web Intelligence documents in the BI launch pad preferences. If you select a default universe for universe-based queries, then when you create a document, the *Select a universe* dialog box shows the default universe. For more information on setting a default universe, consult the *Business Intelligence Launch Pad User Guide*.

   The *Query Panel* opens.
3. Select and drag dimensions and measures that you want to include in the query into the *Result Objects* pane.

   > **Note**
   >
   > For some OLAP .unv and .unx universes, you are required to select a measure for your query.

   > **Tip**
   >
   > - To add all the objects in the class to the *Result Objects* pane, double-click the class folder.
   > - To view the details of an object, move your mouse over the object in the *Result Objects*. A tooltip shows the object details. To copy the content for reuse in another application, right-click the object and select *Object Description*. The *Object Description* dialog box displays all of the details. You can also select the text in the text box and paste it in another application.
4. Repeat the previous step until the query contains all the objects you want to include.
5. Select the objects on which you want to define query filters and drag them to the *Query Filters* pane. To create a quick filter on an object, select the object in the *Result Objects* pane then click the *Add a quick filter* icon in the *Result Objects* toolbar.

   > **Note**
   >
   > If the query is based on a HANA universe, and if the views contain HANA variables or input parameters or both, there will be query prompts. If you add prompts in the *Quick Filters* pane, there could be a duplication

of prompts. We recommend that you run the query prior to defining any query prompts to know what prompts may already exist.

6. Set the scope of analysis and other query properties. For information on scopes of analysis, see Setting the scope of analysis [page 81].
7. To remove an object from the *Result Objects* or *Query Filters* panes, click the *Remove* icon in the top corner of the pane.
8. To remove all objects from the *Result Objects* or *Query Filters* panes, click the *Remove All* icon in the top corner of the pane.
9. Click *Run Query*. When you have more than one query and you want to run just one query, click *Run Queries* and select the query that you want to run.

> **Note**
>
> - If a document is created with two data providers (queries) based on same data source (universe) and you change the source of one of the queries, the source of the other data provider is not changed.
> - If you are querying a HANA data source that uses input parameters, then when you run the query, you can encounter prompts that require you to enter values for variables and parameters. The values available in the prompts come directly from the HANA data source.

Related Information

To preview query results [page 155]
Non-hierarchical queries [page 63]
HANA query prompts in Web Intelligence [page 187]

3.2.6.2 Selecting members of a hierarchy

When you have hierarchical members in a query, you use the *Member Selector* dialog box to select members of the hierarchy to appear in the report generated from the query result set.

After you have selected members, they appear below the hierarchy object in the *Query Panel*.

You can select members explicitly, or implicitly through functions. For example, you can explicitly select the [California] and [Los Angeles] members of the [Geography] hierarchy. You can select the child members of the [US] member (to give US states). You can also select the members included in a named set, for example Top Cities by Revenue to include the cities that generate the most revenue.

Related Information

Overview of the Member Selector dialog box [page 70]
Hierarchical member selection and query filters [page 69]

3.2.6.2.1 Hierarchical member selection and query filters

When you filter members in a query filter, you also impact measure aggregation.

This is different from hierarchy member selection in the *Member Selector* dialog box, which does not impact measures.

Example

Member selection and hierarchical filtering

In this example you have the following data:

Table 22:

Customer Geography			Internet Sales Amount
All Customers			$29,358,677.22
	France		$2,644,017.71
		Hauts de Seine	$263,416.19
		Seine (Paris)	$539,725.80
	Germany		$2.894,312.34
		Brandenburg	$119,871.08
		Hessen	$794,876.08

If you select only the France-related members in the *Member Selector* dialog box, the measure value for All Customers is not impacted:

Table 23:

Customer Geography			Internet Sales Amount
All Customers			$29,358,677.22
	France		$2,644,017.71
		Hauts de Seine	$263,416.19
		Seine (Paris)	$539,725.80

If you filter Germany and its child members using a query filter, the All Customers measure is affected because the German figures no longer appear in the aggregation:

Table 24:

Customer Geography			Internet Sales Amount
All Customers			$26,464,364.08
	France		$2,644,017.71
		Hauts de Seine	$263,416.19
		Seine (Paris)	$539,725.80

Related Information

Selecting members of a hierarchy [page 68]
Hierarchies [page 60]

3.2.6.2.2 Overview of the Member Selector dialog box

You use the *Member Selector* dialog box, accessed via the *Query Panel* to visualize and select members in a hierarchy.

You can work with members explicitly, or with sets of members given, for example, by functions, named sets or hierarchy levels.

You can also use the *Member Selector* dialog box to define prompts, which allow users to select which members they wish to include in a hierarchy when they run the query.

You launch the *Member Selector* dialog box from hierarchy objects that you add to the query in the *Query Panel*.

The following table describes the tabs available in the *Member Selector* dialog box.

Table 25:

Tab	Description
Members	The *Members* tab displays the members arranged hierarchically. Calculated members appear at the position in the hierarchy defined by the BI administrator.
Levels	The *Levels* tab shows the hierarchy levels (if the hierarchy supports levels), named sets and calculated members. If a hierarchy doesn't contain any level, you'll see an icon ⚠ along with a *No values to display* message.
Prompt	The *Prompts* allows you to defer member selection until the query is run, whereupon a prompt appears that allows the users to select members.

> **Note**
>
> In the *Member Selector* dialog box, you can select the display of the technical and business names of objects or hierarchy objects. The Technical Name (also known as the unique name) is the name that identifies the object in addition to its Business Name (also known as the caption name). Technical Names are not localized whereas Business Names are. For example, a Business Name would be 'Customer', and the Technical Name could be Z_CUSTOMER.

Related Information

Selecting members of a hierarchy [page 68]

3.2.6.2.3 To select hierarchy members

You select hierarchy members for your query via the *Query Panel*.

> **Caution**
>
> In the HTML interface, if you select a node that has linked nodes in the *Member Selector* dialog box, they are selected as well after you run the query. If you open the *Member Selector* dialog box after you have run the query, you can see that linked nodes are also selected.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. Add a hierarchy object to the *Result Objects* pane in the *Query Panel*.
4. Click the arrow next to the hierarchy object to launch the *Member Selector* dialog box.
5. In the *Members* tab, select members for inclusion in the query.
6. Click *OK* to close the *Member Selector* dialog box.
   The selected members appear below the hierarchy object in the *Result Objects* pane. When you run the query, only those members are included in the query result.

If you do not select members, the default member for the hierarchy as defined in the database is used in the query result. If no default member is defined, the top-level member is used.

3.2.6.2.4 To select hierarchy members explicitly

You select members from hierarchies for your query via the *Query Panel*.

> **Caution**
>
> In the HTML interface, if you select a node that has linked nodes in the *Member Selector* dialog box, they are selected as well after you run the query. If you open the *Member Selector* dialog box after you have run the query, you can see that linked nodes are also selected.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. In the *Members* tab, select the members by clicking the checkbox next to the member in the hierarchy display.
   The members appear in the list of selected members in the *Member Selector* dialog box.
4. Do one of the following for a member:
   - To select all members in the hierarchy, from the *All Members Select* dropdown list, click *Select*. You can use this option to include all members, even if the hierarchy structure changes in the future.
   - To select members down to a named level, select a level from the *Select All Members until Named Level* list. A named level is, for instance, Country or City. You want level Country or City, whatever its position in the hierarchy.

- To select all members until a specific level, select the level from the *Select All Members until* list.

5. Click *OK* to close the *Member Selector* dialog box.
   The members you selected appear below the hierarchy object in the *Query Panel*.

Related Information

To select hierarchy members [page 71]
To search for members in the Member Selector dialog box [page 77]

3.2.6.2.4.1 Hierarchical member selection in BEx queries

You use the *Member Selector* dialog box, available from a hierarchy object in the *Query Panel*, to select members of a hierarchy for your query.

The following hierarchy illustrates member selection behavior in BEx queries.

Table 26:

World			
	EMEA		
		Europe	
		Middle East	
		Africa	
	North America		
	Asia PAC		
		Asia	
		Pacific	
			Australia
			Philippines
			New Zealand
	South America		

Table 27: Hierarchy selection rules

Rule	Example
When you select a member of a hierarchy at a given level, all of the parent members in the hierarchy are selected.	The root is always selected. It is not possible to select one specific level.

Rule	Example
If you deselect a member when its parent member is already selected, all child members of the parent are also deselected.	If Pacific and all its child members are already selected and you deselect Australia, Philippines and New Zealand are also deselected. The following member selections appear: • Europe • Pacific
If you select a member with some of its child members already selected, all child members are selected.	If Europe is selected and you select EMEA, the Middle East and Africa are also selected. The following member selections appear: • EMEA • Children of EMEA
If you select a member when descendant members are already selected, all children of the member, and all siblings of the selected descendant members are also selected.	If you select Asia PAC when Australia was already selected, Asia, Pacific (children of Asia PAC) and Philippines and New Zealand (siblings of Australia) are also selected. The following member selections appear: • Asia PAC • Children of Asia PAC • Pacific • Children of Pacific

Related Information

Restrictions when using BEx queries [page 100]
Hierarchical member selection in BEx queries [page 72]

3.2.6.2.5 To select hierarchy members in OLAP universes by relationship

You can select hierarchy members in OLAP relational universes via the *Query Panel*.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. Add a hierarchy object to the *Result Objects* pane in the *Query Panel*.
4. Click the arrow next to the hierarchy object to launch the *Member Selector* dialog box.
5. In the *Members* tab, right-click a member.
   The menu displays the following options:

Table 28:

Option	Description
Children	Adds all child members of the member to the list of selected members. The members appear as `Children of [selected member]` in the list. **Note** You cannot include children and descendants of the same member. If you select *Descendants*, then select *Children*, the descendants are removed from the list and replaced by children.
Descendants	Adds all descendant members of the member to the list of selected members. The members appear as `Descendants of [selected member]` in the list. **Note** You cannot include children and descendants of the same member. If you select *Children*, then select *Descendants*, the children are removed from the list and replaced by descendants.
Parent	The member immediately above the selected member is its parent. This option adds the parent member of the member to the list of selected members The member appears as `Parent of [selected member]` in the list. **Note** You cannot include the parent and ancestors of the same member. If you select *Ancestors*, then select *Parent*, the ancestors are removed from the list and replaced by the parent. The `Parent` function is not available in BEx queries.
Ancestors	All members above the selected member in the hierarchy are its ancestors. This option adds the ancestor members of the member to the list of selected members. The members appear as `Ancestors of [selected member]` in the list. You cannot include the ancestors and parent of the same member in the list. If you select *Parent*, then select *Ancestors*, the parent is removed from the list and replaced by the ancestors. The `Ancestors` function is not available in BEx queries.
Siblings	All members at the same level as the selected member and that share the same parent are its siblings. The members appear as `Siblings of [selected member]` in the list. This option adds the selected member and its sibling members to the list of selected members. The `Siblings` function is not available in BEx queries.

6. Click *OK* to close the *Member Selector* dialog box.
   The selected members appear below the hierarchy object in the *Result Objects* pane. When you run the query, only those members are included in the query result.

Related Information

To select hierarchy members [page 71]
To select BEx query hierarchy members by relationship [page 109]

3.2.6.2.6 About level-based member selection

You can select all members of a hierarchy to a specified depth. All members of the selected hierarchy until the specified depth are displayed in the report.

You can select members of a hierarchical object by level in the *Levels* tab in the *Member Selector* dialog box, accessed from the *Query Panel*.

When a hierarchy variable is defined on a characteristic, only one default hierarchy is displayed in the *Query Panel* universe outline.

3.2.6.2.7 To select hierarchy members from a level

You can select all the members at a level in a hierarchy organized into levels in Web Intelligence Applet interface or Web Intelligence Rich Client accessed via the BI launch pad.

> **Note**
>
> Not all hierarchies are organized into levels.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. Add a hierarchy object to the *Result Objects* pane in the *Query Panel*.
4. Click the arrow next to the hierarchy object to launch the *Member Selector* dialog box.
5. In the *Levels* tab, select the levels you want to include.
   The members appear as `All members of the [selected level] level` in the *Summary* list.
6. Click *OK* to close the *Member Selector* dialog box.
   The selected members appear below the hierarchy object in the *Result Objects* pane. When you run the query, only those members are included in the query result.

Related Information

To select hierarchy members [page 71]

3.2.6.2.8 To select calculated members

You can edit calculated members in the *Query Panel*.

The database on which your universe is based supports calculated members.

> **Note**
>
> BEx queries can only be edited in Web Intelligence Applet interface or Web Intelligence Rich Client accessed via the BI launch pad.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. Add a hierarchy object to the *Result Objects* pane in the *Query Panel*.
4. Click the arrow next to the hierarchy object to launch the *Member Selector* dialog box.
5. In the *Levels* tab, select a calculated member.

   > **Note**
   >
   > - The position of the calculated member in the hierarchy is determined by the BI administrator.
   > - You cannot apply functions, for example `Children` or `Parent`, to a calculated member.

6. Click *OK* to close the *Member Selector* dialog box.
   The selected members appear below the hierarchy object in the *Result Objects* pane. When you run the query, only those members are included in the query result.

Related Information

To select hierarchy members [page 71]
Calculated members [page 62]

3.2.6.2.9 To select named sets

You can select named sets in the *Query Panel*.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. Add a hierarchy object to the *Result Objects* pane in the *Query Panel*.
4. Click the arrow next to the hierarchy object to launch the *Member Selector* dialog box.
5. In the *Levels* tab, select a named set from within the *Named Sets* folder.
6. Click *OK* to close the *Member Selector* dialog box.
   The selected members appear below the hierarchy object in the *Result Objects* pane. When you run the query, only those members are included in the query result.

You can also include a named set by selecting it from the list of available query objects. Named sets appear beneath the analysis dimension containing the hierarchy with which they are associated. When you select a named set, its parent hierarchy is included as a result object and the named set appears as a member selection beneath the hierarchy object.

3.2.6.2.10 To exclude hierarchy members

You exclude members from hierarchies in the *Query Panel*.

> **Note**
>
> You cannot exclude members in BEx queries.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. Add a hierarchy object to the *Result Objects* pane in the *Query Panel*.
4. Click the arrow next to the hierarchy object to launch the *Member Selector* dialog box.
5. Select the members or member sets that you want to exclude.
6. Click *Exclude* next to the selected members.
7. Click *OK* to close the *Member Selector* dialog box.
   The excluded members appear below the hierarchy object in the *Result Objects* pane. When you run the query, these members are excluded from the hierarchy.

3.2.6.2.11 To search for members in the Member Selector dialog box

You can search a hierarchy for specific members in the *Member Selector* dialog box.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. Add a hierarchy object to the *Result Objects* pane in the *Query Panel*.
4. Click the arrow next to the hierarchy object to launch the *Member Selector* dialog box.
5. In the *Members* tab, click the *Search* button to launch the *Search* dialog box.

   > **Note**
   >
   > The search is always performed on the entire hierarchy stored in the database, not on the members already retrieved in the *Member Selector* dialog box.

6. Type text in the *Search text* box.

   You can use wildcards in the search.

Table 29:

Wildcard	Description
*	Replaces any string of characters
?	Replaces any individual character

7. Select one of the following:
   - Click *Search in Text* to search the display text of the members.
   - Click *Search in Key* to search their database keys.
8. Click *OK* to close the *Member Selector* dialog box.

3.2.6.2.12 To build prompts for selecting members using the Member Selector dialog box

You can defer member selection until the query is run. If you do so, the user are prompted to select members when they run the query.

> **Note**
>
> Selection of member prompts is restricted to explicit selection of members. The user cannot select members using functions such as `Ancestors` or `Parent`.

To build member-selection prompts:

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. Add a hierarchy object to the *Result Objects* pane in the *Query Panel*.
4. Click the arrow next to the hierarchy object to launch the *Member Selector* dialog box.
5. In the *Prompts* tab, click *Enable Parameter*.

   > **Note**
   >
   > When you select this option, the selections in the other tabs are deactivated.

6. Enter text in the *Prompt Text* box.
7. If you want the prompt to select the previously-chosen values by default when it is displayed, click *Keep last values selected* .
8. If you want the prompt to select default values when it is displayed, click *Set default values*, then *Edit* and select the default values.
9. Click *OK* to close the *List of Values* dialog box.
10. Click *OK* to close the *Member Selector* dialog box.
    The prompt text appears beneath the hierarchy in the *Query Panel*.

Related Information

To select BEx query hierarchy members by relationship [page 109]

3.2.6.3 Resolving ambiguous queries

An ambiguous query is a query that contains one or more objects that can potentially return more than one type of information.

In a universe, certain dimensions may have values that are used for two different purposes in the database. For example, the [Country] dimension in the query below can return two types of information:

- Customers and the country in which they spent their vacation.
- Customers and the country from which they have made their reservation.

The role that Country plays in this query is ambiguous. A country can be either the country where a vacation was sold, or a country where a vacation is reserved. One is existing information (sales), and the other is future information (reservations).

To avoid ambiguities in a query, the universe designer identifies the different ways that objects can be used in the universe, and implements restrictions on how these objects can be combined. These restrictions are called contexts.

3.2.6.3.1 Contexts in a query

A context is a defined group of objects that share a common business purpose.

This business purpose is usually the type of information that these related objects represent. For example, a sales context is a grouping of all the objects that can be used to create sales queries. A reservations context is a grouping of all the objects that can be used in reservation queries. Contexts are defined in the universe by the universe designer.

You can combine any objects within the same context to create a query. You can also combine objects in different contexts. If you use an object that is common to multiple contexts in a query and it is not possible to determine the best context that fits all the other objects in the query, you are prompted to choose the context to apply.

3.2.6.3.2 To choose a context when you run a query

When you create a query or refresh a document, you may be asked to choose a context before the query can run. Contexts are set up in a universe to avoid ambiguous queries.

You need to choose a context each time you run the query if the *Reset contexts on refresh* query property is selected in the *Query Properties* panel. You will also need to choose contexts if you select the *Clear contexts* option in the query properties

Note

- After selecting the *Clear contexts* option, the next prompt on contexts will still show the last selected context and if you want to select another context, you must first remove the existing selection.
- Clearing the *Reset contexts on refresh* setting does not apply to LOV refresh in Prompts. The user will be prompted for the context if the prompt requires it.
- LOV's that prompt for context are not supported in the Web Intelligence HTML interface.
- Before you schedule a document that contains multiple contexts, you must first select a context. To do this, follow the steps below.

Restriction

- If you are migrating an XI 3.1 Desktop Intelligence document to BI 4.1 Web Intelligence using the Report Conversion Tool, you also must have a context selected, otherwise the contexts are lost during the conversion.
- In queries based on UNX universes:
  - Clearing the *Reset contexts on refresh* setting does not apply to LOV refresh in prompts. The user will still be prompted for the context if the prompt requires it.
  - Lists of values that require a prompt context are not supported in the Web Intelligence HTML interface.

1. In a Web Intelligence document containing multiple contexts, run the query or refresh the document.
   The *Select a Context* dialog box appears.
2. Select a context.

If prompts have been set for the document, then the *Prompts* dialog box appears. Otherwise the document content reflects the context you have selected.

Related Information

To reset contexts when a query is refreshed [page 80]

3.2.6.3.3 To reset contexts when a query is refreshed

You can allow contexts to be refreshed every time you refresh a query in the *Query Panel*

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. Click the *Query Properties* icon on the *Query Panel* toolbar to display the *Query Properties* dialog box.
4. Select *Reset contexts on refresh*.
5. Click *OK* to close the *Query Properties* dialog box.

Related Information

To choose a context when you run a query [page 79]

3.2.6.3.4 To clear contexts from a query

You can clear the contents of a query in the *Query Properties* dialog box.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. Click the *Query Properties* icon on the *Query Panel* toolbar to display the *Query Properties* dialog box.
4. Click *Clear contexts*.
5. Click *OK* to close the *Query Properties* dialog box.

3.2.6.4 Setting the scope of analysis

The scope of analysis for a query is extra data that you can retrieve from the database that is available to offer more details on the results returned.

This extra data does not appear in the initial result report, but it remains available in the data cube, and you can pull this data into the report to allow you to access more details at any time. This process of refining the data to lower levels of detail is called drilling down on an object.

> **Note**
>
> The *Scope of Analysis Panel* option in the *Query Panel* is only available for relational `.unx` universes and not for OLAP universes or BEx queries.

In the universe, the scope of analysis corresponds to the hierarchical levels below the object selected for a query. For example, a scope of analysis of one level down for the object Year, would include the object Quarter, which appears immediately under Year.

You can set this level when you build a query. It allows objects lower down the hierarchy to be included in the query, without them appearing in the *Result Objects* pane. The hierarchies in a universe allow you to choose your scope of analysis, and correspondingly the level of drill available. You can also create a custom scope of analysis by selecting specific dimensions to be included in the scope.

Related Information

Retrieving more levels of data to the report [page 432]
To drill out of the scope of analysis [page 432]
Prompt when drill requires additional data option [page 433]

3.2.6.4.1 Levels of scope of analysis

You can set different levels for a scope of analysis in a document.

Table 30:

Level	Description
none	Only the objects that appear in the *Result Objects* pane are included in the query.
• one level • two levels • three levels	For each object in the *Result Objects* pane, one, two, or three objects lower down the hierarchy tree are included in the query. The data from these objects is stored in the cube until you add them to the document.
custom	All objects added manually to the *Scope of analysis* pane are included in the query.

Tip

Including a scope of analysis in a document increases the document size significantly because the data necessary for the scope you specify is saved with the document. It is not visible in the reports unless you start the *Drill Mode* and drill down to the data to display the corresponding values.

In order to minimize the size of documents and optimize performance, include a scope of analysis only in documents where you are certain that users will need to drill.

3.2.6.4.2 To set the scope of analysis

You can set a scope of analysis for a query in the *Scope of Analysis Panel* at the bottom of the *Query Panel*.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. Click the *Scope of Analysis Panel* button.
   The *Scope of Analysis Panel* appears at the bottom of the *Query Panel*. The default scope of analysis is *None*. Each dimension in the *Result Objects* pane appears in the *Scope of analysis* pane.
4. Click the down arrow in the *Scope level* dropdown list box and select a level for the scope of analysis.
   The level appears in the list box and the dimensions that are hierarchically below each dimension in the *Result Objects* pane appear in the *Scope of analysis* pane.
5. If you want to add selected dimensions to the scope of analysis or create a custom scope of analysis, select dimensions in the data outline and drag them across to the *Scope of analysis* pane.

3.2.6.4.3 To deactivate a scope of analysis in a query

You can deactivate a scope of analysis a Web Intelligence document in *Design* or *Data* mode.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.

3. In the *Query Panel*, click the *Scope of Analysis Panel* icon to show the *Scope of Analysis* pane.
4. In the *Scope of analysis* pane, set the *Scope level* to *none*.
5. Click *Run Query*.

3.2.6.5 Viewing the script generated by a query

When you build a query, it generates SQL or Multidimensional Expression (MDX) script behind the scenes to run against the database to return the query result.

SQL is the query language understood by all relational databases. MDX is the query language understood by OLAP databases.

You can view and edit the SQL generated by the query. You can view MDX queries but you cannot edit them.

> **Note**
>
> You cannot view the script of queries that call database stored procedures.

3.2.6.5.1 To view and edit the generated script

You can view and edit generated query script in the *Query Script viewer* dialog box.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. Click the *View Script* button on the query toolbar to display the *Query Script viewer* dialog box.

   > **Note**
   >
   > You cannot edit the query SQL if the query contains optional prompts. Remove the optional prompts from the query before attempting to edit the SQL.

   If script cannot be edited, values supplied in response to prompts appear directly in the query.

   For example, if "UK" was supplied in response to a prompt on [Country], a line similar to the following appears in the query:

   ```
   Resort_country.country In ('UK')
   ```

   If no value has yet been supplied for the prompt, the Web Intelligence syntax for prompts (described below) appears in the query.
4. To make the generated script editable, click *Use custom query script*.

   When you make the script editable, the Web Intelligence syntax for prompts appears in the query.

   For example, a line similar to the following appears in the query:

   ```
   Resort_Country.country = @prompt('Enter Country:','A','Resort\Country',
   ```

```
Mono,Free,Persistent,,User:0)
```

5. Click *Validate* after editing the script to check that your edits are valid.
6. If you are using Web Intelligence Rich Client or the Web Intelligence Applet interface , you can click *Copy* to copy the script to the clipboard.
7. If you are using Web Intelligence Rich Client, you can click *Print* to print the script.

Related Information

Filtering data with query prompts [page 186]
To remove a prompt [page 195]

3.2.6.6 Restricting the amount of data returned by a query

You can restrict the amount of data returned by queries by setting the maximum number of rows a query can return, using a sampled result set, choosing whether to retrieve empty rows, and choosing whether to retrieve duplicate rows.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. Click the *Query Properties* icon on the *Query Panel* toolbar.
4. In the *Query Properties* dialog box, select any of the following options:

Table 31:

Option	Select to...	Available in
Max rows retrieved	To select a maximum numbers of rows for retrieval. If you use this option, you also need to set maximum number of rows to be retrieved.	All instances.
Retrieve duplicate rows	To include duplicate rows. In a database, the same data may be repeated over many rows. You can choose to have these repeated rows returned in a query, or to have only unique rows returned. This option is not available in BEx queries, or if it is not supported by the underlying database.	Relational and OLAP `.unx` files. Not available in BEx queries.

Option	Select to...	Available in
Sample result set	To return a sample result set. To use fixed sampling, click *Fixed*. Sampling is not available in BEx queries. The *Fixed* option is visible, but not activated if this option is not supported by your data source.	Relational `.unx` and `.unv` files. Not available in OLAP `.unx` or BEx queries.
Retrieving empty rows	To include empty rows in the result.	○ OLAP `.unx` ○ BEx queries

5. Click *OK* to return to the *Query Panel*.

Related Information

Sample result set query property [page 86]
Max rows retrieved query property [page 85]
Building queries on BEx queries [page 97]

3.2.6.6.1 Max rows retrieved query property

The *Max rows retrieved* query property determines the maximum number of rows of data that are displayed when a query is run.

If you only need a certain amount of data, you can set this value to limit the number of rows of data in your document.

Max rows retrieved is applied at the database level if the database supports it. If not, rows are discarded after retrieval from the database.

Max rows retrieved does not distinguish between levels in hierarchical data. If *Max rows retrieved* is set to 3, the data in the first table below is truncated as in the second table.

Table 32:

Customers			Unit Sales	Store Cost
US			276,773	234,555
	CA		45,506	67,999
	OR		32,104	56,700
		Albany	10,324	12,325

Table 33:

Customers			Unit Sales	Store Cost
US			276,773	234,555
	CA		45,506	67,999

Customers			Unit Sales	Store Cost
	OR		32,104	56,700

The *Sample result set* query property also applies a restriction on the number of rows in the query, but at the database level. If you set *Max rows retrieved* to 2000 and *Sample result set* to 1000, the query retrieves a maximum of 1000 rows only.

This setting can be overridden by the limits set by the BI administrator in your security profile. For example, if you set the *Max rows retrieved* setting to 400 rows, but your security profile limits you to 200 rows, only 200 rows of data will be retrieved when you run the query.

Related Information

Sample result set query property [page 86]
Restricting the amount of data returned by a query [page 84]

3.2.6.6.2 Sample result set query property

The *Sample result set* property in the *Query Panel* determines the maximum number of rows that a query returns.

This restriction is applied at the database level, in the generated script that is used to return the data.

> **Note**
>
> The *Sample result set* option is only available for relational `.unx` and `.unv` universes, and not for OLAP `.unx` universes or BEx queries.

The *Fixed* option uses fixed sampling. At each data refresh, the query returns the same rows. If you do not set the *Fixed* option, the sampling is random. At each data refresh, the query returns a different set of sampled rows.

Sample result set is more efficient than the *Max rows retrieved* property, which discards rows beyond the maximum limit only after retrieving all the rows in the query.

Not all databases support sampling. If it is not supported, the option is deactivated . Similarly, the *Fixed* option may not be supported by certain databases, in which case the *Fixed* option is deactivated. Sampling is not available in BEx queries or OLAP `.unx` universes.

Related Information

Max rows retrieved query property [page 85]
Building queries on BEx queries [page 97]
Restricting the amount of data returned by a query [page 84]

3.2.6.7 To set the maximum amount of time a query can run

You can set the maximum running time for a query in the *Query Properties* dialog box.

> **Note**
>
> This feature is not available for BEx queries.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. Click the *Query properties* button on the *Query Panel* toolbar to display the *Query Properties* dialog box.
4. Select *Max retrieval time (s)* and enter the amount of time in seconds.
5. Click *OK* to close the dialog box and return to the *Query Panel*.

3.2.6.8 To allow other users to edit queries

By default, queries can by edited only by the user who created them. You can give the ability to edit queries to users who have edit query rights assigned by the BI administrator.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. Click the *Query Properties* icon on the *Query panel* toolbar to display the *Query Properties* dialog box.
4. Click *Allows other users to edit queries*.
5. Click *OK* to return to the *Query Panel*.

3.2.6.9 Using combined queries

A combined query is a group of queries that work together to return a single result.

> **Note**
>
> You can only use the combined query feature with relational universes.

You can combine queries in three relationships:

- union
- intersection
- minus

A UNION query takes all the data from both queries, eliminates duplicate rows, and builds a combined data set.

An INTERSECTION query returns the data that is common to both queries.

A MINUS query returns the data in the first query that does not appear in the second.

Example

Union, intersection and minus queries

In this example you have two queries that return lists of countries as shown in the following table:

Table 34:

Query	Values
Query 1	US; UK; Germany; France
Query 2	US; Spain

The different types of combined query return the following values:

Table 35:

Combination type	Values
UNION	US; UK; Germany; France;Spain
INTERSECTION	US;
MINUS	UK; Germany; France

Related Information

Building queries on BEx queries [page 97]

3.2.6.9.1 An example of a combined query

Combined queries allow you to answer questions that are otherwise difficult or impossible to frame in standard query.

Note

You can only use the combined query feature with relational universes.

Example

Return a data set using a combined query

The Island Resorts Marketing sample universe contains the dimension Year, which, with Customers, returns guests who have already stayed in a resort, and Reservation Year with Customers returns guests who have reserved to stay in the future. Because of the structure of the database and universe, these objects are incompatible, which means that you cannot include them in the same block in a report.

What if you want to return a single list of years that includes those years where more than n guests stayed in a resort and those years where more than n guests reserved to stay in a resort? You can do this using a combined query, as follows:

Table 36:

Query	Returns
Query 1	Years where more than n guests stayed in a resort
UNION	
Query 2	Years where more than n guests reserved to stay in a resort

The union between these two queries returns the list of years that you want.

3.2.6.9.2 How combined queries are generated

Combined queries work at the database level by altering the query submitted to the database.

They do so by generating query script containing UNION, INTERSECTION and MINUS operators.

If your database does not support the type of combination in your query, the combination occurs after data retrieval. Multiple queries return data to the report and this data is then resolved into the same result generated by a database-level combined query.

> **Note**
>
> You can only use the combined query feature with relational universes.

3.2.6.9.3 To build a combined query

If your query is based on a relational universe, you can create a combined query that allows you to answer a question that is otherwise difficult or impossible to frame in a standard query.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. Create an initial query in the *Query Panel*.

   > **Note**
   >
   > You can only use the combined query feature with relational universes.

4. Click the *Add a Combined Query* icon on the toolbar to display the *Combined Queries* panel beneath the list of query objects.
   The *Combined Queries* panel shows the current query. You can change the query name by clicking the query in the panel, selecting *Edit Name* from the menu, then typing a new name in the *Name* box in the dialog box that appears.
5. Click *Add a query*. The second query appears in the *Combined Queries* pane and has the following conditions:
   - It is combined with the original query in a UNION relationship.
   - It is named `Combined Query #n`.

6. To switch to the query, select it in the *Combined Queries* pane.

> **Note**
>
> To delete a query, select it in the *Combined Queries* pane and press the *Delete* key, or drag and drop the query to the universe outline.

7. To change the combination type, select the operator. The operator moves through the sequence UNION, MINUS, INTERSECTION.
8. Build each query within the combined query as you build any normal query.
9. Click *Run Query*.

Related Information

To open for edit the data provider of an existing query [page 154]

3.2.6.9.4 Combined query structure

The queries within a combined query must return the same number of objects of the same data type and the objects must be in the same order.

You cannot combine queries when the number of objects in the query results and the data types of those objects are not identical. For example, you cannot combine a query that returns Year with a query that returns Year and Revenue, or combine a query that returns Year with a query that returns Revenue.

You must also pay attention to the semantics of your combined queries. While it is possible to combine a query that returns Year with a query that returns Region, if both dimensions are of the same data type, the result - a mixed list of years and regions - is unlikely to be meaningful. Typically, if your first query contains a Year dimension, your second query also contains a dimension that returns a list of years.

> **Note**
>
> You can only use the combined query feature with relational universes.

3.2.6.9.4.1 Example: A query of guest occupancy and reservation rates per year

You want to build a query that returns a list of years consisting of years where more than n guests stayed in a resort and years where more than n guests placed reservations to stay in a resort.

> **Note**
>
> This task requires access to the Island Resorts Marketing sample universe in Web Intelligence.

> **Note**
>
> The object you are filtering on must also be in the *Result Objects* pane.

1. In Web Intelligence, create a document and select the Island Resorts Marketing universe in the list of universes.
2. In the *Query Panel*, drag the `Year`, `Number of Guests`, and `Future Guests` objects to the *Result Objects* pane.
3. Drag the `Number of Guests` object to the *Query Filters* pane and create a report filter that restricts `Number of Guests` to greater than n.
4. Click the *Add a combined query* icon.
   Below the list of objects in the *Query Panel*, the *Combined Query* pane appears, displaying the two queries joined by a union.
5. Click the second query and remove the `Year` and `Number of Guests` objects.
6. Drag the `Reservation Year` object to the *Result Objects* pane.
7. Drag the `Future Guests` object to the *Query Filters* pane and create a report filter that restricts the future guests to greater than n.
8. Click *Run Query*.

The query returns the combined list of years and reservation years.

Related Information

To build a query on a universe [page 67]

3.2.6.9.5 Combined query precedence

The order of execution in a combined query is crucial in determining the final result.

In the simplest form of combined query you combine two or more queries in a relationship as follows:

Table 37:

	Query 1
INTERSECTION	Query 2
	Query 3

In such a case, the first result to be calculated is the intersection between Combined Query n and Combined Query n + 1. The next result is the intersection between the first result and the result of Combined Query n + 2. Query execution continues in this way through all the queries in the relationship. This gives the following result for the above example:

Table 38:

Query	Data
Query 1	US; UK; France; Germany
Query 2	US; France; Finland
INTERSECTION of 1 and 2	US; France
Query 3	US; Spain
Final INTERSECTION	US

3.2.6.9.5.1 Nested combined queries

By default, each time you add a combined query, it is combined at the initial combination level with existing queries.

Each added query extends the list of combined queries. If you add Query 3 to Query 1 and Query 2, which are already combined in a UNION relationship, you get the following result:

Table 39:

UNION	Query 1
	Query 2
	Query 3

You can also nest combined queries in complex, multi-level relationships to control the order of execution, as in the following example, which combines the result of Query 1 MINUS Query 2 in an INTERSECT relationship with Query 3.

Table 40:

		Combined Query 1
	MINUS	
INTERSECT		Combined Query 2
	Query 3	

In an LTR locale, query groups are processed from right to left and from top to bottom within each group. In an RTL locale, query groups are processed from left to right and from top to bottom within each group. The way query groups are processed depends on the Preferred Viewing Locale you have selected in the BI launch pad preferences. Some locales, like the English locale, use the left-to-right (LTR) interface positioning, whereas others, like the Arabic locale, use the right-to-left (RTL) interface positioning.

Table 41:

Query	Result
Query 1	US; UK; Spain; Germany
Query 2	Germany
Query 1 MINUS Query 2	US; UK; Spain

Query	Result
Query 3	US; Spain; Finland
(Query 1 MINUS Query 2) INTERSECT Query 3	US; Spain

> **Note**
>
> If your database directly supports the type of combined query you wish to execute, the script generated from the query contains the combination operators directly. In this case the order of precedence depends on the order of precedence defined in the database. See your database administrator for more details.

3.2.6.9.5.2 To set the order of precedence of combined queries

You set an order of precedence in combined queries by placing queries into nested groups

1. In a Web Intelligence document in *Design* or *Data* mode, open the Data Provider for edit.
   The *Query Panel* appears.
2. Build the queries you want to organize in the *Combined Queries* panel.
3. To nest a pair of queries, click the *Add new combined query node* button.
   This action creates a combined query node.
4. Drag and drop a query on to the query with which you want to associate the nested pair.
   The new combined query node is by default a UNION relationship.
5. Continue adding queries to the nested group by dragging and dropping them on to the space between any two queries already in the group.
6. To create further nested groups within an existing higher-precedence group, repeat the previous two steps.
7. Click the combination operators of all the groups in the query to change them as required.
8. Run the query.

Related Information

To open for edit the data provider of an existing query [page 154]
To open for edit the data provider of an existing query [page 154]
To build a combined query [page 89]

3.2.7 Building queries on data files

You can build queries on data files, such as, depending on your version of Web Intelligence, locally installed text files and Excel spreadsheets and Excel files on the CMS.

In the Web Intelligence Rich Client and Web Intelligence Applet interfaces, you can use Excel files saved locally and in the CMS.

> **Note**
>
> You cannot build a query based on a text file in the Web Intelligence HTML interface.

Related Information

To build a query on a text file [page 94]
To build a query on an Excel file [page 95]
To edit a query based on a text file [page 96]
To edit a query based on an Excel file [page 97]

3.2.7.1 To build a query on a text file

You can build a query using a text file as a data source in the Web Intelligence Rich Client or Web Intelligence Applet interface.

1. Open Web Intelligence Rich Client.

   > **Note**
   >
   > You cannot build a query based on a text file in the Web Intelligence HTML interface.

2. To build a query using a text file, do one of the following:
   - Click *New* in the *File* menu.
   - In the *Create a new Web Intelligence Document* dialog box, select *Text* as the data source.
   - In the *Data Access* tab, in the *Data Providers* subtab, select *From Text* from the *New Data Provider* dropdown list.
3. Click *Browse* and select the text file.
4. Set the options to import data from the file.

Option	Description
Data Separator	The character that separates the data relating to each result object. ○ *Tabulation* - data is tab-separated

Option	Description
	○ *Space* - data is separated by spaces ○ *Character* - data is separated by the character you specify
Text Delimeter	The character that encloses the data relating to each result object. ○ *Double quote* - data is enclosed in double quotes ○ *Single quote* - data is enclosed in single quotes ○ *None* - data is not enclosed
First row contains column names	The first row in each column supplies the name of the column.
Locale	The locale of the data in the text file. For example, if the locale is French (France), commas in numbers are interpreted as indicating decimals because decimals contain commas in French.
Charset	The character set used by the text file.
Date Format	The date format to use in the report.

5. Click *Next*.
   The *Query Panel* opens and displays the data in the text file as report objects.
6. Click *Run query* to create a report based on the data from the text file. When you have more than one query and you want to run just one query, click *Run Queries* and select the query that you want to run.

3.2.7.2 To build a query on an Excel file

You can build a query using an Excel file as a data source.

You can use Excel files saved locally and in the CMS.

For information on saving Excel files to the CMS, consult the *Saving objects directly to the CMS* topic in the *BI Launch Pad help*.

1. To build a query using an Excel file, do one of the following:
   - Click *New* in the *File* menu.
   - In the *Create a new Web Intelligence Document* dialog box, select *Excel* as the data source.
   - In the *Data Access* tab, in the *Data Providers* subtab, select *From Excel* from the *New Data Provider* dropdown list.
2. Click *Browse* to select the file you want to use.
3. Set the options to import data from the file.

Option	Description
Sheet Name	The name of the worksheet containing the data.

Option	Description
Field Selection > *All Fields*	All data in the worksheet is treated as query data. **Restriction** Web Intelligence only supports a contiguous cell selection.
Field Selection > *Range Definition*	The data in the specified range is treated as query data. **Restriction** Web Intelligence only supports a contiguous Range Name selection.
Field Selection > *Range Name*	The data in the named range is treated as query data.
First row contains column names	The first row in the range supplies the names of the result objects.

4. Click *Next*.
   The *Query Panel* opens and displays the data in the Excel file as report objects. In the *Query Properties* side pane, you can choose to make the query refreshable and/or editable depending on your user requirements.
5. Click *Run query* to create a report based on the data from the Excel file. When you have more than one query and you want to run just one query, click *Run Queries* and select the query that you want to run.

3.2.7.3 To edit a query based on a text file

You can edit a query based on a text file in the *Query Panel* in the Web Intelligence Rich Client or Web Intelligence Applet interface.

1. Open Web Intelligence Rich Client in *Design* or *Data* mode.

   Note

   You cannot build a query based on a text file in the Web Intelligence HTML interface.

2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
3. Edit the query in the *Query Panel*.

   Caution

   If you select a different file containing source data for the *Source Path*, the structure of the new file must match the structure of the existing file.

4. Edit the options for importing data from the file by clicking *Edit Settings* in the *Query Definition* pane. In the *Query Properties* side pane, you can choose to make the query refreshable and/or editable depending on your user requirements.
5. Click *Run query* to apply your changes to the query.

3.2.7.4 To edit a query based on an Excel file

You can edit a query based on an Excel file in the *Query Panel*..

1. Open Web Intelligence in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
3. Edit the query in the *Query Panel*.

> **Caution**
>
> If you select a different file containing source data for the *Source Path*, the structure of the new file must match the structure of the existing file.

4. Edit the options for importing data from the file by clicking *Edit Settings* in the *Query Definition* section.
5. In the *Query Properties* side pane, you can choose to make the query refreshable, depending on your user requirements.
6. Click *Run query* to apply your changes to the query.

You can also go to the *Data* mode, and in the *Data Provider* tab in the side panel, right-click the query and select from the options in the contextual menu, which include *Refresh*, *Edit*, *Purge*, *Delete*, *Rename*, *Copy*, and *Change Source*.

3.2.8 Building queries on BEx queries

BEx queries (SAP Business Explorer queries) are queries created using the SAP BEx Query Designer, based on SAP Info Cubes in a SAP Business Warehouse (SAP BW).

BEx queries retrieve the metadata from the data source. You use Web Intelligence to connect to a BEx query by using a BI Consumer services (BICS) connection, and retrieve data via the BEx query for reporting purposes.

You create, edit and refresh documents and reports based on BEx queries using the Web Intelligence Applet interface or Web Intelligence Rich Client. In the Web Intelligence HTML interface, you can view and refresh documents, but you cannot edit any document elements based on BEx queries.

Web Intelligence automatically maps data from the BEx query to hierarchies, attributes, dimensions and measures as in universe-based hierarchical queries. Direct access into a SAP BEx query (through a BICS connection) does not allow you to rename, modify, or add metadata. You do not create a universe for BEx queries.

The resulting microcube is represented in the *Available Objects* pane as a tree of objects, but uses a subset of the features available in universe-based hierarchical queries. For example, the `Siblings`, `Parent` and `Ancestor` member functions are not available for BEx queries in the *Member Selector* dialog box. These restrictions are noted in the documentation relating to the features.

> **Note**
>
> - You can only access BEx queries that have the flag *Allow External Access to the Query* enabled in the SAP BEx Query Designer.
> - The object mapping is not all equivalent, refer to the equivalents and restrictions pages to ensure that the queries can be used correctly.

- Web Intelligence can create a document on a BEx query only when the BEx query connection authentication is pre-defined. Prompted authentication mode is not supported on the BEx query at document creation.

Related Information

To create a query based on a BEx query that has no variables [page 116]

3.2.8.1 Which interfaces should you use to work with BEx queries?

To build queries, view reports, edit, or refresh reports, you use the interfaces described below.

Building queries

To create a document or build a query based on a BEx query, you should use one of the following:

- The Web Intelligence Applet interface, accessible from the BI launch pad
- The Web Intelligence HTML interface (accessible from the BI launch pad)
- Web Intelligence Rich Client installed from the SAP Business Objects suite

Working with reports

To view reports, edit, or refresh reports, you can use any of the Web Intelligence interfaces:

- The Web Intelligence HTML interface (accessible from the BI launch pad)
- The Web Intelligence Applet interface (accessible from the BI launch pad)
- The Web Intelligence Rich Client downloaded and installed from the BI launch pad
- Web Intelligence Rich Client installed as a component of the SAP Business Objects suite

3.2.8.2 Supported BEx query metadata

Web Intelligence supports some metadata found in BEx queries.

The following SAP BW metadata features are supported:

- Characteristics (including Time and Unit)
- Display Attributes

- Navigational Attributes
- Hierarchies
- Basic Key Figures
- Calculated Key Figures/Formulas
- Restricted Key Figures
- Variables
- Custom Structures

The metadata types are mapped to universe objects that can be used to build your queries and run reports.

> ⚠ Restriction
>
> Characteristics or key figures dependent on BEx text variables are not supported by Web Intelligence. Your input won't be reflected in the report's objects.

How BEx query metadata is mapped

Table 42:

BEx query metadata	Web Intelligence 4.x object
Characteristic	Dimension
Hierarchy	Hierarchy
Hierarchy level	N/A (levels are displayed in the *Member Selector* dialog box)
Attribute	Attribute
Characteristic properties (Key, Caption, Short description, Medium description, Long description)	Attribute
Key figure without unit/currency	Measure (numeric) Property formatted value (string)
Key figure with unit/currency	Measure (numeric) Property unit/currency (string) Property formatted value (string)

How SAP Business Warehouse Characteristics map to Web Intelligence dimension objects

For data sources based on BEx queries, SAP Business Warehouse (BW) characteristics are mapped to dimension objects in Web Intelligence. Depending on the SAP BW Characteristic data type, these dimensions have a specific type assigned (STRING or DATE).

Although you have defined a BW characteristic in the SAP BW as a numerical data type (NUMC), BW treats the characteristic as a text character string (STRING). Consequently, when it is used in a Web Intelligence document, it is treated as a text character string (STRING). It is not considered a numeric data type.

How SAP BW Key Figures map to Web Intelligence measure objects

For data sources based on BEx queries, SAP BW (BW) Key Figures are mapped to measure objects in Web Intelligence. Depending on the BW Key Figure data type, these measures have a specific type assigned STRING, DATE or NUMERIC)

However, in the BEx query design, if the Key Figure and Characteristic objects are arranged in columns and rows so that the result set columns contain different object types in each row, and the measure object in the Web Intelligence report to shows up as type "STRING". For Web Intelligence, in order to be agnostic, the rule applies that one column equals one data type. The data type "STRING" is thus applied when it recognizes heterogeneous data types in the column. This is the case when the Key Figure Structure is on the Columns Axis only. You can also put both structures on the same axis in your BEx Query.

Example

When a BEx query has a structure that contains UNIT (Currency, for example), TIME (Date, for example) , a formula ("City is X percent of State" for example) and a string-based Characteristic (City for example), each, when added, is a separate row for the column. A Key Figure (for example Order Amount) is added in the Columns section. When you execute the BEx query, a table appears that contains these different objects/types in the rows of the column.

Note

- UNIT and STRING are DataTypes you cannot get in a DataCell (DataCell = each intersection of two BEx structures). You can have NUMERIC (there is INTEGER and DOUBLE), PERCENT, DATE, and TIME. When creating a Web Intelligence report against this query, the measure object is shown as "STRING" due to the different object/types included in the result set for the column.
- If you want to manipulate the results by adding aggregations, for example, you have the choice to change the mapped Web Intelligence measure in the report by converting it via a formula into different data types.

3.2.8.3 Restrictions when using BEx queries

Note

The BI administrator must ensure that the BEx query complies with reporting restrictions described in the table below.

Calculations

Table 43:

BEx query feature	Web Intelligence restriction
Local calculations ("Rank", "Minimum"...)	The key figures on which the local calculation are defined are removed from the BEx query. Avoid the use of these, and use instead the equivalent calculation function in the report.
Calculations/Local calculations	Measures which use "Calculate Single Value as" will be omitted because they would produce inconsistent results within the client tools. The calculation depends heavily on the layout of the data requested (for example, the order in which characteristics are requested, if the result line is switched on or off, and #) and could therefore be misinterpreted. To avoid those misinterpretations, these calculations are automatically switched off. You should not use the following calculation functions: • %GT • %CT • SUMCT • SUMRT • Leaf They might not work correctly within the client tools (same reason as above). It is not feasible to filter them out, as the knowledge about the calculations are not exposed through the interface, therefore the query designer should make sure that those calculations are not used. If you switch on the Multidimensional Expression (MDX) Flag in the BEx Query Designer, the usage of those calculations is checked.
Formula with calculation	We recommend that you avoid using *Formula with calculation* because it may not be supported in the report layout, for example in the case of a Percentage Share of Results report.

Data characteristics

Table 44:

BEx query feature	Web Intelligence restriction
Decimal number	The BEx query decimal number definition is not consumed in Web Intelligence. Use the formatted value instead if you need to keep the exact decimal setting in your report. You can also apply the decimal setting in the table and chart of your report.
Variables on default values	Do not define variables on default values in BEx queries. The variables will be prompted without an effect on the BEx query. Instead, define the default value in the filter.

BEx query feature	Web Intelligence restriction
OR operator	Not supported. The OR operator is not supported from some OLAP data sources such as BEx queries, and OLAP .unx universes on the top of Microsoft Analysis Services (MSAS) and Oracle Essbase.
Merge on key for OLAP business object	The data synchronization of the same object from the same source (cube or BEx query) is based on the internal key of the value of these objects.
BEx query measure aggregation	Measures which aggregate with the SUM function, aggregate the sum in Web Intelligence. Other types of measure aggregation are delegated.
Complex selection	When a variable is defined to support the complex selection, there is no equivalent. This is limited to range selection.
Zero suppression	Rows of zero values are not removed from the result table.
Query default layout	Default positions of characteristics in Rows / Columns are not reproduced.
Result rows	We recommend that you rely on Web Intelligence summaries instead.
Drill-replace capability	There is no drill-replace capability on an object from a BEx query (there is no navigation path).
Attributes in result sets and filters	Cannot be used in the result set and in filters at the same time.

Filters

Table 45:

BEx query feature	Web Intelligence restriction
Filters as default values	Not supported, these are removed from the BEx query. The filter will be ignored, or, if a variable is used, the variable prompt will display, but the user response is ignored. Move any restriction based on a variable into the filter zone in order for it to be taken into account for reporting.
Measures	Cannot be used in filters.

Hierarchies

Table 46:

BEx query feature	Web Intelligence restriction
Lower level nodes	Lower level nodes are always shown after the main node.

BEx query feature	Web Intelligence restriction
Row/Column display as hierarchy	It is not possible to show an overall hierarchy out of an axis hierarchy. The characteristics, hierarchies, and key figures that make up the hierarchy are retained.
Expand to level	By default, hierarchies are not expanded to a given level. Level00 is always the default level. To reproduce this behavior, expand the table and chart in the report, then save the document. Your IT administrator can redefine this default value in the Central Management Console, but note that if the value is set too high, Web Intelligence retrieves the entire hierarchy data which will have an important impact on the performance and stability of the system. The report creator should always indicate explicitly the number of the hierarchy levels they want to retrieve while designing their report queries.
Ranking and hierarchies	Ranking on a table where there is a hierarchy des not take into account the hierarchical structure of the data. When you define a ranking in a table that contains a hierarchy, the ranking becomes flat.
Position of lower level nodes	These are always below the upper levels.
Hierarchical measure structures	Hierarchical measure structures are displayed as a flat list of measures, but you can use hierarchical non-measure structures.
Hierarchical display of an entire axis	This is not supported. You can achieve similar results directly within Web Intelligence.
Hierarchies in result sets and filters	Cannot be used in the result set and in filters at the same time.

Prompts

Table 47:

BEx query feature	Web Intelligence restriction
Variables ready for input	If you define variables ready for input in BEx Query Designer, it is not always possible to manually enter a string in the prompt panel in Web Intelligence. In this situation, you can only select from a list of values.

Query structure

Table 48:

BEx query feature	Web Intelligence restriction
Number of objects allowed in a query	Do not use more than 50 objects in a BEx query, otherwise an error occurs.
Variables dependent on compound characteristics and the parent object	When there are dependencies between variables in compound characteristics and their parent, the dependencies are not guaranteed.
Query stripping	Available for .unv, OLAP, and BEx query sources. For other types of sources it is not available.
Query exceptions	These are not taken into account in Web Intelligence. Apply conditional formatting in Web Intelligence instead.
Conditions	Do not use conditions. When the query is run, the conditions, if present in the query, are not applied.
Default Layout	The Web Intelligence access in general does not take the default layout of the BEx query into account. Use the Query Panel to obtain the following effects: • Arrangement of characteristics in rows and columns • Default presentation (for example, Text / Key-Presentation) • Structure members with the state hidden (can be shown) or visible

Related Information

Query stripping in documents [page 209]

3.2.8.4 Accessing BEx queries

You must meet certain conditions before you can access BEx queries.

1. You can only access BEx queries that have the *Allow External Access to the Query* option enabled in the BEx Query Designer.
2. You must have the appropriate security rights to access and use the BEx queries for reporting.

The BI administrator defines the connection in the Central Management Console (CMC), or you can use the information design tool to publish the connection to the CMC. The simplest method is to use the CMC.

3.2.8.4.1 To enable access to BEx queries

BEx queries can only be accessed by other tools including Web Intelligence if the BEx query property *Allow External Access to the Query* is enabled in the BEx Query Designer.

1. In the BEx Query Designer, select the query that you want to access with Web Intelligence.
2. In the *Properties* pane, select *Advanced*, and ensure that *Allow External Access to the Query* is selected.
3. Save the query.
4. Repeat the above steps for all BEx queries that you want to make available to Web Intelligence.

3.2.8.4.2 To define a BICS connection with the Central Management Console

You can connect to BEx queries via BICS connections that have been created and saved in the Central Management Console (CMC).

You need the appropriate administrator rights to define a BICS connection in the CMC.

You can define a connection to a single BEx query or to an InfoProvider containing several BEx queries.

1. Log in to the CMC.
2. Choose *OLAP connections*.
3. Define a new connection.

   In the *New Connection* window, in the *Provider* dialog box, select *SAP Business Information Warehouse*.
4. Enter the connection information and your system details.
5. Save the connection.

To connect to a BEx query, you also define a BICS connection in the information design tool.

3.2.8.4.3 To define a BICS connection in the information design tool

To connect to a BEx query, you can define a BICS connection in the information design tool. You can define a connection to a single BEx query or to an InfoProvider containing several BEx queries.

1. In the information design tool, use the *New OLAP Connection* wizard to define an OLAP connection and choose the SAP BW SAP BICS Client middleware driver.
2. Publish the connection to a repository where it can be accessed by Web Intelligence.

You can now use Web Intelligence to select the connection and connect to the BEx query.

3.2.8.5 Building a Web Intelligence query on a BEx query

When you have connected to a BEx query, Web Intelligence maps the BEx query metadata to the Web Intelligence query objects.

You use the Web Intelligence *Query Panel* to select the appropriate objects to build a hierarchical query. You can add filters and prompts in the same way as you create queries on universes, but there are restrictions in certain situations, refer to the section *Restrictions when using BEx queries*.

Related Information

Restrictions when using BEx queries [page 100]
Hierarchical member selection in BEx queries [page 72]

3.2.8.5.1 Hierarchical queries

A hierarchical query contains at least one hierarchy object.

You can build hierarchical queries on universes that support hierarchical data or on BEx queries which access SAP Info Queries directly. Hierarchical data can come from relational or OLAP databases, depending on how the data is structured in the universe.

> **Note**
>
> A relational data source is not a true hierarchy; it is a defined path between attributes.

You can include hierarchies either as result or filter objects. When you build a hierarchical query, the Web Intelligence *Query Panel* provides you with additional features for working with hierarchical data.

For example, if you include a hierarchy as a result object, you have the ability to choose members from the hierarchy to appear in the result. The features available in the hierarchical query panel also depend on the source of the hierarchical data you are accessing.

The result set generated by a hierarchical query allows you to perform hierarchical data analysis. Each hierarchy object in the query produces a hierarchical column in the report. You can expand members to reveal their child members.

> **Example**
>
> If you expand the [US] member to reveal US states in a [Geography] hierarchy, then measures in the block are aggregated depending on the member with which they are associated.
>
> A hierarchical query containing the [Customers] hierarchy and the [Unit Sales] and [Store Cost] measures gives the following result set:

Table 49:

Customers			Unit Sales	Store Cost
All Customers			364,707	371,579
	US		276,773	234,555
		CA	45,506	67,999
		OR	32,104	56,700
		Albany	10,324	12,325

Related Information

Hierarchical member selection in BEx queries [page 72]
Measures [page 62]
Hierarchies [page 60]
Hierarchical member selection and query filters [page 69]
Selecting members of a hierarchy [page 68]

3.2.8.5.2 Scaling factors in BEx queries

When a BEx query contains measures that are mapped from scaled key figures, the factor of scaling on the measure is displayed in the resulting report.

When the scaling factor is changed for the key figure, this change is reflected in the report when the report is refreshed. The scaling factor is displayed for the measure name in the report, and for the measure attribute in the *Query Panel*..

3.2.8.5.3 Hierarchy node variables in BEx queries

When a prompt is present on a characteristic of a hierarchy node in a BEx query, this is referred to as a hierarchy node variable.

If there is a hierarchy node variable, the member selection function is disabled for the hierarchy. The prompt related to the hierarchy node variable appears at run time.

3.2.8.5.4 Hierarchical member selection in BEx queries

You use the *Member Selector* dialog box, available from a hierarchy object in the *Query Panel*, to select members of a hierarchy for your query.

The following hierarchy illustrates member selection behavior in BEx queries.

Table 50:

World			
	EMEA		
		Europe	
		Middle East	
		Africa	
	North America		
	Asia PAC		
		Asia	
		Pacific	
			Australia
			Philippines
			New Zealand
	South America		

Table 51: Hierarchy selection rules

Rule	Example
When you select a member of a hierarchy at a given level, all of the parent members in the hierarchy are selected.	The root is always selected. It is not possible to select one specific level.
If you deselect a member when its parent member is already selected, all child members of the parent are also deselected.	If Pacific and all its child members are already selected and you deselect Australia, Philippines and New Zealand are also deselected. The following member selections appear: • Europe • Pacific
If you select a member with some of its child members already selected, all child members are selected.	If Europe is selected and you select EMEA, the Middle East and Africa are also selected. The following member selections appear: • EMEA • Children of EMEA

Rule	Example
If you select a member when descendant members are already selected, all children of the member, and all siblings of the selected descendant members are also selected.	If you select Asia PAC when Australia was already selected, Asia, Pacific (children of Asia PAC) and Philippines and New Zealand (siblings of Australia) are also selected. The following member selections appear: • Asia PAC • Children of Asia PAC • Pacific • Children of Pacific

Related Information

Restrictions when using BEx queries [page 100]
Hierarchical member selection in BEx queries [page 72]

3.2.8.5.4.1 To select BEx query hierarchy members by relationship

You can select by relationship the members in a hierarchy for your BEx query.

1. Open in *Design* or *Data* mode a Web Intelligence document that uses a BEx query.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. Add a hierarchy object to the *Result Objects* pane in the *Query Panel*.
4. Click the arrow next to the hierarchy object to launch the *Member Selector* dialog box.
5. In the *Members* tab, right-click a member to which you want to apply a function.
   The menu displays the following options:

Table 52:

Option	Description
Children	Adds all child members of the member to the list of selected members. The members immediately below the selected member are its children. The members appear as `Children of [selected member]` in the list. **Note** You cannot include children and descendants of the same member. If you had already selected *Descendants* before selecting *Children*, the descendants are removed from the list and replaced by children.
Descendants	Adds all descendant members of the member to the list of selected members. All members below the selected member in the hierarchy are its descendants. The members appear as `Descendants of [selected member]` in the list. **Note** You cannot include children and descendants of the same member. If you had already selected *Children* before selecting *Descendants*, the children are removed from the list and replaced by descendants
Parent	The `Parent` function is not available in BEx queries.
Ancestors	The `Ancestors` function is not available in BEx queries.
Siblings	The `Siblings` function is not available in BEx queries.
Descendents until Named Level	Use the list of level names to choose the level.
Descendents until	Choose the number of levels that you want to include in the selection.

6. Click *OK* to close the *Member Selector* dialog box.
   The selected members appear below the hierarchy object in the *Result Objects* pane. When you run the query, only those members are included in the query result.

   Note

   You cannot exclude hierarchy members in BEx queries.

Related Information

To select hierarchy members [page 71]

About level-based member selection [page 75]
To build prompts for selecting members using the Member Selector dialog box [page 78]
Hierarchical member selection and query filters [page 69]

3.2.8.5.4.2 To search for members in the Member Selector dialog box

You can search a hierarchy for specific members in the *Member Selector* dialog box.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. Add a hierarchy object to the *Result Objects* pane in the *Query Panel*.
4. Click the arrow next to the hierarchy object to launch the *Member Selector* dialog box.
5. In the *Members* tab, click the *Search* button to launch the *Search* dialog box.

   > **Note**
   >
   > The search is always performed on the entire hierarchy stored in the database, not on the members already retrieved in the *Member Selector* dialog box.

6. Type text in the *Search text* box.
   You can use wildcards in the search.

   Table 53:

Wildcard	Description
*	Replaces any string of characters
?	Replaces any individual character

7. Select one of the following:
   - Click *Search in Text* to search the display text of the members.
   - Click *Search in Key* to search their database keys.
8. Click *OK* to close the *Member Selector* dialog box.

3.2.8.5.4.3 To build prompts for selecting members using the Member Selector dialog box

You can defer member selection until the query is run. If you do so, the user are prompted to select members when they run the query.

> **Note**
>
> Selection of member prompts is restricted to explicit selection of members. The user cannot select members using functions such as `Ancestors` or `Parent`.

To build member-selection prompts:

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. Add a hierarchy object to the *Result Objects* pane in the *Query Panel*.
4. Click the arrow next to the hierarchy object to launch the *Member Selector* dialog box.
5. In the *Prompts* tab, click *Enable Parameter*.

   > **Note**
   >
   > When you select this option, the selections in the other tabs are deactivated.

6. Enter text in the *Prompt Text* box.
7. If you want the prompt to select the previously-chosen values by default when it is displayed, click *Keep last values selected* .
8. If you want the prompt to select default values when it is displayed, click *Set default values*, then *Edit* and select the default values.
9. Click *OK* to close the *List of Values* dialog box.
10. Click *OK* to close the *Member Selector* dialog box.
    The prompt text appears beneath the hierarchy in the *Query Panel*.

Related Information

To select BEx query hierarchy members by relationship [page 109]

3.2.8.5.4.4 To select members based on relative depth from a selected node

You can define to which depth of a hierarchy for which information is retrieved. Use the member selector to define the relative depth.

> **Restriction**
>
> Web Intelligence does not support scenarios that have a static hierarchy for a hierarchy node variable and a variable hierarchy for result displays. The prompted hierarchy is always used for results display and filtering that affects the LOV of that hierarchy in the prompts dialog box. You must use the same hierarchy for the hierarchy node variable and a prompt LOV.

> **Note**
>
> This feature is only available when the BEx query has a hierarchy node variable on the characteristic that you are using for the query.

1. Open in *Design* or *Data* mode a Web Intelligence document that uses a BEx query.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. Add a hierarchy object to the *Result Objects* pane in the *Query Panel*.
4. Click the arrow next to the hierarchy object to launch the *Member Selector* dialog box.
5. In the *Relative Depth* tab, select:
   - *All hierarchy node descendants* for the query to handle all the descendants of the selected hierarchy node.
   - *Hierarchy members based on the relative depth* in order to return data from a relative depth in the hierarchy. Select the number of levels below the selected node for which data is returned. You can set a different depth level for each hierarchy node variable.
6. Click *OK* to close the *Member Selector* dialog box.

When you run the query, you are prompted to select a node, and the query returns the data from the selected node down to the specified depth.

3.2.8.5.4.5 To select members based on levels from a selected node

You can define the number of levels of a hierarchy from which to retrieve more detailed data.

1. Open in *Design* or *Data* mode a Web Intelligence document that uses a BEx query.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. Add a hierarchy object to the *Result Objects* pane in the *Query Panel*.
4. Click the arrow next to the hierarchy object to launch the *Member Selector* dialog box.
5. In the *Levels* tab, select *Enable levels* and select the levels down to which you want to return data.
6. Click *OK* to close the *Member Selector* dialog box.

When you run the query, data is retrieved down to the selected level. If you select a different hierarchy at refresh time, the level selection still applies on the new hierarchy and returns nodes and values of the new hierarchy, down to the selected level.

3.2.8.5.5 About the Set Variables dialog box

The *Set Variables* dialog box is prompted before the *Query Panel* so you can manage variables of a BEx query.

When you first create a document based on a BEx query that contains variables, if the query has at least one mandatory or optional variable, the *Set Variables* dialog box automatically appears and displays all the variables and their default values, if any. When you save the variable values, the *Query Panel* appears and you can select the objects for your document.

> **Note**
>
> Currently, the *Set Prompt* check box for each variable is not displayed automatically when you first select the BEx query for your document. When the transient universe has been created and the *Query Panel* displays the objects, you can open the *Set Variables* dialog box and access the *Set Prompt* dialog box.

> **Caution**
>
> If the BI administrator allows manual entry of values for a prompt, so that a start and end key selection is changed to a values list, and your document was created when manual entry was not allowed, you need to do the following for your document:
>
> - Purge the document.
> - Change the default values for query prompts to be compatible with multivalue selection.

Related Information

Selecting prompt values in the Prompts dialog box [page 464]

3.2.8.5.6 Managing mandatory variables with no default values

You can use the *Set Variables* dialog box to define how the variable with no default value is managed for the users.

When the report is published to multiple users, you can ensure that the user is presented with a prompt default value that makes sense.

To use the BEx default values, in the *Set Variables*, select the option *Use BEx query defined default values at runtime*. How the BEx default values are used depends on the settings in the *Set Variables* dialog box and how the user responds to the *Purge Last Selected Prompt Values* prompt when the query is purged.

> **Caution**
>
> You cannot hide prompts and retrieve default values from BEx at the same time. Conversely, you have to display prompts to be able to see dynamic values. If a document is purged with the *Purge Last Selected Prompt Values* option but you have defined a default value and the *Use BEx query defined default values at runtime* option is unchecked, it will still be retrieved after the purge as this value comes from the *Query Panel*.

Workflow when the query designer chooses to use the BEx query default values at runtime

1. When the query contains a BEx mandatory variable, the designer chooses to use the BEx variable default value and selects *Use BEx query defined default values at runtime*.

2. When a user runs the report, the query displays the prompt for the BEx variable. The default value proposed is 'A'. The user chooses a different value ('C', for example).
3. The report contains the results for the user's selected value 'C'.
4. The user purges the report. The purge process displays a warning message asking the if the user wants to purge the last selected prompt value ('C').

If the user:

- Selects *Purge Last Selected Prompt Values*, the query will retrieve 'A' as the default prompt value, since *Use BEx query defined default values at runtime* was selected at query design time.
- Does not select *Purge Last Selected Prompt Values*, the query will retrieve 'C' as the default prompt value, since this value was the last selected prompt value.

Workflow when the query designer chooses not to use the BEx query default values at runtime

1. When the query contains a BEx mandatory variable, the designer chooses not to use the BEx variable default value ('A', for example), but chooses a different value 'B', for example). The designer has not selected *Use BEx query defined default values at runtime*.
2. When a user runs the report, the query displays the prompt for the BEx variable. The default value proposed is 'B', the value selected by the query designer. However, the user chooses a different value ('C', for example).
3. The report contains the results for the user's selected value 'C'.
4. The user purges the report. The purge process displays a warning message asking the if the user wants to purge the last selected prompt value ('C').

If the user:

- Selects *Purge Last Selected Prompt Values*, the query will retrieve 'A' as the default prompt value, since *Use BEx query defined default values at runtime* was selected at query design time.
- Does not select *Purge Last Selected Prompt Values*, the query will retrieve 'B' as the default prompt value, since this value was selected in the *Set Variables* dialog box at query design time.

3.2.8.5.7 The Selection Option in prompts on BEx variables

If there is a characteristics value variable that is of type Selection Option, normally Web Intelligence interprets this type as a BETWEEN operator, so that the user enters a start and end value.

The BI administrator can change this behavior to be an INLIST operator, which allows multivalue selection of variables on a *Selection Option* prompt. When this happens the start and end value selection is changed to a multivalues list.

> ⚠ Caution
>
> If a query was created when the *Selection Option* selection was interpreted as BETWEEN, then any values selected for this prompt do not work. You need to do the following for any document created before the change in selection behavior:

- Purge the document.
- Change the default values for query prompts to be compatible with multivalue selection.

3.2.8.5.8 To create a query based on a BEx query that has no variables

You can create a query using BEx data that contains no variables.

To access the BEx query, it must have the *Allow External Access to the Query* option enabled in the BEx Query Designer.

1. In a Web Intelligence document in *Design* or *Data* mode, click the *New* icon in the *File* toolbar.
2. In the *Select a data source* list, select *BEx*, then *OK*.
3. Select the appropriate BICS connection in the dialog box.
4. Select the BEx query in the side pane and click *OK*. When a BICS connection is based on an InfoCube, there may be several BEx queries available.
   When there are variables in the BEx query, depending on the variable type, the *Set Variables* dialog box appears and you define the variable properties (see the link below for more information about BEx variables and the *Set Variables* dialog box. The *Query Panel* appears, displaying the objects in the query as hierarchies, dimensions and attributes. If you cannot see the BEx query that you want to use, use the BEx Query Designer to ensure that the *Allow External Access to the Query* option is selected in the query.
5. Build the query and query filters using the available objects.

   Note

   - When you create a Web Intelligence query based on a BEx query that contains one mandatory variable (or more) that does not have a default value, when you select a list of values or try to use the *Member Selector* dialog box, an error message appears. Use the *Set Variables* dialog box to set values for the mandatory variable.
   - You cannot filter on attributes in BEx queries.
   - If the BEx query you connected includes SAP server-side variables, you can change the value of the variable in the *Query Panel*. Click the *Set Variables* icon in the *Query Panel* toolbar, and select a new variable.
6. Click *Run Query*. When you have more than one query and you want to run just one query, click *Run Queries* and select the query that you want to run.

3.2.8.5.9 To create a document based on a BEx query that uses variables

You can create a document based on a BEx query that contains variables.

1. In a Web Intelligence document in *Design* or *Data* mode, click the *New* icon in the *File* toolbar.
2. In the *Select a data source* list, select *BEx*, then *OK*.

3. Select the appropriate BICS connection in the dialog box.
4. Select the BEx query in the side pane and click *OK*. When a BICS connection is based on an InfoCube, there may be several BEx queries available.
   When there are variables in the BEx query, depending on the variable type, the Set Variable dialog box appears and you define the variable properties. See the table below for more information about defining BEx variables and using the *Set Variables* dialog box.
5. Build the query and query filters using the available objects.

> **Note**
>
> - When you create a Web Intelligence query based on a BEx query that contains one mandatory variable (or more) that does not have a default value, when you select a list of values or try to use the *Member Selector* dialog box, an error message appears. Use the *Set Variables* dialog box to set values for the mandatory variable.
> - You cannot filter on attributes in BEx queries.
> - If the BEx query you connected includes SAP server-side variables, you can change the value of the variable in the *Query Panel*. Click the *Set Variables* icon in the *Query Panel* toolbar, and select a new variable.

When you have selected a BEx query that contains variables, you use the *Set Variables* dialog box to define or modify the value(s) of the variable(s). The steps you have to perform depend on the variable type (mandatory or optional), and on whether there is a default value or not.

Table 54: Setting variables for BEx queries

When the BEx Query has...	Do this...
Mandatory variable(s) where at least one variable has no default value.	Use the *Set Variables* dialog box to fill in any mandatory variables. The OK button is enabled when all mandatory variables have a value. After this, the *Query Panel* is appears and the outline shows the content of the BEx query as generated in the transient universe. At this point, you can open the *Set Variables* dialog box again and change the *Set Prompts* properties. **Note** If at this point you cancel the *Set Variables* dialog box settings: a. If you are using the Applet interface, the main Web Intelligence interface appears with no document open. If another document was already open at step you will already have been prompted to save or discard the changes when you started to create the BEx query. b. If you are using the Rich Client interface, this returns the interface to the home page.
Mandatory variable(s) with default values (optional variables have no effect on the behavior).	The *Set Variables* automatically appears when the transient universe is created, the *Query Panel* displays the metadata.
Only optional variable(s), at least one of the variables has no default.	The transient universe is created and the *Query Panel* displays the metadata without opening the *Set Variables* dialog box.
Optional variables that all have default values. There are no mandatory variables.	The transient universe is created and the *Query Panel* displays the metadata without opening the *Set Variables* dialog box.

You can now run the query for your document. You can modify variables later by accessing the *Set Variables* dialog box through the *Query Panel*.

3.2.8.5.10 To add a second BEx query data provider to a document

Your current document is already based on a BEx query and you want to add a second BEx query as an additional data provider.

1. In a Web Intelligence document in *Design* or *Data* mode, click the *Add new data provider* icon in the *File* toolbar.
2. In the *Select a data source* list, select *BEx*, then *OK*.
3. Select the appropriate BICS connection in the dialog box.
4. Select the BEx query in the side pane and click *OK*. When a BICS connection is based on an InfoCube, there may be several BEx queries available.
   When there are variables in the additional BEx query, depending on the variable type, the *Set Variables* dialog box appears and you define the variable properties. See the table below for more information about defining BEx variables and using the *Set Variables* dialog box.
5. Build the query and query filters using the available objects.

> **Note**
>
> - When you create a Web Intelligence query based on a BEx query that contains one mandatory variable (or more) that does not have a default value, when you select a list of values or try to use the *Member Selector* dialog box, an error message appears. Use the *Set Variables* dialog box to set values for the mandatory variable.
> - You cannot filter on attributes in BEx queries.
> - If the BEx query you connected includes SAP server-side variables, you can change the value of the variable in the *Query Panel*. Click the *Set Variables* icon in the *Query Panel* toolbar, and select a new variable.

Table 55: Setting variables for an additional BEx query

When the BEx Query has...	Do this...
Mandatory variables where at least one variable has no default value.	When you select the new BEx query, the *Set Variables* dialog box displays all the variables of the newly added BEx query and their default values, if any. Only variables of the newly added data provider are displayed. If variables are shared by the original BEx query and the new BEx query, then the values of those variables are not pre-filled by the values entered for initial query. Although the merge option of BEx variables is active, no merge is applied at this stage. Provide the mandatory variables and click *OK*. The *Query Panel* appears and the outline shows the content of the new BEx query, generated by the underlying transient universe. Create and execute the query. The prompts dialog box displays and shows the variables of the two data Providers depending on the option "Merge BEx variables" of the document: • Merge is active: the dialog box merges the prompts that are shared by the two BEx queries. The values to be displayed are the values entered previously for the first data provider. • Merge is not active: the dialog box displays each prompt separately, with separate values entered for each data provider.
Mandatory variables with default values (optional variables have no effect on the behavior).	The transient universe is created and the *Query Panel* displays the metadata without opening the *Set Variables* dialog box.
Only optional variables, at least one of the variables has no default.	The transient universe is created and the *Query Panel* displays the metadata without opening the *Set Variables* dialog box.
Optional variables that all have default values. There are no mandatory variables.	The transient universe is created and the *Query Panel* displays the metadata without opening the *Set Variables* dialog box.

3.2.8.5.11 To edit a document based on a BEx query

You edit data providers in a BEx query in the *Set Variables* dialog box.

The document has multiple data providers; some of them (not all) are based on BEx Queries.

When editing data providers, the *Set Variables* dialog box appears when a mandatory variable exists and has no values. This situation can only happen if a mandatory variable was added to one of the underlying BEx Queries after the document was created and saved.

1. In a Web Intelligence document, in the *Data Access* tab, click *Edit*.
   The *Set Variables* dialog box is displayed with variables of the BEx Query related to the first Data Provider based on BEx in the document, having mandatory variables with no values. All variables of the BEx Query are displayed, not only the mandatory variables that are missing values.
2. Fill in the values for the missing mandatory valiables and click *OK*.
   The *Set Variables* dialog box appears with variables of the BEx Query related to the second Data Provider based on BEx in the document, having mandatory variables with no values. All variables of the BEx Query are displayed, not only the mandatory variables that are missing values.
3. Fill in the values for the missing mandatory valiables for the second BEx query and click *OK*.

4. Repeat the previous step until there are no more BEx data providers with mandatory variables and no default values.
   The *Query Panel* appears and displays the available objects.
5. The prompts dialog box displays and shows the variables of all data Providers depending on the option "Merge BEx variables" of the document:
   a. When *Merge BEx variables* is enabled: the dialog box merges the prompts that are shared by the BEx Queries. The values to be displayed are the values entered previously for the first data provider.
   b. *Merge BEx variables* is disabled: the dialog box displays each prompt separately, with separate values entered for each data provider.

When you have entered the prompt values, you can run the query for the document.

3.2.8.5.12 To cancel an edit

You can cancel an edit action in a BEx query.

You have a Web Intelligence document that has one or more Data Providers open for edit.

1. In the *Data Access* tab, click *Edit*.
   The *Set Variables* dialog box is displayed with variables of the BEx Query related to the first Data Provider based on BEx in the document, having mandatory variables with no values. All variables of the BEx Query are displayed, not only the mandatory variables that are missing values.
2. Cancel the *Set Variables* dialog box.
   The entire action of edit is cancelled, not only the *Set Variables* dialog box. The *Set Variables* dialog box is not displayed for the other data providers.

3.2.8.5.13 About previewing data when a BEx query has variables

Variables with missing values have no impact on this function.

The prompts dialog box (runtime prompts) displays and invites user to answer variables in all cases. In addition, at this stage the variables should already have been answered in the *Set Variables* dialog box either at document creation time, or when the query is edited. You can preview the query in the same way as any other document.

3.2.8.6 Runtime Configuration

This section describes the configuration options that can be set at runtime to change the behavior of the BW Direct Access in the Semantic Layer and in the BI tools.

All these options are Java runtime options and need to be provided for the Java Virtual Machine (JVM) in the Central Management Console (CMC).

You can provide them through the Adaptive Processing Server command line, in property files, or even through environment variables.

An example of the Adaptive Processing Server command line is as follows:

```
-DoptionName=optionValue
```

> **Note**
>
> The Adaptive Processing Server uses parameters defined for the SAP Java Virtual Machine (SAP JVM). Refer to SAP JVM documentation for more information. For information on modifying a server's command line, refer to the *Business Intelligence Platform Administrator Guide*.

The following lists are valid for BI 4.1 versions Support Package (SP) 01 and higher. Some of these options are also available in BI 4.0.

Infoprovider Browsing

Table 56:

Option	Possible Values	Description	In 4.0, as of:	In 4.1

Long name:
`sap.sl.bics.detectMdxCompliance`
Short name:
`detectMdxCompliance`
Default value:
`rfcPerInfoQuery`
	`rfcPerInfoQuery`
	`rfcProperty`
	`infoArea`
	`false`
		Set the Multidimensional Expression (MDX) compliance detection mechanism for BEx queries when browsing BW infoareas/infocubes.
		For more information, refer to the "SAP BW Browsing Runtime Configuration" below.
			SP04	Yes

Long name: `sap.sl.bics.browsingImplementation` Default value: `bics`	bics olapClient	Set the SL implementation to use for BW query browsing.	SP05	Yes

List of Values

Table 57:

Option	Possible Values	Description	In 4.0	In 4.1

Long name:
`sap.sl.bics.bicslovlimit`
Short name:
`bicslovlimit`
Default value: 5000
	n > 0	Set the maximum number of members for a list of values.	No	Yes

Long name:
`sap.sl.bics.intervalLimitForBigSets`
Short name:
`intervalLimitForBigSets`
Default value: 0
	n > 0	Set the maximum number of intervals that can be retrieved for members that exceed the number of LOV (see property `bicslovlimit`).	No	Yes

Long name:
`sap.sl.bics.variableComplexSelectionMapping`
Short name:
`variableComplexSelectionMapping`
Default value: `interval`
	multivalue
	interval
		Defines the method of selecting values for BEx characteristic variables of the type *Selection Option*.
		⚠ Caution
		If the BI administrator allows manual entry of values for a prompt so that a start and end value selection is changed to a values list, and a document was created when manual entry was not allowed, a document owner needs to do the following for a document:
		• Purge the document.
		• Change the default values for query prompts to be compatible with multivalue selection.
			No	Yes as of SP05

Member Selection and Result Set Scope

Table 58:

Option	Possible Values	Description	In 4.0	In 4.1

Long name:
`sap.sl.bics.expandToLevel`
Short name:
`expandToLevel`
Default value: 0
	n > 0	Set the expandToLevel value for hierarchies when fetching data ;n is 1-based, 0 means "use the expand-to-level value of the BEx query".	No	Yes

Long name:
`sap.sl.bics.expandNotAssignedNodes`
Short name:
`expandNotAssignedNodes`
Default value: `false`
	`true`
	`false`
		Expand the not assigned node when no member selection has been set on a dimension or hierarchy.	No	Yes

Long name:
`sap.sl.bics.depthRelativeTo`
Short name:
`depthRelativeTo`
Default value: `top`
	`top`
	`root`
	`node`
		Defines the behavior of the relative depth used in member selectors:
		'top' means 'depth relative to the selected top node, including out-of-bounds selected nodes that belong to another root'
		'root' means 'depth relative to the selected root node only, and out-of-bounds nodes are excluded'
		'node' means 'depth relative to each selected node'
			No	Yes

Diagnosis and Debug

Table 59:

Option	Possible Values	Description	In 4.0	In 4.1

Long name:
`sap.sl.bics.profileRFC`
Short name:
`profile_rfc`
Default value: `false`
	`true`
	`false`
	txt
	xml
	csv
		Enable/disable the BW RFC tracing, and choose a specific tracing format if enabled.	No	Yes

Long name:
`sap.sl.bics.viewResult`
Short name:
`View_Result`
Default value: undefined
	1
	undefined
		Print result sets.	No	Yes

Miscellaneous

Table 60:

Option	Possible Values	Description	In 4.0	In 4.1

Long name:
`sap.sl.bics.reverseKeyFigureStructure`
Short name:
`Reverse_KF`
Default value: undefined
	1
	undefined
		Reverse axis of Structure containing KeyFigures (ROWS <-> COLUMNS).	No	Yes

Long name:
`sap.sl.bics.retrieveBWLevels`
Short name:
`retrieveBWLevels`
Default value: `true`
	`true`
	`false`
		Retrieve the BW levels for every hierarchy, or completely skip them.	No	Yes

Option	Possible Values	Description	In 4.0	In 4.1

Long name:
`sap.sl.bics.recycleGroupingSetView`
Short name:
`recycleGSView`
Default value: `true`
	`true`
	`false`
		Recycle and share a single query view for all grouping sets.	No	Yes

Long name:
`sap.sl.bics.inlineGroupingSet`
Short name:
`inlineGroupingSet`
Default value: `false`
	`true`
	`false`
		Inline grouping set in the main query if possible.	No	Yes

Long name:
`sap.sl.bics.displayKeyInResultSet`
Short name:
`displayKeyInResultSet`
Default value: `false`
	`true`
	`false`
		Always fetch the member display keys when executing a query.	No	Yes

Long name:
`sap.sl.bics.useDesignTimeServices`
Short name:
`useDesignTimeServices`
Default value: `true`
	`true`
	`false`
		Use the design time services of BICS/BW.	No	Yes

Long name:
`sap.sl.bics.useDesignTimeQueryForRefresh`
Short name:
`useDesignTimeQueryForRefresh`
Default value: `false`
	`true`
	`false`
		Use the design-time query for refresh workflows as well.	No	Yes

Option	Possible Values	Description	In 4.0	In 4.1

Long name:
`sap.sl.bics.useConcurrentDesignTimeQuery`
Short name:
`useConcurrentDesignTimeQuery`
Default value: `true`
	`true`
	`false`
		Instantiate the design-time query early in a concurrent thread.	No	Yes

Long name:
`sap.sl.bics.activateMemberResolutionFallbackWithKey`
Short name:
`activateMemberResolutionFallbackWithKey`
Default value: `false`
	`true`
	`false`
		If text is not found, input is considered a key; 4.0 SP8 and 4.1 SP2+.	No	Yes

Long name:
`sap.sl.bics.hierarchyVariableAlwaysMandatory`
Short name:
`hierarchyVariableAlwaysMandatory`
Default value: `false`
	`true`
	`false`
		In BW system, Hierarchy Variables can be defined as optional. However, in the BEX Analyzer, this optional Hierarchy Variable is treated as mandatory and users must provide an answer. On the BI platform, optional hierarchy variables are shown as optional prompts and users can skip the prompt and execute the query. Incorrect LOV content and incorrect query execution can occur if users skip any prompts. If you set this option to True, users cannot skip the prompts.	No	Yes as of SP05

SAP BW Browsing Runtime Configuration

This section explains the runtime configuration to get the Multidimensional Expression (MDX) compliance information (`detectMdxCompliance`).

Previously, access to a dedicated system InfoArea (`SystemMdxQueriesTopLevel`) was hard-coded and you could not configure it. As of BI 4.0 SP5, you can configure this method.

- **Reverting to the infoArea configuration for the InfoArea dedicated system**
  You can still use this configuration on a new BW system, and it is very efficient for small systems. However, it does not scale up. This method is for BW systems prior to BW version 7.30.
  To activate this method, set the `jvmArg` to:

  ```
  sap.sl.bics.detectMdxCompliance=infoArea
  ```

  This is the default value for BI 4.0 up to version SP4.
  This is not the default value for BI 4.0 version SP5 and higher.
  This method works well with different languages.
- **Configuring the BO or BI system to access the BW system with an RFC call per InfoQuery**
  This method is for BW systems prior to version 7.30. It still usable on new BW system, however it is not efficient for an InfoProvider with a lot of InfoQueries. For large systems, it is more efficient for retrieving information than the InfoArea system.
  To activate this method, set the `jvmArg` to:

  ```
  sap.sl.bics.detectMdxCompliance=rfcPerInfoQuery
  ```

  This is the default value.
- **Configuring the BI system to access the BW system with an RFC call**
  This method is for BW systems from version 7.30 and 7.31. Refer to SAP note 1647346.
  This method is less efficient than the former method for small systems, however the performance is good and it scales up. Internally, an RFC call is done for a cluster of SAP BW nodes. It does not have any max number limitations. All information is received with several RFC calls for a limited number of nodes.
  To activate this method, set the `jvmArg` to:

  ```
  sap.sl.bics.detectMdxCompliance=rfcProperty
  ```

  This is not the default value.
  To override the number of nodes per RFC calls, set `jvArm`:

  ```
  sap.sl.bics.mdxComplianceInfoPerRfc=100
  ```

  This is the default value. Folders appear in English.
- **Deactivation of the MDX compliant flag retrieval**
  All InfoQuery queries will be assumed to be flagged as MDX compliant. Only deactivate the MDX compliant flag retrieval if all InfoQuery queries are verified to be MDX compliant.
  To deactivate the MDX compliant flag retrieval, set the `jvmArg` to:

  ```
  sap.sl.bics.detectMdxCompliance=false
  ```

  This is not the default value.

3.2.9 Building queries on SAP HANA views with SAP HANA Direct Access

You can build queries on SAP HANA views with SAP HANA Direct Access data providers.

You can use SAP HANA views as data sources to create reports without using universes. With SAP HANA Direct Access, a transient universe is generated on the fly so that you can create queries on a SAP HANA view. These queries are then executed for data retrieval in Web Intelligence reports.

SAP HANA Direct Access data providers can be created on SAP HANA secured relational or OLAP connections defined in the CMS. You can execute query scripts using SQL for relational connections, or MDX for OLAP connections. These connections can be defined and published from information design tool (IDT), universe design tool (UDT) or the Central Management Console (CMC).

⚠ Restriction

- You cannot use personal connections defined in information design tool or universe design tool.
- SAP HANA ODBC connections are not supported.

The following Web Intelligence clients support SAP HANA Direct Access:

- Web Intelligence HTML interface
- Web Intelligence Applet interface
- Web Intelligence Rich Client, in CMS connected mode only.

SAP HANA Direct Access data providers support the same functions as other Web Intelligence data providers. You can:

- Rename a SAP HANA Direct Access data provider
- Duplicate an existing SAP HANA Direct Access data provider
- Delete/Remove an existing SAP HANA Direct Access data provider
- Purge data (and prompt answer values) for a SAP HANA Direct Access data provider
- Refresh data for a SAP HANA Direct Access data provider
- Edit an existing SAP HANA Direct Access data provider with the *Query Panel*
- Export data from an existing SAP HANA Direct Access data provider
- Merge SAP HANA Direct Access data provider objects with another data provider
- Create Variables/Formulas from SAP HANA Direct Access data provider objects

ℹ Note

You cannot consume level objects that contain input parameters with SAP HANA Direct Access data providers. Also, the column label is only available with HANA MDX Access on Web Intelligence.

3.2.9.1 SAP HANA view metadata

A transient universe is a universe created at runtime for the purpose of a query. The universe is not persisted and cannot be accessed.

At the design time, Web Intelligence generates a transient universe that can display different metadata, depending on the connection type, relational or OLAP. At the runtime, the transient universe based on the HANA view can be generated every time the HANA view is modified in order to regenerate the query before executing it.

SAP HANA view metadata for relational connections

The table below details the mapping between SAP HANA metadata and the relational transient universe metadata.

Table 61:

SAP HANA view metadata	Relational universe metadata
Attribute views	Folders
Attributes	Dimensions under folders representing their parent attribute views
Calculated/Restricted Columns	Dimensions under the folder representing their parent attribute views
Measures	Measures
Measure aggregations (SUM, COUNT, MIN, MAX)	All SAP HANA measures are set as delegated in the transient universes, except for the SUM function
SAP HANA variables	Universe Prompt parameters (not visible in query panels)
SAP HANA Input Parameters	Universe Prompt parameters (not visible in query panels)

SAP HANA view metadata for OLAP connections

The table below details the mapping between SAP HANA metadata and the OLAP transient universe metadata.

Table 62:

SAP HANA view metadata	OLAP universe metadata
Attribute views	Analysis Dimensions
Attributes	Dimensions under Analysis Dimensions representing their parent attribute views
Calculated/Restricted Columns	Dimensions under the Analysis Dimensions representing their parent attribute views
Measures	Measures

SAP HANA view metadata	OLAP universe metadata
Measure aggregations (SUM, COUNT, MIN, MAX)	All SAP HANA measures are set as delegated in the transient universes, except for the SUM function
Parent-Child Hierarchies	Parent-Child Hierarchies under the Analysis Dimensions representing their parent attribute views
Level-based Hierarchies	Level-based Hierarchies under the Analysis Dimensions representing their parent attribute views
SAP HANA variables	Universe Prompt parameters (not visible in query panels)
SAP HANA Input Parameters	Universe Prompt parameters (not visible in query panels)

3.2.9.2 To build queries on SAP HANA views

You can build queries using a SAP HANA view as a data source.

1. Open Web Intelligence and click the *New* icon in the *File* toolbar.
2. Click *SAP HANA*.
3. Select a secured SAP HANA connection.
4. Select a SAP HANA analytic view or a SAP HANA calculation view.

   You can also search for a SAP HANA view on a given SAP HANA connection using the search bar. The search bar is case insensitive.
5. Click *OK*.
6. Optional: If the SAP HANA view you have selected has mandatory variables or input parameters with no default values, provide answers to the prompts in the *Variable Manager* wizard and click *OK*.
7. In the *Query Panel*, drag dimensions and measures you want to include in the query in the *Result Objects* pane.

   > **Note**
   >
   > On an OLAP connection, the dimensional query panel opens so you can use the *Member Selector* on SAP HANA hierarchies.
8. Select the objects on which you want to define query filters and drag them to the *Query Filters* pane. To create a quick filter on an object, select the object in the *Result Objects* pane then click the *Add a quick filter* icon in the *Result Objects* toolbar.
9. Set the scope of analysis and other query properties.
10. Click *Run Query*.

Related Information

HANA query prompts in Web Intelligence [page 187]

3.2.9.3 Defining query limits

SAP HANA Direct Access data providers use transient universes, which means that they bypass universes and therefore do not offer the same range of settings compared to other data providers.

Your database administrator can set query limits directly at the connection level for SAP HANA OLAP or relational connections. These parameters can edited set in Information Design Tool or Universe Design Tool for SAP HANA relational connections, but also in the Central Management Console for SAP HANA OLAP connections.

These limits the amount of data returned by a query:

- *Query Execution Timeout*: limits the time for the query execution. The limit is expressed in seconds.
- *Max Cells*: limits the number of cells returned by a query. This restricts the number of cells returned, but does not restrict the database from processing all cells in the query. It only limits the number once the databases has started to send rows.

  > **Note**
  >
  > This setting is only available for SAP HANA OLAP connections.

- *Max Rows*: limits the number of rows returned by a query. This restricts the number of rows returned, but does not restrict the DB from processing all rows in the query. It only limits the number once the databases has started to send rows.

  > **Note**
  >
  > This setting is only available for SAP HANA relational connections.

Query limits are supported in SAP HANA Online mode.

Related Information

Retrieving partial results [page 139]

3.2.9.4 To define query limits for SAP HANA OLAP connections

You can limit the amount of time a query can run of the numbers of cells you wan the database to retrieve.

1. On the CMC home screen, click *OLAP connections*.
2. Right-click an SAP HANA connection.
3. Click *Organize* > *Edit*.
4. In the *Maximum Number of Cells* and *Query Timeout* entry fields, set the limits you want to apply to the connection.

3.2.9.5 Managing mandatory variables with the Variable Manager

The *Variable Manager* is a wizard that lets you to manage the variables of a data source. Use it to answer prompts for SAP HANA variables and input parameters in documents that use SAP HANA views as data sources.

The *Variable Manager* is displayed before the query panel so that you can:

- View available data source variables coming from the database
- Set or edit values for every data source variable
- Fix or prompt values of data source variables upon refresh with the *Set as prompt* option for each SAP HANA variable

The *Variable Manager* is available when you edit or add new data providers to a document based on an SAP HANA view. It is displayed automatically if the SAP HANA view has at least one mandatory input parameter or SAP HANA variable without a default value. If there are mandatory or optional input parameters or SAP HANA variables with default values, you can still access the *Variable Manager*. Click the *Variable Manager* icon () in the *Query Panel* to change the values or the prompts.

You can also use the default values defined in SAP HANA Studio. To do so, check the *Use BEx/HANA defined default values at runtime* option.

3.2.9.6 To merge or unmerge SAP HANA variables

You can merge or unmerge SAP HANA variables in a Web Intelligence.

This is useful when a Web Intelligence document has multiple data providers based on the same SAP HANA view.

1. Go to the document properties.
2. Check or uncheck *Merge prompts (BEx or HANA Variables)* to merge or unmerge SAP HANA variables.

3.2.9.7 Formulas for Web Intelligence HANA Direct Access data providers

Once you have created an SAP HANA Direct Access data provider in a Web Intelligence document, you can use the Data Provider functions.

The following table describes the expected values for the Data Provider functions based on SAP HANA Direct Access.

Table 63:

Data Provider Function	Expected value for HANA Direct Access Data Provider
Connection(dp)	'DB Layer : "my-dbLayer". DB Type : "my-dbType"' for SAP HANA Direct Access Data Provider (as for universe data providers) 'DB Layer : "JDBC". DB Type : "HANA"'
DataProvider(obj)	Name of the data provider, for example, 'Query 1 on MyHANAView'
DataProviderKeyDate(dp)	Empty string ('')
DataProviderKeyDateCaption(dp)	Empty string ('')
DataProviderSQL(dp)	SQL/MDX script of the data provider, for example, 'SELECT * FROM COUNTRY'
DataProviderType(dp)	SAP HANA Direct Access
IsPromptAnswered([dp;]prompt_string)	Determines whether a prompt has been answered for this data provider
LastExecutionDate(dp)	Date on which a data provider was last refreshed
LastExecutionDuration(dp)	Time in seconds taken by the last refresh of a data provider
LastExecutionTime(dp)	Time at which a data provider was last refreshed
NumberOfDataProviders()	Number of data providers in a report
NumberOfRows(dp)	Number of rows in a data provider
RefValueDate()	Date of the reference data used for data tracking
RefValueUserResponse([dp;]prompt_string[;Index])	Response to a prompt when the reference data was the current data
UniverseName(dp)	Name of SAP HANA view used by SAP HANA Direct Access Data Provider
UserResponse([dp;]prompt_string[;Index])	Response to a data provider prompt
QuerySummary(dp)	Query Specification Summary used by SAP HANA Direct Access Data Provider

3.2.10 Building queries on SAP HANA views in SAP HANA Online mode

In SAP HANA Online mode, you can create Web Intelligence documents with live data leveraging the power of SAP HANA.

You can use SAP HANA Online mode to build queries on SAP HANA views and delegate every calculation or operation to SAP HANA. When you delegate calculations to SAP HANA, Web Intelligence no longer needs to fill its cache in order to create queries and can bypass the *Query Panel*. As a result, you can create queries on the fly in a transient universe. This enables quicker interactions between Web Intelligence and SAP HANA and provides better performance for data refresh.

The SAP HANA view metadata correspond to the transient universe available objects and are displayed in the Web Intelligence report outline as available objects. You can create or insert report blocks using these data source

objects. In SAP HANA Online mode, every report operation that requires a calculation is delegated to SAP HANA via a query execution that only returns data you actually need.

If you need to use a feature or function that SAP HANA Online mode does not support, you can switch to the classic offline mode at any given time.

The following clients support SAP HANA Online mode:

- Web Intelligence HTML interface
- Web Intelligence Applet interface
- Web Intelligence Rich Client (in Online mode only)

Restriction

- SAP HANA Online mode is available for secured HANA relational connections only. You cannot use personal connections defined in information design tool (IDT) or universe design tool (UDT).
- SAP HANA ODBC connections are not supported.

3.2.10.1 User interface limitations in Design mode

The *Design* mode is the default perspective when you create or modify a Web Intelligence document. However, since the online mode does not support every feature present in offline mode, there are few modifications in the user interface and menu toolbars.

Pane modifications

Table 64:

Pane	Description
Documents summary	Use this pane to read, print and edit the document summary. The following options can be checked/unchecked: • Refresh on open • Permanent regional formatting • Hide warning icons in charts • Merge prompts
Report Map	Use this pane to navigate and switch through reports.
Input Control	Use this pane to add or reset input controls and change filter values. You can also show the input control map.

Pane	Description
User Prompt Input	Use this pane to change the values set in prompt input for SAP HANA variables and input parameters. **Note** Only for the DHTML client.
Available Objects	In SAP HANA Online mode, the SAP HANA view metadata corresponding to the transient universe objects are displayed in the report outline as available objects for the document.
Document Structure	Use this pane to view and modify the document structure. The only change concerns the Hide cell/table and Format table options at the block table/chart/cell level. The following options can be checked/unchecked: • Show table headers • Show table footers • Hide always
Comments	Use this pane to manage comments in your document.
Shared Elements	**Restriction** Shared elements aren't supported in SAP HANA Online mode.

Menu toolbar modifications

Table 65:

Menu	Description
Quick Commands	The *Edit Query* button is deactivated.
Report Element	In the *Behavior* Tab, only the *Hide* option is enabled.
Data Access	• *New Data Providers* becomes *New Data Source*: users can add new SAP HANA views • *Purge Data* becomes *Reset Prompts*: reset or purge answer values for SAP HANA variables or input parameters • New menu called *New Variable*: insert new variables (measures only) • The *Merge Objects*, *Change Source* and *Export Data* panes are deactivated
Analysis	• The *Group* menu is deactivated

Menu	Description
Format and Page Setup	• The *Formula Bar* is available with a restricted list of formula functions supported in SAP HANA Online mode. This means that the formula editor displays only functions/operators supported in SAP HANA Online mode. • The *Status Bar* displays the current status of the document, either online or offline.

3.2.10.2 To create a document in SAP HANA Online mode

1. Click the *New* icon in the *File* toolbar.
2. Click *SAP HANA Online*.
3. Select a secured SAP HANA relational connection.
4. Select a SAP HANA calculation view or a SAP HANA analytic view.
   You can also search for a SAP HANA view on a given SAP HANA connection via the search bar.
5. Click *OK*.

> **Note**
>
> If you are querying a SAP HANA view that uses input parameters, then when you run the query, you can encounter prompts that require you to enter values for variables and parameters. The values available in the prompts come directly from the SAP HANA view.

6. Provide answers for the SAP HANA variables and input parameters.
7. Click *OK*.
   Objects are now visible in the report outline.
8. Drag and drop objects in the report to create or modify report blocks.

3.2.10.3 To add a new data source

You can have multiple SAP HANA views for a single document.

When you add a data source, its available objects are displayed in the report outline under the name of the SAP HANA view.

1. Click *New Data Source*.
2. Select a secured SAP HANA relational connection.
3. Select a SAP HANA calculation view or a SAP HANA analytic view.
   You can also search for a SAP HANA view on a given SAP HANA connection using the search bar.
4. Click *OK*.

> **Note**
>
> If you are querying a SAP HANA view that uses input parameters, then when you run the query, you can encounter prompts that require you to enter values for variables and parameters. The values available in the prompts come directly from the SAP HANA view.

5. Provide answers for the SAP HANA variables and input parameters.
6. Click *OK*.
   New available objects are displayed in the report outline under the name of the SAP HANA view.

3.2.10.4 To remove a data source

When you remove a SAP HANA view data source from a document in SAP HANA Online mode, all report blocks based on this SAP HANA view are removed automatically from the document.

1. In the *Available Objects* pane, right-click an SAP HANA view you want to remove.
2. Click *Delete*.

3.2.10.5 To reset prompts

You can reset or purge all answer values for HANA variables or input parameters in a document in SAP HANA Online mode.

1. In the *Data Access* tab, click *Reset Prompts*.
2. When asked if you are sure you want to reset prompts, click *OK*.

3.2.10.6 To switch to Web Intelligence offline mode

You can go back to Web Intelligence Classic mode at any given time.

SAP HANA Online mode does not support every feature available in Classic mode. When you leave SAP HANA Online and switch to Classic mode. Make sure that you save the document before disconnecting.

> **Note**
>
> SAP HANA Online cannot be reactivated in the document you are working on once you have left it. If you leave SAP HANA Online without saving the document first, it is converted to a normal Web Intelligence document.

1. In the *Data Access* tab in the toolbar, click *Disconnect from SAP HANA*.
   You are prompted to save the document before disconnecting. If you have not saved the document, click *Cancel* and save the document.
2. Click *Disconnect*.

3.2.10.7 Formulas, functions and operators in SAP HANA Online mode

You can add formulas in tables or charts using the formula editor. The formulas available in SAP HANA Online mode are restricted, and the formula editor will only display formulas that are available.

Refer to *Using functions, formulas and calculations in Web Intelligence* to see the full list of supported formulas, functions and operators.

> **Note**
>
> Extended syntax keywords are not supported in SAP HANA Online mode.

3.2.10.8 Providing answers to SAP HANA variables or input parameters

The SAP HANA view that you have selected when you created a document might contain SAP HANA variables and input parameters that need to be answered before you can create queries.

Providing answers to SAP HANA variables or input parameters means that you declare a value for every variable of input parameter that requires one. In SAP HANA Online mode, you must answer SAP HANA variables and input parameters whenever you create or refresh a document.

When you answer variables or prompts that have a default value, it means that they are mandatory and that you must answer them. You can skip optional variables or prompts.

3.2.10.9 Refreshing data

In SAP HANA Online mode, you can refresh the entire document.

When you refresh a document in SAP HANA Online mode, every report block in the entire document is refreshed. Having multiple tables in a report generates multiple queries on SAP HANA that can affect performance.

You might run a single query for instance that is split between five different tables, all based on the same data provider. When you refresh the document, Web Intelligence generates five different queries on SAP HANA to refresh the five tables.

> **Note**
>
> If an SAP HANA view contains SAP HANA variables or input parameters, you will be prompted to provide prompt answers values before you can refresh the document.

Related Information

Providing answers to SAP HANA variables or input parameters [page 138]

3.2.10.10 Navigation paths

When drilling in SAP HANA Online mode, you drill along what is called a navigation path. It corresponds to the dimension hierarchies contained in the SAP HANA view on which the document you are working on is based.

In the *Available Objects* pane, you can view navigation paths. Using navigation paths, you can see how Web Intelligence drills in your data and navigate through SAP HANA objects.

The navigation path is generated from the level-based hierarchies of the SAP HANA view on which the document is based. To each level-based hierarchy corresponds a navigation path, and levels of a hierarchy correspond to levels of the navigation path.

3.2.10.11 To display navigation paths

Display navigation paths whenever you want to see how drilling has been performed on your data.

Make sure your document is based on an SAP HANA view that contains level-based hierarchies.

1. Click the *Available Objects* pane.
2. Click *Arranged by* at the bottom of the pane.
3. Click *Navigation paths*.

You can now see the navigation path in the *Available Objects* pane.

3.2.10.12 Retrieving partial results

In the SAP HANA options, you can limit the results returned in data blocks by Web Intelligence when running a query.

The data retrieved is restricted by default to a limit of 5000 rows, and the timeout limit is set to 60 seconds.

If the retrieved data of at least one of the data blocks exceeds the limits set in the SAP HANA options, a partial result set is returned when you refresh the document. A warning icon displayed in the status bar and in the data blocks lets you know if they display partial results. It is possible to hide the warning icon displayed in a chart or a table. In the document properties, check *Hide warning icons in charts and tables*.

> ⚠ Caution
>
> Make sure that the values you enter correspond to the values set by your administrator at a connection level. If the values you enter in Web Intelligence exceed the values set by your administrator, they are not taken into account during the data retrieval.

Max Rows

If you want the database to return only a partial result set, you can limit the number of rows retrieved. Whenever the limit is exceeded, the query stops and the database returns a partial result set.

This option is available in the *Data Access* > *Options* menu.

Query Execution Timeout

You can set a time limit for queries. Whenever the timeout limit is exceeded, the query stops and the database returns a partial result set.

This option is available in the *Data Access* > *Options* menu.

Related Information

Max rows retrieved query property [page 85]
To set the maximum amount of time a query can run [page 87]

3.2.10.13 Displaying online query statistics per block

Use the *Online Query Statistics* command to see the query statistics for each data block in a Web Intelligence document based on SAP HANA online.

This command is only available in *With Data* mode inside the *Design* mode.

This option provides the following information:

- Data source: name of the SAP HANA view
- Last execution date: date when the query was last run
- Last execution duration: duration of the refresh
- Last execution time: time when the query was last run
- Number or rows: number of rows retrieved
- Status: indicates whether the data block displays a partial result set or all data

3.2.10.14 To display online query statistics per block

1. Right-click a data block.
2. Select *Online Query Statistics*.

3.2.11 Building queries on relational connections using Free-Hand SQL statements

In Web Intelligence, you can use a Free-hand SQL (FHSQL) statement to query an RDBMS database.

You use this sort of data provider when you have complex SQL statements that use advanced database functions not supported by the standard semantic layer.

FHSQL data providers use secured relational connections which accept SQL statements. The BI administrator publishes these connections in the CMS using the SAP BusinessObjects Universe Design Tool or SAP BusinessObjects Information Design Tool.

To build queries based on FHSQL, you must have an advanced understanding of:

- creating and editing SQL scripts
- your database structure

When you create a query using FHSQL, you can:

- copy and paste existing SQL statements into or write new statements directly into the *Query Script editor*
- define prompts with static lists of values
- use existing secured relational connections to the database
- parse the statement for SQL errors

⚠ Restriction

- If you use SQL statements that return multiple result sets, only the first result set will be displayed; the others will be ignored.
- You cannot use the *Change Source Wizard* with FHSQL queries.

Reusing Desktop Intelligence documents in Web Intelligence

Using the Report Conversion Tool, you can convert a Desktop Intelligence document into a Web Intelligence document based on FHSQL statement. You can then open the document in Web Intelligence and in the *Query Panel* edit the statement.

For more information on FHSQL report conversions, refer to the Report Conversion Tool Guide.

3.2.11.1 To build a query using a Free-hand SQL statement

In the Web Intelligence Rich Client or Web Intelligence Applet interface, you can query an RMDBS database using a Free-hand SQL (FHSQL) statement.

1. Open the Web Intelligence Applet interface or Web Intelligence Rich Client.

> **Note**
>
> In the Web Intelligence HTML interface, you can configure report elements in a document based on a FHSQL data provider, but you cannot edit its query.

2. To build a query using an FHSQL statement, do one of the following:
   - Click *New* in the *File* menu, and in the *Create a Document* dialog box, select *Free-hand SQL*.
   - In the *Data Access* tab, in the *Data Providers* subtab, select *From Free-hand SQL* from the *New Data Provider* dropdown list.
3. In the *Select a relational connection* dialog box, select a connection and click *OK*.
4. In the *Query Script editor*, enter a SQL statement manually or using the copy and paste keyboard shortcuts.
5. Click *Validate* to check the statement for SQL errors.

   Web Intelligence runs the SQL against the database and displays any error message that the database returns. Refer to the following topic for keys you should not use: Unsupported keywords in FHSQL SQL statements [page 146]

   When you submit modified SQL statements, this SQL is first checked by the database. Two scenarios can occur:
   - If the SQL is invalid, then the SQL changes are not applied.
   - If the SQL is valid, the FHSQL data provider saves it and applies it automatically to the data source, making the following updates:
     1. Any new SQL columns are added in the data source as new objects.
     2. The SQL columns with the same name and data type as existing data source objects are retained.
     3. Old data source objects are deleted if they did not map with the newly retrieved SQL columns.
6. Once you have resolved any SQL errors, click *OK* to accept the SQL statement.

   The *Query Panel* appears.
7. In the *Query Panel*, you can do the following:
   - View the objects in the query.
   - Edit the properties of the data source objects.
   - Change the FHSQL connection.
   - Access the SQL for editing using the *Edit SQL* button.
8. Click *Run Query*.

3.2.11.2 The FHSQL data provider configuration options in the Query Panel

When you have set a valid connection to the data source, the FHSQL data provider connects to the database in order to parse the SQL.

If the SQL is valid, a set of result objects appears in the *Query Panel*. The following table lists the default values for the *Object Properties* in the *Query Panel*.

Table 66:

Data source object property	Default values	Actions you can perform
Name	Column name	Change the column or object name.
Qualification	• Dimension for STRING and DATE/DATETIME data type • Measure for NUMBER data type	Change the object qualification. Possible values include Dimension, Measure, and Attribute.
Type	• STRING for SQL characters such as VARCHAR, LONGVARCHAR, and so on • NUMBER for SQL numeric objects such as INT, FLOAT, DOUBLE, and so on • DATE for SQL Date, SQL DateTime or SQL Timestamp **⚠ Restriction** FHSQL does not support SQL BLOB/BINARY data types.	Use values such as STRING, NUMBER, and DATE/DATETIME. **⚠ Restriction** • You cannot change the object data type. • A given data type must match the SQL data-type mapping.
Aggregate Function	SUM for Measure. For other objects, there is no default value.	Change the object aggregation function for measures. Possible values include: • None • Sum (by default) • Max • Min • Count • Average
Associated Dimension	No default value	Change the object-associated dimension for the attribute (ex-detail).

FHSQL Query Properties

In the *Query Properties*, you can edit the query name, change the connection, and manage the following refresh options:

Table 67:

Refresh option	Description
Max Rows Retrieved	By default, this option is disabled and that there is no limit to the number of rows retrieved. You can set the range value to [0,¥]. If you do this, the FHSQL data provider will limit the number of rows retrieved to the maximum rows given and only return a partial result set. For more information on this option, see Max rows retrieved query property [page 85].
Max Retrieval Time (s)	By default, this option is disabled and that there is no limit to the query execution time. You can set the *Max Retrieval Time (s)* (in seconds) to the range value of [0,¥]. If you do this, the FHSQL data provider will control the query time; stopping it if it exceeds the given timeout. It will return a partial result set of whatever data is already fetched when the timeout occurred.

3.2.11.3 Using the @Variable and @Prompt functions in FHSQL SQL statements

You can use the @Variable and @Prompt functions in FHSQL statements in Web Intelligence.

For general information on working with these functions, refer to the *Information Design Tool User Guide* or the *Universe Design Tool User Guide*.

@Variable functions and FHSQL

You can use the @Variable syntax in SQL statements to insert BusinessObjects variables into the SQL. The FHSQL data provider substitutes these variables before executing the SQL.

> ⚠ Restriction
>
> FHSQL does not support User Attributes as configurable in the CMC User Attribute Management area in the @Variable syntax.

@Prompt functions and FHSQL

When a user selects a value in a prompt, FHSQL data provider substitutes this value for the @Prompt syntax and then executes the SQL against the database to retrieve data.

When the FHSQL parses the @Prompt syntax in order to validate the SQL or get the data structure, the FHSQL data provider substitutes the @Prompt syntax with:

- Default values (if set)
- The first values of the associated static LOV (if set)
- Placeholders if no default values or static LOV are defined:

Table 68:

Prompt Data Type	Value
STRING	'string'
NUMBER	0
DATE	Current Date

Restriction

Optional prompts are not supported.

3.2.11.4 Formulas for Web Intelligence FHSQL data providers

Once you have created a FHSQL data provider in a Web Intelligence document, you can use the Data Provider functions.

The following table describes the expected values for the *Data Provider* functions when you use a FHSQL statement to create a query.

Table 69:

Data Provider Function	Expected value for FHSQL Data Provider
Connection(dp)	'DB Layer: "my-dbLayer". DB Type: "my-dbType"' (as for universe data providers) For example, 'DB Layer: "JDBC". DB Type : "Oracle 11"'
DataProvider(obj)	Name of the data provider, for example, 'SQL 1 on MyConnection'
DataProviderKeyDate(dp)	Empty string ('')
DataProviderKeyDateCaption(dp)	Empty string ('')
DataProviderSQL(dp)	SQL statement of the data provider, for example, 'SELECT * FROM COUNTRY'
DataProviderType(dp)	'FreeHandSQL'

Data Provider Function	Expected value for FHSQL Data Provider
IsPromptAnswered([dp;]prompt_string)	Determines whether a prompt has been answered for this data provider
LastExecutionDate(dp)	Date on which a data provider was last refreshed
LastExecutionDuration(dp)	Time in seconds taken by the last refresh of a data provider
LastExecutionTime(dp)	Time at which a data provider was last refreshed
NumberOfDataProviders()	Number of data providers in a report
NumberOfRows(dp)	Number of rows in a data provider
QuerySummary(dp)	Empty string ('')
RefValueDate()	Date of the reference data used for data tracking
RefValueUserResponse([dp;]prompt_string[;Index])	Response to a prompt when the reference data was the current data
UniverseName(dp)	Empty string ('')
UserResponse([dp;]prompt_string[;Index])	Response to a data provider prompt

3.2.11.5 Unsupported keywords in FHSQL SQL statements

Web Intelligence does not support certain DDL SQL keywords or commands in FHSQL SQL statements.

The unsupported DDL SQLs keywords and commands are:

- DROP TABLE [table]
- TRUNCATE TABLE [table]
- DELETE FROM «table» WHERE [condition]
- CREATE TABLE [table]
- ALTER TABLE [table]
- INSERT
- UPDATE

3.2.12 Building queries on Analysis View data sources

SAP BusinessObjects Analysis is an OLAP analysis tool that allows users to interactively define analyses to explore data in OLAP data sources.

Users can export data in their analysis as Analysis Views, for use in other applications including SAP BusinessObjects Web Intelligence.

You can build queries on Analysis Views to analyze their data in Web Intelligence documents. The data in the Analysis View appears in the *Query Panel* as report objects such as hierarchies, dimensions and attributes.

> **Note**
>
> Queries built with SAP BusinessObjects Analysis and based on SAP HANA views are not supported in Web Intelligence. In general, Analysis Views with custom objects are not supported. Only analysis views coming directly from SAP BW are supported.

3.2.12.1 To build a query on an Analysis View

You can build a query on an Analysis View in the Web Intelligence Applet interface or Web Intelligence Rich Client.

1. Open a Web Intelligence document in *Design* or *Data* mode, select *Data Access* > *New* > *From Analysis View* to display the *Select an Analysis View* dialog box.
2. To build a query using a text file, do one of the following:
   - Click *New* in the *File* menu, select *Analysis View* and click *OK*.
   - In the *Create a new Web Intelligence Document* dialog box, select *Analysis View* as the data source.
   - In the *Data Access* tab, in the *Data Providers* subtab, select *From Analysis View* from the *New Data Provider* dropdown list.
3. Select the folder containing the Analysis View from the *Folders* list.
4. Select the Analysis View in the Side Panel.
   The *Query Panel* appears, displaying the data in the Analysis View as a report object.
5. Click *Run Query*. When you have more than one query and you want to run just one query, click *Run Queries* and select the query that you want to run.

3.2.13 Building queries on web service data sources

In the Web Intelligence Rich Client, the Web Services plug-in enables you to create a document using "Document as a Web Service" (DaaWS) as a data source.

> **Note**
>
> You cannot use web service data sources in documents in the Web Intelligence Applet or HTML interfaces.

Although this plug-in is developed for DaaWS consumption, it can also be used for generic Web Service with the following properties:

- Simple Object Access Protocol (SOAP) 1.1
- Web Services Description Language (WSDL) 1.0
- Document and RPC literal
- Public WSDLs

For generic web services, Web Intelligence Rich Client does not support:

- Schemas with cyclic references
- Nested imports, only one level of imports is supported

- Attribute elements in an XML schema
- Schemas referring to specific platforms like Microsoft or Java types like: `http://microsoft.com/wsdl/types/`, maps, objects and so on.

> **Note**
>
> For information on how to develop, configure, and deploy Custom Data Provider Plug-in, see the *Custom Data Provider Plug-in Developer Guide*.

3.2.13.1 Prerequisite for using the Web Service plug-in

Before you use the Web Service plug-in to create a Web Intelligence document, the BI administrator must ensure you have a DaaWS or a generic web service WSDL as input to the Web Service plug-in. DaaWS exposes a set of Web Intelligence report part contents as a web service that can be called within and outside of Web Intelligence clients.

For more information on creating a DaaWS WSDL, see the related topic below.

Related Information

Sharing content with other applications [page 779]

3.2.13.1.1 Proxy settings for the Web Service plug-in

When using internet proxy server to access any URLs or WSDLs through the Web Service plug-in, the BI administrator must update the proxy settings in the `net.properties` file located at: `<BOBJ_INST_DIR>/SAP BusinessObjects Enterprise XI 4.1/win64_x86/jdk/jre/` with the following information:

- Provide the values for the following HTTP parameters:

```
http.proxyHost= <http proxy hostname>
http.proxyPort=<http proxy port number>
http.nonProxyHosts=<http hosts for which proxy is not
required>
```

  Where:
  - `proxyHost` is the name of the proxy server. For example, `proxy.mydomain.com`
  - `proxyPort` is the port number to use. By default, the value is 80.
  - `nonProxyHosts` is list of hostnames separated by '|' which can be accessed directly within the network, ignoring the proxy server. The default value is: localhost & 127.0.0.1
- Provide the following values for HTTPS parameters:

```
https.proxyHost=<http proxy hostname>
https.proxyPort=<http proxy port number>
```

Where:

- `proxyHost` is the name of the proxy server. For example, `proxy.mydomain.com`
- `proxyPort` is the port number to use. By default the value is 443. The HTTPS protocol handlers use the http `nonProxyHosts` list.

> **Note**
>
> The `.pac` files are not supported. The BI administrator has to explicitly configure the proxy server in the proxy settings.

3.2.13.2 To build a query based on a web service

You can build queries that use Document as a Web Service (DaaWS) or any generic web service as a data source.

1. Launch Web Intelligence Rich Client and connect to the CMS that is configured for web services.
2. To build a query using a web service as a data source, do one of the following:
   - Click *New* in the *File* menu, and select *Web Services*.
   - In the *Create a new Web Intelligence Document* dialog box, select *Web Services* as the data source.
   - In the *Data Access* tab, in the *Data Providers* subtab, select *From Web Service* from the *New Data Provider* dropdown list.
3. Enter the URL from the QaaWS service in the *Source Path* text box and click *Submit*.

   > **Note**
   >
   > This URL must be to a CMS enabled for web services.

   Sample URL: `http://dewdftv00458q.dhcp.corp:80/ dsws/qaawsservices/biws?WSDL=1&cuid=AcFqxUlcxKVPtBMyI4M1ziY`

   Where:

   Server name: `http://dewdftv00458q.dhcp.corp:80/`

   Web service: `dsws/qaawsservices/biws?WSDL=1&`

   CMS ID: `cuid=AcFqxUlcxKVPtBMyI4M1ziY`

   The *Service Details* and *Message Details* sections appear in the same dialog box.
4. In the *Service Details* section, set the following if they are not configured by default:
   a. From the *Service Name* dropdown list, select the QaaWS service.
   b. From the *Port Name* dropdown list, select the port name.
   c. From the *Operation Name* dropdown list, select the operation name.
5. To enable SSO authentication, select the *SSO Enabled* check box.

   > **Note**
   >
   > If SSO has not been enabled on the CMS, this option is not visible in the dialog box.

   If you select the *SSO Enabled* check box, the login and password cannot be configured.

In SSO authentication, the session ID of Web Intelligence is used for authentication. When you log onto Web Intelligence Rich Client using the Windows NT or Standalone authentication mode, the SSO option is disabled. Hence, you must enter the login credentials to access the web service. When logging into Web Intelligence Rich Client using any other authentication modes, you can either provide login and password information or use the SSO authentication mode to access web services.

> **Note**
>
> The SSO authentication is supported only if the Web Intelligence Rich Client is connected to the CMS on which the web service is deployed. Otherwise, you must provide login credentials to access the web service. If the Web Intelligence Rich Client is connected to a different CMS, you cannot refresh the documents created by using SSO authentication.

6. If you are not using SSO authentication, provide authentication details:
   a. If the *SSO Enabled* option is available in the dialog box, ensure that it is not selected.
   b. In the *Message Details* section, from the *Input Message* list, select *login*, enter the CMS user name in the "Enter Value" text box.
   c. In the same list, select *password*, enter the password for the CMS user in the *Enter Value* text box, and click *Apply*.
7. To set a report filter for the GetReportBlock operation, do the following:
   a. In the *Message Details* section, from the *Output Message* list, click + to expand the dimension on which a filter has to be applied.
   b. Select an object, enter a value in the *Enter Value* text box, and click *Apply*.
   c. Select *operator*, and select a value from the *Select Value* dropdown list.

   > **Note**
   >
   > Specify the value and operator only for the dimensions to which you want to apply the filter.
8. To set filters for a generic web service, do the following:
   a. In the *Message Details* section, from the *Input Message* list, select an input field, enter a value in the *Enter Value* field.
   b. In the *Output Message* list, select output fields.

      You must select at least one field in the *Output Message* panel. To select multiple fields in the *Output Message* panel, press the `Control` key, and select the fields.
9. Click *Next*.

> **Note**
>
> You can use the *Reset* button to remove the value for each field in the *Message Details* section of the *Select Web Service details* panel. The *Reset All* button can be used to remove the values for all the fields in the *Message Details* section.

The *Query Panel* appears. Save the query and configure it as necessary.

Related Information

BI service structure [page 784]

GetReportBlock_<blockname> [page 785]
Drill_<blockname> [page 788]

3.2.13.3 To edit a query based on a web service

1. In Web Intelligence Rich Client, open the document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
3. Edit the following query parameters in the *Query Panel*:
   - *Object Properties*: You can edit the object properties such as name, qualification, type, aggregate function, and aggregate dimension.
   - *Query Properties*: You can edit query properties such as *Name*, *Source URL*, *Refreshable*, and *Editable*.

     > **Note**
     >
     > If you edit the source URL in the *Query Panel*, ensure that the new URL from the QaaWS service has the same structure as the WSDL that it replaces.

   - *Query Definition*: You can edit the query definition by clicking *Edit settings*.
4. Click *Run query* to apply your changes.

A new report is displayed.

For information on creating Custom Data Provider plug-in, see the *Custom Data Provider Plug-in Developer Guide*.

3.2.14 To create a query on a different data source in an existing document

If you have the right to edit queries in the Web Intelligence Rich Client or Applet interface, then you can selected additional data sources in an existing document.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, select a data source from the *New Data Provider* dropdown list.
3. Build and run the query.

Related Information

Changing the data source of a query [page 158]

3.2.15 The Data mode in Web Intelligence

You can use the *Data* mode in the Web Intelligence Applet interface and Web Intelligence Rich Client to view, explore and manage all the queries in a document.

In *Data* view, only the toolboxes in the *Data Access* tab are available.

> **Note**
>
> *Data* mode is not available in the Web Intelligence HTML interface.

3.2.15.1 To view and filter the data in a data provider

You can filter data in a data provider based on the values you specify.

1. Open a Web Intelligence document in Web Intelligence Rich Client or the Web Intelligence Applet interface in *Data* mode.
2. Double-click a data provider to open it.

   > **Note**
   >
   > If the data provider contains multiple contexts or grouping sets, they appear in a dropdown list at the top right of the list pane. Each context or grouping set appears as *Result n*. Select a context or grouping set from the list to display its data.

3. To filter the data, click the arrow on a column header and do one of the following:
   - Select a value from the dropdown list.
   - Select *Custom* and define a custom filter.
     A custom filter contains a filter operators and values that you select from the list of values or type directly. The number of values you can specify depends on the operator.
     The custom filters are as follows:

Operator	Description
is anything	The data is not filtered.
is	The data is equal to a single value, which is the same action as selecting a single value from the dropdown list.
does not equal	The data is not equal to a single value. All values apart from that value are displayed.
is in	The data is in a list of values. Only the selected values are displayed.
is not in	The data is not in a list of values. All values apart from the selected values are displayed.
is empty	Only rows with empty values are displayed.
is not empty	Only rows with non-empty values are displayed.

Operator	Description
begins with	Only rows that begin with the text you type are displayed.
ends with	Only rows that end with the text you type are displayed.
contains	Only rows that contain the text you type are displayed.
does not contain	Only rows that do not contain the text you type are displated.

The filter also restricts the display in the other column. For example, if you filter the column for the Customer dimension to show three values only, the Order Amount column displays only the values that correspond to the remaining Customer values.

3.2.15.2 To switch to Data mode

In the Web Intelligence Applet interface or Web Intelligence Rich Client you can access the *Data* mode.

1. Open a Web Intelligence document in the Web Intelligence Applet interface or Web Intelligence Rich Client.

   > **Note**
   >
   > *Data* mode is not available in the Web Intelligence HTML interface.

2. Click *Data* in the top toolbar.
   The data providers used in the query are listed, along with information about the data provider, such as the number or rows it contains and its last refresh date.

3.2.15.3 To manage queries using the Data Manager

You can view, explore and manage all the queries in a document using the *Data Manager*.

The *Data Manager* lists all the queries and allows you to perform actions such as renaming a query or changing the source of the data on which a query is based.

1. Open a Web Intelligence document in Web Intelligence Rich Client or the Web Intelligence Applet interface in *Data* mode.
   The *Data* mode lists the objects in the selected query. Only the toolbox items relevant to managing queries are available.
2. Do one of the following:
   - To refresh a query, right-click it in the list and select *Refresh*.
   - To edit a query, right-click it and select *Edit*, or in the *Data Providers* tab, click *Edit*. The *Query Panel* for the query you selected appears.
   - To purge a query of data, do one of the following:
     - Right-click it and select *Purge* from the menu.
     - Click *Purge* in the *Data Provider* tab.

- To delete a query, right-click it in the list and select *Delete*.
- To rename a query, right-click it and select *Rename*, then type the new name.
- To copy a query, right-click it in the list and select *Copy*.
- To change the data source:
  - In the list of data providers, right-click the query whose source you want to change and select *Change Source*.
  - In the *Data* tab in the Side Panel, right-click the data source or query and select *Change Source*.
  - In the *Data Access* tab, in the *Tools* tab, click *Change Source* and select the query whose source you want to change. In the case where you are changing the data source for more than one query based on the same data source, select one of the queries that uses that data source.

The *Change Source Wizard* appears. See To change the data source of a query [page 162] for information on using this wizard.

Related Information

Changing the data source of a query [page 158]

3.2.16 To open for edit the data provider of an existing query

If you are able to edit queries, then you can open the Query Panel to edit the data provider.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. Do one of the following:
   - In the toolbar above the Side Panel, click the *Edit data provider* button ().
   - In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.

The *Query Panel* appears.

3.2.17 To set the keydates of queries

You can set keydates in a query that uses an SAP BW data source.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, select *Keydates*.
3. Select *Use the default date for all queries* to set each query to its default keydate.
4. Select *Set date for all queries* and choose the date to specify a keydate for all queries.
5. Select *Prompt users when refreshing data* to display a prompt for the keydate whenever a query containing a key date is refreshed.

To change keydate value variables, open the query for edit in the *Query Panel* and click the *Set Variables* icon.

3.2.18 To preview query results

You can activate a preview pane in the *Query Panel*.

You have defined the result objects and filter objects in the *Query Panel*.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. Click *Show/Hide Data Preview Pane* on the *Query Panel* toolbar to display the *Data Preview* pane.

3.2.19 To sort query results

You can sort the results returned by a query.

The sorts are added directly to the script generated by the query and the database returns the query results already sorted.

For example, sorts added to queries that generate SQL appear in the `ORDER BY` clause of the generated SQL.

> **Note**
>
> Sorting is not available in queries based on OLAP data sources.

1. In a Web Intelligence document in *Design* or *Data* mode, open the Data Provider for edit.
   The *Query Panel* appears.
2. Click *Sort* on the *Result Objects* toolbar to display the *Sort* dialog box.
3. Click *Insert sort object* and select an object in the *Select an Object* dialog box.
4. Select the sort direction from the *Sort type* list.
5. Repeat the previous steps to add additional sorts to the query.
6. Select an object and click *Delete selection* to remove a sort from the query, or click *Delete All* to remove all sorts from the query.
7. Click *OK* to close the *Sorts* dialog box.
   The sorts are added to the script generated by the query.

Related Information

To open for edit the data provider of an existing query [page 154]

3.2.20 Interrupting and canceling queries

You can interrupt or cancel a query before all the data is returned to the document and choose the data you want to display.

When you click *Cancel* in the *Retrieving Data* dialog box, in most cases Web Intelligence directs the database to stop processing the query and gives you back control of the document.

Query cancellation relies heavily on the type of database Web Intelligence is running on. Not all databases can interrupt queries which can impact the behavior of Web Intelligence. The cancellation is either handled by the database itself or by Web Intelligence.

Databases that support query cancellation are listed below.

- Relational
- OLAP
- SAP HANA Direct Access
- Personal Data Providers

When a database supports query cancellation, it interrupts the query which allows Web Intelligence to give you back control of the document. The returned results are partially updated and the values displayed in the document do not accurately reflect the definition of the query.

When a database does not support query cancellation, the query cannot be interrupted. Web Intelligence still gives you back control of the document, but the abandoned query continues to run in the background. To avoid slowing down both database and Web Intelligence performance, the limit of abandoned queries has been set to 10 by default.

If you try to cancel a query after this limit has been reached, Web Intelligence only gives you back control of the document when one of the other abandoned pending queries is complete, or when the current query refresh action is complete.

> **Note**
>
> In the Web Intelligence HTML interface, when you cancel an ongoing query, the Web Intelligence HTML interface returns to the previous state of the document, and the option to interrupt data retrieval is not available.

BW databases

BW databases are a specific case. They do not support query cancellation after you have ordered a refresh command. When you cancel a query, Web Intelligence sends a cancel order to the database so that you can get back control of the document. However, the refresh action will still be carried out and completed in the background by the database.

3.2.20.1 To interrupt or cancel a query

You can use Web Intelligence to interrupt or cancel a query.

1. In a Web Intelligence document, click the *Refresh* icon.
2. In the *Retrieving Data* dialog box, click *Cancel*.
3. Select one of the following options in the *Interrupt Data Retrieval* dialog box:

Option	Description
Restore the results from the previous data retrieval.	Restores the values to the document that were retrieved the last time the query was run or when the query was abandoned. The values displayed will not be the most up-to-date information available on the database. You can run the query later to retrieve the up-to-date values from the database.
Purge all data from the document.	Displays the document empty of values. The structure and formatting of the document is retained. You can run the query later to return the up to date values from the database.
Return the partial results.	Displays the new values retrieved so far in the appropriate parts of the document. The rest of the document will display the values retrieved the last time the query was run or abandoned.

4. Click *OK*.

3.2.21 To remove a query

You can remove a query in the *Query Panel*.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. At the bottom of the *Query Panel*, select the tab for the query you want to remove.
4. Right-click and select *Delete*.
5. Click *Run Query*.

Related Information

To open for edit the data provider of an existing query [page 154]

3.2.22 To duplicate a query

You can duplicate a query in the *Query Panel*.

You must run the query first before you are allowed to duplicate it.

> **Tip**
>
> If you want to build a different query on a universe already included in the document, instead of starting from scratch, duplicate the existing query on that universe and then modify it.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. At the bottom of the *Query Panel*, select the tab for the query you want to duplicate.
4. Right-click the tab and select *Duplicate*.
5. Click *Run Query*.

Related Information

To open for edit the data provider of an existing query [page 154]

3.2.23 Changing the data source of a query

You can change the data source of a query using the *Change Source Wizard*.

The *Change Source Wizard* is useful, for example, when you want to develop a document on a universe in a test environment, and then change to the universe when it has been moved or copied to the production environment.

You can also use the *Change Source Wizard* to change the source of a universe created with the universe design tool (UNV) to the same universe when migrated to the information design tool (UNX).

When you change the data source, you must map the objects coming from the current data source and used in the document to objects in the target data source.

> **Restriction**
>
> The *Change Source Wizard* is not available for Free-hand SQL queries, Excel, CSV, Text files, Analysis Views, and Web Service data sources.

New supported paths in 4.2 SP3

In the 4.2 SP3 release, additional paths are supported:

- SAP BW Direct Access > SAP BW Authored Universe
- SAP BW Direct Access > SAP HANA Direct Access
- SAP HANA Authored Universe > SAP HANA Direct Access

The following table lists the data source options supported by the *Change Source Wizard*.

Table 70:

Source	Target				
	UNV universe	UNX universe on relational data source	UNX universe on OLAP data source	UNX BEx query universe	SAP HANA Direct Access
UNV universe	Yes	Yes	Yes	Yes	Yes
UNX universe on relational data source		Yes	Yes	Yes	Yes
UNX universe on OLAP data source		Yes *	Yes	Yes	Yes
UNX BEx query universe		Yes	Yes	Yes	Yes
SAP HANA Direct Access		Yes	Yes	Yes	Yes

* When changing between these two sources, extensive remapping of objects may be required.

When you change the document from any data source type to a BEx query that has mandatory variables with no default values, Web Intelligence applies the most appropriate values to the variables.

> **Note**
>
> When using an Excel, Free-hand SQL, web service, CSV or Text data source, the *Change Source* option is not available. Open the *Query Panel*, and in the *Query Properties* tab, select a different *Source Path* file.

Related Information

Object validation rules [page 161]
Web Intelligence mapping strategies for data sources [page 159]

3.2.23.1 Web Intelligence mapping strategies for data sources

The Web Intelligence *Change Source Wizard* uses a list of criteria to map objects in data sources.

By default, the *Change Source Wizard* uses the following mapping order strategy.

Table 71:

Strategy Name	Strategy Description
Same ID	To map with a valid object that has the same ID
Same technical name	To map with a valid object that has the same technical name, if it exists.

Strategy Name	Strategy Description
Same path	To map with a valid object that has the same path, the path including both the objects name and type.
Closest name	To map with a valid object that has the closest name. If Web Intelligence encounters several objects with the same name but different object types, then it selects the first one in list based on the ID.
Same name	To map with a valid object with exactly the same name.

The *Change Source Wizard* applies these strategies in the following order, until it finds an object to map in the target data source:

- Same ID
- Same technical name
- Same path
- Closest name

If no matching object is found in the target data source, the *Change Source Wizard* flags it for removal. However, you can still select the strategies to apply.

Mapping results

Depending on the number of objects in your query, it can take a few seconds for Web Intelligence to show the list of mapped objects. You can check the results of the mapping with the *Change Source Wizard*. The icons displayed next to each object that has been mapped indicate the result of the mapping.

Table 72: Change Source Wizard object map icons

Object map icon	Description
	The object has been mapped successfully..
	The object has been mapped, however the path is ambiguous. An ambiguous mapping occurs when the current data source object does not have the same name or path as the recommended object in the target universe. This icon remains even if you decide to manually map the object.
	A source object could not be found in the data source because either the data source is no longer available or the object was removed from the data source.
	The source object type could not be deduced from the current context.

Object map icon	Description
	Web Intelligence cannot map this object to any object in the target data source. The object appears as *Remove object* in the target data source. **⚠ Restriction** If you do not assign to it an object from the target data source, the unmapped object is permanently removed from the query when you complete the data source change.

Related Information

Changing the data source of a query [page 158]
Object validation rules [page 161]

3.2.23.2 Object validation rules

The change source algorithm enforces rules that define what objects are valid for mapping.

Combined with the selected strategies, the following rules can help you fine-tune the change of data source:

- A validation rule based on object type
- A validation rule based on object data type

Table 73: Mapping setting options

Mapping settings	Description
Same object type only	Select this option to map to an object of the same type.
Similar object type	Select this option to map to an object that is of a similar type. When you select this option, the following rules apply: • A dimension can only be mapped to a hierarchy, a level, a dimension attribute or a measure attribute. • A dimension attribute can only be mapped to a dimension. • A dimension or measure attribute can only be mapped to a dimension. For example, if you want to convert a Dimension object to a Hierarchy object, you can choose *Similar object type* for the mapping setting.
Any object type	Select this option to allow a mapping to any object type.
Same data type only	Select this option to map to an object of the same data type.

Mapping settings	Description
Similar data type	Select this option to allow a mapping to an object of a similar data type. When you select this option, the following rules apply: • An object of data type Member to an object of any data type • An object of any defined type to an object of type Member • Object of type Date, DateTime, Time, or CalendarDate type to any object of type Date, DateTime, Time, or CalendarDate.
Any data type	Select this option to allow a mapping to an object of any data type.

Related Information

Changing the data source of a query [page 158]
To change the data source of a query [page 162]

3.2.23.3 To change the data source of a query

Where possible, current and target objects are mapped by default based on their name, object type, data type and location in the data source.

> **Note**
>
> - When using an Excel, Free Hand SQL, web service, CSV or Text data source, the *Change Source* option is not available. Open the *Query Panel*, and in the *Query Properties* tab, select a different *Source Path* file.
> - If the query contains custom SQL, it will be lost during the change source operation.

1. Do one of the following:
   - In the *Design* mode:
     - In the list of data providers, right-click the query whose source you want to change and select *Change Source*.
   - In the *Data* mode:
     - In the list of data providers, right-click the query whose source you want to change and select *Change Source*.
     - In the *Data* tab in the Side Panel, right-click the data source or query and select *Change Source*.
     - In the *Data Access* tab, in the *Tools* subtab, click *Change Source* and from the dropdown list, select the query whose data source you want to change.
2. Specify whether you want to work with an existing data source that is already used in the document or a new one.

   > **Note**
   >
   > When you have other queries in your document based on the data source you have selected, use the *Apply changes in all queries sharing the same data source* option to apply the data source changes to all these

queries. If you select this option, then the *Object Mapping list* shows all objects from all the queries in the same list.

3. Click *Next*.
4. Optional: If your target data source has mandatory HANA variables or BEx variables without default values, provide answers the prompts in the *Set Variables* or *Variable Manager* dialog boxes and click *OK*.
5. Define a mapping strategy order using the left and right arrows to add or remove strategies, and the up and down buttons to order them as you see fit.

   While editing the mapping strategy, you can also edit the mapping settings by clicking the *Settings* button. To know more about the mapping settings, refer to the *Object Validation Rules* section.
6. Click *Next*.
   Web intelligence displays the mapping results.
7. Optional: If you want to fine-tune the automatically generated mapping results, click the checkbox next to an object whose mapping you want to edit and click *Stategies* to create your own custom mapping strategy.

   > **Tip**
   >
   > You can also map an object manually. To do so, click the ... button next to an object you want to edit and select an object.
8. Click *Finish*.
9. Save the document to apply the change source.

Related Information

To open for edit the data provider of an existing query [page 154]
To edit a query based on a text file [page 96]
To edit a query based on an Excel file [page 97]
To build a query on an Analysis View [page 147]
Object validation rules [page 161]

3.2.23.4 Changing the source path of a custom data provider

When using an Excel file, Free-hand SQL or a text file as a data source, the *Change Source* option is not available. However you can change the source path of custom data providers. Changing the file path enables you to modify the access path to a custom data provider you are using as a data source. Change the source path whenever you have moved your original data source and need to indicate its new path.

In the *Query Properties* tab of the *Query Panel*, use the ... (browse) button to indicate a different source path. The new source path must point to the original data source. For FHSQL data sources, the browse button enables you to indicate any valid connection available.

> **Restriction**
>
> In the HTML interface of the 4.2 SP3 release, you cannot change the file path of an Excel data provider.

3.2.24 Working with multiple queries and data providers

You can include one or multiple queries in a document. These queries can be based on any supported data source.

For example, you can include product sales data and customer data in the same document. In this case, your corporate data for product line sales is available on one universe and customer data is available on another universe. You want to present product line sales results and information on customer age groups in the same report. To do this, you create a single document that includes two queries; one query on each universe. You can then include and format results from both queries in the same report.

Defining multiple queries in a single document is necessary when the data you want to include in a document is available in multiple data sources, or when you want to create several differently-focused queries on the same data source. You can define multiple queries when you create a document or add more queries to an existing document. You can present the information from all of the queries on a single report or on multiple reports in the same document.

> **Note**
>
> We recommend that you use no more than 15 data providers in a Web Intelligence document. The amount of data providers you use can affect the time it takes to refresh document data and even the performance of the Web Intelligence Report Server.

3.2.24.1 Multiple queries, combined queries and synchronized queries compared

Multiple queries can be related in a document in different ways.

- Basic multiple queries draw unrelated data from different sources.
- Synchronized queries relate the data from different queries around a dimension that contains data common to both queries. These dimensions are called merged dimensions.
  You merge dimensions after you have created and run your multiple queries.
- Combined queries generate SQL containing the `UNION`, `INTERSECT` and `MINUS` operators (if the database supports them) or simulate the effect of these operators.
  Combined queries allow you to answer complex business questions that are difficult to formulate using standard queries.

  > **Note**
  >
  > This option is not accessible for OLAP databases or for `.unx` relational databases. It is available only for `.unv` relational universes.

3.2.24.2 To add a query to an existing document

You can add queries to an existing document.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
   The *Query Panel* appears.
3. Click the *Add a combined query* icon in the toolbar.
4. Select a data source, if necessary.
5. Select objects for the additional query.
6. Click *Run Query*.
7. In the *New Query* box, specify in how the added data should be displayed:

Option	Description
Insert a table in a new report	Display the data in a new report in the document
Insert a table in the current report	Display the data in the currently selected report in a new table
Include the result objects in the document without generating a table	Include the data in the document without displaying the data on a report. **Note** You can add the objects returned by the query to the report later.

8. Click *OK*.

Related Information

To open for edit the data provider of an existing query [page 154]
To build a query on an Analysis View [page 147]
To create a query based on a BEx query that has no variables [page 116]
To build a query on a universe [page 67]
Building queries on data files [page 94]
To build a query based on a web service [page 149]

3.2.25 Refreshing queries in parallel

Parallel Data Provider Refresh feature improves data refresh performance in Web Intelligence documents that contain multiple data providers.

To refresh queries in parallel, Web Intelligence spreads all data providers on several threads. This feature is activated by default, and Web Intelligence can refresh up to 64 queries in parallel. Data providers based on relational, OLAP and BICS connections are supported, as well as personal data providers (text files, FHSQL).

Restriction

Excel data providers are not supported.

You can decrease that value in the Central Management Console if the hardware running Web Intelligence does not support such a workload. Make sure that your hardware has enough cores to guarantee optimal performance.

Two global parameters are available in the Central Mangement Console:

- *Maximum Parallel Queries per document*: set the maximum number of data providers Web Intelligence can refresh in parallel per document. The default value is set to 64.
- *Enable Parallel Queries for Scheduling*: enable or disable the parallel query processing when scheduling documents. This option is enabled by default.

We also encourage you to fine-tune each database connection with a parameter that lets you specify the number of queries that can be run in parallel. This parameter, called Maximum parallel queries, is available:

- In the Central Management Console or Information Design Tool for OLAP and BICS connections.
- In Information Design Tool or Universe Design Tool for relational connections.

For each connection, the number of data providers that can be refresh in parallel is set to 4 by default. The database administrator can change this value according to the database hardware. For text files however, the default value is set to 1.

Example

In this example, all default values have been kept and each connection supports a maximum of 4 parallel refresh jobs.

Table 74:

Connection	Number of Data Provider to Refresh
2 OLAP connections	6 (5 on Connection 1, 1 on Connection 2)
1 Relational conection	2
1 BICS connection	2
Excel files from a personal data provider	2

Both Excel files are refreshed sequentially as they are not supported by the parallel data provider refresh feature.

Four of the data providers of the of the first OLAP connection are refreshed in parallel on threads 1, 2, 3 and 4. The fifth one is queued and will be processed after one of the data provider (of any connection) has been refreshed, while the one coming from the second OLAP connection is refreshed on thread 5 since it is from a different connection.

The four data providers of both relational and BICS connection are refreshed in parallel on threads 5, 6, 7 and 8.

Note

Whenever there are more data providers of the same type than the defined value, they are queued and wait for other data providers to finish.

Related Information

To modify the number of data providers refreshed in parallel per document [page 167]
To disable parallel query processing for scheduling [page 167]
To modify the number of data providers refreshed in parallel for a specific OLAP connection [page 167]

3.2.25.1 To modify the number of data providers refreshed in parallel per document

1. On the CMC home screen, click *Servers*.
2. Click *Web Intelligence Services*.
3. Right-click *Web Intelligence Processing Server* and click *Properties*.
4. In the *Maximum Parallel Queries* entry field, enter a number.
   The possible values range from 0 to 64.

> **Note**
>
> If you enter 0, you disable the parallel data provider refresh function.

3.2.25.2 To disable parallel query processing for scheduling

1. On the CMC home screen, click *Servers*.
2. Click *Web Intelligence Services*.
3. Right-click *Web Intelligence Processing Server* and click *Properties*.
4. Uncheck *Enable Parallel Queries for Scheduling*.

3.2.25.3 To modify the number of data providers refreshed in parallel for a specific OLAP connection

1. On the home screen, click *OLAP Connections*.
2. Browse the connection you want to configure and right-click it.
3. Select *Organize* > *Edit*.
4. In the *Maximum Parallel Queries* entry field, enter a number.
   The possible values range from 1 to 64.

> **Note**
>
> If you enter 1, data providers will be refreshed sequentially.

3.2.26 Filtering data using query filters

Query filters are defined on the query; they limit the data retrieved from the data source and returned to the document.

Query filters allow you to:

- retrieve only the data you need to answer a specific business question
- hide the data you don't want specific users to see when they access the document
- minimize the quantity of data returned to the document to optimize performance

For example, you can filter the Year dimension to view only sales revenue for Year 2003; or filter the Annual Income dimension to view only customers whose annual income is equal to or greater than $1.5M.

> **Example**
>
> **In Q4 2002, which stores in my sales region gained margins above $130K?**
>
> As Regional Marketing Manager for Texas, you are only interested in analyzing margins for Texas, but the sales universe includes data US-wide. In addition, you only want to view information for stores where margins reached over your 4Q 2002 quarterly target figure of $130K. To create a document with only the information you need, you apply a filter on the State, Year, and Quarter dimensions and a filter on the Margin measure.

Table 75: Filter objects

AND	Year Equal to 2002
	Quarter Equal to Q4
	State Equal to Texas
	Margin Greater than or equal to 130000

To avoid displaying the filtered values Texas, 2002, and Q4 in the table columns Year, Quarter, and State, you exclude the Year, Quarter, and State objects from the Result Objects pane. When you generate the report, the report values correspond to Texas stores with 4Q 2002 margins greater than or equal to $130K:

Table 76:

Store name	Sales Revenue	Margin
e-Fashion Houston	307,914	133,802
e-Fashion Houston Leighton	316,232	136,055

Related Information

Using simple report filters [page 460]
To create simple report filters [page 460]

3.2.26.1 Structure of query filters

Query filters contain a filtered object, operator, and operand.

For example, in the filter `[Country] In list (US;France)`, the `[Country]` dimension is the filtered object, `In list` is the operator, and the list of values (`US;France`) is the operand. The filter removes all values of `[Country]` other than `US` and `France` from the query result.

Table 77: Query filter components

Component	Description
Filtered object	The Filtered object is the object whose values are filtered. Dimensions, attributes, measures, hierarchies and levels can be used as filtered objects. With the exception of BEx queries, the Filtered object is not required to appear as a result object in the query. For example, a query that contains the [Customer] and [Revenue] objects can filter on the [Region] object. If the filter is `[Region] Equal to "South West"`, the query returns only those customers in the South West region.
Operator	The Operator is used to compare the filtered object with the operand. For example, the *Equal to* operator retains only those values of the filtered object that correspond exactly to the value of the operand.
Operand	The Operand supplies the value or values used to filter the object. The next table describes the operand types.

Table 78: Operand types

Operand type	Description
Constant	The Constant operand is used to type values directly. For example, you can use a constant to type "France" into the filter `[Country] Equal to France`. The operand cannot be a constant if the Filtered object is a hierarchy, unless the hierarchy is used in conjunction with the `Matches pattern` or `Different from pattern` operator.
List of Values	The List of Values operand is used to select values from the list associated with the filtered object. For example, if the filtered object is [City], you can use List of Values to select one or more of the cities associated with the object.
Prompt	A Prompt is a dynamic filter that is answered when the query is refreshed.

Operand type	Description
Universe object	You can select an object from the universe to filter the filtered object against its values. **Note** You cannot select a universe object as an operand on some OLAP data sources or the filtered object is a hierarchy.
Result from another query	You can compare the filtered object against the values returned by another query.

Related Information

Building queries on BEx queries [page 97]

3.2.26.1.1 Query filter and prompt operators

You use operators to compare filtered objects.

The function of each operator depends on its context. Operators can perform mathematical operations and concave character strings, as well as perform a wide variety of comparisons yielding Boolean results.

3.2.26.1.1.1 Equal to operator

Use the `Equal to` operator to obtain data equal to a value.

For example, to return data for the US only, create the filter "[Country] `Equal to` US".

3.2.26.1.1.2 Not Equal to operator

Use the `Not Equal to` operator to obtain data not equal to a value.

For example, to return data for all countries except the US create the filter "County `Not Equal to` US".

Note

This operator cannot be used for OLAP `.unx` universe parent-child hierarchies or for BEx queries.

3.2.26.1.1.3 Greater than operator

Use the `Greater than` operator to retrieve data greater than a value.

For example, to retrieve data for customers aged over 60, create the filter "[Customer Age] `Greater than` 60".

> **Note**
>
> This operator cannot be used for OLAP `.unx` universe parent-child hierarchies or for BEx queries.

3.2.26.1.1.4 Greater than or Equal to operator

Use the `Greater than or equal to` operator to retrieve data greater than or equal to a value.

For example, to retrieve data for revenue starting from $1.5M, create the filter "[Revenue] `Greater than or equal to` 1500000".

> **Note**
>
> This operator cannot be used for OLAP `.unx` universe parent-child hierarchies or for BEx hierarchies.

3.2.26.1.1.5 Less than operator

Use the `Less than` operator to retrieve data lower than a value.

For example, to retrieve data for exam grades lower than 40, create the filter "[Exam Grade] `Less than` 40".

> **Note**
>
> This operator cannot be used for OLAP `.unx` universes, hierarchies in filters, or for hierarchies in BEx queries.

3.2.26.1.1.6 Less than or Equal to operator

Use the `Less than or equal to` operator to retrieve data less than or equal to a value.

For example, to retrieve data for customers whose age is 30 or less, create the filter "[Age] `Less than or equal` to 30".

> **Note**
>
> This operator cannot be used for OLAP `.unx` universes, hierarchies in filters or for hierarchies in BEx queries.

3.2.26.1.1.7 Between operator

Use the `Between` operator to retrieve data between two boundary values including the two boundary values.

The first value declared must be lower than the second value.

For example, to retrieve data for weeks starting at week 25 and finishing at 36 (including week 25 and week 36), create the filter "[Week] `Between` 25 and 36".

> **Note**
>
> This operator cannot be used for OLAP `.unx` universe or BEx hierarchies in filters.

3.2.26.1.1.8 Not between operator

Use the `Not between` operator to retrieve data outside the range of two values.

For example, to retrieve data for all the weeks of the year, except for and not including weeks 25 through 36, create the filter "[Week] Not between 25 and 36".

> **Note**
>
> This operator cannot be used for OLAP `.unx` universe or for BEx hierarchies in filters.

3.2.26.1.1.9 In list operator

Use the `In list` operator to retrieve data corresponding to values in a list of values.

For example, to retrieve data only for the US, UK and Japan, create the filter `[Country] In list`, when you can type values in the *Type a value* field, you enter **`US;UK;Japan`**.

When used in a query filter with a hierarchical list of values, either from a dimension associated with a hierarchical list of values or a hierarchy object, `In list` allows the selection of multiple members from any levels of the hierarchy. For example, a prompt on the [Geography] hierarchy using the `In list` operator allows the selection of [Paris] at the City level and [Canada] at the Country level in the prompt.

When used in a report filter, `In list` produces a flat list of values.

3.2.26.1.1.10 Not In List operator

Use the `Not in list` operator to retrieve data that does not correspond to multiple values.

For example, if you do not want to retrieve data for the US, UK and Japan, create the filter "[Country] `Not in list`". In the *Type a value* field, you enter **`US;UK;Japan`**.

When used with a hierarchical list of values, either from a dimension associated with a hierarchical list of values, a hierarchy object or a level object, `Not in list` allows the selection of multiple members from any levels of the hierarchy. For example, a prompt on the [Geography] hierarchy using the `Not in list` operator allows selection of [Paris] at the City level and [Canada] at the Country level in the prompt.

> **Note**
>
> This operator can only be used in certain types of hierarchies, for example, it can be used in level-based hierarchies.

3.2.26.1.1.11 Matches Pattern operator

Use the `Matches pattern` operator to retrieve data that includes a specific string or part of a string.

For example, to retrieve customers whose date of birth is 1972, create the filter [DOB] `Matches pattern` "1972".

If you're using a wildcard, use the "%" character for every data source, except for BEx data sources. For BEx data sources, use the "*" character.

> **Note**
>
> This operator cannot be used for BEx hierarchies.

3.2.26.1.1.12 Different From Pattern operator

Use the `Different from pattern` operator to return data that doesn't include a specific string.

For example, to retrieve customers whose date of birth is not 1972, create the filter [DOB] `Different from pattern` '72'.

> **Note**
>
> This operator cannot be used for BEx or OLAP `.unx` universe parent-based hierarchies.

3.2.26.1.1.13 Both operator

Use the `Both` operator to retrieve data that corresponds to two values.

For example, to retrieve customers who have both fixed and mobile telephone numbers, create the filter [Account Type] `Both` 'Fixed' And 'Mobile'.

> **Note**
>
> This operator is not supported for filters based on hierarchy objects, or in universes based on OLAP data sources.

3.2.26.1.1.14 Except operator

Use the `Except` operator to retrieve data that corresponds to one value and excludes another.

For example, to retrieve customers who have only a fixed telephone number and no mobile telephone number, create the filter [Account Type] 'Fixed' `Except` 'Mobile'.

The `Except` operator is more restrictive than `Different from` or `Not in list`. For example, a report that returns customers and that includes the filter `[Lines] Different From 'Accessories'` excludes all sales records where the item sold is part of the `'Accessories'` line. If the same customer has purchased `Accessories` and `non-Accessories` items, the customer still appears in the report, but their spending total includes only `non-Accessories` sales.

If the filter is `[Lines] Except 'Accessories'`, only customers who have bought no accessories are included in the report.

> **Note**
>
> This operator is not supported in universes based on OLAP data sources.

Related Information

Not In List operator [page 172]

3.2.26.1.1.15 Restrictions on filter operators

The following table lists the restrictions on prompt and filter operators based on the filtered object and query type.

Table 79:

Object	Available filters

Level-based hierarchy	`Equal to`
	`Not equal to`
	`In list`
	`Not in list`
	`Matches pattern`
	`Different from pattern`

Parent-child hierarchy	`Equal to`
	`In list`
	`Matches pattern`

Object	Available filters
Hierarchy in BEx query	`Equal to` `In list`

3.2.26.2 Types of query filter

Several types of query filters are available in Web Intelligence.

Table 80:

Query filter	Description
Predefined filters	Filters created by the BI administrator.
Custom filters	User-defined queries
Quick filters	A simplified form of custom filter.
Prompts	You can define these dynamic filters to display a question or a list of values so that you or other users can select different filter values at each run query.

You can mix different types of filters on a single query.

3.2.26.2.1 Predefined query filters

Predefined filters make the specific data you most typically need for reports permanently available.

They are created by a BI administrator and saved with the universe. Predefined filters often contain complex expressions that require a detailed knowledge of the database structure. Including predefined filters on the universe means you don't need to create the same custom filters every time you create a new document based on the same universe.

You cannot view the component parts of predefined filters or edit predefined filters.

3.2.26.2.1.1 Sets

A set filter is a predefined query filter that is defined directly on the universe. It combines data from multiple objects that you may use in a query, or want to include in more complex queries.

Sets are built in the information design tool by your universe designer, but are consumed in Web Intelligence. They allow you to build and combine multiple lists of values with their restrictions, into a single entity called a set filter that is available to in the *Query Panel*. Ultimately, the goal is to create complex query filters that return data that would normally require time and skill to build in the *Query Panel*. A set filter saves time and provides information that is not always easy to get to.

For more information on how to create and manage sets, refer to the *Information Design Tool User Guide*.

3.2.26.2.1.2 To select a predefined query filter

When you select a predefined query filter and run the query, the data corresponding to the query filter you selected appears in the report.

1. In a Web Intelligence document in *Design* or *Data* mode, open the Data Provider for edit.
   The *Query Panel* appears.
2. Double-click a predefined filter or drag it to the *Query Filters* pane.

Related Information

To open for edit the data provider of an existing query [page 154]

3.2.26.2.2 Quick filters

Quick filters allow you to quickly define the values you want to retrieve for a specific result object without launching the Filter Editor.

By default, Quick filters use the *Equal to* operator if you select a single value or the *InList* operator if you select multiple values.

For example:

- If you select the [Payment Status] dimension and the value **"unpaid?"**, you are creating the following filter:
  `[Payment Status] Equal to "unpaid?"`
- If you select the [Country] dimension and the values US, Japan, Germany, you are creating the following filter:
  `[Country] InList "US;Japan;Germany?"`

> **Note**
>
> Quick filters are not available in BEx queries.

Related Information

Building queries on BEx queries [page 97]

3.2.26.2.2.1 To create or remove a quick filter

You can create and remove quick filters in the *Query Panel*.

1. In a Web Intelligence document in *Design* or *Data* mode, open the Data Provider for edit.

The *Query Panel* appears.

2. Select the object you want to filter.
3. Click the *Add Quick Filter* icon in the top corner of the *Result Objects* pane.
   The *Add Quick Filter* dialog box appears. The values for the selected object are listed.
4. Select the values you want to retrieve from the database and click the arrow next to the *Selected Value(s)* list.

   For example, to filter the query for values in Q1, select the [Quarter] dimension, then select Q1 from the list of values.
5. Click *OK*
   The new filter appears on the *Query Filters* pane.
6. To remove the filter, select it in the *Query Filters* pane and press the *Delete* key.
7. Click *Run Query*.
8. Save the document.

Related Information

To open for edit the data provider of an existing query [page 154]

3.2.26.2.3 Custom query filters

You create custom query filters to limit document data to information corresponding to a specific business question or the business information needs of a specific group of users.

For example, you can create custom filters to retrieve sales results data for specific dates, products, or services, or to view customer information only for customers who are high wage earners or who live in a particular region.

3.2.26.2.3.1 To add and remove custom query filters

You can edit and remove custom query filters in the *Query Filters* pane.

1. In a Web Intelligence document in *Design* or *Data* mode, open the Data Provider for edit.
   The *Query Panel* appears.
2. Select the object you want to filter and drag it to the *Query Filters* pane.
   The query filter appears in an outline in the *Query Filters* pane.
3. Click the arrow next to the default operator (In list) and select a query operator from the list of operators.
4. Click the arrow next to the query filter and select the type of filter you want to apply:

Option	Description
Constant	You compare the object against a constant value to filter the query result.
Value(s) from List	You compare the object against values from a list of values to filter the query result.

Option	Description
	○ If the filtered object is a dimension, attribute or measure, you can select any of the values of the object. ○ If the filtered object is a hierarchy, you can select any members of the hierarchy. ○ If the filtered object is a level, you can select any member from the level.
Prompt	You create a filter which requires the user to supply filter values on data refresh.
Object from this query	You compare the object against the values returned by an object from in the same query.
Result from another query, *Result from another query (Any)*, *Result from another query (All)*	You compare the object against the values returned by an object from another query (the filtering query) to filter the query result.

5. Type/select the constant, list of values or object you want to include in the filter.
6. To remove the filter, do one of the following:
   - Select the filter and press *Delete* on your keyboard.
   - Click *Remove* in the top corner of the *Query Filters* pane.
   - To remove all filters, click *Remove All* in the top corner of the *Query Filters* pane.

Related Information

To open for edit the data provider of an existing query [page 154]

3.2.26.2.3.2 To select values from a list of values

When selecting from a list of values in a query, items in the list can appear either as a single or multi-column list or a hierarchy, depending on the object.

In a multi-column list, additional columns provide related values to the main value. In a hierarchical list, values appear in a hierarchical relationship.

When you refresh a document with prompts, lists of values for the prompts appear in a flat list without multiple columns.

1. In a list of values, select items that you want to appear.
   - If the list of values does not appear when a dialog box opens, refresh the list, or search the list to retrieve values. Some list of values require an initial search to display values because the list is too large to be loaded in full.
   - If the list of values is divided into ranges, use the control above the list to navigate through the ranges. Some large lists of values are divided into ranges to reduce the amount of data retrieved from the database. When you select a range, the list displays the values in that range.
   - If the list of values depends on other lists of values, specify the dependent values in the prompt dialog box that appears. A list of values can be dependent on other lists of values, for example when it is part of a hierarchical list of values. For example, if the list of values contains cities, and the City object is part of the

hierarchy Country > Region > City, you need to specify values for country and region first to filter the list of cities.

> **Note**
>
> Dependent lists of values appear in queries only. They do not appear when you are selecting from a list of values in a report.

When you first display the list of values, you see the *Prompts* dialog box in which you specify the dependent values. Once you have specified the dependent values, you can select the values from the filtered list.

- To display the value keys in OLAP or BEx queries, click *Show/hide key values*.
  Key values are not indicated in the list of *Selected Values*, only in the list of available values. Some lists of values contain key values, which are unique values that can be used to identify values with the same display value. If the list of values contains multiple columns, only the key of the filtering column is displayed.
- To search for values in the list, type the search text in the box below the list and select one of the following options from the *Search* icon dropdown list.

Table 81:

Option	Description
Match case	The search is case-sensitive. This option is not available when the *Search in keys* or *Search on database* options are selected.
Search in keys	The search uses unique value keys rather than display values. This option is available only in lists of values that support key values.
Search on database	The search includes all values stored in the database rather than being restricted to the values loaded into the list. It improves search accuracy but reduces search speed. This option is available only in lists of values that support database searches. Database searching improves search accuracy at the cost of performance. It is useful when not all values in the list of values were retrieved. This can happen when the total number of values in the list exceeds the *Max rows retrieved* query property. Database searching is particularly useful when the list of values is hierarchical because values are loaded from the database only in response to their parent value being expanded in the hierarchy. For example, in a geographical hierarchy, the child values of the California value (cities in California) are not loaded from the database until the value is expanded. If the option is selected, the search includes these items even when the California value has not been expanded.

The search includes all ranges if the list of values is divided into ranges.
In search patterns, the '*' wildcard represents any string of characters and the '?' wildcard represents any single character. For example, the value "March" can be returned by the search patterns "M*" or "Mar?h".

To include the "*" and "?" characters literally rather than as wildcards, precede them with "\" in the search pattern.

- Type values from the list directly if the list supports direct data entry or select values from the list.

2. Click *OK* or *Run Query*, as applicable.

Related Information

Max rows retrieved query property [page 85]
Selecting prompt values in the Prompts dialog box [page 464]

3.2.26.2.3.3 Filtering a query on values returned from another query

You can filter a query on values returned from another query.

> **Note**
>
> When using query filters based on values returned from another query with a large amount of data, performance can be affected due to converting and formatting operations. We recommend using query filters based on values returned from another query only when you are working with small data sets.

For example, if you want to return results for all the countries in Query 1 that have a corresponding country in Query 2, you can filter the `[Query 1].[Country]` object on the values of the `[Query 2].[Country]` object.

The filtered query must be in a universe based on a relational (RDBMS) data source. The query that supplies the filtering values (filtering query) can be based on a relational, OLAP or local data source.

When you are building a query on a query, the filtering query does not appear in the list of queries that can be used as filtering queries until it has been run or saved.

The query filter can filter against all or any of the values returned by the filtering query. The supported combinations of operator and filter mode appear in the table below. If you do not choose an operator from the table, the *Result from another query* menu item is not available.

Operator	Filter mode	Description
Equal to	Any	Keep values in the filtered query that are equal to any value returned by the filtering query.
Not equal to	All	Keep values in the filtered query that are different from all the values returned by the filtering query.

Operator	Filter mode	Description
Greater than Greater than or equal to	Any	Keep values in the filtered query that are greater than/greater than or equal to any of the values in the filtering query. In other words, keep values in the filtered query that are greater than/ greater than or equal to the minimum value returned by the filtering query.
Greater than Greater than or equal to	All	Keep values in the filtered query that are greater than all of the values in the filtering query. In other words, keep values in the filtered query that are greater than/ greater than or equal to the maximum value returned by the filtering query.
Less than Less than or equal to	Any	Keep values in the filtered query that are less than/less than or equal to any of the values in the filtering query. In other words, keep values in the filtered query that are less than/less than or equal to the maximum value returned by the filtering query.
Less than Less than or equal to	All	Keep values in the filtered query that are less than/less than or equal to any of the values in the filtering query. In other words, keep values in the filtered query that are less than/less than or equal to the minimum value returned by the filtering query.
In list	Any	Keep values in the filtered query that are equal to any value in the list of values returned by the filtering query.
Not In list	Any	Keep values in the filtered query that are not equal to any of the values in the list of values returned by the filtering query.

3.2.26.2.4 Combining query filters

You can retrieve data that answers several criteria by combining filters in the same query.

Typical business questions require you to retrieve information that matches more than one criteria. For example, if you are analyzing customer services data, you will most likely want to focus on customers for a specific time period and also for a specific region, and probably also for a specific level of customer service contract.

Example

Analyze sales revenue this year at stores where the floor size is over 4,000 square feet and sales revenue figures are equal to or less than $1.5M

In this example, you are an operations manager for a retail chain. You want to analyze information about the large retail stores in your chain that are making less than the sales revenue figure your company has set as the target.

To do this:

1. Add a predefined filter on the [Year] dimension to specify that you only want to retrieve values for this year.
2. Create a second filter on the [Sales Floor Size] dimension to specify that you only want to retrieve data for stores where the floor size is greater than 4,000 square feet.
3. Create a third filter on the [Sales Revenue] measure to specify that you only want to retrieve data for stores where the sales revenue figures are equal to or less than $1.5M.
4. Combine these three filters with the `And` operator:

Table 82:

`And`	Last Year
	Sales Floor Size Group Greater than or equal to: 4000
	Sales Revenue Less than 1,500,000

When you run the query, only data for stores that satisfy all three criteria will be returned to the report.

Related Information

To combine query filters [page 182]
Nested query filters [page 183]

3.2.26.2.4.1 To combine query filters

You can combine query filters in the *Query Filters* pane.

1. In a Web Intelligence document in *Design* or *Data* mode, open the Data Provider for edit.
   The *Query Panel* appears.
2. Create the filters and add them to the *Query Filters* pane.

Filters are combined by default with the `And` operator.

3. Click the operator or the arrow next to the operator checkbox and select the other operator to toggle between `And` and `Or`.

> **Note**
>
> The `Or` operator is not supported from some OLAP data sources such as BEx queries, and OLAP `.unx` universes on the top of Microsoft Analysis Services (MSAS) and Oracle Essbase.

Related Information

Combining query filters [page 182]
To open for edit the data provider of an existing query [page 154]

3.2.26.2.4.2 Nested query filters

Nested query filters allow you to create more complex filter conditions than is possible when you combine filters at the same level.

When you nest filters, you set the order in which they are evaluated. For example, you can return the data given by two query filters joined in an `Or` relationship (where either one filter condition or the other is true) and then further restrict this data by applying another filter to it. In this case, the two filters in an `Or` relationship are nested, then compared with the other filter in an `And` relationship.

> **Example**
>
> **List all sales made in Japan either in Q4 or where the revenue was greater than 1000000**
>
> To answer this question, you create the following nested query filter:
>
> Table 83:

`And`	Country Equal To Japan	
	`Or`	Quarter Equal To Q4
		Revenue Greater Than 1000000

> This combination of query filters first returns sales data where the sale was made in Q4 or the revenue was greater than 1000000, then restricts this data further by returning only those sales made in Japan.

Related Information

To nest query filters [page 184]
Combining query filters [page 182]

3.2.26.2.4.2.1 To nest query filters

You can create nested query filters in the *Query Panel*.

1. In a Web Intelligence document in *Design* or *Data* mode, open the Data Provider for edit.
   The *Query Panel* appears.
2. Drag and drop a report object onto an existing query filter.
   A query filter outline on the report object appears in a nested *AND* relationship with the existing query filter.
3. Define the new query filter.

Related Information

To open for edit the data provider of an existing query [page 154]
Nested query filters [page 183]
Combining query filters [page 182]

3.2.26.3 How levels filter hierarchical queries

A level used as a query filter removes the specified members from the level and all their child members from the hierarchy.

The filter also impacts measure aggregation.

Example

Filtering on a level

You have the following data on which the level filter `[Country] Not equal to Germany` is applied.

You apply the filter by dragging the [Country] level to the *Query Filters* pane in the *Query Panel*, selecting the *Not equal to* operator and selecting "Germany" from the list of values of the level.

Table 84:

Customer Geography			Internet Sales Amount
All Customers			$29,358,677.22
	France		$2,644,017.71
		Hauts de Seine	$263,416.19
		Seine (Paris)	$539,725.80
	Germany		$2.894,312.34
		Brandenburg	$119,871.08
		Hessen	$794,876.08

After filtering, the data appears as follows:

Table 85:

Customer Geography			Internet Sales Amount
All Customers			$26,464,364.88
	France		$2,644,017.71
		Hauts de Seine	$263,416.19
		Seine (Paris)	$539,725.80

When the filter is applied, Germany and all descendant members are filtered from the hierarchy. The value of `[Internet Sales Amount] for All Customers` is also reduced because the value for Germany is no longer part of the aggregation.

3.2.26.4 How measures filter hierarchical queries

A filter on a measure applies to all levels in a hierarchy and does not impact measure aggregation in the filtered result.

Example

Filtering on a measure

You have the following data, to which you apply the filter `[Internet Sales Amount] Greater than 500,000`.

Table 86:

Customer Geography			Internet Sales Amount
All Customers			$29,358,677.22
	France		$2,644,017.71
		Hauts de Seine	$263,416.19
		Seine (Paris)	$539,725.80
	Germany		$2,894,312.34
		Brandenburg	$119,871.08
		Hessen	$794,876.08

The filtered data appears as follows:

Table 87:

Customer Geography			Internet Sales Amount
All Customers			$29,358,677.22
	France		$2,644,017.71
		Seine (Paris)	$539,725.80
	Germany		$2,894,312.34

Customer Geography			Internet Sales Amount
		Hessen	$794,876.08

The filter is applied to all members, irrespective of their level in the hierarchy, and the aggregated measures are not impacted by the removal of the filtered members. For example, the All Customers amount remains at $29,358,677.22.

3.2.27 Filtering data with query prompts

A query prompt is a dynamic filter in a document that displays a question every time a user opens or refreshes the data in a document.

Users answer prompts by either typing or selecting the values they want to view when they refresh the data. The query then retrieves from the database only the values specified in the *Prompts* dialog box.

Prompts allow multiple users viewing a single document to specify a different sub-set of the database information and display it in the same report tables and charts. Prompts also reduce the time it takes for the data to be retrieved from the database.

A prompt contains the following elements:

- a filtered object
- an operator
- a message

For example, to prompt users to select a specific year, you define a prompt on the [Year] dimension:

```
Year Equal To ("Which year?")
```

In this prompt, the filtered object is [Year], the operator is Equal To, and the prompt message is "Which year?".

You can define prompts on dimensions, measures, attributes, hierarchies and levels. For example, you can filter the [Year] dimension to return values for a specific year, filter the [Sales Revenue] measure to return values for a range of revenue figures, or filter the [Geography] hierarchy to return members from the hierarchy.

Note

- Prompts of type universe parameter can have dynamic default values set through a formula expression in the information design tool. Web Intelligence displays them as regular default values.
- In Web Intelligence Rich Client or Web Intelligence Applet interface, for OLAP `.unx` universes, when filtering on measures, you can only type a constant.
- In Web Intelligence Rich Client or Web Intelligence Applet interface, you cannot add measures or detail objects in the filter panel for BEx queries.

You can create multiple prompts, related by the AND or OR operators, in the same query. You can also nest prompts. When the user runs a query, the prompts are displayed.

Note

On BEx queries and OLAP `.unx` universes, you can only use the AND operator.

Prompts appear in the script generated by the query as either the value supplied in response to the prompt or as special prompt syntax. For example, a prompt on [Country] can appear in generated SQL as:

```
Resort_Country.country  =  @prompt('Enter Country:','A',
'Resort\Country', Mono,Free,Persistent,,User:0)
```

or as

```
Resort_country.country In ('UK')
```

Prompts can be optional. You are not obliged to supply values for optional prompts. If you do not supply a value, the prompt is ignored.

Related Information

Selecting prompt values in the Prompts dialog box [page 464]

3.2.27.1 Merged prompts

When a document contains multiple data providers, any prompts that include objects with the same data type, operators of the same operator type, and that use the same prompt text are merged.

When all the data providers are refreshed, a single prompt message appears for such prompts.

The List of Values displayed by the merged prompt is the list associated with the object in the prompt that has the most display property constraints.

3.2.27.2 HANA query prompts in Web Intelligence

In Web Intelligence, HANA universes behave like any other relational UNX universe; variables and input parameters in SAP HANA information models are associated with the corresponding tables in the data foundation.

If there are variables and input parameters, then when you run a query in the *Query Panel*, prompts will appear that require you to enter values for the variables and parameters, and also when the document is refreshed. The values available in the prompts come directly from a HANA source.

For more information on HANA universes and query prompts at the universe level, see the *Information Design Tool User Guide*.

> **Note**
>
> If you add prompts in the Query Panel, there could be a duplication of prompts. We recommend that you run the query prior to defining any query prompts to know what prompts may already exist.

3.2.27.3 Hierarchical prompts

Depending on the filter operator in the prompt, you can select items from different levels of the list of values, or at the lowest level only.

The following objects display their lists of values hierarchically in a prompt:

- Hierarchies
- Levels
- Dimensions associated with a hierarchical list of values

A hierarchical list of values appears in tree form. You can navigate up and down the tree to the items you want.

3.2.27.4 Query filter and prompt operators

You use operators to compare filtered objects.

The function of each operator depends on its context. Operators can perform mathematical operations and concave character strings, as well as perform a wide variety of comparisons yielding Boolean results.

3.2.27.4.1 Equal to operator

Use the `Equal to` operator to obtain data equal to a value.

For example, to return data for the US only, create the filter "[Country] `Equal to` US".

3.2.27.4.2 Not Equal to operator

Use the `Not Equal to` operator to obtain data not equal to a value.

For example, to return data for all countries except the US create the filter "County `Not Equal to` US".

> **Note**
>
> This operator cannot be used for OLAP `.unx` universe parent-child hierarchies or for BEx queries.

3.2.27.4.3 Greater than operator

Use the `Greater than` operator to retrieve data greater than a value.

For example, to retrieve data for customers aged over 60, create the filter "[Customer Age] `Greater than` 60".

> **Note**
>
> This operator cannot be used for OLAP `.unx` universe parent-child hierarchies or for BEx queries.

3.2.27.4.4 Greater than or Equal to operator

Use the `Greater than or equal to` operator to retrieve data greater than or equal to a value.

For example, to retrieve data for revenue starting from $1.5M, create the filter "[Revenue] `Greater than or equal to` 1500000".

> **Note**
>
> This operator cannot be used for OLAP `.unx` universe parent-child hierarchies or for BEx hierarchies.

3.2.27.4.5 Less than operator

Use the `Less than` operator to retrieve data lower than a value.

For example, to retrieve data for exam grades lower than 40, create the filter "[Exam Grade] `Less than` 40".

> **Note**
>
> This operator cannot be used for OLAP `.unx` universes, hierarchies in filters, or for hierarchies in BEx queries.

3.2.27.4.6 Less than or Equal to operator

Use the `Less than or equal to` operator to retrieve data less than or equal to a value.

For example, to retrieve data for customers whose age is 30 or less, create the filter "[Age] `Less than or equal` to 30".

> **Note**
>
> This operator cannot be used for OLAP `.unx` universes, hierarchies in filters or for hierarchies in BEx queries.

3.2.27.4.7 Between operator

Use the `Between` operator to retrieve data between two boundary values including the two boundary values.

The first value declared must be lower than the second value.

For example, to retrieve data for weeks starting at week 25 and finishing at 36 (including week 25 and week 36), create the filter "[Week] `Between` 25 and 36".

> **Note**
>
> This operator cannot be used for OLAP `.unx` universe or BEx hierarchies in filters.

3.2.27.4.8 Not between operator

Use the `Not between` operator to retrieve data outside the range of two values.

For example, to retrieve data for all the weeks of the year, except for and not including weeks 25 through 36, create the filter "[Week] Not between 25 and 36".

> **Note**
>
> This operator cannot be used for OLAP `.unx` universe or for BEx hierarchies in filters.

3.2.27.4.9 In list operator

Use the `In list` operator to retrieve data corresponding to values in a list of values.

For example, to retrieve data only for the US, UK and Japan, create the filter `[Country] In list`, when you can type values in the *Type a value* field, you enter **`US;UK;Japan`**.

When used in a query filter with a hierarchical list of values, either from a dimension associated with a hierarchical list of values or a hierarchy object, `In list` allows the selection of multiple members from any levels of the hierarchy. For example, a prompt on the [Geography] hierarchy using the `In list` operator allows the selection of [Paris] at the City level and [Canada] at the Country level in the prompt.

When used in a report filter, `In list` produces a flat list of values.

3.2.27.4.10 Not In List operator

Use the `Not in list` operator to retrieve data that does not correspond to multiple values.

For example, if you do not want to retrieve data for the US, UK and Japan, create the filter "[Country] `Not in list`". In the *Type a value* field, you enter **`US;UK;Japan`**.

When used with a hierarchical list of values, either from a dimension associated with a hierarchical list of values, a hierarchy object or a level object, `Not in list` allows the selection of multiple members from any levels of the hierarchy. For example, a prompt on the [Geography] hierarchy using the `Not in list` operator allows selection of [Paris] at the City level and [Canada] at the Country level in the prompt.

> **Note**
>
> This operator can only be used in certain types of hierarchies, for example, it can be used in level-based hierarchies.

3.2.27.4.11 Matches Pattern operator

Use the `Matches pattern` operator to retrieve data that includes a specific string or part of a string.

For example, to retrieve customers whose date of birth is 1972, create the filter [DOB] `Matches pattern` "1972".

If you're using a wildcard, use the "%" character for every data source, except for BEx data sources. For BEx data sources, use the "*" character.

> **Note**
>
> This operator cannot be used for BEx hierarchies.

3.2.27.4.12 Different From Pattern operator

Use the `Different from pattern` operator to return data that doesn't include a specific string.

For example, to retrieve customers whose date of birth is not 1972, create the filter [DOB] `Different from pattern` '72'.

> **Note**
>
> This operator cannot be used for BEx or OLAP `.unx` universe parent-based hierarchies.

3.2.27.4.13 Both operator

Use the `Both` operator to retrieve data that corresponds to two values.

For example, to retrieve customers who have both fixed and mobile telephone numbers, create the filter [Account Type] `Both` 'Fixed' And 'Mobile'.

> **Note**
>
> This operator is not supported for filters based on hierarchy objects, or in universes based on OLAP data sources.

3.2.27.4.14 Except operator

Use the `Except` operator to retrieve data that corresponds to one value and excludes another.

For example, to retrieve customers who have only a fixed telephone number and no mobile telephone number, create the filter [Account Type] 'Fixed' `Except` 'Mobile'.

The `Except` operator is more restrictive than `Different from` or `Not in list`. For example, a report that returns customers and that includes the filter `[Lines] Different From 'Accessories'` excludes all sales records where the item sold is part of the `'Accessories'` line. If the same customer has purchased `Accessories` and `non-Accessories` items, the customer still appears in the report, but their spending total includes only `non-Accessories` sales.

If the filter is `[Lines] Except 'Accessories'`, only customers who have bought no accessories are included in the report.

> **Note**
>
> This operator is not supported in universes based on OLAP data sources.

Related Information

Not In List operator [page 172]

3.2.27.4.15 Restrictions on filter operators

The following table lists the restrictions on prompt and filter operators based on the filtered object and query type.

Table 88:

Object	Available filters

Level-based hierarchy	`Equal to`
	`Not equal to`
	`In list`
	`Not in list`
	`Matches pattern`
	`Different from pattern`

Parent-child hierarchy	`Equal to`
	`In list`
	`Matches pattern`

Object	Available filters
Hierarchy in BEx query	`Equal to` `In list`

3.2.27.5 To build a prompt

You build a query prompt in the *Query Panel*.

1. In a Web Intelligence document in *Design* or *Data* mode, open the Data Provider for edit.
   The *Query Panel* appears.
2. Drag the object you want to filter with a prompt and drop it into the *Query Filters* pane.
   The query filter appears in outline in the *Query Filters* pane. The outline shows the filtered object, the operator and the type of filter applied to the object. By default the filter is a constant.
3. Select a filter operator from the list.

   > **Note**
   >
   > The list of available operators depends on the type of filtered object.

4. Click the arrow next to the outline query filter and select *Prompt* from the menu to filter the object using a prompt.

   > **Note**
   >
   > If the document contains multiple data providers, and there is already a prompt that includes objects with the same data type, operators of the same operator type, and that uses the same prompt text as the new prompt, a warning appears, telling you that the two prompts will be merged. This means that whenever all the data providers are refreshed, a single prompt message appears for the two prompts.

   The *Prompts* dialog box appears.
5. Select *Prompt with list of values* to allow the user to select from a list of values when answering the prompt.

   > **Note**
   >
   > - The option is selected by default if the filtered object has an associated list of values in the universe.
   > - The option is selected by default and cannot be deselected if the filtered object is a hierarchy.
   > - Do not select this option if the filtered object is a date and you want users to see a popup calendar to select the date.

   If you deselect the *Prompt with list of Values* option, type the prompt text (for example "Enter a City") in the *Prompt text* box.
6. In the *Parameter Properties* dialog box, do any of the following:
   - Select *Select only from list* to restrict the user choice to values available in the list.

> **Note**
>
> - The option is selected by default if the filtered object has an associated list of values in the universe, and cannot be deselected if the filtered object is a hierarchy.
> - Do not select this option if the filtered object is a date and you want users to see a popup calendar to select the date.

- Select *Keep last values selected* to ensure that, by default, the prompt selects the values the user selected the last time they answered the prompt.
  The option is selected by default if the filtered object has an associated list of values in the universe, and cannot be deselected if the filtered object is a hierarchy.
- Select *Set default values* if you want the prompt to select values by default when it appears, and type a value in the *Type a value* box, or click ... and select default values in the *List of Values* dialog box.

> **Note**
>
> This button is disabled if the filtered object has no associated list of values.

- Select *Optional prompt* to make the prompt optional. If the user does not supply a value for an optional prompt, the prompt is ignored. Click the icon next to the text box and use the dialog box that appears to set the prompt properties.

The prompt appears at each document refresh.

Related Information

To open for edit the data provider of an existing query [page 154]
Defining how prompts display [page 195]
Merged prompts [page 187]
Selecting prompt values in the Prompts dialog box [page 464]

3.2.27.6 To select an existing prompt

You can select from pre-existing prompts to add to a query. Only pre-existing prompts that are compatible with the object you are filtering are displayed.

1. In a Web Intelligence document in *Design* or *Data* mode, open the Data Provider for edit.
   The *Query Panel* appears.
2. Drag the object on which you want to apply a prompt and drop it onto the *Query Filters* pane.
   The query filter appears in outline in the *Query Filters* pane.
3. Click the arrow next to the query filter and select *Prompt* from the menu.
4. Click *Select from universe*, select an existing prompt and click *OK*.

   The list displays only those universe prompts that are compatible with the object you are filtering. For example, the filtered object and the universe prompt must have the same data type.

Related Information

To open for edit the data provider of an existing query [page 154]

3.2.27.7 To remove a prompt

You can delete query prompts in the *Query Panel*.

1. In a Web Intelligence document in *Design* or *Data* mode, open the Data Provider for edit.
   The *Query Panel* appears.
2. Select the prompt in the *Query Filters* pane and click the *Delete* icon.

Related Information

To open for edit the data provider of an existing query [page 154]

3.2.27.8 Defining how prompts display

You can modify how prompts appear in the *Prompts* dialog box.

In the *Prompts* dialog box, users select values by either entering a value in the *Type a value* text box, if available, and adding it to the selected value list, or by selecting values from a list of values defined by the query prompt.

Table 89: Options available in the Parameter Properties dialog box

If you want the prompt to display...	(useful when you...)	then...
the list of values associated with the filtered dimension, measure, or detail,	want to view all the values for the object and then select from those values	leave the option selected by default: *Prompt with List of Values*
the values specified the last time the prompt was answered (users can select a different values),	default to the same values when you refresh the document, but want the ability to select a different value when necessary, such as the name of the current month	select the option: *Keep last values selected*
the values you specify as the default (users can select a different values),	almost always reselect the same values when you refresh the document, but want the ability to select a different value when necessary, such as the number for the current year	select the option: *Set default value(s)*
a list of values from which users select a values,	prevent users from typing a value that might not exist on the database or that you do not want them to view	select the option: *Select only from List*

To make the prompt optional, select *Optional prompt*. You are not obliged to specify a value for the prompt, in which case it is ignored.

> **Note**
>
> If the prompt is for a date, the users will see the popup calendar and a list of values. If you want users to see the popup calendar in order to select the dates, deselect *Prompt with List of Values*

Related Information

Selecting prompt values in the Prompts dialog box [page 464]

3.2.27.9 Combining prompts

Combining multiple prompts on a single query enables you to filter the data returned to the document so that each person viewing the reports sees only the information relevant to their business need.

For example, you can combine the following three prompts on a Customer Accounts document:

- Which customer?
- Which account?
- Which calendar period: from? to?

This enables each accounts manager viewing the document to view report values for a specific customer account during a specific period.

You combine prompts in the same way that you combine query filters.

3.2.27.9.1 Combining prompts with query filters

Combining prompts and filters on a single query enables you decide the values for some of the selected objects on the query using filters and allow users to decide the values of other selected objects using prompts.

For example, if you combine the following filters and prompts on a Human Resources document:

- [Year] Equal to This Year
- [Job title] Not equal to Senior Executive
- Which employee?

Users viewing the document can choose which employee they view information for, but they can only view data for the current year and they can't view data for senior executives.

3.2.27.10 To change the order of prompts

You change the order of query prompts in the *Query Panel*.

1. In a Web Intelligence document in *Design* or *Data* mode, open the Data Provider for edit.
   The *Query Panel* appears.
2. Click the *Query properties* icon on the *Query Panel* toolbar.
3. Select the prompt you want to move up or down in the prompt order in the *Prompt Order* dialog box, then press the up or down arrow next to the box.

Related Information

To open for edit the data provider of an existing query [page 154]

3.2.28 Filtering data using subqueries

A subquery is a flexible query filter that allows you to restrict values in more sophisticated ways than is possible with an ordinary query filter.

Subqueries are more powerful than ordinary query filters for the following reasons:

- They allow you to compare the values of the object whose values are used to restrict the query with values from other objects.
- They allow you to restrict the values returned by the subquery with a WHERE clause.
- They allow you to pose complex questions that are difficult or impossible to formulate with simple query filters. For example: what is the list of customers and their associated revenue where the customer purchased a service that had previously been reserved (by any customer) in Q1 of 2003?

Subqueries work by modifying the SQL that is generated to retrieve the query data. The SQL contains a subquery that restricts the data returned by an outer query. SQL is the query language supported by all relational databases (RDBMS), although each database has its own syntax. For more information on SQL subqueries, see any book on SQL.

> **Note**
>
> Subqueries are not supported in all databases. If they are not supported, the option to build subqueries does not appear in the *Query Panel*.

> **Note**
>
> You can build subqueries using dimensions, attributes and measures. You cannot build subqueries using hierarchical objects.

Related Information

To build a subquery [page 198]
Subquery parameters [page 200]

3.2.28.1 To build a subquery

You can build subqueries in the *Query Panel*.

1. In a Web Intelligence document in *Design* or *Data* mode, open the Data Provider for edit.
   The *Query Panel* appears.
2. Add the objects that you want to appear in the query to the *Result Objects* pane.
3. Select the object in the *Result Objects* pane that you want to filter with a subquery and click the *Add a subquery* icon at the top of the *Query Filters* pane.
   The subquery outline appears in the *Query Filters* pane. By default the object you selected appears as the *Filter* object and *Filter By* object.
4. To add a WHERE condition to the subquery, drag a report object to the area of the subquery below the *Drop an object here* image.

   You can use an existing subquery or standard query filter as a WHERE condition in a subquery. To do so, drag and drop the existing filter or subquery to the area of the subquery below the *Drop an object here* boxes. To copy rather than move the existing filter to the WHERE condition, hold down the `Control` key while dragging and dropping. In this case the existing filter remains in its initial place and becomes part of the WHERE condition of the subquery.
5. Select the operator and values used to filter the object in the WHERE condition.
6. Click *Subquery* to add an additional subquery to the query filter.

   In addition to linking subqueries in AND or OR relationships, you can nest them (create subqueries within subqueries) by dragging an existing subquery to the area beneath the *Drop an object here* boxes. In this case the inner subquery becomes part of the WHERE condition of the outer subquery. To copy rather than move the subquery to the WHERE condition, hold down the Control key while dragging and dropping. In this case the second subquery remains at the same level as the first, and becomes part of the WHERE clause of the first.

   By default the two subqueries are linked in an AND relationship. Click the AND operator to toggle between AND and OR.
7. To nest a subquery (create a subquery within a subquery), drag an existing subquery to the area beneath the *Drop an object here* image.

   To copy rather than move the subquery to the WHERE condition, hold down the `Control` key while dragging and dropping. In this case the second subquery remains at the same level as the first, and becomes part of the WHERE clause of the first.

   The inner subquery becomes part of the WHERE condition of the outer subquery.

Related Information

To open for edit the data provider of an existing query [page 154]

Filtering data using subqueries [page 197]
Example: Customers bought a service reserved in Q1 of 2003, and how much revenue they generated [page 199]
Subquery parameters [page 200]
Nested combined queries [page 92]

3.2.28.2 Example: Customers bought a service reserved in Q1 of 2003, and how much revenue they generated

This example uses the Island Resorts Marketing sample universe in Web Intelligence to build a subquery.

1. In a Web Intelligence document in *Design* or *Data* mode, open the Data Provider for edit.
   The *Query Panel* appears.
2. Drag the `Customer` and `Revenue` objects to the *Result Objects* pane in the *Query Panel*.
3. Select the `Service` object.
4. Click *Subquery*.
   The subquery outline appears in the *Query Filters* pane.

   > **Note**
   >
   > The selected object appears in both boxes in the subquery outline. You often use the same object in both boxes, although this is not required. If the objects do not return any common values, the subquery returns no values, and the query therefore returns no values.

5. Drag the `Reservation Year` object to the area of the subquery outline beneath the `Service` object, which adds a WHERE condition on the `Reservation Year` object .
6. Set the `Reservation Year` condition operator to `Equal to`.
7. Type **`FY2003`** in the *Type a constant* box.
8. Drag the `Reservation Quarter` object to the area of the subquery outline beneath the `Service` object, which adds the `Reservation Quarter` object to the WHERE condition.
9. Set the *Reservation Quarter* condition operator to `Equal to`.
10. Type **`Q1`** in the *Type a constant* box.
11. Click *Run Query*.

3.2.28.3 Subquery parameters

A subquery or set of subqueries contains several parameters.

Table 90:

Parameter	Description
Filter objects	The object whose values are used to filter the result objects. You can include more than one filter object. If you do, the values of the objects you select are concatenated.
Filter by objects	The object that determines which Filter object values the subquery returns. You can include more than one Filter by object. If you do, the values of the objects you select are concatenated.
Operator	The operator that specifies the relationship between the Filter object and the Filter by object. Because of database restrictions you cannot use certain combinations of operators and Filter by objects together. For example, if you use the *Equal to* operator with a Filter by object that returns multiple values, the database rejects the SQL because this type of subquery requires the Filter by object to return one value only. In cases where the generated SQL is rejected by the database, you see an error message showing the error description returned by the database
WHERE condition (optional)	An additional condition that constrains the list of values of the Filter by object. You can use ordinary report objects, predefined conditions or existing query filters, including subqueries, in the WHERE condition.
Relationship operator	If there is more than one subquery, this operator determines the relationship between the subqueries. AND - the conditions in all of the subqueries must be satisfied. OR - the conditions in any one of the subqueries must be satisfied.

4 Reporting data

4.1 Introduction to reporting

Now that you have built and run your query, you have to organize your data before you can start performing analysis operations.

Organizing your data helps you make your report understandable and avoid information overload. As a best practice, try to keep it simple and remove all irrelevant data that would get in the way of what you are trying to demonstrate.

Use the chart library and tables to design the report. Other tools are available so that you can perform formatting operations. You can for instance sort, rank, or merge data so that information is displayed according to your business requirements and questions.

The following sections provide you with information on how to choose the correct graphics according to your data, and how to format your report to make it look professional and easy to understand.

Table 91:

To know more about	Read
Organizing and formatting data	• Tracking changes in data [page 234] • Highlighting data using conditional formatting [page 244] • Ranking report data [page 248] • Merging data from dimensions and hierarchies [page 257] • Enhancing reports with calculations, formulas and variables [page 282] • Using sections to group data [page 329] • Using breaks [page 334] • Using sorts to organize data in reports [page 338]
Charts	• Choosing the correct Web Intelligence chart for your data [page 343] • Assigning data to a chart [page 356] • Geo-qualifying an object for a geomap chart [page 358]

4.2 Working with reports

You can create and update ad hoc reports based on your business requirements.

In reports you can add charts, free-standing cells, formulas, and much more.

4.2.1 Web Intelligence features that are supported in reports for mobile devices

You can use several Web Intelligence query and report features in reports for mobile devices.

In the following table are the major features of Web Intelligence and if they are supported on mobile devices. This is not a complete list; the features listed below have been tested for viability on mobile devices. For more information on designing Web Intelligence reports for mobile devices, see the *Mobile BI Report Designer's Guide*.

Table 92:

Feature	Purpose and how it helps	Supported on Mobile
Hierarchies	You can use hierarchies to navigate through data that uses parent-child relationships.	Yes
Free-standing blank cells	You can use free-standing cells display text or formulas. For example, you can use these cells for report titles and images. You can put in them basic formulas, for example a conditional status indicator.	Yes
Pre-defined cells	You can use free-standing cells with defined formulas that show information like drill filters, the last refresh date, and the document name.	Yes
Tables	You can use tables to show data in a list format that is easy to scroll through.	Yes ⚠ Restriction There is a limit to the maximum number of rows and columns that can be displayed on the screens of mobile devices. For more information, see the *Mobile BI Report Designer's Guide*.
Groups in tables	You can group dimension values. This feature can save space in a table. For example, if you have branches of stores in several states, you may prefer to group the stores into groups by region.	No
Table breaks	To save space by removing repetitive data in a table, you can use table breaks.	Yes
Sections	You can use sections to split information into smaller parts. For example, in a table with City, Quarter, and Sales Revenue, the city and quarter content can be repetitive. You can create section based on Quarter, which gives you quarterly tables on Sales Revenue by City.	Yes
Sorts	In tables, you can use sorts to organize the order in which values are displayed in a table. For example, you sort the revenue values in Descending order.	Yes

Feature	Purpose and how it helps	Supported on Mobile
Ranking	You can use ranking in a table to show only top or bottom items based on certain criteria. This helps readers to focus on the top or bottom items in a data set.	Yes **⚠ Restriction** Supported only the following Mobile server versions: • BI 4.1 SP03 Patch 01 and higher • BI 4.0 SP09 Patch 01 and higher
Charts	You can use charts to show data in a visual way that adds impact to the results.	Yes **⚠ Restriction** There is a limit to the maximum number of rows and columns that can be displayed on the screens of mobile devices. For more information, see the *Mobile BI Report Designer's Guide*.
Prompts	You can use prompts in reports to allow users refine the data that is shown on the mobile device. You can also control the type or amount of data the user can access and that appears on the mobile device.	Yes
Query filters	You can use query filters to limit the amount of data retrieved from the data source, reducing the data retrieval time.	Yes
Report filters	You can use report filters to limit the retrieved data displayed in a report.	Yes
Input controls	You can use input controls as report element-specific filter controls.	Yes
Folding and unfolding data	You can fold and unfold report data to see only the amount of data you want at a given time.	No
Drilling	You can use drilling to move through the data levels. For example, you can drill down from region to city to store.	Yes
Conditional formatting	You can use rules in reports to have table cell or section format change based on rules. You can highlight in a visual fashion important results by, for example, text, cell border and background display color and size changes, and even via images or web pages.	Yes
Data tracking	You can display data changes in a report in a document, for when the changes in data is the focus of a report.	No

Feature	Purpose and how it helps	Supported on Mobile
Linking to other documents	You can link to other documents in the report, as in the case where you want to offer users access to related documents.	Yes

4.2.2 To rename a report

You can rename a report in a Web Intelligence document in *Design* mode.

1. In a Web Intelligence document in *Design* mode, right-click the *Report* tab of the report you want to rename.
2. Select *Rename Report* on the menu and type the new report name.
3. Click outside the report name tab and save the document.

4.2.3 To duplicate a report

You can duplicate a report in a Web Intelligence document in *Design* mode.

1. In a Web Intelligence document in *Design* mode, right-click the report tab of the report you want to duplicate.
2. Click *Duplicate Report*.
3. Rename the duplicated report, if required.
4. Save the document.

Related Information

To reuse an input control in another report within a Web Intelligence document [page 472]

4.2.4 To delete a report

You can delete a report from a Web Intelligence document in *Design* mode.

1. In a Web Intelligence document in *Design* mode, right-click the report tab of the report you want to delete and select one of the following:

Option	Description
If you are using the Web Intelligence HTML interface:	*Remove Report*
If you are using the Web Intelligence Applet or Rich Client interface:	*Delete Report*

2. Click *Yes* to confirm the deletion.
3. Save the document.

4.2.5 To change the order of reports

You can change the order of reports in a Web Intelligence document in *Design* mode.

1. In a Web Intelligence document in *Design* mode, right-click the report tab of the report whose order you want to change in the document.
2. Click *Move Report* on the menu, then select one of the menu options.

Table 93: Menu options in the Web Intelligence HTML interface

Menu option	Description
First	The report becomes the first report in the document.
Previous	The report tab is moved to the left of another report tab in the report zone.
Next	The report tab is moved to the right of another report tab in the report zone.
Last	The report becomes the last report in the document.

Table 94: Menu options in the Web Intelligence Applet and Rich Client interfaces

Menu option	Description
Move Left	The report tab is moved to the left of another report tab in the report zone.
Move Right	The report tab is moved to the right of another report tab in the report zone.

4.2.6 To add a report

You can add a report to a Web Intelligence document in the *Design* mode.

In a Web Intelligence document in *Design* mode, right-click the report tab of any existing report and click *Add Report*.
A blank report is added to the document with the default name Report n.

4.2.7 Viewing document properties

You can view the document properties in the *Document Summary* pane in the Side Panel and edit them in the *Document Summary* dialog box.

The following table lists the document properties that you can view in the *Document Summary* pane in the Side Panel or edit in the *Document Summary* dialog box that is found at *Properties* > *Document* :

Table 95:

Property	Description
Title	The name of the document in the BI launch pad. This is displayed above the general properties and cannot be edited.
Type	The type of document. This option is only available in the Web Intelligence HTML interface.
Author	The creator of the document.
Creation date	The date the document was created.
Locale	Tells you the formatting locale of the document.
Content Alignment	Found only in the *Document Summary* pane in the Side Panel in the Web Intelligence Applet or Web Intelligence Rich Client interface, you can see the alignment in the document based on your locale settings. The alignment of the application interface is from right to left (RTL) when you select Arabic or Hebrew. The alignment of the document content may be RTL, depending on the system settings selected by the BI administrator.
Description	Optional information that describes the document.
Keywords	Optional keywords that can be used to search for the document in the BI launch pad.
Last refresh date	In the Side Panel, this field informs you of when the results were last refreshed with the latest data from the database.
Last modified	In the Side Panel, this field informs you when the document was last modified.
Last modified by	In the Side Panel, this field informs you who the last person was to modify the document.
Duration of the previous refresh	In the Side Panel, this field informs you how long it took to retrieve the data from the database the last time the results were refreshed.
Refresh on open	Automatically refreshes the results in reports with the latest data from the database each time the document is opened. When *Refresh on open* is selected, data tracking does not display the difference between the data prior to the refresh and the data after the refresh. Data after the refresh is treated as new data because the refresh purges the document. **Note** The *Refresh on open* option is dependent on the following settings in the CMC (configured by the BI administrator): • In *Applications* > *Web Intelligence*, from the *Manage* list, select *Properties*. In the *Automatic Document Refresh on Open Security Right Setting* section, the property *Automatic Refresh* security setting is enabled. • In *Applications* > *Web Intelligence*, from the *Manage* list, select *User Security*. When you select a user profile and click *View Security*, verify that the *Document - disable automatic refresh on open* security right is disabled.
Permanent regional formatting	Formats the document according to the format locale with which it was saved.

Property	Description
Use query drill	Allows drilling in query drill mode.
Enable query stripping	Generates queries that only use objects that contribute to the reports in which they are used. Each time a query is refreshed, non-contributing objects are ignored. Only relevant data is retrieved from the data provider. This feature enhances performance. **Note** Query stripping is enabled by default for BEx queries.
Hide warning icons in chart	Hides General Warning icons in order to enhance readability.
Change Default Style	This button is only available in the Web Intelligence Applet interface and Web Intelligence Rich Client. In the *Document Summary* edit dialog box, you can change the default style for the document. You can import a new style or export the current style.
Data tracking reference mode	In the Side Panel, this field indicates whether data tracking is turned on or off.
Data tracking	Track the following kinds of data changes: • Inserted data • Deleted data • Changed data • Increased values • Decreased values
Auto-merge dimensions	Automatically merges dimensions with the same name and from the same universe. You see the merged dimension in the list of available objects with the dimensions merged within it below. Merged dimensions are the mechanism for synchronizing data from different data providers.
Extend merged dimension values	The option when selected extends values of merged dimensions. Merged dimensions are the mechanism for synchronizing data from different data providers. This controls the results when a table contains synchronized data. If a table contains a dimension used in a merge, this dimension returns the value of its query plus the values of the other dimensions merged from other data providers for which there is an object in the table. When this option is not selected and a table contains a dimension used in a merge, this dimension returns the value of its query. **Restriction** You should only activate the *Extend merged dimension values* option when you want to reproduce the merged dimension behavior of SAP BusinessObjects Desktop Intelligence.

Property	Description
Auto-refresh	This option, available in *Document Summary* panel, when activated causes the document to be automatically refreshed. The *Auto-refresh* option applies to the use of delegated measures. Block elements that are affected by this include adding/deleting a column, inserting a break, including a footer, filter bar, input control and so on. When this option is selected, and an object is added to or removed from the query, or when a different value is selected from a list in the *Report Filter* bar (all values, simple values), for example, the document is refreshed automatically. The `#TOREFRESH` message will not appear in the report because the refresh is automatic. This option only applies to aggregated delegated measures. For example when you add a total to a table in a report. Using this option can slow down the performance. If the drop in performance is a problem, consider deselecting this option. In this case `#TOREFRESH` will display when the report is modified. **Note** This option can only be modified if the BI administrator has enabled it in the Web Intelligence application properties in the Central Management Console (CMC).
Default Style	You can change the default style that is used for the document. You can do the following: • Import a different `.css` style sheet to replace the existing style sheet. • Export the current style sheet to save or use elsewhere. • Reset the document to use the original style sheet installed with the product. This option is only available when the current document style sheet is different from the original style sheet. **Note** This option is only available in the Web Intelligence Applet interface and Web intelligence Rich Client.
Merge prompts (BEx variables)	Select this option if you want to merge prompts that are created in Web Intelligence from BEx variables in the original BEx query. Only BEx variables that have the same technical name are merged. When this option is unselected, any previously merged BEx variables are unmerged and treated as separate prompts.
Prompts	In the Side Panel, this box indicates the prompts entered for the current view of the document.
KeyDates	In the Side Panel, this box indicates any keydates associated with the document

Related Information

Merging data from dimensions and hierarchies [page 257]

Drilling with query drill [page 449]
Data tracking and Refresh on Open [page 242]

4.2.7.1 To configure document properties

You can configure the document properties in the *Document Summary* dialog box.

1. In a Web Intelligence document in *Design* or *Data* mode, do one of the following:
   - Click *Document* on the *Properties* tab.
   - In the Side Panel, select the *Document Summary* pane, then click *Edit*.
2. In the *Document Summary* dialog box, edit the document properties.
3. Click *OK* to close the *Document Summary* dialog box.

Related Information

Viewing document properties [page 205]

4.2.7.2 To select default folders for local documents and universes

In Web Intelligence Rich Client, you can select a folder where local documents and universes are stored by default on your local machine.

1. In a Web Intelligence document in *Design* mode, click *Application* in the *Properties* tab.
2. In the *Web Intelligence Options* dialog box, select the *General* tab.
3. Next to *User documents*, click *Browse*, and select a folder for documents.
4. Next to *Universes*, click *Browse*, and select a folder for universes.
5. Click *OK* to close the *Web Intelligence Options* dialog box.

4.2.7.3 Query stripping in documents

Query stripping is a reporting feature that can be used to optimize performance.

Query stripping is used only by Web Intelligence.

For relational universes, query stripping is only enabled if the following parameters are set:

- The *Allow query stripping* option is selected in the business layer properties in the information design tool (unselected by default).
- The *Enable query stripping* option is selected for the data provider in the *Query Properties* in Web Intelligence.

- The *Enable query stripping* option is selected in the *Document Properties* in Web Intelligence (selected by default if query stripping is enabled for the data provider).

For OLAP universes, query stripping is enabled by default.

When query stripping is enabled, the query is rewritten to reference only objects that are used in the report. Let's take for example a query that contains three result objects: **Country**, **City**, and **Revenue**. A report based on this query may contain only **City** and **Revenue**. If query stripping is enabled, when the report is refreshed, in most cases the query will only retrieve the data for **City** and **Revenue**.

In relational universes, a report with query stripping enabled may return different data than when query stripping is disabled, depending on the schema of the data foundation. Let's look again at the example of a query that contains **Country**, **City**, and **Sales Revenue**. In the data foundation, there is a self-restricting join on the **Country** table that restricts the country to the US. With query stripping disabled, the report on **City** and **Revenue** returns revenue for only cities in the US. With query stripping enabled, the report returns revenue for cities in all countries, because the **Country** table was stripped out of the query.

> ⚠ Caution
>
> Web Intelligence cannot strip every object if there is no report element in the document: the report must contain at least one object.

Enhanced Query Stripping

The `USE_ENHANCED_QUERY_STRIPPING` parameter allows you to take advantage of enhancements to the query stripping method. Normal query stripping rewrites the query to contain only the objects referenced in the report and any joins concerned by those objects. Enhanced query stripping only optimizes the SELECT and GROUP BY clauses to avoid fetching unused data, but it doesn't modify the other clauses or the joins. It is recommended to use enhanced query stripping in the following situations:

- The data foundation contains outer joins.
- The data foundation contains self-restricting joins (column filters).
- The data foundation contains shortcut joins.

If aggregate awareness is defined in the business layer (using the @Aggregate_aware function in the definition of business layer objects), enhanced query stripping is used in every case, even if the `USE_ENHANCED_QUERY_STRIPPING` parameter is not set.

The `USE_ENHANCED_QUERY_STRIPPING` parameter is not set by default. It can be set in the data foundation or business layer. For more information on query stripping, see the Information Design Tool user guide.

Related Information

Viewing document properties [page 205]
Restrictions when using BEx queries [page 100]

4.2.8 Hierarchical and non-hierarchical data

Depending on their data source, reports can contain non-hierarchical or hierarchical data.

Non-hierarchical and hierarchical data behaves differently and you work with it in different ways.

4.2.8.1 Working with non-hierarchical data

Non-hierarchical data has no parent-child relationships. A dimension is an example of a non-hierarchical object.

For example, the [Country] and [City] dimensions displayed in a table, show the following values:

Table 96:

Country	City
US	New York
US	Atlanta
France	Paris
France	Rennes

Although the data has a hierarchical relationship (for example, "New York" and "Atlanta" are child values of "US"), the data appears in non-hierarchical columns and the parent-child relationship is not expressed in the data structure.

You can analyze non-hierarchical data in many ways in your reports, for example by sorting or filtering it.

4.2.8.2 Working with hierarchical data

Hierarchical data organizes data in parent-child relationships, and you can use these relationships to navigate and analyze the data and the results returned by related measures.

Measures associated with hierarchies are aggregated based on the position of the data in the hierarchy. For example, the [Revenue] measure calculates total revenue for [San Diego], and total revenue for [California], at a less detailed level of aggregation, when associated with a [Geography] hierarchy. Navigating the hierarchy allows you to explore different measure values at different levels of the hierarchy.

How hierarchical data appears and behaves depends on the report element that contains it.

Collapsing and expanding hierarchies

When the user is executing a collapse or expand on a hierarchy that is next to another hierarchy, the system is doing an asymmetric collapse or expand. The collapse or expand action is done only for the selected member for a given member on the hierarchy. The user can explicitly ask for a symmetric collapse or expand, in that case the action is done for any instances of the selected member.

The system is doing symmetric collapse or expand by default on a hierarchy that is next to a dimension (in that case default collapse or expand and symmetric collapse or expand is producing the same result).

Collapse or expand on a hierarchy which is changing on refresh (hierarchy node variable, prompted member selection, modification at the cube level), may be blocked after a refresh from the preview from the *Query Panel*. In that case, the user can drag and drop the hierarchy again in the column.

Related Information

Working with non-hierarchical data [page 211]

4.2.8.2.1 Restrictions concerning reporting with hierarchical data

Some restrictions can apply when you are using hierarchical data.

These restrictions are repeated in the appropriate sections in this guide.

Table 97: Restrictions when reporting with hierarchies

The restriction concerns...	Description
BEx query measures	Measures which aggregate with the SUM function in Web Intelligence, and not in the BEx query. The other types of measure aggregation are delegated.
Break on measure or detail	A break is always associated with the sort on the object where it is applied. For this reason, any hierarchy in the table the where break applies, the hierarchy becomes flat. The user can remove the break on the underlying object to restore the hierarchy.
Delegated measure aggregation	This restriction applies whenever delegated measures are used, and is not specific to reporting on hierarchical data. Delegated measure aggregation returns `#TOREFRESH`, when the required aggregation is not available in the query. The user has to refresh the document to get the new level of aggregation. This occurs, for example, when using the filter bar, and the user selects a value before "all value" and vice verse when selecting "all value" before a selected value. Delegated measure aggregation returns the `#UNAVAILABLE` message if the delegated measure is in a formula on a dimension, or if it is in a multi-valued filter (for example, an input control) on a dimension that is not in the context of the aggregation of the measure. This occurs for example when defining a URL on top of a dimension in a table where there is a delegated measure. In that case, we recommend that you create a variable on top of the URL formula as a detail of the original dimension and include, but hide, the original dimension in the block. In the formula: If (condition) then [dimension1] else [dimension2] , any delegated measure that is given against this formula will still return `#UNAVAILABLE`.

The restriction concerns...	Description
Drilling	There is no drill-replace capability on objects from a BEx query (there is no navigation path). There is no query drill on OLAP `.unx` sources.
Filtering on hierarchies	A report/table filter where there is a hierarchy may remove rows without respecting the hierarchy structure. For this reason, a filter can remove a parent node currently expanded and but keep leaves or nodes collapsed. To avoid returning an empty table, the system automatically expands the hierarchy in the block to shows the resulting members. A filter can remove an intermediary node of a hierarchy. In that case, the user cannot access the next level of member from the parent node with a simple expand action. To see the descendant of the parent node, the user can do an expand all. It is not possible to filter on a merge object based on a hierarchy. Filter bar (drill bar): when filtering through the filter bar on a hierarchy, selecting a node that is not shown in the table because it is collapsed, the table is shown empty. The user can do an expand all to see all the value. To filter from the filter bar is to filter on the caption, even for OLAP business objects that have a key.
Report filters	When the user changes any report filter, the system proceeds with an “expand all” on any hierarchy in the report.
Flattening hierarchies	When a hierarchy becomes flat, the system shows all the members of the hierarchy at the same level, like for a dimension, without using + or - to navigate and without contextual menu “collapse/expand”.
Merged objects	A merged object based on a hierarchy cannot be directly used in the report. This is because where the original hierarchy has a conflicting hierarchy structure (a member A is descendant of another member B, whereas in the other hierarchy the member A is ancestor of member B), the system cannot build a merge hierarchy. The system prevents you from dragging the merged object. If the user builds a formula using the merged object, the system returns `#SYNTAX`. The user can use directly the original hierarchy instead in the report. A merge on a key for a OLAP business object is a data synchronization of the same object from the same source (cube or BEx query), and is based on the internal key of the value of these objects. It can also be based on the caption. It is not possible to filter on a merged object based on a hierarchy.

The restriction concerns...	Description
OLAP	The order of an OLAP dimension member in a report LOV (filter bar, input control) is ascending in lexicographical order. Filtering on an OLAP object from the filter UI filter is based on the key of the given object. Filtering from an input control on an OLAP dimension is filtering on the caption. Filtering on a hierarchy is filtering on a key.
Query stripping	Query stripping is only available for `.unv`, OLAP, and BEx query sources.
Refreshing documents	When you refresh a document, the system proceeds with a "collapse all" for any hierarchy whose root value has changed.
Ranking on hierarchical data in a table	A ranking on a table where there is a hierarchy does not take into account the hierarchy structure of the data. For this reason, any hierarchy in a table where the user defines a ranking becomes flat.
Sorting	Sorting a hierarchy and, in the case of OLAP sources, a dimension is based on the order of the member in the underlying system. It is based on the source ordinal called natural order, but not lexicographical order like for other type of business object. The sort on a hierarchy respects the structure of the hierarchy; it is sorting sibling members at a given level. Sorting on a measure does not preserve the order of member within a hierarchy in the same table. For this reason the system is showing the hierarchy flat in a table, where the user applied a sort on measure.
Variables	Variable (formula) on hierarchy: a formula based on a hierarchy is always resulting in flat value list (no hierarchical data).

4.2.8.2.2 Working with hierarchical data in tables

Hierarchies appear in tables as hierarchical columns.

A hierarchical column displays the hierarchy in parent-child relationships. You can explore the hierarchy by expanding and collapsing its values.

Example

A hierarchical column in a table

The following table displays the [Product] hierarchy and the [Revenue] measure:

Table 98:

Product	Revenue
Grocery	203,124

Product	Revenue
Baking Goods	100,101
Beverages	54,345
Breads	48,678

The measure displays the total revenue for the corresponding value in the hierarchy. For example, the total revenue for Grocery products is 203,124.

You can find more information about Beverages by expanding the [Beverages] member:

Table 99:

Product	Revenue
Grocery	203,124
Baking Goods	100,101
Beverages	54,345
Soft Drinks	10,100
Soda	20,200
Milk	24,045
Breads	48,678

When you expand the member, the Revenue column also displays the measure values associated with different kinds of beverage.

4.2.8.2.3 Hierarchical data in cross tables

Hierarchical data behaves similarly in cross table to how it behaves in tables.

If an axis of the crosstab is based on a hierarchy, you can click a data item to expand it.

Example

Hierarchical data in a cross table

The following crosstab has the [Time] hierarchy on the vertical axis and the [Product] hierarchy on the horizontal axis.

Table 100:

Time	Grocery
2008	203,110
2009	321,400
2010	350,444

If you click the [Grocery] item, it expands to display its child items and displays the corresponding measure values.

Table 101:

Time	Grocery		
	Baking Goods	Beverages	Bread
2008	54,570	67,000	81,540
2009	101,000	98,990	121,410
2010	124,000	133,000	93,444

4.2.8.2.4 To expand and collapse all the hierarchies in a table

In a table with hierarchical values, you can expand all the hierarchies to show all possible combinations of hierarchy members.

1. From the BI launch pad, open a document based on a `.unx` OLAP universe in Web Intelligence Rich Client or Web Intelligence Applet interface.
2. Switch to *Reading* or *Design* mode.
3. To expand all the hierarchies in a table, right-click anywhere in the table and select *Hierarchical Navigation* > *All* > *Expand All Hierarchies*.
4. To collapse all the hierarchies in a table, right-click anywhere in the table and select *Hierarchical Navigation* > *All* > *Collapse All Hierarchies*.

4.2.8.2.5 Exploring a hierarchy asymmetrically

Asymmetric exploration is the way you explore a hierarchy by default when you select members to expand or contract them.

When you explore a hierarchy asymmetrically, your expand and collapse actions are applied only to the current value of the other dimensions that appear next to the explored hierarchy.

Example

Asymmetric exploration

A table contains the [Product] dimension and the [Geography] hierarchy.

Table 102:

Product	Geography	Revenue
Grocery	California	540,000
Beverages	California	453,300

If you expand the [California] member to display cities in California in the first row of the table, the expansion applies only to the currrent value (Grocery) of the [Product] dimension.

Table 103:

Product	Geography		Revenue
Grocery	California		540,000
		Los Angeles	320,000
		San Diego	100,000
		San Francisco	120,000
Beverages	California		453,300

Related Information

To explore a hierarchy asymmetrically [page 217]
To expand and collapse all the hierarchies in a table [page 216]

4.2.8.2.5.1 To explore a hierarchy asymmetrically

You can expand a hierarchy for only the current values of a dimension or hierarchy.

1. Open a Web Intelligence document based on a hierarchical data source in any mode.
2. To expand the child members of a member, click the member, or right-click and select *Expand Children* from the menu.
   The hierarchy expands only for the current value of the dimensions or hierarchies next to the expanded hierarchy in the table.
3. To expand all descendant members of a member, click the member, or right-click and select *Expand Descendants*.
   The hierarchy collapses only for the current value of the dimensions or hierarchies next to the expanded hierarchy in the table.
4. To collapse the child members of a member, click the expanded member, or right-click and select *Collapse Children*
   The hierarchy collapses only for the current value of the dimensions or hierarchies next to the collapsed hierarchy in the table.

4.2.8.2.6 Exploring a hierarchy symmetrically

When you explore a hierarchy symmetrically, your expand and collapse actions are applied in relation to all values of the other hierarchies or dimensions that appear next to the explored hierarchy in the table.

Example

Symmetric exploration

A table contains the [Product] dimension and the [Geography] hierarchy.

Table 104:

Product	Geography	Revenue
Grocery	California	540,000
Beverages	California	453,300

If you expand the [California] member on the first row to display cities in California, the expansion applies to both values of the [Product] dimension.

Table 105:

Product	Geography		Revenue
Grocery	California		540,000
		Los Angeles	320,000
		San Diego	100,000
		San Francisco	120,000
Beverages	California		453,300
		Los Angeles	120,000
		San Diego	200,000
		San Francisco	133,300

Related Information

To expand and collapse all the hierarchies in a table [page 216]
To explore a hierarchy symmetrically [page 218]

4.2.8.2.6.1 To explore a hierarchy symmetrically

You can expand a hierarchy for all values of a dimension or hierarchy.

1. Open a Web Intelligence document based on a hierarchical data source in any mode.

2. To expand the child items of a member, right-click the member and select *Hierarchical Navigation* > *Symmetric* > *Expand Children*.
   The hierarchy expands for all values of the dimensions or hierarchies next to the expanded hierarchy in the table.
3. To expand all descendant items of a member, right-click the member and select *Hierarchical Navigation* > *Symmetric* > *Expand Descendants*.
   The hierarchy expands for all values of the dimensions or hierarchies next to the expanded hierarchy in the table.
4. To collapse the child members of a member, right-click the member and select *Hierarchical Navigation* > *Symmetric* > *Collapse Children*
   The hierarchy collapses for all values of the dimensions or hierarchies next to the collapsed hierarchy in the table.

4.2.8.2.7 Changing the drill focus of a hierarchy

You can change the drill focus when exploring hierarchies.

When you change the drill focus you filter out the parent member and all members at and above its level when expanding it.

Changing the drill focus is useful when creating charts on hierarchical data. Because measure values associated with parent members are more aggregated than their child members, it is difficult to display them on the same chart axis using the same scale. By removing the parent member, it is possible to display the values for the child members using the same scale.

Example

Drilling down on a hierarchy

You have the following data in a table:

Table 106:

Time	Revenue
2008	29,358,677.22
2009	30,242,323
2010	45,320,243

When you drill down on the [2010] member, you see the following display:

Table 107:

Time	Revenue
Q1	12,500,650
Q2	14,353,231
Q3	8,342,231
Q4	10,124,131

The year members, with values that are much larger than the measure values of the quarter members, do not appear in the display.

4.2.8.2.7.1 To change the drill focus of a hierarchy

You can drill up and down in a table hierarchy.

1. Open the Web Intelligence document in *Design* mode.
2. To drill down on a table hierarchy, do one of the following:
   - In the Web Intelligence HTML interface, right-click the member you want to expand and select *Start Drill* > *Drill down to*.
   - In the Web Intelligence Applet interface or Web Intelligence Rich Client, right-click the member you want to expand and select *Start Drill* > *Drill*.
3. To drill up on a table hierarchy, right-click any child member of a member you previously drilled down on and select *Drill Focus* > *Drill Up*.

4.2.8.2.8 Aggregating hierarchical data

Hierarchical measure data is aggregated differently depending on whether the method of aggregation is default or explicit.

The aggregation logic is based on the following rules:

- Data sets used for aggregation:
  1. When there is a hierarchy in a measure context the measure values for the root members of the hierarchy are aggregated - this is by default (the `Aggregate()` mechanism is not explicitly declared).
  2. For explicit types (SUM, MAX, MIN), the hierarchical nature of the data is ignored. All the visible data is aggregated, including data that has already been aggregated (parent members already aggregated).
- Sensitivity to the collapse/expand status.
  1. Explicit aggregation only aggregates visible data, except when the set expression is used for a specific hierarchy, then an aggregation is performed on the objects defined in the set expression.
  2. Default aggregation including the aggregate() function is not sensitive to the state of the collapse/expand.

4.2.8.2.8.1 Default aggregation

In a default aggregation, the collapsed or expanded state of a hierarchy's item is not taken into account.

A measure in a report block is always aggregated with the context of that block. For example, if the block contains only one [Year] dimension, the measure will be aggregated for each value of the dimension: 2004, 2005, 2006 and so on. Also, if you aggregate every value of the measure for each quarter of each [Year] value using the Sum() function by default, Web Intelligence returns the sum of the measure for every quarter of each [Year] value.

This method of aggregation is called default aggregation, where it uses the default universe aggregation function specified by the universe designer at the universe creation. The default aggregation function is usually specified in the universe, although not always. For Excel data sources for instance, it is specified in the *Query Panel*. The aggregation is processed by Web Intelligence's calculator. The calculator can run aggregations using functions such as Sum(), Average(), Count(), Min() or Max().

A default aggregation uses the rolled-up values returned by the database. In other words, it is compatible with the aggregated values returned by the database. Default values are calculated by applying the default aggregation function to all the root values in the hierarchy. This means that a default aggregation does not count values more than once except in situations where the same value appears beneath different root items in a hierarchy.

Delegated aggregation

You can declare a function for a measure, which, by default, is delegated to the database. This means that when you use this measure in a report block, a query is sent to the database to retrieve the result of the aggregation depending on the context.

Delegated aggregations are mainly used for measures associated with hierarchical objects coming from SAP Business Explorer (BEx). That is because Web Intelligence cannot aggregate the values of a hierarchy that depends on the nodes and leaves retrieved by the query. Only the database knows the content of the hierarchical object in its entirety and is therefore able to aggregate a measure depending on that content.

Related Information

Examples of default and explicit aggregation [page 222]

4.2.8.2.8.2 Explicit aggregation

In an explicit aggregation, you declare an aggregation function for the measure you want to aggregate.

In an explicit aggregation, Web Intelligence references the visual state of the hierarchy and uses the collapsed or expanded state of the members of the hierarchy to run calculations. As a result, values can be counted more than once, and the result of calculations can change depending on whether an item is collapsed or expanded.

For example, if an item is expanded and an explicit aggregation references both the item and one if its child items, depending on the rollup calculation, the value of the child may be counted twice: once for itself and once with the value of its parent. That is because Web Intelligence is adding the child and parent value.

Restriction concerning set-based explicit aggregation

When a measure is aggregated along hierarchies that are not part of the set expression declared in the aggregation function, the aggregation is not implicit.

For example, when hierarchies are present in a table and aggregation using set is in the table footer and the hierarchies in the table are not specified in the set expression, if there is a filter somewhere in the report which removes the initial roots of the hierarchy in the table, the system will not aggregate values for these roots, but along the original unfiltered roots (the original query result).

Related Information

Examples of default and explicit aggregation [page 222]

4.2.8.2.8.3 Examples of default and explicit aggregation

If you include a measure in a cell without specifiying an aggregation function, or if you use the `Aggregate` function, the measure is calculated using the default aggregation function.

Example

Default and explicit aggregation

You have a hierarchy with the following data and the hierarchy appears fully expanded in a report:

Table 108:

Product		Unit Sales
Drink		24,597
	Alcoholic Beverages	6,838
	Beverages	13,573
Food		19,194
	Baked Goods	7,870

- Placed in the table footer, `[Unit Sales]` returns 43,791. This default aggregation returns the total aggregated value of the measure (24,597 + 19,194).
- Placed in a table footer, `Sum([Unit Sales])` returns 72.072. This explicit aggregation counts every visible value in the hierarchy (24,597 + 6,838 + 13,573 + 19,194 + 7,870).
- The explicit aggregation `Sum([Unit Sales];[Product]&[Drink].children)` returns 20,411 (6,838 + 13,573) because `[Drink]` is expanded.
- The explicit aggregation `Sum([Unit Sales];{[Product]&[Drink];[Product]&[Beverages]})` returns 38.170 (24,597 + 13,573). The value for `[Beverages]` appears twice in the calculation because `[Drinks]` is expanded.
- The default aggregation `Aggregate([Unit Sales];{[Product]&[Drink];[Product].[Beverages]})` returns 24,597. The value for `[Beverages]` does not appear twice in the calculation.

If you collapse the `[Drink]` node in the report, the calculations are as follows:

- `[Unit Sales]` returns 43,791. The default aggregation is not affected by the change in display.
- `Sum([Unit Sales])` returns 51,661 (24,597 + 19,194 + 7,870). The explicit aggregation uses all the visible values to return the value.

- `Sum([Unit Sales];[Product].&[Drink].children)` returns a non-NULL value even though the child members of `[Drink]` are not visible.
- `Sum([Unit Sales];{[Product].&[Drink];[Product].&[Beverages]})` returns 38,170 because [Beverages] is not visible. The explicit aggregation uses visible values only.
- `Aggregate([Unit Sales];{[Product].&[Drink];[Product].&[Beverages]})` returns 24,597. The default aggregation is not affected by the change in display.

4.2.8.2.9 Setting default hierarchy levels in a report table

Using the *Hierarchical Navigation* option, you can set the default hierarchy member levels that are visible in a hierarchy table so that they will remain visible to the preferred level or fixed at the root level, even after refresh and data purge actions.

> **Note**
>
> If you set a default level, and then add a quick filter, all hierarchical levels are exposed for selection in the filter. If you select a level that is lower than the level set for hierarchy expansion, then you receive no values.

This option is available from the right-click contextual menu for a report table. If the filter is searching for hierarchy members that are on levels lower that those specified for the *Hierarchical Navigation*, then the table will appear empty.

Normally, the hierarchy in a table is automatically collapsed to the root hierarchy member in the following cases:

- You have just opened the document.
- You have changed the root members of the hierarchy.
- You have purged or refreshed a document.

If you do not use this option, then when a document is refreshed and the root members of the hierarchy are changed, or when the document has been purged and refreshed, the hierarchy in the table is automatically collapsed to the root hierarchy member.

Impact of a document refresh on hierarchies

Refreshing a document that contains hierarchies can impact the way they appear in a report. A collapsed hierarchy for example might expand after your refresh the document.

If the *Refresh on open* option is activated, the data is purged when you open the document. As a consequence, hierarchies are reset and collapsed to avoid having missing nodes after a refresh that could corrupt the document. However, if the document contains filters that apply to hierarchies, they are expanded to prevent the creation of empty blocks caused by a negative filter on the roots of a hierarchy that could potentially be filtered out.

This behavior does not apply when you do a standard refresh in a document because there is no data purge. Therefore, Web Intelligence has a reference to compare with and does not need to reset the hierarchies.

4.2.8.2.9.1 Using the Default Level Expansion setting

To avoid expanding all levels of a hierarchy, you can use the *Default Level Expansion* setting to specify which levels of the hierarchy should be expanded.

In Web Intelligence, hierarchies support up to 99 levels. If you set the *Default Level Expansion* to *None* in a hierarchy that has four levels for instance, the setting does not apply to the hierarchy. In this instance, all levels will be collapsed in the report after a refresh with data purge or a refresh on open. However, if a filter is applied to that hierarchy, the four levels will be expanded.

> ⚠ Caution
>
> Setting the *Default Level Expansion* setting to *None* in a hierarchy does not mean that it will be collapsed. It means that you do not apply any default expansion level.

Related Information

Setting default hierarchy levels in a report table [page 223]
To set the default hierarchy level in a report table [page 224]

4.2.8.2.9.2 To set the default hierarchy level in a report table

You can set the default number of hierarchy levels on a hierarchy member that are visible in a report table.

1. From the BI launch pad, open a document in Web Intelligence.
2. In *Design* mode, select the report that contains the table you want to configure.
3. Right-click in the table the hierarchy whose level you want to set, and select *Hierarchical Navigation* > *Default Level Expansion*.
4. In the *Default Level Expansion* contextual list, do one of the following:
   - Set the default level expansion from *None* to *4*.
   - Select *More* to select or enter in the *Default level expansion* dialog box any level between *1* and *99*.

4.2.9 Finding text in a report page

You can search for text in a report in a Web Intelligence document in *Reading* or *Design* mode.

1. Open a Web Intelligence document.
2. Do one of the following:
   - If you are in *Reading* mode, click the *Find* icon on the toolbar.
   - If you are in *Design* mode, click the *Find* icon on the toolbar in the *File* tab toolbar.

   The *Find* or *Search Bar* appears at the bottom of the report panel.

3. Type text in the *Find* or *Search Bar* box and press `Enter` or click the *Find* icon.

> **Note**
>
> To perform a case-sensitive search, click the arrow next to the box and select *Match case*.

4. If the text occurs more than once, click the *Next* or *Previous* icon to highlight other occurrences of the text.

> **Note**
>
> If you are creating a report using the Web Intelligence Applet interface or Web Intelligence Rich Client, you can click *Highlight all* to highlight all occurrences of the text on the page. This option is not available once you have saved or closed the document.

To close the *Find* or *Search Bar* box, click the *X* located at the far end of the *Find* or *Search Bar*.

4.2.10 Viewing modes

In the *Reading* and *Design* document modes, you can view reports in different modes depending on how you want to work with data and how you want the data to appear.

The viewing modes are controlled by buttons at the bottom of the Web Intelligence screen, on the status bar.

4.2.10.1 Page view mode

In the *Reading* and *Design* document modes, the *Page* view mode displays the page layout of reports, including page margins, headers, and footers.

Use *Page* view mode when you want to fine-tune the formatting of tables and charts and the layout of report pages.

4.2.10.1.1 Setting the report size in Page mode

You can set a report size to a specific percentage or to a specific number of pages in *Page* mode.

For example, if you set a report to be one page tall, all elements on the report are re-organized to fit on one horizontal page.

Setting the report size overrides all other settings that control the page layout of a report. For example, if you have a report with three sections and the report is set to start each section on a new page, the report still contains one page if the report is set to be one page tall.

The report size setting takes effect in *Page* mode only.

4.2.10.1.1.1 To set the report size

You can set the width and height of the report, or even set the size as a percentage.

1. In a Web Intelligence document in *Design* mode, select the *Page Setup* tab.
2. In the *Scale to Page* subtab, select the report width in the *Width* box and the height in the *Height* box, or set the report size as a percentage in the *Scale* box.

   If you define a percentage, the width and height are calculated automatically.

4.2.10.2 Quick Display view mode

In the *Reading* and *Design* document modes, the *Quick Display* view mode is the default display mode.

It is a pagination mode that is based on the data, rather than the physical size of report pages. The *Quick Display* view mode displays just the tables, reports, and free standing cells in reports and displays a maximum number of records vertically and horizontally, depending on the *Quick Display* settings. The *Quick Display* view mode also specifies the minimum page width and height and the amount of padding around the edges of the report.

Because the *Quick Display* view mode restricts the number of horizontal and vertical rows, a report might not contain all possible data.

Use the *Quick Display* view mode when you want to focus on analyzing results, add calculations or formulas, or add breaks or sorts to tables to organize results.

The *Quick Display* view mode properties are configurable either by the BI administrator, or directly in the interface.

Configuration	Property
BI administrator	• Maximum vertical records • Maximum horizontal records • Minimum page width • Minimum page height • Right padding • Bottom padding
Interface	• Vertical records per page **Note** ○ This property impacts only horizontal tables and cross tables. ○ Horizontal tables are never cut vertically. ○ The number of rows in a horizontal table is ignored in vertical records calculations. • Horizontal records per page

Configuration	Property
	Note ○ This property impacts only vertical tables, forms and cross tables. ○ The number of rows in a vertical table is ignored in horizontal records calculations.

Other notes:

- Table headers and footers do not count as rows.
- Free standing cells and charts do not count as rows.
- Section cells do not count as rows when the section is not empty.
- Sections cells count as vertical rows when the section is empty.
- The *Avoid Page Break in Block* option has no effect in *Quick Display* view mode.

4.2.10.2.1 To change Quick Display mode settings

You can change the number of horizontal and vertical records per page in *Quick Display* mode.

1. In a Web Intelligence document in *Design* mode, right-click the report and select *Format Report* to display the *Format Report* dialog box.
2. Select the *General* tab.
3. Select the number of horizontal and vertical records per page in the *Page content (Quick Display mode only)* section.
4. Click *OK* to return to the document.

4.2.10.3 To switch between viewing modes

You can switch between *Quick Display* and *Page* view modes.

1. Open a Web Intelligence document, in the *Reading* or *Design* document mode.
2. In the status bar at the bottom of the document, select one of the following icons:
   - To display a report in *Quick Display* view mode, click the *Quick Display* icon.
   - To display a report in *Page* view mode, click the *Page* icon.

4.2.11 Folding and unfolding report data

You can hide and display report data by folding and unfolding the display of different report elements.

You can fold and unfold sections, breaks and tables. Data is concealed and displayed in different ways depending on the report element.

Report element	Result
Section	When a section is folded, section details are hidden and free cells only are displayed. In *Reading* mode, you can fold and unfold sections.
Table or break	When a table or break is folded, the rows are concealed, and only headers and footers are displayed. Tables must have headers and footers to be folded and unfolded. Vertical tables, horizontal tables and cross tables can be folded and unfolded. In *Reading* mode, you can fold and unfold sections.

4.2.11.1 To fold and unfold report data

You can fold and unfold data in *Reading* and *Design* mode by activating the outline.

1. Open a Web Intelligence document.
2. Select a cell in the table.
3. Do one of the following:
   - In the *Reading* mode, click *Outline*.
   - In the *Design* mode, in the *Analysis* tab, select the *Interact* subtab and click *Outline*.

   The fold and unfold bars appear to the side of and above the report panel, depending on the report structure.
4. Use the +/- or arrow icons on the bars, which correspond to and are aligned with individual report elements, to fold and unfold them.
5. Use the icons at the side or upper part of the bar to fold and unfold all instances of a type of report element.

4.2.12 To redisplay all hidden content in a report

You can hide tables, cells and sections in reports.

1. Open a Web Intelligence document in *Design* mode.
2. Right-click the report containing hidden content and click *Hide* > *Show All Hidden Content*.

4.2.13 Formatting the report layout

You can format your report and report elements in order to present the report with a company style.

You can format the report layout manually, or you can create a company stylesheet using a CSS file. You can add color background, corporate images, and so on. To change the report format, you must view the report in Design mode in order to access the report formatting options. You can format the following report elements:

To set the...	Do this...
Name the report	Right-click in the report, select *Format Report* *General*, then name the report.
Number of records per page	Right-click in the report, select *Format Report* *General*, then set the number of records per page.
Report border style	Right-click in the report, select *Format Report* *Border*, set the border style, thickness, and color.
Report background	Right-click in the report, select *Format Report* *Appearance* and set the background (color, pattern, image).
Page size	Right-click in the report, select *Format Report* *Layout*, select a page size.
Page orientation	Right-click in the report, select *Format Report* *Layout*, select landscape or portrait orientation.
Page scaling	Right-click in the report, select *Format Report* *Layout*, select the page scaling/
Page margins	Right-click in the report, select *Format Report* *Layout*, and set the different margin sizes, as required.
Show/hide header	Right-click in the report, select *Format Report* *Layout*, select or unselect Show header. or Right-click in the report header, select *Format Header*, select or unselect Show header.
Header size	Right-click in the report, select *Format Report* *Layout*, enter a size for the header. or Right-click in the report header, select *Format Header*, enter a size for the header.
Header border style	Right-click in the report header, select *Format Header*, select a style for the header border.
Header background	Right-click in the report header, select *Format Header*, select a background color, a pattern or enter an address for an image.
Show/hide footer	Right-click in the report, select *Format Report* *Layout*, select or unselect Show footer or Right-click in the report footer, select *Format Footer* and select or unselect *Show footer*.

To set the...	Do this...
Footer size	Right-click in the report, select *Format Report* > *Layout*, enter a size for the footer. or Right-click in the report footer, select *Format Footer*, enter a size for the footer.
Footer border style	Right-click in the report footer, select *Format Footer*, select a style for the footer border.
Footer background	Right-click in the report footer, select *Format Footer*, select a background color, pattern or enter an address for an image.

Related Information

To format the appearance of reports and their headers, footers, sections, tables, and table cells [page 230]
Formatting your reports using Cascading Style Sheets [page 272]
Creating a corporate palette for charts [page 379]
Formatting tables and table cells [page 296]

4.2.13.1 To format the appearance of reports and their headers, footers, sections, tables, and table cells

You can define the background color and pattern of a report, or its headers, footers, sections, tables, and even specific cells in tables. The pattern can be a skin, also known as a theme, an image from a URL address or a file.

1. In a Web Intelligence document in *Design* mode, right-click the report, a header, footer, report section, table, or a selection of one or more cells in a table and select the applicable Format option from the contextual menu.
   For example, if you right-click on a selection of a group of cells, select *Format Cells* from the contextual menu.
2. In the format dialog box that appears, select the *Appearance* tab.
   The *Background* section in this tab shows the settings you can apply to your selected items.
3. To select a color for the background of the selected items:
   a. Click the radio button next to the color palette icon.
   b. Click the arrow next to the color palette icon to display the palette.
   c. Select a color from the palette.
   d. Click *OK* to return to the document.

> **Note**
>
> When the background color of cells are defined (even as white), they take precedence over the table background color. If you apply a background color to an entire table but one or more cells remain white, open the *Format Cells* dialog box for these cells and check their color background setting.

4. To format the pattern for the selected items, do one of the following:
   - To select a skin, select the *Skin* radio button, and select a skin from the dropdown list.

     > **Note**
     >
     > If you are formatting the table appearance, you need to set the horizontal or vertical padding value to greater than 0 in the *Spacing and Padding* section of the *Appearance* tab, otherwise the skin will not appear.

   - To select an image at a URL location, select the *Image from address* radio button, and do one of the following:
     - Paste in the text box the URL address for an image. Click the *Validate* icon.
     - To create a dynamic image using a complex formula, click the *Formula Editor* icon next to the text box.
       Example: Table cell syntax
       “<URL>”+”<column header object>”+”.<image format>”

       > **Note**
       >
       > - To access an image on the corporate server, type the image name. The application inserts `boimg://` when you click *Apply*.
       > - The dynamic image appears only if the column header object used to define the image is in the table. However, the object can be hidden. If the object is not in the table, then there is no context available to calculate the images address.

   - To select use an image from a file on your computer or a server, select the *Image from file* radio button, click *Add* or *Browse*, navigate to the image and click *Open*.
   - If you are using an image, you can select a display location from the *Display* dropdown list.
     - If you select a *Normal* display, then you can set the position of the image from the *Position* dropdown lists.
     - If you select *Stretch*, the image adjusts to fit the entire space, irrespective of the image height and width settings.
     - If you select *Tile*, the image is repeated in the space.
     - If you select a *Horizontal Tile* or *Vertical Tile* location, then you also have additional *Position* options.

   > **Note**
   >
   > To remove an image or pattern, select *None* for the pattern.

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

> **Restriction**
>
> Because there is no background image feature in Excel, when you save or export a report to the Excel format any background images are not exported to the output file.

Related Information

To build a formula in the Formula Editor [page 284]

Formatting the report layout [page 228]
Formatting tables and table cells [page 296]

4.2.14 Reusing report elements in other documents

You can reuse a report element in other applications. When you copy a report element, Web Intelligence automatically stores a copy in several formats:

- In an image format.
- In a text format so that it can be pasted in a text editing application.
- In a Web Intelligence format so that it can be pasted in the same document.
- In a shared object so that it can be pasted in a different Web Intelligence document.

In the Web Intelligence Applet interface, the creation of the shared object can take a while and affect performance as a result.

You can make the shared object creation optional and disable it to avoid performance drops.

> **Note**
>
> If you disable this option, you will not be able to paste report elements in other Web Intelligence documents.

Related Information

To enable or disable report elements reuse in other documents [page 232]

4.2.14.1 To enable or disable report elements reuse in other documents

If you do not plan on reusing report elements in other documents, you can disable the reuse option.

1. Click *Properties* > *Application*.
   If you are using Web Intelligence Rich Client, click the *Viewing* tab.
2. Uncheck *Reuse copied report elements in other Web Intelligence documents* to disable the reuse option.

4.2.15 Printing reports

You can print one or multiple reports from a Web Intelligence document.

You print documents directly from Web Intelligence Applet interface and Web Intelligence Rich Client. However, when you print from the Web Intelligence HTML interface, you export the document to a PDF file that you can then print.

> **Note**
>
> If a report is wider than the width of the paper size defined in the *Report Page Layout*, page breaks are inserted. The paper size and page orientation for printing can be different from the paper size and page orientation set for the reports when you view them in Web Intelligence Applet interface or Web Intelligence Rich Client.

4.2.15.1 To print reports in Web Intelligence

A variety of methods are available for printing reports in Web Intelligence.

1. Open a Web Intelligence document.
2. Do one of the following:
   - In the Web Intelligence HTML interface:
     - If you are in *Reading* mode, click the arrow next to the *Print* icon on the toolbar.
     - If you are in *Design* or *Data* mode, click the arrow next to the *Print* icon in the *File* tab toolbar.
   - In the Web Intelligence Applet interface or Web Intelligence Rich Client interface:
     - If you are in *Reading* mode, click the *Print* icon on the toolbar.
     - If you are in *Design* or *Data* mode, click the *Print* icon in the *File* tab toolbar.

   The *Print* dialog box appears.
3. Do one of the following:
   - In the Web Intelligence HTML interface: choose your printing options and click *Print*.
   - In the Web Intelligence Applet interface or Web Intelligence Rich Client interface: choose your printing options and click *OK*.
   - In the Web Intelligence HTML interface: the *File Download* dialog box appears. Open the PDF file and print the report.
   - In the Web Intelligence Applet interface or Web Intelligence Rich Client interface: the report is sent to the printer.

   > **Note**
   >
   > In the Web Intelligence HTML interface, click the *Print* icon to print the report with current settings.

4.2.16 Tracking changes in data

To make informed and effective business intelligence decisions, you need to understand how the data on which you base those decisions changes over time.

You can track and display data changes to help you focus your analysis on key areas and avoid wasting time exploring irrelevant data.

When you track data changes, you select a particular data refresh as a reference point. This data is known as the reference data. When you activate data tracking, you see your data in relation to the reference data.

Here are some examples of data tracking:

- If an outlet no longer appears in a list of the top outlets by sales, it would be interpreted as deleted from the list. You can use this information to investigate why the outlet is no longer a top performer.
- If sales have decreased in a region, data tracking displays the decrease. You can then drill down into the data for the region to understand why revenue is falling.

In both these cases, data tracking makes the current data more meaningful by placing it in context with older data. Without this context it is much more difficult to identify trends.

> **Note**
>
> - The information in the Status Bar at the bottom of the report indicates the document level status. An asterisk on a report tab indicates that change tracking is activated on the report.
> - Status “changes” of tracking data changes is only for a detail value when displayed with its associated dimension in the table. When the detail is given without it is associated dimension it is considered as a dimension and does not show the status changes (but only shows when the detail is inserted/deleted).

Related Information

Types of data change [page 235]
Automatic update tracking mode [page 235]
Absolute reference data tracking mode [page 235]
To activate data tracking [page 235]
To display changed data [page 237]
Configuring the appearance of changed data [page 236]
To configure the appearance of changed data [page 236]
How changed data is displayed in blocks [page 237]
How changed data is displayed in blocks with breaks [page 241]
How changed data is displayed in sections [page 239]
How changed data is displayed in reports with merged dimensions [page 238]
How changed data is displayed in charts [page 241]

4.2.16.1 Types of data change

You configure the display of data changes through the interface or formula language.

You can track the following types of data change:

- Inserted data
- Deleted data
- Changed data
- Increased values
- Decreased values

The formula language provides advanced users with additional power and flexibility in displaying and formatting changed data.

4.2.16.2 Automatic update tracking mode

In the *Auto-update* data tracking mode, you always compare the current data with the data before the last refresh.

This is achieved by automatically setting the current data as the reference data just before each refresh. The reference data is always one refresh behind the current data.

Automatic data tracking is appropriate for scheduled documents when you want to compare the current data with the data before the last refresh.

> **Restriction**
>
> This applies only to documents scheduled to the *Web Intelligence* output format.

4.2.16.3 Absolute reference data tracking mode

In the *Fixed data* tracking mode, you manually select the reference data in the *Data Tracking* dialog box.

You continue to use this data as a reference point until you update the reference point.

4.2.16.4 To activate data tracking

You can activate data tracking in the *Data Tracking* dialog box.

> **Note**
>
> If your user rights do not permit document tracking, then the options mentioned below are grayed out.

1. Open a Web Intelligence document.

2. Do one of the following:
   - In any mode, click *Track changes* on the status bar at the bottom of the window.
   - In the *Reading* mode, click *Track* in the toolbar.
   - In the *Design* mode, in the *Analysis* tab, select the *Data Tracking* subtab and click *Track*.
3. In the *Data Tracking* dialog box, select the *Data* tab.
4. To compare the data with the last refresh, select *Compare with last data refresh*.

   When you select this option, the current data becomes the reference data after each data refresh. The report always shows the difference between the most recent data and the data before the last refresh.

   If this option is selected, the status bar displays *Track changes: Auto-update*.
5. To compare the data with a specific data refresh, select *Compare with data refresh from* and select the date of the data refresh from the list.

   When you select this option, the data refresh you choose becomes the reference data. The report always shows the difference between the most recent data and the data refresh you chose.

   If this option is selected, the status bar displays *Track changes: Fixed data*.
6. Select the reports that you want to display data tracking from the *Reports with data tracking shown* list.
7. Select *Refresh data now* to refresh the data when the dialog box closes.
8. Click *OK* to close the *Data Tracking* dialog box.

4.2.16.5 Configuring the appearance of changed data

You can configure the appearance (font style, size and color) of changed data in your document.

You can seperately configure the appearance of the following changes:

- Inserted, deleted dimensions and changed detail values
- Increased or decreased measure values

Measure values can also adopt the formatting of inserted or deleted dimension values. For example, if a dimension value disappears from a list of values in a block, and the block also shows a measure value for the dimension, both the dimension and measure values appear as deleted data.

The BI administrator defines the default appearance of changed data in the Central Management Server (CMS). When you configure the appearance of changed data locally, you override the CMS defaults.

4.2.16.5.1 To configure the appearance of changed data

You can configure the appearance of changed data in the *Data Tracking* dialog box.

1. Open a Web Intelligence document in *Reading* or *Design* mode.
2. Click *Track Changes* on the status bar at the bottom of the window to display the *Data Tracking* dialog box.
3. In the *Options* tab, select each type of changed data you wish to display and click *Format* to specify how you want the changes to appear.

4. Click *OK* to close the *Data Tracking* dialog box.

Related Information

Highlighting data using conditional formatting [page 244]

4.2.16.5.2 To display changed data

You can choose whether to display changed data when data tracking is activated.

1. Open a Web Intelligence document in *Reading* or *Design* mode.
2. Activate data tracking.
3. Do one of the following:
   - If you are in *Reading* mode, select *Track* > *Show Changes*.
   - If you are in *Design* mode, in the *Analysis* tab, in the *Data Tracking* subtab, click *Show Changes*
4. Select the option again to turn off the display of changed data.

Related Information

Configuring the appearance of changed data [page 236]
To activate data tracking [page 235]

4.2.16.5.3 How changed data is displayed in blocks

This example uses a document with a block showing [Country], [Year] and [Revenue].

Example

Changed data in a simple block

The original data is as follows:

Table 109:

Country	Year	Revenue
France	2003	1000
France	2004	2000
Japan	2002	1000
Poland	2002	1200

After a refresh, the data is as follows:

Table 110:

Country	Year	Revenue
France	2004	3000
Japan	2003	900
Poland	2002	800
UK	2004	900

When data tracking is activated and data changes displayed, the block appears as follows:

Table 111:

Country	Year	Revenue	Formatting
France	2003	1000	[deleted data formatting on all cells]
France	2004	3000	[increased data formatting on Revenue cell]
Japan	2002	1000	[deleted data formatting on all cells]
Japan	2003	900	[inserted data formatting on all cells]
Poland	2002	800	[decreased data formatting on Revenue cell]
UK	2004	900	[inserted data formatting on all cells]

- The rows showing revenue for France in 2003 and Japan in 2002 represent data that no longers exist after the refresh.
- The revenue for France in 2004 has increased.
- The revenue for Poland in 2002 has decreased.
- The rows showing revenue for Japan in 2003 and the UK in 2004 appeared after the refresh.

4.2.16.5.4 How changed data is displayed in reports with merged dimensions

A dimension appears as changed only if all the dimensions that participate in the merge are changed.

Example

Changed data and merged dimensions

In this example, Country is a merged dimension containing the Country dimensions from two data providers. Before data refresh, the data is as follows:

Table 112:

Country (DP1)	Revenue (DP1)	Country (DP2)	Sales (DP2)
US	10000	US	5000
France	4000		
UK	5000	UK	3000
Germany	1000	Germany	1000

After a data refresh, the data becomes:

Table 113:

Country (DP1)	Revenue (DP1)	Country (DP2)	Sales (DP2)
US	10000	US	4000
France	4000	France	3000
UK	6000	UK	4000
Poland	2000		

When displayed in a block with the merged Country dimension and data changes displayed, the data appears as follows:

Table 114:

Country	Revenue	Sales	Formatting
US	10000	4000	[decreased data formatting on Sales cell]
France	4000	3000	[inserted data formatting on Revenue cell]
UK	6000	4000	[increased data formatting on Revenue and Sales cells]
Germany	1000	1000	[deleted data formatting on all cells]
Poland	2000		[inserted data formatting on Country and Revenue cells]

In the France row, France does not appear as inserted because a France row was not inserted in both data providers. Revenue appears as inserted because it is a new measure value after the data refresh.

In the Poland row, Poland appears as inserted because it is a new dimension value after the data refresh.

4.2.16.5.5 How changed data is displayed in sections

In this example you have a document with a block showing [Country], [Year] and [Revenue].

Example

Changed data in a report with sections

The original data is as follows:

Table 115:

Country	Year	Revenue
France	2003	1000
France	2004	2000
Japan	2002	1000
Poland	2002	1200
US	2003	
US	2004	

After a refresh, the data is as follows:

Table 116:

Country	Year	Revenue
France	2004	3000
Japan	2003	900
Poland	2002	800
UK	2004	900

If you create a section on [Country] and display data changes, the report appears as follows:

France [no formatting]

Table 117:

Year	Revenue	Formatting
2003	1000	[deleted data formatting on all cells]
2004	3000	[increased data formatting on Revenue cell]

Japan [no formatting]

Table 118:

Year	Revenue	Formatting
2002	1000	[deleted data formatting on all cells]
2003	900	[inserted data formatting on all cells]

Poland [no formatting]

Table 119:

Year	Revenue	Formatting
2002	800	[decreased data formatting on Revenue cell]

UK [inserted data formatting]

Table 120:

Year	Revenue	Formatting
2004	900	[inserted data formatting on all cells]

The data appears in the section header in either of two ways, depending on the changes in the data in the section:

- If all the rows in the block in the section have changed in the same way, the section header is displayed with the same formatting as the rows.
- If the rows have changed in different ways, or only some rows have changed, the section header retains its default format.

4.2.16.5.6 How changed data is displayed in blocks with breaks

When a block contains a break and the *Merge* block property is set, the display of the centered value follows rules similar to those for section headers.

- If all the rows in the break have changed in the same way, the centered value is displayed with the same formatting as the rows.
- If the rows have changed in different ways, or only some rows have changed, the centered value retains the default formatting.

4.2.16.5.7 How changed data is displayed in charts

When the data in a chart has changed, a changed data icon appears above the chart.

When you click the icon, the chart changes to a table to allow you to see the details of the changes.

4.2.16.6 Data tracking restrictions

If you change or purge a data provider, the report no longer displays changed data.

If the data provider is changed, the current version of the document is no longer compatible with the reference version. If the data is cleared, the old data no longer exists for comparison.

As a result, the following actions are incompatible with data tracking:

- Drill out of scope
- Query drill
- Deleting a query
- Any modification (including modifications to security rights) that changes the SQL generated by a data provider
- Purging the document

When you perform any of these actions, the data history of the document is cleared because the actions are incompatible with the display of changed data. For example, if you modify a query, the data in the document

changes because of the modification. Any comparison between this data and old data generated from a different query is misleading.

> **Note**
>
> When you use query drill or drill out of scope, the data history is cleared because these actions change the data provider. This should not affect you because, when you start to drill, you have already identified the data that requires further analysis. Data tracking has served its purpose and you can now continue with your data analysis.

Related Information

To drill out of the scope of analysis [page 432]
Drilling with query drill [page 449]
To manage queries using the Data Manager [page 153]

4.2.16.6.1 Data tracking and Refresh on Open

When a document is set to refresh its data on opening (when the *Refresh on open* document property is selected), data tracking does not display the difference between the data prior to the refresh and the data after the refresh.

The data after the refresh is considered to be new data because the refresh purges the document.

> **Note**
>
> When you enable the *Refresh on open* document property, the document displays the latest information each time you open the document. The *Refresh on open* option is dependent on the following settings in the CMC (configured by the BI administrator):
>
> - In *Applications* > *Web Intelligence*, from the *Manage* list, select *Properties*. In the *Automatic Document Refresh on Open Security Right Setting* section, the property *Automatic Refresh* security setting is enabled.
> - In *Applications* > *Web Intelligence*, from the *Manage* list, select *User Security*. When you select a user profile and click *View Security*, check that the *Document - disable automatic refresh on open* security right is disabled.

In the settings are set as listed above, then even if the document is not set as being *Refresh on open*, the data will still be refreshed when the document is opened.

Related Information

To save a document in the corporate repository [page 406]

4.2.16.7 Using formulas to track changed data

You can use formulas to create alerters that let you know when data has changed in a document.

These custom alerters do not appear in the list of standard alerters.

You use the RefValue, RefValueDate, and RefValueUserResponse functions in cell formulas to build these custom alerters. You can also use formulas with special calculations based on data changes. For example, you can include a calculation to show the difference between the previous value and the current value of a measure.

For more information on the functions, see the *Using Functions, Formulas and Calculations in Web Intelligence* guide or the related section in the Web Intelligence online help.

4.2.16.8 Changed data and the calculation context

When data tracking is activated, data only appears as changed when the calculation context remains the same.

For example, if a measure value changes because you have changed the calculation context of a block, the new value is not flagged as changed.

Example

Changing the calculation context

In this example you have a block showing [City], [Customer] and [Revenue] as follows:

Table 121:

City	Customer	Revenue
San Francisco	Smith	1000
San Francisco	Jones	2000
Los Angeles	Wilson	3000
Los Angeles	Harris	4000

If you remove [Customer] from the block, revenue is aggregated by city:

Table 122:

City	Customer
San Francisco	3000
Los Angeles	7000

The revenues do not appear as increased because the amount of revenue has not changed. Only the calculation context has changed. Revenues are now aggregated by city only, giving higher figures.

If, after a data refresh, Jones' revenue falls to 1000 and Wilson's revenue rises to 4000, the data appears as follows:

Table 123:

City	Customer
San Francisco	2000
Los Angeles	8000

The data appears as changed because, independently of the change of calculation context, the total revenue for San Francisco has decreased and the total revenue for Los Angeles has increased.

4.2.17 Highlighting data using conditional formatting

Conditional formatting enables you to highlight results or change formatting based on data.

You can, for example, conditionally format results to highlight particularly high or low results with specific colors or with text comments, such as **High Performer** or **Low Performer**.

You can apply conditional formatting to the following elements:

- Columns in a vertical table
- Rows in a horizontal table
- Cells in forms and crosstables
- Section headers
- Free-standing cells

You can apply up to 30 conditional formatting rules in a document. You can apply these rules to a maximum of 20 table columns or rows, free-standing cells, or section cells on the reports. You can apply up to 10 different rules on a single table column or row, free-standing cell, or section cell.

You can define conditional formatting rules to activate the following formatting changes:

- text color, size and style
- cell border colors and style
- cell background display – specific colors, images, or hyperlinks to web pages

You can also define rules that display a text or formula, an image, or a hyperlink. In this case, the results that meet the condition defined in the rule will be replaced by the text or formula.

Conditional formatting is dynamic. When you refresh reports with the latest data from the database, the rules highlight the new results accordingly.

If you apply conditional formatting to a table row or column with a break, the rule is only activated when the value that meets the conditional rule appears on the first row of that break.

4.2.17.1 Conditions in conditional formatting

Conditional formatting rules contain multiple conditions, allowing you to apply multiple formats depending on the data.

A conditional formatting rule operates as follows:

```
If <Main Condition> is true, Apply <Main Format>
ElseIf <Second Condition> is true,  Apply <Second Format>
ElseIf <Third Condition> is true,  Apply <Third Format>
ElseIf...
Else Apply <Default Format>
```

In the above example, if `<Main Condition>` is `Sales Revenue > 100,000` and `<Main Format>` formats the text in blue, the conditional formatting displays the measure in blue whenever the Sales Revenue measure is greater than 100,000.

If `<Second Condition>` is `Sales Revenue < 10,000` and `<Second Format>` formats the text in red, the conditional formatting also displays the measure in red whenever its value is less than 10,000.

Each condition can contain multiple tests, and all tests must return True for the conditional formatting to be applied. For example, a condition can test the values of the [Country] and [Resort] objects. Both objects must return the value specified in the test for the formatting to be applied.

4.2.17.2 To build a conditional formatting rule

1. Open a Web Intelligence document in *Design* mode.
2. In the *Analysis* tab, select the *Conditional* subtab.
3. Click *New Rule* to display the *Formatting Rule Editor* panel.
4. Enter a rule name and rule description.
5. Click ... next to the *Filtered object or cell* box and select objects.

   You cannot define a rule on a cell containing a date or numeric type data (for example, a date or a calculation) because the application considers any value you type into the *Value* text box as a character string.
6. Select an operator.
7. Enter the value that triggers the formatting rule in the *Operands* box.
   - To enter a value directly, type it in the box.
   - To select a value from the list of values, click ... next to the *Operands* box and select a value.
   - To change the object or variable as the value, click ... next to the *Operands* box, click *Select an Object or Variable* on the menu, then select a different object or variable.
   - To clear the *Operands* box, click ... next to the box, then select *Empty*.
8. To add an additional test within the condition, click + by the existing conditions, then choose the filtered cell or object, operator and value as described above.
9. To remove a condition, click *x* next to the *Condition* box.
10. To trigger the condition using a formula, click the arrow next to *Condition* and select *Fx*.
11. Click *Fx* next to the formula box to display the *Formula Editor* in which you can build formulas.

- If you want your formula to return a text string, do not include quote marks before or after the text. For example, if you want the alerter to display OVERDUE, then type: OVERDUE.
- The formula must return True or False. True triggers the condition; False does not. For example, if the formula is `RowIndex()=3`, the conditional formatting appears on the fourth row of the table.

12. To add an additional condition to the rule, click *Add* at the top corner of the box to display an additional condition box, then define the conditions or build a formula as described above.

    You can add multiple conditions.
13. To set the format that appears when the rule is triggered, click *Format* in the *If the above is true, then display* panel.
    The *Formatting Rules Display* dialog box to set the format appears.
14. Click *OK* to save the IF/THEN formats, then *OK* to set the rule format in the report.

4.2.17.3 To set the format displayed by a conditional formatting rule

1. Open a Web Intelligence document in *Design* mode.
2. In the *Analysis* tab, select the *Conditional* subtab.
3. Click *Formatting Rules*.
4. Select a rule from the list and click *Edit*.
5. In the *Formatting Rule Editor* dialog box, click *Format* to display the *Formatting Rule Display* dialog box.
6. To display text or a formula, select the *Display* tab and build the formula in the box.
   - To define the displayed text or formula as HTML, an image URL or a hyperlink, click *Read content as*, then select *HTML*, *Image URL* or *Hyperlink* from the list.

     > **Note**
     >
     > When you select *Read content as*: *HTML*, the *Autofit Width* and *Autofit Height* properties do not work because the size of the HTML data in a cell cannot be decoded by the browser properly. The HTML content that is provided by the user is rendered by the browser directly. Web Intelligence does not modify the HTML code provided by the user to set the width and height.

   - To change the number format, select the format from the *Format Number* list or click *Custom* and select the format from the *Format Number* dialog box.
7. To change the font style, click the *Text* tab, and define the font using the controls in the tab.
8. To change the background style, select the *Background* tab then define the background using the controls in the tab.
9. To change the border style, select the *Border* tab and define the border using the controls in the tab.
10. Click *OK*, then *OK* again to return to the document.

Related Information

To build a conditional formatting rule [page 245]

4.2.17.4 To apply conditional formatting

You can apply previously-defined conditional formatting rules to report elements.

You can format the following report elements:

- Columns in a vertical table
- Rows in a horizontal table
- Cells in forms and crosstables
- Section headers
- Free-standing cells

1. In a Web Intelligence document in *Design* mode, select a report element on which you want to conditionally format.
2. In the *Analysis* tab, select the *Conditional* subtab.
3. Click the arrow next to *Formatting Rules* and select the rule you want to apply from the list.
4. Save the document.

4.2.17.5 To manage conditional formats

1. Open a Web Intelligence document in *Design* mode.
2. In the *Analysis* tab, select the *Conditional* subtab.
3. From the *Formatting Rules* dropdown list, select *Manage Rules* to display the *Conditional Formats* dialog box.
4. To give a rule higher or lower priority in the list, select the rule and click the up or down arrow button to the side of the list.
5. To duplicate a rule, select the rule and click *Duplicate*.
6. To remove a rule, select the rule and click *Remove*.
7. Click *OK* to return to the document.

4.2.17.6 Using formulas to create advanced conditional formatting rules

You can build advanced conditional formatting rules using the formula language rather than using the *Filtered object or cell*, *Operator* and *Value* choices offered by in the *Formatting Rules Editor*.

Example

Highlighting three ranges of quarterly sales revenue results calculated as percentages of the average sales revenue

In this example, you build three rules to color-code sales revenues, depending on their relationship to the average sales revenue. The table includes results for three years, and this is the average to which you want to compare each sales revenue result calculated per quarter per product line.

Using the formula option in the *Formatting Rules Editor*, you build the following rule, which contains three conditions The conditions are as follows:

Condition:

```
[Sales revenue] < ((Average([Sales revenue]) In Block) * 0.8)
```

Else Condition:

```
=[Sales revenue] < ((Average([Sales revenue]) In Block) * 1.2)
```

Else Condition:

```
=[Sales revenue] > ((Average([Sales revenue]) In Block) * 1.2)
```

The formula you specify for each condition works as follows:

- The first condition applies when sales revenues are are < 0.8, or 80%, of the average.
- The second condition applies when sales revenues are < 1.2, or less than 120%, of the average.
- The third applies when sales revenue are > 1.2, or greater than 120%, of the average.

You then use the *Formatting Rules Display* dialog box to specify the conditional formatting you want displayed in report cells that meet one of the conditions. You choose the following formatting:

- Report cells containing sales revenue that is less than 80% of the average revenue (the first condition) display the revenue in red.
- Report cells containing sales revenue that is less than 20% above the average revenue (the second condition) display the revenue in blue.

  > **Note**
  >
  > This condition covers values also covered by the first condition. For example, if the average is 100, 79 is less than 80% below the average and less than 20% above the average. In this case, the first condition takes precedence.

- Report cells containing sales revenue that is greater than 20% above the average revenue (the third condition) display the revenue in green.

This formatting enables you to see at a glance which product lines are generating above average, below average, or close to average sales revenue.

4.2.18 Ranking report data

Ranking allows you to isolate the top and bottom records in a set based on a variety of criteria.

For example, if you have a block showing countries and associated revenues, ranking allows you to rank the data in the block to show the top 3 countries only, based on the revenue they generate.

Ranking allows you to answer business questions such as:

- Which 3 regions generate the most revenue?
- Which are the bottom 10% of stores in terms of revenue generation?

- What is the group of the best-performing stores that generates a combined revenue of up to $10,000,000?

You can rank data in many ways to answer these kinds of business questions. You can:

- Rank the top and/or bottom n records by dimension (for example Country) based on the sum of a related measure (for example Revenue).
- Rank the top and/or bottom n% of the total number of records by dimension. based on the value of a related measure as a percentage of the total value of the measure.
- Rank the top and/or bottom n records by dimension based on the cumulative sum of a related measure.
- Rank the top and/or bottom n records by dimension based on the value of a related measure as a cumulative percentage of the total value of the measure.

4.2.18.1 Rankings and sorts

When you rank data, the data will be sorted according to the dimensions by which it is ranked.

For example, using the following table:

Table 124:

Dimension A	Dimension B	Measure
A1	B1	1
A1	B2	4
A2	B1	5
A2	B2	2
A3	B1	3
A3	B2	6

If you rank the top 2 measure values and no ranked-by dimension has been defined, then the data is sorted according to that measure, across all dimensions:

Table 125:

Dimension A	Dimension B	Measure
A3	B2	6
A2	B1	5

If you rank the top 2 measure values by a specific dimension, for example [Dimension A], the data is sorted according to the aggregated value of that measure, in the chosen dimension [Dimension A]:

Table 126:

Dimension A	Dimension B	Measure
A3	B1	3
A3	B2	6
A2	B1	5
A2	B2	2

Sorts applied to display rankings take precedence over sorts that you previously applied to data. For example, if you previously sorted the list of stores in alphabetical order, the ranking sort overrides the alphabetical sort.

Sorts applied to display rankings can be managed like any other sort, using the dedicated Web Intelligence menus.

Removing the ranking on a measure will also remove the sort applied to the data.

Note

- If the dimension used to rank by is not present in the table, then the ranking cannot sort the data.
- Null measure values are not taken into account when a ranking is applied to that measure.

Related Information

Using sorts to organize data in reports [page 338]

4.2.18.2 Tied rankings

Tied rankings are assigned equal ranking values and subsequent ranking values are pushed back to compensate.

This means that a top or bottom n ranking can return more than n records.

Example

Top and bottom tied rankings

The following table shows a tied top 3 ranking and a tied bottom 3 ranking.

Table 127:

Dimension	Measure	Top 3 Ranking	Bottom 3 Ranking
A	10	4	1
B	20	3	2
C	30	1	3
D	30	1	3

Each ranking includes records up to and including rank 3. This results in the following result for a top 3 ranking:

Table 128:

Dimension	Measure
C	30
D	30
B	20

It results in the following for a bottom 3 ranking:

Table 129:

Dimension	Measure
A	10
B	20
C	30
D	30

Because the 2 largest measure values are identical, a top 1 or 2 ranking in the same table will result in the same table content.

Table 130:

Dimension	Measure
C	30
D	30

4.2.18.3 Ranking and data order

You cannot rank on an object whose values depend on the data order because the ranking changes the data order.

If the data order is changed, the object data is changed and results in a recalculation of the ranking. The result is a circular dependency between the ranking and the object that cannot be resolved.

If you create a rank on a measure whose values depend on the data order, for example a measure that uses the `Previous` function, the `#RANK` error code appears in all cells in the block.

For similar reasons, ranking on a measure using a running aggregation function such as `RunningSum` will not give any meaningful result, however no error code will be displayed in the block cells. The ranking cannot be meaningful because running calculations depend on the data context, which will be modified by the ranking operation.

For more information on the functions, see the *Using Functions, Formulas and Calculations in Web Intelligence* guide or the Web Intelligence online help.

4.2.18.4 Ranking in sections

You can apply ranking on blocks located within sections.

However, ranking on a measure using a context modifier such as `ForEach` or `ForAll` is not supported. If you use a context modifier, you will encounter unexpected results, because of the interaction of the implicit filter defined by the section instance with the calculation context modifier that is used in the ranked measure.

For more information on the functions, see the *Using Functions, Formulas and Calculations in Web Intelligence* guide or the Web Intelligence online help.

4.2.18.5 Ranking parameters

The following parameters can be configured in the *Ranking* dialog box.

Table 131:

Parameter	Description
Top/Bottom	When the calculation mode is *Count*, the ranking returns the top/bottom n records based on the measure specified as the *Based on* parameter. For example, the top 3 countries by revenue generated, the bottom 3 year/quarter combinations by revenue generated. When the calculation mode is *Percentage*, the ranking returns the top/bottom n% of the total number of records based on the measure specified as the *Based on* parameter. For example, if there are 100 records and you rank the top 10%, the ranking returns the top 10 records. When the calculation mode is *Cumulative Sum*, the ranking returns the top/bottom records, for which the cumulative sum of the measure specified as the *Based on* parameter does not exceed the value specified in the top/bottom. When the calculation mode is *Cumulative Percentage*, the ranking returns the top/bottom records, for which the cumulative sum of the measure specified as the *Based on* parameter does not exceed n% of the total of the measure, specified in the top/bottom.
Based on	The measure on which the ranking is based.
Ranked By	The ranking dimension. If you specify a ranking dimension, the aggregated values of the *Based on* parameter, calculated for the dimension, determine the ranking. If you do not specify this dimension, the values of the *Based on* parameter calculated for all dimensions in the block determine the ranking. In other words, the ranking returns the top/bottom X rows in the block based on the measure. The ranked by dimension does not need to be part of the block where the ranking is applied. However, in this case, the ranked data cannot be sorted.
Calculation mode	The type of calculation used to create the ranking. See the description of the *Top/Bottom* parameters in this table for more information.

Related Information

To create a ranking [page 254]

4.2.18.5.1 Example of a ranking

If you rank the top 2 of each Quarter based on Revenue, the ranking filters out all the rows for Q1 and Q3 because Q4 and Q2 have the highest aggregated revenues.

A table contains the following data:

Table 132:

Year	Quarter	Revenue
2006	Q1	100
2006	Q2	200
2006	Q3	300
2006	Q4	500
2007	Q1	400
2007	Q2	700
2007	Q3	300
2007	Q4	600
2008	Q1	200
2008	Q2	200
2008	Q3	400
2008	Q4	500

Total for Q1: 700

Total for Q2: 1100

Total for Q3: 1000

Total Q4: 1600

4.2.18.6 Ranking workflows

A ranking uses sorts and filters that are applied transparently according to the ranking you specify.

There are two ways of ranking data. You can:

- create a ranking by using the interface
- use the `Rank` function to return a ranking value

For example, if you rank the top 3 countries in a block by revenue, you implicitly sort the countries in descending order by revenue, then filter the block to remove all countries other than the 3 with the highest revenue.

> **Note**
>
> - When you create a ranking using the interface, the `Rank` function is used behind the scenes to assign ranking values.
> - When the dimension used to rank by is not part of the block where the ranking is applied, then the ranked data cannot be sorted.

4.2.18.6.1 To create a ranking

You configure ranking filters in the *Ranking* dialog box.

1. Open a Web Intelligence document in *Design* mode.
2. Select the block that you want to rank.
3. Do one of the following:
   - In the *Analysis* tab, in the *Filters* subtab, click *Ranking*.
   - Right-click the measure you want to rank, and from the contextual menu, choose *Ranking* > *Add Ranking*.
4. In the *Ranking* dialog box, any one of the following:
   - To rank the highest records in the block, click *Top* and select the number of records you want to rank.
   - To rank the lowest records in the block, click *Bottom* and select the number of records you want to rank.
   - Select the measure on which the ranking is based in the *Based on* list.
   - To rank by a particular dimension rather than by all dimensions in the block, click *Ranked by* and select the dimension on which the ranking is based.
   - Select a rank calculation mode in the *Calculation mode* list.
5. Click *OK* to close the *Ranking* dialog box.

Related Information

Ranking parameters [page 252]

4.2.18.7 Ranking examples

In the following examples, you have a dimension, Region, and a measure, Revenue.

Table 133:

Region	Revenue	% of Total Revenue
South East	1000000	7%
South West	2000000	13%
North East	3000000	20%
North West	4000000	24%
Central	5000000	33%

Example

Rank the top 3 regions by revenue generated

To perform this ranking you set the following parameters:

Table 134:

Parameter	Value
Top	3
Ranked by	Region (or unspecified because region is the only dimension in the block and therefore the default ranking dimension)
Based on	Revenue
Calculation mode	Count

This ranking gives the following result:

Table 135:

Region	Revenue
Central	5000000
North West	4000000
North East	3000000

The implicit steps in calculating this ranking are:

- Sort the records in descending order.
- Display the top 3 records.

Example

Rank the bottom 40% of regions by revenue

To perform this ranking you set the following parameters:

Table 136:

Parameter	Value
Bottom	40%
Ranked by	Region
Based on	Revenue
Calculation mode	Percentage

This ranking gives the following result:

Table 137:

Region	Revenue
South East	1000000
South West	2000000

The implicit steps in calculating this ranking are:

- Sort the record in ascending order.
- Work through the records until 40% of the total number of records are displayed.

Example

Rank the top regions whose cumulative revenue is less than or equal to 10,000,000

To perform this ranking you set the following parameters:

Table 138:

Parameter	Value
Top	10000000
Ranked by	Region
Based on	Revenue
Calculation mode	Cumulative sum

This ranking gives the following result:

Table 139:

Region	Revenue
Central	5000000
North West	4000000

The implicit steps in calculating this ranking are:

- Sort the records in descending order.
- Work through the records until the record that causes the cumulative total of the measure to pass 10,000,000.
- Include those records that do not cause the cumulative total to pass 10,000,000.

Example

Rank the bottom regions whose cumulative revenue is less than or equal to 30% of the total revenue

To perform this ranking you set the following parameters:

Table 140:

Parameter	Value
Bottom	30%
Ranked by	Region
Based on	Revenue
Calculation mode	Cumulative percentage

This ranking gives the following result:

Table 141:

Region	Revenue
South East	1000000
South West	2000000

Region	Revenue
North East	3000000

The implicit steps in calculating this ranking are:

- Sort the records in ascending order.
- Work through the records until the record that causes the cumulative total of the measure, expressed as a percentage of the overall total of the measure, exceeds 30%.
- Display those records that do not cause the cumulative percentage to pass 30%.

4.2.19 Merging data from dimensions and hierarchies

You can synchronize the data returned by dimensions, hierarchies or attributes by creating merged objects which incorporate them.

You merge data from different data providers. For example, if you have one data provider that contains detailed customer information and another data provider that contains sales data, you can synchronize the two data providers around the customer.

When you merge data from the same data source (for example the same universe or BEx query), the merge is based on the internal ID of each data member. When you merge data from different data sources, the merge is based on the caption of each data member. For example, if you synchronize two [Geography] hierarchies, the data member [Los Angeles] is merged with [Los Angeles] through its internal ID when the hierarchies are based on the same data source. The members are merged on the caption "Los Angeles" when the hierarchies are in different data sources.

In cases where merging is based on the caption, and different members with the same caption have different parent members, it is not possible to merge the members and the `#MULTIVALUE` error occurs.

When a merged object contains a hierarchy, you cannot include it directly in a report, but you can still see synchronized hierarchical data by using the original hierarchies. If you include a merged object without hierarchies in a report, the object returns the `#COMPUTATION` error if hierarchies are subsequently added to it.

When merged objects are from different data providers

When two merged objects are from different data providers, note the following restriction concerning the dimension value for a merged object and object participating in a merge:

When [DIM1] coming from data provider 1, and [DIM2] coming from data provider 2), are merged, the value for the [MERGE] is the union of the values of [DIM1] and [DIM2].

- When you use [DIM1] (or [DIM2]) in a table, the table shows only the value from [DIM1] (or [DIM2]) This behavior is as expected.
- When you filter (using an input control, drill bar, or filter panel) on one of these dimensions, this shows the list of values of the [MERGE] because it will result in a filter on the [MERGE].

- When [DIM1] (or [DIM2]) is used with a context modifier (In, foreach, forall), the calculation will be done based on the [MERGE]. For example, count([measure] foreach ([DIM1])) counts all the measure items given against [MERGE].

Related Information

Merging hierarchies [page 260]

4.2.19.1 Merging data providers based on keys

When you merge two data sources based on detail objects for a query based on BICS, the BEx query keys are mapped to details. In this way it is possible to merge data providers based on keys. Once merged, the attribute is used in the report in the same way as a dimension.

4.2.19.2 Choosing which data to merge

You merge data when your report draws data from different but related sources.

For example, you have a report showing revenue and sales targets. The report contains sections based on the year, and each section shows revenue and sales targets. If revenue and sales target data comes from two different data providers, it is not synchronized. You synchronize the data by merging the two data providers on the common dimension, Year.

The only technical restriction imposed on merged dimensions is that they must be of the same data type. You can, for example, merge two dimensions containing character data. But it does not make sense to merge unrelated dimensions even when their data types are the same. For example, it does not make sense to merge a dimension containing customer names with a dimension containing sales regions.

Merged dimensions often have the same name in both data sources, but this is not obligatory. It can make sense to merge dimensions with different names if they contain related data.

To merge dimensions correctly you need to be aware of the semantics of the data (what the data refers to) in the different data sources. The dimension data types and names are an approximate guide only to suitability of a dimension for merging.

4.2.19.3 Merged dimension example

In this topic, you can see an example of merged dimensions with two data providers.

Example

Merging City dimensions

Data Provider 1:

Table 142:

Country	City
US	New York
US	Los Angeles
France	Paris
France	Toulouse

Data Provider 2:

Table 143:

City	Revenue
New York	100000
Los Angeles	75000
Paris	90000
Toulouse	60000

If you do not merge the City dimensions, you get the following result if you place the Country, City and Revenue objects in a table:

Table 144:

Country	City	Revenue
US	New York	325000
US	Los Angeles	325000
France	Paris	325000
France	Toulouse	325000

Because there is no link between the two data providers through a merged dimension, city revenues are not related to countries. The table shows the total revenue in data provider 2 against each Country/City pair.

If you merge the City dimensions, you get the following result:

Table 145:

Country	City	Revenue
US	New York	100000
US	Los Angeles	75000
France	Paris	90000
France	Toulouse	60000

4.2.19.4 Merging hierarchies

You can take advantage of data synchronization by using the original hierarchies that make up a merged hierarchy.

The data in the report takes the structure of the hierarchy you select.

Example

Merged hierarchies

You have two data sources, each using a hierarchy that you have merged into a merged object. Data provider 1 contains the following data:

Table 146:

Product			Store Invoice
Sport			5401
	Gym		4073
		Bottoms	1236
		Tops	1208
		Weights	1629
	Swimming		1328
Camping			16961
	Tents		3534
	Sleeping Bags		3423
	Kitchen Equipment		5352
	Electrical		4652

Data provider 2 contains the following data:

Table 147:

Product			Units Ordered
Sport			13348
	Gym		8814
		Bottoms	1231
		Tops	3241
		Weights	4342
	Swimming		4534
Camping			34234

If you use the first hierarchy in a report, the merged data is structured as follows:

Table 148:

Product			Store Invoice	Units Ordered
Sport			5401	13348
	Gym		4073	8814
		Bottoms	1236	1231
		Tops	1208	3241
		Weights	1629	4342
	Swimming		1328	4534
Camping			16961	34234
	Tents		3534	
	Sleeping Bags		3423	
	Kitchen Equipment		5352	
	Electrical		4652	

The child members of [Camping] appear in the hierarchy because they appear in the hierarchy you selected. The [Units Ordered] measure does not display values for these members because they do not exist in the second data source.

If you select the second hierarchy, the merged data is structured as follows:

Table 149:

Product			Store Invoice	Units Ordered
Sport			5401	13348
	Gym		4073	8814
		Tops	1236	1231
		Bottoms	1208	3241
		Weights	1629	4342
	Swimming		1328	4534
Camping			16961	34234

The child members of [Camping] do not appear because they do not appear in the orignal hierarchy you selected.

4.2.19.5 Merging different types of objects

You can include dimensions, attributes and hierarchies in merged objects.

The structure of the data that appears in the report depends on which object you chose.

Example

Merging a dimension and a hierarchy

You have two data sources, one containing a dimension and the other a hierarchy. Data provider 1 contains the [Country] dimension as follows:

Table 150:

City	Stock Items
Los Angeles	4545
San Francisco	6465
San Diego	4564

Data provider 2 contains the [Geography] hierarchy as follows:

Table 151:

Geography		Revenue
US		54342
California		6996
	Los Angeles	3423
	San Francisco	2342
	San Diego	1231

You merge the dimension and hierarchy in a merged object. If you include the [Country] dimension in a report, the data appears as follows:

Table 152:

City	Stock Items	Revenue
Los Angeles	4545	3423
San Francisco	6465	2342
San Diego	4564	1231

If you place the [Geography] hierarchy in a report, the result is as follows:

Table 153:

Product		Stock Items	Revenue
US			54342
California			6996
	Los Angeles	4545	3423
	San Francisco	6465	2342
	San Diego	4564	1231

4.2.19.6 Forcing merged calculations with the ForceMerge function

By default, calculations do not account for merged dimensions if the merged dimensions do not explicitly appear in the calculation context.

Example

Calculating revenue with ForceMerge

This example has two data providers as follows:

Data Provider 1:

Table 154:

Country	City
US	New York
US	Los Angeles
France	Paris
France	Toulouse

Data Provider 2:

Table 155:

City	Revenue
New York	100000
Los Angeles	75000
Paris	90000
Toulouse	60000

If you merge the City dimensions, then create a table with Country and Revenue, you get the following result:

Table 156:

Country	Revenue
US	325000
US	325000
France	325000
France	325000

Because City, the merged dimension, does not appear in the table, it does not influence the calculation of the revenue. The total revenue in the second data provider appears against each country.

To display the correct result, replace Revenue in the second column with the formula `ForceMerge([Revenue])`:

Table 157:

City	Revenue
US	175000
US	175000
France	150000
France	150000

The relationship between countries and cities now influences the calculation of the revenue.

> **Note**
>
> If Revenue is a smart measure in the above example, `ForceMerge([Revenue])` returns `#MULTIVALUE`. This is because the grouping set (Country) does not exist for the Revenue measure. `ForceMerge([smart_measure])` always returns `#MULTIVALUE`, unless by chance no aggregation is required to calculate the measure.

4.2.19.7 To merge details, dimensions, or hierarchies

You can merge data objects in the *Available Objects* pane.

1. Open a Web Intelligence document in *Design* mode.
2. In the *Data Access* tab, in the *Data Objects* subtab, click *Merge*.
3. Hold down the `Control` key and select the dimensions or hierarchies you want to merge.
4. Click *OK*.

   You can view the merged object in the *Available Objects* pane of the Side Panel. The original hierarchies or dimensions that make up the merged object appear beneath it. You edit or remove the merged dimension or hierarchy in the *Available Objects* pane.

   > **Tip**
   >
   > You can also select objects in the *Available Objects* pane, right-click the selected objects and click *Merge*.

5. To add additional objects to a group of merged objects:
   a. Select the *Available Objects* button in the *Side Panel*.
   b. Select the merged object.
   c. Hold down the *Control* key on your keyboard and select one or several object you want to add to the group.

      > **Note**
      >
      > The objects you select must be of the same data type as the objects already merged.

   d. Right-click the selection and select *Add to Merge* from the contextual menu.

Related Information

To unmerge objects [page 266]
To edit merged objects [page 265]

4.2.19.8 To merge dimensions automatically

You can merge dimensions automatically if the dimensions have the same name and data type, and are in the same universe. The auto-merge happens only at the document level.

1. Open a Web Intelligence document in *Design* mode.
2. In the *Properties* tab, click *Document*.
3. In the *Document Summary* dialog box, select *Auto-merge dimensions*.

> **Restriction**
>
> If this option is activated, Web Intelligence searches for all dimensions sharing the same name and data type in a universe and merges them. In the case where you have the same object with different names, we recommend that you merge dimensions manually.

> **Note**
>
> We recommend that you activate this option at the beginning so that all similar dimensions are merged, and then deactivate the option afterward.

4. Click *OK* to close the *Document Summary* dialog box.

4.2.19.9 To edit merged objects

You can edit merged objects in the *Edit Merged Dimension* dialog box.

1. In a Web Intelligence document in *Design* mode, select the *Available Objects* button in the Side Panel.
2. Right-click a merged dimension, then select *Edit Properties*.
3. In the *Edit Merged Dimension* dialog box, type the merged dimension name in the *Merged Dimension Name* text box.
4. Type a description in the *Description* box.
5. Select a dimension that provides default properties for the merged dimension from the *Source Dimension* dropdown list.
6. Click *OK* to close the *Edit Merged Dimension* dialog box.

4.2.19.10 To unmerge objects

You can unmerge data objects in the *Available Objects* pane.

1. In a Web Intelligence document in *Design* mode, select the *Available Objects* button in the Side Panel.
2. Do one of the following:
   - To unmerge a group of objects, right-click a merged dimension and click *Unmerge* from the contextual menu.
   - To remove an object from a merged group, right-click it in the group and select *Remove from Merge* from the contextual menu.
3. Click *Yes* to confirm.

4.2.19.11 Synchronizing data providers with different aggregation levels

You can synchronize data providers with different aggregation levels. This can have implications for the calculation of measures.

Example

Synchronizing data providers with different aggregation levels

In this example you have two data providers as follows:

Table 158:

Customer	Year	Revenue
Jones	2004	1500
Jones	2005	2000
Smith	2005	1200

Table 159:

Customer	Number of sales
Jones	12
Smith	10

If you merge the two data providers and the table properties *Avoid duplicate row aggregation* and *Show rows with empty dimension values* are unchecked, the result is as follows:

Table 160:

Customer	Year	Revenue	Number of sales
Jones	2004	1500	12
Jones	2005	1200	12
Smith	2005	1200	10

It is not possible to determine the number of sales per year for customer Jones because the data provider that stores the number of sales does not break them down by year. Instead you see the total number of sales on each row.

Note

Although the Number of Sales values are duplicated, if you add a standard calculation to the bottom of the column (for example a Sum or Average calculation), the result is correct.

One way of adressing this issue is to add the dimensions to the second data provider that allow calculation to the appropriate level of data. If this is not possible, you must be aware of any situations where it is not possible to aggregate the data to the necessary level of detail.

Related Information

To show or hide tables [page 306]
To avoid duplicate row aggregation [page 310]

4.2.19.12 Attributes and merged dimensions

Attributes are associated with dimensions and provide additional information about the dimension.

There must be a one-to-one relationship between dimensions and attributes. An attribute can have one value only for each value of its associated dimension. Attribute objects are not taken into account when synchronizing data. The following example illustrates why this is necessary.

Note

Some previous versions of SAP BusinessObjects Web Intelligence (Web Intelligence, Desktop Intelligence and BusinessObjects), allowed a one-to-many relationship between dimensions and attributes. If you migrate a report created using any of these products and the attribute contains multiple values, you see the #MULTIVALUE error in the attribute cell.

Example

Synchronizing data providers with attributes

In this example you have two data providers, and Address is an attribute of Customer:

Table 161:

Customer	Address	Revenue
John	London	10000
Paul	Liverpool	15000
Paul	London	27000

Table 162:

Customer	Telephone Number
John	1234
Paul	5678

If you create a merged Customer dimension to synchronize the data providers, and Address can have more than one value for each customer, the result is ambiguous because there is no common value for data synchronization.

In the example, Paul has addresses in Liverpool and London, which means that there is no unique 'Paul' row for synchronization of Paul's telephone number. Paul has a different telephone number for each address, and we do not know which address to associate with the telephone number:

Table 163:

Customer	Address	Telephone Number
John	London	1234
Paul	#MULTIVALUE	5678

If the relationship between Customer and Address is one-to-one, Address can be ignored in the synchronization. This removes the ambiguity:

Table 164:

Customer	Address	Telephone Number
John	London	1234
Paul	Liverpool	5678

Related Information

Attributes [page 59]

4.2.19.13 Incompatible objects and merged dimensions

As a general rule, you cannot place dimensions from different data providers in the same table.

This is to avoid Cartesian products (the display of all possible combinations of values from unrelated objects) or other ambiguous results, depending on the universe structure.

You can always place measures from different data providers in a table. The measure calculation depends on what dimensions are available. For example, if you place a measure in a table that contains no dimensions from the same data provider as the measure, the calculation displays its total value in the table.

You can place a merged dimension in a table as long as the table contains other dimensions from a data provider that participates in the merge. You can also place attributes from different data providers in a table, as long as the details are associated with dimensions that participate in a merged dimension.

In certain situations, it can be valid to place a dimension from another data provider in a table, even when this is not allowed by the software. This occurs when the incompatible dimension has a one-to-one or one-to many relationship with a dimension already in the table. The important point is that there is only one value of the incompatible dimension associated with the dimension in the table (one-to-one). On the other hand, the same value of the incompatible dimension can be associated with multiple values of the dimension in the table (one-to-many).

In the table below, the relationship between Address and Name conforms to these rules: Address has a one-to-one or one-to-many association with Name. There is no one-to-many association in the other direction, between Name and Address (one name with more than one address):

Dimension in table (Name)	Incompatible dimension (Address)
John	London
Paul	London
George	Liverpool

In this case the universe design is incorrect - the incompatible dimension (Address) should be defined as a detail of the dimension in the table (Name). If you encouter this situation, contact the BI administrator and ask for a redesign of the universe.

Tip

If it is not practical to change the universe:

1. Create a variable at the report level.
2. Define this variable as a detail.
3. Associate it with the dimension in the table.
4. Supply the name of the incompatible dimension as the variable definition.

The variable simply returns the same values as the incompatible dimension. Because it is defined as a detail of the dimension in the table, you can place it in the same table as the dimension.

Related Information

To create a variable [page 286]

4.2.19.14 Filtering and drilling on merged dimensions

Merging dimensions has implications for the application of filters.

Note

You cannot apply a filter on a merged object containing hierarchies.

Block filters and merged dimensions

When you apply a block filter to a dimension that is part of a merged dimension, the filter is applied to the block. It is not applied to other data providers synchronized through the merged dimension.

Section filters and merged dimensions

When a dimension that is part of a merged dimension is set as a section header, any filter applied to the section also applies to blocks from synchronized data providers within the section.

Report filters and merged dimensions

When you apply a report filter to a dimension that is part of a merged dimension, then the filter will impact all related blocks in the report that use the merged dimension (or any dimensions that participate in the merge).

Example

When you have two queries with a common dimension that you have merged, and you have two tables in a report, each table with data coming from a different query, when you filter on the merged dimension in one query, the filter will also impact the corresponding dimension in the second query and therefore in the second table.

Drilling on merged dimensions

When you merge dimensions, the new merged dimension belongs to the hierarchies of all dimensions involved in the merge.

4.2.19.15 Extending the values returned by merged dimensions

When you merge dimensions from different data providers, Web Intelligence creates a merged dimension.

When you place the merged dimension in the report, only those dimension values that have corresponding values in the data providers synchronized through the merge are returned.

Note

Web Intelligence and Desktop Intelligence handle merged dimensions differently, you need to be aware of this when migrating reports from Desktop Intelligence and Web Intelligence. Desktop Intelligence does not create a dimension based on the merged dimension for the report. The following section describes how the differences affect your reports.

Example

Web Intelligence and Desktop Intelligence behavior when dimensions are merged

You have a report with the following data providers:

Table 165:

Country of origin	Revenue
Germany	470

Table 166:

Country of origin	Quantity
Japan	499

Web Intelligence returns the values of the Country of Origin dimension through the values returned by the Revenue measure.

If you include the Country of Origin dimension from Data Provider 1 and the Quantity measure from Data Provider 2 in the same block, in Web Intelligence, you get the following result:

Table 167:

Country of origin	Quantity
Germany	

The same block in Desktop Intelligence returns the following result:

Table 168:

Country of origin	Quantity
Germany	
Japan	499

To get the same results table as above with Web Intelligence, you must extend the dimension values.

4.2.19.15.1 To extend dimension values

You can activate the dimension extension option in the *Document Properties* pane.

1. Open a Web Intelligence document in *Design* mode.
2. In the *Properties* tab, select *Document*.
3. In the *Document Properties* pane, select the *Extend merged dimension values* option.

   ### Restriction

   You should only activate the *Extend merged dimension values* option when you want to reproduce the merged dimension behavior of SAP BusinessObjects Desktop Intelligence.

4. Click *OK* to close the *Document Properties* pane.

4.2.20 Formatting your reports using Cascading Style Sheets

Web Intelligence Cascading Style Sheets (CSS) define how to display your reports and determine the presentation of documents.

You can edit the CSS to apply a specific style to the presentation of documents. You can export the file, modify the styles according to your needs and then import the file back. You can also distribute the style sheet to other users as a standard style.

The Web Intelligence CSS conforms to the W3C CSS core syntax. However, the core syntax does not imply anything about property names, types and semantic. Web Intelligence CSS supports locale-specific style sheets.

> **Note**
>
> The CSS style sheet does not control the color of charts. There is a separate file for defining corporate palettes for charts.

> **Note**
>
> The Cascading Style Sheets are derived from the W3C CSS. In order to modify the CSS of your documents, you must be familiar with the CSS core syntax of the W3C. For more information, see http://www.w3.org .

Using a CSS allows you to:

- Define a company-wide style sheet in order to define standard settings (such as a company logo).
- Define different styles to present a specific type of information. For example, you can use one color for products sold, another color for expenses and another color for revenues.
- Create a style sheet in order to encode personal preferences.
- Personalize the presentation of the documents you create.

Related Information

Formatting the report layout [page 228]
Creating a corporate palette for charts [page 379]
Formatting tables and table cells [page 296]

4.2.20.1 Using a Cascading Style Sheet in documents

When you create a report or a report element in a Web Intelligence document, the formatting is entirely based on the default style.

If specific formatting is done on these elements by the user from the Right-click context menu (*Format* option), the modified properties overwrite locally the values taken from the default style.

To remove this specific formatting, right-click the report and select *Format* > *Clear Format*.

4.2.20.2 Modifying the document default style

The document default style is stored in a Cascading Style Sheet (CSS) file that is embedded into the document itself.

- To modify the default style, you can export the CSS file. To export a CSS file, in the *Properties* tab, click *Document* > *Change Default Style* > *Export Style*.
- You can use any text editor to edit a CSS file. Once you have edited the file, save and import it to apply the changes.

  > **Note**
  >
  > You have to import the CSS file every time you edit it.

  To import a CSS file, in the *Properties* tab, click *Document* > *Change Default Style* > *Import Style*. The CSS file you import is applied to the report.

  > **Note**
  >
  > If the properties of an element have been set through the user interface (toolbox, context menu, dialog box), these properties are not affected by the CSS you import.

- To apply a CSS to an element that has already been formatted through the user interface, you have to clear its format. To clear the format of an element, right-click the element and select *Format* > *Clear Format*.
- To clear the format of all the elements in a page, right-click the report body and select *Format* > *Clear Format*.

  > **Note**
  >
  > You have to clear the format of the header and footer manually because they are not a part of the report body.

- You can undo changes at any time by clicking the *Undo* button.
- To restore the default CSS, in the *Properties* tab, click *Document* > *Reset standard Default Style*.

4.2.20.3 Modifying and using the standard default style

The standard CSS file is named `WebIDefaultStyleSheet.css`.

This standard CSS file is located by default at:

```
c:\Program Files(x86)\SAP BusinessObjects Entreprise XI\images
\WebIDefaultStyleSheet.css
```

When you create a 4.X document, or when you edit a Web Intelligence 3.1 document for the first time, the standard CSS is embedded into the Web Intelligence document to become the document style. This default style document diverges from the standard and can be locally modified.

To reset the document default style to the standard style, in the *Properties* tab, click *Document* > *Reset standard Default Style*. The standard CSS will replace the previous CSS in the document.

To publish a standard default file, you must have access to the `../images/` folder of your servers and Web Intelligence Rich Client installations to put a new version of `WebiDefaultStyleSheet.css`.

4.2.20.4 Web Intelligence CSS syntax

The Web Intelligence CSS conforms to the W3C CSS core syntax.

However, the core syntax does not imply anything about property names, types and semantic.

Web Intelligence CSS supports locale-specific style sheets.

Related Information

http://www.w3.org/TR/CSS21/syndata.html

4.2.20.4.1 Cascading Style Sheet elements

In order to modify the way your document is displayed, you have to modify the Web Intelligence CSS elements of the document.

To modify an element, you have to modify its properties.

This table shows the elements you can edit in the CSS file:

Element	Definition
`REPORT`	Tag that contains the report
`PAGE_BODY`	Tag that contains the page
`PAGE_HEADER`	Tag that contains the area on top of the `PAGE_BODY`
`PAGE_FOOTER`	Tag that contains the area in the bottom of the `PAGE_BODY`
`SECTION`	Tag that contains an area inside the `PAGE_BODY`
`TABLE`	Tag that contains a table
`VTABLE`	Tag that modifies a table vertically
`HTABLE`	Tag that modifies the table horizontally

Element	Definition
COLINFO	Tag that contains the columns of a table
ROWINFO	Tag that contains tha rows of a table
CELL	Tag that contains the cells of a table
AXIS	Tag that defines the relationship between the columns and rows of a table
FORM	Tag that contains a form
XELEMENT	Tag that contains a graphic
BAG	Tag that contains elements and places them relatively using X and Y
WOB	Tag that contains elements and places them automatically

4.2.20.4.2 Cascading Style Sheet properties

For many properties, Web Intelligence CSS uses the same names as the W3C CSS.

Some property names change and some are ignored.

Example

Web Intelligence CSS uses the property `min-width` and the W3C CSS uses the property `width`. Both properties have the same use.

Related Information

For CSS 2.1
For CSS 3

4.2.20.4.2.1 Report page properties

For cascading style sheets, you can edit the following report page properties.

This table shows the properties that can be applied to the element `REPORT`:

Property name	Description	Default value	Value range
page-format-dimension-height	Height of page	42094	Numeric value

Property name	Description	Default value	Value range
`page-format-dimension-width`	Width of page	29764	Numeric value
`page-format-margin-bottom`	Size of the bottom margin of the page	0	Numeric value
`page-format-margin-left`	Size of the left margin of the page	0	Numeric value
`page-format-margin-right`	Size of the right margin of the page	0	Numeric value
`page-format-margin-top`	Size of the top margin of the page	0	Numeric value
`page-format-orientation`	Orientation of page	`portrait`	`landscape, portrait`
`page-records-horizontal`	In *Quick Display* mode, specifies how many data records can be horizontally displayed before triggering a page break	150	Numeric value
`page-records-vertical`	In *Quick Display* mode, specifies how many data records can be vertically displayed before triggering a page break	50	Numeric value
`page-scaling-factor`	Zoom percentage	100	Numeric value
`page-scaling-tall`	When this property is defined, the report will be scaled so that it fits in the given height	100	Numeric value
`page-scaling-wide`	When this property is defined, the report will be scaled so that it fits in the given width	0	Numeric value
`page-target-mode`	Pagination mode: quick display or not	`undefined`	`undefined, quick, all`

4.2.20.4.2.2 Report element properties

For cascading style sheets, you can edit the properties in report elements.

Property name	Description	Default value	Value range
`autofit-height`	Specifies whether the height of the element can be adjusted to fit its content	`yes`	`yes/no`

Property name	Description	Default value	Value range
autofit-width	Specifies whether the width of the element can be adjusted to fit its content	yes	yes/no
bookmark	Specifies whether the element will be bookmarked	no	yes/no
h-align	Horizontal positioning of the element	none	none, top, center, bottom
hide	Specifies whether the element is hidden	no	yes/no
min-height	Minimal height of the element	0	Numeric value
min-width	Minimal width of the element	0	Numeric value
never-alternate	This property can be used to avoid the application of the alternate style on the element	no	yes/no
padding-bottom	How much space to put between the bottom border and the content of the element	0	Numeric value
padding-left	How much space to put between the left border and the content of the element	0	Numeric value
padding-right	How much space to put between the right border and the content of the element	0	Numeric value
padding-top	How much space to put between the top border and the content of the element	0	Numeric value
struct-min-height	Minimal height of the element when displayed in structure mode	900	Numeric value
struct-min-width	Minimal width of the element when displayed in structure mode	4050	Numeric value
v-align	Vertical positioning of the element	none	none, top, center, bottom

These properties can be applied to the following elements:

- BAG
- WOB
- CELL
- VTABLE
- HTABLE
- XTABLE
- TABLE

- XELEMENT
- SECTION

4.2.20.4.2.3 Formatting properties

For cascading style sheets, you can edit the Formatting elements.

This table shows the properties that you can edit to modify the Formatting elements:

Property name	Description	Default value	Value range
background-color	Color to be displayed in background	#000000	Any hexadecimal color
background-fill	Describes what will be displayed in background	none	color, bitmap, bitmapAndColor, skin, none
background-h-align	Horizontal position of the background image	center	left, center, right
background-image	Image to be displayed in background	None	Any image you want
background-inner-height	Inner height of background	0	Numeric value
background-inner-width	Inner width of background	0	Numeric value
background-type	Determines how the background image will be laid out or repeated	box	box, tile, vtile, htile, stretch
background-v-align	Vertical position of the background image	center	top, center, bottom
border-bottom-color	Color of an element's bottom border	#000000	Any hexadecimal color
border-bottom-style	Style of an element's bottom border	none	none, dashed, dotted, double, plain
border-bottom-width	Width of an element's bottom border	0	Numeric value
border-left-color	Color of an element's left border	#000000	Any hexadecimal color
border-left-style	Style of an element's left border	none	none, dashed, dotted, double, plain
border-left-width	Width of an element's left border	0	Numeric value

Property name	Description	Default value	Value range
border-right-color	Color of an element's right border	#000000	Any hexadecimal color
border-right-style	Style of an element's right border	none	none, dashed, dotted, double, plain
border-right-width	Width of an element's right border	0	Numeric value
border-top-color	Color of an element's top border	#000000	Any hexadecimal color
border-top-style	Style of an element's top border	none	none, dashed, dotted, double, plain
border-top-width	Width of an element's top border	0	Numeric value
color	Foreground color	#000000	Any hexadecimal color
default-date-h-align	Default horizontal alignment when a date is being displayed	right	lleft, center, right, auto
default-numeric-h-align	Default horizontal alignment when a numeric value is being displayed	right	left, center, right, auto
default-text-h-align	Default horizontal alignment when a text is being displayed	left	left, center, right, auto
font-family	Name of font family	default	Web Intelligence-supported fonts
font-orientation	Describes the orientation of the displayed text	normal	normal, hotel, 45D, 90D, 180D, 270D, 315D
font-size	Size of the displayed font	0	Numeric value in points (pt.)
font-style-italic	Activates the italic font style	no	yes/no
font-weight-bold	Activates the bold font style	no	yes/no
text-align	Horizontal alignment of the text	left	left, center, right, auto
text-decoration-line-through	Activates the line-through text decoration	no	yes/no
text-decoration-underline	Activates the underline text decoration	no	yes/no
text-v-align	Vertical alignment of the text	bottom	top, center, bottom
text-wrap	Specifies whether the text may be wrapped	no	yes/no

These properties can be applied to the following elements:

- BAG
- WOB
- CELL
- VTABLE
- HTABLE
- XTABLE
- TABLE
- XELEMENT
- SECTION

4.2.20.4.2.4 Spacing properties

For cascading style sheets, you can edit the spacing element properties.

This table shows the properties that you can edit to modify the spacing elements:

Property name	Description	Default value	Value range
h-spacing	Horizontal spacing of children	0	Numeric value
v-spacing	Vertical spacing of children	0	Numeric value

These properties can be applied to the following elements:

- BAG
- WOB

4.2.20.4.2.5 Hyperlink properties

For cascading style sheets, you can edit the hyperlink elements.

This table shows the properties that you can edit to modify the hyperlink elements:

Property name	Description	Default value	Value range
active-color	Color of hyperlinks when they are being activated	#000000	Any hexadecimal color
hover-color	Color of hyperlinks when the user designates it (by a pointing device)	#000000	Any hexadecimal color
link-color	Color of hyperlinks	#0000ff	Any hexadecimal color
visited-color	Color of visited hyperlinks	#000000	Any hexadecimal color

These properties can be applied to the following elements:

- REPORT

4.2.20.4.2.6 Break properties

For cascading style sheets, you can edit the break element properties.

This table shows the properties that can be applied to the `BREAK` element:

Property name	Description	Default value	Value range
`break-newpage`	Reports always start on a new page	`false`	`true/false`
`break-onepage`	Reports start on a new page only if they do not fit in the current page	`true`	`true/false`

4.2.20.4.3 Cascading Style Sheet units

Numeric values can be very important in Cascading Style Sheet units.

Numeric values in fonts

When you assign a numeric value to the property `font-size`, you can only use the unit "points" (pt).

For example: `font-size : 14pt;`

Numeric values in dimension properties

When you assign a numeric value to any other dimension property, you can use centimeters (cm), inches (in) or "metric" (without any unit).

`width : 1.0in;` would be the same as `width : 2.54cm;` and the same as `width : 3600;`

4.2.20.5 Style and 3.x documents

When you open a Web Intelligence 4.x document with a Web Intelligence 3.x format, the style of the document does not change, regardless of the style defined in the standard CSS.

However, the style used while creating report elements or during *Turn into* operations will come from the CSS.

The Web Intelligence CSS replaces the old way of personalizing your documents.

To set the default style defined by the report elements in the document, select the report elements and go to *Format* > *Clear Format*. The formatting of the selected objects will be cleared and the default style will be applied.

The `DefaultConfig.xml` file used in the previous versions is obsolete.

Here are some correspondances between the entries of Web Intelligence CSS and the obsolete entries of the `DefaultConfig.xml` file used in previous versions.

Webi selector	Corresponding entry in defaultConfig.xml
TABLE	table*Table
FORM	table*Form
SECTION	Section*background
CELL	freeCell*default

4.2.21 Enhancing reports with calculations, formulas and variables

You can use calculations, formulas and variables to manipulate data in reports.

Refer to the *Using Functions, Formulas and Calculations in Web Intelligence* guide for detailed information on the advanced calculation capabilities that you can use when you perform data analysis. This guide also provides a syntax reference to the available functions and operators.

4.2.21.1 Standard calculations

You can use standard calculation functions to make quick calculations on data.

The following standard calculations are available:

Table 169:

Calculation	Description
Sum	Calculates the sum of the selected data.
Count	Counts all rows for a measure object or count distinct rows for a dimension or detail object.
Average	Calculates the average of the data.
Minimum	Displays the minimum value of the selected data.
Maximum	Display the maximum value of the selected data.
Percentage	Displays the selected data as a percentage of the total. The results of the percentage are displayed in an additional column or row of the table. **Note** Percentages are calculated for the selected measure compared to the total results for that measure on the table or break. To calculate the percentage of one measure compared to another measure, you need to build a custom calculation.

Calculation	Description
Default	Applies the default aggregation function to a standard measure, or the database aggregation function to a smart measure.

When you apply standard calculations to table columns, the calculation results appear in footers. One footer is added for each calculation.

4.2.21.1.1 To insert a standard calculation in a table or cross table

You can insert standard calculations in tables or cross tables to make quick calculations on table data.

For more information on the standard calculations, see the *Using Functions, Formulas and Calculations in Web Intelligence* guide or in the online help.

You can insert multiple calculations in a table or cross table. When you apply two calculations to a table or crosstab, a footer is added for each calculation result. You insert multiple calculations in a table or cross table in the same way that you insert one calculation, but you repeat the procedure for as many calculations as you want to insert.

1. In a Web Intelligence document in *Design* mode, click the table cell that contains the data you want to calculate.
2. In the *Analysis* tab, in the *Functions* subtab, select a calculation.

   You can repeat this step to add multiple calculations to the same column.

   > **Tip**
   >
   > Double-click a cell to launch the *Formula Editor* toolbar, in which you can edit the formula.

   A footer containing the result of the calculation is added below the column.

4.2.21.1.2 To remove a standard calculation

You can remove a standard calculation in Web Intelligence.

1. Open a Web Intelligence document in *Design* mode.
2. Right-click that contains the calculation that you want to remove and select *Delete*.

4.2.21.2 Using formulas to build custom calculations

Custom calculations allow you to add additional calculations to your report beyond its base objects and standard calculations.

You add a custom calculation by writing a formula. A formula can consist of base report variables, functions, operators and calculation contexts.

A custom calculation is a formula that can consist of report objects, functions and operators. Formulas have a calculation context that you can specify explicitly if you choose.

Example

Showing average revenue per sale

If you have a report with Sales Revenue and Number Sold objects and you want to add revenue per sale to the report. The calculation `[Sales Revenue]/[Number Sold]` gives this value by dividing the revenue by the number of items sold in order to give the revenue per item.

4.2.21.2.1 To enter a formula by typing

You can manually enter formulas in the *Formula Editor* in Web Intelligence.

1. In a Web Intelligence document in *Design* mode, select the *Properties* tab.
2. From the *View* dropdown list, select *Formula Bar* to display the *Formula Bar*.
3. Select or insert a cell or text box in the report.
4. Type a formula in the *Formula* box.
5. To build a formula using the *Formula Editor*, click the *Formula Editor* icon on the *Formula Bar*.
6. Build the formula.
7. To confirm and apply the formula, click *OK*.

4.2.21.2.2 To build a formula in the Formula Editor

You can use the *Formula Editor* to define the formula for a table cell.

In the *Formula Editor*, you can define a formula, include a list of values in the formula, and include a prompt in the formula.

Note

For more information about operators and functions, refer to the *Using functions, formulas and calculations in Web Intelligence* guide or the Web Intelligence online help. You can also access this information by selecting an operator or function and clicking *More on this function* in the *Description* box.

1. In a Web Intelligence document in *Design* mode, select the table cell where you want to insert the formula.

2. In the *Properties* tab, select *Formula Bar* from the *View* dropdown list to display the *Formula Bar*.
3. To build a formula using the *Formula Editor*, click the *Formula Editor* icon on the *Formula bar*.
4. Double-click to select an object for the formula from the *Available Objects* pane.
5. Double-click to select a function for the formula from the *Available Functions* or *Functions* pane.
6. Double-click to select an operator for you formula from the *Available Operators* or *Operators* pane.

   If your formula requires you to select one or more values from a list of values, perform the following steps:

   a. Select an object in the *Available Operators* list.
   b. Double-click *Prompts* to open the prompt editor and define a prompt.
   c. Double-click the *Values* item to open the *List of Values* dialog box.
   d. Do one of the following:

   > **Note**
   >
   > For more information about including prompts in the formula, refer to the pdf version of the Web Intelligence user documentation.

   - To select one value, select the value and then click *OK*.
   - To select contiguous values, select the first value. While pressing the `Shift` key, click the last value and then click *OK*.
   - To select several (non-contiguous) values, select the first value. While pressing the `Control` key, click the other values you want to select and then click *OK*.
7. To confirm and apply the formula, click *OK*.

Related Information

Filtering data with prompts [page 462]

4.2.21.3 Using variables to simplify formulas

If a formula is complex you can use variables to simplify it.

By using variables you break a complex formula down into manageable parts and make it much easier to read, as well as making building formulas much less error-prone.

You can use previously-created variables in a formula in exactly the same way as you use other report objects. Variables appear in the formula editor under the Variables folder.

You can type this variable name into a formula or drag the variable to the Formula toolbar as you would for any report object.

4.2.21.3.1 To create a variable

You can create a variable in Web Intelligence.

1. Open a Web Intelligence document in *Design* mode.
2. To display the *Formula Bar*, in the *Properties* tab, select *Formula bar* from the *View* dropdown list.
3. Click the *Create Variable* icon in the *Formula Bar* to display the *Create New Variable* or *Create Variable* panel.
4. Type the variable name in the *Name* box.
5. In the *Formula* box, build a formula for the variable, if one is not already displayed.

   > **Note**
   >
   > - If a cell is selected before you open the *Formula Editor*, the formula you create is assigned to the cell.
   > - For detailed information on building formulas, including a syntax reference to the available functions and operators, refer to the *Using functions, formulas and calculations in Web Intelligence* guide or the Web Intelligence interface help.

6. Select a variable qualification.
7. Click *OK* to save the variable and return to the document.

4.2.21.3.2 To edit a variable

You can edit a variable in Web Intelligence.

1. In a Web Intelligence document in *Design* mode, select the *Available Objects* tab on the Side Panel.
2. Right-click the variable you want to edit and select *Edit* .
   The *Variable Editor* or *Edit Variable* panel appears.
3. Edit the variable.

   > **Note**
   >
   > For detailed information on building formulas, including a syntax reference to the available functions and operators, refer to the *Using functions, formulas and calculations in Web Intelligence* guide or the Web Intelligence interface help.

4. Click *OK* to return to the document.
   The following warning message appears: *Are you sure you want to modify this variable?*
5. Click *Yes* to return to the document.

4.2.21.3.3 To delete a variable

You can delete a variable in Web Intelligence.

1. In a Web Intelligence document in *Design* mode, select the *Available Objects* tab on the Side Panel.
2. Right-click in the list the variable that you want to delete and select *Remove*.

4.2.21.3.4 To rename a variable

You can rename a variable in the Web Intelligence Applet interface and Web Intelligence Rich Client.

1. In a Web Intelligence document in *Design* mode, select the *Available Objects* tab on the Side Panel.
2. Right-click the variable that you want to rename and select *Rename*.

> **Note**
>
> The Rename options is not available in the Web Intelligence HTML interface, however you can rename the variable in the *Variable Editor* or *Edit Variable* panel.

3. Rename the variable and click *OK* to save it.

Related Information

To edit a variable [page 286]

4.2.21.3.5 To duplicate a variable

You can duplicate a variable in Web Intelligence.

1. In a Web Intelligence document in *Design* mode, select the *Available Objects* tab in the *Side Panel*.
2. Right-click the variable that you want to duplicate and select *Copy*.
3. Right-click the *Variables* folder icon and select *Paste*.
   The duplicated variable appears below the original variable, with a number in parenthesis in its name, for example (1) for the first duplicate, (2) for the second duplicate, and so on.

4.2.21.3.6 To merge variables

You can merge two variables, or merge a variable with another object.

The variables must be dimension objects, and must come from different queries. You cannot merge objects coming from the same query.

> **Tip**
>
> To have a better visibility of the variables you can merge, switch to the *Arranged by: Query* view in the *Available Objects* pane. Using this view, you can see the variables coming from the different queries used in your document.

1. In *Design* mode, select the *Available Objects* tab on the *Side Panel*.
2. Select two variables you want to merge by holding the `Ctrl` or `Cmd` key.

3. Right-click one of the variables you have selected.
4. Click *Merge*.

4.2.21.4 Using references to reuse data

A reference is a variable whose definition and content are based on another cell. It is useful whenever you want to leverage data of a cell that has been obtained using a complex formula.

You use a reference to point to another cell and reuse its value. Using a reference as a direct pointer to the content of a referenced cell is a direct shortcut to the value you are interested in. After you have created a reference in a document, it is replaced by the content of it referenced cell.

You can use references anywhere in a document, in any report or formula. As an example, you could use references to create a summary report that references figures from other reports.

A reference always inherits the type of the cell it references. If the referenced cell type is a string for instance, then the reference type is a string as well. If the referenced cell type changes, then the reference adapts so.

The definition of a reference is made of two elements:

- A name
- The path of the cell it references

The following table lists the definitions related to references:

Table 170:

Concept	Definition
Reference	Variable whose definition and value references a target cell
Referenced cell	Target cell of the reference
Referenced cell content	Data contained in the reference, reused from the referenced cell

Restriction

- A reference doesn't keep the format of its target cell. If a target cell has a specific color or font for instance, it is not reflected in the reference.
- When hiding a column table that contains a referenced cell or a commented cell, the reference is lost as well as the comment.

References use the following icon: 

4.2.21.4.1 To assign a reference

1. Right-click a cell whose content you want to reuse.

2. Click *Assign Reference*.
3. Select whether you want to assign a new reference to the cell or an existing one.
4. Click *OK*.

The reference now appears in the *Available Objects* pane, under the *References* folder. Note that if you copy and paste a cell using a reference, then the reference in the copied cell points to the same target cell.

4.2.21.4.2 To rename a reference

1. In the *Available Objects* pane, right-click the reference you want to rename.
2. Click *Rename*.
3. Enter a name in the *New name* text field.
4. Click *OK*.

The reference has been updated with its new name in the *Available Objects* pane, under the *References* folder.

4.2.21.4.3 To delete a reference

1. In the *Available Objects* pane, right-click a reference you want to delete.
2. Click *Delete*.
3. Click *OK*.

In the *Available Objects* pane, the reference you have deleted no longer appears under the *References* folder.

4.2.21.4.4 To display a referenced cell

1. In the *Available Objects* pane, right-click a reference whose referenced cell you want to display.
2. Click *Show referenced cell*.

The cell is automatically selected on the report page.

4.2.22 Displaying data in tables

When you create a document and run the query the first time to display the results, the document contains a report that includes the query results in a vertical table.

You can do the following:

- Modify how the table is organized
- Remove or add data
- Insert other rows or columns
- Hide columns (see note below)
- Change the table type
- Turn the table into a chart
- Insert other tables

> **Tip**
>
> When you create a new name for a column, it becomes a custom header and it is no longer attached to the dimension. When you hide the column and show it again, it will revert to the original, default column name. If you want the custom header name to be permanent, you can create a variable.

Related Information

To create a variable [page 286]

4.2.22.1 Vertical tables

Vertical tables display header cells at the top of the table and the corresponding data in columns.

By default, the header cells display the names of the dimensions, details, and measures included in the table. The body cells display the corresponding values.

Lines	Sales revenue	Margin
Accessories	$9,914,546	$3,809,135
City Skirts	$347,775	$132,302
City Trousers	$284,734	$104,346
Dresses	$2,915,620	$1,173,881
Jackets	$677,307	$286,130
Leather	$187,413	$70,599
Outerwear	$1,183,083	$474,302
Overcoats	$436,258	$185,522
Shirt Waist	$4,018,220	$1,616,218
Sweaters	$2,839,035	$1,000,673
Trousers	$903,320	$327,515

4.2.22.2 Horizontal tables

Horizontal tables display header cells on the side of the table and the corresponding data in rows.

By default, the header cells display the names of the dimensions, details, and measures included in the table. The body cells display the corresponding values.

Fiscal Period	FY01	FY02	FY03
Sales revenue	$8,095,814	$13,232,246	$15,059,143
Margin	$3,731,971	$5,187,886	$5,667,084

4.2.22.3 Cross tables

Cross tables display values for dimensions across the top axis and on the side axis.

The body displays the values of a measure that correspond to the cross-section of the dimensions.

Values in cross tables

In the following example, the cross table displays values for [Quarter] across the top axis and displays values for [State] on the side axis. The body displays values that [Sales Revenue] for each quarter in each state.

	Q1	Q2	Q3	Q4
California	$1,899,680	$1,760,148	$1,930,517	$1,889,225
Colorado	$525,682	$500,076	$510,777	$523,740
DC	$766,822	$706,447	$692,258	$796,423
Florida	$515,688	$489,998	$387,810	$485,663
Illinois	$846,408	$850,905	$610,765	$714,890
Massachusetts	$312,896	$291,431	$249,529	$429,850
New York	$1,987,115	$2,028,091	$1,672,581	$1,894,435
Texas	$2,875,569	$2,499,277	$2,146,303	$2,596,516

Multiple dimensions in cross tables

You can include multiple dimensions in cross tables. In the following example, the cross table displays two dimensions. The values for the [Sales Revenue] measure are values each state by quarter for each line.

	Q1	Q1	Q2	Q2	Q3	Q3	Q4	Q4
	City Skirts	City Trousers	City Skirts	City Trousers	City Skirts	City Trousers	City Skirts	City Trousers
California	$7,796	$8,496	$9,075	$1,248	$24,377	$11,924	$33,685	$26,517
Colorado	$726	$2,270	$2,375	$857	$6,421	$2,381	$8,015	$7,468
DC	$2,568	$4,026	$3,564	$1,121	$9,788	$5,338	$8,326	$10,448
Florida	$1,765	$1,737	$2,735		$4,927	$2,511	$7,377	$9,563
Illinois	$588	$2,139	$2,822	$459	$5,552	$5,305	$7,748	$12,987
Massachusetts	$1,194	$532	$2,373		$5,752	$-185	$2,134	$7,565
New York	$10,626	$14,203	$17,241	$1,769	$23,762	$18,689	$28,564	$41,324
Texas	$10,612	$12,604	$22,272	$1,663	$37,119	$20,239	$35,898	$49,539

When you create cross tables that include dimensions in the body, the body cell values are calculated according to a multi-dimensional data model. In the following example, the values displayed in the body are calculated according to all of the coordinates on the table axes, whether or not there is a row for the specific coordinate in the data.

	California	Colorado	DC
2001	Colorado Springs	Colorado Springs	Colorado Springs
2001	Los Angeles	Los Angeles	Los Angeles
2001	San Francisco	San Francisco	San Francisco
2001	Washington	Washington	Washington
2002	Colorado Springs	Colorado Springs	Colorado Springs
2002	Los Angeles	Los Angeles	Los Angeles
2002	San Francisco	San Francisco	San Francisco
2002	Washington	Washington	Washington
2003	Colorado Springs	Colorado Springs	Colorado Springs
2003	Los Angeles	Los Angeles	Los Angeles
2003	San Francisco	San Francisco	San Francisco
2003	Washington	Washington	Washington

4.2.22.4 Forms

You can use in your report to display detailed information per customer, product, or partner.

For example, you can use a form to display customer information such as the account, name, address, and so on.

Forms are also useful for formatting address labels for envelopes.

4.2.22.5 To create a table by dragging objects onto a report

You are working with a report and want to insert a table into the report. You use the available objects from the query.

1. In a Web Intelligence document in *Design* mode, click the *Available Objects* icon to display the *Available Objects* list in the Side Panel.

2. Select an object or objects and drag and drop them with the mouse cursor to an empty part of the report. When you release the mouse button the objects appear as columns in a vertical table.
3. To add another object or objects to the table, drag them onto an existing table.

   For example:
   - To add a column next to an existing column, drag and drop the object to the border of the column.
   - To replace an existing column, drag and drop the object to the middle of the column.

4.2.22.6 To create a table

Working in *Structure* mode allows you to define and preview a new table without data from the server.

1. In a Web Intelligence document, from the *Design* mode dropdown list in the top corner of the toolbar, click *Structure only* to switch to *Structure* mode.
2. In the *Report Elements* tab, select the *Tables* subtab.
3. Select one of the following:
   - *Define Vertical Table*
   - *Define Horizontal Table*
   - *Define Cross Table*
   - *Define Form*
4. Click the report at the position where you want the table to appear.
5. Right-click the table border and select *Assign Data* from the contextual menu
   The *Assign Data* dialog box appears.
6. Click the arrow in the *Pick* text box and from the dropdown list select the object to associate with the table column, row or body cell.

   > **Note**
   >
   > You can associate a formula rather than a report object with the component by clicking the arrow next to the component, selecting *Edit Formula* and defining the formula in the *Formula Editor*.

7. To add another table element, click + next to the *Pick* text box.
8. To delete a table component, do one of the following:
   - Click the *X* icon.
   - Click the arrow next to an element text box and select *Delete* from the contextual menu.
9. When you have finished defining the table, click *OK*.

4.2.22.7 To change the format of a table

You can turn a table into a different format or into a chart using the *Turn Table Into* option.

1. In a Web Intelligence document in *Design* mode, right-click the table you want to reformat, then select *Turn Table Into* to display the *Turn Into* options.

   You can also select the table or chart style from the *Tools* section of the *Report Elements* tab.

2. Choose a table or chart type.

> **Note**
>
> When you turn a table with a unicode font into a chart, the font is not retained unless unicode is defined as your default font for charts. Contact the BI administrator for further information on setting unicode as your default font.

4.2.22.8 To add table rows or columns

You can add table rows and columns in Web Intelligence document in *Design* mode.

1. In a Web Intelligence document in *Design* mode, select a cell in the column or row next to which you want to insert another column or row.
2. Do one of the following procedures:
   - Select the *Report Element* tab, and in the *Table Layout* subtab, from the *Insert* list, select one of the following:
     - *Insert Rows Above*
     - *Insert Rows Below*
     - *Insert Columns on Left*
     - *Insert Columns on Right*
   - Right-click the cell and select *Insert*, then one of the following:
     - *Row Above*
     - *Row Below*
     - *Column on Left*
     - *Column on Right*
3. Drag an object from the *Available Objects* pane in the Side Panel to the empty column or row you inserted.

4.2.22.9 To remove table rows or columns

You can remove table rows or columns in a Web Intelligence document in *Design* mode.

1. In a Web Intelligence document in *Design* mode, right-click the table column or row you want to remove and select *Delete* from the menu.
   By default, if you select *Delete* from the menu, it deletes the column in a vertical table or a row in a horizontal table.
2. Select *Row* or *Column*.
3. Click *OK*.

4.2.22.10 To move a row or column

You can move a row or column in a table in a Web Intelligence document in *Design* mode.

In a Web Intelligence document in *Design* mode, drag the selected column or row and drop it before or after another column or row on the table.

When you drag a row or column, the column or row header displays next to your pointer.

4.2.22.11 To swap a row or column

You can swap rows and columns in tables in a Web Intelligence document in *Design* mode.

1. Open a Web Intelligence document in *Design* mode.
2. Drag the selected column or row onto the column or row that you want to swap.

> **Tip**
>
> The drag and drop is not available if you are using Chrome as a web brower. To work around the issue, move the mouse outside the table before you drop the colum or row.

4.2.22.12 To clear cell contents from a table

You can clear different types of cells in a table.

You can clear the following types of cell in a table:

- Header cells – you can clear each header cell separately
- Footer cells – you can clear each footer cell separately
- Related body cells – when you clear one body cell, you automatically clear all of the body cells in the same column or row of the table

1. In a Web Intelligence document in *Design* mode, select the cell you want to clear.
   The cell borders are highlighted.
2. Right-click the selected cell and click *Clear Contents*.

4.2.22.13 To remove a table

You can remove a table in a Web Intelligence document in *Design* mode.

1. In a Web Intelligence document in *Design* mode, click the top edge of the table you want to remove.
   A gray border appears around the table.
2. Press the `Delete` key on your keyboard.

4.2.22.14 To copy a table

You can copy and paste tables within a report or into external applications such as Microsoft Word and Excel.

1. In a Web Intelligence document in *Design* mode, select and right-click the table you want to copy.
2. Select *Copy*.
3. To paste the table to another part of the report, right-click where you want the table to appear and select *Paste*.

   > ⚠ Restriction
   >
   > You cannot copy tables from one version of Web Intelligence to another.

4. To paste the table into another application, paste the contents in the other application.

4.2.22.15 Formatting tables and table cells

In Web Intelligence, you can define several visual aspects of tables and cells in reports.

- Select a background color for the table
- Insert an image or skin in a table or one or more of its cells
- Format table cells or borders
- Format text in table cells
- Set cell height and width
- Copy and paste formatting
- Set the position of the table in the report page
- Layer tables and cells
- Merge table cells

Related Information

To format the appearance of reports and their headers, footers, sections, tables, and table cells [page 230]
To format the appearance of reports and their headers, footers, sections, tables, and table cells [page 230]
To select a background color for the table or cells [page 297]
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4.2.22.15.1 To select a background color for the table or cells

You can set the background color for a table or its cells. When the background color of cells are defined (even as white), they take precedence over the table background color.

1. In a Web Intelligence document in *Design* mode, right-click the table or cell and select *Format Table* or *Format Cell* from the contextual menu.
2. In the *Appearance* tab, click the radio button next to the color palette icon.
3. Click the arrow next to the color palette icon to display the palette.
4. Select a color from the palette.
5. Click *OK* to return to the document.

> **Tip**
>
> If you try to apply a background color to all of a table, and the cells remain white, make sure that the cells are not set with a white background.

Related Information

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4.2.22.15.2 To define alternate row and column colors for a table

You can define row colors in a table in a Web Intelligence document in *Design* mode.

1. In a Web Intelligence document in *Design* mode, right-click the table and select *Format Table* from the contextual menu.
2. In the *Appearance* tab, in the *Alternate Color* section, set the frequency with which you want the alternate color to appear for the alternate row color in the combo box next to *Frequency*.
3. Click the arrow next to *Color* and select the color using the color palette.
4. Click *OK* to return to the document.

Related Information

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4.2.22.15.3 To format table or cell borders

You can format the border of a table or cell in a table in a Web Intelligence document in *Design* mode.

1. In a Web Intelligence document in *Design* mode, right-click the table or cell and select *Format Table* or *Format Cell* from the contextual menu.
2. In the *Border* tab, use the controls in the tab to configure the border styles and colors.

   Each time you change a style setting, you need to click the square or one of the line buttons so that it is applied to the *Preview* section, or it will not be applied to the cell or table.

   When borders are defined between two adjacent cells, priority is given to lines in the order *Double* *Dashed* *Dotted* *Plain* *none*. In case of equivalent priorities between the two cells, the right border of the left cell or the bottom border of the top cell will be shown.
3. Click *OK* to return to the document.

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4.2.22.15.4 To format text in table cells

You can format text in tables in a Web Intelligence document in *Design* mode.

1. In a Web Intelligence document in *Design* mode, select the cells whose text you want to format.

> **Note**
>
> If you select one cell in the column, depending on the type of table, the following cells are also selected:
>
> Table 171:
>
Table type	Resulting cells are selected
Horizontal	Row
Vertical	Column
Cross	Entire table body

> **Tip**
>
> You can select multiple cells in one of the following ways:
> - Select the first cell, hold down the `Control` key, and then click additional cells.
> - To select a contiguous group of columns or rows, select the beginning row or column, hold down the `Shift` key, and then click the end location of the group of rows or columns.

2. Right-click on the cell selection and click *Format Cell*.
3. In the *Font* tab, select the font, style, size and effects, as needed.
4. Click *OK* to return to the document.

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4.2.22.15.5 To activate text wrapping in a table cell

You can activate the text wrapping in a cell in a table.

1. Open a Web Intelligence document in *Design* mode.
2. Select a cell in the table and do one of the following:
   - In the *Format* or *Formatting* tab and in the *Alignment* subtab, click the *Wrap Text* icon.
   - Right-click the cell and do one of the following:
     - Select *Text*, then *Wrap Text*.
     - Select *Format Cell*. In the *Format Cell* dialog box, select Alignment in the Side Pane and activate *Wrap Text*. Click *OK* to close the dialog box.

To deactivate text wrapping in a cell, select it and do one of the following techniques offered above and unselect *Wrap Text*.

4.2.22.15.6 To set cell height and width

You can define the height and width of cells by using drag and drop or specifying the size of cells in the *Format Cell* dialog box.

> **Tip**
>
> If you want to hide the contents of a cell, right-click the cell and select *Hide* ▸ *Hide dimension*.

1. Open a Web Intelligence document in *Design* mode.
2. To set a fixed cell height and width, do one of the following:
   - Drag the cell borders until the cell is the height and width you want.

- Select the cells you want to change, then right-click the cells and select *Format Cell*. In the *General* tab, set the cell height and width.

3. To set the cell to automatically fit to its text contents, do one of the following:
   - Select *Autofit width to content* or *Autofit height to content* or both, and set the minimum width and height. Autofit retains the current cell size as the minimum size and enlarges the cell size if the string that the cell contains is larger than the minimum size specified.
     Some functions are incompatible with autofitted cells. If you place any of these functions in an autofitted cell, the function returns the `#RECURSIVE` error message.
   - To set an autofit cell width, double-click either sides of the cell.
   - To set an autofit cell height, double-click the bottom border of the cell.

> ⚠ Restriction
>
> - Documents that contain tables with the cell size set to autofit take longer to display than documents where tables contain cells with a fixed cell width and height.
> - *Autofit height to content* and *Autofit width to content* properties do not work as well when the *Read content as* option is set to HTML.

Related Information

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4.2.22.15.6.1 Effects of autofit and text wrapping in table cells

This topic lists the effects of the autofit and wrap text features when used separately and in combination.

Feature	Effect
Wrap text	Text is wrapped at the end of the cell.
Autofit width to content	Cell width is adjusted to display all the text.

Feature	Effect
Autofit height to content	Cell height is adjusted to display all the text.
Autofit width to content + *Autofit height to content*	Cell width and height is adjusted to display all the text
Wrap text + *Autofit width to content*	Cell width is adjusted to accomodate the longest word. Because the cell height is not adjusted to the number of lines of text, text might be truncated vertically.
Wrap text + *Autofit height to content*	Cell height is adjusted to accommodate the number of lines of text created by the wrap text. Because the cell width is not adjusted to the longest word, text might be truncated horizontally.
Wrap text + *Autofit height to content* + *Autofit width to content*	Cell height and width is adjusted to the text and there is no horizontal or vertical truncation.

Related Information

To activate text wrapping in a table cell [page 300]
To set cell height and width [page 300]

4.2.22.15.7 To copy formatting using the Format Painter tool

You use the *Format Painter* tool to quickly apply the formatting from a report, table or cell to other reports, tables or cells.

The formatting options applied depend on the objects you choose as the source and target. In general, only properties that affect the visual formatting, for example font style, background color, are applied. Properties that affect the display of data, for example table properties such as *Avoid duplicate row aggregation*, are not applied.

1. In a Web Intelligence document in *Design* mode, select the report, table or cell whose formatting you want to apply.
2. In the *Tools* subtab under the *Formatting* tab, click the *Format Painter* icon to apply the formatting once, or double-click to apply the formatting multiple times.
3. Click the report, table or cell to which you want to apply the formatting.

   If you single-clicked the *Format Painter* icon, it is deactivated.

   If you double-clicked the Format Painter, it remains activated. To deactivate it, click the *Format Painter* icon again or press Esc to cancel the formatting operation.

Related Information

To format the appearance of reports and their headers, footers, sections, tables, and table cells [page 230]
To select a background color for the table or cells [page 297]

To define alternate row and column colors for a table [page 298]
To format table or cell borders [page 298]
To format text in table cells [page 299]
To set cell height and width [page 300]
To set the position of a table or chart on the report page [page 303]
To layer tables and cells [page 304]
To merge table cells [page 305]
Formatting the report layout [page 228]
Formatting your reports using Cascading Style Sheets [page 272]
Creating a corporate palette for charts [page 379]

4.2.22.15.8 To set the position of a table or chart on the report page

You can set the position of a table or chart in a report.

1. In a Web Intelligence document in *Design* mode, right-click the border of the table or chart, and select *Format Table* or *Format Chart*.
2. In the *Global* > *Layout* section of the table or chart format panel, use the controls in the *Relative Position* section to set the position of the table or chart in relation to other report elements.

   > **Tip**
   >
   > You can also reach the *Layout* tab in the table or chart format panel by one of the following ways:
   > - In the *Report Elements* tab, in the *Position* subtab, click *Align*, then an alignment option.
   > - Right-click the table or chart and select *Align*, then an alignment option.

3. Click *OK*.

Related Information

To format the appearance of reports and their headers, footers, sections, tables, and table cells [page 230]
To select a background color for the table or cells [page 297]
To define alternate row and column colors for a table [page 298]
To format table or cell borders [page 298]
To format text in table cells [page 299]
To set cell height and width [page 300]
To copy formatting using the Format Painter tool [page 302]
To layer tables and cells [page 304]
To merge table cells [page 305]
Formatting the report layout [page 228]
Formatting your reports using Cascading Style Sheets [page 272]

Creating a corporate palette for charts [page 379]

4.2.22.15.9 To layer tables and cells

Layering determines how tables and cells appear when they occupy the same space in a report. An object further forward in the layering order appears over an object further backward in the layering order.

1. In a Web Intelligence document in *Design* mode, select the table or cell whose layer you want to set.
2. Right-click the selection, click *Order* and select the layering option.

Option	Description
Bring to Front	Make the table or cell the first object in the layering order.
Send to Back	Make the table or cell the last object in the layering order.
Bring Forward	Bring the table or cell one layer forward in the layering order.
Send Backward	Send the table or cell one layer backward in the layering order.

Related Information

To format the appearance of reports and their headers, footers, sections, tables, and table cells [page 230]
To select a background color for the table or cells [page 297]
To define alternate row and column colors for a table [page 298]
To format table or cell borders [page 298]
To format text in table cells [page 299]
To set cell height and width [page 300]
To copy formatting using the Format Painter tool [page 302]
To set the position of a table or chart on the report page [page 303]
To merge table cells [page 305]
Formatting the report layout [page 228]
Formatting your reports using Cascading Style Sheets [page 272]
Creating a corporate palette for charts [page 379]

4.2.22.15.10 To exclude zero values in charts and tables

In charts and tables, you can exclude zero values from the displayed data.

If a chart or table has zero values, you can choose to remove them from the visible output. You can also have hidden items that have zero values.

If you deactivate either of the zero value options:

- In a chart, there are no items.

- In a table, if the values in a column or row for an item equal zero, the column or row does not appear.

1. In a Web Intelligence document in *Design* mode, right-click the chart or table frame and select *Format Chart* or *Format Table*.
2. Do one of the following:
   - For a chart, in the *Global* chart area, select the *General* tab.
   - For a table, select the *General* tab.
3. Select the following *Display* options as required:

Option	Description
Show rows for which all measure values = 0	In vertical and cross tables, to suppress rows where all measure values are equal to zero.
Show rows for which the sum of measure values = 0	In vertical and cross tables, to suppress rows where the sum of the measure values is equal to zero.
Show columns for which all measure values = 0	In horizontal and cross tables, to suppress columns where all measure values are equal to zero.
Show columns for the sum of measure values = 0	In horizontal and cross tables, to suppress columns where the sum of the measure values is equal to zero.
Show measure values where values = 0	In charts, to suppress a chart item if its measure values are equal to zero.
Show measure values for which the sum of values = 0	In charts, to suppress a chart item where the sum of its measure values is equal to zero.

> **Note**
>
> In charts and tables, empty values are considered the same as zero values, and therefore are also affected by these *Display* options.

4. Click *OK* to close the dialog box.

4.2.22.15.11 To merge table cells

You can merge table cells in a Web Intelligence document in *Design* mode.

1. In a Web Intelligence document in *Design* mode, to select the cells you want to merge, hold down the `Control` key and click the cells.
2. Keep the `Control` key pressed, right-click the selected cells, and select *Merge*.

> **Caution**
>
> When you merge cells, the resulting merged cell contains the data only from the first cell you selected only. Data from all the other cells is lost.

Related Information

To format the appearance of reports and their headers, footers, sections, tables, and table cells [page 230]

To select a background color for the table or cells [page 297]
To define alternate row and column colors for a table [page 298]
To format table or cell borders [page 298]
To format text in table cells [page 299]
To set cell height and width [page 300]
To copy formatting using the Format Painter tool [page 302]
To set the position of a table or chart on the report page [page 303]
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Formatting your reports using Cascading Style Sheets [page 272]
Creating a corporate palette for charts [page 379]

4.2.22.16 Controlling the presence of tables, measures, and dimensions in tables

You can display or hide tables or table objects in a Web Intelligence document.

Sometimes tables or specific rows and columns display no values. For example, if a sales of a specific product are discontinued, table rows or columns that normally show results for that product appear empty. By default, these empty rows, columns, or tables are displayed.

You can also display and hide tables based on the result of a formula.

4.2.22.16.1 To show or hide tables

You can display or hide tables in a Web Intelligence document in *Design* mode.

1. Open a Web Intelligence document in *Design* mode.
2. Hover the mouse over the table border until the cursor becomes a + sign, click the table and do one of the following:
   - In the *Document Structure and Filters* pane in the Side Panel, right-click the table and select one of the following options:

Option	When selected
Hide	The table or dimension column is always hidden.
Hide when Empty	The table is hidden when there is no data.
Hide When...	The table is hidden when the formula you create is true.
Show Hidden Dimensions	The hidden dimension columns in the table appear in the table.
Show	The hidden table appears in the report.

- While the table is selected, click the right mouse button and select one of the following from the contextual menu:
  1. Select *Hide*, and then one of the following options.

     > **Note**
     >
     > If you only want to hide a column containing a dimension in a vertical or cross table, or a row in a horizontal or cross table, right-click only the dimension in the table.

Option	When selected
Hide	The table is always hidden.
Hide when Empty	The table is hidden when there is no data.
Hide When...	The table is hidden when the formula you create is true. To hide the table when the formula is true, select and type a formula in the box.

  2. Select *Format Table*, and in the *General* tab configure the following options:

Option	When selected	When deselected
Hide always	The table is always hidden.	The table is never hidden.
Hide when empty	The table is hidden when there is no data.	The table is always visible, even if it contains no data.
Hide when following formula is true	The table is hidden when the formula you create is true.	The table is never hidden based on any formula in the Formula text box.

  > **Note**
  >
  > For information on creating formulas, refer to the Web Intelligence online help or the *Using functions, formulas and calculations in Web Intelligence* guide.

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

   When a table or element is hidden, its name is italicized in grey in the *Document Structure and Filters* pane in the Side Panel.

4.2.22.16.2 To show or hide dimensions in tables

Depending on the type of table you are using, you can hide or show dimensions in columns or rows.

> **Note**
>
> You cannot hide a measure.

1. In a Web Intelligence document in *Design* mode, select the table column containing the dimension you want to show or hide.

2. Do one of the following:
   - To hide a dimension, right-click the table and select *Hide* > *Hide Dimension*. The dimension is hidden in the table.
   - To show hidden dimensions, right-click any dimension or measure in the table, and select *Hide* > *Show Hidden Dimensions*. Any hidden dimensions reappear in the table.

4.2.22.16.3 To conditionally show or hide measures or dimensions values in tables

Depending on the type of table you are using, you can conditionally hide or show measures or dimensions values in columns or rows.

1. Open a Web Intelligence document in *Design* mode.
2. Hover the mouse over the table border until the cursor becomes a + sign, click the right mouse button and select *Format Table* from the contextual menu.
3. In the *General* tab, configure the following options:
   - For form, cross, and vertical tables:

Table 172:

Option	When selected	When deselected
Show rows with all empty measure values	Rows are displayed in the table, even if they do not contain values.	Rows are hidden if they do not contain values.
Show rows with empty dimension values	Rows are displayed in the table, even if they do not contain values.	Rows are hidden if they do not contain any values.
Shows rows for which all measure values = 0	Even if the measure value is 0 in all cells of the row, the row still appears in the table.	If the measure value is 0 in all cells, the row does not appear in the table.
Shows rows for which the sum of measure values = 0	Even if the sum of measure value is 0 in the row, the row still appears in the table.	If the sum of the measure value is 0 in all cells, the row does not appear in the table.

> **Restriction**
>
> You cannot conditionally hide or show column values in vertical tables and forms.

   - For horizontal and cross tables:

Table 173:

Option	When selected	When deselected
Show columns with empty measure values	Columns are displayed in the table, even if they do not contain values.	Columns are hidden if they do not contain values.
Show columns with empty dimension values	Columns are displayed in the table, even if they do not contain values.	Columns are hidden if they do not contain any values.

Option	When selected	When deselected
Shows columns for which all measure values = 0	Even if the measure value is 0 in all cells of the column, the column still appears in the table.	If the measure value is 0 in all cells of the column, the column does not appear in the table.
Shows columns for which the sum of measure values = 0	Even if the sum of measure value is 0 in the column, the column still appears in the table.	If the sum of the measure value is 0 for the column, the column does not appear in the table.

> **Restriction**
>
> You cannot conditionally hide or show row values in horizontal tables.

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

4.2.22.16.4 To redisplay hidden dimensions

You can redisplay dimensions that have been hidden in a Web Intelligence report in *Design* mode.

1. In a Web Intelligence document in *Design* mode, select a table containing the hidden dimensions.
2. In the *Report Elements* tab, select the *Behaviors* subtab.
3. Click *Hide* > *Show Hidden Dimensions* to redisplay the dimensions.

> **Tip**
>
> If the hidden dimensions were the only objects in the table, right-click the table in the *Document Structure and FIlters* pane of the Side Panel and select *Hide* > *Show Hidden Dimensions*.

4.2.22.16.5 To redisplay hidden tables, cells or sections

You can redisplay hidden objects in a Web Intelligence document in *Design* mode.

1. In a Web Intelligence document in *Design* mode, select one of the following:
   - The hidden table, free-standing cell or section in the *Document Structure and Filters* tab in the Side Panel.
   - The hidden report object in the table in which it is displayed.
2. Right-click the object and select *Hide* > *Show*.

> **Tip**
>
> To show all hidden elements in a report, right-click in the report and select *Show All Hidden Content*.

4.2.22.16.6 To avoid duplicate row aggregation

When rows contain duplicate data, measure values are aggregated by default. You can choose not to aggregate measure values in this situation.

1. Open a Web Intelligence document in *Design* mode.
2. Hover the mouse over the table border until the cursor becomes a plus sign, click the right mouse button and select *Format Table* from the contextual menu.
3. In the *General* tab, select *Avoid duplicate row aggregation*.

   > **Note**
   >
   > This option does not work in tables containing hierarchical data.

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

4.2.22.17 To show or hide table headers and footers

You can show and hide table headers in a Web Intelligence document in *Design* mode.

1. Open a Web Intelligence document in *Design* mode.
2. Hover the mouse over the table border until the cursor becomes a plus sign, click the right mouse button and select *Format Table* from the contextual menu.
3. In the *Format Table* dialog box, select the *General* tab.
4. For the table header, do one of the following:
   - To display the headers:
     - If you are using Web Intelligence HTML Interface, select *Table headers* or, in the case of a cross table, *Top header* or *Left header* or both.
     - If you are using Web Intelligence Applet interface or Web Intelligence Rich Client, select *Show table headers* or, in the case of a cross table, *Show top header* or *Show left header* or both.
   - To hide the headers, unselect the header options.
5. For the table footer, do one of the following:
   - To display the footers:
     - If you are using Web Intelligence HTML Interface, select *Table footers* or, in the case of a cross table, *Bottom footer* or *Right footer*.
     - If you are using Web Intelligence Applet interface or Web Intelligence Rich Client, select *Show table footers* or, in the case of a cross table, *Show bottom footer* or *Show right footer*.
   - To hide the footers, unselect the footer options.
6. Click *OK* to return to the document.

4.2.22.18 To start tables on a new report page

You can set a table to start on a new Web Intelligence report page in *Design* mode.

1. Open a Web Intelligence document in *Design* mode.
2. Hover the mouse over the table border until the cursor becomes a plus sign, click the right mouse button and select *Format Table* from the contextual menu.
3. In the *Layout* tab, select *Start on a new page* in the *Vertical* or *Horizontal* panes.

   The *Horizontal* and *Vertical* panes refer to the table axes.
4. Click *OK* to return to the document.

4.2.22.19 To display object names in headers on cross tables

You can display object names in headers in cross tables in a Web Intelligence document in *Design* mode.

1. Open a Web Intelligence document in *Design* mode.
2. Hover the mouse over the table border until the cursor becomes a plus sign, click the right mouse button and select *Format Table* from the contextual menu.
3. In the *General* tab, click *Show object names* to display the object names in additional headers on the cross table.
4. Click *OK* to return to the document.

4.2.22.20 To avoid page breaks in tables

You can stop page breaks from occurring in tables in a Web Intelligence report in *Design* mode.

1. Open a Web Intelligence document in *Design* mode.
2. Hover the mouse over the table border until the cursor becomes a plus sign, click the right mouse button and select *Format Table* from the contextual menu.
3. In the *Layout* tab, select *Avoid page breaks in table* in the *Vertical* or *Horizontal* panes.

   The *Horizontal* and *Vertical* panes refer to the table axes.
4. Click *OK* to return to the document.

4.2.22.21 To repeat table headers or footers on report pages

You can set table headers and footers to be repeated in Web Intelligence report pages in *Design* mode.

1. Open a Web Intelligence document in *Design* mode.
2. Hover the mouse over the table border until the cursor becomes a plus sign, click the right mouse button and select *Format Table* from the contextual menu.
3. In the *Layout* tab, select *Repeat header on every page* or *Repeat footer on every page* in the *Vertical* or *Horizontal* panes.

The *Horizontal* and *Vertical* panes refer to the table axes.

4. Click *OK* in the document.

4.2.22.22 Transforming a dimension in a table using dimension value groups

In a table column in a Web Intelligence report, you can collect the values of a dimension into an aggregated group to which you can assign a unique name. For example, if your company has branch offices in the US cities of New York, Washington, and Boston, you can place them in a group called `Eastern branch offices`.

In a table, when you group the values of a dimension, they are no longer visible in the table as single entities; they and their data are aggregated into the group until you choose to remove any of the values of a dimension from the group.

The *Group* option is available in the *Design* mode in the following locations:

- From the *Analysis* > *Display* tabs
- From the right-click contextual menu

A variable object for this aggregated group is created in the *Available Objects* tab on the Side Panel and allows you to manage the group configuration.

Ungrouped values

Any ungrouped values of a dimension remain separate in the table column unless you activate the *Automatically grouped* option. If you select *Automatically grouped* for ungrouped values, then the values of a dimension are removed from the table and aggregated into the selected group's data.

Tips about grouping values of a dimension in a table

- You can reuse the aggregated group variable in other tables.

  > **Note**
  >
  > If the original dimension can be used in the same or other tables and is not affected by the group variable.

- A dimension value can only belong to one group.
- A dimension value group is a text data type, even if the original values of a dimension are dates or numbers.
- We recommend that you do not have more than 1,000 values of a dimension in a group. To use more than this amount could cause performance issues.

4.2.22.22.1 To group values of a dimension in a table using the Group dropdown list

The *Group* option allows you to assign two or more selected values of a dimension in a table column to an aggregated group and assign that group a unique name.

1. Open a Web Intelligence document in *Design* mode.
2. Select two or more values of a dimension in a table column and do one of the following:
   - In the *Analysis* tab, in the *Display* subtab, select *Group* from the *Group* dropdown list.
   - Right-click the selection and from the *Group* contextual menu, select *Group*.
3. In the *New Group* dialog box, change the proposed group name if necessary, and click *OK*.

The values are grouped in the dimension column in the table, and the column header name changes to "[dimension name]+". For example, if you group values for dimension "City", the column header changes to show "City+". A group variable is created in the *Variables* folder in the *Available Objects* tab on the Side Panel. You can change the group variable name in the *Manage Groups* dialog box or using the right-click contextual menu for the group variable in the *Variables* folder.

Related Information

To edit Group variables in the Available Objects tab in the Side Panel [page 318]
To group values of a dimension in a table using the Manage Groups dialog box [page 314]
To add values of a dimension to an existing group using the Manage Groups dialog box [page 316]
To ungroup values of a dimension from an existing group using the Manage Groups dialog box [page 315]
To rename a dimension value group using the Manage Groups dialog box [page 318]
To rename a dimension value group using the Group dropdown list [page 317]

4.2.22.22.2 To ungroup values of a dimension from an existing group using the Group dropdown list

The *Ungroup* option in the *Group* dropdown list allows you to ungroup the values of a dimension in a table column.

1. Open a Web Intelligence document in *Design* mode.
2. Select at least one dimension value group of a group variable in a table column and do one of the following:
   - In the *Analysis* tab, in the *Display* subtab, from the *Group* dropdown list, select *Ungroup*.
   - Right-click the table and from the *Group* contextual menu, select *Ungroup*.

The values of the dimension reappear in the table column.

> ⚠ Caution
>
> If you have selected *Automatically grouped* for ungrouped values, then the values of the dimension do not appear singly in the table column because they are aggregated into the "ungrouped" group data.

Related Information

To edit Group variables in the Available Objects tab in the Side Panel [page 318]
To add values of a dimension to an existing group using the Manage Groups dialog box [page 316]
To ungroup values of a dimension from an existing group using the Manage Groups dialog box [page 315]
To add values of a dimension to an existing group using the Group dropdown list [page 315]

4.2.22.22.3 To group values of a dimension in a table using the Manage Groups dialog box

The *Manage Group* dialog box allows you to assign two or more values of a dimension in a table column to an aggregated group and assign that aggregated group a unique name.

1. Open a Web Intelligence document in *Design* mode.
2. Click a dimension column in the table and do one of the following:
   - In the *Analysis* tab, in the *Display* subtab, select *Manage Groups* from the *Group* dropdown list.
   - Right-click the dimension column in the table and from the *Group* contextual menu, select *Manage Groups*.
   - Right-click the group variable in the *Available Objects* tab on the Side Panel and select *Manage Groups*.
3. In the *Manage Groups* dialog box, select the checkboxes for the dimension value categories that you want to group.
4. Click *Group*.
5. In the *New Group* dialog box, type a name for the group and click *OK*.
   The groups of values appear in the *Groups* column.
6. To have any ungrouped values of a dimension automatically grouped:
   a. From the *Ungrouped Values* dropdown list, select *Automatically Grouped*.
   b. In the *Automatically grouped values* dialog box, enter a name for the group in the *Name* text box if you prefer a name different from *Others*.
   c. Click *OK*.
7. Click *OK* to close the *Manage Groups* dialog box.

The values are grouped in the dimension column in the table, and the column header name changes to "[dimension name]+". For example, if you group values for dimension "City", the column header changes to show "City+". A group variable is created in the *Variables* folder in the *Available Objects* tab on the Side Panel. You can change the group variable name in the *Manage Groups* dialog box or using the right-click contextual menu for the group variable in the *Variables* folder.

Related Information

To edit Group variables in the Available Objects tab in the Side Panel [page 318]
To group values of a dimension in a table using the Group dropdown list [page 313]
To ungroup values of a dimension from an existing group using the Manage Groups dialog box [page 315]

4.2.22.22.4 To ungroup values of a dimension from an existing group using the Manage Groups dialog box

The “Manage Group” dialog box allows you to remove values of a dimension from an aggregated group.

1. Open a Web Intelligence document in *Design* mode.
2. Click a dimension column in the table and do one of the following:
   - In the *Analysis* tab, in the *Display* subtab, select *Manage Groups* from the *Group* dropdown list.
   - Right-click the dimension column in the table and from the *Group* contextual menu, select *Manage Groups*.
3. In the *Manage Groups* dialog box, select the checkbox next to the values that you want to remove from a group.
4. Click *Ungroup*.

   The group name disappears in the “Groups” column next to the values that you selected.
5. Click *OK* to close the *Manage Groups* dialog box.

The values you removed from a group reappear in the table.

> **Caution**
>
> If you have selected *Automatically grouped* for ungrouped values, then the values of the dimension do not appear singly in the table column because they are aggregated into the "ungrouped" group data.

Related Information

To ungroup values of a dimension from an existing group using the Group dropdown list [page 313]
To group values of a dimension in a table using the Manage Groups dialog box [page 314]
To group values of a dimension in a table using the Group dropdown list [page 313]

4.2.22.22.5 To add values of a dimension to an existing group using the Group dropdown list

The *Move to Group* option in the *Group* dropdown list allows you to add selected values of a dimension in a table to an aggregated group.

1. Open a Web Intelligence document in *Design* mode.
2. Select one or more dimension value in a table column and do one of the following:
   - In the *Analysis* tab, in the *Display* subtab, select *Group* from the *Group* dropdown list.
   - Right-click the selection and from the *Group* contextual menu, select *Group*.

The selected values of the dimension disappear from the dimension column and are aggregated into the selected group.

Related Information

To add values of a dimension to an existing group using the Manage Groups dialog box [page 316]
To add a group of dimension values to another group of dimension values using the Manage Groups dialog box [page 317]
To ungroup values of a dimension from an existing group using the Group dropdown list [page 313]
To ungroup values of a dimension from an existing group using the Manage Groups dialog box [page 315]

4.2.22.22.6 To add values of a dimension to an existing group using the Manage Groups dialog box

The *Manage Group* dialog box allows you to add values of a dimension to an existing aggregated group in a table column.

1. Open a Web Intelligence document in *Design* mode.
2. Click a dimension column in the table and do one of the following:
   - In the *Analysis* tab, in the *Display* subtab, select *Manage Groups* from the *Group* dropdown list.
   - Right-click the dimension column in the table and from the *Group* contextual menu, select *Manage Groups*.
   - Right-click the group variable in the *Available Objects* tab on the Side Panel and select *Manage Groups*.
3. In the *Manage Groups* dialog box, select the checkbox next to the dimension value that you want to add to a group.
4. Select a group from the *Move to* dropdown list.
   The group name appears in the *Groups* column next to the variables that you have selected.
5. Click *OK* to close the *Manage Groups* dialog box.

The selected values of the dimension disappear from the table column and are aggregated into the selected group.

Related Information

To add values of a dimension to an existing group using the Group dropdown list [page 315]
To add a group of dimension values to another group of dimension values using the Manage Groups dialog box [page 317]

4.2.22.22.7 To add a group of dimension values to another group of dimension values using the Manage Groups dialog box

The *Manage Group* dialog box allows you to add one or more groups to an existing aggregated value group in a table column.

1. Open a Web Intelligence document in *Design* mode.
2. Click a dimension column in the table and do one of the following:
   - In the *Analysis* tab, in the *Display* subtab, select *Manage Groups* from the *Group* dropdown list.
   - Right-click the dimension column in the table and from the *Group* contextual menu, select *Manage Groups*.
   - Right-click the group variable in the *Available Objects* tab on the Side Panel and select *Manage Groups*.
3. In the *Manage Groups* dialog box, select the checkbox next to the grouped values of a dimension that you want to add to another group.
4. Select a group from the *Move to* dropdown list.
   The group name in the *Groups* column next to the values you selected is changed to reflect the group change.
5. Click *OK* to close the *Manage Groups* dialog box.

Related Information

To add values of a dimension to an existing group using the Group dropdown list [page 315]
To add values of a dimension to an existing group using the Manage Groups dialog box [page 316]
To ungroup values of a dimension from an existing group using the Manage Groups dialog box [page 315]
To ungroup values of a dimension from an existing group using the Group dropdown list [page 313]

4.2.22.22.8 To rename a dimension value group using the Group dropdown list

The *Rename Group* option in the *Group* dropdown list allows you to rename a dimension value group.

1. Open a Web Intelligence document in *Design* mode.
2. Select a dimension value group in a table column and do one of the following:
   - In the *Analysis* tab, in the *Display* subtab, from the *Group* dropdown list, select *Rename Group*.
   - Right-click the table and from the *Group* contextual menu, select *Rename Group*.
3. In the *Rename Group* dialog box, enter a new name and click *OK*.

The selected dimension value group name is changed in the table column.

> **Tip**
>
> You can also rename the group by renaming its variable in the *Available Objects* tab on the Side Panel.

Related Information

To edit Group variables in the Available Objects tab in the Side Panel [page 318]
To rename a dimension group variable name using the Manage Groups dialog [page 319]
To rename a dimension value group using the Manage Groups dialog box [page 318]

4.2.22.22.9 To rename a dimension value group using the Manage Groups dialog box

The *Manage Group* dialog box allows you to rename an existing aggregated group of dimension values.

1. Open a Web Intelligence document in *Design* mode.
2. Click a dimension column in the table and do one of the following:
   - In the *Analysis* tab, in the *Display* subtab, select *Manage Groups* from the *Group* dropdown list.
   - Right-click the dimension column in the table and from the *Group* contextual menu, select *Manage Groups*.
   - Right-click the group variable in the *Available Objects* tab on the Side Panel and select *Manage Groups*.
3. From the dropdown list at the bottom of the *Manage Groups* dialog box, select the value group that you want to rename.
4. Click the *Rename the selected group* icon.
5. In the *Rename Group* dialog box, enter a new name and click *OK*.
6. Click *OK* to close the *Manage Groups* dialog box.

The selected dimension value group name is changed in the table column.

Related Information

To rename a dimension value group using the Group dropdown list [page 317]
To rename a dimension group variable name using the Manage Groups dialog [page 319]

4.2.22.22.10 To edit Group variables in the Available Objects tab in the Side Panel

You can edit dimension group variables in the Side Panel.

1. Open a Web Intelligence document in *Design* mode.
2. In the *Available Objects* tab on the Side Panel, right-click a group variable object in the *Variables* folder.
3. Do one of the following:
   - To edit the values for a group, click *Edit*. In the *Manage Group* dialog box, edit the group as required.

- To rename the group variable, click *Rename*. In the *Rename Variable* dialog box, enter a new name and click *OK*.

  > **Note**
  >
  > You can also rename the group variable in the *Manage Group* dialog box.

- To copy the variable, click *Copy*.
- To delete the variable, click *Remove*. The group variable is deleted from the *Variables* folder and the group column is deleted from any tables in which the variable is used.

Related Information

To group values of a dimension in a table using the Manage Groups dialog box [page 314]
To add values of a dimension to an existing group using the Manage Groups dialog box [page 316]
To rename a dimension group variable name using the Manage Groups dialog [page 319]
To rename a dimension value group using the Manage Groups dialog box [page 318]
To add a group of dimension values to another group of dimension values using the Manage Groups dialog box [page 317]

4.2.22.22.11 To rename a dimension group variable name using the Manage Groups dialog

The *Manage Group* dialog box allows you to rename the group variable name. This name appears in the column header of the table and in the *Variables* folder in the *Available Objects* tab on the Side Panel.

1. Open a Web Intelligence document in *Design* mode.
2. Click a dimension column in the table and do one of the following:
   - In the *Analysis* tab, in the *Display* subtab, select *Manage Groups* from the *Group* dropdown list.
   - Right-click the dimension column in the table and from the *Group* contextual menu, select *Manage Groups*.
   - Right-click the group variable in the *Available Objects* tab on the Side Panel and select *Manage Groups*.
3. From the dropdown list at the bottom of the *Manage Groups* dialog box, select the group that you want to rename.
4. Click the *Rename the selected group* icon.
5. In the *Rename Group* dialog box, enter a new name and click *OK*.
6. Click *OK* to close the *Manage Groups* dialog box.

The selected dimension group name is changed for the table column and in any other table in which it is used.

> **Tip**
>
> You can also change the dimension group variable name directly in the *Available Objects* tab on the Side Panel.

Related Information

To edit Group variables in the Available Objects tab in the Side Panel [page 318]
To rename a dimension value group using the Group dropdown list [page 317]
To rename a dimension value group using the Manage Groups dialog box [page 318]

4.2.23 Displaying data in free-standing cells

Free-standing cells are single cells that stand alone in a report.

You can place any text or formula in a blank free-standing cell, or you can use pre-defined free standing cells that display specific information.

For more information on the functions used in free-standing cells, see the *Using Functions, Formulas and Calculations in Web Intelligence* guide, or see the Web Intelligence online help.

Formula and text cell functions in free-standing cells

Table 174:

Function	Description
Blank Cell	Empty cell in which you can enter any text or formula.
Drill Filters	Uses the `DrillFilters` function to display details of the drill filters applied to the report.
Last Refresh Date	Uses the `LastExecutionDate` function to display the last date when the document was refreshed.
Document Name	Uses the `DocumentName` function to display the document name.
Query Summary	Uses the `QuerySummary` function to display details of the queries in the document.
Prompt	From the *Prompt* dropdown list, you can select one of the following cell options: • `PromptSummary`: This cell uses the PromptSummary function to display the complete details of the user prompt selections in the document. • <name of query prompt>: The name of each query prompt is listed in the *Prompt* list. A pre-defined cell based on a query prompt displays the user prompt selections at the last refresh or *Run Query* action.
Report Filter Summary	Uses the `ReportFilterSummary` function to display the report filters applied to the report.

Page number cell functions in free-standing cells

Table 175:

Function	Description
Page Number	Uses the `Page` function to display the number of pages in the report.
Page Number/Total Pages	Uses the `Page` and `NumberOfPages` functions to display the current page number and the total number of pages in the report.
Total Number of Pages	Uses the `NumberOfPages` function to display the total number of pages in the report.

4.2.23.1 To insert a free-standing cell in a report

You can insert a free-standing cell in a table.

1. In a Web Intelligence document in *Design* mode, select the *Report Element* tab.
2. In the *Cell* subtab, do one of the following:
   - Click *Blank* to insert a blank cell.
   - From the *Pre-Defined* dropdown list, select a pre-defined cell to insert.
3. Place your mouse over the part of the report where you want to insert the cell and click the left mouse button.
4. If you have inserted a blank cell, type the text or formula of the cell in the *Formula Bar*.

> **Note**
>
> To activate the *Formula Bar*, click the *Formula Bar* icon in the *Analysis* tab.

5. To delete the cell, select it and press the `Delete` key on your keyboard.

4.2.23.2 To hide free-standing cells

You can hide free-standing cells unconditionally, when they are empty, or based on the result of a formula.

1. In a Web Intelligence document in *Design* mode, right-click the free-standing cell and select *Format Cell* in the contextual menu.
2. In the *Format Cell* dialog box, in the *General* tab, select any of the following:
   - To hide the cell unconditionally, select *Hide always*.
   - To hide the cell when it is empty, select *Hide when empty*.
   - To hide the cell based on the result of a formula, click *Hide when the following formula is true* and type the formula in the box.
3. Click *OK* to return to the document.

Related Information

To redisplay hidden tables, cells or sections [page 309]

4.2.23.3 To copy a free-standing cell

You can copy and paste free-standing cells within a report or into external applications such as Microsoft Word and Excel.

1. Open a Web Intelligence document in *Design* mode.
2. Right-click the free-standing cell and select *Copy* in the contextual menu.
3. To paste the free-standing cell to another part of the report, right-click where you want the free-standing cell to appear and click *Paste* on the menu.
4. To paste the free-standing cell into another application, paste the contents of the clipboard from within the application.

   You can also copy a free-standing cell into another application by dragging and dropping the free-standing cell directly into the open document in the target application. When you drag and drop a free-standing cell into a Microsoft Office application, the text in the cell is pasted into the application.

4.2.24 Formatting numbers and dates

You can change how values appear in specific cells or on chart axes using predefined formats available in the application, or by creating your own custom formats.

You can save your custom formats for reuse in more than one block and report in the same document.

4.2.24.1 Predefined formats

This topic describes the predefined formats available in Web Intelligence for table cells.

Table 176:

Format	Description
Default	The format defined for the object on the universe.
Number	Formats for decimal or integer values.
Currency	Formats for currency values.
Date/Time	Date and time formats.
Boolean	Formats for true and false values.

Related Information

To apply a custom number format to a cell [page 327]
To define a custom format [page 327]
Setting Decimal type for big numbers to improve calculation and rounding accuracy [page 323]

4.2.24.1.1 To apply a predefined format to a cell

You can apply a predefined number format to data in a cell in a table.

1. In a Web Intelligence document in *Design* mode, select a cell.
2. To select a predefined format:
   - In the Web Intelligence HTML interface, in the *Formatting* tab, select the *Numbers* subtab, and select a format from the *Number Format* dropdown list.
   - In the Web Intelligence Rich Client, in the *Format* tab, in the *Numbers* subtab, and select a format from the *DEFAULT* dropdown list.
3. Save the document.

4.2.24.1.2 Setting Decimal type for big numbers to improve calculation and rounding accuracy

The new Decimal number type implements the IEEE 754-2008 Decimal data format for big numbers which improves Web Intelligence calculation precision. The Decimal function `ToDecimal(value)` is supported where value can be a number or a string, and transforms its input into a Decimal type.

The Decimal number type offers the following advantages:

- Web Intelligence can now compute decimal numbers for any operation where a Number type is expected, for example, mathematical operators, conditional operators, or logical operators.
- Decimal values have a default precision of up to 40 digits with a maximum exponent value of 400 which correctly converts Double into Decimal.
- The new Decimal function `ToDecimal(value)` is supported in any function where a number is expected. For example, in the Character functions, you can use a Decimal value for num_repeats in the function `Fill(repeated_string ; num_repeats)` where `(value)` can be a number or a string that transforms its input into a Decimal. The string input type is particularly useful to extract large precision values from a data source without any loss in precision. For a numeric function, if the argument for a function is Decimal, then the function returns Decimal type to the extended precision. For example, =Sin(1.0/3.0) returns . 3271946967961520 but =Sin(ToDecimal("1")/ToDecimal("3")) returns 0.327194696796152244173344085267620606l.

In a Web Intelligence report, you apply Decimal for a measure as follows:

- Right click a measure in the *Available Objects* side panel.
- Select *Decimal* from the *Change Type* menu. You can also select *Number* for a measure that is already defined as Decimal.

> **Caution**
>
> Changing certain measures to Decimal in your report may impact the performance of Web Intelligence. This applies particularly to documents with many measures returning high numbers of rows in the data provider.

Related Information

Predefined formats [page 322]

4.2.24.2 Custom formats

In tables, you can use the Custom format type to define a customized format for any cell.

In Web Intelligence functions, the day/date, calendar and time of day character definitions below apply. The following table lists the strings you can use to create custom formats:

Table 177:

Character(s)	Display(s)	Example
#	The corresponding digit. If the number has less digits than the number of # characters used to specify the format, no leading zeros are inserted.	'12345' with the format #,##0 gives '12,345' (if your locale defines the grouping separator as a comma) or '12 345' (if your locale defines the grouping separator as a space)
0	The corresponding digit. If the number has less digits than the number of 0 characters used to specify the format, a leading zero(s) is inserted before the number.	'123' with the format #0,000 gives '0,123'
,	The grouping separator as defined by your locale.	'1234567' with the format #,##0 gives '1,234,567' (if you locale defines the grouping separator as a comma) or '1 234 567' (if your locale defines the grouping separator as a non-breaking space)
.	The decimal separator as defined by your locale.	'12.34' with the format #.#0 gives '12.34' (if your locale defines the decimal separator as a period) or '12,34' (if your locale defines the decimal separator as a comma)
[%]%	Displays a percentage sign (%) after the result and multiplies the result by 100.	0.50 becomes 50%.
%	The % sign after the result, but does not multiply the result by 100.	0.50 becomes 0.50%
	A non-breaking space ( )	'1234567' with the format # ##0 gives '1234 567'

Character(s)	Display(s)	Example
1, 2, 3, a, b, c, $, £, € (and so on)	The alphanumeric character.	'705.15' with the format $#.#0 gives '$705.15' or with the format #,#0 € gives '705,15 €' **Note** Alphanumeric characters should be delimited by single quotes, otherwise they can be interpreted as formatting characters. For example, # # will result in '123 4' while '#' # will result in '# 1234'
[Red], [Blue], [Green], [Yellow], [Gray], [White], [Dark Red], [Dark Blue], [Dark Green]	The value in the specified color.	'150' with the format #,##0[Red] gives '150' in red text, #,##0[Blue] gives '150' in blue text.
Day/date characters	(day, date)	
d	The number of the day in the month with no leading zeros. If the date for day is less than two characters, the date displays without a zero before it.	The first day of a month with the format d gives '1'
dd	The number of the day with leading zeros. If the date for day is less than two characters, the date displays with a zero before it.	The first day of a month with the format dd gives '01'
ddd	The name of the day abbreviated. The first letter is capitalized if the selected locale uses capitalized day names.	'Monday' with the format ddd gives 'Mon' in English, in French, lundi gives lun.
Dddd	Forced the capitalization of the day name, for any locale.	'Monday' with the format Dddd gives 'Mon' in English, in French, lundi gives Lun.
dddd	The name of the day in full. The first letter is capitalized if the selected locale uses capitalized day names.	'Monday' with the format dddd gives 'Monday' in English. In French, the day is lundi.
DDDD	The name of the day in full, in uppercase.	'Monday' with the format DDDD gives 'MONDAY' in English. In French, the day is LUNDI.
dddd dd	The day of the week followed by a space and the number of the day.	'Monday' with the format dddd dd gives 'Monday 01'
Calendar characters	(week, month, year)	
M	The number of the month with no leading zeros. If the number for month is less than two characters, the number displays without a zero before it.	'January' with the format M gives '1'

Character(s)	Display(s)	Example
MM	The number of the month with leading zeros. If the number for month is less than two characters, the number displays with a zero before it.	'January' with the format MM gives '01'
mmm	The name of the month abbreviated. The first letter is capitalized if the selected locale uses capitalization.	'January' with the format mmm gives Jan in English. In French, this is 'jan'.
Mmmm	The name of the month abbreviated. The first letter is capitalized for all locales.	'January' with the format mmm gives Jan in English. In French, this is 'Jan'.
mmmm	The name of the month in full. The first letter is capitalized if the selected locale used capitalization.	'January' with the format mmmm gives January in English, janvier in French
MMMM	The name of the month in full all in uppercase.	'January' with the format MMMM gives JANUARY in English, JANVIER in French
ww	The week number of the year.	For the 9th of January 2015, the ww format gives '02', because it is the seventh week of the year 2015.
w	The week number of the year without leading zero.	For the 9th of January 2015, the w format gives '2', because it is the seventh week of the year 2015.
W	The week number of the month.	For the 9th of January 2015, the W format gives '2', because it is the second week of January.
yy	The last two digits for year.	'2003' with the format yy gives '03'
yyyy	All four digits for year.	'2003' with the format yyyy gives '2003'
Time of day characters	(hours, minutes, seconds, am/pm)	
hh:mm:ss a	The hour with no leading zeros and the minutes and seconds with leading zeros. The "a" character displays AM or PM after the time when available.	'21:05:03' with the format hh:mm:ss a gives '9:05:03 PM' for English locale
H	The hour according to the 24-hour clock, starting at 0. No leading zero for single figure hours.	'21:00' with the format H gives '21'. Possible values are 0-23.
HH	The hour according to the 24-hour clock, starting at 0.	'21:00' with the format HH gives '21'. Possible values are 00-23.
k	The hour according to the 24-hour clock, starting at 1. No leading zero for single figure hours.	'21:00' with the format k gives '21'. Possible values are 1-24.
kk	The hour according to the 24-hour clock, starting at 01.	'21:00' with the format kk gives '21'. Possible values are 01-24.
hh	The hour according to the 12-hour clock.	'21:00' with the format hh gives '09'

Character(s)	Display(s)	Example
HH:mm	The hour and minutes with a zero in front of a single-digit hour.	'7:15 am' with the format HH:mm gives '07:15'
HH:mm:ss	The hour, minutes, and seconds with a zero in front of a single-digit hour.	'7:15 am' with the format HH:mm:ss gives '07:15:00'
mm:ss	The minutes, and seconds with a zero in front of a single-digit hour.	'07:15:03' with the format mm:ss gives '15:03'
z	The time zone information on a date/time value as follows: GMT+/-HH:mm	

4.2.24.2.1 To define a custom format

You can define custom number formats to use in cells in tables.

1. In a Web Intelligence document in *Design* mode, select the *Format* tab, then the *Numbers* subtab.
2. Click *Custom* to display the *Custom Format* panel.
3. Select a format listed in the *Samples* pane, and then click *Custom*.
4. Edit the selected format by typing additional characters in one or more text boxes.

   For example, if you want to create a custom format for a number value, type the custom format you want in the *Positive*, *Negative*, and *Equal to zero* text boxes. If you want to create a custom format for Boolean values, type the custom format you want in the *True* and *False* boxes.
5. Click *Add*.

   You cannot delete or edit custom formats. To change a custom format, you need to create a new custom format and apply the new format to the selected cells. Any custom formats not applied to cells in a document are deleted automatically when you end your session.

   The custom format appears in the *Custom* tab of the *Format Number* panel.
6. Click *OK* to return to the document.

Related Information

Custom formats [page 324]
To apply a custom number format to a cell [page 327]

4.2.24.2.2 To apply a custom number format to a cell

You can apply an existing custom number format to data in a cell in a table.

1. In a Web Intelligence document in *Design* mode, select the cells to which you want to apply a custom format.
2. Do one of the following:

- In the *Format* tab, select the *Numbers* subtab. Select the custom formula from the dropdown list.
- Right-click the selected cells, and select *Format Number* in the *Format Number* panel. In the *Custom* tab, select the custom format. Click *OK* to return to the document.

4.2.24.3 To format a number as a currency in a table cell

You can format the currency format in a cell in a table.

1. In a Web Intelligence document in *Design* mode, select a cell.
2. In the *Format* or *Formatting* tab, select the *Numbers* subtab.
3. From the *Currency* icon dropdown list, select the currency symbol.
4. To select a number format, do one of the following:
   - Select a format from the *Default* dropdown list.
   - If you require a format that is not in the dropdown list, click *Custom*. Refer to the *To define a custom format* topic for more information.

Related Information

To define a custom format [page 327]

4.2.24.4 To apply a percentage format to a cell number

In a table in a Web Intelligence document, you can apply the percentage format in more than one way.

1. Open a Web Intelligence document in *Design* mode.
2. Select one or more cells.
3. Do one of the following:
   - In the *Format* or *Formatting* tab:
     1. Select the *Numbers* subtab.
     2. Click the *Percentage* icon.
     3. From the *Default* dropdown list, select *123,456.70%*.
   - Right-click the selection and choose one of the following:
     - If you are in the Web Intelligence Rich Client or Web Intelligence Applet interface, select *Format Number*. In the *Format Number* dialog box, select the *Percentage* tab, then *123,456.70%*. Click *OK*.
     - If you are in the Web Intelligence HTML interface, select *Format Cell*. In the *Format Cell* dialog box, select the *Number* tab, then *123,456.70%*. Click *OK*.

The cell or cells change to the selected number format.

4.2.25 Using sections to group data

Sections allow you to split report information into smaller, more comprehensible parts.

Example

Grouping quarterly revenue results into sections on a report

You are the regional sales manager in Texas. You receive a report showing 2003 annual revenue for stores in your region, broken down by cities and quarters.

Table 178:

City	Quarter	Sales revenue
Austin	Q1	314430
Austin	Q2	273608
Austin	Q3	294798
Austin	Q4	252644
Dallas	Q1	215874
Dallas	Q2	194689
Dallas	Q3	204066
Dallas	Q4	188791
Houston	Q1	572177
Houston	Q2	619924
Houston	Q3	533765
Houston	Q4	520332

To make a comparison of the results for each city per quarter, you set [Quarter] as a section value. The report is broken up into four separate sections by quarter.

Q1

Table 179:

City	Sales revenue
Austin	314430
Dallas	215874
Houston	572177

Q2

Table 180:

City	Sales revenue
Austin	273608
Dallas	194689
Houston	619924

Q3

Table 181:

City	Sales revenue
Austin	294798
Dallas	204066
Houston	533765

Q4

Table 182:

City	Sales revenue
Austin	252644
Dallas	188791
Houston	520332

You can create a single section or include multiple sections with subsections in a report. You can also remove and reposition sections within a report.

You can create a section from one of two sources:

- on a dimension already displayed on a table or chart: right-click the dimension and select *Set as section.*
- on a dimension included in the document but not displayed on a table or chart

You cannot create a section with a measure object.

Related Information

To format the appearance of reports and their headers, footers, sections, tables, and table cells [page 230]

4.2.25.1 To create a section from a column

You can create a section based on a table column in a Web Intelligence report in *Design* mode.

1. Open a Web Intelligence document in *Design* mode.
2. Right-click the column you want to define as a section and click *Set as Section*.

4.2.25.2 To create a section from a dimension

You can create a section in a Web Intelligence document in *Design* mode.

1. In a Web Intelligence document in *Design* mode, select the *Report Elements* tab.

2. In the *Section* subtab, click *Insert Section*.
3. Click in the report at the position where you want to insert the section.
4. Select the dimension in the dialog box that appears and click *OK* to insert the section.

4.2.25.3 Using report filters in report sections

You can apply report filters to sections using values in the section header or that appear within the section.

Filters on a section header

If you have a report with section `[Country]`, you can use in the filter syntax `[Country] = "US"` to filter out all sections on countries that are not `"US"`.

Filters on section data

If you have a report with section `[Region]` and you use in the filter syntax `[Product]="Drinks"` in the section, the report contains all sections that contain the product `"Drinks"`.

Tthe filter is based on the data in the section, but applied indirectly to the data in the section header.

Related Information

To create, edit, and delete standard report filters [page 457]

4.2.25.4 Sections based on a hierarchy

If you create a section on a hierarchy, each member of the hierarchy becomes a section header.

You can expand sections in the same way as you expand members in a column in a table.

You have a report that displays the following data:

Table 183:

Customer Geography		Gender	Internet Sales Amount
All Customers		Male	235.243
		Female	254,342

Customer Geography		Gender	Internet Sales Amount
	Australia	Male	34,342
		Female	45,464
	Canada	Male	12,232
		Female	14,242
	France	Male	17,343
		Female	18,001

If you create a section on [Customer Geography], the report initially appears as follows:

Table 184:

All Customers

Table 185:

Gender	Internet Sales Amount
Male	235,243
Female	254,342

If you expand the section header, the report appears as follows:

Table 186:

All Customers

Table 187:

Gender	Internet Sales Amount
Male	235,243
Female	254,342

Table 188:

Australia

Table 189:

Gender	Internet Sales Amount
Male	34,342
Female	45,464

Table 190:

Canada

Table 191:

Gender	Internet Sales Amount
Male	12,232
Female	14,242

Table 192:

France

Table 193:

Gender	Internet Sales Amount
Male	17,343
Female	18,001

4.2.25.5 To remove a section cell or section

You can remove a section or section cell in a Web Intelligence report in *Design* mode.

1. Open a Web Intelligence document in *Design* mode.
2. Right-click a section cell and do one of the following:
   - Select *Delete* > *Cell Only* to delete the section cell.
   - Select *Delete* > *Section and Cell* to delete the section and the cell.

4.2.25.6 To set the page layout of a section

You can set the page layout of a section in a Web Intelligence report in *Design* mode.

1. In a Web Intelligence document in *Design* mode, right-click a section and select *Format Section* from the menu.
2. In the *Layout* tab, select any of the following:
   - Select *Start on a new page* to start each section on a new page.
   - Select *Avoid page breaks* to avoid page breaks in the section.
   - Select *Repeat on every page* to repeat the section header on every page.
3. Click *OK* to return to the document.

4.2.25.8 To hide sections

You can hide sections in a Web Intelligence report in *Design* mode.

1. In a Web Intelligence document in *Design* mode, select a section.
2. In the *Report Elements* tab, in the *Behaviors* subtab, click the arrow next to the *Hide* button and select one of the following:
   - To hide the section, select *Hide*.
   - To hide the section when it is empty, select *Hide When Empty*.
   - To hide the section when a specified formula is true, select *Hide When*, then select *Hide when the following formula is true*, and type a formula in the box . The formula must return a Boolean value (True or False).

Related Information

To redisplay hidden tables, cells or sections [page 309]

4.2.25.9 To define colors and images in a section

You can define section colors and images in a Web Intelligence report in *Design* mode.

1. In a Web Intelligence document in *Design* mode, right-click the section and select *Format Section*.
2. In the *Appearance* tab, define the colors and images.
3. Click *OK* to return to the document.

Related Information

To format the appearance of reports and their headers, footers, sections, tables, and table cells [page 230]

4.2.26 Using breaks

A break is a division within a block in which data is grouped according to a selected dimension, detail, or measure into self-contained sections.

Break sections are represented as smaller tables within the same block of data.

You use breaks to display all the data for each unique value of an object in separate parts.

Breaks offer the following advantages:

- You can more efficiently organize how your data is represented.
- You can display subtotals.
- You can display sub-aggregations.

4.2.26.1 Breaks compared to sections

Breaks and sections separate data differently in Web Intelligence.

A section distributes the data into multiple free-standing cells called section headers. Each section header contains one value for a dimension, with a block of data that corresponds to the dimension value.

A break divides the data up within one block. One column contains the values for a dimension, detail, or measure, which are repeated for each other row of values in the block.

4.2.26.2 Applying breaks to hierarchies

When you apply a break to a hierarchy, the break occurs on all hierarchy members at all levels.

Example

A break applied to a hierarchy

You have a report displaying the following data:

Table 194:

Customer	Gender	Unit Sales
ALL	F	131,587
	M	138,215
USA	F	131,587
	M	138,215
CA	F	36,759
	M	37,989

If you apply a break to the [Customer] hierarchy, the display appears as follows. The break is applied on each member of [Customer].

Table 195:

Customer	Gender	Unit Sales
ALL	F	131,587
	M	138,215

Table 196:

Customer	Gender	Unit Sales
USA	F	131,587
	M	138,215

Table 197:

Customer	Gender	Unit Sales
CA	F	36,759
	M	37,989

4.2.26.3 Default sort order in breaks

When you apply a break in a report, a default sort order is applied.

When you insert a break on an object, the values for the object are automatically sorted in ascending order as follows:

- If the values are numeric, the lowest value appears in the first row of the table, the highest in the last row.
- If the values are alphabetical characters, then the values are sorted in alphabetical order from A to Z.

You can set multiple breaks across several dimensions details or measures and set a sort priority on each break.

4.2.26.4 To insert a break

You can insert a break in any table in a Web Intelligence report, except for in form tables.

1. In a Web Intelligence document in *Design* mode, in a table, select a column on which you want to apply a break.
2. In the *Analysis* tab, in the *Display* subtab, select *Add Break* from the *Break* dropdown list.
   The table is divided into as many mini tables as there are unique values in the column. Each mini table has a footer.

Related Information

To manage breaks [page 336]

4.2.26.5 To remove a break

You can remove the break in a table in the *Manage Breaks* dialog box.

1. In a Web Intelligence document in *Design* mode, select the table column on which the break is defined.
2. In the *Analysis* tab, in the *Display* subtab, select *Remove Break* from the *Break* dropdown list.

   > **Note**
   >
   > If the column does not have a break defined, the *Remove Break* menu item is not available.

3. To remove all breaks, select any column in the table and select *Remove All Breaks* from the *Break* dropdown list.

   The *Remove All Breaks* menu item is not available if the table has no breaks defined.

4.2.26.6 To manage breaks

You can manage table column breaks in the *Manage Breaks* dialog box.

1. In a Web Intelligence document in *Design* mode, select any column in a table.
2. In the *Analysis* tab, in the *Display* subtab, select *Manage Breaks* from the *Break* dropdown list.

   The *Manage Breaks* dialog box shows the breaks defined in the table. If the table is a crosstab, the dialog box shows the breaks on both the horizontal and vertical axes. Each break is represented by the dimension on

which it is defined. The order in which the dimensions appear indicates the order in which the breaks are applied.

3. To change the priority of a break, select the dimension and click the *Up* or *Down* arrow to move the dimension in the break priority.
4. To add a break, click *Add* and select the dimension on which you want to apply the break.
5. To remove a break, select the dimension and click *Remove*.
6. To set the properties of a break, select the dimension and select the properties in the opposite section in the dialog box. See the link at the bottom of this topic for more information on the break properties you can set.
7. Click *OK*.

Related Information

Break properties [page 337]

4.2.26.7 Break properties

A table break has several customizable properties.

You can set the following properties of a break:

Table 198:

Property	Description
Break header	Displays a header for each part of the table, crosstab, or form when you insert a break.
Break footer	This displays a footer for each break in a section, including a footer after the last row for a table or column for a crosstab when you insert a break. When you apply a calculation to the data, the result is shown in the footer.
Apply Sort	Applies the default sort order to the values in the break.
Duplicate values: Display all	Displays all values in the break, even when they are duplicated.
Duplicate values: Display first	Displays the first value only when values are duplicated.
Duplicate values: Merge	Merges cells containing duplicate values and displays a single value over the merged cells.
Duplicate values: Repeat first on new page	Displays the first value in a group of duplicate values at the beginning of the break and on each new page.
Start on a new page	Displays each part of the table or form created by a break on a new page.
Avoid page breaks in block	Where possible, keeps each break section on the same page. This option is not taken into account when a block is larger than one page.
Repeat header on every page	Repeats the header at the top of the table on every new page when a table goes over onto a new page.
Repeat footer on every page	Repeats the footer at the bottom of the table on every new page when a table goes over onto a new page.

4.2.27 Using sorts to organize data in reports

You can apply sorts to the values displayed in tables, sections and charts to organize the order in which values are displayed in a report.

By default, the sort starts from the first column.

Note

- By default, each individual dimension is sorted ascending, in alphabetic order, when displayed in the report. If you do not set the order explicitly, then the priority is given to the dimensions going from left to right. A dimension or hierarchy from an OLAP source (`.unx`) is ordered according to the underlying source order, if this source provides an order.
- When the Preferred viewing locale is different from and incompatible with the Document locale (different character sets), sorting in document tables may not work. In order to sort in documents that use a different locale to your Preferred viewing locale, contact your administrator and request a change to the registry key for Windows, or to the `boconfig.cfg` file for UNIX in the following way:
  In Windows, on the server machines and client machines, change or create the following registry key declaration: `HKEY_LOCAL_MACHINE\SOFTWARE\SAP BusinessObjects\Suite XI 4.0\... \WebIntelligence\Calculator : SortLocale = PVL`, then close and reopen any Web Intelligence documents that are open.
  In UNIX, on the server machines, open the `boconfig.cfg` file (in $installdir/setup/boconfig.cfg), and add the registry key declaration: `HKEY_LOCAL_MACHINE\SOFTWARE\SAP BusinessObjects\Suite XI 4.0\...\WebIntelligence\Calculator : SortLocale = PVL`, then close and reopen any Web Intelligence documents that are open.

When you perform sorts, the following sort orders are available:

Table 199:

Sort order	Description
Default	Depending on the type of data in the column or row, the results are sorted as follows: • ascending numeric order for numeric data • ascending chronological order for date • alphabetical order for alphanumeric data
Ascending	When selected, results are arranged in ascending order, starting with the smallest value at the top of the column. For example: 100, 200, 300 or California, Colorado, Florida.
Descending	When selected, results are arranged in descending order, starting with the highest value at the top of the column. For example: 300, 200, 100 or Florida, Colorado, California.

Sort order	Description
Custom Order	You define your own sort order. *Custom Order* is available on dimensions and attributes. **Note** • *Custom Order* is not available on hierarchies, levels, and measures. It is not possible to manually add values to the *Custom Order* list if the dimension detail contains an internal key (in data sources like OLAP and BEx). • By default, the maximum number of values for dimensions are set to different values on the client and server. To avoid conflicts, we recommend that you set both to the same value. • You cannot manually add values for a *Custom Order* if the dimension has an internal key. Server default value: 100 items (`MaximumCustomSortSize` parameter in the `WebIntelligenceProcessingServer` properties in the Central Management Console) Client default value: 1000 items (`WebiParamCustomSortMaxSize` parameter in `WebIContainer_ClientDescriptor.xml`)

Related Information

Interface and document locales [page 48]

4.2.27.1 Sorting hierarchical data

Sorts apply on hierarchical data within each parent item in the hierarchy. Sorts do not break links between parent and child items.

Example

Sorting hierarchical data

The following table contains the [Product] hierarchy in an unsorted state:

Table 200:

Product		
Grocery		
	Baking Goods	
	Beverages	
		Soft Drinks
		Milk
		Soda

Product
Breads

After a descending sort is applied, the hierarchy appears as follows:

Table 201:

Product		
Grocery		
	Breads	
	Beverages	
		Soft Drinks
		Soda
		Milk
	Baking Goods	

The sort places grocery types in descending order and beverages in descending order in their parent item. The sorted beverages retain their hierarchical link with their parent item.

4.2.27.2 To insert a sort

You can insert a table sort in a Web Intelligence document in *Design* mode.

1. Open a Web Intelligence document in *Design* mode.
2. Select the column you want to sort.
3. In the *Analysis* tab, in the *Display* subtab, select *Ascending* or *Descending* from the *Sort* list to sort the column in ascending or descending order.

4.2.27.3 To remove a sort

You can remove a column sort in a Web Intelligence document in *Design* mode.

1. In a Web Intelligence document in *Design* mode, select a sorted column.
2. In the *Analysis* tab, in the *Display* subtab, select *None* from the *Sort* list.

   To remove all sorts from the table, select a column and select *Remove All Sorts*.

4.2.27.4 To manage sorts

The *Manage Sorts* dialog box displays the sorts applied to the table or chart.

In a cross table, the sorts on both the horizontal and vertical axes are displayed. Each sort is represented by the name of the sorted dimension, and an arrow indicates the sort direction (ascending or descending). The order in which the sorted dimensions appear indicates the order in which the sorts are applied.

1. In a Web Intelligence document in *Design* mode, select the table or chart in which you want to manage sorts.
2. In the *Analysis* tab, in the *Display* subtab, select *Advanced* from the *Sort* dropdown list.
3. In the *Manage Sorts* dialog box, do any of the following:
   - To change the priority of a sort, select the dimension and click the *Up* or *Down* arrow to move the dimension in the sort priority.

     > **Note**
     >
     > You cannot change the priority of a sort if a sorted break is defined on the dimension.

   - To change the direction of a sort, double-click the dimension, or select it and select *Ascending* or *Descending* from the *Order* list.
   - To add a sort, click *Add* and select the dimension you want to sort from the list.
   - To remove a sort, select the dimension and click *Remove*.
   - To customize a sort by choosing your own sort order or adding values to the list of values to sort, click *Values* beneath *Custom Order* and define your custom sort.

     > **Note**
     >
     > - The *Values* button is disabled if the custom sort is not applicable.
     > - The custom order is applied to the dimension in the entire document and not just in the selected block.

   - To reset a custom sort order to the standard sort order, select the dimension and click *Reset*.

     > **Note**
     >
     > - The *Reset* button is disabled if the sort on the selected dimension is not customized.
     > - Refer to the table in the topic *Sorting the results displayed on reports* for the restrictions of the *Custom Order* option.

4. Click *OK* to save your changes and close the *Manage Sorts* dialog box.

Related Information

Using sorts to organize data in reports [page 338]

4.3 Working with charts in reports

Charts allows you to visualize the data.

You can include one or multiple charts in a Web Intelligence report.

> **Note**
>
> When you export a document that contains a chart to Excel format, the chart is converted into an image.

Related Information

To add a chart to a report [page 355]

4.3.1 Chart types

Web Intelligence offers many types of charts that you can use to display your data.

> **Note**
>
> 3D line, 3D area, and 3D surface charts, available in XI 3.1, are not available in BI 4.x. When Web Intelligence documents are migrated to BI 4.x, any of these charts in the XI 3.1 version of the document are transformed into 3D bar charts.

4.3.1.1 Choosing the correct Web Intelligence chart for your data

Web Intelligence offers various charts for viewing and analyzing data.

Table 202:

Analysis type	Description	Available charts
Comparison	Use to view the differences between values. It provides the simple comparison of categorical divisions of measures. It is the default analysis type. For example, you could use a bar chart to compare the differences in your sales revenue between different countries.	If you have only a few categories: • 3D column chart • Bar chart, vertical or horizontal • Column chart • Heat map • Pie with variable slice depth chart • Tag cloud chart For statistical analysis: • Box plot chart
Distribution	Use one of these charts to show a summarized group of unorganized data. You can also use these charts for qualitative and quantitative data.	For single variables: • 3D column chart • Area chart • Bar chart • Column chart • Line chart If you have more than one variable: • Polar scatter chart • Scatter chart
Correlation	Use for viewing the relationship between values. It is useful for comparing multiple measure values. For example, you can view the correlation of two measures, and understand the impact of the first measure on the second measure.	For two variables: • Polar bubble chart • Polar scatter chart • Scatter plot chart For three variables: • Bubble chart (The size of bubbles within the chart is determined by a third measure)

Analysis type	Description	Available charts
Trend	Use to show a trend in the data values. This analysis type is particularly useful for dimensions that are time based such as Year. It is useful for seeing progression of your data and possible patterns. For example, you can use a line chart to view sales revenue trends of a product throughout a range of years.	If you have several periods to compare over time: • Line chart • Radar chart If you only have a few periods to compare over time: • 3D column chart • Column chart • Column or line chart with dual axes • Combined column and line chart • Combined column and line chart with dual axes • Waterfall chart
Composite	Use these charts to show cumulative differences in data over time or to show the effect of a measure on values. For example, use a pie chart to see who had the highest sales as part of a total sales value directly: Total sales = $200, Paul had 10% ($20), David had 65% ($130), and Susan had 25% ($50).	For data changing over time: • Area chart • 100% stacked bar or column chart • Stacked bar or column chart For static data: • Pie with variable slice depth chart • Pie or donut chart • Tree map • Waterfall chart
Geography	Use to show a map of the country object on a mobile device. The data for dimensions sorted by country are shown on the map. This is useful to see the geographical spread of data. **Note** The Geo map is actually a data table in reports that is configured for use only on mobile devices. For more information on this chart, refer to the *Mobile BI Report Designer's Guide*.	Geo analysis

Related Information

To add a chart to a report [page 355]
To assign data to a chart [page 357]
To change the chart type by using Turn Into [page 395]

4.3.1.2 Bar charts

Bar charts display data in rectangular form horizontally.

Bar charts are useful if you want to compare similar groups of data; for example, revenue from one time period to another.

Table 203: Types of bar charts

Chart type	Description
Bar Chart	 A chart constructed of horizontally-oriented rectangles. The lengths of rectangles are proportional to the values associated to different category items.
Stacked Bar Chart	 A chart constructed of horizontally-oriented stacked colored rectangles . The heights of the rectangles are proportional to the values associated to different category items. Rectangles are colored according to legend entries.
100% Stacked Bar	 A chart with data displayed as parts of a whole (as percentages). A whole being a rectangle and a series being a subdivision of the rectangle.

4.3.1.3 Box plot charts

A *Box Plot Chart* (also called a stock chart) displays a five-number summary based on the distribution of a dataset: the maximum, the minimum, the first quartile, the third quartile, and the median.

A *Box Plot Chart* can also show abnormal values called outliers.

4.3.1.4 Column charts

Column charts display a series as a set of vertical bars that are grouped by category.

Column charts are useful for showing data changes over a period of time or for illustrating comparisons among items.

Web Intelligence offers the following column charts.

Table 204:

Chart type	Description
Column Chart	 A chart constructed of vertically-oriented rectangles. The heights of the rectangles are proportional to the values associated to different category items.
Column Chart with Dual Value Axes	 A chart with two value axes. It allows a part of a data series to be plotted against one axis and a part of the data series to be plotted against the other axis.
Combined Column and Line Chart	 A chart displaying a combination of a column chart and a line chart. The chart types share the same value axis.
Combined Column and Line Chart with Dual Value Axes	 A chart displaying a combination of a column chart and a line chart. The chart types each have their own value axis.
Stacked Column Chart	 A chart constructed of vertically-oriented stacked colored rectangles. The heights of rectangles are proportional to the values associated to different category items. Rectangles are colored according to legend entries.

Chart type	Description
100% Stacked Column	 A chart with data displayed as parts of a whole (as percentages) with a whole being a column and a series being a subdivision of the column. If there is only one series in your chart, all the column bars will fit to 100% of the chart area.
3D Column Chart	 A chart similar to a column chart with an added 3D dimension.

4.3.1.5 Geomap charts

Geomap charts display data on a geographic map.

Geomap charts are useful if you want to compare your data geographically. They use a geographical database embedded in Web Intelligence and a matching algorithm to automatically match values of dimensions, merged objects or a dimension variables with a location. When you match values with specific locations, you geo-qualify the values and their parent object so they can be rendered on a map. The geo-qualification can be done using either a location's name, or its latitude and longitude coordinates.

> **Note**
>
> The database contains location names in multiple languages, called exonyms. When you geo-qualify an object, Web Intelligence selects the exonym according to your preferred viewing locale (PVL). If you decide later on to modify your PVL, you will need to geo-qualify the object again so that the new PVL is taken into account.

Table 205:

Chart Type	Description
Choropleth	 Choropleth charts display values that are represented by colors on a geographic map. The colors of the geographic zones are determined by a measure value.

Chart Type	Description
Geo Bubble	 Geo Bubble charts display values that are represented by bubbles on a geographic map. The size of the bubbles on each geographic zone is determined by a measure value.
Geo Pie	 Geo Pie charts display values that are represented by pies on a geographic map. The size of the pies on each geographic zone is determined by a measure value.

Once you have geo-qualified an object, an icon appears next to it. Click the + button to see the geographical details of the location it has been matched with, such as its name, its latitude and its longitude.

Available settings

The table below lists the settings available according to each type of Geomap chart.

Table 206:

Parameter	Description	Available for
Display invisible area as point	Display choropleth areas as points when they are too small. This is typically the case for City level areas	Choropleth
Symbol Size	Sets the choropleth symbol size when choropleth is represented as colored points	Choropleth
Draws unrelated geographic boundaries as background	Draws the country borders as background	All Geomaps
Geographic context color	Sets the color of the background geographic context	All Geomaps
Geographic context of the zones with data	Draws the borders of the areas with data. Possible values are: none, neighbors (that is, areas at the same level) or parents (that is, areas at the upper level)	Choropleth

Parameter	Description	Available for
Precision	Drawing precision of the borders (0 - highest to 10 - lowest)	All Geomaps
The color of the sea in the geographic map	Sets the color of the sea	All Geomaps
Shapes with NULL or empty values	Sets the color of areas with NULL or empty values	Choropleth
Shapes with values out of range	Sets the color of out-of-range areas	Choropleth
Bubble scale	Sets the ratio between the smallest and the largest bubbles and pies (2 to 10)	Geo Bubble, Geo Pie
Bubble scaling mode	Allows you to choose between a proportional and a perceptual bubbles and pies scaling mode	Geo Bubble, Geo Pie
Edge color	Sets the color of the areas borders	All Geomaps
Pie title	Allows you to display the Geopie titles	Geo Pie
Use Manual Range	Allows you to define the latitude / longitude range of the map	All Geomaps

Related Information

Geo-qualifying an object for a geomap chart [page 358]
To match values of an object with a location [page 359]
To manually match values of an object with a location [page 360]
To modify the location of a value [page 362]
To reset the location of a value [page 362]

4.3.1.6 Line charts

Line charts connect specific data values with lines, either horizontally or vertically.

Line charts are useful if you want to show trends or changes in data over time.

Table 207: Types of line charts

Chart type	Desciption
Line Chart	 An XY chart that displays lines connecting plots. Value axis plot positions are expressed by analysis category items. The secondary value axis plot positions represent the associated values.
Line Chart with Dual Axes	 An XY chart with two axes displaying lines connecting plots. Category axis plot positions signify analysis category items. The value axis plot positions, on both axes, represent the associated values.
Area Chart	 An area chart is an XY chart that displays a surface made up of a collection of plots.

4.3.1.7 Map charts

Web Intelligence offers two types of Map chart.

Table 208:

Chart type	Description
Tree Map	 Charts that display values within nested rectangles that can be colored. The levels of nesting correspond to the level of hierarchical breakdown. The size of the rectangles and their color both express a set of values.
Heat Map	 Charts that display values that are represented by colors in a map using a category axis and optionally a second category axis. The colors of the rectangles are determined by a measure value.

4.3.1.8 Pie charts

Pie charts display data as segments of a whole.

Pie charts are useful if you want to show how each part of your report data contributes to the total.

You can only include one measure object in a simple pie chart or two in a pie chart with depth. If you have several measures in your report, you should choose another chart type.

Data labels on pie charts can be wrapped for a better layout. In the *Data Values* pane of the *Format Chart* tab, the *Text Policy* option *Wrap* can be used.

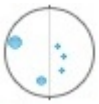
Table 209: Types of pie charts available

Chart type	Description
Pie Chart	 A circular chart made up of sectors. The area of the circle represents a whole, and the sectors of the circle represent the parts of a whole. Additionally, a *Donut Chart* can be displayed from a pie chart. It is similar to a pie chart, but with an empty center; it is ring shaped. 
Pie Chart with Variable Slice Depth	 A circular chart made up of sectors. The area of the circle represents a whole, and the sectors of the circle represent the parts of a whole. The sectors may have some depth expressing a third value.

4.3.1.9 Point charts

The Point chart category includes scatter, polar and bubble charts.

Table 210:

Chart type	Description
Scatter Plot Chart	 An XY chart displaying plots. Plots are positioned with coordinates given by a pair of values. Each plot may have colored symbols representing the analysis category item associated with the values. Scatter Charts are similar to line graphs, except that the data points are plotted without a line connecting them. Scatter Charts are useful if you want to make a comparison between specific data points.
Bubble Chart	 A two-dimensional chart of points representing a collection of data. Extra variables are represented by the size of the points.
Polar Scatter Plot	 An XY chart displaying plots. Plots are positioned with coordinates given by a pair of values. Each plot may be sized according to extra values. A chart with one radial axis and one angular axis, where each data point is represented with a symbol. Similar to a Bubble Chart, but without the sizing of points.
Polar Bubble Chart	 An XY chart displaying plots. Plots are positioned with coordinates given by a pair of values. Each plot may be sized according to extra values. A two-dimensional chart with one radial axis and one angular axis of points representing a collection of data. Extra variables are represented by the size of the points.

4.3.1.10 Radar charts

The *Radar Chart* (also known as a Spider chart) displays several axes starting from a unique origin and with a common scale.

Each axis represents an analysis category item. Plots are directly placed on an axis according to the associated values. Plots can be linked by lines.

Radar charts are useful if you want to look at several different factors related to one item. For example, you could use a radar chart to display revenue data for different services within a hotel. On one axis, you could display revenue for the rooms. On another you could display revenue for the restaurant, and so on.

4.3.1.11 Tag cloud charts

A *Tag Cloud Chart* is a mono-dimensional visualization representing data as words where the word font size represents its relative weight in the dataset.

4.3.1.12 Waterfall charts

A Waterfall Chart (also known as a Bridge chart) displays vertical bars.

Each one of these bars starts at the level where the preceding bar ends, making the bars look as if they are floating. This type of chart is useful for showing how a measure increases or decreases, for representing positive or negative changes or for illustrating up and down effects.

Types of waterfall charts

- A chart generated from a flat dimension gives a simple waterfall chart.
- A chart generated from hierarchical data gives a complex waterfall chart.

Subtotal management

- Intermediate totals are only generated from hierarchical tree nodes. To generate intermediate totals from a flat dimension, you have to use grouping.
- Intermediate totals (tree nodes) are displayed as a waterfall.

Feeding restrictions

- The category axis is limited to one dimension (or hierarchy).
- The value axis is limited to one measure.

Color management

You can assign specific colors to initial values, totals, subtotals or positive/negative variations.

Related Information

To configure the value colors in a waterfall chart [page 379]

4.3.2 Custom Elements

Custom Elements are visualizations whose rendering is delegated to external rendering services outside of Web Intelligence.

In Web Intelligence documents, Custom Elements are integrated and displayed similarly to any other report elements like charts or tables. The feeding model is provided by the selected Custom Elements service, with a default number of axis. You can work with Custom Elements using the contextual menu when you right-click them. They are located at the bottom of the list of regular charts when you insert a report element.

To be able to use Custom Elements in Web Intelligence, you have to add a Custom Elements service in the CMC first. To know how to add a Custom Elements service, refer to the *Business Intelligence Platform Administrator Guide*.

> **Note**
>
> You cannot drill on a custom element.

Using Custom Elements with the Rich Client

If a document that contains Custom Elements is saved locally on a computer, you can view and modify its full content in Web Intelligence Rich Client only if Rich Client is connected to the BI Platform where the document was created.

Related Information

To add a custom element to a report [page 356]

4.3.3 Opening charts created with XI Web Intelligence 3.x

This version of the software supports backward compatibility with Web Intelligence XI 3.x.

Existing charts are converted automatically when you open them; however if you open an existing 3D chart, other than a 3D bar chart, it will be converted into a 3D bar chart.

4.3.4 To add a chart to a report

You can add a chart to a Web Intelligence report.

1. Open a Web Intelligence document in *Design* mode.

   > **Note**
   >
   > If you are in *Structure Only Design* mode, all the charts will appear grayed out.

2. Do one of the following:
   - In the *Reports Elements* tab, in the *Chart* subtab, click a chart icon, then click in your report. Drag and drop the dimensions and measures you want into it from the *Available Objects* pane.
   - Right-click in the report and select *Insert* and do one of the following:
     - Select a column, line, pie or scatter plot chart.
     - To insert a different sort of chart from those listed above, click *Insert a Report Element*.

     The chart appears empty in light gray. This is sometimes called a ghost chart.
   - Select a table you want to turn into a chart and do one of the following:
     - Select *Turn Into* from the *Tools* subtab.
     - Right-click the table and select *Turn Into*, then select a chart type.

Related Information

To assign data to a chart [page 357]

4.3.5 To add a custom element to a report

You can add a custom element to a Web Intelligence report.

The Custom Element subtab is available only if at least one Custom Elements service has been configured and enabled in the CMC. To know how to add a Custom Elements service, refer to *Business Intelligence Platform Administrator Guide*.

1. Open a Web Intelligence document in *Design* mode.
2. Under the *Custom Element* subtab in the toolbar, click *Insert Custom Element*.
3. Place the Custom Element anywhere on the report page.
4. Select a *Custom Elements* service at the bottom of the list of regular charts.
5. Select a Custom Element.
6. Assign data to the Custom Element like you assign data to regular Web Intelligence charts.
7. Click *OK*.

> ⚠ Caution
>
> In Web Intelligence DHTML client, you will lose the mouse focus if you move a Custom Element in the report page and the pointer hovers over a Custom Element in the process. That is because the focus is taken away by the interactions with the Custom Element content. To avoid this issue, do not hover over a Custom Element when you move the pointer. Also, if you want to move a Custom Element for instance, you can drag it by the bottom if you want to move it down, or by the top if you want to move it up.

Related Information

To assign data to a chart [page 357]

4.3.6 Assigning data to a chart

Depending on the chart, you assign objects, also called feeding, to different drivers.

Some dimensions and measures generate axis labels or values and some drive the series color.

The table explains the different elements for assigning data a chart.

Table 211:

Purpose	Feeds	Object type
Binding object to axes	Value axes	Measures
	Category axes	Dimensions, Details or Measure Names
Defining series (*)	• Region Color • Region Shape (Radar & Point charts)	Dimensions, Details or Measure Names
Defining series size	• Pie sector size / sector height • TreeMap rectangle weight • Bubble height / Bubble width	Measures
Conditional coloring (*)	• Map rectangles • TagCloud text zones	Measures

(*) Optional

4.3.6.1 To assign data to a chart

You can assign data to a chart via the Side Panel or from an option in the contextual menu.

1. Open a Web Intelligence document in *Design* mode.
2. Do one of the following:
   - In the Side Panel, select *Available Objects*. From the *Available Objects* pane, drag and drop the measures, dimensions, and/or details into the chart. They will automatically be dispatched to the relevant area.
   - Right-click in the chart and select *Assign Data* from the contextual menu. The *Assign Data* dialog box appears displaying the dimensions that require data. You can add, delete, reorder (move up, down, to the top, or to the bottom), or hide the values plus edit or create a formula.

> **Note**
>
> If you are assigning data to a Geomap chart, make sure that every object you want to use is matched with a location. An object that has not been matched with a location cannot be displayed on the Geomap chart.

Related Information

Geo-qualifying an object for a geomap chart [page 358]
To match values of an object with a location [page 359]
To manually match values of an object with a location [page 360]
To modify the location of a value [page 362]

To reset the location of a value [page 362]
To format a chart [page 366]

4.3.7 Geo-qualifying an object for a geomap chart

Geomaps rely on a geographical database to render your data.

Before you start using geomaps in you reports, you need to set up your data and go through the geo-qualification process so that they can be bound to the geographical database. Geo-qualifying your data means that you match each value of an object with a specific location. Geomaps then use these locations to render your data on a map. The geo-qualification can be done using either a location's name, or its latitude and longitude coordinates.

Geo-qualifying an object using a location's name

Web Intelligence uses an algorithm to match each value of the object with a geographic location. The search engine uses fuzzy logic to create three categories of values and automatically match them with locations:

- *Resolved*: only one location matches at 100%, and is automatically bound to the value.
- *Unresolved*: several locations match at 100% or higher than 85% but below 100%. There is no obvious match, and you have to select the most appropriate one.
- *Missing*: no location found, or locations match at lower than 85%. Search for the location you want to bind in the geographical database.

> **Note**
>
> In order to be geo-qualified by its name, every value of a dimension must belong to the same geographical level. Hierarchical dimension objects cannot be edited as geography because they contain several geographical levels (for example, Country, Region, Sub-Region and City).

You may select a different location in the dropdown list from the one selected by the automatic matching mechanism. To select a location manually, refer to *To manually match values of a dimension with a location*.

Geo-qualifying an object using a location's latitude and longitude coordinates (4.2 SP3)

Latitude and longitude coordinates are two objects that must be available as dimensions, dimensions' attributes or variables. They can be any object that can be added to a dimension as a detail, and do not necessarily have to be the same type of object. You can have latitude coordinates as a dimension and longitude coordinates as a variable for instance.

> **Restriction**
>
> Latitude and longitude objects cannot be geo-qualified objects, measures, measures' attributes or hierarchies.

Coordinates must range from:

- -90.0° (South) to 90.0° (North) for latitude coordinates, 0° being the equator
- -180.0° (West) to 180.0° (East) for longitude coordinates, 0° being the Greenwich meridian

It is possible to edit an object that has been geo-qualified using latitude and longitude coordinates, but only by latitude and longitude, not by name.

Related Information

Geomap charts [page 347]
To match values of an object with a location [page 359]
To manually match values of an object with a location [page 360]
To match values of an object using latitude and longitude coordinates [page 362]

4.3.7.1 To match values of an object with a location

You can bind a geographic location to a value. Geomap charts for instance use locations to render data on a map.

The geo-qualification will automatically match values to a geographic database of name-latitude-longitude data using name lookup. If there is more than one matching location, all matches will be presented, allowing you to select the most appropriate location. It is possible to select a different location in the dropdown list from the one selected by the automatic matching mechanism. To do so, refer to *To manually match values of an object with a location*.

1. Go to the *Available Objects* pane.
2. Right-click an object you want to geo-qualify.
3. Click *Edit as a Geography* > *By Name*.
4. Select a *level*.

   There are four possible levels: *Country*, *Region*, *Sub-Region* and *City*. In the United States for example, California is a region, Southern California is a sub-region, and Los Angeles is a city.
5. Optional: Click the *Show* combo box to filter the list on matching category.
6. Click the dropdown list next to the value you want to edit.
7. Select one of the locations available.
8. Click *Apply*.
9. Click *OK*.

> **Note**
>
> An error icon is displayed on the geomap and next to the geo-qualified object if a value has not been geo-qualified. This may occur when you refresh the document or add new locations. To fix this issue, make sure all objects values are geo-qualified by repeating the above procedure.

Related Information

To manually match values of an object with a location [page 360]

4.3.7.2 To manually match values of an object with a location

You can manually match values of an object to a location. This is useful when the location you expect does not appear in the dropdown list for example, or when a value is assigned to an incorrect location.

> **Note**
>
> The geographical database might not recognize a specific location you are looking for. If this is the case, try to select a substitute location, create a custom location or select an alternative location.

1. Go to the *Available Objects* pane.
2. Right-click an object you want to geo-qualify.
3. Click *Edit as a geography* > *By Name*.
4. Select a *level*.

   There are four possible levels: *Country*, *Region*, *Sub-Region* and *City*. In the United States for example, California is a region, Southern California is a sub-region, and Los Angeles is a city.
5. Click the dropdown list next to the value that you want to edit.

   If several locations appear in the dropdown list, select the one that is closest to the location you were originally looking for.
6. Optional: If you do not find the location you are looking for, Click *Select location...*.
7. Do one of the following:
   - Type in the name of the location, select the one you are looking for and click *OK*.
   - Click *Add Location*, enter the coordinates of the location you are looking for and click *OK*.

   > **Note**
   >
   > The search applies to the level you have defined when you edited the dimension as geography: *Country*, *Region*, *Sub-Region* or *City*. Make sure you are using the correct level when doing a search.
8. Click *OK*.

4.3.7.3 Matching values of a merged object with a location

Members of a geo-qualified merged object share a common list of values.

If you merge an object that is geo-qualified with another one that is not, it inherits the geo-qualification method, that is by name or latitude and longitude, of the member that was originally geo-qualified.

In the *Available Objects* pane, the following icon is displayed next to merged objects that are geo-qualified:  .

Depending on the geo-qualification scenario, you might have conflicts or unresolved and missing values. In that case, an icon is displayed next to the merged object with unresolved or missing values:  . Another icon is also diplayed next to the member whose geo-qualification needs is incomplete:  . Conflicts, unresolved or missing values can happen in the following cases:

- You are merging two geo-qualified objects to create a geo-qualified merged object
  Each member object comes with in its own list of values resulting from a previous geo-qualification. If the lists of values conflict with one another or if there are unresolved and missing values, repeat the geo-qualification process.
- You are adding a new object to a merged object that is already geo-qualified
  The member you are adding to the merged object is automatically geo-qualified. However, it can bring new and unresolved values. Repeat the geo-qualification process either for the merged object or one of its members to solve the issue.

Restriction

You cannot merge objects that have been geo-qualified using the latitude/longitude geo-qualification method. However, it is possible to merge an object that has been geo-qualified using the latitude/longitude geo-qualification method with an object that is not geo-qualified.

Impact of an unmerge command on geo-qualification

Unmerging a geo-qualified object by name does not cancel the geo-qualification of its members. Unmerging a geo-qualified object by latitude and longitude returns all of its members to their original state.

Caution

Resetting the geo-qualification of a merged object, a merged object member or an object that is part of a merge will reset the geo-qualification of the merged object, its members and all its participating objects.

Related Information

To match values of an object with a location [page 359]
To manually match values of an object with a location [page 360]
To match values of an object using latitude and longitude coordinates [page 362]

4.3.7.4 To match values of an object using latitude and longitude coordinates

> **Restriction**
>
> You cannot use an object as latitude or longitude if it is already geo-qualified.

1. Go to the *Available Objects* pane.
2. Right-click an object you want to geo-qualify.
3. Click *Edit as a Geography* > *By Latitude / Longitude*.
4. Select the latitude and longitude objects.
5. Click *OK*.

4.3.7.5 To modify the location of a value

You can modify the geo-qualification of an object.

After a geo-qualified object has been modified, refresh the document for the new locations to be displayed on the map.

1. Go to the *Available Objects* pane.
2. Right-click on a geo-qualified object you want to edit.
3. Click *Edit as a Geography*.
4. Optional: Filter the results in the *Show* dropdown list.
5. Click the dropdown list next to the value that you want to edit.
6. Select one of the locations available.
7. Repeat the process for every value you want to edit.
8. Click *Apply*.
9. Click *OK*.

4.3.7.6 To reset the location of a value

Reset the geo-qualification to remove the geography associated with an object.

> **Caution**
>
> If you reset a merged object, every member is reset and loses the geo-qualification. This behavior also applies if you reset a geo-qualified object participating to a merge.

1. Go to the *Available Objects* pane.
2. Right-click on a geo-qualified object you want to reset.

3. Click *Reset*.

4.3.8 To remove a chart

The following task describes how to remove a chart from a report.

1. Open a Web Intelligence document in *Design* mode.
2. Do one of the following:
   - Right-click the chart frame and click *Delete*.
   - Select the *Document Structure and Filters* tab in the *Side Panel*. Right-click the chart name and select *Delete*.
   - Select the chart, and in the *Side Panel* toolbar, click the *Delete* icon.

The chart has been deleted.

Related Information

To format a chart [page 366]

4.3.9 To copy a chart

You can copy a chart dynamically to another report or as a picture in other applications.

1. In a Web Intelligence document in *Design* mode, right-click the chart frame and select *Copy*.
   The chart is copied to the clipboard.
2. To paste the chart to another part of the report, right-click where you want the chart to appear then select *Paste*.
3. To paste the chart into another application, paste the contents of the clipboard from within the other application.

   You can also copy a chart into another application by dragging and dropping it directly into the open document in the target application.

   Within the same application, your copied chart will be dynamic. However, if the chart is pasted into another application, the chart appears as a picture.

Related Information

To format a chart [page 366]

4.3.10 Turning hierarchical queries into charts

You can turn a hierarchical query into a chart.

> **Tip**
>
> Displaying the totals may generate scale distortions, especially if the measure is an aggregate. Hierarchical totals should not be displayed in Pie charts or a Tag Cloud. To hide hierarchical totals, use levels for feeding or navigate within the table with the *Drill Focus* option or uncheck the option *Show parent nodes* in the *Format Chart* dialog box (*Global* > *General*).

> **Note**
>
> Use only one hierarchy to feed a Tree Map.

Related Information

Hierarchical queries [page 63]
To change the chart type by using Turn Into [page 395]

4.3.11 To set the position of a table or chart on the report page

You can set the position of a table or chart in a report.

1. In a Web Intelligence document in *Design* mode, right-click the border of the table or chart, and select *Format Table* or *Format Chart*.
2. In the *Global* > *Layout* section of the table or chart format panel, use the controls in the *Relative Position* section to set the position of the table or chart in relation to other report elements.

   > **Tip**
   >
   > You can also reach the *Layout* tab in the table or chart format panel by one of the following ways:
   > - In the *Report Elements* tab, in the *Position* subtab, click *Align*, then an alignment option.
   > - Right-click the table or chart and select *Align*, then an alignment option.

3. Click *OK*.

Related Information

To format the appearance of reports and their headers, footers, sections, tables, and table cells [page 230]
To select a background color for the table or cells [page 297]
To define alternate row and column colors for a table [page 298]

To format table or cell borders [page 298]
To format text in table cells [page 299]
To set cell height and width [page 300]
To copy formatting using the Format Painter tool [page 302]
To layer tables and cells [page 304]
To merge table cells [page 305]
Formatting the report layout [page 228]
Formatting your reports using Cascading Style Sheets [page 272]
Creating a corporate palette for charts [page 379]

4.3.12 To position a chart in relation to another chart or table

If you have more than one block (table, chart, or form) in your report, you can use relative positioning.

Relative positioning allows you to position a selected block (for example, a chart) in relation to other blocks in the report.

If new data on the database modifies the size of the tables or charts, relative positioning ensures that the different tables and charts display correctly without overlapping each other.

> **Note**
>
> If you position a chart in relation to another block (that is, a chart, table, or form), the position of the chart changes automatically, if you reposition the reference block.

1. In a Web Intelligence document in *Design* mode, right-click the chart and click *Format Chart*.
2. Select the *Global* chart area, then the *Layout* tab.
3. In the *Relative Position* area, configure the left and right edge position of the chart in proximity of a report object you specify.

   For example, to align with the left edge of the report title, select *Left edge*, then *Report title*.

> **Tip**
>
> You can also reach the *Layout* dialog box by doing one of the following:
>
> - In the *Report Elements* tab, in the *Position* subtab, click *Align* > *Relative Position*.
> - Right-click the table or chart and selecting *Align* > *Relative Position*.

4.3.13 Formulas in chart elements

You can use the *Formula Editor* (the *fx* icon) to define and edit formulas in chart elements.

The following chart elements can use a formula:

Chart title

Legend title
Axis titles
Maximum and minimum values for axis scaling

For more information on the functions used in free-standing cells, see the *Using Functions, Formulas and Calculations in Web Intelligence* guide or the online help.

4.3.14 Formatting charts

You can format a chart area or a selected chart area (title, legend, axes, plot area, area title) in Web Intelligence.

You can find chart format options in the *Format* or *Formatting* toolbar in the *Design* mode.

4.3.14.1 To format a chart

You can format a chart in a report using options in the *Format Chart* dialog box.

1. In a Web Intelligence document in *Design* mode, right-click the chart frame and select *Format Chart*.
2. In the *Format Chart* dialog box, select the chart area that you want to format.

   > **Tip**
   >
   > If you have preselected a chart area before calling the dialog box, this area is displayed automatically without you having to navigate.

3. Do one of the following:
   - In Web Intelligence Rich Client, select the functional tab that you want to change in the Side Panel.
   - In the Web Intelligence HTML interface, expand the tab of the chart area you want to format, then select the functional tab.
4. When you have made your changes, click *Apply* if you want to see the changes before you close the dialog box or if you want to make some other changes before you close the dialog box. Otherwise, click *OK* to save the changes and close the dialog box.

Another way to access the *Format Chart* dialog box is to select the chart. In the *Formatting* tab, in the *Chart Style* subtab, click *Format Chart*.

4.3.14.2 Data intervals in Tree Maps, Heat Maps and Tag Cloud charts

Data intervals are based on colors in Tree Map, Heat Map, and Tag Cloud charts that use intervals.

You can use one of the following shape coloring methods:

Table 212:

Coloring method	Description
Custom Range Coloring	The *Custom Range Coloring* method uses ranges that you set based on an increment or percentage, and you select the color that applies to each range.
Gradient-based Palette Coloring	The *Gradient-based Palette Coloring* method uses a 2 or 3 color gradient definition, and you select the color that applies to each gradient.
Gradient-based Palette Coloring Using Measure Polarity	The *Gradient-based Palette Coloring Using Measure Polarity* method not only uses a 2 or 3 color gradient definition, it also uses a 2 or 3 color neutral polarity definition.
Palette Coloring	The *Palette Coloring* method applies a different color from the selected palette to each legend interval.

> **Note**
>
> You should not use these charts with hierarchical nodes for aggregate measures because the color scale can be distorted. To deactivate these nodes, deactivate the *Show Parent Node* option in the *Global* > *General* section of the *Format Chart* dialog box.

Palette coloring methods

In all of the palette coloring methods, the data range is defined in the *Range Definition* setting. This range defines the set of data that is distributed in the intervals.

You can define the number of intervals which will be created within the data range, using the *Number of Intervals* setting.

You can set the way data is distributed in chart intervals using the *Data Distribution Mode* setting.

Table 213:

Mode	Description

Distribution by Values	The range of attribute values is divided into equal-sized ranges. This method emphasizes the amount of an attribute value relative to other values. **Note** If the data values are clustered instead of being evenly distributed, then most of the data can exist in one or two ranges and some ranges can have no data.
Distribution by Quartiles	The quartile distribution works well with linearly-distributed data. Because data is grouped by the number in each range, the resulting chart can be misleading. Similar data can be placed in adjacent ranges, or data with widely different values can be put in the same range. This distortion can be minimized by increasing the number of ranges. **Note** Data with close values may end up in different ranges, thus exaggerating the differences between them.

Shapes with values out of range

By default, coloring applies to all values, but you can restrict coloring to a range of values. This is done by default with the *Custom Range Coloring*. You can specify a color to values out of range.

Shapes with null or empty values

You can specify a color for shapes with null or empty values to, for example, define the color of states without any point of sales.

Data Interval Syntax

In *Measure-based Coloring*, the chart legend displays a range of data using bracket. You select the preferred syntax in the *Data Interval Syntax*.

To declare an interval, you can use the *ISO31-11* syntax setting, which uses an inverse bracket to exclude a value:

[-2..-1[

[-1..3[

[3..5]

However, in the United States, you use the *US Syntax* setting to replace that bracket by a parenthesis when excluding values:

[-2..-1)

[-1..3)

[3..5]

If you prefer syntax less mathematical, then you use the *Basic Syntax* setting:

-2..1

1..3

3..5

Measure polarity

Measure-based coloring charts are driven by measure values. The *Gradient-based Palette Coloring Using Measure Polarity* coloring method is based on the polarity associated to the measure driving the color and determines if high values are good, bad or neutral.

The following palettes exist:

Table 214:

Palettes	Description
Ascending polarity	The colors indicate that low is bad and high is good, with the first palette from the *Start Color* to the End Color, which is red to green by default.
Descending polarity	The colors indicate that low is good and high is bad, with the first palette from the *End Color* to the *Start Color*, which is green to red by default.
Neutral polarity	With this palette, neither low nor high is bad or good. The second palette is from *Start Color* to *End Color*, which are blue to yellow by default.

The default setting, found in the *Measure Properties* section of the Global chart area settings, for measure polarity is *Automatic*, which applies descending polarity.

Related Information

Tag cloud charts [page 353]
Waterfall charts [page 353]

4.3.14.2.1 To configure the measure polarity for Tree Map, Heat Map, and Tag Cloud charts

You can configure the measure polarity for data interval charts in the *Format Chart* dialog box.

1. In a Web Intelligence document in "Design" mode, right-click the chart and select *Format Chart*.
2. In the *Global* section, select *Measure Properties*.
3. Select a polarity palette for your chart type:

Option	Description
Chart Type	**Measures to configure**
Tree Map	*Rectangle Weight* *Rectangle Color*
Heat Map	*Rectangle Color*
Tag Cloud	*Tags Weight* *Tags Family*

4. Click *OK* to close the *Format Chart* dialog box.

> **Note**
>
> You can configure other aspects of the Tree Map, Tree Map or Tag Cloud chart in the *Palette and Style* tab of the *Global* section.

Related Information

To manage measure-based coloring in Tree maps, Heat maps and Tag Cloud charts [page 392]
To configure the data interval for Tree Map, Heat Map, and Tag Cloud charts [page 370]

4.3.14.2.2 To configure the data interval for Tree Map, Heat Map, and Tag Cloud charts

You can configure the data interval for Tree Map, Heat Map, and Tag Cloud charts in the Format Chart dialog box.

1. In a Web Intelligence document in "Design" mode, right-click the chart and select *Format Chart*.
2. In the *Global* section, select *Palette and Style*.
3. Select a *Color Palette*.
4. If you wish the plot area to have a color, select *Use Internal Palette*.
5. Select a method from the *Coloring Method for Shapes* dropdown list.

6. If you are using the either of the gradient-based palette coloring methods, configure the *Gradient Definition*.
   a. Select one of the following:

      Table 215:

Gradient	Description
3 Colors	Allows you to have starting color, a midpoint color and an ending color.
2 Colors	Allows you to have starting color and an ending color.

   b. Select the colors and their gradient.
7. To define the number of intervals within the defined data range, specify a *Number of Ranges*.

> **Tip**
>
> The best number of ranges is typically 4 or 5. This amount can reveal data patterns without being confusing. If you have more than 7 colors, data with similar values can be hard to distinguish, and fewer than four ranges will not reveal much variation and therefore may reveal no clear pattern.

> **Note**
>
> This setting does not apply to the *Custom Range Coloring* method.

8. To define a specific range of data to appear in the chart, select the *Range Definition* checkbox, then enter the *From* and *To* numbers.

> **Note**
>
> This setting does not apply to the *Custom Range Coloring* method.

9. To set the way data is distributed in chart intervals, select a *Data Distribution Mode*.

> **Note**
>
> This setting does not apply to the *Custom Range Coloring* method.

10. To set colors for out-of range value shapes, for the *Shapes with Values Out of Range* option configure the following settings:
    a. Select either *RGBA Color* or *Gradient*.
    b. Select a color from the color picker dropdown list and set the opacity.
11. To set colors for null and empty value shapes, for the “Shapes with NULL or Empty Value” option, configure the following settings:
    a. Select either *RGBA Color* or *Gradient*.
    b. Select a color from the color picker dropdown list and set the opacity.
12. Select a *Data Interval Syntax*.
13. If you are using the *Gradient-based Palette Coloring Using Measure Polarity* method, then you need to configure the *Gradient Definitions for Measures with Neutral Polarity* option.
    a. Select one of the following:

Table 216:

Gradient	Description
3 Colors	Allows you to have starting color, a midpoint color and an ending color.
2 Colors	Allows you to have starting color and an ending color.

b. Select the colors and their gradient.

14. If you are using the *Custom Range Coloring* method, configure the *Color zones* option.
    a. To have the ranges colored by percent instead of increments, select *Percent*.
    b. Enter the minimum and maximum zone parameters.
    c. Select a color from the color picker dropdown list and set the opacity.

> **Tip**
>
> In Heat Maps, if you are using the *Emboss Effect*, you should disable the *Light and Shadow Effects* in the *Palette and Style* subsection.

Related Information

To configure the measure polarity for Tree Map, Heat Map, and Tag Cloud charts [page 370]
Map charts [page 350]
Tag cloud charts [page 353]

4.3.14.3 Warning icons in charts

Warning icons in charts can alert you when there are chart and data object errors.

The warning icons available are:

- General Warnings, icons displayed on the top left corner of the chart.

  Red X in a white background: impossible to generate the chart. (This could be due to a cache problem - try clearing temporary objects from cache.
  White X in a red circle: cannot find the image, the BI administrator should check load balancing settings and enable service monitoring as described in the Business Intelligence Platform Administrator Guide.
  Yellow warning: for example dataset too large (technical limit of the server), need to refresh the dataset, other cube errors.
  Blue alert: limit for optimal rendering

  The display of the General Warning icons is controlled by the *Hide warning icons in chart* setting in the Web Intelligence document properties. If this setting is activated, then no General Warning icons appear in the charts.
- An incompatible chart data warning, small yellow warning icon displayed on the data point.
  These occur if *Show alert when the data is incompatible with the chart* is activated in the chart format options and the dataset is inconsistent with the chart parameters. For example, a warning can appear in a Pie chart

with negative values, negative values for a logarithmic scale, or inconsistent hierarchical values for a Tree Map.

Restriction	Definition	Result
Technical limits of the data received from the Visualization Service, which is responsible for displaying data in the chart	Max number of rows = 50,000 **⚠ Restriction** This is a non-configurable parameter. It is hard-coded into the product and cannot be changed by properties of the APS server in CMC or by manually changing an XML file.	Only part of the dataset is rendered and a warning icon appears, as well as an informational tooltip.
Data restricted for optimal rendering	The data is restricted by the chart type and size for optimal appearance.	An alert icon appears, as well as a tooltip showing optimization guidelines.

Related Information

Viewing document properties [page 205]

4.3.14.3.1 To display warning icons in charts

You can allow warning icons to appear in charts and on data points.

1. In a Web Intelligence document in *Design* mode, right-click the chart frame and select *Format Chart*.
2. In the *Global* chart area, select the *General* tab.
3. Select *Show alert when the data is incompatible with the chart*.
4. Click *OK* to return to the document.

4.3.14.4 To insert and format a chart title

You can activate and set titles in charts in the *Format Chart* dialog box.

1. In a Web Intelligence document in *Design* mode, right-click the chart frame and select *Format Chart*.
2. In the *Format Chart* dialog box, select one of the following:
   - *Global* > *Area Display* to edit the chart title.
   - *Title* > *Design* to edit the chart title.
3. Click *OK* to return to the document.

Related Information

To format a chart [page 366]

4.3.14.5 To display a chart with a 3D look

You can apply a 3D look to a chart.

1. In a Web Intelligence document in *Design* mode, right-click the chart frame and select *Format Chart*.
2. In the *Global* chart area, select the *Palette and Style* tab.
3. Select *3D look* or *3D*.

> **Note**
>
> Some types of bar charts using bar display effects do not look very attractive if they also use the *3D look* or *3D* setting.

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

Related Information

To format a chart [page 366]

4.3.14.6 Assigning colors to charts

You can personalize the appearance of charts in Web Intelligence reports by assigning colors to dimension objects manually or by using built-in or customized color palettes. You can retain this color assignment to keep a color assigned to a dimension object.

When you create a chart in a Web Intelligence report, colors from the default color palette are automatically assigned to dimension objects in a top-to-bottom order. This order remains the same across sections and pages. However, the colors you assign using color palettes are not retained when the report is refreshed when opened, or when you change the number of objects displayed in a chart by filtering or using drill snapshots.

If you want to consistently display a specific object, such as a [Product Line] or [Sales Region], in a specific color, you can either assign a specific color to the object manually, or assign an in-built or custom color palette and set the color assignment as default.

When you set the color assignment as default, colors assigned to dimension objects do not change when you use filters or drill snapshots, or when the report is refreshed when opened. You can reset all colors by applying a new palette to the chart or by using a dedicated option.

> **Note**
>
> When you turn a chart into another type of chart, the color mapping is maintained only if the following conditions are respected:
>
> - The legend color for the primary dimension (assigned to Region Type color or Pie color) must be the same.
> - The legend items must be the same (no adding or removing a primary dimension for the Region Shape).

> **Note**
>
> You cannot assign colors to dual value axis charts or to charts using Measured-Based Coloring (like Heat Map, Tree Map and Tag Cloud).

Related Information

To create a custom palette style for charts [page 376]
To assign a color to an object in chart [page 378]
To assign colors to objects in charts using color palettes [page 378]

4.3.14.6.1 To select a palette for a chart

You can select a palette for a chart in the *Format chart* dialog box.

1. Open a Web Intelligence document in *Design* mode.
2. Select or insert a chart.
3. Do one of the following:
   - Right-click the chart area and select *Format Chart* from the contextual menu. The *Format chart* dialog box appears. Select the *Palette and Style* tab. From the *Color Palette* dropdown list (), select a palette style.
   - In the *Format* tab, in the *Chart Style* subtab, from the *Palette Style* dropdown list (), select a palette style.

   The chart is displayed with the colors from the selected palette. If the colors are not as you prefer, you can either select another palette style from the dropdown list, or you can create a custom palette.

   > **Note**
   >
   > In waterfall charts, settings other than *Automatic* in the *Custom Format* section of the *Format chart* dialog box can override any custom *Color Palette* settings. To use the *Color Palette* settings in the waterfall chart, change all *Custom Format* settings to *Automatic*.

Related Information

To edit a custom palette chart style [page 377]
To create a custom palette style for charts [page 376]
To configure the value colors in a waterfall chart [page 379]

4.3.14.6.2 To create a custom palette style for charts

You can create a custom palette style based on an existing palette style.

1. Open a Web Intelligence document in *Design* mode.
2. Select or insert a chart.
3. Do one of the following:
   - Right-click the chart area and select *Format Chart* from the contextual menu. The *Format chart* dialog box appears. Select the *Palette and Style* tab. From the *Color Palette* dropdown list (), select *Custom*.
   - In the *Format* tab, in the *Chart Style* subtab, from the *Palette Style* dropdown list (), select *Custom*.

   The *Manage Palettes* dialog box appears, with either the default palette or the last palette applied to the chart selected.
4. Do one of the following:
   - If the currently selected palette is the one from which you want to create a custom palette, click *New*.
   - If you want to create a palette based on another built-in palette, select that palette and click *New*.

   The *Create palette* dialog box appears.
5. Enter a palette name.
6. Click a cell in the *Color settings* area and then select a different color from the *Color* dropdown palette.
7. Set the opacity if necessary.
8. When you have customized the cells, click *OK*.

   The custom palette appears in the Custom section of the Manage Palettes dialog box.

   The custom palette you have created will appear in the following places when it is selected for a chart:
   - From the *Color Palette* dropdown list in the *Format chart* dialog box.
   - From the *Palette Style* dropdown list in the *Chart Style* subtab.

   When it is not selected for a chart, you can access it in the *Manage Palettes* dialog box.

> **Note**
>
> In waterfall charts, settings other than *Automatic* in the *Custom Format* section of the *Format chart* dialog box can override any custom *Color Palette* settings. To use the *Color Palette* settings in the waterfall chart, change all *Custom Format* settings to *Automatic*.

Related Information

To edit a custom palette chart style [page 377]
To select a palette for a chart [page 375]
To configure the value colors in a waterfall chart [page 379]

4.3.14.6.3 To edit a custom palette chart style

You can edit custom chart styles.

1. Open a Web Intelligence document in *Design* mode.
2. Select or insert a chart.
3. Do one of the following:
   - Right-click the chart area and select *Format Chart* from the contextual menu. The *Format chart* dialog box appears. Select the *Palette and Style* tab. From the *Color Palette* dropdown list (), select *Custom*.
   - In the *Format* tab, in the *Chart Style* subtab, from the *Palette Style* dropdown list (), select *Custom*.

   The *Manage Palettes* dialog box appears, with either the default palette or the last palette applied to the chart selected.
4. Select the custom palette style that you want to edit and click *Edit*.

   > **Note**
   >
   > Built-in chart styles cannot be changed, however you can create a palette chart style from a built-in chart style.

   The *Create palette* dialog box appears.
5. Edit the palette settings as necessary.
6. When you have completed your changes, click *OK*.

   > **Note**
   >
   > In waterfall charts, settings other than *Automatic* in the *Custom Format* section of the *Format chart* dialog box can override any custom *Color Palette* settings. To use the *Color Palette* settings in the waterfall chart, change all *Custom Format* settings to *Automatic*.

Related Information

To create a custom palette style for charts [page 376]
To select a palette for a chart [page 375]

To configure the value colors in a waterfall chart [page 379]

4.3.14.6.4 To assign a color to an object in chart

You can assign custom colors to dimension objects in charts in Web Intelligence reports.

1. Open a Web Intelligence document in *Design* mode.
2. Select a dimension object or a legend item on a chart.
3. In the *Formatting* tab, in the *Style* subtab, click the *arrow* next to the *Background Color* icon.
4. From the *Background Color* dropdown list, do one of the following:
   - To assign a pre-defined color, select a color.
   - To assign a custom color, click *More Colors*, set a color and click *OK*.

The color is assigned to the dimension object.

4.3.14.6.5 To assign colors to objects in charts using color palettes

You can assign default or custom color palettes to dimension objects in charts in Web Intelligence reports. You can retain this color assignment when the report is refreshed when opened, and when you use filters, input controls, or drill snapshots.

1. Open a Web Intelligence document in *Design* mode.
2. Select a chart.
3. In the *Formatting* tab, in the *Chart Style* subtab, from the *Palette Style* dropdown list, select a palette or click *Custom* to create a custom palette.
   Colors from the palette are assigned to the dimension objects.
4. If you want to retain this color assignment, right-click the chart.
5. Select *Series Colors* > *Set as Default Colors*.

If you want to clear the color assignment, right-click the chart and select *Series Colors* > *Clear Color Assignment*.

Related Information

To create a custom palette style for charts [page 376]

4.3.14.6.6 To configure the value colors in a waterfall chart

You can configure the start, total, negative and positive values in a waterfall chart.

1. Open a Web Intelligence document in *Design* mode.
2. Select or insert a waterfall chart.
3. Right-click the chart area and select Format Chart from the contextual menu.
4. In the *Format chart* dialog box, select the *Palette and Style* tab.
5. In the *Custom Format* section, configure the *Fixed Value* for any of the following on the waterfall chart:
   - The *Start Value Color* affects the starting value bar.
   - The *Total Value Color* affects the final value bar.
   - The *Negative Value Color* affects any bars that reflect negative values.
   - The *Positive Value Color* affects any bars that reflect positive values.

   > **Note**
   >
   > Settings other than *Automatic* in the *Custom Format* section can override the *Color Palette* settings. To return to the *Color Palette* settings, change all of the *Custom Format* settings to *Automatic*.
6. When you have completed your changes, click *OK*.

Related Information

To edit a custom palette chart style [page 377]

4.3.14.6.7 Creating a corporate palette for charts

You can define a corporate palette for charts so that your reports have the corporate style. The palette colors are defined in the configuration file called `VisualizationConfig.xml`. You can only define one corporate palette, and the palette ID must not be changed.

The default palette contains 32 defined colors. You can define more colors, but you must define at least two colors. You define a color by defining the strengths of red (R), green (G), blue (B), and the transparency (A).

> **Example**
>
> ```
> <COLOR R="200" G="0" B="0" A="255" />
> ```

Related Information

Formatting the report layout [page 228]

Formatting your reports using Cascading Style Sheets [page 272]
Formatting tables and table cells [page 296]

4.3.14.6.7.1 Corporate palette configuration file syntax

You can define a default corporate chart palette.

The corporate chart palette configuration file `VisualizationConfig.xml` is by default located in the following location:

```
C:\Program Files (x86)\SAP BusinessObjects\SAP BusinessObjects Enterprise XI
4.0\images
```

This file contains the following elements:

```
<?xml version="1.0" encoding="UTF-8"?>
<CONFIG>
            <!-- Rename this file to VisualizationConfig.xml which will activate a
custom default palette. -->
            <!-- The following section allows to define a corporate palette which
will be used by default in all new visualization. -->
            <!-- TOMCAT must be restarted after each modification of this file -->
  <PALETTES>
                        <PALETTE ID="corporate">
                                    <!-- Add a list of colors so as to define your
palette (default palettes contains 32 colors): R for Red, G for Green, B for Blue
and A for managing the transparency-->
                                    <!-- Each attributes must take an integer value
from 0 to 255 -->
                                     <!-- The palette ID should not be changed.  -->
                                    <COLOR R="200" G="0" B="0" A="255" />
                                    <COLOR R="0" G="200" B="0" A="255" />
                                    <COLOR R="0" G="0" B="200" A="255" />
                                    <COLOR R="0" G="0" B="0" A="255" />
                                    <COLOR R="200" G="200" B="200" A="255" />
                                    <COLOR R="125" G="125" B="0" A="255" />
                                    <COLOR R="0" G="125" B="125" A="255" />
                                    <COLOR R="125" G="0" B="125" A="255" />
                                    <COLOR R="200" G="0" B="0" A="255" />
                                    <COLOR R="0" G="200" B="0" A="255" />
                                    <COLOR R="0" G="0" B="200" A="255" />
                                    <COLOR R="0" G="0" B="0" A="255" />
                                    <COLOR R="200" G="200" B="200" A="255" />
                                    <COLOR R="125" G="125" B="0" A="255" />
                                    <COLOR R="0" G="125" B="125" A="255" />
                                    <COLOR R="125" G="0" B="125" A="255" />
                                    <COLOR R="200" G="0" B="0" A="255" />
                                    <COLOR R="0" G="200" B="0" A="255" />
                                    <COLOR R="0" G="0" B="200" A="255" />
                                    <COLOR R="0" G="0" B="0" A="255" />
                                    <COLOR R="200" G="200" B="200" A="255" />
                                    <COLOR R="125" G="125" B="0" A="255" />
                                    <COLOR R="0" G="125" B="125" A="255" />
                                    <COLOR R="125" G="0" B="125" A="255" />
                                    <COLOR R="200" G="0" B="0" A="255" />
                                    <COLOR R="0" G="200" B="0" A="255" />
                                    <COLOR R="0" G="0" B="200" A="255" />
                                    <COLOR R="0" G="0" B="0" A="255" />
                                    <COLOR R="200" G="200" B="200" A="255" />
                                    <COLOR R="125" G="125" B="0" A="255" />
                                    <COLOR R="0" G="125" B="125" A="255" />
```

```
                                    <COLOR R="125" G="0" B="125" A="255" />
                        </PALETTE>
            </PALETTES>
</CONFIG>
```

Related Information

To define a corporate palette for charts [page 381]

4.3.14.6.7.2 To define a corporate palette for charts

The BI administrator can use the following steps to define a corporate palette using the `VisualizationConfig.xml` configuration file. This corporate palette will then be used as default for all new charts.

1. In the following directory open the template file: `VisualizationConfig.template.xml`:

   `C:\Program Files (x86)\SAP BusinessObjects\SAP BusinessObjects Enterprise XI 4.0\images`
2. Define at least two colors or edit the ones present in the template file.
3. Rename the file: `VisualizationConfig.xml` and save it in the same directory.
4. Restart Tomcat.

This corporate palette will be used as default for all new charts. Make sure there are no errors in the configuration file, otherwise the standard palette will be applied.

> **Tip**
>
> Restart Tomcat each time you modify this file.

4.3.14.7 To modify chart borders

You can modify the borders of a chart in the *Format Chart* dialog box.

1. In a Web Intelligence document in *Design* mode, right-click the chart and select *Format Chart*.
2. In the *Global* chart area, select the *Border* tab.
3. Use the settings to format the borders.
4. Click *OK* to return to the document.

Related Information

To format a chart [page 366]

4.3.14.8 To format the chart background

You can format the background colors, grid colors, opacity, line type and transparency of charts.

> **Note**
>
> The Tree Map, Tag Cloud, and Heat Map charts do not have background configuration options.

The options available vary depending on the type of chart.

1. In a Web Intelligence document in *Design* mode, right-click the plot area and select *Format Chart Plot Area* or *Format Chart*.
2. In the *Plot Area* chart area, select the *Background* tab.
3. In a 3D chart, you can show or hide the grid floor and edges.
4. Select a *Grid and Background* style:
   - *Plain background*
     - *Background Color* (refers to the background of the plot area)
     - *Category Axis Grid Color* (refers to the lines that are parallel to the category axis)
     - *Value Axis Grid Color* (refers to the lines that are parallel to the value axis)
     - *Depth Grid Color* (in a 3D chart, it refers to the lines parallel to the *Value Axis Grid Color*.
   - *Striped Background* (it shows alternate colors, instead a grid. The striped background option may not be available depending on the chart type, as in the case of Pie and 3D charts.
   - If you want the plot area lines to be dashed, select *Dashed Lines*.

   > **Note**
   >
   > Grid options slightly differ depending on the chart type.
5. Click *OK* to return to the document.

Related Information

To format a chart [page 366]

4.3.14.9 To modify plot area settings in Waterfall charts

You can activate or deactivate a reference line and set the spacing between objects in the Waterfall chart plot area.

1. Right-click in the Waterfall chart.
2. Select *Format Chart*.
3. In the *Format Chart* dialog box, select the *Plot Area* chart area.
4. In the *Design* tab, select *Reference Line*.

5. To set the spacing between plot area items, enter or select a number for the *Relative Spacing between Items*.
6. Click *OK* or *Apply*.

Related Information

To format the chart background [page 382]

4.3.14.10 To show and format chart legend

You can format the chart legend in a report.

1. In a Web Intelligence document in *Design* mode, right-click the chart legend and select *Format Legend*.
2. In the *Format Chart* dialog box, for the *Legend* chart area, select the *Design* tab.
3. You can make the legend visible or not, adjust the symbol size, position and layout, group by dimension, adjust the text settings and border and background settings.
4. In the *Title* tab, you set the legend title settings, such as: *Automatic Title* or *Custom Title*. *Custom Title* allows you to define a formula to be used for the Legend title.
5. Click *OK* to return to the document.

> **Tip**
>
> In the *Global* chart area, in the *Area Display* tab, you can display or hide the legend and legend title.

Related Information

To format a chart [page 366]
Formulas in chart elements [page 365]

4.3.14.11 To reverse the legend order in stacked column charts

By default, the legend for stacked columns charts are in the reverse order of the stacks.

It is possible to reverse the legend order of the chart so that the legend is in keeping with the stacks.

> **Note**
>
> This setting is only available for Stacked Column charts and 100% Stacked Column charts

1. In *Design* mode, right-click the chart legend you want to edit.

2. Click *Format Chart Legend*.
3. Check *Reverse legend order*.

The legend order has been reversed.

4.3.14.12 To avoid page breaks in charts

You can restrict page breaks in charts.

1. In a Web Intelligence document in *Design* mode, right-click the chart frame and select *Format Chart*.
2. In the *Global* chart area, select the *Layout* tab.
3. Select *Avoid page breaks in chart* or *Avoid page break*. These options can be selected for both horizontal and vertical breaks.
4. Click *OK* to return to the document.

Related Information

To format a chart [page 366]

4.3.14.13 To configure a stacked bar or column chart

In a stacked chart, the measure data is stacked in bars or columns. Stacking is done axis by axis and you can choose which data to stack. In a 100% stacked chart, the data is displayed as percentage parts of a whole, or 100%, of a bar or column.

> **Note**
>
> Only charts with value axes can be stacked.

1. In a Web Intelligence document in *Design* mode, add a stacked bar or column chart.
2. Right-click the chart and select *Format Chart* from the contextual menu.
3. In the *Value Axis* chart area:
   - Select the *Design* tab. Under *Stacking*, select one of the following:

Table 217:

Option	Description
Unstacked	Select this option to unstack all dimensions and measures in the chart.

Option	Description
Stacked Chart	Select this option if you only want to slice one dimension by another. For example, in a chart containing revenue per state and year. Measures are not stacked.
Globally Stacked Chart	Select this option stacks the dimensions and measures in one stack per bar or column.

- Select *100% Stacked Chart* if you want to measure multiple series as a proportion vs. time, or if you have three or more data series and want to compare distributions within categories, and at the same time display the differences between categories. Each bar represents 100% of the amounts for that category.

4. In the *Plot Area* chart area, if you are configuring a 100% stacked chart, and want bars or columns with zero values to be flat against the value axis, select *Flatten zero values*.
5. Click *OK* to close the *Format Chart* dialog box.

Related Information

To format the category or value axis title [page 385]
To format the chart background [page 382]
To format axis grid values, numbers and text [page 388]
To show a specific range of axis values [page 386]
To display the Value Axis logarithmically [page 386]
Linear and logarithmic axis scales [page 386]
To show and format chart legend [page 383]

4.3.14.14 To format the category or value axis title

You can format the title of a category or value axis in a chart.

1. In a Web Intelligence document in *Design* mode, right-click the chart frame and select *Format Chart*.
2. In the *Category Axis* or *Value Axis* chart area, select the *Title* tab.
3. Edit the title settings, which include:
   - Title lable and visibility
   - Layout spacing
   - Text formatting
   - Borders and the background
4. Click *OK* to return to the document.

Related Information

To format a chart [page 366]

4.3.14.15 To show a specific range of axis values

You can specify a range of values in a chart axis.

1. In a Web Intelligence document in *Design* mode, right-click the chart frame and select *Format Chart*.
2. In the *Value Axis* chart area, select the *Design* tab.
3. Under *Scaling*, to set the *Minimum Value* and the *Maximum Value*, select *Fixed Value*, then enter a value.

   > **Note**
   >
   > Overscaling is a specific display that indicates that a bar is incomplete. Its value is out of the axis Max/Min values.

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

Related Information

To format a chart [page 366]

4.3.14.16 Linear and logarithmic axis scales

Linear scales are based on addition. Logarithmic scales allow you to examine values that span many orders of magnitude without losing information on the smaller scales.

By default, the application displays the Value axis on charts as a linear scale. In a linear scale, the axis markers are evenly spaced.Consider, for example, the linear sequence: 1, 3, 5, 7, 9. To get the next number in the sequence, you add 2 to the previous number.

You can set the axis to a logarithmic scale. Logarithmic scales are based on multiplication rather than addition. In a logarithmic scale, the steps increase or decrease in size. Logarithmic scales are based on multiplication (or division). Consider, for example, the logarithmic sequence: 2, 4, 8, 16, 32

To get the next number in the sequence, you multiply the previous number by 2. We can say that this sequence represents ``base 2.''

Consider the following sequence: 1, 10, 100, 1000, 10000.

This sequence represents ``base 10,'' because you get the next term in the sequence by multiplying the previous term by 10.

4.3.14.16.1 To display the Value Axis logarithmically

You can change the Value Axis to appear logarithmically in a chart.

1. In a Web Intelligence document in *Design* mode, right-click the chart frame and select *Format Chart*.

2. In the *Value Axis* chart area, select the *Design* tab.
3. Under *Scaling*, select *Logarithmic* for *Axis Scaling*.

   A logarithmic scale uniformly presents percent changes rather than point changes. In other words, the distance from 1 to 2 (100% increase) is the same as the distance from 2 to 4 (another 100% increase).
4. Click *OK* to return to the document.

> **Note**
>
> You cannot represent negative values on a logarithmic scale. If you have selected *Show alert when the data is incompatible with the chart* option in the chart format options, a small yellow warning icon will appear on the data point if there is negative data.

Related Information

To format a chart [page 366]
Linear and logarithmic axis scales [page 386]
To display warning icons in charts [page 373]

4.3.14.17 To assign axis labels to data values

You can assign labels to an axis in charts.

1. In a Web Intelligence document in *Design* mode, right-click the chart frame and select *Format Chart*.
2. In the *Global* chart area, select the *Data Values* tab.
3. Select *Data label displaying mode*.
4. Select the appropriate *Data Type*.
5. You can also change the other data value settings on this page, like *Automatic Hiding Mode* and font, border, line and background settings as necessary.
6. Click *OK* to return to the document.

Related Information

To format a chart [page 366]
To show or hide data values [page 393]

4.3.14.18 To format axis grid values, numbers and text

You can format the value and category axis settings.

1. In a Web Intelligence document in *Design* mode, right-click the chart frame and select *Format Chart*.
2. In the *Category Axis* or *Value Axis* chart area, select the *Design* tab and format settings in the following sections:
   - Under *General*, you can select that the axis is visible.
   - Under *Layout*, you can display the axis, show labels, change the orientation, adjust the legend layout, automatically reduce the font size of labels displayed in grid, reverse order on the category axis, set the axis label delete mode and show continuous axis layout.

     > **Note**
     >
     > By default the Value axis is the Y axis and the Category axis is the X axis. If you reverse the order of the chart, the X,Y relationship is broken. The horizontal line remains the X axis and the vertical axis remains the Y axis.

     To set the legend layout, select *Adjust Layout* and configure the following options for the layout width and height:

     Table 218:

Option	Description
Automatic	Select *Automatic* so that the legend width or height is automatically adjusted to the size of the legend contents. **Note** The width adjusts as much as possible, however if the legend items are long, they can disappear from the legend cell.
Fixed	Select *Fixed* to manually set the height or width of the legend cell.
Proportional	Select *Proportional* to have the legend cell height or width appears relative to the size of the chart. You express this size as a 0.x value, where 0.2 means that the legend cell height will appear as 20% of the actual chart.

   - Under *Color Options*, you can set the *Axis Color* (the category axis line), *Grid Color* (the grid around the category axis labels) and *Grid Background Color* (which refers to the category axis labels).
   - Under *Text*, you can choose the font settings, text alignment, and the text policy (*Wrap*, *No Wrap* or *Truncate*).

     > **Note**
     >
     > - To force the display of a long chart title when *No wrap* has been selected and the title is longer than the chart width, activate *Force to Display* .
     > - The legend size, controlled by the *Adjust Layout* option, can be determined manually or automatically adjusted depending on the chart size and legend items length for optimal readability.

If you select the *No Wrap* option while the *Layout Width* is *Automatic*, the legend width will be adjusted to the legend item length as much as possible when the chart size is small; however long items will be hidden.

- Under *Number*, select the pattern you want for chart numbers.

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

Related Information

To format a chart [page 366]

4.3.14.19 To unlock a value axis in a dual axis chart

In a chart that uses dual axes, the chart normally has axes that are locked and synchronized to the same origin.

In some data series where one axis has positive values and another data series has both negative and positive values, the chart results can appear flat. In this case, you can unlock the axes so that each has its own grid and origin, and the minimum and maximum values share one axis, each according to its data context.

1. In a Web Intelligence document in *Design* mode, right-click the chart frame and select *Format Chart*.
2. In the *Value Axis 2* chart area, select the *Design* tab.
3. Under *Scaling*, select *Unlock the Axis*.

When the axes are unlocked, the second value axis is freed from the grid.

> **Note**
>
> In a XI 3.1 document migrated to BI 4.1 SP 4 or greater, value axes are automatically unlocked.

Related Information

Linear and logarithmic axis scales [page 386]
To format axis grid values, numbers and text [page 388]
To assign axis labels to data values [page 387]
To show a specific range of axis values [page 386]

4.3.14.20 To hide an empty chart

Sometimes charts display no values. For example, if sales of a specific product are discontinued, a chart that normally displays results for that product will appear empty. By default, the application displays such empty charts on reports. If wished, you set the application to hide charts whenever they are empty.

1. In a Web Intelligence document in *Design* mode, right-click the chart frame and select *Format Chart*.
2. In the *Global* chart area, select the *General* tab.
3. In the *Display* section, select one of the following:
   - Select *Hide always* to hide the chart.
   - Select *Hide when empty* to hide the chart when it is empty.
   - Select *Hide when following formula is true* and type a formula in the box to hide the chart when the formula is true.
4. Click *OK* to return to the document.

Related Information

To format a chart [page 366]

4.3.14.21 To exclude zero values in charts and tables

In charts and tables, you can exclude zero values from the displayed data.

If a chart or table has zero values, you can choose to remove them from the visible output. You can also have hidden items that have zero values.

If you deactivate either of the zero value options:

- In a chart, there are no items.
- In a table, if the values in a column or row for an item equal zero, the column or row does not appear.

1. In a Web Intelligence document in *Design* mode, right-click the chart or table frame and select *Format Chart* or *Format Table*.
2. Do one of the following:
   - For a chart, in the *Global* chart area, select the *General* tab.
   - For a table, select the *General* tab.
3. Select the following *Display* options as required:

Option	Description
Show rows for which all measure values = 0	In vertical and cross tables, to suppress rows where all measure values are equal to zero.
Show rows for which the sum of measure values = 0	In vertical and cross tables, to suppress rows where the sum of the measure values is equal to zero.

Option	Description
Show columns for which all measure values = 0	In horizontal and cross tables, to suppress columns where all measure values are equal to zero.
Show columns for the sum of measure values = 0	In horizontal and cross tables, to suppress columns where the sum of the measure values is equal to zero.
Show measure values where values = 0	In charts, to suppress a chart item if its measure values are equal to zero.
Show measure values for which the sum of values = 0	In charts, to suppress a chart item where the sum of its measure values is equal to zero.

> **Note**
>
> In charts and tables, empty values are considered the same as zero values, and therefore are also affected by these *Display* options.

4. Click *OK* to close the dialog box.

4.3.14.22 To specify styles, shadow effects and data markers for the chart data

You can specify palette and style effects in line, bar, column, line, point, and radar charts.

> **Note**
>
> By default, dual axis charts use two color palettes.

1. In a Web Intelligence document in *Design* mode, right-click the chart frame and select *Format Chart*.
2. In the *Global* chart area, select the *Palette and Style* tab.
3. Configure the following as necessary:
   - In *Chart Series Style*, select an effect.
   - Select the *Color Palette* and the percent of transparency.
   - Under *Marker*, choose symbols, symbol size, symbol palettes, border, border color.
   - Under *Light and Shadow Effects*, select many light and shadow effects: offset, color, shadow, and 1-sided shadow.
4. Click *OK* to return to the document.

Related Information

To format a chart [page 366]

4.3.14.23 To manage measure-based coloring in Tree maps, Heat maps and Tag Cloud charts

The coloring method determines the color of rectangles or tags based on the value of a reference measure.

1. In a Web Intelligence document in *Design* mode, right-click the chart frame and select *Format Chart*.
2. In the *Global* chart area, select the *Palette and Style* tab.
3. Select a coloring method from the *Coloring Method for Shapes* dropdown list:

Option	Description
Palette Coloring	You can define the number of ranges and the colors are associated automatically based on the selected palette. You can also define range definition and the color for null or empty values.
Gradient-based Palette Coloring	You can define a 2- or 3-color gradient associated to the ranges.
Gradient-based Palette Coloring using Measure Polarity	You can define a 2- or 3-color gradient associated to Measure with Neutral Polarity.
Custom Range Coloring	You can define the ranges manually and associate the colors by either percentage or absolute value.

4. If needed, define a range for the measure values and associate a color to out of range values.
5. Select a color for null or empty values.
6. Define the gradient for gradient methods or associate a color to each range for the custom method. For custom range coloring, define the *Maximum* and *Minimum* values of the color ranges. (It is automatic for other methods)
7. Click *OK* to return to the document.

4.3.14.24 To format a series of data in a chart

You can adjust the color, color opacity and data label position of pieces or points in Bar, Column, Line, Pie, Scatter, Bubble, and Point charts.

1. Right-click the piece, point, or legend item in a chart that you want to configure and select *Format Data Series* from the contextual menu.

> **Note**
>
> This feature is not available for Box plot, Map, Tag cloud or Waterfall charts.

2. In the *Format Data Series* dialog box, select *Custom*.

> **Note**
>
> At any time you can reset the settings in this dialog box to the application default by selecting *Automatic*.

3. Select a color for the data piece or point from the color picker dropdown panel and adjust the opacity setting as necessary.

4. If you are formatting a Line chart and want to have a thicker line, select a **Line Width** number.
5. To have a data label appear, in the case where a data label was hidden, or to customize the data label position, select *Show Data Labels*.

   > **Note**
   >
   > Unselect this option if you want the data label hidden in the chart.

6. Select one of the following data position options:

   For all charts:

   - Select *Outside* if you want the label outside of the selected chart piece.
   - Select *Inside* if you want the label inside the selected chart piece.

     > **Note**
     >
     > Data label positioning is not available for Polar, stacked Bar or Column charts.

   For all charts except the Pie chart the following options are also available:

   - Select *Inside First, Outside Otherwise* if you prefer the label inside the selected chart item, but can allow it to be outside the chart piece if there is not enough room for the label in the item.
   - Select *Outside First, Inside Otherwise* if you prefer the label outside the selected chart piece, but can allow it to be inside the chart piece if there is not enough room for the label in the item.
7. Depending on your chart type, you can set the data label alignment when the data position is set to *Outside*:
   - If you are working with a Donut or Pie chart, select one of the following data label alignments:
     - Select *Side Layout* for the data label to appear at the side of the chart block.
     - Select *Circular Layout* for the data label to appear right next to the chart piece.
   - If you are working with a Line or Point chart, select one of the following data label alignments: *Top*, *Below*, *Left*, *Right*.
8. Click *Apply* to apply your changes and continue to modify the data label changes.
9. Click *OK* to apply your changes and close the panel.

4.3.14.25 To show or hide data values

You can show and hide data values in a chart.

1. In a Web Intelligence document in *Design* mode, right-click the chart frame and select *Format Chart*.
2. In the *Global* chart area, select the *Data Values* tab.
3. Select *Data label displaying mode* to show the data.
4. You can adjust the settings for various parameters, depending on the chart type. For instance for a pie chart, select the data type, the data position, border size, background color, etc.
5. Click *OK* to return to the document.

Related Information

To format a chart [page 366]

4.3.14.26 To resize a chart

You can resize the chart using the mouse or in the *Format Chart* dialog box.

1. In a Web Intelligence document in *Design* mode, right-click the chart frame and click *Format Chart*.
2. In the *Global* chart area, select the *General* tab.
3. Enter or set the chart width and height in the *Width* and *Height* boxes.
4. Click *OK* to return to the document.

Related Information

To format a chart [page 366]

4.3.14.27 To apply a chart style

A chart style is a group of settings stored within a source file.

The chart style is used to manipulate a chart (at several levels - graphic, region, and property) before it is rendered. Chart styles allow charts to assembled using a set of predefined settings which include modern chart styles (such as anti-alias, gloss, and emboss). Adapted chart styles offer straightforward chart output customization with pre-settings and themes. They contain the group of settings for a chart including:

layout - the settings that determine how each chart is displayed
chart items (such as the title, the legend, the axes)
chart location (for example, where chart items are placed, if they are visible)
theme - the settings that determine how the chart looks
color palettes, etc.
textures (such as the texture of the background)
shadows
fonts

> **Note**
>
> You can choose among pre-defined color palettes.

When creating a chart, we recommend that you feed it with all needed dimensions; apply the style, then change the settings to refine the chart format. If you modify a setting before applying a template, you may alter your modifications if these settings are included in the template definition. If that happens, the only way to get them back is to do an *Undo* action.

1. Open a Web Intelligence document in *Design* mode.
2. Select an existing chart or create one.
3. With the chart selected, in the *Formatting* tab, in the *Chart Style* subtab, select a style from the *Format Chart Style* icon dropdown list:
   - *Flashy Style*
   - *Normal Style*
   - *High Contrast*

Related Information

To format a chart [page 366]

4.3.14.28 To change the chart type by using Turn Into

You can change the chart type using *Turn Into* in the chart contextual menu.

1. In a Web Intelligence document in *Design* mode, right-click the table or chart.
2. Select *Turn Into* from the contextual menu, then *More Transformations* .
   The *Turn Into* dialog box appears.
3. Click the chart category you want, then click a chart icon.
   Edit the chart values as necessary.
4. Click *OK*.
   The selected template is applied to the block and displays the data in the chart type you chose.

Related Information

To format a chart [page 366]
Line charts [page 349]
Bar charts [page 345]
Box plot charts [page 345]
Column charts [page 346]
Geomap charts [page 347]
Map charts [page 350]
Pie charts [page 351]
Point charts [page 352]
Radar charts [page 353]
Tag cloud charts [page 353]
Waterfall charts [page 353]

4.4 Linking to other documents

Document cells can be defined as hyperlinks.

Hyperlinks in cells are similar to the hyperlinks found on the World Wide Web that allow you to open a different web page from the page you are currently viewing.

> ⚠ Restriction
>
> In a Web Intelligence report, if you construct a hyperlink that refers to a web site that cannot be opened in other websites, you can encounter browser errors.

When you click a cell that contains a hyperlink, the target document specified in the link opens. The target document can be another Web Intelligence document, a site on the world wide web, a PDF, Excel or Word document, or any resource accessible through a hyperlink.

Hyperlinks can be either static or dynamic. A static hyperlink always links to the same document in the same way. A dynamic hyperlink can link differently depending on the data in the document containing the hyperlink.

You can create different types of hyperlink:

- A cell where the cell text is the hyperlink text.
- A cell with an associated hyperlink.
- A link to another document in the CMS. Use the Web Intelligence HTML interface for this action. For target documents that refer to BEx queries or `.unx` or `.unv` universes that contain prompts that use Index Awareness, there are additional parameters to set.

When you create a link using the Web Intelligence HTML interface, the link is defined using the `OpenDocument` syntax. If you wish, you can build links manually using `OpenDocument`. For detailed information on `OpenDocument` syntax, see the *Viewing Documents using OpenDocument* guide.

As well as linking between documents, you can also link report elements in the same report by defining elements as input controls that filter the values in other report elements.

4.4.1 Cells defined as a hyperlink

When you define a cell as a hyperlink, the cell text becomes active hyperlink text.

For example, if you define a free-standing cell containing the text `http://www.sap.com` as a hyperlink, clicking the cell takes you to the SAP web page.

This method is best suited for static hyperlinks, where the text in the cell always remains the same and links to the same resource in the same way.

> ℹ Note
>
> It is possible to make this type of hyperlink dynamic by using a cell formula to change the cell text based on report data.

4.4.1.1 To define a cell as a hyperlink

You define a cell as a hyperlink in a document in Web Intelligence.

1. Open a Web Intelligence document in *Design* mode.
2. Select or type hyperlink text in a cell.
3. Right-click the cell and select *Linking* > *Read Contents as Hyperlink*.

4.4.2 A hyperlink associated with a cell

When you associate a hyperlink with a cell, you define a hyperlink that links to the source document when the cell is clicked.

The cell text itself is not the hyperlink.

This is the recommended method for creating dynamic hyperlinks, for the following reasons:

- It is specially tailored for working with the parameters in dynamic hyperlinks.
- It shields you from the complexity of hyperlink syntax. You define your hyperlink using a graphical interface and the hyperlink syntax is generated and managed behind the scenes.
- It allows you to define hyperlink text that is different from the cell text.

4.4.2.1 To add a hyperlink to a cell

You configure a cell hyperlink in the *Create Hyperlink* or *Hyperlinks* dialog box.

1. Open a Web Intelligence document in *Design* mode.
2. Right-click a cell and select *Linking* > *Add Hyperlink* to display the *Create Hyperlink* or *Hyperlinks* dialog box.
3. If you are in the Web Intelligence HTML interface, select the *Link to web page* tab.
4. Type or paste the hyperlink text into the box.
5. Click *Parse*.

   Any hyperlink parameters appear in the *Customize URL parameters* area.

   Dynamic hyperlinks contain parameters whose values can change. Parameters appear as `name=value` parts at the end of the hyperlink after the question mark. For example, the following URL contains one parameter, `reportname`, whose value is “products":

   ```
   http://salesandproductreport/default.asp?reportname=products
   ```

   Each parameter appears on a separate line with the parameter name on the left and the parameter value on the right. The static part of the hyperlink, the part without the parameters, appears in the *Main* section.
6. To supply data from formulas or variables as parameter values, click the arrow next to each parameter value and select an option.

Option	Description
Build formula	You build a formula in the *Formula Editor* to supply the formula output as the parameter value.
Select object	You choose the object from the list in the *Available Objects* dialog box to supply its value as the parameter value.

> **Note**
>
> When you modify a parameter, the full hyperlink syntax changes to reflect the modification in the box at the top of the screen.

7. To add or remove a parameter, modify the hyperlink syntax, then click *Parse*.

> **Note**
>
> You cannot add or remove parameters directly in the parameter list in the *Customize URL parameters* area. You must modify the URL syntax directly.

8. Type the tooltip text in the *Tooltip* box or build a dynamic tooltip by using the *Build formula* or *Select variable* options.

Option	Description
Build formula	You build a formula in the *Formula Editor* to supply the formula output as the tooltip.
Select object	You choose the object from the list in the *Available Objects* dialog box to supply its value as the tooltip.

The tooltip appears when you hover your mouse pointer over the cell containing the hyperlink.

9. Click the arrow next to *Target window* to define how the target URL appears.

Option	Description
Current window	The target URL replaces the document containing the hyperlink in the current window.
New window	The target URL opens in a new browser window.

10. Click *OK* to close the *Create Hyperlink* or *Hyperlinks* dialog box.

4.4.3 Linking to another document in the CMS

In the Web Intelligence HTML interface, you can link to another document in the CMS using the *Create Hyperlink* dialog box.

The link uses the `OpenDocument` function. The parameters passed to the function are determined by the choices you make in the dialog box.

You can also work with the `OpenDocument` function directly by typing the syntax into a cell.

Document instances and values passed to prompts

Hyperlinks supply values to prompts in the target document in two ways:

- Passing values directly to prompts.
- Opening a document instance based on passed values.

In the first case, the hyperlink feeds values directly to the prompts in the target document. In the second case, the link opens the document instance whose stored prompt values correspond to the values passed by the hyperlink. When you click on the url, the target document is automaticaly refreshed, even if the *Refresh on open* option is deactivated.

It is more efficient to choose a document instance based on passed parameters if the target document is large.

Linking to large documents

When the target document contains a large amount of data, it is more efficient to link to an instance than to open and retrieve the document with a passed parameter value. You can schedule and pre-retreive multiple instances with different parameter values. This allows the document to be scheduled and pre-retrieved in advance with different parameter values.

When you click the hyperlink, the link opens the appropriate pre-retrieved instance rather than using the passed value to open the document and retrieve the data.

Example

Linking to a large sales report

In this example you link to a large sales report that retrieves sales by region. The report has a parameter that allows the user to select the region. There are four regions - North, South, East, and West.

Your source document has a [Region] dimension. You do the following:

- Configure the hyperlink to pass the value of [Region] as a parameter.
- Create four instances of the sales report, one for each value of [Region].
- Schedule these instances for pre-retrieval.
- Configure the hyperlink to open the latest instance whose parameter value matches the value passed by the hyperlink.

Assuming that the document has a [Region] dimension, the settings are as follows:

Table 219:

Link to document instance setting	Latest value match
Most recent - matching prompt values	[Region]

4.4.3.1 To link to another document in the CMS

You can set in a document one or more links to other documents in the same CMS.

> **Note**
>
> When the target document refers to a `.unx` or `.unv` universe containing an Index Awareness Prompt, or to a BEx query, there are additional objects to select.

1. Open a Web Intelligence document in *Design* mode.
2. Do one of the following:

   > **Note**
   >
   > The *Add Document Link* option is only available when a report is edited in Web Intelligence HTML interface. It is not available in Web Intelligence Applet interface or Web Intelligence Rich Client.

   - Right-click the cell where you want to create the link and select *Linking* > *Add Document Link*.
   - In the *Report Elements* tab, in the *Linking* subtab, select *Add Document Link* from the *Document* dropdown list.
3. In the *Create Hyperlink* dialog box, Select the *Link to a document* tab.
4. Click *Browse* and in the *Choose a document* dialog box, select the target document, and click *Open*.

   If there are prompts on the document to which you are linking, the *Select Prompts* panel appears.
5. In the *Select Prompts* panel, select the prompts that you want to appear and click *OK*, or if you have no selections to make, click *Cancel*.
6. In the *Hyperlink Properties* section:
   - To ensure that the link uses the full URL path rather than a relative path from the current document, select *Use complete URL path to create hyperlink*.
   - To refresh the data of the target document when the hyperlink is selected, select *Refresh on open*.
   - To link to an instance of the selected document, select *Link to document instance*, then select an option from the dropdown list.

   Table 220:

Option	Description
Most recent	The hyperlink opens the most recent instance. **Note** You cannot specify parameter values in the hyperlink when you choose this option. The hyperlink does not pass parameter values. All parameters are set to *Use document default* and cannot be modified.

Option	Description
Most recent - current user	The hyperlink opens the most recent instance owned by the current user. **Note** You cannot specify parameter values in the hyperlink when you choose this option. The hyperlink does not pass parameter values. All parameters are set to *Use document default* and cannot be modified.
Most recent - matching prompt values	The hyperlink opens the most recent instance whose prompt values correspond to the values passed by the hyperlink. This option is useful when you want to link to a large document that contains prompts. You must specify at least one parameter value. Without at least one specified value, the hyperlink returns an error when clicked. The error occurs because the hyperlink is designed to retrieve an instance based on parameter values, but no value is provided for comparison against the instance.

- If you are linking to a Web Intelligence document, select *Target area within the document* > *Report name* and then the name of the report.
- To link to a specific part of a report:
  1. Select *Target area within the document* > *Report part*.
  2. Click *Select*.
  3. Right-click the report part (for example a table) and select *Select this report part*.
  4. To display only the report part, select *Display report part only*.
  5. To focus on the report part but display the whole report in the target document, select *Position at report part (full document available)*.

Note

You can create links between report elements by defining a report element as an input control that filters the values in other report elements. For example, if you have a report containing two tables, you can filter the values in one table depending on the values selected in the other.

7. In the *Customize the look and behavior of the hyperlink* section, do one of the following:
   - Select the format of the target document from the *Document format* dropdown list. The format of the document determines which options are available when defining the link. For example, you cannot link to a report part in a PDF document. For a document referring to a BEx query or a `.unx` or `.unv` universe with a prompt that uses index awareness:
     1. Select the *key*.
     2. Click the key dropdown box and select *Build formula* and type `=<objectname>.key()`. The object must not be a variable and the object must have a key.
     3. Test that the `<objectname>.key()` returns the expected results. If the result does not return the key, ask the universe designer to provide help on how to obtain the key.

- To define how the target document opens, select *New window* or *Current window* from the *Target window* dropdown list.

  Table 221:

Option	Description
New window	The document opens in a new browser window.
Current window	The document opens in the current browser window and replaces the document containing the hyperlink.

- Type text in the *Tooltip* box, or build a dynamic tooltip by using the *Build formula* or *Select object* options. The tooltip will appear when you hover your mouse pointer over the cell containing the hyperlink.

  Table 222:

Option	Description
Build formula	You build a formula in the *Formula Editor* to supply the formula output as the tooltip.
Select object	You choose the variable from the list in the *Available Objects* dialog box to supply its value as the tooltip.

8. In the *Document prompts* section, for each prompt existing in the document, select one of the following options from the dropdown list:

Option	Description
Build formula	You use the *Formula Editor* to build a formula to pass a value to the prompt.
Select object	You select an object whose value is passed to the prompt.
Prompt user at runtime	The user specifies a value for the prompt when they click the hyperlink.
Use document default	You configure the hyperlink to not pass a parameter to the target document, and the target document opens with the default value for the prompt. The default value is either the last value specified for the prompt, or the default specified in the document.
Enter a constant	You enter a constant alphanumeric string that is entered for the prompt.

4.4.4 To open a document from a hyperlink

You can set hyperlinks between documents in the Web Intelligence HTML interface.

1. Open a Web Intelligence document in *Design* mode.
2. Hover your mouse pointer over a cell with a hyperlink to display the tooltip, if a tooltip is defined.

> **Note**
>
> The generated syntax of the hyperlink appears in the *Formula Bar*. Do not modify this syntax directly. Use the *Create Hyperlink* dialog box if you need to update it.

3. Click the hyperlink to open the target document.
   Depending on how the hyperlink is configured, the target document opens in a new browser window, or it replaces the current document in the current browser window.

4.4.5 To edit a hyperlink in a cell

You can set hyperlinks in table cells in the Web Intelligence HTML interface.

1. Open a Web Intelligence document in *Design* mode.
2. Right-click the cell containing the hyperlink and select *Hyperlink* > *Edit*.
3. In the *Create Hyperlink* dialog box, edit the hyperlink.
4. Click *OK* to close the *Create Hyperlink* dialog box.

4.4.6 To delete a hyperlink

You can delete hyperlinks in documents in the Web Intelligence.

1. Open a Web Intelligence document in *Design* mode.
2. Select the cell containing the hyperlink and select *Linking* > *Remove*.

4.4.7 Formatting hyperlink colors

You can define the colors used to display hyperlinks that have already been clicked (visited hyperlinks).

You can also define the colors for hyperlinks that have not been clicked (unvisited hyperlinks).

4.4.7.1 To set hyperlink colors

You can set the colors of hyperlinks in documents in Web Intelligence.

1. Open a Web Intelligence document in *Design* mode.
2. Right-click a blank area on the report that contains hyperlinks and select *Format Report*.
3. In the *Format Report* dialog box, click the *Appearance* tab.
4. In the *Hyperlink color* section, click the arrows next to *Visited* and *Unvisited*, then either select a predefined color or click *More colors* to define a custom color.
5. Click *OK* to close the *Format Report* dialog box.

4.5 Saving and exporting documents, reports and data in Web Intelligence

Web Intelligence allows you to save or export your documents in a variety of formats.

You can perform the following save and export actions, depending on the version of Web Intelligence you are using.

Table 223:

Application	Export as	Save as
Web Intelligence HTML interface	CSV CSV archive Excel Excel 2007 PDF Text	Web Intelligence
Web Intelligence Applet interface	CSV	CSV archive Excel Excel 2007 PDF Text Web Intelligence
Web Intelligence Rich Client	CSV	CSV archive Excel Excel 2007 PDF Text Web Intelligence

Refer to the appropriate topics in this document for instructions on how to save the different formats in the interface you are using.

Related Information

Saving data in a document in a CSV archive zip file [page 409]
To save a document as a text file [page 407]
To save document data in a CSV file [page 408]

To save a document in the corporate repository [page 406]
To save a document as a PDF file [page 406]
To save a document as an Excel spreadsheet [page 405]
Exporting documents, reports or data [page 409]

4.5.1 To save a document as an Excel spreadsheet

You can use the Web Intelligence Applet or HTML interface to save a document as a Excel spreadsheet.

You must modify the Windows registry before you can export images as background or content to an Excel spreadsheet. See Exporting HTML Code, URLs, and Images to Excel Spreadsheets and PDF Files [page 411].

Note

- When you export a report with charts to an Excel .xls format, the charts are converted to into embedded images in the Excel file and use only 56 colors. This can have an effect on the final color and shading of the images. There are no restrictions on color or shading when you export to an Excel .xlsx format.
- In the BI launch pad preferences for Web Intelligence, you can configure the appearance of data in Web Intelligence documents exported or saved as Microsoft Excel files. For more information refer to the *Selecting an Excel format for Web Intelligence documents* topic in the *Business Intelligence Launch Pad User Guide*.

Restriction

- An Excel .xlsx worksheet can contain up to 1 million rows of exported data. If you save or export a report to a version of Excel prior to Excel .xlsx, then a new worksheet is started for each 65,000 rows of exported data.
- Web Intelligence cannot export or save to Excel report tables that exceed 2 million rows.

To save a document as an Excel spreadsheet:

1. Open a Web Intelligence document.
2. Do one of the following:
   - If you are in *Reading* mode, select *Save As* from the *Save* icon dropdown list.
   - If you are in *Design* or *Data* mode, click the arrow next to *Save* on the toolbar in the *File* tab toolbar and select *Save As*.
3. Select *My Computer*, *My Desktop*, or *My Documents* in the dialog box and navigate to the folder where you want to save the document.
4. From the *Files of Type* list, select *Excel (.xls)* or *Excel (.xlsx)*.
5. Select the reports you want to save as Excel or select *Select All* to save all reports.

   If you save the entire document to Excel, each report within the document is saved as separate worksheet within the Excel file.
6. To have the layout and formatting of the document matched as closely as possible in the Excel file, select *Prioritize the formatting of the documents*.

> **Tip**
>
> This option does not exploit the data processing features of Excel to the same extent.

7. To avoid merging multiple cells into Excel cells as much as possible to exploit the data processing features of Excel, select *Prioritize easy data processing in Excel*.
8. Click *Save*.

   In Web Intelligence, all charts are automatically converted to images in Excel.

4.5.2 To save a document as a PDF file

You can use the Web Intelligence Applet interface to save a document as a PDF file.

> **Note**
>
> The table cell formatting *Read content as HTML* is not supported when exporting a document or report as PDF. Any table cells with this setting will appear blank in the generated PDF. To obtain the content in PDF, you need to unselect this property. To do this, right-click in the table cell, select *Format Cell*, and in the *Display* section of the *General* tab, change the *Read contents as* to some other value than *HTML*. The setting is applied to the entire column.

1. Open a Web Intelligence document.
2. Do one of the following:
   - If you are in *Reading* mode, select *Save As* from the *Save* icon dropdown list.
   - If you are in *Design* or *Data* mode, click the arrow next to *Save* on the toolbar in the *File* tab toolbar and select *Save As*.
3. Select *My Computer*, *My Desktop*, or *My Documents* in the dialog box and navigate to the folder where you want to save the document.
4. In the *Files of Type* field, select *PDF*.
5. Do one of the following:
   - To select specific reports to save, select *Select reports*, then select the reports from the list.
   - To save the current report and select the pages you want to save, select *Current report*.
6. Click *Save*.

4.5.3 To save a document in the corporate repository

You can save a document in the corporate repository.

1. Do one of the following:
   - If you are in *Reading* mode, select *Save As* from the *Save* icon dropdown list.
     In Rich Client, from the *Save Menu* icon dropdown list, select *Save to Enterprise*.
   - If you are in *Design* or *Data* mode, click the arrow next to *Save* on the toolbar in the *File* tab toolbar and select *Save As*.

In Rich Client, select *Save to Enterprise* from the *Save Menu* icon dropdown list.

2. Browse the folder in which you want to save the document.
3. Enter a name, a description, and key words.

   Click the *Advanced* button or toggle button to display the *Description* and *Keywords* entry fields.

> **Tip**
>
> Use keywords so that you or other users can reuse them and find documents quicker when doing a search.

4. If you are using the HTML interface, select the categories you want to associate with the documents in the *Assign Category* box.
5. Optional: Check *Refresh on open* to refresh the document each time it is opened.

> **Note**
>
> When you enable the *Refresh on open* document property, the document displays the latest information each time you open the document. The *Refresh on open* option is dependent on the following settings in the CMC (configured by the BI administrator):
>
> - In *Applications* > *Web Intelligence*, from the *Manage* list, select *Properties*. In the *Automatic Document Refresh on Open Security Right Setting* section, the property *Automatic Refresh* security setting is enabled.
> - In *Applications* > *Web Intelligence*, from the *Manage* list, select *User Security*. When you select a user profile and click *View Security*, check that the *Document - disable automatic refresh on open* security right is disabled.

6. Optional: Check *Permanent regional formatting* to preserve the document regional formatting with the document.
7. In Web Intelligence Rich Client:
   - To remove all document security and make the document available in *Standalone* mode, check *Remove document security*.
   - To ensure that the document is not locked by the current user, select *Save for all users*.
8. Click *Save*.

The document is saved in the corporate repository.

4.5.4 To save a document as a text file

You can use the Web Intelligence Applet interface to save a document as a text file.

1. Open a Web Intelligence document.
2. Do one of the following:
   - If you are in *Reading* mode, select *Save As* from the *Save* icon dropdown list.
   - If you are in *Design* or *Data* mode, click the arrow next to *Save* on the toolbar in the *File* tab toolbar and select *Save As*.
3. Select *My Computer*, *My Desktop*, or *My Documents* in the dialog box and navigate to the folder where you want to save the document.

4. In the *Files of Type* field, select *TXT File*.
5. Select the reports to save from the *Select reports* list or select *Select All* to export all reports.

   The export of the report elements depends on the Preferred Viewing Locale you have selected in the BI launch pad preferences. Some locales, like the English locale, use the left-to-right (LTR) interface positioning, whereas others, like the Arabic locale, use the right-to-left (RTL) interface positioning.

   In an LTR locale, report elements are exported in the following order:

   1. Report element position, starting from the upper left corner
   2. Left to right, then top to bottom.

   In an RTL locale, report elements are exported in the following order:

   1. Report element position, starting from the upper right corner
   2. Right to left, then top to bottom.

   > **Note**
   >
   > - In page mode, report elements are exported page by page.
   > - The exported file in page mode can be different from the result in draft mode.
   > - The separator used is a tab space.
   > - Charts and images are not exported.
   > - Export size limit for text file is defined in the Central Management Console. The default value is 5 MB. An error message appears if the size limit is exceeded.
   > - If several reports are selected, they are appended one after another in the same text file.

6. Click *Save*.

Related Information

Interface and document locales [page 48]

4.5.5 To save document data in a CSV file

You can use the Web Intelligence Applet interface or Web Intelligence Rich Client to save document data in a CSV file.

If you save to a CSV archive file, only the data in the current document is saved into a ZIP file, with each report in a separate CSV file.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. If you are in *Data* mode, select the query whose data you want to save as a CSV or CSV archive file.
3. In the menu above the Side Panel, select *Save as* from the *Save* dropdown list. Select the *CSV archive* format.
4. Enter a file name.
5. Choose the text qualifier, column delimiter and character set.

> **Tip**
>
> To make the options you chose the default options when saving to CSV, select *Set as default values*.

6. If you are creating a CSV archive file, select the reports you want exported.
7. Click *Save*.

4.5.6 Saving data in a document in a CSV archive zip file

In Web Intelligence Rich Client and the Web Intelligence Applet interface, you can save document data to the CSV archive format which generates an archive file (`.zip`) that contains one CSV file per report.

Each CSV file contains the report data without any headers, footers or charts.

You can configure the following objects:

- Text qualifier
- Column Delimiter
- Charset

You can also have all or only some of the reports saved in the CSV archive file.

> **Example**
>
> **Contents of a <Document_Name>.zip archive file**
>
> `<Report1_name>.csv`
>
> `<Report2_name>.csv`
>
> `<ReportN_name>.csv`

4.5.7 Exporting documents, reports or data

You can select whether you want to export a complete document, reports or raw data in text file, a pdf, an excel spreadsheet, a .CSV archive or a .CSV file.

> **Note**
>
> The following formats are only available in the HTML interface:
>
> - .PDF
> - .TXT
> - .XLS
> - .XLSX

If you want to export raw data, only the .CSV format is available. You can select whether you want to export all data or only specific queries.

Except for the text file format, each file type has several settings available when you're in the *Export* dialog box.. They are detailed in the sections below.

PDF file

When exporting in a pdf file, you can decide whether you want to export all reports if you have several reports in your document, or only the report you are currently viewing. If you decide to export only the report you are viewing, then it is possible to select whether you want to export:

- All pages
- The current page
- Specific pages, for example pages 10 to 15 only

You can also fine-tune the DPI for images using the *Images DPI* dropdown list.

Excel spreadsheet

For both .XLS and .XLSX files, you can select between two options:

- *Prioritize the formatting of the document*
- *Prioritize ease data processing in Excel*

You can also fine-tune the DPI for images using the *Images DPI* dropdown list.

CSV file and CSV archive

> **Note**
>
> If you select the .CSV archive format, a .zip file is created with one .CSV file per report.

You can configure the following objects:

- Text qualifier
- Column delimiter
- Charset

If you want these options to be the default options when you export to a CSV archive, select *Set as default values*.

4.5.8 To export a document

You can export a document to a specific location.

Depending on the interface you are using, available formats may vary.

1. Click the export icon  .
2. Optional: In the HTML interface, select whether you want to export specific reports or data only.
3. Select a format.

> **Caution**
>
> .PDF, .TXT, .XLS, and .XLSX formats are only available in the HTML interface.

4. In the HTML interface, set the different options available for the format you have elected and click *OK*.
   To know more about the options available, read Exporting documents, reports or data [page 409].
5. Browse the location where you want to export the file.
6. Give a name to the file you want to export.
7. Click *Save*.

4.5.9 Exporting HTML Code, URLs, and Images to Excel Spreadsheets and PDF Files

HTML code, URLs and images contained in Web Intelligence documents can be exported to Excel spreadsheets and to PDF files.

Exporting HTML Code to Excel Spreadsheets and PDF Files

HTML code contained in Web Intelligence tables and free cells will be exported as text in Excel spreadsheets and will not be interpreted. In PDF files, HTML code contained in Web Intelligence tables and free cells will not be exported, if these cells have been formatted to be read as HTML. Else, they will be exported as text without any interpretation.

Exporting URLs to Excel Spreadsheets and PDF Files

URLs contained in Web Intelligence tables and free cells will be exported as URLs in Excel spreadsheets and PDF files, if these cells have been formatted to be read as hyperlinks. Else, they will be exported as text.

Exporting Images to Excel Spreadsheets and PDF Files

Images as background or content, that is, cells formatted to be read as image hyperlinks, of Web Intelligence tables and free cells will be exported as images in Excel spreadsheets and PDF files.

However, you must define the proxy server used by Web Intelligence to export these images.

On Windows

In the Windows registry `HKEY_LOCAL_MACHINE\SOFTWARE\SAP BusinessObjects\Suite XI 4.0\default\WebIntelligence\BlobManager` subkey, do the following:

1. Create or modify the `ResolveHTTPUrl` value to `yes` to have the following line:

```
"<ResolveHTTPUrl>"=string:"<yes>"
```

2. Create or modify the `PROXY` value to `<customer-proxy>:<port>`, where `<customer-proxy>` is your proxy server and `<port>` is the port of that server, to have the following line:

```
"<PROXY>"=string:"<customer-proxy>:<port>"
```

In the case of the Web Intelligence Rich Client, the `BlobManager` subkey is to be found in `HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\SAP BusinessObjects\Suite XI 4.0\default\WebIntelligence`.

On UNIX

You need to modify the `boconfig.cfg` file found in the `$installdir/setup` folder.

In the `boconfig.cfg` file, locate the `Software\SAP BusinessObjects\Suite XI 4.0\default\WebIntelligence\BlobManager` section and do the following:

1. Create or modify the `ResolveHTTPUrl` value to `yes` to have the following line:

```
"<ResolveHTTPUrl>"=string:"<yes>".
```

2. Create or modify the `PROXY` value to `<proxy>:<port>`, where `<proxy>` is your client proxy server and `<port>` is the port of that server, to have the following line:

```
"<PROXY>"=string:"<proxy>:<port>"
```

4.5.10 Autosaved documents

If autosave has been activated by the BI administrator in the Central Management Console (CMC) and if you have the appropriate security rights, then your documents are saved automatically in the `My Favorites/~WebIntelligence` folder as you work.

Autosaved document names consist of the document name prefixed by the document ID and followed by the autosaved document ID. If the document ID is -1, the document was not saved before being autosaved.

> **Note**
>
> Web Intelligence Rich Client does not save documents automatically.

When the autosave feature is enabled, Web Intelligence saves a version of the document you are working on in the `My Favorites/~WebIntelligence` folder. This version however is partial and contains references to the source document. It corresponds to a state of the document at a specific point in time when the document was autosaved. Do not delete the source file, as opening an autosaved document in the `My Favorites/~WebIntelligence` will generate an error if the source document is missing. An autosaved version still needs the original document in order to be opened, as it contains references to the source document.

> **Caution**
>
> We do not recommend migrating the `My Favorites/~WebIntelligence` folder as it will not be reusable after the migration.

The interval at which documents are autosaved is also defined in the CMC. This interval is reset each time you save a document manually, and each time a document is saved automatically. The autosaved document is also deleted when you save a document manually.

In addition to regular autosaving, documents are saved when your session times out.

> **Note**
>
> If you lose a document before you can save it, check the folder immediately to see if there is an autosaved version. The `My Favorites/` folder retains autosaved documents until you end the BI launch pad session.

For more information on the settings and security rights that impact automatic saving, refer to the *Business Intelligence Platform Administrator Guide*.

Related Information

Management of autosaved documents [page 414]
Recovering autosaved documents [page 413]

4.5.10.1 Recovering autosaved documents

Check the `My Favorites/~WebIntelligence` folder immediately after restoring the connection for your autosaved document.

If your session times out while you are working on a document, your document is saved in the `My Favorites/~WebIntelligence` folder and displays a dialog box explaining that the session has ended.

In this dialog box:

- Select *Restore* to launch a new session and reopen the autosaved document. The next time you save the document manually, it is saved in its original folder.
- Select *Close* to be redirected to the home page of the BI launch pad. The autosaved document is available in the `My Favorites/~WebIntelligence` folder.

It is not always possible to link to the autosaved document after a server timeout or connection loss. When this happens, you do not have the option to restore the autosaved document. Documents are regularly deleted from this folder based on the autosave settings.

Related Information

Autosaved documents [page 412]
Management of autosaved documents [page 414]

4.5.10.2 Management of autosaved documents

Documents are autosaved in the `My Favorites/~WebIntelligence` folder.

As a general rule, autosaving is transparent and you do not access autosaved documents directly.

> **Note**
>
> The `My Favorites/~WebIntelligence` is not a permanent storage location for autosaved documents, but it usually lists autosaved documents for a short time. All documents are also deleted from the folder at an interval defined in the Central Management Console (CMC).

The `My Favorites/~WebIntelligence` folder has a maximum size limit, which is set in the CMC. When the total size of the documents in the folder exceeds this limit, the application deletes as many of the oldest documents in the folder as necessary to make way for the latest document.

If you navigate away from a document in the browser without saving the document, the document is lost and the contents of the `My Favorites/~WebIntelligence` folder are cleared.

Related Information

Autosaved documents [page 412]
Recovering autosaved documents [page 413]

5 Collaborating and sharing data

5.1 Commenting on report data

You can add one or several comments to your data and manage them via the *Side Panel*.

There is a variety of elements you can comment on. The table below details the different report elements you can comment on and provides links about how to do it.

Table 224:

Report element	Definition	How to	Icon displayed in the top-right hand corner of the cell
Report	A general comment on a report or a report section	Make a global comment with a free cell [page 418]	
Section	A contextual comment linked to a specific section of the report	Comment on a report section [page 419]	
Table cell	A comment specific to a cell contained in a table	Comment on a cell [page 419]	
Report cell	A comment specific to a cell located in the header, body or footer of the report	Comment on a cell [page 419]	
A report block	A comment specific to a chart or a table	Comment on a block [page 420]	

Every comment entered for a report or report element can be seen in the *Comments* pane of the *Side Panel*. For comments entered for a report cell, a table cell or a report block, a tooltip shows either the first or last comment entered according to the parameter set in the *Document Properties* when you hover over the icon in the top-right hand corner of the cell. However, you can see the whole thread in the *Comments* pane when you right-click on a report element and select *Comments* in the contextual menu.

A document that has not been saved cannot contain comments, so make sure to save it first before you try to add comments to it. If you save a document using the *Save As* method, it is possible to save the comments as well with the *Save document with comments* option. It is unchecked by default and greyed out if you do not have the necessary rights to use it.

Caution

- You cannot add comments to a document's instance. To do so, either use the original document or save the instance as a new document.
- The comments of a document you copy are not persisted in the instance that you paste.
- When entering a comment, the text field is limited to 600 characters (2000 UTF-8 bytes).

Related Information

To make a global comment with a free cell [page 418]
To comment on a report section [page 419]
To comment on a report section [page 419]
To comment on a block [page 420]
To reply to a comment [page 420]
To delete a comment [page 420]

5.1.1 Comments restrictions and limitations

Depending on how you interact with the report, you might run into limitations regarding the commenting possibilities.

Commenting in *Design* mode

The commentary service is only available in *Reading* mode or *Design with Data* mode.

> ⚠ Caution
>
> To be able to create a comment cell in *Design* mode, you must be granted the Reporting - Enable Formatting security right. If you don't have this right, contact your system administrator.

Commenting in a report header, body, or footer

You cannot comment on a report header, body, or footer. As a workaround, create an empty cell, comment it and then place it in the header, body, or header of the report.

Database and report desynchronization

To make sure that you are viewing the latest comments entered in the report, refresh the document.

Changing the context on cells that contain comments

If you change the context of a table by changing a column using the *Assign Data* method or by editing a measure using the formula editor, comments that were entered for a cell are still displayed in the *Comments* pane even though the data have changed.

As a workaround, delete the column and create a new one with the new measure.

Filters and prompts

When you add a comment to a table cell and apply filters or prompts to the table, the comment cell can sometimes disappear. That is because the comment is not linked to the filtered result, but to the table cell itself. If you remove the filters or prompts you have applied, then the comment cell is displayed again.

Hierarchies

If you comment on a cell within a hierarchy, the comment is displayed as long as the hierarchy is expanded. If you collapse the hierarchy, then the comment disappears.

Drilling

If you comment on a table cell and drill down on the table, the comment disappears. Drill back up to see the comment again.

Non-aggregated data in tables

You cannot comment on non-aggregated data.

Scheduling documents that contain comments

If you schedule a document several times and modify or delete comments between two sheduling jobs, the previous instances will reflect these modifications or deletions. Note that if you add new comments between two instances, previous instances will only contain the comments that were in the document at the time of the scheduling job.

5.1.2 Security rights

You need to be granted specific rights by your administrator to manage comments.

You can access the security rights in the Central Management Console in the *Folders* section.

> **Note**
>
> These rights are not Web Intelligence specific, they apply to the whole Business Intelligence platform. For more information, refer the *Business Intelligence Platform Administrator Guide*.

The table below lists the differents rights.

Table 225:

Action	Description
Create Comments	Enter or reply to a comment
Read Comments	Display all the comments in the *Comments* pane
Read Comments You Own	Display only the comments you own in the *Comments* pane
Edit All Comments	Edit comments you have not entered yourself
Edit Comments You Own	Edit your comments
Delete All Comments	Delete comments you have not entered yourself. **Caution** The *Delete* button () does not actually delete comments, it only hides them in the interface. The comments you delete aren't erased, and still exist in the database.
Delete Comments You Own	Delete your comments. **Caution** The *Delete* button () does not actually delete comments, it only hides them in the interface. The comments you delete aren't erased, and still exist in the database.

5.1.3 To make a global comment with a free cell

You use a free cell to make a global comment on a report.

A free cell is a cell that can be displayed anywhere on the report page. It is not linked to a report element.

> **Note**
>
> To create a comment using a free cell, you must be in *Connected* mode.

1. Do one of the following.
   - Right-click anywhere on the report and click *Insert* > *Comment*.
   - In the *Report Elements* tab, click *Cell* > *Pre-defined* > *Comment*.
   - In the *Report Elements* tab, click *Comment* > *Insert Comment Cell*.
2. Click on the report page where you want the comment to be displayed.
3. Type a comment in the *Comments* pane that just opened in the *Side Panel*.
4. Click *OK*.

The free cell containing your comment is now displayed on the report page.

5.1.4 To comment on a report section

You can create comments that are related to a specific context of data using section comments.

Sections support contextual comments, meaning that if you create a comment in a section, the comment will only be displayed in that specific section of the report.

1. Do one of the following:
   - Right-click anywhere in the section and click *Insert* > *Comment*.
   - In the *Report Elements* tab, click *Cell* > *Pre-defined* > *Comment*.
   - In the *Report Elements* tab, click *Comment* > *Insert Comment Cell*.
2. Click anywhere in the section where you want to insert the comment.
3. Type a comment.
4. Click *OK*.

5.1.5 To comment on a cell

As opposed to the free cell that contains general comments on a report or a report section, comments on a cell are related to a specific cell of your report.

A cell can be a table cell or a report cell, that is in the header, body or footer of the report but not part of table.

> **Tip**
>
> You cannot comment directly on the header, body or footer of a report. As a workaround, create an empty cell, comment it and then place it in the header, body or header of the report.

1. Right-click a cell you want to comment on.
2. Click *Comment*.

The *Comments* pane opens up in the *Side Panel*.

3. Click *Add*.
4. Click *OK*.

A yellow ribbon is now displayed in the top-right hand corner of the cell you have just commented on. Hover over the ribbon to see the comment.

5.1.6 To comment on a block

As opposed to the free cell that contains general comments on a report or report section, comments on a block are related to a specific block of your report.

A block can be a chart or a table.

1. Click the block you want to comment on.
2. In the *Comments* pane of the *Side Panel*, click *Add*.
3. Enter your comment.
4. Click *OK*.

An icon is now displayed in the top-right hand corner of the block you have just commented on. Hover over the icon to see the comment.

5.1.7 To reply to a comment

You can reply to a comment in both *Design* mode and *Reading* mode.

1. In the *Side Panel*, click the *Comments* pane.
2. Click *Reply*.
3. Enter your text.
4. Click *OK*.

5.1.8 To delete a comment

The delete action does not actually delete comments, it only hides them in the interface. The comments you delete still exist in the database.

> **Note**
>
> Make sure that you are granted the necessary rights to delete comments.

1. Go the *Comments* pane in the *Side Panel*.

2. Click the bin icon () next to the comment you want to delete.

Related Information

Security rights [page 418]
To clean up comments in the database [page 421]

5.1.9 To copy a comment thread

1. In the *Side Panel*, click the *Comments* pane.
2. Click *Copy Comments*.
3. Press Ctrl + C or Cmd + C .

The comment has been copied to the clipboard.

5.1.10 Cleaning up comments from the database

You can delete comments from the database using the CMC.

An option, called *Delete all comments older than X days*, allows you to schedule a recurrent cleaning operation in the database. When enabled, comments older than the specific number of days you have entered are automatically deleted from the database. By default, the option is disabled.

> **Caution**
>
> If you have hidden comments in the interface, a desynchronization can happen between the database and the Web Intelligence client. In such a case, Web Intelligence displays the cache rather than the updated content of the database. To make sure that you are viewing the latest comments entered, refresh the document.

5.1.11 To clean up comments in the database

1. On the CMC home screen, click *Applications*.
2. Click *BI Commentary Application*.
3. Check *Delete comments olders than X days*.
4. Enter a number of days after which comments should be deleted.

5.1.12 Displaying a specific comment

You can add parameters to the Comment() function to display a specific comment whenever a cell contains several comments.

The Comment() function is useful whenever you are in a validation workflow and need to display comments that have been validated. The function only works with empty cells that do not contain data, and you can use it either with free comment cells or with empty table cells. As a best practice, we recommend creating an extra column with empty cells in your table dedicated to comments if you intend to use the function with table cells.

After comments have been entered in a cell, all you need to do is pass parameters to the function and assign them values that are then registered in the database to display the comment that has been validated.

Here's how it works: Web Intelligence drills down the database and retrieves every comment that matches a given value. If several comments match a value given to a parameter, Web Intelligence displays only the first or last matching comment according to the preference you have defined in the *Document Properties*.

The comments database is managed by the administrator, and has four columns that can contain values assigned to a comment:

- OptionKey1
- OptionKey2
- OptionKey3
- OptionKey4

Make sure that the value you give to comments in the database is in keeping with your validation workflow. If you want to display a comment that has to be reviewed, give it a "Review" or "Check" value for instance.

After you have set the function to retrieve a specific comment, an icon is displayed at the top-right hand corner of the cell or report block. When you hover over the icon, an icon shows the comment entered for the cell. The only time this tooltip is not displayed is when you decide to display two comments in a free comment cell and one of these comments is called via the parameters of the Comment() formula.

Caution

There might be a desynchronization issue between the database and the user interface in cells that contain several comments and in which you have used the Comment() function. In such cases, the tooltip is disabled to avoid displaying comments that are not up to date or validated. As a workaround, refresh the document to make sure that you are viewing the most up to date content.

Example

The table below is an extract of the Comments database and details the content and lifecycle of a specific comment cell.

Table 226:

Comment ID	Comment Owner	Comment Time Stamp	OptionKey1
CommentCell 1	Administrator	07/20/2015 14:50:23	
CommentCell 1	Spokesman	07/20/2015 16:00:00	Validated
CommentCell 1	Administrator	07/20/2015 16:02:23	

Comment ID	Comment Owner	Comment Time Stamp	OptionKey1
CommentCell 1	Administrator	07/20/2015 16:05:14	

The content of the cell has been modified several times with different comments, but only one of the comments has been validated by the report owner.

As the document reaches its final version, you might want to only display comments that have been validated. Edit the function as follows:

```
Comment(OptionKey1;Validated)
```

Web Intelligence will only display the comment that matches the value declared in the function.

To know more about the Comments database and BI Commentary, refer to the *Business Intelligence Platform Administrator Guide*.

5.1.13 Saving a document with its comments

A document that has not been saved cannot contain comments, so make sure to save it first before you try to add comments to it. If you save a document using the *Save As* method, it is possible to save the comments as well with the *Save document with comments* option, available in the *Save* dialog box under *Advanced options*.

5.2 Using shared elements to share report parts

Shared elements are report elements, for example, tables, charts, headers or footers, that you store in the CMS repository when you save them. By doing so, you can make them available to you and other report designers so they can be reused multiple times in other documents.

When you insert a shared element in a document, you copy an instance of the report element that you have saved as a shared element. Therefore, the shared element inherits the properties and dependencies of the report element it stems from.

You can manage shared elements from the *Side Panel* in the *Shared Elements* pane. Make sure you are connected to the CMS repository and have the necessary security rights granted.

Note

Shared elements are not supported in SAP HANA Online mode.

Example

Every report of your company displays a header with the name of the company. You recreated that same header for every new report you designed.

What if you could avoid creating the same header every time? If you save that specific report element as a shared element, you can then insert it in on the fly in every new report you design. This header is now shared, and your colleagues can use it whenever they design their own reports.

Related Information

To create a shared element [page 425]
To insert a shared element using the toolbar [page 426]
To insert a shared element using the Side Panel [page 426]
Document and shared element synchronization [page 426]
Updating a shared element [page 427]
To update a shared element manually [page 428]

5.2.1 Shared elements restrictions

To work with shared elements, you must be connected to the CMS repository. Depending on the mode you are in, several tasks can be disabled.

Shared elements in Connected mode

In *Connected* mode, Web Intelligence is connected to the CMS repository. There are no restrictions.

Standalone mode

In *Standalone* mode, Web Intelligence is not connected to the CMS repository, and every action regarding shared elements is disabled.

> **Note**
>
> You can open a document that is linked to a shared element if it has been saved without security on a local folder.

Offline mode

In *Offline* mode, the content accessed in *Online* mode is still available via a cache. The table below details the list of restrictions.

Table 227:

Action	Availability
Creating a shared element	Not available
Inserting a shared element in a document	Not available
Editing shared element properties	Not available
Modifying inserted shared elements content in the document	Available This does not break the link between the shared element and the document, except if you delete the report element linked to the shared element.
Editing shared element content in the CMS	Not available
Updating a shared element in the CMS	Not available
Removing/Unlinking a linked shared element	Available This breaks the link between the shared element and the document.
Searching shared elements in the CMS	Not available

5.2.2 To create a shared element

Create a shared element whenever you want to share content with other users. When you save a shared element, it is stored in the CMS repository.

> **Note**
>
> It is not possible to create a shared element based on a custom element, a geomap chart, a comment, a web service or a text file. Also, we do not recommend that you create a shared element from a cell containing a comment.

1. In *Design* mode, right-click a report element and click *Linking* > *Save as Shared element* or in the toolbar, click *Shared Element* > *Save as*.
2. Enter a name and a description for the shared element.
3. Browse the location where you want to save the shared element.
4. Optional: If you do not want to keep the format attached to the report element, check *Remove format*.
5. Assign categories to the shared element.
6. Click *Save*.

> **Note**
>
> When a report element is created from a document, no link between this document and the shared element is created. They both remain independent.

5.2.3 To insert a shared element using the toolbar

When you insert a shared element in a document, a link to the source shared element is created so that Web Intelligence can check for shared element updates. Removing this link unlinks the document from the shared element, but the shared element content remains in the document.

1. Click *Report Element* > *Linking* > *Shared element* > *Insert shared element*.
2. Click on the report page where you want the shared element to be displayed.
3. Browse the folder where the shared element is located.
4. Select the shared element.
5. Click *Open*.
6. Optional: If you are prompted to update the shared element, click *OK*.

5.2.4 To insert a shared element using the Side Panel

You can use the *Side Panel* to insert a shared element.

> **Note**
>
> This is only possible in the Web Intelligence Applet interface or HTML interface.

1. In the *Shared Elements* pane in the *Side Panel*, click *Browse* to navigate to the location of the shared element you want to insert and select it.

   You can also use the search functionality to type the name of the shared element you are looking for and access it directly. To do so, click the magnifying glass icon and enter the name of the shared element.
2. Drag it on the report page and drop it where you want it to be displayed.

   In the HTML interface, if you use the search functionality to select a shared element, you cannot use the drag and drop to place the shared element on the report page. To insert it, right-click it and click *Insert*.

5.2.5 Document and shared element synchronization

When you insert a shared element in a document, Web Intelligence creates a link between the shared element and the document. The content of the shared element however is not automatically updated if a new version is available.

Whenever the shared element is updated in the CMS repository, the document in which the shared element has been copied is no longer up to date. To make sure that you always use the latest version of a shared element in your document, update the shared element content in the document.

> **Note**
>
> Only one version of a shared element can be linked to a document.

If you do not want to keep the modifications between the latest version of a shared element in the CMS repository and its copy in a document, to track changes for instance, unlink the shared element from the document.

Related Information

Updating a shared element [page 427]
To update a shared element manually [page 428]
To unlink a shared element from a document [page 428]

5.2.6 Updating a shared element

Shared elements can have a different life cycle than the documents they are linked to.

This can happen in the following cases:

- A shared element has been modified and a new version, more recent than the one used in the document, has been published in the CMS repository.
- An older version of a shared element has been restored in the CMS repository and is available.

If an update modifies the query, a new query is created to avoid the modification of the variables or report elements that you use in the document. If you update several shared elements, the document may contain several unused queries. Web Intelligence deletes the unused query to avoid renaming the updated query and its possible variables if it is not used in the document.

A different version of the shared element exists in the CMS repository

When you open a document that contains one or multiple shared elements, Web Intelligence runs a background check to know whether the version of the shared element in the document corresponds to the one stored in the CMS repository.

> **Note**
>
> Make sure that you have enabled the *Check for shared element updates on open* option in the *Document Properties*.

The shared element has been deleted from the CMS repository

An error icon is displayed if a shared element has been removed from the CMS repository or if you do not have the rights to see it. This icon means that the shared element can no longer be accessed. However, the references to the shared element in the document are kept.

The version of the shared element in the CMS repository is unknown

If you are not connected to the CMS repository or if the check for new versions has not been performed, an icon is displayed next to the shared element used in the document.

5.2.7 To update a shared element manually

You can check for new versions of the shared elements contained in your document in order to update them.

> **Tip**
>
> In the *Properties* tab, enable the option *Check for shared object update(s) on open* to avoid checking for updates manually.

1. Select a shared element.
2. In the *Shared Elements* pane, click *Check New Revisions*.

   An icon is displayed if a new version of the shared element used in the document is available
3. In the *Shared Elements* pane of the *Side Panel*, in the *Currently Used* menu, check the box(es) of the shared element(s) you want to update.
4. Click *Update* in the toolbar to update the shared element(s) you have selected.

If an error icon appears after the update process, it means that the shared element(s) you have selected cannot be found in the CMS repository.

5.2.8 To update a shared element automatically

You can automatically update shared elements each time you open the document by enabling the option *Update shared element(s) on open*. As a result, the update icon in the *Shared Elements* pane is not displayed since the document already contains the latest revisions of the shared elements.

1. In the *Properties* tab, click *Document*.
2. Enable the option *Update shared element(s) on open*.

5.2.9 To unlink a shared element from a document

Unlinking a shared element from a document removes the link between the shared element and the document.

You will not be notified if new version of the shared element is available in the CMS repository.

> **Note**
>
> Unlinking a shared element does not delete its content from the document it was linked to.

1. In the *Shared Elements* pane in the *Side Panel*, click *Currently Used* to display the shared elements linked to the document.
2. Select a shared element.
3. Click *Unlink*.

> **Note**
>
> You can also unlink a specific instance of the shared element in the document by clicking *Report Element* > *Linking* > *Shared element* > *Unlink shared element* in the toolbar. If there are no instances of the shared element left in the document or if they have all been unlinked from the document, Web Intelligence deletes the link between the document and the shared element.

5.2.10 To unlink a specific instance of a shared element from a document

You can unlink a specific instance of a shared element in a document if has been copied several times. It does not remove the link of other instances copied in the document.

This is useful when you have inserted a shared element several times in different reports of a same document, for instance.

> **Note**
>
> Do not use the *Side Panel* to unlink a specific instance of a shared element. It will unlink all the instances that the document contains.

1. On the report page, right-click the shared element you want to unlink.
2. Click *Linking* > *Unlink Shared Element*.

5.2.11 To search for shared elements

You can search for shared elements in the CMS repository.

1. In the *Shared Elements* pane in the *Side Panel*, click the *Browse* button.
2. Select a folder.
3. Click the magnifying glass icon.
4. Click the drop-down list and select whether you want to search by name (default), keyword or description.
5. Enter your text.
6. Click the magnifying glass to start searching.

5.2.12 To edit the properties of a shared element

You can edit the properties of a shared element in *Design* mode in the *Side Panel*.

Make sure you are connected to the CMS repository.

1. In the *Shared Elements* pane in the *Side Panel*, click *Browse*.
2. Select the shared element you want to edit.
3. In the toolbar, click *Edit*.
4. Edit the name, description or keywords of the shared element.
5. Click *Save*.

> **Note**
>
> The name and the description are saved in the document when you insert the shared element. They are updated only when there is a shared element update in the document.

5.2.13 Modifying the content of a shared element linked to a document

You can modify the content of any linked shared element added in a document without breaking the link with the given element in the CMS repository, even if these modifications introduce differences between the content in the document and the shared element.

However, if you update the shared element, its content is replaced by the content of the shared element in the CMS repository and all your modifications are lost.

5.2.14 Editing the content of a shared element in the CMS repository

To edit the content of a shared element, you must modify its content in a Web Intelligence document in which it has been copied and then republish it under the same name . The content is then replaced if a shared element with the same name already exists in the CMS repository. The last modification date of the shared element is automatically updated.

The description of the shared element is not updated automatically. However, you can modify the content of the description.

Related Information

To create a shared element [page 425]

6 Analyzing data

6.1 Introduction to data analysis

Data analysis is a crucial process that consists of inspecting your data to find useful information and take decisions.

To analyze your data, you have to break each component apart to get an understanding of why they give such results when put together. The underlying structure and variables of your data set provide you with an investigation plan and valuable insights.

Depending on the insight you are trying to gain from your data, you can use several methods of analysis such as drilling or filtering. These methods enable you to dig into your data and extract key messages that back up the decision you are going to take and help you decide what the next step is.

The following sections provide you with information on the several methods of data analysis, as well as how to use functions and calculations.

6.2 Drilling on report data

Drilling on reports lets you look deeper into your data to discover the details behind a good or bad summary result displayed in tables, charts, or sections.

Table 228: Restrictions

Restriction	Description
Queries on BEx queries	You cannot use a Navigation path on BEx queries. Navigation path (previously called the drillpath) has been replaced by the collapse/expand workflow on the real hierarchy.
Queries on `.unv` and `.unx` universes	You can only drill on a `.unv` or `.unx` universe if the drill paths are previously defined in the universe.

Example

Why did sales of accessories, outwear, and overcoats rise in Q3?

You work for a US national fashion retail chain, and are in charge of sales of accessories, outerwear and overcoat clothing lines in western states. You see that revenue is much higher for Q3 than the other quarters. To understand why, you drill down to look at the factors behind the result and you see that jewelry sales were much higher in July.

6.2.1 Retrieving more levels of data to the report

When you are drilling a report, you may want to drill up or down to a dimension that lies outside the scope of analysis defined for the document.

Returning the additional data requires running a new query that includes the additional dimensions you specify. This is called extending the scope of analysis.

You can extend the scope of analysis during your drill sessions only if your security profile allows you to do so. Your security profile is controlled by the BI administrator.

If your drill options are not set to display the *Extend the Scope of Analysis* prompt message during drill, you will not be given the option to select filters if you drill beyond the data already available in the document. In this case, the new query runs automatically and returns data for all the values on the dimensions you are drilling.

> **Note**
>
> If you plan on drilling out of scope on a Geomap chart, make sure that every additional dimension you specify is matched with a location. If no location is indicated, the additional dimensions will not show on the map.

6.2.1.1 To drill out of the scope of analysis

You can create an additional query for a document that returns additional data to the document and adds to the table data for the dimension on which you drilled.

1. Open a Web Intelligence document in *Reading* or *Design* mode.
2. In the *Analysis* tab, in the *Interact* subtab, select *Start Drill* from the *Drill* dropdown list.
3. Hold your mouse cursor over a dimension value that is at the end of the scope of analysis.
   A ToolTip informs you that a new query is necessary to return the additional data to the document.
4. Drill on the dimension.

   If your drill options are set to prompt you when a drill action requires a new query, the *Extend the Scope of Analysis* dialog box appears.

   The dialog box lists the dimensions in the hierarchy above and below the drilled value. The dimensions already included in the document are checked. The dialog box also displays the filters that you can select to filter the new query.
5. Select the check boxes next to the dimensions you want to drill.
6. Select the check boxes next to the filters you want to use to filter the query.
7. Click *OK*.

6.2.2 Drill paths and hierarchies

When you analyze data in drill mode, you move along a drill path.

These paths are based on the dimension hierarchies set by the designer of the universe. Universe designers organize objects in classes in a hierarchy with the summary objects at the top and the most detailed at the

bottom. So if you want to make a high-level report, you know that your query should include objects at the top of the list. If you want to see more detailed information, you can then switch to *Drill Mode* and drill down on each dimension value displayed in the reports.

For example, if the data from [Quarter] did not sufficiently explain a result, you could drill down to [Month] or [Week], depending on how the universe designer set up the hierarchy. When you drill to a different level, measures, such as a [Revenue] or [Margin], are recalculated accordingly.

Drill paths usually follow the same hierarchy order as the classes on a universe. For example, a class called Time typically includes the [Year] dimension at the top of the class, followed by the [Quarter], [Month], and [Week] dimensions. The hierarchies for drill within the Time hierarchy typically follow the same order, because users want to drill annual results to analyze details for quarter, month, and so on. However, the universe designer can also define custom hierarchies.

> **Note**
>
> A dimension can belong to several hierarchies. When you drill a result on a dimension that belongs to more than one hierarchy, you must answer a prompt to select the drill path.

6.2.2.1 To view drill hierarchies

You can view drill hierarchies in a data provider.

1. Open a Web Intelligence document in *Data* or *Design* mode.
2. In the *Data Access* tab, in the *Data Providers* subtab, click *Edit*.
3. In the *Query Panel*, underneath *Universe Outline*, select *Display by Navigation Paths* from the *Master Perspective* dropdown list.

6.2.3 Prompt when drill requires additional data option

When you drill the results displayed on a report, you may want to drill to higher- or lower-level information that isn't included in the scope of analysis for the document. A new query is required to retrieve this data.

Since queries on large selections of data may take a long time to be completed, you can choose to be prompted with a message every time a new query is necessary. The prompt message asks you whether you want to run the additional query or not. In addition, the prompt lets you apply filters to the extra dimensions you include in the new query. This means you can restrict the size of the query to only the data necessary for your analysis.

You need permission from the BI administrator to drill out of the scope of analysis.

Related Information

Setting the scope of analysis [page 81]
Retrieving more levels of data to the report [page 432]

6.2.4 Setting drill options

Before you begin a drill session, you can set your drill options to specify how reports will change each time you drill.

How you set the drill options depends on the interface you are using:

- BI launch pad, if you are using the Web Intelligence HTML or Web Intelligence Applet interface.
- Your computer, if you are using Web Intelligence Rich Client from the BI platform deployment on your computer.

Related Information

To set drill options in the BI launch pad [page 434]
To set drill options in Web Intelligence Rich Client [page 434]
Synchronize drill on report blocks option [page 435]
Hide Drill toolbar on startup option [page 435]
Start drill session on existing report option [page 436]
Start drill session on a duplicate report option [page 436]

6.2.4.1 To set drill options in the BI launch pad

You can configure drill options for Web Intelligence in the BI launch pad preferences.

1. In the BI launch pad, click *Preferences*.
2. In *Web Intelligence* section, select the drill options under *Drill options* and *Start drill session*.

6.2.4.2 To set drill options in Web Intelligence Rich Client

You can configure drill options in a document.

1. With a document open in the Web Intelligence Rich Client, click *Properties* > *Application*.
2. If no document is open in the Web Intelligence Rich Client, click *Tools*, and select *Options* from the menu in the top corner next to the help menu to display the *Options* dialog box.
3. Select the *Drill* tab.
4. Select the drill options.

6.2.4.3 Synchronize drill on report blocks option

When you select the *Sychronize drill on report blocks* option for Web Intelligence in the BI launch pad preferences, the display of all blocks changes to correspond with your drill actions.

For example, if you drill down on a block from year to quarter, and your report also contains a chart showing data by year, the chart display also changes to display data by quarter.

If you do not select the option, only the structure of the drilled block changes. Drill filters are applied to the whole report.

Synchronizing drill across multiple tables and charts

A report can contain several tables or charts. The generic term used to refer to tables and charts in this guide is a block. There are two ways to drill on a report with multiple blocks:

- Drill simultaneously on each block in the report the contains the drilled dimension
- Drill on only the current block of data

You set how drill is performed on reports with the *Synchronize drill on report blocks* option.

If synchronize drilling across all blocks in a report, you drill on each block in the report containing that drilled dimension. The next dimension in the drill path replaces the previous dimension in all blocks in the report.

If you do not synchronize drilling across all blocks in a report, the next dimension in the drill path replaces the previous dimension only in the current block in the report.

6.2.4.4 Hide Drill toolbar on startup option

When you drill on a value displayed on a report, the *Drill* toolbar appears and displays the value on which you drilled.

The value displayed on the toolbar filters the results displayed on the drilled report.

For example, if you drill on year 2010, the results displayed on the drilled table are Q1, Q2, Q3, and Q4 for year 2010. This means that the quarterly values you drilled to are filtered by 2001.

The *Drill* toolbar allows you to select alternative values on the same level, in order to filter the results differently. For example, if you use the *Drill* toolbar illustrated above to select “2002," the results displayed on the drilled table would be Q1, Q2, Q3, and Q4 for year 2002.

In the Web Intelligence section of the BI launch pad *Preferences*, you can select *Hide Drill toolbar on startup* to hide the *Drill* toolbar when you start the drill mode. The *Drill* toolbar is only useful if you want to select filters during your drill session.

6.2.4.5 Start drill session on existing report option

You can activate the ability to drill in Web Intelligence documents via the BI launch pad preferences.

In the Web Intelligence section of the BI launch pad *Preferences*, select *Start drill session* > *On existing report* so that the current report becomes drillable when you start drill mode. When you end drill mode, the report displays the drilled values.

6.2.4.6 Start drill session on a duplicate report option

You can activate the ability to drill in duplicate reports in Web Intelligence documents via the BI launche pad preferences.

In the Web Intelligence section of the BI launch pad *Preferences*, select *Start drill session* > *On duplicate report* to drill on a duplicate of the current report when working in drill mode. This allows you to compare the results of the original report with the results you discover during your drill analysis.

6.2.5 To switch to drill mode

To start drilling on a report, you either switch to *Drill* mode or, if the report is saved in *Drill* mode, drill directly.

1. In a Web Intelligence document in *Design* mode, select the report you want to drill.
2. In the *Analysis* tab, in the *Interact* subtab, select *Start Drill* from the *Drill* dropdown list.

> **Note**
>
> When you open a document that was saved in Drill mode, the document opens in Drill mode if you have the right to drill on documents.

By default, a drill icon appears on the tab of the drillable report. Depending on the drill options you selected in the BI launch pad *Preferences* page, either the selected report becomes drillable or a drillable duplicate of the selected report is created.

Related Information

Start drill session on a duplicate report option [page 436]

6.2.6 To choose a drill path when more than one is available

A dimension can belong to multiple hierarchies. When you drill down on such a dimension value, it is not clear which drill path to follow. You must define the drill path.

> **Note**
>
> If the dimension value you choose to drill on is the result of a previous drill, the drill path is already known. Therefore you do not need to select a drill path.

1. Open a Web Intelligence document in *Design* mode.
2. In the *Analysis* tab, in the *Interact* subtab, select *Start Drill* from the *Drill* dropdown list.
3. Drill on the dimension.
   The *Select Drill Path* dialog box appears. The dialog box lists the dimensions in the hierarchy above and below the drilled value. A check box appears next to each dimensions below the current dimension you are drilling, so that you can select which of these dimensions you want to retrieve from the database. The dialog box also displays the filters that you can select to filter the new query.
4. Select the path you want to drill.
5. Click *OK*.

6.2.7 To take a snapshot of report drill results

You can create a report in the existing document that contains the results of a drill action.

1. Open a Web Intelligence document in *Reading* or *Design* mode.
2. Activate the Drill mode:
   - If you are in *Reading* mode, select *Start Drill Mode* from the *Drill* dropdown list.
   - If you are in *Design* mode, go to the *Analysis* tab, and in the *Interact* subtab, select *Start Drill Mode* from the *Drill* dropdown list.
3. Do one of the following:
   - If you are in *Reading* mode, select *Snapshot* from the *Drill* dropdown list.
   - If you are in *Design* mode, go to the *Analysis* tab, and in the *Interact* subtab, select *Snapshot* from the *Drill* dropdown list.

6.2.8 Drilling on measures in tables and sections

When you drill on a measure value, you drill one level down for each related dimension in the block, and you see the measure calculated for the displayed dimensions.

> **Example**
>
> **Drill on annual sales revenue results to see the breakdown by city and quarter**
>
> For example, you drill down on the year 2003 sales revenue value for California, which is displayed on a crosstab that shows sales revenue by year and by state.

The drilled report displays sales revenue by quarter (one level below Year) and by city (one level below State) for California.

6.2.9 Drilling on dimensions in tables and sections

When you drill on a dimension to see the more data behind the displayed result, it is calculated according to the values to which you drill.

Dimensions typically represent character data, such as customer or business names, and dates. Calculations are based around the dimensions in a report. For example, a report calculates a region's total sales revenue for a given year where a Sales Revenue measure is calculated based on the State and Year dimensions.

If you drill on Year, you display sales revenue by state and quarter, because Quarter is the next dimension in the time hierarchy below Year.

Note

Detail objects cannot be drilled on in reports.

6.2.9.1 Drilling down on report data

You can drill down to see the lower-level data that makes up the summary results displayed on reports. This helps explain why high or low results occurred.

Example

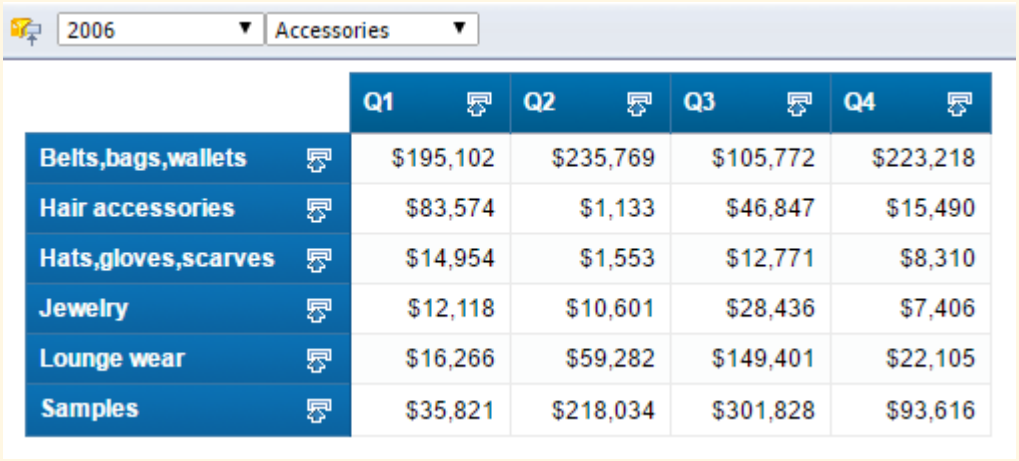
Using drill analysis to find out why sales decreased dramatically in 2006

In this example, you receive a report that shows sales revenue results for the accessories line at the eFashion retail store. The following crosstab shows that the Accessories line decreased in 2006.

	2004	2005	2006
Accessories	$2,546,222	$5,468,919	$1,899,405

To analyze more precisely when the decrease occurred, you drill down on the cell value 2006, to view the detailed data for each quarter. When you drill down on the cell value 2006, a filter appears in the *Drill* toolbar to show that the quarterly values you have drilled to are filtered for the year 2006. The drilled chart clearly shows that the problem arose in Q4 of 2006.

To find out which of the of the categories within the Accessories line was responsible for the drop in revenue, you drill down again on the cell value Accessories.



	Q1	Q2	Q3	Q4
Belts,bags,wallets	$195,102	$235,769	$105,772	$223,218
Hair accessories	$83,574	$1,133	$46,847	$15,490
Hats,gloves,scarves	$14,954	$1,553	$12,771	$8,310
Jewelry	$12,118	$10,601	$28,436	$7,406
Lounge wear	$16,266	$59,282	$149,401	$22,105
Samples	$35,821	$218,034	$301,828	$93,616

The drilled crosstab shows which categories were responsible for low revenue in Q4.

Note

If you try to drill to a dimension that is already displayed in another column or row of the same table, the next available dimension in the drill path is displayed.

6.2.9.1.1 To drill down on a value in a table or section cell

You can drill down on a measure value in a table or section in a report.

1. Open a Web Intelligence document in *Design* mode.
2. In the *Analysis* tab, in the *Interact* subtab, select *Start Drill* from the *Drill* dropdown list.
3. On a table or section cell, place your pointer over the dimension value on which you want to drill.
   A ToolTip appears, showing the next dimension in the drill path. If the drilled report includes dimensions from multiple data providers, the ToolTip displays the name of the query and the dimension for the value.
4. Right-click the cell and select *Drill*, then the drill direction.
   The drilled table or section displays data one dimension level down. The Drill toolbar, at the top of the report, displays the values from which you drilled. These values filter the values displayed on the drilled table.

Related Information

To take a snapshot of report drill results [page 437]

6.2.9.2 Drilling up on report data

You can drill up on a dimension value to see how the more detailed data aggregates to a higher-level result.

For example, you may have drilled down on Year to examine data for each quarter. If you want to see how this data aggregates to yearly results, you can drill up.

When you drill up on a dimension value, you move along the drill path from lower to higher-level data. For example, you may have drilled down on [Year] to [Quarter]. If you drill up on [Quarter], you return to [Year].

You can only drill up on a dimension value if you have previously drilled down to that dimension, or you have defined the appropriate drill path in the scope of analysis.

Related Information

Setting the scope of analysis [page 81]
Retrieving more levels of data to the report [page 432]

6.2.9.2.1 To drill up on a dimension or measure value

You can drill up on a dimension or measure value in a table in a document.

1. Open a Web Intelligence document in *Design* mode.
2. In the *Analysis* tab, in the *Interact* subtab, select *Start Drill* from the *Drill* dropdown list.
3. On a table or section cell, do one of the following:
   - Right-click the cell and select *Drill* > *Drill up*.
   - Click the *Drill Up* icon next to the dimension value you want to drill up.

   If the table is a crosstab without headers that display the names of the dimensions on the table, then the *Drill Up* icon appears next to each value from which you can drill up.

Related Information

To take a snapshot of report drill results [page 437]

6.2.9.3 Drilling by other dimensions in a report

When you drill down or up, you move through a hierarchy one dimension at a time.

However, you can get another view of the data by slicing it in a different way, and then look at the data in other hierarchies. To do this, you drill by the other dimensions that interest you.

Note

You can only use *Drill by* with a dimension that is included in the scope of analysis of the document.

Example

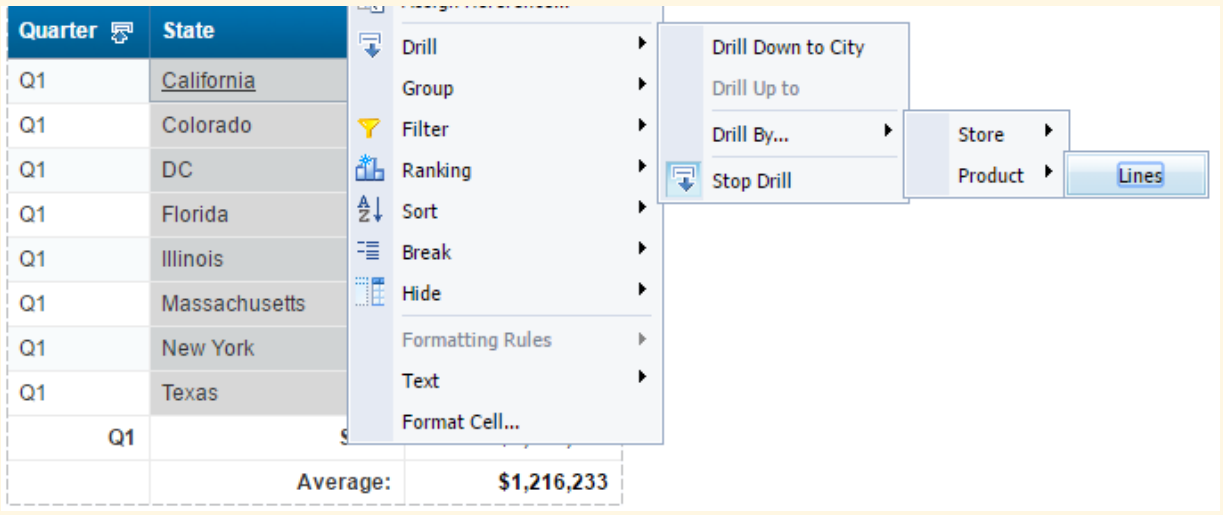
Drilling by the Products hierarchy to slice sales revenue results by product

You work as regional manager for California in a retail clothing store, and have been sent the following report that shows quarterly sales revenue by state:

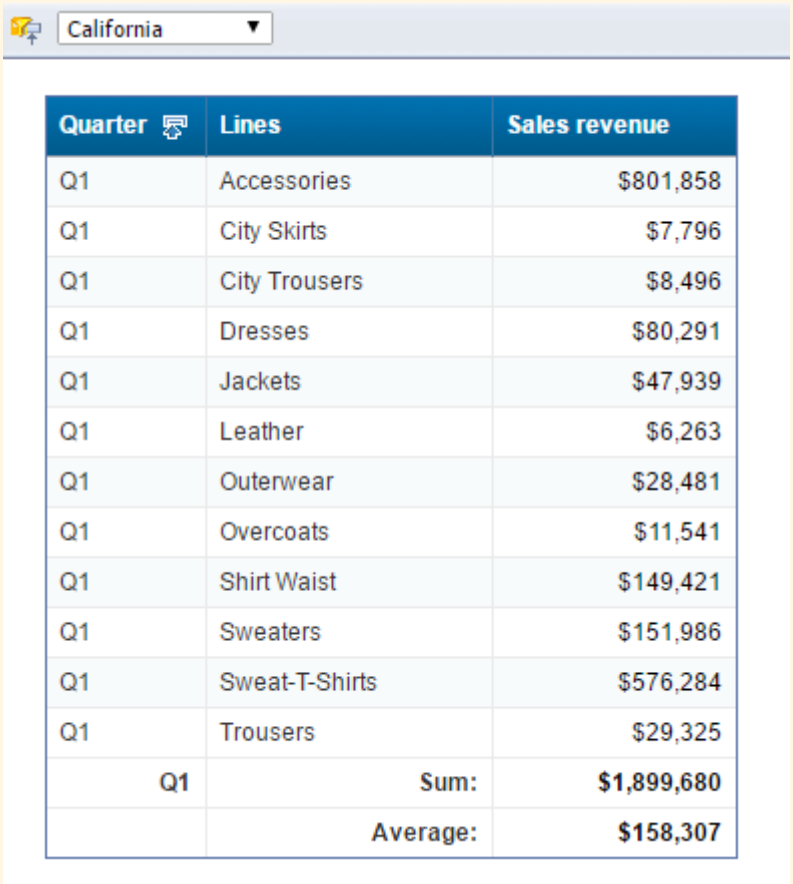
Quarter	State	Sales revenue
Q1	California	$1,899,680
Q1	Colorado	$525,682
Q1	DC	$766,822
Q1	Florida	$515,688
Q1	Illinois	$846,408
Q1	Massachusetts	$312,896
Q1	New York	$1,987,115
Q1	Texas	$2,875,569
Q1	**Sum:**	**$9,729,861**
	Average:	**$1,216,233**

You are only interested in analyzing the results in the state of California. In addition, you want to analyze the sales revenue broken down by each product line you sell. To drill on California data, you place your pointer on the table cell that says California.

If you drilled down now, however, you would drill to results for each city within California, because [City] is the dimension below [State]. Instead, you select *Drill by* from the drill menu and then you navigate through the dimensions on the Products hierarchy by selecting the sub-menus until you reach the [Lines] dimension.



The drilled report displays the detailed sales revenue results for each product line sold in California.



Quarter	Lines	Sales revenue
Q1	Accessories	$801,858
Q1	City Skirts	$7,796
Q1	City Trousers	$8,496
Q1	Dresses	$80,291
Q1	Jackets	$47,939
Q1	Leather	$6,263
Q1	Outerwear	$28,481
Q1	Overcoats	$11,541
Q1	Shirt Waist	$149,421
Q1	Sweaters	$151,986
Q1	Sweat-T-Shirts	$576,284
Q1	Trousers	$29,325
Q1	**Sum:**	**$1,899,680**
	Average:	**$158,307**

Related Information

Levels of scope of analysis [page 82]
Setting the scope of analysis [page 81]

6.2.9.3.1 To drill by a dimension value

You can drill by a measure value in a report table.

1. Open a Web Intelligence document in *Design* mode.
2. In the *Analysis* tab, in the *Interact* subtab, select *Start Drill* from the *Drill* dropdown list.
3. Right-click a dimension value in a table or section cell.
   The contextual menu appears, displaying the available drill paths.
4. Click *Drill by*.

   > **Note**
   >
   > If this option does not appear in the contextual menu, then the cell does not have lower levels of data.

5. Select the class to which you want to drill and then the dimension to which you want to drill.
   The report now displays data for the dimension to which you drilled.

Related Information

To take a snapshot of report drill results [page 437]

6.2.10 Drilling on charts

Drilling down, up, or by on a chart, provides you with a graphical explanation for why summary results are particularly high or low.

You can drill on:

- dimensions – by drilling on chart axes or the chart legend
- measures – by drilling on the data bars or markers in the body of the chart

You cannot drill by dimensions on chart axes. However, you can drill by dimensions on chart legends.

Related Information

Drilling on axis legends [page 447]

6.2.10.1 Drilling on dimensions via chart axes

On 2D charts, you can drill on dimensions via the X Axis. On 3D charts, you can drill on dimensions via the X Axis and the Z Axis.

Charts can contain one or multiple dimensions on a single axis. When an axis contains multiple dimensions, each possible combination of the dimension values appear on the axis (this is sometimes referred to as a cartesian product).

When you drill on an axis value with multiple dimensions, the drilled results are filtered by both dimensions.

6.2.10.1.1 To drill on a chart axis

You can drill down or up on a dimension value in a chart axis.

1. Open a Web Intelligence document in *Design* mode.
2. In the *Analysis* tab, in the *Interact* subtab, select *Start Drill* from the *Drill* dropdown list.
3. Do one of the following:
   - To drill down on the dimension value, click the value.
   - To drill up on the dimension value, right-click the value then select *Drill Up*.
   - To drill down on the dimension value, right-click the value then select *Drill Down*.
   - To drill by the dimension value, right-click the value then select *Drill By*.

> **Note**
>
> *Drill By* is not available if the axis has multiple dimensions.

6.2.10.2 Drilling on measures in charts

When you drill on measures, the drill occurs on each dimension displayed on the chart axes.

You can drill on the measures displayed on the following types of chart:

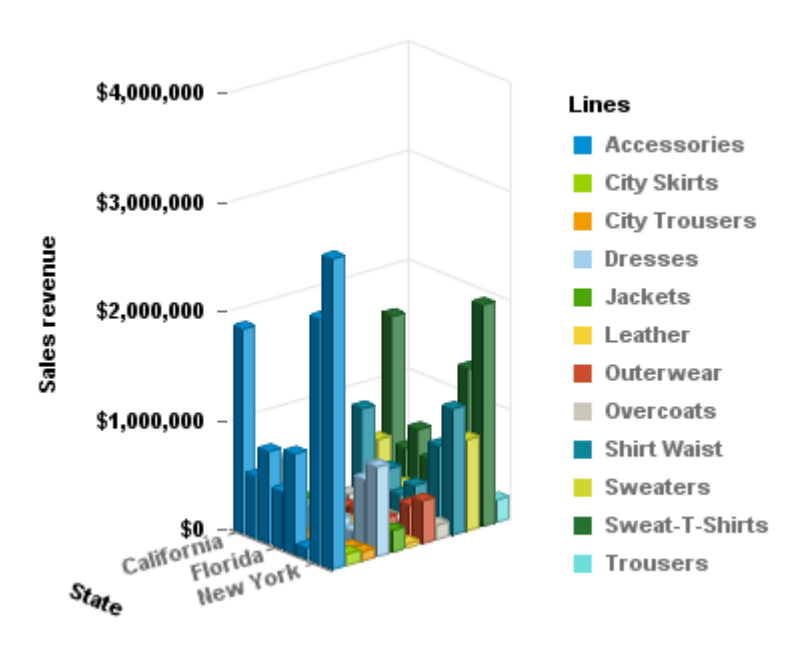
- bar charts – by drilling on the bars
- line and radar line charts – by drilling on the data markers
- pie chart – by drilling on the segments

The new measure calculations displayed on the bars or data markers on the drilled chart, correspond to the lower or higher-level dimensions to which you drilled. The chart axis labels display the names of the drilled dimensions.

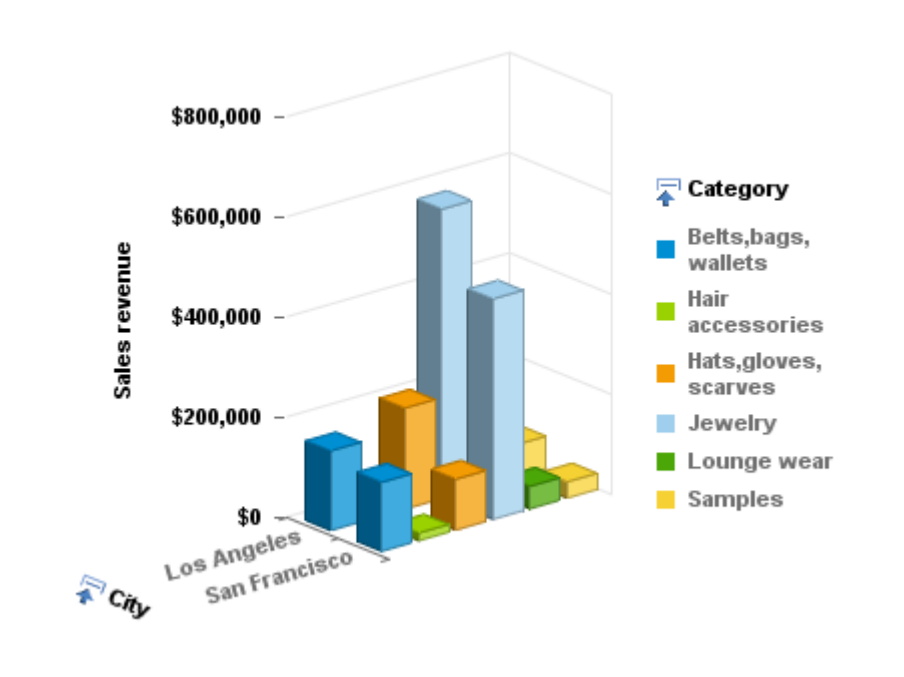
Example

Analyze detailed information for the sales revenue measure on a chart

For example, this 3D bar chart displays values for the [State] dimension on the X Axis and displays values for the [Lines] dimension on the Z Axis. This means that the chart bars display values for sales revenue per state per line.



As the example below shows, when you drill down on the bar for “Accessories" in “California", you also drill down from [State] to [City] on the X Axis and from [Lines] to [Category] on the Y Axis.



The drilled chart displays sales revenue per city per category for accessories.

6.2.10.2.1 To drill on a measure in a chart

You can drill down or up on a measure value in a chart.

1. Open a Web Intelligence document in *Design* mode.
2. In the *Analysis* tab, in the *Interact* subtab, select *Start Drill* from the *Drill* dropdown list.
3. Do one of the following:
   - To drill down on the measure value, click the bar or data marker.
   - To drill up on the measure value, right-click the bar or data marker, and then click *Drill up*.

   On charts, each measure is represented by a bar (on bar charts) or by a data marker (on a line charts and radar line charts).

6.2.10.2.2 Restrictions when drilling measures on charts

When you drill on charts that are not bar charts, the drill action might be performed only on certain dimensions instead of on all of the dimensions on the chart axes.

When you drill on measures in the following chart types, the drill action is performed only on the values in the axis legend:

- area charts – 2D, 3D, and stacked

- radar and scatter charts – all types

> **Note**
>
> You cannot drill on measures in 3D area charts.

6.2.10.3 Drilling on axis legends

You can drill on charts via the chart legend whenever the legend lists the dimensions displayed on the chart.

However, when the chart legend lists the measures displayed on the chart, drilling on the legend is not possible.

Drilling on a legend is useful if you are working with a pie chart, because the axis labels, which display the names of the dimensions represented by each pie segment, are not often displayed.

> **Note**
>
> You can only use *Drill By* on a chart legend if there is a single dimension on the axis.

6.2.10.3.1 To drill on an axis legend

You can drill down on a dimension value, or drill up or by a dimension value.

1. Open a Web Intelligence document in *Design* mode.
2. In the *Analysis* tab, in the *Interact* subtab, select *Start Drill* from the *Drill* dropdown list.
3. Do one of the following:
   - To drill down the dimension value, click the color associated with the value.
   - To drill up the dimension value, right-click the color associated with the value, then click *Drill up*.
   - To drill by the dimension value, right-click the color associated with the value, then click *Drill by*.

6.2.11 Using filters when you drill

When you drill on a dimension or measure value in a table or chart, the drilled results are filtered by the dimension or measure you drilled on.

The filter is applied to all of the results displayed on the drilled report.

Filters appear as list boxes in the *Drill* toolbar. Each list box contains the values associated with that filter. You select the data displayed in a table or chart by choosing the appropriate values from the list boxes.

> **Tip**
>
> You can also use the *Drill* toolbar outside drill mode to quickly add simple report filters to reports. In this context the toolbar is known as the *Report Filter* toolbar.

Example

Filtering drilled reports by different US states

For example, if you drill down on a table cell displaying “California" to view results for cities in California, you filter the values in the entire report for California and display results for California only in the report.

By changing the value of each filter, you can then see data for other values on the drilled dimension. For example, you can select Colorado in the filter on State.

Note

If the drilled report includes dimensions from multiple data providers, a ToolTip appears when you rest your cursor on the value displayed on the filter. The ToolTip displays the name of the query and the dimension for the value.

Related Information

To create simple report filters [page 460]

6.2.11.1 To add or remove a drill filter

You can add or remove a drill filter in a document.

1. Open a Web Intelligence document in *Design* mode.
2. In the *Analysis* tab, in the *Interact* subtab, select *Start Drill* from the *Drill* dropdown list.
3. From the *Available Objects* list, drag the dimension containing the values around which you want to filter your report and drop it onto the *Drill* toolbar.
4. A list box for the new filter appears on the *Drill* toolbar. You can select a value from the list of values to filter the results displayed on the drilled table, chart, or report.
5. To remove a drill filter, drag the dimension away from the *Drill* toolbar.

6.2.12 Saving reports with drill filters

When you save a document with reports in *Drill* mode, filters generated during drill are saved with the document.

When you open a document saved in *Drill* mode, the *Drill* toolbar appears on the drilled reports and shows the filters generated during the last drill session.

Note

Documents saved in *Drill* mode take longer to open.

6.2.13 Refreshing data in a drilled report with prompts

When you refresh a document, a prompt can appear that requires you to specify the values you want to retrieve from the database and return to the reports in the document.

For example, a prompt can require you to specify a year for which you want to retrieve data. This drilled report shows values for Year 2003, the year selected for the prompt.

If the drilled report is filtered for Year 2003, and you then refresh the document and select year 2002 to answer the prompt, the report displays results for 2002 instead of 2003.

6.2.14 Drilling with query drill

When you activate query drill, you drill by modifying the underlying query (adding and removing dimensions and query filters) in addition to applying drill filters.

You use query drill when your report contains aggregate measures calculated at the database level. It is designed in particular to provide a drill mode adapted to databases such as Oracle 9i OLAP, which contain aggregate functions which are not supported in Web Intelligence, or which cannot be accurately calculated in the report during a drill session.

Query drill is also useful for reducing the amount of data stored locally during a drill session. Because query drill reduces the scope of analysis when you drill up, it purges unnecessary data.

Note

In query drill mode, new objects created when drilling out of scope are deleted when they are no longer needed. As a result, dimensions used in Geomap charts lose the location they have been matched with.

Example

Drilling down from month to week

In this example, Month is the lowest dimension currently available in the query from a time hierarchy, and Week is the dimension immediately below it in the hierarchy.

If you drill down on Month = January, three things happen:

- Week is added to the scope of analysis.
- A query filter restricts Month to "January".
- A drill filter is added to restrict Month to "January".

If you drill up from Week to Month, the process is reversed:

- Week is removed from the scope of analysis.
- The query filter is removed.
- The drill filter is removed.

> **Note**
>
> Drill filters are not strictly necessary in query drill mode. They are applied for consistency with standard drill mode. For example, the `DrillFilters` function returns the correct value in query drill mode because a query drill applies drill filters to match the query filters.

Related Information

Setting the scope of analysis [page 81]
Levels of scope of analysis [page 82]
To drill out of the scope of analysis [page 432]

6.2.14.1 Drilling down with query drill

When you drill down, query drill behaves similarly to standard drill at the point where the data moves outside the scope of analysis.

A drilled dimension is filtered in query drill mode by adding a query filter in addition to a drill filter. For example, if you drill on Year=2001, you add a query filter to restrict the Year dimension to 2001. For this reason, the only value that appears in the drill toolbar for the drilled dimension is the value on which you drilled (in this case 2001). This is different from standard drill mode, in which all values of the dimension are visible in the toolbar. As a result, you cannot change filter values in query drill mode (for example, drill on Year=2001 then switch to Year=2003) as you can in standard drill mode.

Because query drill automatically extends the scope of analysis, you can use it only if you have the right to drill outside the scope. Contact the BI administrator for more details.

Related Information

Setting the scope of analysis [page 81]
Retrieving more levels of data to the report [page 432]
Levels of scope of analysis [page 82]

6.2.14.2 Drilling up with query drill

When you drill up, query drill removes dimensions from the query.

For example, if you drill up from Month to Quarter, you remove Month from the query. This has two consequences:

- Query drill is incompatible with drill snapshots.
- You cannot drill up beyond any dimension that appears as one of the report objects. For example, if your report displays Year, Quarter and Revenue, you cannot drill up from Quarter to Year because this would remove quarter from the list of report objects.

Related Information

Query drill and drill snapshots [page 451]
To take a snapshot of report drill results [page 437]

6.2.14.3 Query drill and drill snapshots

In query drill mode, snapshots change when you drill up beyond a dimension that you included in a snapshot.

Do not use drill snapshots when working in query drill mode, because query drill means that snapshots cannot be guaranteed to stay the same.

Because the drill up removes the dimension from the underlying query, it also removes the dimension from the snapshot.

Related Information

To take a snapshot of report drill results [page 437]

6.2.14.4 Query drill and other reports based on the same data provider

If your document contains other reports that contain dimensions on which you drill in query drill mode, these reports are affected because the query drill modifies the dimensions they contain.

You can avoid this (at the cost of retrieving duplicate data) by creating a new data provider and rebuilding the other report against it. Now when you drill in query drill mode, the other report remains unaffected.

Example

Drilling on a dimension that appears in another report

If you have two reports based on a query that contains Year, Quarter and Sales Revenue, and you use query drill to drill down to Year = 2001 on the first report, you also filter the data for Year in the second report to include 2001 only.

6.2.14.5 To activate query drill

If your report already has a scope of analysis defined, you see an error message telling you to clear the scope of analysis before activating query drill.

1. Open a Web Intelligence document in *Design* or *Data* mode.
2. In the *Properties* tab, click *Document* to display the *Document Properties* dialog box.
3. Select *Use query drill*.

> **Note**
>
> The *Use query drill* option is unavailable if there is a scope of analysis activated in the *Query Panel*.

4. Click *OK* to close the *Document Properties* dialog box.

Related Information

To set the scope of analysis [page 82]

6.3 Filtering report data

You can filter reports to limit the displayed results.

For example, you can limit the displayed results to information for a specific customer or a sales period. The data you filter out remains in the document; it is simply not displayed in the report tables or charts. This means you can change or remove report filters in order to view the hidden values, without modifying the query behind the document.

You can apply different filters to different parts of a report. For example, you can limit the results in the entire report to a specific product line and then limit results in a table or chart further to focus on results for a specific region or customer profile.

To create a report filter, you need to specify the following elements:

- a filtered object
- an operator
- filter values
- the report element to be filtered (the whole report, sections, or blocks)

In the Side Panel, click the "Document Structure and Filters" tab, to see the structure of the document and the report elements that are filtered by operator and value.

Related Information

Using report filters in report sections [page 331]

6.3.1 Query filters and report filters compared

You can define the following types of filter in a document.

Table 229:

Type of document filter	Description
Query filter	Defined on the query to limit the data retrieved from the data source and returned to the document.
Report filter	Defined within the report to limit values displayed in tables, charts, and sections within the document. Unlike the query filter, a report filter doesn't modify the data that is retrieved from the data source; it simply hides values at the report level.

> **Caution**
>
> Users with document edit rights on a document have the right to modify any of your document report filter and can also access the document data.

Empty and null values in LOVs

The List of Values option *[EMPTY_VALUE]* for a filter appears in your filter list of values (LOV) when empty string values are present in your query. You can use *[EMPTY_VALUE]* only when filtering on empty strings, not when filtering on NULL values.

The *[NULL_VALUE]* option in a LOV allows you to select any null or empty string value in the list. This option always appears in a report filter LOV, and can appear in a Combo box, Radio buttons, List box, or Check boxes input control if the input control is set to allow selection of null values.

Related Information

To create, edit, and delete standard report filters [page 457]
Filtering data using query filters [page 168]

6.3.2 Report filter operators

You use operators to compare filtered objects.

Operators can perform mathematical operations.

6.3.2.1 Not Equal to operator

Use the `Not Equal to` operator to obtain data not equal to a value.

For example, to return data for all countries except the US create the filter "County `Not Equal to` US".

> **Note**
>
> This operator cannot be used for OLAP `.unx` universe parent-child hierarchies or for BEx queries.

6.3.2.2 Greater than operator

Use the `Greater than` operator to retrieve data greater than a value.

For example, to retrieve data for customers aged over 60, create the filter "[Customer Age] `Greater than` 60".

> **Note**
>
> This operator cannot be used for OLAP `.unx` universe parent-child hierarchies or for BEx queries.

6.3.2.3 Greater than or Equal to operator

Use the `Greater than or equal to` operator to retrieve data greater than or equal to a value.

For example, to retrieve data for revenue starting from $1.5M, create the filter "[Revenue] `Greater than or equal to` 1500000".

> **Note**
>
> This operator cannot be used for OLAP `.unx` universe parent-child hierarchies or for BEx hierarchies.

6.3.2.4 Less than operator

Use the `Less than` operator to retrieve data lower than a value.

For example, to retrieve data for exam grades lower than 40, create the filter "[Exam Grade] `Less than` 40".

> **Note**
>
> This operator cannot be used for OLAP `.unx` universes, hierarchies in filters, or for hierarchies in BEx queries.

6.3.2.5 Less than or Equal to operator

Use the `Less than or equal to` operator to retrieve data less than or equal to a value.

For example, to retrieve data for customers whose age is 30 or less, create the filter "[Age] `Less than or equal` to 30".

> **Note**
>
> This operator cannot be used for OLAP `.unx` universes, hierarchies in filters or for hierarchies in BEx queries.

6.3.2.6 Between operator

Use the `Between` operator to retrieve data between two boundary values including the two boundary values.

The first value declared must be lower than the second value.

For example, to retrieve data for weeks starting at week 25 and finishing at 36 (including week 25 and week 36), create the filter "[Week] `Between` 25 and 36".

> **Note**
>
> This operator cannot be used for OLAP `.unx` universe or BEx hierarchies in filters.

6.3.2.7 Not between operator

Use the `Not between` operator to retrieve data outside the range of two values.

For example, to retrieve data for all the weeks of the year, except for and not including weeks 25 through 36, create the filter "[Week] Not between 25 and 36".

> **Note**
>
> This operator cannot be used for OLAP `.unx` universe or for BEx hierarchies in filters.

6.3.2.8 In list operator

Use the `In list` operator to retrieve data corresponding to values in a list of values.

For example, to retrieve data only for the US, UK and Japan, create the filter `[Country] In list`, when you can type values in the *Type a value* field, you enter **`US;UK;Japan`**.

When used in a query filter with a hierarchical list of values, either from a dimension associated with a hierarchical list of values or a hierarchy object, `In list` allows the selection of multiple members from any levels of the hierarchy. For example, a prompt on the [Geography] hierarchy using the `In list` operator allows the selection of [Paris] at the City level and [Canada] at the Country level in the prompt.

When used in a report filter, `In list` produces a flat list of values.

6.3.2.9 Not In List operator

Use the `Not in list` operator to retrieve data that does not correspond to multiple values.

For example, if you do not want to retrieve data for the US, UK and Japan, create the filter "[Country] `Not in list`". In the *Type a value* field, you enter **`US;UK;Japan`**.

When used with a hierarchical list of values, either from a dimension associated with a hierarchical list of values, a hierarchy object or a level object, `Not in list` allows the selection of multiple members from any levels of the hierarchy. For example, a prompt on the [Geography] hierarchy using the `Not in list` operator allows selection of [Paris] at the City level and [Canada] at the Country level in the prompt.

> **Note**
>
> This operator can only be used in certain types of hierarchies, for example, it can be used in level-based hierarchies.

6.3.2.10 IsNull operator

Use the *IsNull* operator to retrieve data for which there are no values in the database.

For example, to retrieve customers without children (the children column in the database has no value), create the filter [Children] IsNull.

6.3.2.11 Is not Null operator

Use the *Is not Null* operator to return data for which there is a value in the database.

For example, to return customers with children, create the filter [Children] Is not Null.

6.3.2.12 Equal to operator

Use the `Equal to` operator to obtain data equal to a value.

For example, to return data for the US only, create the filter "[Country] `Equal to` US".

6.3.3 Types of report filter

Report filters are filters that can be applied on different report elements: report, section, table, graph.

There are two types of report filter:

- Standard report filters.
  Standard report filters are the most flexible type of report filter. They can use any filter operator and can filter on single values or lists of values.
- Simple report filters.
  Simple report filters provide an easy way to create filters using the `Equal to` operator. They can filter on single values only, and are applied to a whole report (not an entire document or report element).

6.3.4 To create, edit, and delete standard report filters

You can work with report filters in the *Report Filter* dialog box.

1. In a Web Intelligence document in *Design* mode, select the report element you want to filter.
2. In the *Analysis* tab, select the *Filters* subtab.
3. From the *Filter* dropdown list, select *Add filter*.

   If you selected a cell in a table, by default, the *Filter On* box displays the object for that cell.
4. If you wish to filter on an object besides the default object, click *Add filter* in the *Report Filter* dialog box to display the objects you can filter.
5. In the *Available objects* panel, select the objects you want to filter and click *OK*.

   If you selected more than one object, the filtered objects appear in an AND relationship. Double-click the AND operator to change it to OR.
6. For each filter object, select a filter operator from the object's dropdown list.

   By default, the *In List* filter operator is selected.
7. To add values for the filter to the list of filtered values, do one of the following:
   - Type values directly in the box above the list of values of the object.
   - Double-click the item to add it to the list of selected values.
   - Select values from the list and click > to add it to the list of selected values.

   The values you can type or select depend on the operator. For example, if you select the *Equal to* operator, you can type or select only one value.

   To obtain data for rows or columns that contains no data, add *[NULL_VALUE]* to the object. For example, if you want to see customers who have not paid, then if you select *[NULL_VALUE]* for object "Invoice Date", the resulting list shows only those customers without an invoice date.

If the filtered object is a hierarchy, the values are displayed hierarchically. All members of the hierarchy are visible even if they are collapsed in the report. You must select hierarchy members from the hierarchy; you cannot type them manually. All member values that have been selected in the *Query Panel* are displayed in gray and can't be selected if they are not in the final report because they are not linked to any measures. To help you select the right values, you can also click the key icon to see both the text and key ID value for the members.

If the filtered object is a level, the values are displayed in a list. It is not possible to type the values.

8. Click *OK* to apply the report filter to the element.
9. To edit a report filter, select the report element and select *Edit Filter* from the *Filter* dropdown list and edit the filter using the dialog box. Click *OK* to return to the document.
10. To delete a report filter, select the report element and select *Remove Filter* from the *Filter* dropdown list.

    You use this to remove all filters for the selected report element. To remove only one filter, click *Edit Filter* and in the *Report Filter* dialog box, select the filter and click the *Remove* icon.

6.3.4.1 To select values from a list of values

When selecting from a list of values in a query, items in the list can appear either as a single or multi-column list or a hierarchy, depending on the object.

In a multi-column list, additional columns provide related values to the main value. In a hierarchical list, values appear in a hierarchical relationship.

When you refresh a document with prompts, lists of values for the prompts appear in a flat list without multiple columns.

1. In a list of values, select items that you want to appear.
   - If the list of values does not appear when a dialog box opens, refresh the list, or search the list to retrieve values. Some list of values require an initial search to display values because the list is too large to be loaded in full.
   - If the list of values is divided into ranges, use the control above the list to navigate through the ranges. Some large lists of values are divided into ranges to reduce the amount of data retrieved from the database. When you select a range, the list displays the values in that range.
   - If the list of values depends on other lists of values, specify the dependent values in the prompt dialog box that appears. A list of values can be dependent on other lists of values, for example when it is part of a hierarchical list of values. For example, if the list of values contains cities, and the City object is part of the hierarchy Country > Region > City, you need to specify values for country and region first to filter the list of cities.

     > **Note**
     >
     > Dependent lists of values appear in queries only. They do not appear when you are selecting from a list of values in a report.

     When you first display the list of values, you see the *Prompts* dialog box in which you specify the dependent values. Once you have specified the dependent values, you can select the values from the filtered list.
   - To display the value keys in OLAP or BEx queries, click *Show/hide key values*.

Key values are not indicated in the list of *Selected Values*, only in the list of available values. Some lists of values contain key values, which are unique values that can be used to identify values with the same display value. If the list of values contains multiple columns, only the key of the filtering column is displayed.

- To search for values in the list, type the search text in the box below the list and select one of the following options from the *Search* icon dropdown list.

Table 230:

Option	Description
Match case	The search is case-sensitive. This option is not available when the *Search in keys* or *Search on database* options are selected.
Search in keys	The search uses unique value keys rather than display values. This option is available only in lists of values that support key values.
Search on database	The search includes all values stored in the database rather than being restricted to the values loaded into the list. It improves search accuracy but reduces search speed. This option is available only in lists of values that support database searches. Database searching improves search accuracy at the cost of performance. It is useful when not all values in the list of values were retrieved. This can happen when the total number of values in the list exceeds the *Max rows retrieved* query property. Database searching is particularly useful when the list of values is hierarchical because values are loaded from the database only in response to their parent value being expanded in the hierarchy. For example, in a geographical hierarchy, the child values of the California value (cities in California) are not loaded from the database until the value is expanded. If the option is selected, the search includes these items even when the California value has not been expanded.

The search includes all ranges if the list of values is divided into ranges.
In search patterns, the '*' wildcard represents any string of characters and the '?' wildcard represents any single character. For example, the value "March" can be returned by the search patterns "M*" or "Mar?h". To include the "*" and "?" characters literally rather than as wildcards, precede them with "\" in the search pattern.

- Type values from the list directly if the list supports direct data entry or select values from the list.

2. Click *OK* or *Run Query*, as applicable.

Related Information

Max rows retrieved query property [page 85]
Selecting prompt values in the Prompts dialog box [page 464]

6.3.5 Using simple report filters

Simple report filters filter information in an open Web Intelligence report, not in the document or in specific objects in the report.

The *Report Filter* toolbar provides a quick method for adding simple report filters to reports.

You can filter on the following objects in a report:

- Dimension or detail objects
- Hierarchies, characteristics or attributes for OLAP universes or BEx queries (but not at the hierarchy level or on measures)

Simple report filters can only use the *Equal to* operator and can only filter on a single value. They can use the *All values* operator.

> **Restriction**
>
> In 4.2 SP3, available filter operators on attributes for queries based on OLAP sources are limited to “Equal to”, “In List” and “Matches pattern”. This only applies to attributes directly associated to hierarchies.

Related Information

To create simple report filters [page 460]

6.3.5.1 To create simple report filters

You can filter a report on the object value you select. For example, if you select "US" from the list of values of the Country object, the report is filtered to exclude all rows where Country does not have the value "US".

1. Open a Web Intelligence document.
2. Do one of the following:
   - In the *Reading* mode, click *Filter Bar*.
   - In *Design* mode, in the *Analysis* tab, select the *Interact* subtab and click *Filter Bar*.

   The *Report Filter* toolbar appears.

> **Note**
>
> When opening the filter bar, filters are automatically inserted when their report scopes are:
> - Single value (*Equal to* operator)
> - With the *All Values* operator
>
> Those filters are no longer displayed in the Filter box.

> **Note**
>
> When collapsing the *Report Filter* toolbar, all "simple filters" are put back as *Equal to* or *All values* report filters that filter on the entire report. To avoid creating *All values* filters, remove the object from the filter bar before you collapse it.

3. Click the *add simple report filter* icon on the toolbar and select the object on which you want to filter from the menu.

   You can add multiple objects to the toolbar to create multiple filters.

   > **Note**
   >
   > Depending on the data sources and selected objects, the values or objects available in a filter may depend on the values set in another filter object.

4. Select the value on which you want to filter from the dropdown list of values.

   > **Note**
   >
   > For non-hierarchical objects, the list contains all values contained in the report for this object after applying all other report scope filters. For example if you have an *In List* filter reducing this object values, you will have this list of values for the filter bar *Equal to* filter.
   >
   > For hierarchical objects, the list contains the flat list of all member values at any level. This list is in tree view order, not alphabetical order.

   > **Tip**
   >
   > In the Web Intelligence Applet interface, or in Web Intelligence Rich Client, you can drag objects from the tree view to the *Report Filter* toolbar.

To remove a filter:

- In the Web Intelligence HTML interface in *Reading* or *Design* mode, from the dropdown list for the operator in the *Report Filter* toolbar, select *(Remove)*.
- In the Web Intelligence Applet interface or Web Intelligence Rich Client in *Design* mode, select the filter and drag and drop it into the report.

Related Information

To create, edit, and delete standard report filters [page 457]

6.3.6 To create nested filters in a report

A nested report filter contains more than one filter that use AND and OR clauses.

1. Open a Web Intelligence document in *Design* mode.

2. To add a filter to the existing filter list, in the *Analysis* tab, select the *Filters* subtab.
3. From the *Filter* dropdown list, click *Add Filter*.
4. In *Report Filter* panel, click *Add filter*, select one or more object for the filter, and click *OK*.
5. Select an operator and values for the filter.
6. Click the operator to change the type from AND to OR and vice versa.
7. When you have finished adding filters, click *OK* to return to the document.

6.3.7 Filtering data with prompts

You can filter report data by supplying values for prompts.

When you refresh a document with prompts, the *Prompts* dialog box displays a summary of all the defined prompts in the *Prompt Summary* pane. You select the prompt you want to answer, and supply values in the *Enter values for prompt* pane of the dialog box.

Depending on the prompt you select, you type values directly or select values from a list. A list of values can contain display only values, or the values and their corresponding database key values. Database key values are unique values used to identify the display within the database.

Lists of values can be organized hierarchically if the list was defined as a hierarchy by the universe designer, or the prompt is based on a hierarchy or level object.

Lists of values can be split into ranges to improve performance.

You can search or filter lists of values for easier access to the values you are interested in.

Prompts can be optional or mandatory. If you do not supply a value for an optional prompt, the prompt is ignored. You must supply values for all mandatory prompts before you can filter the data by running the prompts.

Prompts can depend on other prompts. For example, a prompt on a City object can be dependent on a prompt on a Region object. By supplying values to the Region prompt, you restrict the number of possible values of the City prompt.

You can supply values for dependent prompts only when you have supplied values for all the prompts on which they depend. If you wish to supply values to dependent prompts of an optional prompt, you must supply values for the optional prompt

Related Information

To select values from a list of values [page 178]
Selecting prompt values in the Prompts dialog box [page 464]

6.3.7.1 To supply values for prompts

You can filter report data based on the prompt values you use.

1. Open a Web Intelligence document containing a query-level prompt in *Design* mode.
2. Click the *Refresh* button.
3. Select the prompt in the *Prompts Summary* pane.
4. If the prompt has a list of values and the values are not displayed, click the *Refresh* button to display them. In this case, the list displays the text *To see the contents of the list, click Refresh.*

   If the prompt is dependent on other prompts, the list of values displays links to the dependent prompts. You must supply values for the dependent prompts before you can supply a value for the current prompt. Groups of dependent prompts appear in separate groups in the *Prompt Summary* pane.

   The values can appear as single values, in multiple columns (where the additional columns supply further information about the main filtering column), or hierarchically, depending on the prompt.

   If the list of values is too large to display all at once, the list is split into ranges and a box above the list of values displays the current range. You can scroll through the ranges to see all the values in the list.
5. Select values and click > to add values to the selected values list, or type values directly if the prompt allows you to do so.

   You cannot type values directly if the list of values is hierarchical.

   If the prompt requires a date, you can select it from the calendar that appears in the box in which you select the value.

   > **Note**
   >
   > SAP Key Dates appear as date prompts, with other prompts in the same data provider appearing as dependent prompts.
6. Repeat the previous step if the prompt allows you to select multiple values.

   If a prompt allows you to make multiple selections from a hierarchical list of values, you can select values at different levels of the hierarchy. If the prompt allows single values only, you can select values only from the bottom level of the hierarchy.

   If a prompt allows you to type values directly and allows multiple values, you can specify multiple values separated by ";", for example `California;Nevada;Iowa`. After you have typed or pasted the separated list, click the tooltip that says *Click here to interpret as multiple values.* If you click >, the list is interpreted as a single value.
7. Run the query:
   a. In the Web Intelligence HTML interface, click *Run Query* to run the query.
   b. In the Web Intelligence Applet interface or Web Intelligence Rich Client, click *OK* to run the query.

Related Information

To select values from a list of values [page 178]
To build a prompt [page 193]

6.3.7.2 Selecting prompt values in the Prompts dialog box

When you open or refresh a document with prompts, the *Prompts* dialog box appears.

The actions you can take in the *Prompts* dialog box depend on the type of data source the document is accessing or the settings selected by the data source or document query designer.

Table 231: Features of the Prompts dialog box in the Applet and Rich Client interfaces

Feature	Description	Actions you can take
Available prompt variants text box and dropdown list	This feature is available after you have created, run, and saved to the CMS the Web Intelligence query for the first time. This feature lists any prompt variants you have saved.	You enter the name of the prompt variant in this text box when you are creating it for the first time. Once you have named and saved a prompt variant, you can select it from the dropdown list.
Delete prompt variant button	This feature is available after you have created, run, and saved to the CMS the Web Intelligence query for the first time. A button that allows you to delete an existing prompt variant.	To delete the prompt variant: 1. Select the prompt variant from the *Available prompt variants* dropdown list. 2. Click *Delete prompt variant*.
Create prompt variant button	This feature is available after you have created, run, and saved to the CMS the Web Intelligence query for the first time. A button that allows you to create a prompt variant.	To create a prompt variant: 1. Select values from each prompt in the prompt summary. 2. Enter a name in the *Available prompt variants* text box. 3. Click *Create prompt variant*. It appears in the *Available prompt variants* dropdown list.
Save prompt variant button	This feature is available after you have created, run, and saved to the CMS the Web Intelligence query for the first time. A button that allows you to save changes to an existing prompt variant.	To save prompt variant changes: 1. Select your prompt variant from the *Available prompt variants* dropdown list. 2. Update the value selection for each prompt in the prompt summary. 3. Click *Save prompt variant*.
Prompts Summary list box	A list of the prompts and your previous selections.	To change the selections for a specific prompt, you can select it from the list, and supply different values.

Feature	Description	Actions you can take
Type a value text box	A text box in which you can manually enter values, including wildcard text patterns (for example 9* for all accounts starting with 9), to add to the *Selected Value(s)* list box. **Note** • If the document or data source settings do not allow manual entry of values, this box does not appear in the Prompts dialog box. • Not all data sources recognize wildcard text patterns for prompts values.	To manually add a value, or use wildcard text patterns, you enter the text string in this box and click the right angle bracket (>) icon to add it to the *Selected Value(s)*, *Start Value*, or *End Value* list box. **Note** For BEx characteristic variables, you manually enter a key value.
List of values box	The list box that shows the available data values.	To add an item in this list box to a *Selected Value(s)*, *Start Value*, or *End Value* list box: 1. Select the item in the List of values box (to select additional items, press *Control* and click other items). 2. Click the right angle bracket (>) icon.
Refresh values button	When you click this icon, the List of values box shows the values that can be selected for the prompt. Some lists of values require an initial search to display values because the list is too large to be loaded in full. See To select values from a list of values [page 178] for more information on lists of values.	To refresh the list of values box, click the *Refresh values* button.
Search text box	A text box in which you can enter a search pattern. Next to this text box is a *Search* button that offers three search options: *Match case*, *Search in keys*, and *Search on database*. See To select values from a list of values [page 178] for more information on lists of values.	To search the list of values, enter text in the search text box and press *Enter* or click the *Search* button. **Tip** If the data being queried is very large, list of values can be divided into limited ranges. In this case, your search string may not be found. If manual entry of values in the *Selected Value(s)*, *Start Value*, or *End Value* list box is allowed, you should add your values manually.
Selected Value(s) list box	In a prompt that allows multivalue variable selection, the list box that shows the values that you have entered for a prompt.	To delete an item from this list box, select it and click the < button.

Feature	Description	Actions you can take
Start Value text box	In a prompt that requires an interval selection, this shows the start value you have entered.	
End Value text box	In a prompt that requires an interval selection, this shows the end value you have entered.	
Right angle bracket (>) icon	A button that allows you to add items to the *Selected Value(s)*, *Start Value*, or *End Value* list box.	When you have manually entered a value in the *Type a value* text box or selected one or more values in the list of values box, click > to add the values to the *Selected Value(s)*, *Start Value*, or *End Value* list box.
Left angle bracket (<) icon	A button that allows you to remove items to the *Selected Value(s)*, *Start Value*, or *End Value* list box.	To remove an item from a *Selected Value(s)* list box, select the item and click <. To remove an item from a *Start Value* or *End Value* list box, click < next to the applicable list box.

Related Information

Prompt variant sets in the Prompts dialog box [page 466]
To select members based on relative depth from a selected node [page 112]
To add a second BEx query data provider to a document [page 118]
To edit a document based on a BEx query [page 119]
About previewing data when a BEx query has variables [page 120]
To select values from a list of values [page 178]
Filtering data with query prompts [page 186]
To build a prompt [page 193]
Defining how prompts display [page 195]

6.3.7.3 Prompt variant sets in the Prompts dialog box

You can save a group of often-used variable value sets as a prompt variant in the *Prompts* dialog box.

After the Web Intelligence document query is created, run, and saved for the first time, when you refresh or open the document, you can see the *Available prompt variants* options in the *Prompts* dialog box. Once you've selected the values for each prompt in the *Prompts Summary*, you name and save the variable value set as a prompt variant. It is subsequently available in the *Prompts* dialog box from the *Available prompt variants* dropdown list.

For example, if you are a regional manager and prefer to have a prompt variant for each branch in you region, then when you refresh a report and select a prompt variant for branch A, the document displays only the data for branch A.

When Web Intelligence applies a prompt variant, each variant value is applied to prompt if, and only if, the following match exactly:

- data type (as in string, date, and so on)
- selection type (single, multiple, or interval)
- structure (hierarchy, flat)

Unmatched prompts are ignored.

Restriction

- You must create, run, and then save the document to the CMS to see the prompt variant options.
- Only the user who created the prompt variants can view them and they only apply to the document in which they have been created on.
- When you delete a prompt variant, it is completely removed from the document. It cannot be recovered.
- Prompt variants do not work in Web Intelligence Rich Client in offline or standalone mode.

Related Information

Selecting prompt values in the Prompts dialog box [page 464]

6.4 Filtering data using input controls

Input controls provide a convenient, easily accessible way to filter and analyze report data.

When you create an input control, it appears in the *Input Controls* tab on the Side Panel.

You can define input controls using standard windows controls such as text boxes and radio buttons and associate these input controls with one or more elements such as tables, sections, and charts in a report, or for all of the elements in a document. When you select values in the input control, you filter the values in the associated report elements by the values you have selected.

You can use input controls to analyze different scenarios by changing the value of variables. For example, you can assign a slider input control to a variable with a constant value. If the variable is part of a formula, you use the slider control to examine different formula results based on the variable value.

Note

Input controls apply directly to the variables. You cannot define dependencies on reports, report parts or documents.

Filtering with element links

Report element links are another kind of input control, also displayed in the *Input Controls* tab. You can define tables and charts as input controls using element links. When you create an element link between a parent and child elements, you can select values in the parent table or chart to filter the child report elements.

When you select a table or chart-based control in the *Input Controls* tab, the table or chart used as an input control is highlighted.

> ⚠ Restriction
>
> When a report is in drill mode, table and chart-based input controls are disabled. They are re-enabled when drill mode is deactivated.

6.4.1 Using input controls with hierarchical data

You can use input controls on hierarchical data.

When you select a node of a hierarchy, you can select a single value and use the *Equal to* operator, or you can select multiple values from a hierarchical tree list.

When you select a hierarchical tree list, right-click and select the member, its children, or its descendants in the hierarchy. The elements of the hierarchies that you select display in the report pane.

6.4.2 Available input controls

You can choose from several input controls to help users filter data in your reports.

Table 232:

Type	Description
Entry field	For any type of object, you can use the entry field input control on a report object where you want to be able to directly type a value name into a text box. This is useful for objects with simple names, for example if you are using a Year universe object. In an input control based on year, you simply type the year and click *OK*. To clear the input control, you delete the text box contents and click *OK*.
Combo box	For a dimension object, you can use the combo box to select a value from a list of possible values. The combo box is compact and only expands when you select it, otherwise only the current selection is displayed.
Radio buttons	For a dimension object, you can use ever visible radio buttons to select one value from a list of possible value.

Type	Description
List box	For a dimension object, you can use a list box that displays all available values. For single value selections: You can select one value from a list of possible values. The selected value is highlighted. For multiple value selections: You can select several values from a list of possible values, using the `Control` and click method, and then click *OK* to update the display of those report elements affected by the input control.
Calendar	For a (dimension) date object, you can pick a value that appears in with a manual entry text box or a calendar icon. If you click the calendar icon, you can then select a date from a popup calendar.
Spinner	For a measure object, you can have an arrow-activated, spinning list of values.
Simple slider	For a measure object, you can have a slider bar to navigate to a specific value. You must set interval bounds and a default value.
Tree list	For a dimension object, you can have a list of hierarchy values. For single value selections: You can select a node or node subset. By default, the control shows the currently selected value, and can be toggled to tree selection. For multiple value selections: You can select more than one value from a list of possible values in a hierarchy, using the `Control` and click method. By default, control displays the list of currently selected values, and can be toggled to tree selection.
Check box	For a dimension object, you can have a list of alternatives from which you can select more than one value. **Note** The availability of the *OK* button is controlled in the input control create or edit mode.
Double slider	For a measure object, you can have a slider list based on a measure object from which you can select two values from an interval. You must set interval bounds and default values.

6.4.3 To add an input control

You can add an input control to a Web Intelligence document.

You must have sufficient document modification rights to add input controls.

1. In a Web Intelligence document in *Design* mode, do one of the following:
   - In the *Input Controls* tab in the Side Panel, click *New*.
   - In the *Analysis* tab, select the *Filters* subtab, and then from the *Input Controls* dropdown list, select *Define Control*.

   If you selected an entire table or chart before clicking *Define Control* or *New*, you can select *Include objects from selected block only* or *Filter objects to current selection* to restrict the list of objects to the objects in the table or chart you selected.

   You can also select the type of input control directly from the list of controls under *Analysis* > *Filters* > *Controls* instead of selecting *Define Control*. Those controls not compatible with the data from the report element you selected are disabled. The control is automatically associated with the report object that supplies data to the selected report element and uses its default properties, and you move directly to selecting the report elements you want the input control to filter.
2. In the *Select Report Object* panel, select the report object to supply values for the input control, then click *Next*.
3. Select the input control type.

   The list of control types is determined by the data type of the report object. For more information on input control types, see Available input controls [page 468].
4. Set the input control properties.

   If you are in Web Intelligence Rich Client, click the empty field next to the input control property.

   The available properties are determined by the control type.

Table 233:

Rich Client interface	HTML or Applet Interface	Description
Label	*Name*	The name of the input control
Description		The description of the input control
List of values		The list of values available in the input control. You can use all values of the report object on which the input control is based (the default) or define your own custom list of values.
Use restricted List of Values		If you define a custom list of values for the report object, this setting filters the data in the report element you assign to the input control based on this list of values. Even when no values are selected in the input control, any values not in the restricted list are excluded from the report element filtered by the input control. For example, if an input control based on the Country dimension is restricted to the values "US" and "France", a table filtered by the input control shows data for US and France only, even when no value is selected in the input control. If you deselect *Use restricted List of Values*, all values of Country appear in the table when no value is selected in the input control.

Rich Client interface	HTML or Applet Interface	Description
Allow selection of all values		This property allows you to show or hide the *All Values* option in an input control. For example, you may want to hide the *All values* option when the aggregation of the values makes no sense.
Operator	*Filter Operators*	The operator that the input control uses to filter the associated report elements.
Default values		The default values that the input control uses to filter the associated report element.
Allow selection of null values		For the Combo box, Radio buttons, List box, and Check boxes input controls, you can allow users to select null values. When you select this option, *[NULL_VALUE]* is available in the input control LOV. When a user selects *[NULL_VALUE]* in the list, the report shows rows or columns without data. For example, if a user wants to see customers who have not paid, then selecting *[NULL_VALUE]* for object "Invoice Date" results in a list showing only customers without an invoice date. For more information about how the NULL_VALUE LOV option compares to the *[EMPTY_VALUE]* LOV option, refer to Query filters and report filters compared [page 453].
Number of lines		The number of lines that the input control displays in the *Input Control* pane. For example a list of five radio buttons with *Number of lines* set to 3 displays only three radio buttons by default. You access the other two radio buttons by using the scroll bar.
Minimum value	*Min Value*	The minimum numerical value you can select in the input control.
Maximum value	*Max Value*	The maximum numerical value you can select in the input control.
Increment		The amount by which the input control increases/decreases a numerical value when you are choosing a value.

5. Click *Next*.
6. In the *Assign Report Elements* panel:
   - To assign the input control to all tables and charts in the document, select *Entire document*.
   - To assign the input control to all elements in a report, select *Current report*.

> **Note**
>
> Each time you save a document, any input controls that have no associated report elements are removed.

7. Click *Finish*.
   The input control appears on the *Input Controls* pane, which organizes input controls in the following categories:
   - *Document Input controls*
   - *Report Input controls*

Related Information

To edit an input control [page 472]

6.4.4 To reuse an input control in another report within a Web Intelligence document

You can reuse the input controls from an existing report in a new report.

1. Open a Web Intelligence document in *Design* mode.
2. Go to the report with the input controls you want to reuse.
3. Right-click the report tab and click *Duplicate Report*.

The report and its input controls are duplicated.

6.4.5 To edit an input control

You can edit an input control in the *Edit Input Control* dialog box.

1. In a Web Intelligence document in *Design* mode, select the *Input Controls* tab in the Side Panel.
2. Select the input control, then click the *Edit* icon on the input control toolbar to display the *Edit Input Control* dialog box.
3. To edit the input control properties:
   - In the Web Intelligence HTML interface, edit the input control properties in the *Properties* tab.
   - In the Web Intelligence Applet interface or Web Intelligence Rich Client, edit the input control properties in the *Control* tab.
4. Edit the report elements associated with the input control on the *Dependencies* tab:
   - To reassign an input control to all tables and charts in the document, select *Entire document*.
   - To reassign an input control to all elements in a report, select *Current report*.
5. Click *OK* to return to the document.

6.4.6 To view input control dependencies

You can view input control dependencies in a document.

1. In a Web Intelligence document in *Design* mode, click the *Input Controls* tab in the Side Panel.
2. Do the following:
   a. In the Web Intelligence HTML interface, select the input control in the list, then click the *Highlight dependencies* icon on the input control toolbar.
   b. In the Web Intelligence Applet interface or Web Intelligence Rich Client, click the *Show dependencies* icon on the input control toolbar.

c. Click *Map* at the top of the *Input Controls* tab.

   This tab is sorted by:

   - Input controls and the elements they control
   - Reports, their elements, and their input controls

6.4.7 To organize input controls

You can change the order of input controls in the *Input Controls* pane.

1. In a Web Intelligence document in *Design* mode, select the *Input Controls* tab in the Side Panel.
2. Drag and drop input controls to move them up or down on the *Input Controls* pane.
3. Select an input control, then click the *Remove* icon on the input control toolbar to remove it from the *Input Controls* pane.
4. Click *Yes* to confirm the action.

6.4.8 To define a table or chart as an input control

You can use a table or a chart as an input control in a Web Intelligence document.

1. In a Web Intelligence document in *Design* mode, right-click the table or chart and select *Linking* > *Add Element Link*.
2. Do one of the following:
   - To define all the objects in the table or chart as the filtering objects, select *All objects*.
   - To define a single object in the table or chart as the filtering object, select *Single object* and then select an object.

   > **Note**
   >
   > You can select dimensions only as filtering objects when you define a table or chart as an input control.

3. Click *Next*.
4. Type a name and a description for the input control, then click *Next*.
5. Select the report elements to be filtered by the input control.

   > **Note**
   >
   > You cannot select the table or chart that you are defining as an input control from the list of report elements.

6. Click *Finish.*
   The table or chart input control appears in the *Input Controls* pane. When you click *Show Dependencies*, the table or chart defined as the input control is highlighted.
7. To modify the way a table or chart filters other report elements, right-click the table or chart and select *Linking* > *Edit Element Link*.

8. To remove a link between a table or chart and other report elements, disable the element link, then right-click the table or chart and select *Linking* > *Remove*.

Related Information

To edit an input control [page 472]

6.4.9 To filter data using input controls

You can filter data in a document using input control.

1. In a Web Intelligence document in *Design* mode, select the *Input Controls* tab in the Side Panel.

   > **Note**
   >
   > The input control displays the following message if the report elements filtered by the input control are no longer in the report: *There are no dependent report elements in the report.*

2. Select values in the input control.

   The associated report elements are filtered based on the values you select. For example, if you select the "US" value of the [Country] dimension, the filter operator is Equal To, and there is a table associated with the input control, the table is filtered on the condition [Country] = "US".

   Select *[NULL_VALUE]* to show rows or columns without data. For example, if you want to see customers who have not paid, [NULL_VALUE] for object “Invoice Date” results in a list showing only customers without an invoice date.

3. To filter using a table or chart defined as an input control, select dimension values in the table (rows, columns or cells) or chart (clickable data areas).

   > **Note**
   >
   > - Tables or charts defined as input controls can only filter using dimension values.
   > - In the Web Intelligence Applet interface, a warning message appears when you delete objects used by an input control.
   > - The input control shows the following message if the table or chart is no longer in the report: *The table or chart is not in the report.*
   > - The input control shows the following message if the filtering dimensions are no longer in the table or chart: *Filtering dimensions not available.* The input control becomes usable again if you add the dimensions to the table or chart.
   > - The input control shows the following message if the report is in drill mode: *Control not usable while the report is in drill mode.* Drill mode must be turned off to make the input control usable.
   >   - Table and chart-based input controls are indicated by an icon in the top corner of the table or chart. Right-clicking the icon displays the following menu options:

Command	Description
Edit	Edits the input control
Highlight dependencies (Web Intelligence HTML interface) *Show dependencies* (Web Intelligence Applet interface)	Highlights the report elements filtered by the input control
Reset	Removes the filters applied by the input control
Disable/Enable	Disables or enables the input control

4. To remove all filters applied by input controls, click *Reset* at the top of the *Input Controls* pane.

6.5 Filtering data dynamically with groups of input controls

You can use a filter path to help you refine your data in a report.

A filter path is a visual representation of values you have successively selected for several input controls that you have purposely grouped beforehand.

In *Design* mode only, you create a filter path by grouping several input controls together in a report, and then select each one in the order that you would like your values to be filtered. The filter path allows you to control the progressive refinement of your data.

Caution

Restricting lists of values dependent on other input controls' selections can decrease performance.

Example

Instead of selecting a city from a large list of values, it is easier to:

1. Select a value for the *Country* input control to narrow down the possible regions.
2. Select a value from the restricted list of regions for the *Region* input control to further limit the number of potential cities.
3. Select a value from the restricted list of cities for the *City* input control.

Your filter path would then look like this: *Country* > *Region* > *Cities*.

Tip

You can also group input controls to improve the layout of a report.

Related Information

To create a group of input controls [page 477]
Input controls eligible to groups and dynamic filtering [page 476]
Example: Creating a filter path [page 479]

6.5.1 Input controls eligible to groups and dynamic filtering

Depending on the input control and the properties you selected when you created it, it might not be eligible to grouping, or eligible with restrictions regarding dynamic filtering.

Web Intelligence notifies you whenever there are incompatibilities between the properties of an input control and grouping or dynamic filtering when you create a group of input controls.

Input controls not eligible to grouping

Input controls can be ineligible for one of the reasons listed below:

- Restricted list of values
  You have defined a list of values that might be incompatible with the restricted list of values resulting from dynamic filtering.
- Default value
  The default value of the input control might be incompatible with the restricted list of values resulting from dynamic filtering.
- Excluding `<All values>`
  The default value you have selected instead of `<All values>` might be incompatible with the restricted list of values resulting from dynamic filtering.

Input controls that cannot be added to a group are grayed out and cannot be selected. An information icon and a tooltip appear when you move the cursor over. When attempting to select them, a message is also displayed at the bottom of the dialog box. Elements links and tree lists for example aren't eligible to grouping.

Input controls eligible to grouping with restrictions regarding dynamic filtering

Several input controls are not associated to a list of values and therefore cannot be filtered dynamically:

- Calendar
- Direct input
- Spinner
- Slider

If you select an input control from the list above to add it to a group, the incompatibility is explained in a tooltip when you move the cursor over the warning icon. A message is also displayed at the bottom of the dialog box.

6.5.2 To create a group of input controls

Before creating a filter path, you need to create a group of input controls in which you can apply a filter path.

1. In the *Side Panel*, click the *Input Controls* pane.
2. Click *Group*.
3. Enter a name for the new group.
4. Click *Document* or *Report* to select from a list of either document input controls or report input controls.

   A group cannot contain both report and document input controls. Make sure that the input controls you add to a group are of the same type.
5. Select at least two input controls.

   > **Note**
   >
   > You cannot have the same input control in two different groups. If you select an input control that already belongs to another group, the other group will be reset without the selected input control, and its filter path will be modified. Also, if you add an existing input control to a group, its value is reset to "*All values*".
6. Click *OK*.

   The group is now created and displayed in the *Input Controls* pane.

Related Information

To create a filter path [page 477]
To reset a filter path [page 478]
Input controls eligible to groups and dynamic filtering [page 476]

6.5.3 To create a filter path

Once you have a group of input controls, you can create a filter path. Make sure the first input control in the path returns the most general values, followed by input controls with increasing specificity so the filter path narrows down your data selection in successive steps.

1. Click the group for which you want to create a filter path.
2. Select one or more values for the first input control of the group.

   The report dynamically changes to display a restricted list of values filtered accordingly to the value of the first input control. The filter path is displayed on top of the first input control of the group.

   > **Note**
   >
   > You can modify the selected values at any time by clearing current values or selecting new ones. The filter path will adapt accordingly.
3. Select a second input control and select one or more values. These are the values that have been restricted by the previous input control.

The report adjusts to the new values.

4. Repeat the previous step for each of the following input controls.

Related Information

Filtering data dynamically with groups of input controls [page 475]
Input controls eligible to groups and dynamic filtering [page 476]

6.5.4 To reset a filter path

Resetting a filter path has the following effects in the group:

- Every value of each input control is reset to *all values*
- The order of the input controls specified in the removed filter path is reset to its original order in the group.

1. Right-click the header of the group whose filter path you want to reset.
2. Click *Reset*.

> **Tip**
>
> You can also click the *Clear filter path* icon ( ) next to the name of the group.

6.5.5 To add an input control to a group

1. Right-click the input control you want to add to a group.
2. Click *Add to Group*.
3. Select the group to which you want to add the input control.

The new input control is displayed at the bottom of the group.

6.5.6 To remove an input control from a group

> **Caution**
>
> If you remove an input control from a group that has only two input controls, the group is deleted. Also, if the input control you remove belongs to a filter path, the filter path is modified.

1. Right-click the input control you want to remove from the group.
2. In the contextual menu, click *Ungroup*.

The input control you have just removed is now displayed underneath the group it belonged to.

6.5.7 To move an input control to another group

> **Caution**
>
> If the input control you move belongs to a group that has only two input controls, the group will be deleted. Also, if the input control is part of the filter path of its previous group, moving it to another group will remove it from the filter path and will reset the values of its previous group.

1. Right-click the input control you want to move to another group.
2. In the context menu, select *Move to group*.
3. Select the new group.

6.5.8 To delete a group

1. Click the ✕ icon next to name of the group you want to delete.
2. Click *Yes*.

6.5.9 Example: Creating a filter path

You create a filter path by successively selecting different input controls, so that you can narrow down the amount values you want to analyze in your report.

Checking the revenue generated by swimming suits in Kingston in 2014

As a regional marketing director for America, you want to check the revenue generated by the city of Kingston in 2014, for the swimming suits product line. You have the following information:

- Two input controls, `<Year 2014>` and `<Sales Revenue>` have already been created in the report you are working on.
- There is also a group of three input controls, named `<Business>`, with the following input controls inside: `<Country>`, `<City>` and `<Product>`.

So, you would like to create a filter path to display the information you are interested in and filter your data.

1. Select the value of the first input control of the group, <Country>: Jamaica.
   You can see that the list of possible values for <City> decreased and displays only the value for Jamaica.
   Let's say that you want to take a closer look at Kingston, to see if the results are better than last year.
2. Select Kingston as the value for the second input control, <City>.
   Again, the values of the last input controls are filtered to show only the remaining possible values.
3. Select the swimming suits in the third input control, <Product>, to get a quick view of the result you wanted to get originally.

You can now see in the table the revenue generated by swimming suits in Kingston in 2014.

Notice how the three input controls of the group now have a shape and a color associated to them in the input control pane. They indicate that these input control belong to the filter path.

You can see the filter path as you go along in the *Input Controls* pane on the left. It should look like this: *Jamaica* > *Kingston* > *Swimming Suits*.

If you want to drill up and get a look a broader results, for the whole country for instance, reset the second input control to <all values> to see the revenue generated by the other cities of the country.

Modifying the filter path of a group

To modify the filter path, for example if you want to see the result for the country France instead of Jamaica, expand the <Country> input control and select <France>.

Results:

- The <City> input control is expanded.
- The list of values of the input control <City> is reset to display only the cities from France, and the selection is reset to <All Values>.

6.6 Using functions, formulas and calculations for data analysis

6.6.1 Document History: Web Intelligence Functions, Formulas and Calculations

The following table provides an overview of the most important document changes.

Version	Date	Description
SAP BusinessObjects Web Intelligence 4.2 Support Package 3	August 2016	The following sections have been added to the guide or updated:

Version	Date	Description
		• New MemberAtDepth function added MemberAtDepth [page 673] • Updated QuerySummary function with new `StatusOfData` parameter for BW data sources QuerySummary [page 619]
SAP BusinessObjects Web Intelligence 4.2 Support Package 2	March 2016	The following section has been added to the guide: • Description of Comment function Comment [page 684]
SAP BusinessObjects Web Intelligence 4.2	November 2015	The following sections have been added to the guide: • Description of Automatic Formula Rewrite mechanism Automatic rewrite formula mechanism [page 730] • SAP HANA Online mode formulas, functions and operators restrictions Function and formula operators [page 489] • Strings to create custom formats for weeks Custom formats [page 324] • Time zone can be displayed on a date/time value Custom formats [page 324] • New ToDecimal function added ToDecimal [page 654] • Updated Concatenation function behavior Concatenation [page 557]

6.6.2 About this guide

The Using Functions, Formulas and Calculations in Web Intelligence guide provides detailed information on the advanced calculation capabilities that you can use when you perform data analysis.

This guide also provides a syntax reference to the available functions and operators.

6.6.3 Using standard and custom calculations

6.6.3.1 Using standard and custom calculations

You can use standard calculation functions to make quick calculations on data.

If standard calculations are not sufficient for your needs, you can use the formula language to build custom calculations.

6.6.3.1.1 Standard calculations

You can use standard calculation functions to make quick calculations on data.

The following standard calculations are available:

Table 234:

Calculation	Description
Sum	Calculates the sum of the selected data.
Count	Counts all rows for a measure object or count distinct rows for a dimension or detail object.
Average	Calculates the average of the data.
Minimum	Displays the minimum value of the selected data.
Maximum	Display the maximum value of the selected data.
Percentage	Displays the selected data as a percentage of the total. The results of the percentage are displayed in an additional column or row of the table. **Note** Percentages are calculated for the selected measure compared to the total results for that measure on the table or break. To calculate the percentage of one measure compared to another measure, you need to build a custom calculation.
Default	Applies the default aggregation function to a standard measure, or the database aggregation function to a smart measure.

When you apply standard calculations to table columns, the calculation results appear in footers. One footer is added for each calculation.

6.6.3.1.2 Using formulas to build custom calculations

Custom calculations allow you to add additional calculations to your report beyond its base objects and standard calculations.

You add a custom calculation by writing a formula. A formula can consist of base report variables, functions, operators and calculation contexts.

A custom calculation is a formula that can consist of report objects, functions and operators. Formulas have a calculation context that you can specify explicitly if you choose.

Example

Showing average revenue per sale

If you have a report with Sales Revenue and Number Sold objects and you want to add revenue per sale to the report. The calculation `[Sales Revenue]/[Number Sold]` gives this value by dividing the revenue by the number of items sold in order to give the revenue per item.

6.6.3.1.2.1 Using variables to simplify formulas

If a formula is complex you can use variables to simplify it.

By using variables you break a complex formula down into manageable parts and make it much easier to read, as well as making building formulas much less error-prone.

You can use previously-created variables in a formula in exactly the same way as you use other report objects. Variables appear in the formula editor under the Variables folder.

You can type this variable name into a formula or drag the variable to the Formula toolbar as you would for any report object.

6.6.3.1.3 Working with functions

A custom calculation sometimes contains only report objects, for example `[Sales Revenue]/[Number of Sales]`. Calculations can also include functions in addition to report objects.

A function receives zero or more values as input and returns output based on those values. For example, the `Sum` function totals all the values in a measure and outputs the result. The formula `Sum([Sales Revenue])` outputs a total of sales revenues. In this case, the function input is the Sales Revenue measure and the output is the total of all Sales Measures.

Related Information

Function and formula operators [page 489]
Functions [page 511]

6.6.3.1.3.1 Including functions in cells

The text in report cells always begins with '=' .

Literal text appears in quotation marks, while formulas appear without quotation marks. For example, the formula Average([Revenue]) appears in a cell as `=Average([Revenue])`. The text "Average Revenue?" appears as `="Average Revenue?"`

You can use text alone in a cell, or mix formulas and text by using the '+' operator. If you want a cell to display the average revenue preceded by the text "Average Revenue:", the cell text is as follows: `="Average Revenue: " + Average([Revenue])`

Note the space at the end of the text string so that the text and the value are not placed directly side-by-side in the cell.

6.6.3.1.3.2 Function syntax

The *Formula Editor* displays the function syntax when you select the function.

To use a function you need to know its name, how many input values it requires and the data types of these input values. You also need to know the type of data that the function outputs.

For example, the `Sum` function takes a numerical object as input (for example a measure showing sales revenue) and outputs numeric data (the sum of all the values of the measure object).

Here is the syntax of the `Abs` function:

```
num Abs(number)
```

This syntax tells you that the `Abs` function takes a single number as input and returns a number as output.

6.6.3.1.3.3 Examples of functions

This topic offers examples of functions used in formulas.

Example

Showing prompt input with the UserResponse function

You have a report showing Year, Quarter and Sales revenue. The State object also appears in the report data, although it is not displayed. When the user runs the report they are presented with a prompt and they must choose a state. You want to show the state that they have chosen in the report title. If your data provider is called "eFashion" and the text in the prompt is "Choose a State", the formula for the title is:

```
"Quarterly Revenues for " + UserResponse([Query 1];"Enter values for State:")
```

The report is as follows when the user has chosen Illinois as the state when refreshing the data provider:

Quarterly Revenues for Illinois

Year	Quarter	Sales revenue
2001	Q1	$256,454
	Q2	$241,458
	Q3	$107,006
	Q4	$133,306
2001	**Total**	**$738,223.80**

Year	Quarter	Sales revenue
2002	Q1	$334,297
	Q2	$254,722
	Q3	$230,573
	Q4	$331,067
2002	**Total**	**$1,150,658.80**

Year	Quarter	Sales revenue
2003	Q1	$255,658
	Q2	$354,724
	Q3	$273,186
	Q4	$250,517
2003	**Total**	**$1,134,085.40**

Example

Calculating a percentage using the Percentage function

The Percentage function calculates percentages. This function calculates the percentage of a number in relation to its surrounding context. For example, the following table shows revenues by year and quarter. The percentage column contains the formula `Percentage ([Sales revenue])`.

Year	Quarter	Sales revenue	Percentage
2001	Q1	$2660700	0.07
2001	Q2	$2279003	0.06
2001	Q3	$1367841	0.04
2001	Q4	$1788580	0.05
2002	Q1	$3326172	0.09
2002	Q2	$2840651	0.08
2002	Q3	$2879303	0.08
2002	Q4	$4186120	0.12
2003	Q1	$3742989	0.1
2003	Q2	$4006718	0.11
2003	Q3	$3953395	0.11
2003	Q4	$3356041	0.09
		Sum:	**1**

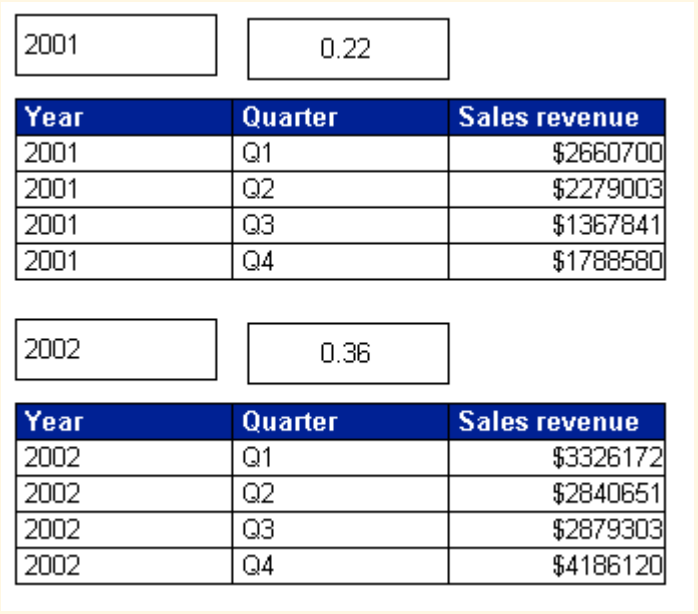
In this case the function calculates each revenue as a percentage of the total revenue. The surrounding context is the total revenue; this is the only revenue figure that is relevant outside the breakdown by year and quarter in the table.

If the report is split into sections by year, the surrounding context outside the table becomes the total revenue in the section.

2001

Year	Quarter	Sales revenue	Percentage
2001	Q1	$2660700	0.33
2001	Q2	$2279003	0.28
2001	Q3	$1367841	0.17
2001	Q4	$1788580	0.22
		Sum:	**1**

If the Percentage cell is placed outside the table but still inside the section, the surrounding context becomes the total revenue. In this case the Percentage function calculates the total revenue for the section as a percentage of the total overall revenue.



Example

Calculating a percentage using the Sum function

You can gain more control over the context in which a percentage is calculated by using the Sum function rather than the Percentage function. If you divide one figure in a set of figures by the total of those figures, you get its percentage of the total; for example, the formula [Sales revenue]/Sum([Sales revenue]) gives the sales revenue as a percentage of the total revenue.

In the following table the Percentage of Total column has the formula:

```
[Sales revenue]/(Sum([Sales revenue] In Report))
```

and the Percentage of Year column has the formula:

```
[Sales revenue]/(Sum([Sales revenue] In Section))
```

2001

Year	Quarter	Sales revenue	Percentage of Total	Percentage of Year
2001	Q1	$2660700	0.07	0.33
2001	Q2	$2279003	0.06	0.28
2001	Q3	$1367841	0.04	0.17
2001	Q4	$1788580	0.05	0.22

These formulas take advantage of the extended syntax keywords Report and Section to instruct the Sum function to calculate the overall total revenue and yearly revenue respectively.

Related Information

Modifying the default calculation context with extended syntax [page 499]

6.6.3.1.3.3.1 Simplifying a variance formula with variables

Variance is a statistical term. The variance of a set of values measures the spread of those values around their average.

The `Var` function calculates the variance in one step, but manual calculation of variance provides a good example of how to simplify a complex formula using variables. To calculate the variance manually you need to:

- calculate the average number of items sold
- calculate the difference between each number of items sold and the average, then square this value
- add up all these squared differences
- divide this total by the number of values - 1

You have a report showing numbers of items sold by quarter and you want to include the variance. Without the use of variables to simplify it, this complex formula is as follows:

```
Sum((([Quantity sold] - Average([Quantity sold] ForEach [Quarter]) In
Report)*([Quantity sold] - Average([Quantity sold] ForEach [Quarter]) In Report))
In [Quarter])/(Count ([Quantity sold] ForEach [Quarter]) - 1)
```

Creating the variance formula

There are several steps involved in creating a variance formula. You encapsulate each of these steps in a variable. The variables you create are:

- average number of items sold
- number of observations (that is, the number of separate values of the number of items sold)
- difference between an observation and the average, squared
- sum of these differences divided by the number of observations - 1

The variable formulas are as follows:

Table 235:

Variable	Formula
Average Sold	Average([Quantity sold] In ([Quarter])) In Report
Number of Observations	Count([Quantity sold] In ([Quarter])) In Report
Difference Squared	Power(([Quantity sold] - [Average sold]);2)
Variance	Sum([Difference squared] In ([Quarter]))/([Number of Observations] - 1)

The final formula becomes the following:

```
Sum ([Difference Squared])/[Number of Observations] - 1)
```

This formula is much easier to understand. This simplified version of the formula gives you a high-level view of what the formula is doing, rather than plunging you into the confusing details. You can then examine the formulas of the variables referenced in the high-level formula to understand its component parts.

For example, the formula references the variable Difference squared, which itself references the variable Average sold. By examining the formulas of Difference squared and Average sold, you can drill down into the formula to understand the details of what it is doing.

6.6.3.1.3.4 Function and formula operators

Operators link the various components in a formula.

Formulas can contain mathematical, conditional, logical, function-specific or extended syntax operators.

SAP HANA Online mode operators restrictions

The table below lists the operators that are not supported in SAP HANA Online mode.

Table 236:

Operator Type	Operator
Function-specific operators	Drill
	Index
	Where
Extended syntax operators	In
	ForEach
	ForAll

6.6.3.1.3.4.1 Mathematical operators

Mathematical operators are familiar from everyday arithmetic.

There are addition (+), subtraction (-), multiplication (*), division (/) operators that allow you to perform mathematical operations in a formula. The formula `[Sales Revenue] - [Cost of Sales]` contains a mathematical operator, in this case subtraction.

> **Note**
>
> When used with character strings, the '+' operator becomes a string concatenation operator. That is, it joins character strings. For example, the formula "John" + " Smith" returns "John Smith".

6.6.3.1.3.4.2 Conditional operators

Conditional operators determine the type of comparison to be made between values.

Table 237:

Operator	Description
=	Equal to
>	Greater than
<	Less than
>=	Greater than or equal to
<=	Less than or equal to
<>	Not equal to

You use conditional operators with the If function, as in:

```
If [Revenue]>10000 Then "High" Else "Low"
```

which returns “High" for all rows where the revenue is greater than or equal to 10000 and “Low" for all other rows.

6.6.3.1.3.4.3 Logical operators

The logical operators are `And`, `Or`, `Not`, `Between` and `InList`.

Logical operators are used in boolean expressions, which return `True` or `False`.

6.6.3.1.3.4.4 Context operators

Context operators form part of extended calculation syntax.

Extended syntax allows you to define which dimensions a measure or formula takes into account in a calculation.

6.6.3.1.3.4.5 Function-specific operators

Some functions can take specific operators as arguments.

For example, the `Previous` function can take the `Self` operator.

All functions use `)` and `(` to enclose function arguments. Functions that accept multiple parameters use `;` to separate the parameters.

6.6.4 Understanding calculation contexts

6.6.4.1 Understanding calculation contexts

The calculation context is the data that a calculation takes into account to generate a result.

This means that the value given by a measure is determined by the dimensions used to calculate the measure.

A report contains two kinds of objects:

- Dimensions represent business data that generate figures. Store outlets, years or regions are examples of dimension data. For example, a store outlet, a year or a region can generate revenue: we can talk about revenue by store, revenue by year or revenue by region.
- Measures are numerical data generated by dimension data. Examples of measure are revenue and number of sales. For example, we can talk about the number of sales made in a particular store.

Measures can also be generated by combinations of dimension data. For example, we can talk about the revenue generated by a particular store in 2005.

The calculation context of a measure has two components:

- the dimension or list of dimensions that determine the measure value
- the part of the dimension data that determines the measure value

The calculation context has two components:

- The input context
- The output context

Related Information

The input context [page 491]
The output context [page 492]

6.6.4.1.1 The input context

The input context of a measure or formula is the list of dimensions that feed into the calculation.

The list of dimensions in an input context appears inside the parentheses of the function that outputs the value. The list of dimensions must also be enclosed in parentheses (even if it contains only one dimension) and the dimensions must be separated by semicolons.

Example

Specifying an input context

In a report with Year sections and a block in each section with Customer and Revenue columns, the input contexts are:

Table 238:

Report part	Input context
Section header and block footers	Year
Rows in the block	Year, Customer

In other words, the section headers and block footers show aggregated revenue by Year, and each row in the block shows revenue aggregated by Year and Customer (the revenue generated by that customer in the year in question).

When specified explicitly in a formula, these input contexts are:

```
Sum ([Revenue] In ([Year]))
```

```
Sum ([Revenue] In ([Year];[Customer]))
```

That is, the dimensions in the input context appear inside the parentheses of the function (in this case, Sum) whose input context is specified.

6.6.4.1.2 The output context

The output context causes the formula to output a value if it is placed in the footer of a block containing a break.

Example

Specifying an output context

The following report shows revenue by year and quarter, with a break on year, and the minimum revenue calculated by year:

Year	Quarter	Sales revenue
	Q1	$2660699.50
	Q2	$2279003.00
	Q3	$1367840.70
	Q4	$1788580.40
2001		
	Min:	**$1367840.70**

Year	Quarter	Sales revenue
	Q1	$3326172.20
	Q2	$2840650.80
	Q3	$2879303.00
	Q4	$4186120.00
2002		
	Min:	**$2840650.80**

Year	Quarter	Sales revenue
	Q1	$3742988.90
	Q2	$4006717.50
	Q3	$3953395.30
	Q4	$3356041.10
2003		
	Min:	**$3356041.10**

What if you want to show the minimum revenue by year in a block with no break? You can do this by specifying the output context in a formula. In this case, the formula looks like this:

```
Min ([Sales revenue]) In ([Year])
```

That is, the output context appears after the parentheses of the function whose output context you are specifying. In this case, the output context calculates the minimum revenue by year.

If you add an additional column containing this formula to the block, the result is as follows:

Year	Quarter	Sales revenue	Min by Year
2001	Q1	$2660699.50	$1367840.70
2001	Q2	$2279003.00	$1367840.70
2001	Q3	$1367840.70	$1367840.70
2001	Q4	$1788580.40	$1367840.70
2002	Q1	$3326172.20	$2840650.80
2002	Q2	$2840650.80	$2840650.80
2002	Q3	$2879303.00	$2840650.80
2002	Q4	$4186120.00	$2840650.80
2003	Q1	$3742988.90	$3356041.10
2003	Q2	$4006717.50	$3356041.10
2003	Q3	$3953395.30	$3356041.10
2003	Q4	$3356041.10	$3356041.10

You can see that the Min By Year column contains the minimum revenues that appear in the break footers in the previous report.

Notice that in this example, the input context is not specified because it is the default context (Year, Quarter) for the block. In other words, the output context determines which revenue by year and quarter to output. In full, with both input and output formulas explicitly specified, the formula looks like this:

```
Min ([Sales revenue] In([Year];[Quarter])) In ([Year])
```

This formula calculates revenues by year by quarter, then outputs the smallest of these revenues that occurs in each year.

What would happen if you did not specify the output context in the Min by Year column? In this case, these figures would be identical to the figures in the Sales revenue column. Why? Remember that the default context in a block includes the dimensions in that block. The minimum revenue by year by quarter is the same as the revenue by year by quarter simply because there is only one revenue for each year/quarter combination.

6.6.4.1.3 Default calculation contexts

A measure has a default calculation context depending on its place in the report.

The figures returned by a measure depend on the dimensions with which it is associated. This combination of dimensions represents the calculation context.

You can change the default context with extended syntax. In other words, you can determine the set of dimensions used to generate a measure. This is what is meant by defining the calculation context.

Example

Default contexts in a report

This example describes the default calculation context of the measures in a simple report. The report shows revenue generated by customers and is split into sections by year.

Table 239:

2005	Total: 8000

Table 240:

Customer	Revenue
Harris	1000
Jones	3000
Walsh	4000
Total:	8000

Table 241:

Report total: 8000

The table below lists the calculation context of the measures in this report:

Table 242:

Measure	Value	Context
Report total	20000	Total of all revenues in the report
Section header total	8000	Year
Customer total	1000, 3000, 4000	Year;Customer
Block footer total	8000	Year

Related Information

Understanding calculation contexts [page 491]
Modifying the default calculation context with extended syntax [page 499]

6.6.4.1.3.1 Default contexts in a vertical table

A vertical table is a standard report table with headers at the top, data going from top to bottom and footers at the bottom.

The default contexts in a down table are:

Table 243:

When the calculation is in the...	The input context is	The output context is
Header	The dimensions and measures used to generate the body of the block	All the data is aggregated then the calculation function returns a single value

When the calculation is in the...	The input context is	The output context is
Body of the block	The dimensions and measures used to generate the current row	The same as the input context
Footer	The dimensions and measures used to generate the body of the block	All the data is aggregated then the calculation function returns a single value

6.6.4.1.3.2 Default contexts in a horizontal table

The default contexts for a horizontal table are the same as those for a vertical table.

A horizontal table is like a vertical table turned on its side.

The appearance of the horizontal table depends on the Preferred Viewing Locale you have selected in the BI launch pad preferences. Some locales, like the English locale, use the left-to-right (LTR) interface positioning, whereas others, like the Arabic locale, use the right-to-left (RTL) interface positioning.

In an LTR locale, headers appear at the left, data goes left to right and footers appear at the right. In an RTL locale, headers appear at the right, data goes right to left and footers appear at the left.

6.6.4.1.3.3 Default contexts in a crosstab table

A crosstab displays data in a matrix with measures appearing at the intersections of dimensions.

The default contexts in a crosstab are:

Table 244:

The calculation is in the...	The input context is...	The output context is...
Header	The dimensions and measures used to generate the body of the block.	All the data is aggregated, then the calculation function returns a single value.
Body of the block	The dimensions and measures used to generate the body of the block.	The same as the input context.
Footer	The dimensions and measures used to generate the body of the block.	All the data is aggregated, then the calculation function returns a single value.
VBody footer	The dimensions and measures used to generate the current column.	All the data is aggregated, then the calculation function returns a single value.
HBody Footer	The dimensions and measures used to generate the current row.	All the data is aggregated, then the calculation function returns a single value.
VFooter	Same as footer.	All the data is aggregated, then the calculation function returns a single value.
HFooter	Same as footer.	All the data is aggregated, then the calculation function returns a single value.

Example

Default contexts in a crosstab

The following report shows the default contexts in a crosstab:

		FY2000	FY2000	FY2000	FY2000	1,115,730
		Q1	Q2	Q3	Q4	1,115,730
France	259,170	61,895	76,555	70,080	50,640	259,170
US	856,560	196,831	189,886	234,574	235,269	856,560
Sum:	1,115,730	258,726	266,441	304,654	285,909	1,115,730

6.6.4.1.3.4 Default contexts in a section

A section consists of a header, body and footer.

The default contexts in a section are:

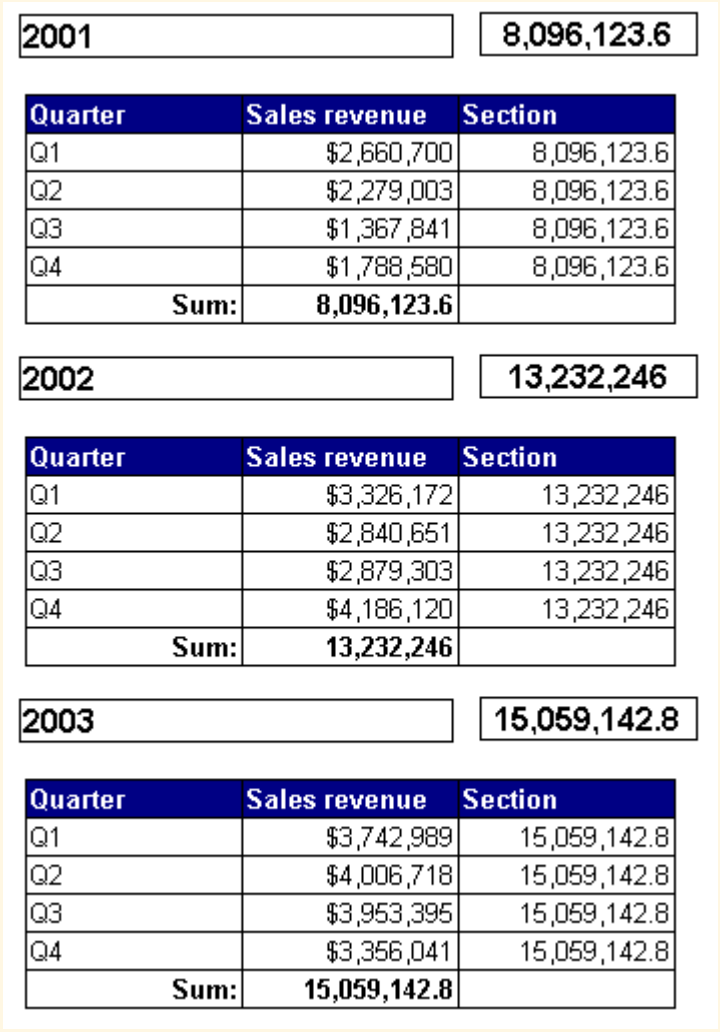
Table 245:

The calculation is in the...	The input context is...	The output context is...
Body	The dimensions and measures in the report, filtered to restrict the data to the section data.	All the data is aggregated, then the calculation function returns a single value.

Example

Default contexts in a section

The following report shows the default contexts in a section:



2001	8,096,123.6

Quarter	Sales revenue	Section
Q1	$2,660,700	8,096,123.6
Q2	$2,279,003	8,096,123.6
Q3	$1,367,841	8,096,123.6
Q4	$1,788,580	8,096,123.6
Sum:	8,096,123.6	

2002	13,232,246

Quarter	Sales revenue	Section
Q1	$3,326,172	13,232,246
Q2	$2,840,651	13,232,246
Q3	$2,879,303	13,232,246
Q4	$4,186,120	13,232,246
Sum:	13,232,246	

2003	15,059,142.8

Quarter	Sales revenue	Section
Q1	$3,742,989	15,059,142.8
Q2	$4,006,718	15,059,142.8
Q3	$3,953,395	15,059,142.8
Q4	$3,356,041	15,059,142.8
Sum:	15,059,142.8	

6.6.4.1.3.5 Default contexts in a break

A break consists of a header, body and footer.

The default contexts in a break are:

Table 246:

The calculation is in the...	The input context is...	The output context is...
Header	Current instance of the break.	All the data is aggregated, then the calculation function returns a single value.
Footer	Current instance of the break.	All the data is aggregated, then the calculation function returns a single value.

Example

Default contexts in a break

The following report shows the default contexts in a break:

Year	Quarter	$8096123
	Q1	$2660700
	Q2	$2279003
	Q3	$1367841
	Q4	$1788580
2001		
	Sum:	$8096124

Year	Quarter	$13232246
	Q1	$3326172
	Q2	$2840651
	Q3	$2879303
	Q4	$4186120
2002		
	Sum:	$13232246

6.6.4.1.4 Modifying the default calculation context with extended syntax

Extended syntax uses context operators that you add to a formula or measure to specify its calculation context.

A measure or formula context consists of its input context and output context.

Related Information

Extended syntax keywords [page 723]
Extended syntax operators [page 499]

6.6.4.1.4.1 Extended syntax operators

You specify input and output contexts explicitly with context operators.

The following table lists the context operators:

Table 247:

Operator	Description
In	Specifies an explicit list of dimensions to use in the context.
ForEach	Adds dimensions to the default context
ForAll	Removes dimensions from the default context

The ForAll and ForEach operators are useful when you have a default context with many dimensions. It is often easier to add or subtract from the context using ForAll and ForEach than it is to specify the list explicitly using In.

6.6.4.1.4.1.1 In context operator

The `In context` operator specifies dimensions explicitly in a context.

Example

Using In to specify the dimensions in a context

In this example you have a report showing Year and Sales revenue. Your data provider also contains the Quarter object but you do not include this dimension in the block. Instead, you want to include an additional column to show the maximum revenue by quarter in each year. Your report looks like this:

Year	Sales revenue	Max Quarterly Revenue
2001	$8,096,123.60	$2,660,699.50
2002	$13,232,246.00	$4,186,120.00
2003	$15,059,142.80	$4,006,717.50

You can see where the values in the Max Quarterly Revenue column come from by examining this block in conjunction with a block that includes the Quarter dimension:

Year	Quarter	Sales revenue
2001	Q1	$2,660,699.50
2001	Q2	$2,279,003.00
2001	Q3	$1,367,841.00
2001	Q4	$1,788,580.00
	Max:	$2,660,699.50

Year	Quarter	Sales revenue
	Q1	$3,326,172.00
	Q2	$2,840,651.00
	Q3	$2,879,303.00
	Q4	$4,186,120.00
	Max:	$4,186,120.00

Year	Quarter	Sales revenue
	Q1	$3,742,989.00
	Q2	$4,006,717.50
	Q3	$3,953,395.00
	Q4	$3,356,041.00
	Max:	$4,006,717.50

The Max Quarterly Revenue column shows the highest quarterly revenue in each year. For example, Q4 has the highest revenue in 2002, so the Max Quarterly Revenue shows Q4 revenue on the row showing 2002.

Using the In operator, the formula for Max Quarterly Revenue is

```
Max ([Sales revenue] In ([Year];[Quarter])) In ([Year])
```

This formula calculates the maximum sales revenue for each (Year,Quarter) combination, then outputs this figure by year.

Note

Because the default output context of the block is Year, you do not need to specify the output context explicitly in this formula.

6.6.4.1.4.1.2 ForEach context operator

The `ForEach` operator adds dimensions to a context.

Example

Using ForEach to add dimensions to a context

The following table shows the maximum revenue for each Quarter in a report which contains the Quarter dimension but does not include it in the block:

Year	Sales revenue	Max Quarterly Revenue
2001	8096123.60	2660699.50
2002	13232246.00	4186120.00
2003	15059142.80	4006717.50

It is possible to create a formula for the Max Quarterly Revenue column that does not include the ForEach operator:

```
Max ([Sales revenue] In ([Year];[Quarter])) In ([Year])
```

Using the ForEach context operator, you can achieve the same result with the following formula:

```
Max ([Sales revenue] ForEach ([Quarter])) In ([Year])
```

Why? Because the Year dimension is the default input context in the block. By using the ForEach operator, you add the Quarter dimension to the context, giving an input context of ([Year];[Quarter]).

6.6.4.1.4.1.3 ForAll context operator

The `ForAll` context operator removes dimensions from a context.

Example

Using ForAll to remove dimensions from a context

You have a report showing Year, Quarter and Sales revenue and you want to add a column that shows the total revenue in each year, as shown in the following block:

Year	Quarter	Sales revenue	Yearly Total
2001	Q1	$2660700	$8096124
2001	Q2	$2279003	$8096124
2001	Q3	$1367841	$8096124
2001	Q4	$1788580	$8096124
2002	Q1	$3326172	$13232246
2002	Q2	$2840651	$13232246
2002	Q3	$2879303	$13232246
2002	Q4	$4186120	$13232246
2003	Q1	$3742989	$15059143
2003	Q2	$4006718	$15059143
2003	Q3	$3953395	$15059143
2003	Q4	$3356041	$15059143

To total revenues by year the input context needs to be (Year); by default it is (Year; Quarter). Therefore, you can remove Quarter from the input context by specifying `ForAll ([Quarter])` in the formula, which looks like this:

```
Sum([Sales revenue] ForAll ([Quarter]))
```

Note that you can use the In operator to achieve the same thing; in this case the formula is:

```
Sum([Sales revenue] In ([Year]))
```

This version of the formula explicitly specifies Year as the context, rather than removing Quarter to leave Year.

6.6.5 Calculating values with smart measures

6.6.5.1 Calculating values with smart measures

Smart measures are measures whose values are calculated by the database (relational or OLAP) on which a universe is based.

They differ from classic measures, which are calculated from the detailed values returned by the database. The data returned by smart measures is aggregated in ways not supported natively by the Web Intelligence component of the SAP BusinessObjects Business Intelligence platform.

Queries that contain smart measures calculate the measures in all the calculation contexts required in a report. These contexts can change as the report changes. As a result, the query changes at each data refresh after the required contexts have changed.

When you edit such a report, automatically the #TOREFRESH message is inserted in the report reminding you that the report should be refreshed in order to reflect the changes. You can choose to update the report automatically by selecting the Auto-refresh document option in the Document properties dialog

> **Note**
>
> The measure delegation is static and defined based on the report definition at design time. In some cases (formula based on “if [choice]= 1 then [dimension 1) else [dimension 2]”) the dimensional context is variable at run time. In this case the system cannot delegate the measure calculation and returns an empty value.

Smart measures behave differently from classic measures, which support a basic set of aggregation functions (Max, Min, Count, Sum, Average) that can be calculated in all contexts without help from the database. For example, if you build a query containing the [Country] and [Region] dimensions and the [Revenue] measure (which calculates the sum of the revenue), the initial display shows Country, Region and Revenue in a block. If you remove Region from the block, the total revenue for each country can still be calculated without a data refresh by summing the revenues for all the regions in the country. A smart measure requires a data refresh in this situation.

Calculation contexts are represented by grouping sets in the generated query.

6.6.5.1.1 Grouping sets and smart measures

A grouping set is a set of dimensions that generates a result for a measure.

The generated SQL that returns the data in a smart measure includes grouping sets for all the aggregations of that measure that are included in the report.

> **Example**
>
> **Grouping sets in a query**
>
> A query contains the [Country], [Region], [City] dimensions and the [Revenue] smart measure. These objects imply the following grouping sets to calculate revenue in all possible contexts:
>
> - Total smart measure value
> - smart measure value by (Country, Region, City)

- smart measure value by (Country, City)
- smart measure value by (City)
- smart measure value by (Region, City)
- smart measure value by (Region)
- smart measure value by (Country, Region)
- smart measure value by (Country)

If the database supports `UNION`, each grouping set is represented in a `UNION` clause in the generated SQL.

The grouping sets are updated according to the calculation contexts required by the report, which can change in response to changes in the report structure.

6.6.5.1.1.1 Management of grouping sets

When you first build and run a query including smart measures, the generated SQL includes the grouping set necessary to calculate the smart measures at the most detailed level implied by the query objects.

For example, if you build a query containing the [Country], [Region] and [City] dimensions and the [Revenue] smart measure, the (Country, Region, City) grouping set appears in the generated SQL. The most detailed grouping set always appears in the SQL. Other grouping sets are added and removed in response to changes in the report.

If you remove the [City] dimension from the block, the (Country, Region) grouping set is required to return the revenue values. This grouping set is not yet available in the query SQL, so #TOREFRESH appears in the [Revenue] cells. When you refresh the data, #TOREFRESH is replaced with the revenue values.

If you then replace the [City] dimension in the block, the (Country, Region) grouping set is no longer needed. It is removed from the query SQL and its values discarded the next time you refresh the data.

Each time you refresh the report data, grouping sets are included or discarded according to the calculation contexts required by the report.

In certain situations, it is not possible to display the value of a smart measure. In this case, #UNAVAILABLE appears in the measure cells.

6.6.5.1.2 Smart measures and the scope of analysis

When you build a query with a scope of analysis, the initial grouping set contains the result objects, but not the scope objects.

The query does not generate all the possible grouping sets from the combination of the result objects and the scope objects.

Example

A query with a scope of analysis and a smart measure

A query has the result objects [Country] and [Revenue]. The scope of analysis contains the [Region] and [City] dimensions. When you run the query, its SQL contains the (Country) grouping set and it displays [Country] and [Revenue] in a block.

6.6.5.1.3 Smart measures and SQL

6.6.5.1.3.1 Grouping sets and the UNION operator

Some databases support grouping sets explicitly with the `GROUPING SETS` operator.

When you build a query containing smart measures, the generated SQL uses multiple result sets and the `UNION` operator to simulate the effect of `GROUPING SETS`.

Example

Grouping sets retrieved with the UNION operator

This example describes a query containing [Country], [Region], [City] dimensions and the [Revenue] smart measure.

Note

For simplicity, the smart measure calculates a sum. In practice, a smart measure is not needed for this aggregation because sums are supported natively in Web Intelligence.

When the query is first run, the grouping set is (Country, Region, City). The entire SQL query returns this grouping set and there is no need for the `UNION` operator in the SQL.

If you remove the [City] dimension from the table, the (Country, Region) grouping set is required to display the revenue (which appears initially as #TOREFRESH). After data refresh, the SQL is as follows:

```
SELECT
  SELECT
  0 AS GID,
  country.country_name,
  region.region_name,
  NULL,
  sum(city.revenue)
FROM
  country,
  region,
  city
WHERE
  ( country.country_id=region.country_id  )
  AND  ( region.region_id=city.region_id  )
GROUP BY
  country.country_name,
  region.region_name
UNION
SELECT
```

```
  1 AS GID,
  country.country_name,
  region.region_name,
  city.city_name,
  sum(city.revenue)
FROM
  country,
  region,
  city
WHERE
  ( country.country_id=region.country_id  )
  AND  ( region.region_id=city.region_id  )
GROUP BY
  country.country_name,
  region.region_name,
  city.city_name
```

Each grouping set is represented by a `SELECT` statement, and each has its own ID (the GID column). Grouping sets that do not contain the full set of dimensions include empty columns (`SELECT ''`) because each `SELECT` statement in a query including `UNION` must have the same number of columns.

If you add a new block containing [Country] and [Revenue] to the report, the (Country) grouping set is required. The generated SQL now includes three grouping sets as follows:

```
SELECT
  0 AS GID,
  country.country_name,
  region.region_name,
  NULL,
  sum(city.revenue)
FROM
  country,
  region,
  city
WHERE
  ( country.country_id=region.country_id  )
  AND  ( region.region_id=city.region_id  )
GROUP BY
  country.country_name,
  region.region_name
UNION
SELECT
  1 AS GID,
  country.country_name,
  NULL,
  NULL,
  sum(city.revenue)
FROM
  country,
  city,
  region
WHERE
  ( country.country_id=region.country_id  )
  AND  ( region.region_id=city.region_id  )
GROUP BY
  country.country_name
UNION
SELECT
  2 AS GID,
  country.country_name,
  region.region_name,
  city.city_name,
  sum(city.revenue)
FROM
  country,
  region,
```

```
  city
WHERE
  ( country.country_id=region.country_id  )
  AND  ( region.region_id=city.region_id  )
GROUP BY
  country.country_name,
  region.region_name,
  city.city_name
```

6.6.5.1.4 Smart measures and formulas

6.6.5.1.4.1 Smart measures and dimensions containing formulas

If a formula or variable appears as a dimension in the calculation context of a smart measure, and the formula determines the grouping set required by the measure, the values of the smart measure can be displayed.

For example, smart measures and dimensions now return values for:

- A URL created with hyperlink wizard.
- Simple concatenation on a dimension (or blank removal).
- When FormatDate is used on [date]

> **Note**
>
> The message #UNAVAILABLE is stil returned for the following functions: ForEach, ForAll, In, Where, Rank, Previous, RelativeValue, RelativeDate, TimeDim, and in the Aggregation function when Min, Max, Last, or First are used in the formula: if ([selection] =1) then [dim1] else [dim2]

6.6.5.1.4.2 Smart measures in formulas

Smart measures can return values when included in formulas, even when the formula requires a different calculation context from the context implied by the position of the formula.

For example, a report contains a block as follows:

Table 248:

Country	Region	Revenue
US	North	10000
US	South	15000
US	East	14000
US	West	12000

If you include an additional column in this table with the formula

```
[Revenue] ForAll ([Region])
```

the initial value of the column is #TOREFRESH because the formula, which excludes regions from the calculation, requires the grouping set (Country). Refreshing the data adds the (Country) grouping set to the query and displays the values of the measure.

Related Information

ForAll context operator [page 502]

6.6.5.1.5 Smart measures and filters

6.6.5.1.5.1 Restrictions concerning smart measures and filters

A smart measure can be evaluated in the body of a table when there is no filter in the table or in the parent context (a report filter).

The following table describes how smart measures are evaluated when filters are present.

Table 249: How smart measures are evaluated when a filter is present in the report

When the filter is on a ...	The smart measure is evalueated this way
Measure	The smart measure will be correctly evaluated, but some rows will be removed from the table.
Dimension that is already part of the table axis	The smart measure will be correctly evaluated, but some rows will be removed from the table. The smart measure can be evaluated, because there is no aggregation after the filtering.
Dimension that is not part of the axis of the table, and when the filter operand is mono-value (the filter will return one value/row).	The smart measure will be correctly evaluated. The smart measure can be evaluated because there is no aggregation after the filtering.
Dimension that is not part of the axis of the table, and if the filter operand is multivalue (the filter can return many values/rows).	The smart measure can't be evaluated (#UNAVAILABLE is displayed) because in this case, filtering is done before aggregation, and for one row of the table, aggregation is required.

6.6.5.1.5.2 Smart measures and filters on dimensions

If you apply a multi-valued filter to a dimension on which the value of a smart value depends, but the dimension does not appear explicitly in the calculation context of the measure, the smart measure cannot return a value, and the cell displays #UNAVAILABLE.

This also applies when a report filter comes from an input control.

#UNAVAILABLE appears because the measure must be filtered in the report and then aggregated, but a smart measure cannot be aggregated after a report-level filter is applied. Calculating the measure would be possible by adding a query filter to the generated SQL, but this solution carries the risk of impacting other reports based on the same query.

Note

A multi-valued filter filters on multiple values using operators such as Greater Than, In List or Less Than. You can apply single-valued filters such as Equal To without generating the #UNAVAILABLE error.

Note

There is a workaround for cases which do not require aggregation: Define the formula as variable whose qualification is a measure and be sure that the used dimension is included in the block with the variable (you can hide that column for a better display).

Example

A smart measure and a filter on a dimension

A query contains the Country and Product dimensions and the Revenue smart measure. Country and Revenue are displayed in a block. If you apply a report filter restricting the values of Product to "Dresses" or "Jackets", #UNAVAILABLE appears in the Revenue cells.

Country	Revenue
France	#UNAVAILABLE
US	#UNAVAILABLE
Sum:	#UNAVAILABLE

If you restrict Product to "Jackets" only, the values are displayed.

Country	Revenue
US	971,444
Sum:	971,444

Note

A multivalue filter on Country will return results because the filter is in the table.

6.6.5.1.5.3 Filtering smart measures

The value in the table footer must be the aggregation of what the user sees in the table.

If what user sees in the table is filtered locally, then the system cannot return delegated aggregation of what is locally filtered.

Example

Filtering a smart measure

Country	OrderAmountDel
Brazil	28,833.36
China	51,384.33
France	68,630.22
USA	3,529,511.14
Total:	3,678,359.05
Sum:	3,678,359.05

When the data in the following table is filtered by OrderAmountDel > 60,000

The table shows the rows for which the OrderAmountDel in the context of table (per country) is greater than 60,000:

Sum in footer calculates the sum of the visible rows;

Total returns #UNAVAILABLE because the calculation is pushing the aggregation to the back end, but because Web Intelligence has performed local filtering, the aggregation cannot be delegated.

Country	OrderAmountDel
France	68,630.22
USA	3,529,511.14
Total:	#UNAVAILABLE
Sum:	3,598,141.36

6.6.5.1.5.4 Smart measures and drill filters

A drill filter is a single valued filter.

You can drill using the drill bar directly.

6.6.5.1.5.5 Smart measures and nested OR filters

Nested OR filters in which at least one of the filtered dimensions does not appear in a block generate the #UNAVAILABLE error for a smart measure in the block.

This is because the smart measure has to be aggregated locally after some local processing (for example, filtering; some specific Web Intelligence formula) and this is not delegated.

6.6.6 Functions, operators and keywords

6.6.6.1 Functions

Formula functions are divided into several categories.

> **Note**
>
> In the following languages, the functions are not translated: Chinese, Japanese, Hungarian, Polish, Turkish, Thai, and Russian. They appear in the interface in English.

Table 250:

Category	Description
Aggregate	Aggregates data (for example by summing or averaging a set of values)
Character	Manipulates character strings
Date and Time	Returns date or time data
Document	Returns data about a document
Data Provider	Returns data about a document's data provider
Logical	Returns TRUE or FALSE
Numeric	Returns numeric data
Misc	Functions that do not fit into the above categories
Set	Returns sets of members from hierarchies

SAP HANA Online Mode functions restrictions

The functions listed in the table below are not supported in SAP HANA Online mode.

Table 251:

Function Category	Function Name
Data Provider	Connection
	DataProvider
	DataProviderKeyDate
	DataProviderKeyDateCaption
	DataProviderSQL
	DataProviderType
	IsPromptAnswered
	LastExecutionDate

Function Category	Function Name
	LastExecutionDuration
	LastExecutionTime
	NumberOfDataProviders
	NumberOfRows
	RefValueDate
	RefValueUserResponse
	ServerValue
	UniverseName
	UserResponse
Document	DocumentPartiallyRefreshed
	QuerySummary
Misc	ForceMerge
	Key
	NoFilter
	RefValue
	RowIndex
Set	Ancestor
	Children
	Depth
	Descendants
	IsLeaf
	Lag
	Parent
	Siblings

6.6.6.1.1 Custom formats

In tables, you can use the Custom format type to define a customized format for any cell.

In Web Intelligence functions, the day/date, calendar and time of day character definitions below apply. The following table lists the strings you can use to create custom formats:

Table 252:

Character(s)	Display(s)	Example
#	The corresponding digit. If the number has less digits than the number of # characters used to specify the format, no leading zeros are inserted.	'12345' with the format #,##0 gives '12,345' (if your locale defines the grouping separator as a comma) or '12 345' (if your locale defines the grouping separator as a space)
0	The corresponding digit. If the number has less digits than the number of 0 characters used to specify the format, a leading zero(s) is inserted before the number.	'123' with the format #0,000 gives '0,123'
,	The grouping separator as defined by your locale.	'1234567' with the format #,##0 gives '1,234,567' (if you locale defines the grouping separator as a comma) or '1 234 567' (if your locale defines the grouping separator as a non-breaking space)
.	The decimal separator as defined by your locale.	'12.34' with the format #.#0 gives '12.34' (if your locale defines the decimal separator as a period) or '12,34' (if your locale defines the decimal separator as a comma)
[%]%	Displays a percentage sign (%) after the result and multiplies the result by 100.	0.50 becomes 50%.
%	The % sign after the result, but does not multiply the result by 100.	0.50 becomes 0.50%
	A non-breaking space ( )	'1234567' with the format # ##0 gives '1234 567'
1, 2, 3, a, b, c, $, £, € (and so on)	The alphanumeric character.	'705.15' with the format $#.#0 gives '$705.15' or with the format #,#0 € gives '705,15 €' **Note** Alphanumeric characters should be delimited by single quotes, otherwise they can be interpreted as formatting characters. For example, # # will result in '123 4' while '#' # will result in '# 1234'
[Red], [Blue], [Green], [Yellow], [Gray], [White], [Dark Red], [Dark Blue], [Dark Green]	The value in the specified color.	'150' with the format #,##0[Red] gives '150' in red text, #,##0[Blue] gives '150' in blue text.
Day/date characters	(day, date)	
d	The number of the day in the month with no leading zeros. If the date for day is less than two characters, the date displays without a zero before it.	The first day of a month with the format d gives '1'

Character(s)	Display(s)	Example
dd	The number of the day with leading zeros. If the date for day is less than two characters, the date displays with a zero before it.	The first day of a month with the format dd gives '01'
ddd	The name of the day abbreviated. The first letter is capitalized if the selected locale uses capitalized day names.	'Monday' with the format ddd gives 'Mon' in English, in French, lundi gives lun.
Dddd	Forced the capitalization of the day name, for any locale.	'Monday' with the format Dddd gives 'Mon' in English, in French, lundi gives Lun.
dddd	The name of the day in full. The first letter is capitalized if the selected locale uses capitalized day names.	'Monday' with the format dddd gives 'Monday' in English. In French, the day is lundi.
DDDD	The name of the day in full, in uppercase.	'Monday' with the format DDDD gives 'MONDAY' in English. In French, the day is LUNDI.
dddd dd	The day of the week followed by a space and the number of the day.	'Monday' with the format dddd dd gives 'Monday 01'
Calendar characters	(week, month, year)	
M	The number of the month with no leading zeros. If the number for month is less than two characters, the number displays without a zero before it.	'January' with the format M gives '1'
MM	The number of the month with leading zeros. If the number for month is less than two characters, the number displays with a zero before it.	'January' with the format MM gives '01'
mmm	The name of the month abbreviated. The first letter is capitalized if the selected locale uses capitalization.	'January' with the format mmm gives Jan in English. In French, this is 'jan'.
Mmmm	The name of the month abbreviated. The first letter is capitalized for all locales.	'January' with the format mmm gives Jan in English. In French, this is 'Jan'.
mmmm	The name of the month in full. The first letter is capitalized if the selected locale used capitalization.	'January' with the format mmmm gives January in English, janvier in French
MMMM	The name of the month in full all in uppercase.	'January' with the format MMMM gives JANUARY in English, JANVIER in French
ww	The week number of the year.	For the 9th of January 2015, the ww format gives '02', because it is the seventh week of the year 2015.
w	The week number of the year without leading zero.	For the 9th of January 2015, the w format gives '2', because it is the seventh week of the year 2015.
W	The week number of the month.	For the 9th of January 2015, the W format gives '2', because it is the second week of January.

Character(s)	Display(s)	Example
yy	The last two digits for year.	'2003' with the format yy gives '03'
yyyy	All four digits for year.	'2003' with the format yyyy gives '2003'
Time of day characters	(hours, minutes, seconds, am/pm)	
hh:mm:ss a	The hour with no leading zeros and the minutes and seconds with leading zeros. The "a" character displays AM or PM after the time when available.	'21:05:03' with the format hh:mm:ss a gives '9:05:03 PM' for English locale
H	The hour according to the 24-hour clock, starting at 0. No leading zero for single figure hours.	'21:00' with the format H gives '21'. Possible values are 0-23.
HH	The hour according to the 24-hour clock, starting at 0.	'21:00' with the format HH gives '21'. Possible values are 00-23.
k	The hour according to the 24-hour clock, starting at 1. No leading zero for single figure hours.	'21:00' with the format k gives '21'. Possible values are 1-24.
kk	The hour according to the 24-hour clock, starting at 01.	'21:00' with the format kk gives '21'. Possible values are 01-24.
hh	The hour according to the 12-hour clock.	'21:00' with the format hh gives '09'
HH:mm	The hour and minutes with a zero in front of a single-digit hour.	'7:15 am' with the format HH:mm gives '07:15'
HH:mm:ss	The hour, minutes, and seconds with a zero in front of a single-digit hour.	'7:15 am' with the format HH:mm:ss gives '07:15:00'
mm:ss	The minutes, and seconds with a zero in front of a single-digit hour.	'07:15:03' with the format mm:ss gives '15:03'
z	The time zone information on a date/time value as follows: GMT+/−HH:mm	

6.6.6.1.2 Aggregate functions

6.6.6.1.2.1 Aggregate

Description

Returns the default aggregation of a measure for a given member set

Function Group

Aggregate

Syntax

```
num Aggregate(measure[;member_set])
```

Input

Parameter	Description	Type	Required
measure	Any measure	Measure	Yes
member_set	The member set used to calculate the aggregation	Member set	No

Notes

- You can use extended syntax context operators with `Aggregate`.
- If you include `member_set`, `Aggregate` returns the aggregate value of the measure for all members in the member set.
- `member_set` can include multiple sets separated by semicolons (;).
- The list of member sets must be enclosed in {}.
- If the member set expression does not specify a precise member or node, the hierarchy referenced must be present in the table, then the member set expression references the current member in the hierarchy in the table. If the hierarchy is not in the table, the function returns the message #MULTIVALUE.
- Delegated measure aggregation returns #TOREFRESH when the required aggregation is not available in the query. The user has to refresh the document to get the new level of aggregation. This occurs for example when using the filter bar when the user selects a value before “all values” and vice versa when selecting “all values” before a selected value.

Examples

If the default aggregation of the [Sales Revenue] measure is Sum, and [California] is a member in the [Geography] hierarchy (Country > State > City), `Aggregate([Sales Revenue];{Descendants([Geography]&[US].[California];1)})` returns the total sales revenue of all cities in California.

Related Information

Referring to members and member sets in hierarchies [page 729]

6.6.6.1.2.2 Member selection in aggregate functions

Description

For certain aggregate functions you can define a member selection to define the aggregation context when the block contains a hierarchy.

Function Group

Aggregate

Syntax

```
=AggregationFunction([my object];{memberselection})
```

Input

Parameter	Description	Type	Required
AggregationFunction	Must be one of the following: • Aggregate • Average • Coun • Ma • Mi • Sum	Aggregate function	Yes
my object	Dimension or a measure	Dimension or Measure	Yes
memberselection	A defined member, or a calculated set of member using set functions. The memberselection must be enclosed in curly brackets. Each part of the member set is separated with semicolon `{[member one];[member two];CalculatedMemberSet()}` Where CalculatedMemberSet uses one of the set functions:	Member or a calculated set of members using Set functions.	Yes

Parameter	Description	Type	Required
	• Ancestor • Descendant • Lag • Children • Parent • Siblings		

Description

The set functions use Object, Level, or Member as parameters. If you specify only Object and the object is a hierarchical object present in the block, then it will use the current member. You can also define a specific member using the following syntax :

```
[HierarchicalOBject]&[RootMember].[ChildMember].[ChildMember]
```

For Microsoft and Essbase .UNX sources you can select select a Level :

```
[HierarchicalOBject].[LevelName]
```

Examples

The following examples are all taken from an English language data source.

Example

In the following sample, you want to get the internet sales difference between Year 2002 and Year 2001:

```
=Sum([Internet Sales].[Internet Sales Amount];{[Calendar].[Date.Calendar]&[All
Periods].[CY 2002]}) + Sum([Internet Sales].[Internet Sales Amount];{[Calendar].
[Date.Calendar]&[All Periods].[CY 2001]})
```

Or either select two members in the member selection :

```
=Sum([Internet Sales].[Internet Sales Amount];{[Calendar].[Date.Calendar]&[All
Periods].[CY 2002]};[Calendar].[Date.Calendar]&[All Periods].[CY 2001]})
```

Date.Calendar	Internet Sales Amount	{CY 2001;CY 2002}
All Periods	29,358,677.22	9,796,717.18
CY 2001	3,266,373.66	
CY 2002	6,530,343.53	
CY 2003	9,791,060.3	
CY 2004	9,770,899.74	

Example

In the following sample, you have a product hierarchy, and you want to know the internet sales for all products related to bikes. But two of them are in a different branch:

```
=Sum([Query 3].[Internet Sales].[Internet Sales Amount];{[Product Model
Categories]&[All Products].[Accessories].[Bike Racks];[Product Model
Categories]&[All Products].[Accessories].[Bike Stands];[Product Model
Categories]&[All Products].[Bikes]})
```

Bikes Amount	28,397,095.65
All Products	29,358,677.22
Accessories	700,759.96
Bike Racks	39,360
Bike Stands	39,591
Bottles and Cages	56,798.19
Cleaners	7,218.6
Fenders	46,619.58
Helmets	225,335.6
Hydration Packs	40,307.67
Tires and Tubes	245,529.32
Bikes	28,318,144.65
Mountain Bikes	9,952,759.56
Road Bikes	14,520,584.04
Touring Bikes	3,844,801.05
Clothing	339,772.61
Caps	19,688.1
Gloves	35,020.7
Jerseys	172,950.68
Shorts	71,319.81
Socks	5,106.32
Vests	35,687

Example

In the following sample, you want to compare Internet Sales Amount between North America Area countries, comparing first of all Canada and USA, and then with other countrys worldwide:

Firstly, get the total for the North American countries, for this sample, you are only interested in Canada and USA :

```
 =Sum([Query 2].[Internet Sales].[Internet Sales Amount];{[Customer Geography]&[All Customers].[Canada];[Customer Geography]&[All Customers].[United States]})
```

Customer Geography		Internet Sales Amount
All Customers	11,367,634.37	29,358,677.22
Australia	11,367,634.37	9,061,000.58
Canada	11,367,634.37	1,977,844.86
France	11,367,634.37	2,644,017.71
Germany	11,367,634.37	2,894,312.34
United Kingdom	11,367,634.37	3,391,712.21
United States	11,367,634.37	9,389,789.51

Then you want to compare all countries with North America :

```
=[Query 2].[Internet Sales].[Internet Sales Amount] / Sum([Query 2].[Internet Sales].[Internet Sales Amount];{[Customer Geography]&[All Customers].[Canada];[Customer Geography]&[All Customers].[United States]})
```

Customer Geography		Internet Sales Amount
All Customers	258.27%	29,358,677.22
Australia	79.71%	9,061,000.58
Canada	17.40%	1,977,844.86
France	23.26%	2,644,017.71
Germany	25.46%	2,894,312.34
United Kingdom	29.84%	3,391,712.21
United States	82.60%	9,389,789.51

We can see that the global world total of customers is two and a half times that of North America, and that Australia is 80% compared to North America.

Related Information

Aggregate [page 515]

6.6.6.1.2.3 Average

Description

Returns the average value of a measure

Function Group

Aggregate

Syntax

```
num Average(measure[;member_set][;IncludeEmpty])
```

Input

Parameter	Description	Type	Required
measure	Any measure	Measure	Yes
member_set	A set of members	Member set	No
IncludeEmpty	Includes empty rows in the calculation	Keyword	No (Empty rows excluded by default)

Notes

- You can use extended syntax context operators with `Average`.
- If you include `member_set`, `Average` returns the average value of the measure for all members in the member set.
- `member_set` can include multiple sets separated by semicolons (;).
- The list of member sets must be enclosed in {}.
- If the member set expression does not specify a precise member or node, the hierarchy referenced must be present in the table, then the member set expression references the current member in the hierarchy in the table. If the hierarchy is not in the table, the function returns the message #MULTIVALUE.
- Delegated measure aggregation returns #TOREFRESH when the required aggregation is not available in the query. The user has to refresh the document to get the new level of aggregation. This occurs for example

when using the filter bar when the user selects a value before “all values” and vice versa when selecting “all values” before a selected value.

- A delegated measure given against a group returns #UNAVAILABLE as it requires local aggregation (aggregation of the measure value of the grouped values).
  Even when you force local aggregaton on a delegated measure against an "if then else" formula or group value it will still return the #MULTIVALUE message.

Examples

If the [Sales Revenue] measure has the values 41569, 30500, 40000 and 50138, `Average([Sales Revenue])` returns 40552.

If [California] is a member in the [Geography] hierarchy (Country > State > City), `Average([Sales Revenue];{[Geography]&[US].[California].children})` returns the average sales revenue of all cities in California.

Related Information

Referring to members and member sets in hierarchies [page 729]
IncludeEmpty operator [page 713]

6.6.6.1.2.4 Count

Description

Returns the number of values in a set of values

Function Group

Aggregate

Syntax

```
integer Count(aggregated_data[;member_set][;IncludeEmpty][;Distinct|All])
```

Input

Parameter	Description	Type	Required
aggregated_data	Any dimension, measure, hierarchy, level or member set	Dimension, measure, hierarchy, member set	Yes
member_set	The member set used to calculate the count	Member set	No
IncludeEmpty	Includes empty values in the calculation	Keyword	No
Distinct|All	Includes distinct values only (default for dimensions) or all values (default for measures) in the calculation	Keyword	No

Notes

- You can use extended syntax context operators with `Count`.
- If you specify `IncludeEmpty` as the second argument, the function takes empty (null) values into consideration in the calculation.
- If you do not specify the `Distinct|All` parameter, the default values are `Distinct` for dimensions and `All` for measures.
- If you include `member_set`, `Count` restricts the count to the number of values in `member_set`.
- `member_set` can include multiple sets separated by semicolons (;).
- The list of member sets must be enclosed in {}.
- If the member set expression does not specify a precise member or node, the hierarchy referenced must be present in the table, then the member set expression references the current member in the hierarchy in the table. If the hierarchy is not in the table, the function returns the message #MULTIVALUE.
- Delegated measure aggregation returns #TOREFRESH when the required aggregation is not available in the query. The user has to refresh the document to get the new level of aggregation. This occurs for example when using the filter bar when the user selects a value before *All values* and vice versa when selecting *All values* before a selected value.
- A delegated measure given against a group returns #UNAVAILABLE as it requires local aggregation (aggregation of the measure value of the grouped values).
  Even when you force local aggregaton on a delegated measure against an "if then else" formula or group value it will still return the #MULTIVALUE message.

Examples

`Count("Test")` returns 1

`Count([City];Distinct)` returns 5 if there are 5 different cities in a list of cities, even if there are more than 5 rows in the list due to duplication.

`Count([City];All)` returns 10 if there are 10 cities in a list of cities, even though some are duplicated.

`Count ([City];IncludeEmpty)` returns 6 if there are 5 cities and one blank row in a list of cities.

`Count([Product];{[Geography]&[State]})` returns the total number of products at the [State] level in the [Geography] hierarchy.

Related Information

IncludeEmpty operator [page 713]
Distinct/All operators [page 713]

6.6.6.1.2.5 First

Description

Returns the first value in a data set

Function Group

Aggregate

Syntax

```
input_type First(dimension|measure)
```

Input

Parameter	Description	Type	Required
dimension|measure	Any dimension or measure	Dimension or measure	Yes

Notes

- When placed in a break footer, `First` returns the first value in the break.
- When placed in a table footer, `First` returns the first value in the table.
- When placed in a table body, the result of `First` is unpredictable and depends on the order of the data set in the data source.

Examples

When placed in a table footer, `First([Revenue])` returns the first value of [Revenue] in the table.

6.6.6.1.2.6 Interpolation

Description

Calculates empty measure values by interpolation

Function Group

Aggregate

Syntax

```
num Interpolation(measure[;PointToPoint|Linear]
[;NotOnBreak|(reset_dims)][;Row|Col])
```

Input

Parameter	Description	Type	Required
measure	Any measure	Measure	Yes
PointToPoint|Linear	The interpolation method:	Keyword	No (`PointToPoint` is default)

Parameter	Description	Type	Required
	• `PointToPoint` - point-to-point interpolation • `Linear` - linear regression with least squares interpolation		
NotOnBreak| reset_dims	• `NotOnBreak` - prevents the function from resetting the calculation on block and section breaks • `reset_dims` - the list of dimensions used to reset the interpolation	Keyword| dimension list	No
Row|Col	Sets the calculation direction	Keyword	(`Row` is default)

Notes

- `Interpolation` is particularly useful when you create a line graph on a measure that contains missing values. By using the function you ensure that the graph plots a continuous line rather than disconnected lines and points.
- Linear regression with least squares interpolation calculates missing values by calculating a line equation in the form f(x) = ax + b that passes as closely as possible through all the available values of the measure.
- Point-to point interpolation calculates missing values by calculating a line equation in the form f(x) = ax + b that passes through the two adjacent values of the missing value.
- The sort order of the measure impacts the values returned by `Interpolation`.
- You cannot apply a sort or a ranking to a formula containing `Interpolation`.
- If there is only one value in the list of values, `Interpolation` uses this value to supply all the missing values.
- Filters applied to an interpolated measure can change the values returned by `Interpolation` depending on which values the filter impacts.

Examples

`Interpolation([Value])` supplies the following missing values using the default point-to-point interpolation method:

Table 253:

Day	Value	Interpolation([Value])
Monday	12	12
Tuesday	14	14

Day	Value	Interpolation([Value])
Wednesday		15
Thursday	16	16
Friday		17
Saturday		18
Sunday	19	19

Related Information

Linear operator [page 714]
PointToPoint operator [page 716]

6.6.6.1.2.7 Last

Description

Returns the last value in a data set

Function Group

Aggregate

Syntax

```
input_type Last(dimension|measure)
```

Input

Parameter	Description	Type	Required
dimension|measure	Any dimension or measure	Dimension or measure	Yes

Notes

- When placed in a table footer, `Last` returns the last value in the in the break.
- When placed in a table footer, `Last` returns the last value in the table.
- When placed in a table body, the result of `Last` is unpredictable and depends on the order of the data set in the data source.
- For technical reasons, `Last` can return a null value when the input parameter is a merged object.

Examples

When placed in a table footer, `Last([Revenue])` returns the last value of [Revenue] in the table.

6.6.6.1.2.8 Max

Description

Returns the largest value in a set of values

Function Group

Aggregate

Syntax

```
input_type Max(aggregated_data[;member_set])
```

Input

Parameter	Description	Type	Required
aggregated_data	Any dimension, measure, hierarchy, level or member set	Dimension, measure, hierarchy, level or member set	Yes
member_set	A set of members	Member set	No

Notes

- You can use extended syntax context operators with `Max`.
- If you include `member_set`, `Max` returns the maximum value of the aggregated data for all members in the member set.
- `member_set` can include multiple sets separated by semicolons (;).
- The list of member sets must be enclosed in {}.
- If the member set expression does not specify a precise member or node, the hierarchy referenced must be present in the table, then the member set expression references the current member in the hierarchy in the table. If the hierarchy is not in the table, the function returns the message #MULTIVALUE.
- Delegated measure aggregation returns #TOREFRESH when the required aggregation is not available in the query. The user has to refresh the document to get the new level of aggregation. This occurs for example when using the filter bar when the user selects a value before “all values” and vice versa when selecting “all values” before a selected value.
- A delegated measure given against a group returns #UNAVAILABLE as it requires local aggregation (aggregation of the measure value of the grouped values).
  Even when you force local aggregaton on a delegated measure against an "if then else" formula or group value it will still return the #MULTIVALUE message.

Examples

If the [Sales Revenue] measure has the values 3000, 60034 and 901234, `Max([Sales Revenue])` returns 901234.

If the [City] dimension has the values "Aberdeen" and "London", `Max ([City])` returns "London".

If [US] is a member in the [Geography] hierarchy (Country > State > City), `Max([Sales Revenue]; {[Geography].[US].Children})` returns the highest sales revenue for a US state.

6.6.6.1.2.9 Median

Description

Returns the median (middle value) of a measure

Function Group

Aggregate

Syntax

```
num Median(measure)
```

Input

Parameter	Description	Type	Required
measure	Any measure	Measure	Yes

Notes

If the set of numbers has an even number of values, `Median` takes the average of the middle two values.

Examples

`Median([Revenue])` returns 971,444 if [Revenue] has the values 835420, 971444, and 1479660.

6.6.6.1.2.10 Min

Description

Returns the smallest value in a set of values

Function Group

Aggregate

Syntax

```
input_type Min(aggregated_data[;member_set])
```

Input

Parameter	Description	Type	Required
aggregated_data	Any dimension, measure, hierarchy, level or member set	Dimension, measure, hierarchy, level or member set	Yes
member_set	A set of members	Member set	No

Notes

- You can use extended syntax context operators with `Min`.
- If you include `member_set`, `Min` returns the minimum value of the aggregated data for all members in the member set.
- `member_set` can include multiple sets separated by semicolons (;).
- The list of member sets must be enclosed in {}.
- If the member set expression does not specify a precise member or node, the hierarchy referenced must be present in the table, then the member set expression references the current member in the hierarchy in the table. If the hierarchy is not in the table, the function returns the message #MULTIVALUE.
- Delegated measure aggregation returns #TOREFRESH when the required aggregation is not available in the query. The user has to refresh the document to get the new level of aggregation. This occurs for example when using the filter bar when the user selects a value before “all values” and vice versa when selecting “all values” before a selected value.
- A delegated measure given against a group returns #UNAVAILABLE as it requires local aggregation (aggregation of the measure value of the grouped values).
  Even when you force local aggregaton on a delegated measure against an "if then else" formula or group value it will still return the #MULTIVALUE message.

Examples

If the [Sales revenue] measure has the values 3000, 60034 and 901234, `Min([Sales Revenue])` returns 3000.

If the [City] dimension has the values Aberdeen and London, `Min([City])` returns "Aberdeen".

`Min([Sales Revenue];{[Geography]&[US].children})` returns the lowest sales revenue for a US state if [US] is a member in the [Geography] hierarchy with levels [Country] > [State] > [City].

6.6.6.1.2.11 Mode

Description

Returns the most frequently-occurring value in a data set

Function Group

Aggregate

Syntax

```
input_type Mode(dimension|measure)
```

Input

Parameter	Description	Type	Required
dimension|measure	Any dimension or measure	Measure	Yes

Notes

- `Mode` returns null if the data set does not contain one value that occurs more frequently than all the others.

Examples

`Mode([Revenue])` returns 200 if [Revenue] has the values 100, 200, 300, 200.

`Mode([Country])` returns the most frequently-occurring value of [Country].

6.6.6.1.2.12 Percentage

Description

Expresses a measure value as a percentage of its embedding context

Function Group

Aggregate

Syntax

```
num Percentage(measure[;Break][;Row|Col])
```

Input

Parameter	Description	Type	Required
measure	Any measure	Measure	Yes
Break	Accounts for table breaks	Keyword	No
Row|Col	Sets the calculation direction	Keyword	No

Examples

In the following table, the Percentage column has the formula `Percentage([Sales Revenue])`

Table 254:

Year	*Sales Revenue*	*Percentage*
2001	1000	10
2002	5000	50
2003	4000	40
Sum:	*10000*	*100*

By default the embedding context is the measure total in the table. You can make the function take account of a break in a table by using the optional `Break` argument. In this case the default embedding context becomes the table section.

In the following table, the Percentage column has the formula `Percentage([Sales Revenue];Break)`

Table 255:

Year	*Quarter*	*Sales Revenue*	*Percentage*
2001	Q1	1000	10
	Q2	2000	20
	Q3	5000	50
	Q4	2000	20
2001	*Sum:*	10000	100

Table 256:

Year	*Quarter*	*Sales Revenue*	*Percentage*

2002	Q1	2000	20
	Q2	2000	20
	Q3	5000	50
	Q4	1000	10
2002	*Sum:*	10000	100

You can use the `Percentage` function across columns or rows; you can specify this explicitly using the optional `Row|Col` argument. For example, in the following crosstab, the % column has the formula `Percentage([Sales Revenue];Row)`

Table 257:

	Q1	*%*	*Q2*	*%*	*Q3*	*%*	*Q4*	*%*
2001	1000	10	2000	20	5000	50	2000	20
2002	2000	20	2000	20	5000	50	1000	10

6.6.6.1.2.13 Percentile

Description

Returns the nth percentile of a measure

Function Group

Numeric

Syntax

```
num Percentile(measure;percentile)
```

Input

Parameter	Description	Type	Required
measure	Any measure	Measure	Yes

Parameter	Description	Type	Required
percentile	A percentage expressed as a decimal	Number	Yes

Notes

The nth percentile is a number that is greater than or equal to n% of the numbers in a set. You express n% in the form 0.n.

Examples

If [measure] has the set of numbers (10;20;30;40;50), `Percentile([measure];0.3)` returns 22, which is greater than or equal to 30% of the numbers in the set.

6.6.6.1.2.14 Product

Description

Multiplies the values of a measure

Function Group

Aggregate

Syntax

```
num Product(measure)
```

Input

Parameter	Description	Type	Required
measure	Any measure	Measure	Yes

Examples

`Product([Measure])` returns 30 if [Measure] has the values 2, 3, 5.

6.6.6.1.2.15 RunningAverage

Description

Returns the running average of a measure

Function Group

Aggregate

Syntax

```
num RunningAverage(measure[;Row|Col][;IncludeEmpty][;(reset_dims)])
```

To reset at each section the RunningAverage, we recommend the following syntax:

```
num RunningAverage(measure;section)
```

Input

Parameter	Description	Type	Required
measure	Any measure	Measure	Yes
Row|Col	Sets the calculation direction	Keyword	No

Parameter	Description	Type	Required
IncludeEmpty	Includes empty values in the calculation	Keyword	No
reset_dims	Resets the calculation on the specified dimensions	Dimension list	No
section	Dimension on which the section is set	Keyword	Yes in the case of a section reset

Notes

- You can use extended syntax context operators with `RunningAverage`.
- You can set the calculation direction with the `Row` and `Col` operators.
- If you apply a sort on the measure referenced by `RunningAverage`, the running average is calculated after the measure is sorted.
- You must always place dimensions in parentheses even if there is only one dimension in the list of reset dimensions.
- When you specify a set of reset dimensions you must separate them with semi-colons.
- `RunningAverage` does not automatically reset the average after a block break or new section.

Examples

`RunningAverage([Revenue])` returns the following results:

Table 258:

Country	*Resort*	Revenue	Running Average
US	Hawaiian Club	1,479,660	835,420
US	Bahamas Beach	971,444	1,225,552
France	French Riviera	835,420	1,095,508

`RunningAverage([Revenue];([Country]))` returns the following results:

Table 259:

Country	*Resort*	Revenue	Running Average
US	Hawaiian Club	1,479,660	835,420
US	Bahamas Beach	971,444	1,225,552
France	French Riviera	835,420	835,420

In an example where you are using `RunningAverage` in a section on [Quarter], using the formula `RunningAverage([Sales revenue];([Quarter]))`, you receive the following results:

Table 260:

Q1		
City	**Sales revenue**	**Running Average**
New York	$1,987,114.70	$1,987,114.70
Houston	$1,544,627.80	$1,765,871.25
Los Angeles	$1,129,177.60	$1,553,640.03
Q2		
City	**Sales revenue**	**Running Average**
New York	$2,028,090.70	$2,028,090.70
Houston	$1,380,838.20	$1,704,464.45
Los Angeles	$980,405.30	$1,463,111.40

Related Information

IncludeEmpty operator [page 713]
Row/Col operators [page 716]

6.6.6.1.2.16 RunningCount

Description

Returns the running count of a number set

Function Group

Aggregate

Syntax

```
num RunningCount(dimension|measure[;Row|Col][;IncludeEmpty][;(reset_dims)])
```

To reset at each section the RunningCount, we recommend the following syntax:

```
num RunningCount(dimension|measure;section)
```

Input

Parameter	Description	Type	Required
dimension|measure	Any dimension or measure	Dimension or measure	Yes
Row|Col	Sets the calculation direction	Keyword	No
IncludeEmpty	Includes empty values in the calculation	Keyword	No
reset_dims	Resets the calculation on the specified dimensions	Dimension list	No
section	Dimension on which the section is set	Keyword	Yes in the case of a section reset

Notes

- You can use extended syntax context operators with `RunningCount`.
- You can set the calculation direction with the `Row` and `Col` operators.
- If you apply a sort on the measure referenced by `RunningCount`, the running count is calculated after the measure is sorted.
- You must always place dimensions in parentheses even if there is only one dimension in the list of reset dimensions.
- When you specify a set of reset dimensions you must separate them with semi-colons.
- `RunningCount` does not automatically reset the count after a block break or new section.

Examples

`RunningCount([Sales revenue])` returns these results in the following table:

Country	*Resort*	Sales revenue	Running Count
US	Hawaiian Club	1,479,660	1
US	Bahamas Beach	971,444	2
France	French Riviera	835,420	3

`RunningCount([Revenue];([Country]))` returns these results in the following table:

Country	*Resort*	**Revenue**	**Running Count**
US	Hawaiian Club	1,479,660	1
US	Bahamas Beach	971,444	2
France	French Riviera	835,420	1

In an example where you are using `RunningCount` in a section on [Week], using the formula `RunningCount([Lines];([Week]))` and with an input control on [Sales revenue] limiting the list to revenues over $30,000, returns the following results:

Table 261:

Week 1		
Lines	*Sales revenue*	*Running Count*
Sweat-T-Shirts	$186,191	1
Shirt Waist	$139,082	2
Dresses	$70,931	3
Week 2		
Lines	*Sales revenue*	*Running Count*
Accessories	$344,617	1
Sweat-T-Shirts	$196,976	2
Shirt Waist	$105,597	3
Dresses	$76,290	4
Sweaters	$68,364	5

Notice that in Week 1 there are three lines with revenue that exceeded $30,000, while in Week 2, there are five product lines that exceeded $30,000.

Related Information

IncludeEmpty operator [page 713]
Row/Col operators [page 716]
IncludeEmpty operator [page 713]
IncludeEmpty operator [page 713]

6.6.6.1.2.17 RunningMax

Description

Returns the running maximum of a dimension or measure

Function Group

Aggregate

Syntax

```
input_type RunningMax(dimension|measure[;Row|Col][;(reset_dims)])
```

To reset at each section the RunningMax, we recommend the following syntax:

```
num RunningMax(measure;section)
```

Input

Parameter	Description	Type	Reqiured
dimension|measure	Any dimension or measure	Dimension or measure	Yes
Row|Col	Sets the calculation direction	Keyword	No
reset_dims	Resets the calculation on the specified dimensions	Dimension list	No
section	Dimension on which the section is set	Keyword	Yes in the case of a section reset

Notes

- You can use extended syntax context operators with `RunningMax`.
- You can set the calculation direction with the `Row` and `Col` operators.
- If you apply a sort on the measure referenced by `RunningMax`, the running maximum is calculated after the measure is sorted .
- You must always place dimensions in parentheses even if there is only one dimension in the list of reset dimensions.
- When you specify a set of reset dimensions you must separate them with semi-colons.
- `RunningMax` does not automatically reset the max after a block break or new section.

Examples

`RunningMax([Revenue])` returns these results in the following table:

Table 262:

Country	*Resort*	*Revenue*	*Running Max*
France	French Riviera	835,420	835,420
US	Bahamas Beach	971,444	971,444
US	Hawaiian Club	1,479,660	1,479,660

In an example where you are using `RunningMax` in a section on [City], using the formula `RunningMax([Sales revenue];([City]))`, you receive the following results:

Table 263:

Austin		
Quarter	*Sales revenue*	*Running Max*
Q1	$775,482.70	$775,482.70
Q2	$667,850.30	$775,482.70
Q3	$581,470.40	$775,482.70
Q4	$674,869.80	$775,482.70
Boston		
Quarter	*Sales revenue*	*Running Max*
Q1	$312,896.40	$312,896.40
Q2	$291,431.00	$312,896.40
Q3	$249,529.00	$312,896.40
Q4	$429,850.20	$429,850.20

Related Information

IncludeEmpty operator [page 713]
Row/Col operators [page 716]

6.6.6.1.2.18 RunningMin

Description

Returns the running minimum of a dimension or measure

Function Group

Aggregate

Syntax

```
input_type RunningMin(dimension|measure;[Row|Col];[(reset_dims)])
```

To reset at each section the RunningMin, we recommend the following syntax:

```
num RunningMin(measure;section)
```

Input

Parameter	Description	Type	Required
dimension|detail|measure	Any dimension or measure	Dimension or measure	Yes
Row|Col	Sets teh calculation direction	Keyword	No
reset_dims	Resets the calculation on the specified dimensions	Dimension list	No
section	Dimension on which the section is set	Keyword	Yes in the case of a section reset

Notes

- You can use extended syntax context operators with `RunningMin`.
- You can set the calculation direction with the `Row` and `Col` operators.
- If you apply a sort on the measure referenced by `RunningMin`, the running minimum is calculated after the measure is sorted.
- You must always place dimensions in parentheses even if there is only one dimension in the list of reset dimensions.
- When you specify a set of reset dimensions you must separate them with semi-colons.
- `RunningMin` does not automatically reset the minimum after a block break or new section.

Examples

`RunningMin([Sales revenue])` returns these results in the following table:

Table 264:

Country	*Resort*	*Sales revenue*	*Running Min*
France	French Riviera	835,420	835,420
US	Bahamas Beach	971,444	835,420
US	Hawaiian Club	1,479,660	835,420

In an example where you are using `RunningMin` in a section on [City], using the formula `RunningMin([Sales revenue];([City]))`, you receive the following results:

Table 265:

Austin		
Quarter	*Sales revenue*	*Running Min*
Q1	$775,482.70	$775,482.70
Q2	$667,850.30	$667,850.30
Q3	$581,470.40	$581,470.40
Q4	$674,869.80	$581,470.40
Boston		
Quarter	*Sales revenue*	*Running Min*
Q1	$312,896.40	$312,896.40
Q2	$291,431.00	$291,431.00
Q3	$249,529.00	$249,529.00
Q4	$429,850.20	$249,529.00

Related Information

IncludeEmpty operator [page 713]
Row/Col operators [page 716]

6.6.6.1.2.19 RunningProduct

Description

Returns the running product of a measure

Function Group

Aggregate

Syntax

```
num RunningProduct(measure[;Row|Col][;(reset_dims)])
```

Input

Parameter	Description	Type	Required
measure	Any measure	Measure	Yes
Row|Col	Sets the calculation direction	Keyword	No
reset_dims	Resets the calculation on the specified dimensions	Dimension list	No

Notes

- You can use extended syntax context operators with `RunningProduct`.
- You can set the calculation direction with the `Row` and `Col` operators.
- If you apply a sort on the measure referenced by `RunningProduct`, the running product is calculated after the measure is sorted.
- You must always place dimensions in parentheses even if there is only one dimension in the list of reset dimensions.
- When you specify a set of reset dimensions you must separate them with semi-colons.
- `RunningProduct` does not automatically reset the product after a block break or new section.

Examples

`RunningProduct([Number of guests])` returns these results in the following table:

Table 266:

Country of origin	*City*	Number of guests	Running Product
Japan	Kobe	6	6
Japan	Osaka	4	24

US	Chicago	241	5,784

`RunningProduct([Number of guests];([Country of origin]))` returns these results in the following table:

Table 267:

Country of origin	*City*	Number of guests	Running Product
Japan	Kobe	6	6
Japan	Osaka	4	24
US	Chicago	241	5784

Related Information

IncludeEmpty operator [page 713]
Row/Col operators [page 716]

6.6.6.1.2.20 RunningSum

Description

Returns the running sum of a measure

Function Group

Aggregate

Syntax

```
num RunningSum(measure[;Row|Col][;(reset_dims)])
```

To reset at each section the RunningSum, we recommend the following syntax:

```
num RunningSum(measure;section)
```

Input

Parameter	Description	Type	Required
measure	Any measure	Measure	Yes
Row|Col	Sets the calculation direction	Keyword	No
reset_dims	Resets the calculation on the specified dimensions	Dimension list	No
section	Dimension on which the section is set	Keyword	Yes in the case of a section reset

Notes

- You can use extended syntax context operators with the `RunningSum`.
- You can set the calculation direction with the `Row` and `Col` operators.
- If you apply a sort on the measure referenced by the `RunningSum` function, the running sum is calculated after the measure is sorted.
- You must always place dimensions in parentheses even if there is only one dimension in the list of reset dimensions.
- When you specify a set of reset dimensions you must separate them with semi-colons.
- `RunningSum` does not automatically reset the sum after a block break or new section.

Example

`RunningSum([Revenue])` returns these results in the following table:

Table 268:

Country	*Resort*	*Revenue*	*Running Sum*
France	French Riviera	835,420	835,420
US	Bahamas Beach	971,444	1,806,864
US	Hawaiian Club	1,479,660	3,286,524

`RunningSum([Revenue];([Country]))` returns these results in the following table:

Table 269:

Country	*Resort*	*Revenue*	*Running Sum*
France	French Riviera	835,420	835,420
US	Bahamas Beach	971,444	971,444
US	Hawaiian Club	1,479,660	2,451,104

In an example where you are using `RunningSum` in a section on [Quarter], using the formula `RunningSum([Sales revenue];([Quarter]))`, you receive the following results:

Table 270:

Q1		
City	*Sales revenue*	*Running Sum*
New York	$1,987,114.70	$1,987,114.70
Houston	$1,544,627.80	$3,531,742.50
Los Angeles	$1,129,177.60	$4,660,920.10
Q2		
City	*Sales revenue*	*Running Sum*
New York	$2,028,090.70	$2,028,090.70
Houston	$1,380,838.20	$3,408,928.90
Los Angeles	$980,405.30	$4,389,334.20

Related Information

IncludeEmpty operator [page 713]
Row/Col operators [page 716]

6.6.6.1.2.21 StdDev

Description

Returns the standard deviation of a measure

Function Group

Aggregate

Syntax

```
num StdDev(measure)
```

Input

Paramter	Description	Type	Required
measure	Any measure	Measure	Yes

Notes

The standard deviation is a measure of the statistical dispersion in a set of numbers. It is calculated by:

- finding the average of the set of numbers
- subtracting the average from each number in the set and squaring the difference
- summing all these squared differences
- dividing this sum by (`<number of numbers in the set>` - 1)
- finding the square root of the result

Examples

If `measure` has the set of values (2, 4, 6, 8) `StdDev([measure])` returns 2.58.

Related Information

Var [page 553]

6.6.6.1.2.22 StdDevP

Description

Returns the population standard deviation of a measure

Function Group

Aggregate

Syntax

```
num StdDevP(measure)
```

Input

Paramter	Description	Type	Required
measure	Any measure	Measure	Yes

Notes

The population standard deviation is a measure of the statistical dispersion in a set of numbers. It is calculated by:

- finding the average of the set of numbers;
- subtracting the average from each number in the set and squaring the difference;
- summing all these squared differences;
- dividing this sum by (`<number of numbers in the set>`);
- finding the square root of the result.

You can use extended syntax context operators with `StdDevP`.

Examples

If `measure` has the set of values (2, 4, 6, 8) `StdDevP([measure])` returns 2.24.

6.6.6.1.2.23 Sum

Description

Returns the sum of a measure

Function Group

Aggregate

Syntax

```
num Sum(measure[;member_set])
```

Input

Parameter	Description	Type	Required
measure	Any measure	Measure	Yes
member_set	A set of members	Member set	No

Notes

- You can use extended syntax context operators with `Sum`.
- If you include `member_set`, `Sum` returns the sum of the measure for all members in the member set.
- `member_set` can include multiple sets separated by semicolons (;).
- The list of member sets must be enclosed in {}.
- If the member set expression does not specify a precise member or node, the hierarchy referenced must be present in the table, then the member set expression references the current member in the hierarchy in the table. If the hierarchy is not in the table, the function returns the message #MULTIVALUE.
- Delegated measure aggregation returns #TOREFRESH when the required aggregation is not available in the query. The user has to refresh the document to get the new level of aggregation. This occurs for example when using the filter bar when the user selects a value before “all values” and vice versa when selecting “all values” before a selected value.
- When migrating from XIR2 to XIR3, aggregation functions containing IN and WHERE clauses in XI2 queries should be included into Sum function definitely by using parenthesis as follows:
  In XIR2, the formula: `=Sum([Measure] In ([Dim 1];[Dim 2])) In ([Dim 1]) Where ([Dim 3]="Constant")`
  From XI3 onwards, modify the declaration: `=Sum(([Measure] In ([Dim 1];[Dim 2])) In ([Dim 1]) Where ([Dim 3]="Constant"))`
- A delegated measure given against a group returns #UNAVAILABLE as it requires local aggregation (aggregation of the measure value of the grouped values).
  Even when you force local aggregaton on a delegated measure against an "if then else" formula or group value it will still return the #MULTIVALUE message.

Examples

If the Sales Revenue measure has the values 2000, 3000, 4000, and 1000, `Sum([Sales Revenue])` returns 10000.

If [California] is a member in the [Geography] hierarchy (Country > State > City), `Sum([Sales Revenue];{Descendants([Geography]&[US].[California];1)})` returns the total sales revenue of all cities in California.

6.6.6.1.2.24 Var

Description

Returns the variance of a measure

Function Group

Aggregate

Syntax

```
num Var(measure)
```

Input

Paramter	Description	Type	Required
measure	Any measure	Measure	Yes

Notes

The variance is a measure of the statistical dispersion in a set of numbers. It is calculated by:

- finding the average of the set of numbers
- subtracting the average from each number in the set and squaring the difference
- summing all these squared differences
- dividing this sum by (`<number of numbers in the set>` - 1)

The variance is the square of the standard deviation.

You can use extended syntax context operators with `Var`.

Examples

If `measure` has the set of values (2, 4, 6, 8) `Var([measure])` returns 6.67.

Related Information

StdDev [page 549]

6.6.6.1.2.25 VarP

Description

Returns the population variance of a measure

Function Group

Aggregate

Syntax

```
num VarP(measure)
```

Input

Paramter	Description	Type	Required
measure	Any measure	Measure	Yes

Notes

The population variance is a measure of the statistical dispersion in a set of numbers. It is calculated by:

- finding the average of the set of numbers

- subtracting the average from each number in the set and squaring the difference
- summing all these squared differences
- dividing this sum by (`<number of numbers in the set>`)

The population variance is the square of the population standard deviation.

You can use extended syntax context operators with `VarP`.

Examples

If `measure` has the set of values (2, 4, 6, 8) `VarP([measure])` returns 5.

Related Information

StdDevP [page 550]

6.6.6.1.3 Character functions

6.6.6.1.3.1 Asc

Description

Returns the ASCII value of a character

Function Group

Character

Syntax

```
int Asc(string)
```

Input

Parameter	Description	Type	Required
string	Any string	String	Yes

Notes

If `string` contains more than one character, the function returns the ASCII value of the first character in the string.

Examples

`Asc("A")` returns 65.

`Asc("ab")` returns 97.

`Asc([Country])` returns 85 when the value of [Country] is "US".

6.6.6.1.3.2 Char

Description

Returns the character associated with an ASCII code

Function Group

Character

Syntax

```
string Char(ascii_code)
```

Input

Parameter	Description	Type	Required
ascii_code	An ASCII code	Number	Yes

Notes

If `number` is a decimal, the function ignores the decimal part.

Example

s

`Char(123)` returns "{".

6.6.6.1.3.3 Concatenation

Description

Concatenates (joins) two character strings. With numbers, the function will sum up the values rather than concatenate them.

> **Note**
>
> If at least one of the input parameters is a string, then all other input parameters are converted into strings.

Function Group

Character

Syntax

```
string Concatenation(first_string;second_string)
```

Input

Parameter	Description	Type	Required
first_string	The first string	String or number	Yes
second_string	The string added to the first string	String or number	Yes

Notes

You can also use the '+' operator to concatenate strings.

`"First " + "Second"` returns "First Second".

`"First " + "Second" + " Third"` returns "First Second Third".

You can use concatenation to include multiple dimensions in an aggregation function. For example, `Count([Sales Person]+[Quarter]+[Resort])` is equivalent to the syntax `Count(<Sales Person>,<Quarter>,<Resort>)` that is allowed by Desktop Intelligence.

Examples

`Concatenation("First ";"Second")` returns "First Second".

`Concatenation("First ";Concatenation("Second ";"Third"))` returns "First Second Third".

If `[A]` is a number and `[A]` = `1`, `Concatenation([A];[A])` returns "2".

If `[A]` is a string and `[A]` = `1`, `Concatenation([A];[A])` returns "11".

If `[A]` is a string, `[B]` is a number, `[A]` = `1` and `[B]` = `2`, `Concatenation([A];[B])` returns "12".

6.6.6.1.3.4 Fill

Description

Builds a string by repeating a string `n` times

Function Group

Character

Syntax

```
string Fill(repeating_string;num_repeats)
```

Input

Parameter	Description	Type	Required
repeating_string	The repeating string	String	Yes
num_repeats	The number of repeats	Number	Yes

Examples

`Fill ("New York ";2)` returns "New York New York ".

6.6.6.1.3.5 FormatDate

Description

Formats a date according to a specified format

Function Group

Character

Syntax

```
string FormatDate(date;format_string)
```

Input

Parameter	Description	Type	Required
date	The date to format	Date	Yes
format_string	The format to apply	String	Yes

Notes

- The format of the output is dependent on the date format applied to the cell.
- The color formatting strings (for example: [Red], [Blue] and so on) cannot be applied to `FormatDate`.

Examples

`FormatDate(CurrentDate();"dd/MM/yyyy")` returns "15/12/2005" if the current date is 15 December 2005.

Related Information

Custom formats [page 324]

6.6.6.1.3.5.1 Format_string examples for the FormatDate function

In the `FormatDate` syntax for `format_string`, you can use the examples in the following table.

> **Note**
>
> You can find these samples in the *Format Number* dialog box in the Web Intelligence Rich Client or Applet interfaces; however what samples appear depend on your selected Product Locale in the BI launch pad preferences. For example, if you select *English*, then “September 21, 2004” will be an available sample.

Table 271:

Sample	Syntax
Tuesday, September 21, 2004	dddd', 'mmmm d', 'yyyy
September 21, 2004	mmmm d', 'yyyy
Sep 21, 2004	mmm d', 'yyyy

Sample	Syntax
9/21/04	M'/'d'/'yy
Sep 21, 2004 8:45:30 PM	mmm d', 'yyyy h':'mm':'ss a
9/21/04 8:45 PM	M'/'d'/'yy h':'mm a
9/21/2004	M'/'d'/'yyyy
09/21/2004	MM'/'d'/'yyyy
9/21/04 8:45:30 PM	M'/'d'/'yy h':'mm a
8:45:30 PM	h':'mm':'ss a
8:45 PM	h':'mm a
20:45:30	HH':'mm':'ss
20h45	HH'h'mm

Tip

We recommend that you represent actual text in the syntax surrounded by apostrophes so that the text is not confused as pattern symbols. For example, as in the last sample in the table above, 'h' in "HH'h'mm".

Related Information

FormatDate [page 559]
Custom formats [page 324]

6.6.6.1.3.6 FormatNumber

Description

Formats a number according to a specified format

Function Group

Character

Syntax

```
string FormatNumber(number;format_string)
```

Input

Parameter	Description	Type	Required
number	The number to format	Number	Yes
format_string	The format to apply	String	Yes

Notes

- The format of the output is dependent on the number format applied to the cell.
- The color formatting strings (for example: [Red], [Blue] and so on) cannot be applied to `FormatNumber`.

Examples

`FormatNumber([Revenue];"#,##.00")` returns 835,420.00 if [Revenue] is 835,420.

Related Information

Custom formats [page 324]

6.6.6.1.3.7 HTMLEncode

Description

Applies HTML encoding rules to a string

Function Group

Character

Syntax

```
string HTMLEncode(html)
```

Input

Paramter	Description	Type	Required
html	An HTML string	String	Yes

Examples

`HTMLEncode("http://www.sap.com")` returns "http%3A%2F%2Fwww%2Esap%2Ecom ".

6.6.6.1.3.8 InitCap

Description

Capitalizes the first letter of a string

Function Group

Character

Syntax

```
string InitCap(string)
```

Input

Parameter	Description	Type	Required
string	The string to capitalize	String	Yes

Examples

`InitCap("we hold these truths to be self-evident")` returns "We hold these truths to be self-evident".

6.6.6.1.3.9 Left

Description

Returns the leftmost characters of a string.

> **Note**
>
> When the selected interface locale is Arabic (Right-To-Left display/reading) this function returns the first characters from the logical start of the string.

Function Group

Character

Syntax

```
string Left(string;num_chars)
```

Input

Parameter	Description	Type	Required
string	The input string	string	Yes

Parameter	Description	Type	Required
num_chars	The number of characters to return from the start of the string	number	Yes

Example

`Left([Country];2)` returns "Fr" if [Country] is "France".

6.6.6.1.3.10 LeftPad

Description

Pads a string on its left with another string.

> **Note**
>
> When the selected interface locale is Arabic (Right-To-Left display/reading) this function pads the string before its logical start with characters of another string.

Function Group

Character

Syntax

```
string LeftPad(padded_string;length;left_string)
```

Input

Parameter	Description	Type	Required
padded_string	The original string	String	Yes

Parameter	Description	Type	Required
length	The length of the output string	Number	Yes
left_string	The string to be added to the start of `padded_string`	String	Yes

Notes

- If `length` is less than the length of `left_string` and `padded_string` combined, `left_string` is truncated.
- If `length` is less than or equal to the length of `padded_string`, the function returns `padded_string`.
- If `length` is greater than the lengths of `padded_string` and `left_string` combined, `left_string` is repeated or partially repeated enough times to fill out the length.

Examples

`LeftPad("York";8;"New ")` returns "New York"

`LeftPad("York";6;"New ")` returns "NeYork"

`LeftPad("York";11;"New ")` returns "New NewYork"

`LeftPad("New ";2;"York")` returns "New".

6.6.6.1.3.11 LeftTrim

Description

Trims the leading spaces from a string.

> **Note**
>
> When the selected interface locale is Arabic (Right-To-Left display/reading) this function removes the first space characters from the logical start of the string.

Function Group

Character

Syntax

```
string LeftTrim(trimmed_string)
```

Input

Parameter	Description	Type	Required
trimmed_string	The string to be trimmed	String	Yes

Examples

`LeftTrim([Country])` returns "France" if [Country] is " France".

6.6.6.1.3.12 Length

Description

Returns the number of characters in a string

Function Group

Character

Syntax

```
int Length(string)
```

Input

Parameter	Description	Type	Required
string	The input string	String	Yes

Examples

`Length([Last Name])` returns 5 if [Last Name] is "Smith".

6.6.6.1.3.13 Lower

Description

Converts a string to lower case

Function Group

Character

Syntax

```
string Lower(string)
```

Input

Parameter	Description	Type	Required
string	The string to be converted to lower case	String	Yes

Examples

`Lower("New York")` returns "new york".

6.6.6.1.3.14 Match

Description

Determines whether a string matches a pattern

Function Group

Character

Syntax

```
bool Match(test_string;pattern)
```

Input

Paramter	Description	Type	Required
test_string	The string to be tested against the text pattern	string	Yes
pattern	The text pattern	string	Yes

Notes

- The pattern can contain the wildcards "*" (replaces any set of characters) or "?" (replaces any single character).

Examples

`Match([Country];"F*")` returns True if [Country} is "France".

`Match([Country];"?S?")` returns True if [Country] is "USA".

`Match("New York";"P*")` returns False.

6.6.6.1.3.15 Pos

Description

Returns the starting position of a text pattern in a string

Function Group

Character

Syntax

```
int Pos(test_string;pattern)
```

Input

Paramter	Description	Type	Required
test_string	The string to be tested for the text pattern	string	Yes
pattern	The text pattern	string	Yes

Notes

- If the pattern occurs more than once, `Pos` returns the position of the first occurrence.

Examples

`Pos("New York";"Ne")` returns 1.

`Pos("New York, New York";"Ne")` returns 1.

`Pos("New York"; "York")` returns 5.

6.6.6.1.3.16 Replace

Description

Replaces part of a string with another string

Function Group

Character

Syntax

```
string Replace(replace_in;replaced_string;replace_with)
```

Input

Parameter	Description	Type	Required
replace_in	The string in which the text is replaced	string	Yes
replaced_string	The text to be replaced	string	Yes
replace_with	The text that replaces `replaced_string`	string	Yes

Examples

`Replace("New YORK";"ORK";"ork")` returns "New York".

6.6.6.1.3.17 Right

Description

Returns the rightmost characters of a string (the characters at the end of the string).

> **Note**
>
> When the selected interface locale is Arabic (Right-To-Left display/reading) this function returns the first characters from the logical start of the string.

Function Group

Character

Syntax

```
string Right(string;num_chars)
```

Input

Parameter	Description	Type	Required
string	Any string	string	Yes
num_chars	The number of characters to return from the right	number	Yes

Examples

`Right([Country];2)` returns "ce" if [Country] is "France".

6.6.6.1.3.18 RightPad

Description

Pads a string on its right with another string (adds a string to the start of the original string).

> **Note**
>
> When the selected interface locale is Arabic (Right-To-Left display/reading) this function adds a string to the first characters from the logical start of the string.

Function Group

Character

Syntax

```
string RightPad(padded_string;length;right_string)
```

Input

Parameter	Description	Type	Required
padded_string	The original string	String	Yes
length	The length of the output string	Number	Yes
right_string	The string to be added to the end of `padded_string`	String	Yes

Notes

- If `length` is less than the length of `right_string` and `padded_string` combined, `right_string` is truncated.
- If `length` is less than or equal to the length of `padded_string`, the function returns `padded_string`.
- If `length` is greater than the lengths of `padded_string` and `right_string` combined, `right_string` is repeated or partially repeated enough times to fill out the length.

Examples

`RightPad("New ";8;"York")` returns "New York"

`RightPad("New ";6;"York")` returns "New Yo"

`RightPad("New ";11;"York")` returns "New YorkYor"

`RightPad("New ";2;"York")` returns "New".

6.6.6.1.3.19 RightTrim

Description

Trims the trailing spaces from a string.

> **Note**
>
> When the selected interface locale is Arabic (Right-To-Left display/reading) this function trims the trailing space from the logical end of the string.

Function Group

Character

Syntax

```
string RightTrim(trimmed_string)
```

Input

Parameter	Description	Type	Required
trimmed_string	The string to be trimmed	String	Yes

Examples

`RightTrim([Country])` returns "France" if [Country] is "France ".

6.6.6.1.3.20 Substr

Description

Returns part of a string

Function Group

Character

Syntax

```
string SubStr(string;start;length)
```

Input

Parameter	Description	Type	Required
string	Any string	String	Yes
start	The start position of the extracted string	Number	Yes
length	The length of the extracted string	Number	Yes

Examples

`SubStr("Great Britain";1;5)` returns "Great".

`SubStr("Great Britain";7;7)` returns "Britain".

6.6.6.1.3.21 Trim

Description

Trims the leading and trailing spaces from a string

Function Group

Character

Syntax

```
string Trim(trimmed_string)
```

Input

Parameter	Description	Type	Required
string	The string to be trimmed	String	Yes

Examples

`Trim(" Great Britain ")` returns "Great Britain".

6.6.6.1.3.22 Upper

Description

Converts a string to upper case

Function Group

Character

Syntax

```
string Upper(string)
```

Input

Parameter	Description	Type	Required
string	The string to be converted	String	Yes

Examples

`Upper("New York")` returns "NEW YORK".

6.6.6.1.3.23 UrlEncode

Description

Applies URL encoding rules to a string

Function Group

Character

Syntax

```
string UrlEncode(html)
```

Input

Parameter	Description	Type	Required
html	The URL to be encoded	String	Yes

Examples

`UrlEncode("http://www.sap.com")` returns "http%3A%2F%2Fwww%2Esap%2Ecom".

6.6.6.1.3.24 WordCap

Description

Capitalizes the first letter of all the words in a string

Function Group

Character

Syntax

```
string WordCap(string)
```

Input

Parameter	Description	Type	Required
string	The string to be capitalized	String	Yes

Examples

`WordCap("Sales revenue for March")` returns "Sales Revenue For March".

6.6.6.1.4 Date and Time functions

6.6.6.1.4.1 CurrentDate

Description

Returns the current date formatted according to the regional settings

Function Group

Date and Time

Syntax

```
date CurrentDate()
```

Examples

`CurrentDate()` returns 10 September 2002 if the date is 10 September 2002.

6.6.6.1.4.2 CurrentTime

Description

Returns the current time formatted according to the regional settings

Function Group

Date and Time

Syntax

```
time CurrentTime()
```

Examples

`CurrentTime` returns 11:15 if the current time is 11:15.

6.6.6.1.4.3 DayName

Description

Returns the day name in a date

Function Group

Date and Time

Syntax

```
string DayName(date)
```

Input

Parameter	Description	Type	Required
date	The input date	Date	Yes

Examples

`DayName([Reservation Date])` returns "Saturday' when the date in [Reservation Date] is 15 December 2001 (which is a Saturday).

Note

The input date must be a variable. You cannot specify the date directly, as in `DayName("07/15/2001")`.

6.6.6.1.4.4 DayNumberOfMonth

Description

Returns the day number in a month

Function Group

Date and Time

Syntax

```
int DayNumberOfMonth(date)
```

Input

Parameter	Description	Type	Required
date	The input date	Date	Yes

Examples

`DayNumberOfMonth([Reservation Date])` returns 15 when the date in [Reservation Date] is 15 December 2001.

6.6.6.1.4.5 DayNumberOfWeek

Description

Returns the day number in a week

Function Group

Date and Time

Syntax

```
int DayNumberOfWeek(date)
```

Input

Parameter	Description	Type	Required
date	The input date	Date	Yes

Notes

The function treats Monday as the first day of the week.

Examples

`DayNumberOfWeek([Reservation Date])` returns 1 when the date in [Reservation Date] is 2 May 2005 (which is a Monday).

6.6.6.1.4.6 DayNumberOfYear

Description

Returns the day number in a year

Function Group

Date and Time

Syntax

```
int DayNumberOfYear(date)
```

Input

Parameter	Description	Type	Required
date	The input date	Date	Yes

Examples

`DayNumberOfYear([Reservation Date])` returns 349 when the date in [Reservation Date] is 15 December 2001.

6.6.6.1.4.7 DaysBetween

Description

Returns the number of days between two dates

Function Group

Date and Time

Syntax

```
int DaysBetween(first_date;last_date)
```

> **Note**
>
> You must ensure that the dates given in the arguments are in the same timezone. This applies to all date operations: comparison and calculation.

Input

Parameter	Description	Type	Required
first_date	The first date	Date	Yes
last_date	The last date	Date	Yes

Examples

`DaysBetween([Sale Date];[Invoice Date])` returns 2 if [Sale Date] is 15 December 2001 and [Invoice Date] is 17 December 2001.

6.6.6.1.4.8 LastDayOfMonth

Description

Returns the date of the last day in a month

Function Group

Date and Time

Syntax

```
date LastDayOfMonth(date)
```

Input

Parameter	Description	Type	Required
date	Any date in the month	Date	Yes

Examples

`LastDayOfMonth([Sale Date])` returns 31 December 2005 if [Sale Date] is 11 December 2005.

6.6.6.1.4.9 LastDayOfWeek

Description

Returns the date of the last day in a week

Function Group

Date and Time

Syntax

```
date LastDayOfWeek(date)
```

Input

Parameter	Description	Type	Required
date	Any date in the week	Date	Yes

Notes

The function treats Monday as the first day of the week.

Examples

`LastDayOfWeek([Sale Date])` returns 15 May 2005 (a Sunday) if [Sale Date] is 11 May 2005.

6.6.6.1.4.10 Month

Description

Returns the month name in a date

Function Group

Date and Time

Syntax

```
string Month(date)
```

Input

Parameter	Description	Type	Required
date	The input date	Date	Yes

Examples

`Month([Reservation Date])` returns "December" when the date in [Reservation Date] is 15 December 2005.

6.6.6.1.4.11 MonthNumberOfYear

Description

Returns the month number in a date

Function Group

Date and Time

Syntax

```
int MonthNumberOfYear(date)
```

Input

Parameter	Description	Type	Required
date	Any date in the year	Date	Yes

Example

`MonthNumberOfYear([Reservation Date])` returns 12 when the date in [Reservation Date] is 15 December 2005.

6.6.6.1.4.12 MonthsBetween

Description

Returns the number of months between two dates

Function Group

Date and Time

Syntax

```
int MonthsBetween(first_date;last_date)
```

Input

Parameter	Description	Type	Required
first_date	The first date	Date	Yes
last_date	The last date	Date	Yes

Examples

`MonthsBetween([Sale Date];[Invoice Date])` returns 1 if [Sale Date] is 2 December 2005 and [Invoice Date] is 2 January 2006.

`MonthsBetween([Sale Date];[Invoice Date])` returns 1 if [Sale Date] is 31/03/2008 and [Invoice Date] is 30/04/2008.

`MonthsBetween([Sale Date];[Invoice Date])` returns 118 if [Sale Date] is 07/01/1993 and [Invoice Date] is 06/11/2002.

6.6.6.1.4.13 Quarter

Description

Returns the quarter number in a date

Function Group

Date and Time

Syntax

```
int Quarter(date)
```

Input

Parameter	Description	Type	Required
date	Any date in the quarter	Date	Yes

Examples

`Quarter([Reservation Date])` returns 4 when the date in [Reservation Date] is 15 December 2005.

6.6.6.1.4.14 RelativeDate

Description

Returns a date relative to another date.

Function Group

Date and Time

Syntax

```
date RelativeDate(start_date;num;period)
```

Input

Parameter	Description	Type	Required
start_date	The start date	Date	Yes
num	The number of period units added to the start date	Number	Yes
period	The type of period added to the start date	Pre-defined	Optional

Notes

- The `num` parameter can be a constant, the numerical result of a function, a measure value or a numerical dimension value, and has to be an integer.
- The `num` parameter can be negative to return a date earlier than `start_date`.
- If omitted, the `period` parameter works with days `(DayPeriod)`.
- When adding or subtracting months (for `SemesterPeriod`, `QuarterPeriod` and `MonthPeriod`), if the day does not exist in the returned month, then the last day of the returned month must be used.
- Possible values for the period parameter are: `MillisecondPeriod`, `SecondPeriod`, `MinutePeriod`, `HourPeriod`, `DayPeriod`, `WeekPeriod`, `MonthPeriod`, `QuarterPeriod`, `SemesterPeriod`, `YearPeriod`.

Examples

`RelativeDate([Reservation Date];2)` returns 17 December 2005 when [Reservation Date] is 15 December 2005.

`RelativeDate([Reservation Date];-3)` returns 9 January 2007 when [Reservation Date] is 12 January 2007.

`RelativeDate([Reservation Date];1;MonthPeriod)` returns 12 February 2007 when [Reservation date] is 12 January 2007.

6.6.6.1.4.15 TimeDim

Description

The `TimeDim` time dimension allows you to build a time axis from a date type universe object. `TimeDim` returns the data for the dates given as the first parameter over the time periods given as the second parameter. When there are periods that have no data, the first day of each empty period is returned. This ensures a full axis for the given period. This guarantees:

- That the axis retains the natural time order (oldest objects first, the most recent objects last).
- The axis contains all the periods between the minimum and maximum dates in the current context.

> **Note**
>
> You cannot use the TimeDim function to filter on formulas (for example in a filter, input-control, element-link, filter/drill bar). Instead you should directly filter on the underlaying date dimension.

Function Group

Date and Time

Syntax

```
TimeDim([Date Type]; Period Type)
```

Input

Parameter	Description	Type	Required
Date Type	The date object for the report, for example, `InvoiceDate`.	Date	Yes
Period Type	The period for the results, from the following values: • `DayPeriod` • `MonthPeriod` • `QuarterPeriod` • `YearPeriod` When no value is selected, the `DayPeriod` is used by default. This object should be a data provider object, it must be available from report objects, and cannot be a variable.	Pre-defined	Optional

Use the above function in conjunction with the following functions:

- `DayName`
- `DayNumberOfMonth`
- `DayNumberOfWeek`
- `DayNumberOfYear`
- `Month`
- `MonthNumberOfYear`
- `Quarter`
- `Year`
- `FormatDate`

Example

The first table below contains data that concerns only certain dates. The query examples that follow show how the results are interpreted.

Invoice Date	Revenue
1/3/00	31,607
1/8/00	31,244
7/3/00	38,154

The following formula `DayName(TimeDim([Invoice Date] ; QuarterPeriod)` returns daily values from the above table.

Invoice Date	Revenue
1/3/00	31,607
1/8/00	31,244
4/1/00	
7/3/00	38,154

You should format the results of the `TimeDim` function with the Quarter function to return the results by Quarter (Q1, Q2...) to give you the following result table:

Invoice Date	Revenue
Q1	62,851
Q2	
Q3	38,154

6.6.6.1.4.16 ToDate

Description

Turns a character string into a date. Give the date format as the parameter to indicate to Web Intelligence how to convert the string into a date. The date format you provide must match the format of the date in the original string. Refer to the link below for the possible date formats.

Function Group

Date and Time

Syntax

```
date ToDate(date_string;format)
```

or

```
date ToDate(date_string;"INPUT_DATE_TIME")
```

> **Note**
>
> In scenarios where the *Preferred viewing locale* can be different depending on the user, a fixed format (for a particular locale) is not appropriate. In this case use INPUT_DATE_TIME as shown in the second example above.

Input

Parameter	Description	Type	Required
date_string	The string to be interpreted as a date.	string	Yes
format	The date format used by the string. Use "INPUT_DATE_TIME" to use the format of the Preferred viewing locale.	string	Yes*

* See the note above. Use the format or INPUT_DATE_TIME depending on your needs.

Examples

ToDate("12/15/2002";"MM/dd/yyyy") interprets "12" as a month number, "15" as a day number and "2002" as a year.

ToDate("Dec/02";"Mmm/yy") interprets "Dec" as an abbreviated month name and "02" as the two last digits of a year.

ToDate("15-December-02";"dd-Mmmm-yy") interprets "15" as a day number, "December" as a month and "02" as the last two digits of a year.

ToDate("12/15/02 11:00:00";"INPUT_DATE_TIME") interprets "12/15/02 11:00:00" in the format used by the *Preferred viewing locale* on the user's machine.

> **Note**
>
> - With INPUT_DATE_TIME, both the date and time must be specified in the date_string input string.
> - If date_string cannot be interpreted as a valid date with the specified format, the ToDate() formula returns #ERROR.
> - The way a date is displayed in a cell depends on the chosen date format in that cell. For instance, if the chosen date format is "MM/dd/yyyy", then ToDate("Dec/15/02";"MMM/dd/yy") will be displayed as 12/15/2002.

Related Information

Custom formats [page 324]

6.6.6.1.4.17 Week

Description

Returns the week number in the year

Function Group

Date and Time

Syntax

```
int Week(date)
```

Input

Parameter	Description	Type	Required
date	The input date	Date	Yes

Examples

`Week([Reservation Date])` returns 1 when the date in [Reservation Date] is 4 January 2004 (which occurs in the first week of the year 2004).

6.6.6.1.4.18 Year

Description

Returns the year in a date

Function Group

Date and Time

Syntax

```
int Year(date)
```

Input

Parameter	Description	Type	Required
date	The input date	Date	Yes

Examples

`Year([Reservation Date])` returns 2005 when the date in [Reservation Date] is 15 December 2005.

6.6.6.1.5 Data Provider functions

6.6.6.1.5.1 Connection

Description

Returns the parameters of the database connection used by a data provider

Function Group

Data Provider

Syntax

```
string Connection(dp)
```

Input

Parameter	Description	Type	Required
dp	The data provider	Data provider	Yes

Notes

- You must enclose the name of the data provider in square brackets.
- For security reasons, the output of the function does not include the database host name, user name and user password.

6.6.6.1.5.2 DataProvider

Description

Returns the name of the data provider containing a report object

Function Group

Data Provider

Syntax

```
string DataProvider(obj)
```

Input

Parameter	Description	Type	Required
obj	A report object	Report object	Yes

Examples

`DataProvider([Total Revenue])` returns "Sales" if the [Total Revenue] measure is in a data provider called "Sales".

> **Note**
>
> DataProvider requires an object name to return its data provider name. If you use another function as a parameter of DataProvider, for example a dimension variable, that does not give an object name, the DataProvider function will return an error.

6.6.6.1.5.3 DataProviderKeyDate

Description

Returns the keydate of a data provider

Function Group

Data Provider

Syntax

```
date DataProviderKeyDate(dp)
```

Input

Parameter	Description	Type	Required
dp	The data provider	Data provider	Yes

Notes

- You must enclose the name of the data provider in square brackets.
- The returned keydate is formatted according to the document locale.

Examples

`DataProviderKeyDate([Sales])` returns 3 August 2007 if the keydate for the Sales data provider is 3 August 2007.

6.6.6.1.5.4 DataProviderKeyDateCaption

Description

Returns the keydate caption of a data provider

Function Group

Data Provider

Syntax

```
string DataProviderKeyDateCaption(dp)
```

Input

Parameter	Description	Type	Required
dp	The data provider	Data provider	Yes

Notes

You must enclose the name of the data provider in square brackets.

Examples

`DataProviderKeyDateCaption([Sales])` returns "Current calendar date" if the keydate caption in the Sales data provider is "Current calendar date".

6.6.6.1.5.5 DataProviderSQL

Description

Returns the SQL generated by a data provider

Function Group

Data Provider

Syntax

```
string DataProviderSQL(dp)
```

Input

Parameter	Description	Type	Required
dp	The data provider	Data provider	Yes

Notes

You must enclose the name of the data provider in square brackets.

Examples

`DataProviderSQL([Query 1])` returns `SELECT country.country_name FROM country` if the data provider SQL is `SELECT country.country_name FROM country`.

6.6.6.1.5.6 DataProviderType

Description

Returns the type of a data provider

Function Group

Data Provider

Syntax

```
string DataProviderType(dp)
```

Input

Parameter	Description	Type	Required
dp	The data provider	Data provider	Yes

Notes

- `DataProviderType` returns "Universe" for universe data providers or "Personal Data" for personal data providers.
- You must enclose the name of the data provider in square brackets.

Examples

`DataProviderType([Sales])` returns "Universe" if the "Sales" data provider is based on a universe.

6.6.6.1.5.7 IsPromptAnswered

Description

Determines whether a prompt has been answered

Function Group

Data Provider

Syntax

```
bool IsPromptAnswered([dp;]prompt_string)
```

Input

Parameter	Description	Type	Required
dp	The data provider containing the prompt	Data provider	No
prompt_string	The prompt text	String	Yes

Notes

- You must enclose the name of the data provider in square brackets.
- IsPromptAnswered returns a Boolean value that you can use with the If function.
- If you place IsPromptAnswered directly into a column, it returns an integer (1=true, 0=false). You can format this integer using a Boolean number format.

Examples

`IsPromptAnswered("Choose a city")` returns true if the prompt identified by the text "Choose a city" has been answered.

`IsPromptAnswered([Sales];"Choose a city")` returns true if the prompt identified by the text "Choose a city" in the [Sales] data provider has been answered.

6.6.6.1.5.8 LastExecutionDate

Description

Returns the date on which a data provider was last refreshed

Function Group

Data Provider

Syntax

```
date LastExecutionDate(dp)
```

Input

Parameter	Description	Type	Required
dp	The data provider	Data provider	Yes

Notes

- If your report has one data provider only you can omit the `dp` parameter.
- You must enclose the name of the data provider in square brackets.
- You can use the `DataProvider` function to provide a reference to a data provider.

Examples

`LastExecutionDate([Sales Query])` returns "3/4/2002" if the Sales Query data provider was last refreshed on 4 March 2002.

Related Information

DataProvider [page 596]

6.6.6.1.5.9 LastExecutionDuration

Description

Returns the time in seconds taken by the last refresh of a data provider

Function Group

Data Provider

Syntax

```
num LastExecutionDuration(dp)
```

Input

Parameter	Description	Type	Required
dp	The data provider	Data provider	Yes

Notes

You must enclose the name of the data provider in square brackets.

Examples

`LastExecutionDuration([Sales])` returns 3 if the "Sales" data provider took 3 second to return its data the last time it was run.

6.6.6.1.5.10 LastExecutionTime

Description

Returns the time at which a data provider was last refreshed

Function Group

Data Provider

Syntax

```
time LastExecutionTime(dp)
```

Input

Parameter	Description	Type	Required
dp	The data provider	Data provider	Yes

Notes

- If your report has one data provider only you can omit the `dp` parameter.
- You can use the `DataProvider` function to provide a reference to a data provider.
- You must enclose the name of the data provider in square brackets.

Examples

`LastExecutionTime([Sales Query])` returns "2:48:00 PM" if the Sales Query data provider was last refreshed at 2:48:00 PM.

Related Information

DataProvider [page 596]

6.6.6.1.5.11 NumberOfDataProviders

Description

Returns the number of data providers in a report

Function Group

Data Provider

Syntax

```
int NumberOfDataProviders()
```

Examples

`NumberOfDataProviders()` returns 2 if the report has two data providers.

6.6.6.1.5.12 NumberOfRows

Description

Returns the number of rows in a data provider

Function Group

Data Provider

Syntax

```
int NumberOfRows(dp)
```

Input

Parameter	Description	Type	Required
dp	The data provider	Data provider	Yes

Notes

- You must enclose the name of the data provider in square brackets.
- You can use the `DataProvider` function to provide a reference to a data provider.

Examples

`NumberOfRows([Query 1])` returns 10 if the "Query 1" data provider has 10 rows.

Related Information

DataProvider [page 596]

6.6.6.1.5.13 RefValueDate

Description

Returns the date of the reference data used for data tracking

Function Group

Data Provider

Syntax

```
date RefValueDate()
```

Examples

`RefValueDate()` returns 15 December 2008 if the reference date is 15 December 2008.

6.6.6.1.5.14 RefValueUserReponse

Description

Returns the response to a prompt when the reference data was the current data

Function Group

Data Provider

Syntax

```
string RefValueUserResponse([dp;]prompt_string[;Index])
```

Input

Parameter	Description	Type	Required
dp	The data provider	Data provider	No
prompt_string	The prompt text	String	Yes
Index	Tells the function to return the database primary keys of the prompt values	Keyword	No

Notes

- The function returns an empty string if data tracking is not activated.
- You must enclose the name of the data provider in square brackets.
- You can use the `DataProvider` function to provide a reference to a data provider.
- If you selected more than one value in answer to a prompt, the function returns a string consisting of a list of values (or primary keys if the `Index` operator is specified) separated by semi-colons.

Examples

`RefValueUserResponse( "Which city?" )` returns "Los Angeles" if you entered "Los Angeles" in the "Which City?" prompt at the time when the reference data was the current data.

`RefValueUserResponse([Sales Query];"Which city?")` returns "Los Angeles," if you entered "Los Angeles" in the "Which City?" prompt in the "Sales Query" data provider at the time when the reference data was the current data.

6.6.6.1.5.15 ServerValue

Description

Returns the database value of a measure

Function Group

Data Provider

Syntax

```
num ServerValue([measure])
```

Input

Parameter	Description	Type	Required
measure	Any measure	Measure	Yes

Notes

- `ServerValue` ignores all local filters applied to dimensions or hierarchies used to calculate the measure

Example

`ServerValue([Internet Sales Amount]` returns the database value of the measure `[Internet Sales Amount]`

6.6.6.1.5.16 UniverseName

Description

Returns the name of the universe on which a data provider is based

Function Group

Data Provider

Syntax

```
string UniverseName(dp)
```

Input

Parameter	Description	Type	Required
dp	The data provider	Data provider	Yes

Notes

- The value of `dp` in the formula is automatically updated if the name of the data provider changes. If the data provider is renamed to "Q1", the formula becomes `UniverseName([Q1])`.
- You must enclose the name of the data provider in square brackets.
- You can use the `DataProvider` function to provide a reference to a data provider.

Examples

`UniverseName([Query 1])` returns "eFashion" if the [Query 1] data provider is based on the eFashion universe.

Related Information

DataProvider [page 596]

6.6.6.1.5.17 UserResponse

Description

Returns the response to a prompt

Function Group

Data Provider

Syntax

```
string UserResponse([dp;]prompt_string[;Index])
```

Input

Parameter	Description	Type	Required
dp	The data provider	Data provider	No
prompt_string	The prompt text	String	Yes
Index	Tells the function to return the database primary keys of the prompt values	Keyword	No

Notes

- You must enclose the name of the data provider in square brackets.
- You can use the `DataProvider` function to provide a reference to a data provider.
- If you select more than one value in answer to a prompt, the function returns a string consisting of a list of values (or primary keys if the `Index` operator is specified) separated by semi-colons.

Examples

`UserResponse("Which city?")` returns "Los Angeles if you entered "Los Angeles" in the "Which City?" prompt.

`UserResponse([Sales Query];"Which city?")` returns "Los Angeles," if you entered "Los Angeles" in the "Which City?" prompt in the "Sales Query" data provider.

`UserResponse([Sales Query];"Which city?";Index)` returns 23 if you entered "Los Angeles" in the "Which City?" prompt in the "Sales Query" data provider, and the database primary key of Los Angeles is 23.

6.6.6.1.6 Document functions

6.6.6.1.6.1 DocumentAuthor

Description

Returns the InfoView logon of the document creator

Function Group

Document

Syntax

```
string DocumentAuthor()
```

Examples

`DocumentAuthor()` returns "gkn" if the document author's login is "gkn".

6.6.6.1.6.2 DocumentCreationDate

Description

Returns the date on which a document was created

Function Group

Document

Syntax

```
date DocumentCreationDate()
```

Examples

`DocumentCreationDate()` returns 15 December 2008 if the document was created on 15 December 2008.

6.6.6.1.6.3 DocumentCreationTime

Description

Returns the time when a document was created

Function Group

Document

Syntax

```
time DocumentCreationTime()
```

Examples

`DocumentCreationTime()` returns 11:15 if the document was created at 11:15.

6.6.6.1.6.4 DocumentDate

Description

Returns the date on which a document was last saved

Function Group

Document

Syntax

```
date DocumentDate()
```

Examples

`DocumentDate()` returns 8 August 2005 if the document was last saved on 8 August 2005.

6.6.6.1.6.5 DocumentName

Description

Returns the document name

Function Group

Document

Syntax

```
string DocumentName()
```

Examples

`DocumentName()` returns "Sales Report" if the document is called "Sales Report".

6.6.6.1.6.6 DocumentOwner

Description

Returns the BI launch pad logon/user name of the owner of the document (the last person who saved the document). (To return the original author/creator of the document, use the DocumentAuthor function.)

Function Group

Document

Syntax

```
string DocumentOwner()
```

Examples

`DocumentOwner()` returns "gkn" if the last person who saved the document has the user name or login "gkn".

6.6.6.1.6.7 DocumentPartiallyRefreshed

Description

Determines whether a document is partially refreshed

Function Group

Document

Syntax

```
bool DocumentPartiallyRefreshed()
```

Notes

`DocumentPartiallyRefreshed` returns a boolean value that you can use in the `If` function.

Examples

`DocumentPartiallyRefreshed()` returns True if the document is partially refreshed.

6.6.6.1.6.8 DocumentTime

Description

Returns the time when a document was last saved

Function Group

Document

Syntax

```
time DocumentTime()
```

Notes

The format of the returned time varies depending on the cell format.

Example

`DocumentTime()` returns 15:45 if the document was last saved at 15:45.

6.6.6.1.6.9 DrillFilters

Description

Returns the results of drill filters applied to a document or object in an declared report in drill mode. You can declare a different report within the document. If you do not declare a report, the current active report is used.

Function Group

Document

Syntax

```
string DrillFilters([obj|separator[;report]])
```

Input

Parameter	Description	Type	Required
obj	A report object	Report object	Either `obj` or `separator` required
separator	The drill filter separator	String	Either `obj` or `separator` required
report	Optional. The name of the report you want to use. It must be in the document. If no report is declared, then the current report is used.	String	Either `obj` or `separator` required

Notes

- You can insert `DrillFilters` directly without the need to enter the formula manually by inserting a DrillFilters cell.
- If you do not specify an object, the function returns all drill filters applied to the document.

Examples

`DrillFilters()` returns "US" if the document has a drill filter restricting the [Country] object to US.

`DrillFilters()` returns "US - 1999" if the document has a filter restricting [Country] to "US" and [Year] to 1999.

`DrillFilters("/")` returns "US / 1999" if the document has filters restricting [Country] to "US" and [Year] to 1999.

`DrillFilters ([Quarter])` returns "Q3" if the document has a drill filter restricting [Quarter] to "Q3".

6.6.6.1.6.10 PromptSummary

Description

Returns the prompt text and user response of all prompts in a document

Function Group

Document

Syntax

```
string PromptSummary()
```

Example

Example output of the `PromptSummary` function appears as follows:

```
            Enter Quantity Sold: 5000
            Enter value(s) for State (optional): California, Texas, Utah
            Enter Customer (optional):
```

6.6.6.1.6.11 QuerySummary

Description

Returns information about the queries in a document

Function Group

Document

Syntax

```
string QuerySummary([dp])
```

```
string QuerySummary([dp];[StatusOfData])
```

Input

Parameter	Description	Type	Required
dp	A data provider	Data provider	No
StatusOfData	BW Status of data	Boolean	No

Notes

- You must enclose the name of the data provider in square brackets.
- The BW status of data indicates the last refresh date of the BW info provider, and appears as the last line returned by the function.

Examples

`QuerySummary()` returns information about all the queries in a document.

`QuerySummary([Query 1])` returns information about the queries based on the [Query 1] data provider.

Output example:

```
Query 1:
                                Universe: eFashion
                                Last execution time: 1s
                                NB of rows: 34500
                                Result objects: State, Year, Sales Revenue
                                Scope of analysis: State, City, Year, Quarter, Month
                                Filters:
                                    (State inlist{"US";"France";}
                                    And (Sales Revenue Greater Than 1000000
                                    Or Sales Revenue Less Than 10000))
                            Query 2:
                                Source file: D:\Data\datacar.xls
                                Result objects: State, Year, Sales Revenue
```

6.6.6.1.6.12 ReportFilter

Description

Returns the report filters applied to an object or report

Function Group

Document

Syntax

```
string ReportFilter(obj)
```

Input

Parameter	Description	Type	Required
obj	A report object	Report object	Yes

Examples

`ReportFilter([Country])` returns "US" if there is a report filter on the Country object that restricts it to "US".

6.6.6.1.6.13 ReportFilterSummary

Description

Returns a summary of the report filters in a document or report

Function Group

Document

Syntax

```
string ReportFilterSummary(report_name)
```

Input

Parameter	Description	Type	Required
report_name	The name of the report	String	No

Notes

If `report_name` is omitted, `ReportFilterSummary` returns a summary of all the report filters in all the reports in the document.

Examples

`ReportFilterSummary()` returns information about all the report filters in a document.

`ReportFilterSummary("Report1")` returns information about the report filters in the "Report1" report.

Example output of the `ReportFilterSummary` function appears as follows:

```
Filters on Report1:
                              (Sales Revenue Greater Than 1000000
                               Or (Sales Revenue Less Than 3000))
                          Filters on Section on City:
                               (City InList{"Los Angeles";"San Diego";})
```

```
                        Ranking Filter:
                             (Top 10 & Bottom 10 [Customer] Based on [Sales
Revenue] (Count))
```

6.6.6.1.7 Logical functions

6.6.6.1.7.1 Even

Description

Determines whether a number is even

Function Group

Logical

Syntax

```
bool Even(number)
```

Input

Parameter	Description	Type	Required
number	Any number	Number	Yes

Notes

- `Even` returns a boolean value that you can use in the `If` function.
- If you place `Even` directly into a column, it returns an integer (1=true; 0=false). You can format this integer using a Boolean number format.

Examples

`Even(4)` returns True.

`Even(3)` returns False.

`Even(23.2)` returns False.

`Even(-4)` returns True.

`Even(-2.2)` returns False.

6.6.6.1.7.2 IsDate

Description

Determines whether a value is a date

Function Group

Logical

Syntax

```
bool IsDate(obj)
```

Input

Parameter	Description	Type	Required
obj	Any report object	Report object	Yes

Notes

- `IsDate` returns a boolean value that you can use in the `If` function.
- If you place `IsDate` directly into a column, it returns an integer (1=true; 0=false). You can format this integer using a Boolean number format.

Examples

`IsDate([Reservation Date])` returns True if [Reservation Date] is a date.

Or one of the following to return "Date" if [Reservation Date] is a date:

- `If(IsDate([Reservation Date])) Then "Date" Else "Not a date"`
- `If IsDate([Reservation Date]) Then "Date" Else "Not a date"`

Related Information

If...Then...Else [page 690]

6.6.6.1.7.3 IsError

Description

Determines whether an object returns an error

Function Group

Logical

Syntax

```
bool IsError(obj)
```

Input

Parameter	Description	Type	Required
obj	Any report object	Report object	Yes

Notes

- `IsError` returns a boolean value that you can use in the `If` function.
- If you place `IsError` directly into a column, it returns an integer (1=true; 0=false). You can format this integer using a Boolean number format.

Examples

`IsError([Revenue])` returns False if the [Revenue] variable does not return an error.

`IsError([Average Guests])` returns True if the [Average Guests] variable returns a division by zero (#DIV/0) error.

`If IsError([Average Guests]) Then "Error" Else "No error"` returns "Error" if the [Average Guests] variable returns a division by zero (#DIV/0) error.

Related Information

If...Then...Else [page 690]

6.6.6.1.7.4 IsLogical

Description

Determines whether a value is boolean

Function Group

Logical

Syntax

```
bool IsLogical(obj)
```

Input

Parameter	Description	Type	Required
obj	Any report object	Report object	Yes

Notes

- `IsLogical` returns a boolean value that you can use in the `If` function.
- If you place `IsLogical` directly into a column, it returns an integer (1=true; 0=false). You can format this integer using a Boolean number format.

Examples

`IsLogical(IsString([Country]))` returns True.

`IsLogical([Country])` returns False if country returns any data type other than boolean.

`If IsLogical(IsDate([Country])) Then "Boolean" Else "Not boolean"` returns "Boolean".

Related Information

If...Then...Else [page 690]

6.6.6.1.7.5 IsNull

Description

Determines whether a value is null

Function Group

Logical

Syntax

```
bool IsNull(obj)
```

Input

Parameter	Description	Type	Required
obj	Any report object	Report object	Yes

Notes

- `IsNull` returns a boolean value that you can use in the `If` function.
- If you place `IsNull` directly into a column, it returns an integer (1=true; 0=false). You can format this integer using a Boolean number format.

Examples

`IsNull([Revenue])` returns False if the [Revenue] variable is not null.

`IsNull([Average Guests])` returns True if the [Average Guests] variable is null.

Related Information

If...Then...Else [page 690]

6.6.6.1.7.6 IsNumber

Description

Determines whether a value is a number

Function Group

Logical

Syntax

```
bool IsNumber(obj)
```

Input

Parameter	Description	Type	Required
obj	Any report object	Report object	Yes

Notes

- `IsNumber` returns a boolean value that you can use in the `If` function.
- If you place `IsNumber` directly into a column, it returns an integer (1=true; 0=false). You can format this integer using a Boolean number format.

Examples

`IsNumber([Revenue])` returns True if the [Revenue] variable is a number.

`IsNumber([Customer Name])` returns False if the [Customer Name] variable is not a number.

`If IsNumber([Customer Name]) Then "Number" Else "Not a number"` returns "Not a number" if the [Customer Name] variable is not a number.

Related Information

If...Then...Else [page 690]

6.6.6.1.7.7 IsString

Description

Determines whether a value is a string

Function Group

Logical

Syntax

```
bool IsString(obj)
```

Input

Parameter	Description	Type	Required
obj	Any report object	Report object	Yes

Notes

- `IsString` returns a boolean value that you can use in the `If` function.
- If you place `IsString` directly into a column, it returns an integer (1=true; 0=false). You can format this integer using a Boolean number format.

Examples

`IsString([Revenue])` returns false if the [Revenue] variable is not a string.

`IsString([Customer Name])` returns true if the [Customer Name] variable is a string.

`If IsString([Customer Name]) Then "String" Else "Not a string"` returns "String" if the [Customer Name] variable is a string.

Related Information

If...Then...Else [page 690]

6.6.6.1.7.8 IsTime

Description

Determines whether a variable is a time variable

Function Group

Logical

Syntax

```
bool IsTime(obj)
```

Input

Parameter	Description	Type	Required
obj	Any report object	Report object	Yes

Notes

- `IsTime` returns a boolean value that you can use in the `If` function.
- If you place `IsTime` directly into a column, it returns an integer (1=true; 0=false). You can format this integer using a Boolean number format.

Examples

`IsTime([Reservation Time])` returns true if the [Reservation Time] variable is a time variable.

`IsTime([Average Guests])` returns false if the [Average Guests] variable is not a time variable.

`If IsTime([Average Guests]) Then "Time" Else "Not time"` returns "Not time" if the [Average Guests] variable is not a time variable.

Related Information

If...Then...Else [page 690]

6.6.6.1.7.9 Odd

Description

Determines whether a number is odd

Function Group

Logical

Syntax

```
bool Odd(number)
```

Input

Parameter	Description	Type	Required
number	Any number	Number	Yes

Notes

- `Odd` returns a boolean value that you can use in the `If` function.
- If you place `Odd` directly into a column, it returns an integer (1=true; 0=false). You can format this integer using a Boolean number format.

- `Odd` ignores the fractional parts of decimal numbers.

Examples

`Odd(5)` returns True.

`Odd(4)` returns False.

`Odd(23.2)` returns True.

`Odd(24.2)` returns True.

`Odd(-23.2)` returns True.

`Odd(-24.2)` returns True.

Related Information

If...Then...Else [page 690]

6.6.6.1.8 Numeric functions

6.6.6.1.8.1 Abs

Description

Returns the absolute value of a number

Function Group

Numeric

Syntax

```
num Abs(number)
```

Input

Parameter	Description	Type	Required
number	Any number	Number	Yes

Examples

`Abs(25)` returns 25.

`Abs(-11)` returns 11.

6.6.6.1.8.2 Ceil

Description

Returns a number rounded up to the nearest integer

Function Group

Numeric

Syntax

```
num Ceil(number)
```

Input

Parameter	Description	Type	Required
number	Any number	Number	Yes

Examples

`Ceil(2.4)` returns 3.

`Ceil(3.1)` returns 4.

`Ceil(-3.1)` returns -3.

6.6.6.1.8.3 Cos

Description

Returns the cosine of an angle

Function Group

Numeric

Syntax

```
num Cos(angle)
```

Input

Parameter	Description	Type	Required
angle	An angle in radians	Number	Yes

Example

`Cos(180)` returns -0.6.

6.6.6.1.8.4 EuroConvertFrom

Description

Converts a Euro amount to another currency

Function Group

Numeric

Syntax

```
num EuroConvertFrom(euro_amount;curr_code;round_level)
```

Input

Parameter	Description	Type	Required
euro_amount	The amount in Euros	Number	Yes
curr_code	The ISO code of the target currency	String	Yes
round_level	The number of decimal places to which the result is rounded	Number	Yes

Notes

The currency code must be the code of one of the 12 EU currencies whose values were fixed in relation to the Euro prior to their abolition in January 2002. If it is not, the function returns #ERROR. The currencies are:

Table 272:

BEF	Belgian franc
DEM	German mark
GRD	Greek drachma
ESP	Spanish peseta

FRF	French franc
IEP	Irish punt
ITL	Italian lira
LUF	Luxembourg franc
NLG	Dutch guilder
ATS	Austrian schilling
PTS	Portuguese escudo
FIM	Finnish mark

Examples

`EuroConvertFrom(1000;"FRF";2)` returns 6559.57.

`EuroConvertFrom(1000;"FRF";1)` returns 6559.60.

`EuroConvertFrom(1000.04;"DEM";2)` returns 1955.83.

`EuroConvertFrom(1000.04;"DEM";1)` returns 1955.80.

Related Information

Rounding and truncating numbers [page 728]

6.6.6.1.8.5 EuroConvertTo

Description

Converts an amount to Euros

Function Group

Numeric

Syntax

```
num EuroConvertTo(noneuro_amount;curr_code;round_level)
```

Input

Parameter	Description	Type	Required
euro_amount	The amount in the non-euro currency	Number	Yes
curr_code	The ISO code of the non-euro currency	String	Yes
round_level	The number of decimal places to which the result is rounded	Number	Yes

Example

`EuroConvertTo(6559;"FRF";2)` returns 999.91.

`EuroConvertTo(6559;"FRF";1)` returns 999.90.

`EuroConvertTo(1955;"DEM";2)` returns 999.58.

`EuroConvertTo(1955;"DEM";1)` returns 999.60.

Note

The currency code must be the code of one of the 12 EU currencies whose values were fixed in relation to the Euro prior to their abolition in January 2002. If it is not, the function returns #ERROR. The currencies are:

Table 273:

BEF	Belgian franc
DEM	German mark
GRD	Greek drachma
ESP	Spanish peseta
FRF	French franc
IEP	Irish punt
ITL	Italian lira

LUF	Luxembourg franc
NLG	Dutch guilder
ATS	Austrian schilling
PTS	Portuguese escudo
FIM	Finnish mark

Related Information

Rounding and truncating numbers [page 728]

6.6.6.1.8.6 EuroFromRoundError

Description

Returns the rounding error in a conversion from Euros

Function Group

Numeric

Syntax

```
num EuroFromRoundError(euro_amount;curr_code;round_level)
```

Input

Parameter	Description	Type	Required
euro_amount	The amount in Euros	Number	Yes
curr_code	The ISO code of the target currency	String	Yes

Parameter	Description	Type	Required
round_level	The number of decimal places to which the result is rounded	Number	Yes

Output

The rounding error in the calculation

Examples

`EuroFromRoundError(1000;"FRF";2)` returns 0. (There is no difference between the unrounded conversion and the conversion rounded to 2 decimal places.)

`EuroFromRoundError(1000;"FRF";1)` returns 0.03. (The unrounded conversion is 6559.57. The conversion rounded to 1 decimal place is 6559.60. The rounding error is 0.03.)

`EuroFromRoundError(1000;"DEM";2)` returns 0. (There is no difference between the unrounded conversion and the conversion rounded to 2 decimal places.)

`EuroFromRoundError(1000;"DEM";1)` returns -0.01. (The unrounded conversion is 1955.83. The conversion rounded to 1 decimal place is 1995.80. The rounding error is -0.03.)

Note

The currency code must be the code of one of the 12 EU currencies whose values were fixed in relation to the Euro prior to their abolition in January 2002. If it is not, the function returns #ERROR. The currencies are:

Table 274:

BEF	Belgian franc
DEM	German mark
GRD	Greek drachma
ESP	Spanish peseta
FRF	French franc
IEP	Irish punt
ITL	Italian lira
LUF	Luxembourg franc
NLG	Dutch guilder
ATS	Austrian schilling

PTS	Portuguese escudo
FIM	Finnish mark

Related Information

Rounding and truncating numbers [page 728]

6.6.6.1.8.7 EuroToRoundError

Description

Returns the rounding error in a conversion to Euros

Function Group

Numeric

Syntax

```
num EuroToRoundError(noneuro_amount;curr_code;round_level)
```

Input

Parameter	Description	Type	Required
euro_amount	The amount in the non-euro currency	Number	Yes
curr_code	The ISO code of the non-euro currency	String	Yes
round_level	The number of decimal places to which the result is rounded	Number	Yes

Examples

`EuroToRoundError(6559;"FRF";2)` returns 0. (There is no difference between the unrounded conversion and the conversion rounded to 2 decimal places.)

`EuroToRoundError(6559;"FRF";1)` returns -0.01. (The unrounded conversion is 999.91. The conversion rounded to 1 decimal place is 999.90. The rounding error is -0.01.)

`EuroToRoundError(1955;"DEM";2)` returns 0. (There is no difference between the unrounded conversion and the conversion rounded to 2 decimal places.)

`EuroToRoundError(1955;"DEM";1)` returns 0.02. (The unrounded conversion is 999.58. The conversion rounded to 1 decimal place is 999.60. The rounding error is 0.02.)

Note

The currency code must be the code of one of the 12 EU currencies whose values were fixed in relation to the Euro prior to their abolition in January 2002. If it is not, the function returns #ERROR. The currencies are:

Table 275:

BEF	Belgian franc
DEM	German mark
GRD	Greek drachma
ESP	Spanish peseta
FRF	French franc
IEP	Irish punt
ITL	Italian lira
LUF	Luxembourg franc
NLG	Dutch guilder
ATS	Austrian schilling
PTS	Portuguese escudo
FIM	Finnish mark

Related Information

Rounding and truncating numbers [page 728]

6.6.6.1.8.8 Exp

Description

Returns an exponential (e raised to a power)

Function Group

Numeric

Syntax

```
num Exp(power)
```

Input

Parameter	Description	Type	Required
power	The power	Number	Yes

Notes

An exponential is the constant e (2.718...) raised to a power.

Examples

`Exp(2.2)` returns 9.03.

6.6.6.1.8.9 Fact

Description

Returns the factorial of a number

Function Group

Numeric

Syntax

```
int Fact(number)
```

Input

Parameter	Description	Type	Required
number	Any number	Number	Yes

Notes

The factorial of `number` is the product of all the integers from 1 to `number`.

Examples

`Fact(4)` returns 24.

`Fact(5.9)` returns 120.

6.6.6.1.8.10 Floor

Description

Returns a number rounded down to the nearest integer

Function Group

Numeric

Syntax

```
int Floor(number)
```

Input

Parameter	Description	Type	Required
number	Any number	Number	Yes

Example

`Floor(24.4)` returns 24.

6.6.6.1.8.11 Ln

Description

Returns the natural logarithm of a number

Function Group

Numeric

Syntax

```
num Ln(number)
```

Input

Parameter	Description	Type	Required
number	Any number	Number	Yes

Examples

`Ln(10)` returns 2.3

6.6.6.1.8.12 Log

Description

Returns the logarithm of a number in a specified base

Function Group

Numeric

Syntax

```
num Log(number;base)
```

Input

Parameter	Description	Type	Required
number	Any number	Number	Yes
base	The base of the logarithm	Number	Yes

Examples

`Log(125;5)` returns 3.

6.6.6.1.8.13 Log10

Description

Returns the base 10 logarithm of a number

Function Group

Numeric

Syntax

```
num Log10(number)
```

Input

Parameter	Description	Type	Required
number	Any number	Number	Yes

Examples

`Log10(100)` returns 2.

6.6.6.1.8.14 Mod

Description

Returns the remainder from the division of two numbers

Function Group

Numeric

Syntax

```
num Mod(dividend;divisor)
```

Input

Parameter	Description	Type	Required
dividend	The dividend	Number	Yes
divisor	The divisor	Number	Yes

Examples

`Mod(10;4)` returns 2.

`Mod (10.2;4.2)` returns 1.8.

6.6.6.1.8.15 Power

Description

Returns a number raised to a power

Function Group

Numeric

Syntax

```
num Power(number;power)
```

Input

Parameter	Description	Type	Required
number	The number to raise to a power	Number	Yes
power	The power	Number	Yes

Example

`Power(10;2)` returns 100.

6.6.6.1.8.16 Rank

Description

Ranks a measure by dimensions

Function Group

Numeric

Syntax

```
int Rank(measure;[ranking_dims][;Top|Bottom][;(reset_dims)])
```

Input

Parameter	Description	Type	Required
measure	The measure to be ranked	Measure	Yes
ranking_dims	The dimensions used to rank the measure	Dimension list	No
Top|Bottom	Sets the ranking order:	Keyword	No (`Top` is default)

Parameter	Description	Type	Required
	• `Top` - descending • `Bottom` - ascending		
reset_dims	The dimensions that reset the ranking	Dimension list	No

Notes

- The function uses the default calculation context to calculate the ranking if you do not specify ranking dimensions.
- You must always place dimensions in parentheses even if there is only one dimension in the list of ranking or reset dimensions.
- When you specify a set of ranking or reset dimensions you must separate them with semi-colons.
- By default the ranking is reset over a section or block break.

Examples

In the following table the rank is given by `Rank([Revenue];([Country]))`:

Table 276:

Country	Revenue	Rank
France	835,420	2
US	2,451,104	1

In the following table the rank is given by `Rank([Revenue];([Country]);Bottom)`. The `Bottom` argument means that the measures are ranked in descending order.

Table 277:

Country	Revenue	Rank
France	835,420	1
US	2,451,104	2

In the following table the rank is given by `Rank([Revenue];([Country];[Resort]))`:

Table 278:

Country	Resort	Revenue	Rank
France	French Riviera	835,420	3
US	Bahamas Beach	971,444	2
US	Hawaiian Club	1,479,660	1

In the following table the rank is given by `Rank([Revenue];([Country];[Year]);([Country]))`. The rank is reset on the Country dimension.

Table 279:

Country	Year	Revenue	Rank
France	FY1998	295,940	1
France	FY1999	280,310	2
France	FY2000	259,170	3
US	FY1998	767,614	3
US	FY1999	826,930	2
US	FY2000	856,560	1

Related Information

Bottom/Top operators [page 711]

6.6.6.1.8.17 Round

Description

Rounds a number

Function Group

Numeric

Syntax

```
num Round (number;round_level)
```

Input

Parameter	Description	Type	Required
number	The number to be rounded	Number	Yes
round_level	The number of decimal places to which the number is rounded	Number	Yes

Examples

`Round(9.44;1)` returns 9.4.

`Round(9.45;1)` returns 9.5.

`Round(9.45;0)` returns 9.

`Round(9.45;-1)` returns 10.

`Round(4.45;-1)` returns 0.

Related Information

Rounding and truncating numbers [page 728]

6.6.6.1.8.18 Sign

Description

Returns the sign of a number

Function Group

Numeric

Syntax

```
int Sign(number)
```

Input

Parameter	Description	Type	Required
number	Any number	Number	Yes

Notes

`Sign` returns -1 if `number` is negative, 0 if `number` is zero and 1 if `number` is positive.

Examples

`Sign(3)` returns 1.

`Sign(-27.5)` returns -1.

6.6.6.1.8.19 Sin

Description

Returns the sine of an angle.

Function Group

Numeric

Syntax

```
num Sin(angle)
```

Input

Parameter	Description	Type	Required
angle	An angle in radians	Number	Yes

Example

`Sin(234542)` can return, depending on the decimal point setting, -0.116992 or -0.12.

6.6.6.1.8.20 Sqrt

Description

Returns the square root of a number

Function Group

Numeric

Syntax

```
num Sqrt(number)
```

Input

Parameter	Description	Type	Required
number	Any number	Number	Yes

Example

`Sqrt(25)` returns 5.

6.6.6.1.8.21 Tan

Description

Returns the tangent of an angle

Function Group

Numeric

Syntax

```
num Tan(angle)
```

Input

Parameter	Description	Type	Required
angle	An angle in radians	Number	Yes

Examples

`Tan(90)` returns -2.

6.6.6.1.8.22 ToDecimal

Description

Returns a decimal.

Function Group

Numeric

Syntax

```
num ToDecimal(number|string)
```

Input

Parameter	Description	Type	Required
number|string	A number or a string that can be interpreted as a number	Number or string	Yes

Notes

If `string` is not a number, `ToDecimal` returns `#ERROR`.

Examples

`ToDecimal("1234567890.1234567890")` returns `1234567890.1234567890`.

`ToDecimal("1234567890.12345")` returns `1234567890.12345`.

`ToDecimal("abcdefijkl")` returns `#ERROR`.

6.6.6.1.8.23 ToNumber

Description

Returns a string as a number

Function Group

Numeric

Syntax

```
num ToNumber(string)
```

or

Input

Parameter	Description	Type	Required
string	A number as a string	String	Yes

Notes

If `string` is not a number or a datetime, `ToNumber` returns `#ERROR`.

Examples

`ToNumber("45")` returns 45.

6.6.6.1.8.24 Truncate

Description

Truncates a number

Function Group

Numeric

Syntax

```
num Truncate(number;truncate_level)
```

Input

Parameter	Description	Type	Required
number	The number to be rounded	Number	Yes
truncate_level	The number of decimal places to which the number is truncated	Number	Yes

Notes

Example

`Truncate(3.423;2)` returns 3.42.

Related Information

Rounding and truncating numbers [page 728]

6.6.6.1.9 Set functions

6.6.6.1.9.1 Ancestor

Description

Returns an ancestor member of a member

Function Group

Set

Syntax

```
member Ancestor(member;level|distance)
```

Input

Parameter	Description	Type	Required
member	Any member	member	Yes
level	The level of the ancestor	level	Either `level` or `distance` is required
distance	The distance of the ancestor level from the current level	int	Either `level` or `distance` is required

Notes

- `Ancestor` is not used as a standalone function. It is used in the input parameter in aggregate functions that specifies the member set for aggregation.
- `member` is the current member of a hierarchy. When the hierarchy is not in the context of the block, the formula returns an empty value.
- `distance` must be positive.

Examples

The following examples are all taken from an English language data source.

Based on the following geography hierarchy, you want to know the Internet Sales Amount impact of each customer independant of the customer's city.

Firstly, for each City, you want the Internet Sales Amount value for its Country:

```
=Sum([Query 2].[Internet Sales].[Internet Sales Amount];{Ancestor([Customer
Geography];[Customer Geography].[City])})
```

Customer Geography	'=Sum([Query 2].[Internet Sales].[	Internet Sales Amount
All Customers		29,358,677.22
Australia		9,061,000.58
New South Wales		3,934,485.73
Coffs Harbour	235,454.97	235,454.97
2450	235,454.97	235,454.97
Adriana Smith	235,454.97	5,333.25
Aimee Guo	235,454.97	77.27
Allison R. Young	235,454.97	39.98
Ann A. Sara	235,454.97	39.98
Antonio G. Pattersor	235,454.97	8,068.03
Ariana Stewart	235,454.97	6,070.59
Arthur Kapoor	235,454.97	23.97
Barbara W. Lal	235,454.97	2,795.01
Bobby D. Saunders	235,454.97	120.48
Brianna J. Johnson	235,454.97	38.98

Then you calculate the contribution of each City in the country's global Internet Sales amount :

```
=[Query 2].[Internet Sales].[Internet Sales Amount] / Sum([Query 2].[Internet
Sales].[Internet Sales Amount];{Ancestor([Customer Geography];[Customer Geography].
[City])})
```

Customer Geography	'=Sum([Query 2].[Internet Sales].[	Internet Sales Amount
All Customers		29,358,677.22
Australia		9,061,000.58
New South Wales		3,934,485.73
Coffs Harbour	100.00%	235,454.97
2450	100.00%	235,454.97
Adriana Smith	2.27%	5,333.25
Aimee Guo	0.03%	77.27
Allison R. Young	0.02%	39.98
Ann A. Sara	0.02%	39.98
Antonio G. Pattersor	3.43%	8,068.03
Ariana Stewart	2.58%	6,070.59
Arthur Kapoor	0.01%	23.97
Barbara W. Lal	1.19%	2,795.01
Bobby D. Saunders	0.05%	120.48
Brianna J. Johnson	0.02%	38.98
Bruce G. Madan	0.03%	65.96

Note

When using BICS connections to SAPBW providers, you need to specify an offset level instead of naming the level:

```
=[Query 2].[Internet Sales].[Internet Sales Amount] / Sum([Query 2].[Internet
Sales].[Internet Sales Amount];{Ancestor([Customer Geography];2)})
```

In this case you will have results also for State Province and Country.

Related Information

Aggregate [page 515]
Average [page 522]
Count [page 523]
Max [page 529]
Min [page 531]
Sum [page 551]

6.6.6.1.9.2 Children

Description

Returns the child members of a hierarchy member within an aggregate function.

Function Group

Set

Syntax

```
member_set member.Children
```

Input

Parameter	Description	Type	Required
member	Any member	member	Yes

Notes

- `Children` is not used as a standalone function. It is used in the input parameter in aggregate functions that specifies the member set for aggregation.
- `member` is the current member of a hierarchy. When the hierarchy is not in the context of the block, the formula returns an empty value.

Examples

`[Geography].[US].[California].Children` returns [Los Angeles], [San Francisco], [San Diego].

`[Geography].Children` returns [Los Angeles], [San Francisco], [San Diego] if [California] is the current member in the [Geography] hierarchy.

Related Information

Aggregate [page 515]
Average [page 522]
Count [page 523]
Max [page 529]
Min [page 531]
Sum [page 551]

6.6.6.1.9.3 Depth

Description

Returns the depth of a member in a hierarchy

Function Group

Set

Syntax

```
int member.Depth
```

Input

Parameter	Description	Type	Required
member	Any member	member	Yes

Notes

- The depth is the distance of the member from top level of the hierarchy.
- The top level of the hierarchy is level 0.
- `member` is the current member of a hierarchy. When the hierarchy is not in the context of the block, the formula returns an empty value.

Examples

You want to know the depth of hierarchy members:

```
=[Calendar].[Date.Calendar].Depth
```

Date.Calendar	'=[Calendar].[Date.Calendar].Depth
All Periods	0
CY 2001	1
H2 CY 2001	2
Q3 CY 2001	3
July 2001	4
July 1, 2001	5
July 2, 2001	5
July 3, 2001	5
July 4, 2001	5
July 5, 2001	5
July 6, 2001	5
July 7, 2001	5

Now combine with the Children functions to check if you have all days listed every month:

```
=If [Calendar].[Date.Calendar].Depth = 4 Then Count([Internet Sales].[Internet
Sales Amount];{[Calendar].[Date.Calendar].Children()})
```

Date.Calendar	Internet Sales Amount	[Date.Calendar].Depth	[Date.Calendar].Children()
All Periods	29,358,677.22	0	
CY 2001	3,266,373.66	1	
H2 CY 2001	3,266,373.66	2	
Q3 CY 2001	1,453,522.89	3	
July 2001	473,388.16	4	31
August 2001	506,191.69	4	30
September 2001	473,943.03	4	29
Q4 CY 2001	1,812,850.77	3	
October 2001	513,329.47	4	30
November 2001	543,993.41	4	30
December 2001	755,527.89	4	31

6.6.6.1.9.4 Descendants

Description

Returns descendants of a hierarchy member within an aggregation function.

Function Group

Set

Syntax

```
member_set Descendants(member[;level|distance][;desc_flag])
```

Input

Parameter	Description	Type	Required
member	Any member	member	Yes

Parameter	Description	Type	Required
level	The level of the descendants	level	No (the level of `member` is the default)
distance	The distance of the descendant level from the current level	int	No (the level of `member` is the default)
desc_flag	Determines which descendant members are returned	keyword	No (default is `Self`)

Notes

- `Descendants` is not used as a standalone function. It is used in the input parameter in aggregate functions that specifies the member set for aggregation.
- `member` is the current member of a hierarchy. When the hierarchy is not in the context of the block, the formula returns an empty value.
- `Self` in `desc_flag` refers to the level specified by the `level|distance` parameter.
- `Before` in `desc_flag` refers to all levels above the level specified by the `level|distance` parameter.
- `After` in `desc_flag` refers to all levels below the level specified by the `level|distance` parameter.
- The values of `desc_flag` are as follows:

Self	Returns the descendants at the level specified by the `level|distance` parameter, including the current member if it is at this level.
Before	Returns the current member and all descendants above the level specified by the `level|distance` parameter.
After	Returns the descendants below the level specified by the `level|distance` parameter.
Self_Before	Returns the current member and all descendants above and including the level specified by the `level|distance` parameter.
Self_After	Returns the current member and all descendants at and below the level specified by the `level|distance` parameter.
Before_After	Returns the current member and all descendants except those at the level specified by the `level|distance` parameter.
Self_Before_After	Returns the current member and all descendants.
Leaves	Returns all members between the current member and the level specified by the `level|distance` parameter that do not have child members.

- `distance` must be positive.

Example

You have a financial hierarchy, some of the nodes are not always cumulative ones, but you want to sum their descendants. In this example, you will get the sum of descendants of each Balance Sheet member, only 1 level below:

```
=Sum([Query 3 (1)].[Financial Reporting].[Amount];{Descendants([Accounts]&[Balance Sheet];1)})
```

Accounts		
⊟ Balance Sheet	0	27,481,462
⊞ Assets	13,740,731	
⊞ Liabilities and Owners Equity	13,740,731	
⊟ Net Income	12,609,503	

```
=Sum([Query 3 (1)].[Financial Reporting].[Amount];{Descendants([Accounts]&[Balance Sheet].[Assets].[Current Assets];1;Leaves)})
```

⊟ Balance Sheet	0	12,445,628
⊟ Assets	13,740,731	
⊟ Current Assets	12,445,628	
Cash	3,236,799	
⊟ Receivables	3,475,923	
Trade Receivables	3,371,580	
Other Receivables	104,343	
Allowance for Bad Debt	67,429	
⊟ Inventory	4,143,398	
Raw Materials	2,007,586	
Work in Process	1,393,582	
Finished Goods	742,230	
Deferred Taxes	505,424	
Prepaid Expenses	341,992	
Intercompany Receivable	674,663	

Now you want to sum all members below Current Assets :

```
=Sum([Query 3 (1)].[Financial Reporting].[Amount];{Descendants([Accounts]&[Balance Sheet].[Assets].[Current Assets];0;After)})
```

Balance Sheet	0	20,064,949
Assets	13,740,731	
Current Assets	12,445,628	
Cash	3,236,799	
Receivables	3,475,923	
Trade Receivables	3,371,580	
Other Receivables	104,343	
Allowance for Bad Debt	67,429	
Inventory	4,143,398	
Raw Materials	2,007,586	
Work in Process	1,393,582	
Finished Goods	742,230	
Deferred Taxes	505,424	
Prepaid Expenses	341,992	
Intercompany Receivable	674,663	

Now add Current Assets itself :

```
=Sum([Query 3 (1)].[Financial Reporting].[Amount];{Descendants([Accounts]&[Balance Sheet].[Assets].[Current Assets];0;Self_After)})
```

Balance Sheet	0	32,510,577
Assets	13,740,731	
Current Assets	12,445,628	
Cash	3,236,799	
Receivables	3,475,923	
Trade Receivables	3,371,580	
Other Receivables	104,343	
Allowance for Bad Debt	67,429	
Inventory	4,143,398	
Raw Materials	2,007,586	
Work in Process	1,393,582	
Finished Goods	742,230	
Deferred Taxes	505,424	
Prepaid Expenses	341,992	
Intercompany Receivable	674,663	

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6.6.6.1.9.5 IsLeaf

Description

Determines whether a member is a leaf member

Function Group

Misc

Syntax

```
bool member.IsLeaf
```

Input

Parameter	Description	Type	Required
member	Any member	member	Yes

Notes

- A leaf member is a member that does not have any child members.
- `member` is the current member of a hierarchy. When the hierarchy is not in the context of the block, the formula returns an empty value.

Examples

You want to know if the line is a day:

```
=[Calendar].[Date.Calendar].IsLeaf()
```

Date.Calendar	'=[Query 1].[Calendar].[Date.Calendar].IsLeaf
All Periods	0
CY 2001	0
H2 CY 2001	0
Q3 CY 2001	0
July 2001	0
July 1, 2001	1
July 2, 2001	1
July 3, 2001	1
July 4, 2001	1
July 5, 2001	1
July 6, 2001	1
July 7, 2001	1
July 8, 2001	1

6.6.6.1.9.6 Key

Description

Returns the key of a member

Syntax

```
string member.Key
```

Function Group

Set

Input

Parameter	Description	Type	Required
member	Any member	member	Yes

Notes

- The key is the internal identifier of a member.
- `member` is the current member of a hierarchy. When the hierarchy is not in the context of the block, the formula returns an empty value.

Example

`[Geography].[US].Key` returns "XYZ" if the key of the [US] member is "XYZ".

6.6.6.1.9.7 Lag

Description

Returns a member at the same level as the current member and a given distance after it, within an aggregate function.

Syntax

```
member member.Lag(distance)
```

Function Group

Set

Input

Parameter	Description	Type	Required
member	Any member	member	Yes
distance	The distance of the member from the current member	int	Yes

Notes

- `Lag` is not used as a standalone function. It is used in the input parameter in aggregate functions that specifies the member set for aggregation.
- If `distance` is positive, `Lag` returns the member `distance` places after `member`. If `distance` is negative, `Lag` returns the member `distance` places before `member`.
- `member` is the current member of a hierarchy. When the hierarchy is not in the context of the block, the formula returns an empty value.
- `Lag` uses the member order in the hierarchy and query to return the related member.

Examples

You want to get the differences in internet sales from week to week.

```
=Max([Internet Sales].[Internet Sales Amount];{[Calendar].[Date.Calendar].Lag(7)})
```

Date.Calendar	Internet Sales Amount	'=Max([Query 1].[Internet Sales].[Internet Sales Amount];([Query 1].[Calendar].[Date.Calendar].Lag(7)))
All Periods	29,358,677.22	
CY 2001	3,266,373.66	
H2 CY 2001	3,266,373.66	
Q3 CY 2001	1,453,522.89	1,623,971.06
July 2001	473,388.16	550,816.69
July 1, 2001	14,477.34	7,855.64
July 2, 2001	13,931.52	20,909.78
July 3, 2001	15,012.18	10,556.53
July 4, 2001	7,156.54	14,313.08
July 5, 2001	15,012.18	14,134.8
July 6, 2001	14,313.08	7,156.54
July 7, 2001	7,855.64	25,047.89
July 8, 2001	7,855.64	11,230.63
July 9, 2001	20,909.78	14,313.08
July 10, 2001	10,556.53	14,134.8

Or you want to compare a specific year to another year two years previously:

Date.Calendar	Internet Sales Amount	
All Periods	29,358,677.22	
CY 2001	3,266,373.66	11.13%
H2 CY 2001	3,266,373.66	100.00%
CY 2002	6,530,343.53	22.24%
H1 CY 2002	3,805,710.59	58.28%
H2 CY 2002	2,724,632.94	41.72%
CY 2003	9,791,060.3	33.35%
H1 CY 2003	3,037,501.36	31.02%
H2 CY 2003	6,753,558.94	68.98%
CY 2004	9,770,899.74	33.28%

CY 2002	CY 2002.Lag(2)	CY 2002 - CY 2002.Lag(2)
6,530,343.53	9,770,899.74	-3,240,556.21

Now you want to combine Lag and IsLeaf to know over a one week period the difference for the amount sold. The formula set in the last column will be :

```
=If [Calendar].[Date.Calendar].IsLeaf() Then [Internet Sales].[Internet Sales
Amount] - Max([Internet Sales].[Internet Sales Amount];{[Calendar].
[Date.Calendar].Lag(7)})
```

Date.Calendar	Internet Sales Amount	"[Calendar].[Date.Calendar].Lag(7))	Difference week to week
All Periods	29,358,677.22		
CY 2001	3,266,373.66		
H2 CY 2001	3,266,373.66		
Q3 CY 2001	1,453,522.89	1,623,971.06	
July 2001	473,388.16	550,816.69	
July 1, 2001	14,477.34	7,855.64	6,621.7
July 2, 2001	13,931.52	20,909.78	-6,978.26
July 3, 2001	15,012.18	10,556.53	4,455.65
July 4, 2001	7,156.54	14,313.08	-7,156.54
July 5, 2001	15,012.18	14,134.8	877.38
July 6, 2001	14,313.08	7,156.54	7,156.54
July 7, 2001	7,855.64	25,047.89	-17,192.25
July 8, 2001	7,855.64	11,230.63	-3,374.99
July 9, 2001	20,909.78	14,313.08	6,596.7
July 10, 2001	10,556.53	14,134.8	-3,578.27
July 11, 2001	14,313.08	6,953.26	7,359.82

Related Information

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6.6.6.1.9.8 MemberAtDepth

Description

Returns the members of a hierarchy, at a chosen depth.

Function Group

Set

Syntax

```
string MemberAtDepth(hierarchy;depth)
```

Input

Table 280:

Parameter	Description	Type	Required
`hierarchy`	Hierarchical object	dimension	Yes
`depth`	The level of the member set in the chosen hierarchy	int	Yes

Notes

- `depth` must be positive or zero, else the function will return an error
- When there is no member at the given depth, then `MemberAtDepth()` returns `Null`
- When the input object is not a hierarchy, then `MemberAtDepth()` returns `Null` for any depth greater than zero

Examples

The following `[Country]` hierarchy has been filtered to keep only two children of the EUROPE node.

Country	Quantity
WORLD	262,461
EUROPE	31,009
France	6,965
Germany	6,331
NORTH_AMERICA	219,944
Canada	17,754
USA	202,190
ASIA_PAC	9,065

`MemberAtDepth([Country];0)` returns:

	Order Quantity
WORLD	755,719

“WORLD” is the root and the only value at level 0.

If the *Avoid duplicate row aggregation* option is disabled, then the function aggregates all the members' values since they all stem from the "WORLD" root. If you want to check all the aggregated values, enable the *Avoid duplicate row aggregation* option. The hierarchy would then look like this:

	Order Quantity
WORLD	262,461
WORLD	31,009
WORLD	6,965
WORLD	6,331
WORLD	219,944
WORLD	17,754
WORLD	202,190
WORLD	9,065
Sum:	**755,719**

`MemberAtDepth([Country];1)` returns:

	Order Quantity
	262,461
ASIA_PAC	9,065
EUROPE	44,305
NORTH_AME	439,888

The first row contains a NULL value because the root has no values at level 1.

On other rows, the function aggregates all the members' values of the `[Country]` hierarchy at level 1: “ASIA_PAC”, “EUROPE” and “NORTH_AMERICA”. If you want to check all the aggregated values, enable the *Avoid duplicate row aggregation* option. The hierarchy would then look like this:

	Order Quantity
	262,461
ASIA_PAC	9,065
EUROPE	31,009
EUROPE	6,965
EUROPE	6,331
NORTH_AME	219,944
NORTH_AME	17,754
NORTH_AME	202,190
Sum:	**755,719**

`MemberAtDepth([Country];2)` returns:

	Order Quantity
	522,479
Canada	17,754
France	6,965
Germany	6,331
USA	202,190

Again, the first row aggregates all the members that have no values at level 2, that is, the root and each node. On other rows, all the members' values of the `[Country]` hierarchy at level 2 are aggregated.

`MemberAtDepth([Country];3)` returns:

	Order Quantity
	755,719

There is only one row left, with a NULL value, since the hierarchy has no third level. Therefore, all nodes and leaves' values of the hierarchy are aggregated.

If you want to visualize the whole hierarchy, add columns containing the levels of the hierarchy in the existing table, then use the function and give it different level values. It would then look like this:

Level 0	Level 1	Level 2	Order Quantity
WORLD			262,461
WORLD	ASIA_PAC		9,065
WORLD	EUROPE		31,009
WORLD	EUROPE	France	6,965
WORLD	EUROPE	Germany	6,331
WORLD	NORTH_AMERICA		219,944
WORLD	NORTH_AMERICA	Canada	17,754
WORLD	NORTH_AMERICA	USA	202,190

You can use the `IsLeaf` formula to filter the hierarchy leaves in the above table: For more information on the `IsLeaf` formula, see IsLeaf [page 668]

Level 0	Level 1	Level 2	Order Quantity	IsLeaf
WORLD			262,461	false
WORLD	ASIA_PAC		9,065	true
WORLD	EUROPE		31,009	false
WORLD	EUROPE	France	6,965	true
WORLD	EUROPE	Germany	6,331	true
WORLD	NORTH_AMERICA		219,944	false
WORLD	NORTH_AMERICA	Canada	17,754	true
WORLD	NORTH_AMERICA	USA	202,190	true

Once it's done, you can hide the `IsLeaf` column to get the equivalent of a flattened hierarchy table:

Level 0	Level 1	Level 2	Order Quantity
WORLD	ASIA_PAC		9,065
WORLD	EUROPE	France	6,965
WORLD	EUROPE	Germany	6,331
WORLD	NORTH_AMERICA	Canada	17,754
WORLD	NORTH_AMERICA	USA	202,190

6.6.6.1.9.9 Parent

Description

Returns the parent member of a hierarchy member within an aggregate function.

Function Group

Set

Syntax

```
member member.Parent
```

Input

Parameter	Description	Type	Required
member	Any member	member	Yes

Notes

- `Parent` is not used as a standalone function. It is used in the input parameter in aggregate functions that specifies the member set for aggregation.
- `member` is the current member of a hierarchy. When the hierarchy is not in the context of the block, the formula returns an empty value.

Examples

The second column contains the formula that allow yous to obtain the Parent of each hierarchy member:

```
=Max([Customer Geography];{[Customer Geography].Parent})
```

All Customers	
Australia	All Customer:
New South Wales	Australia
Alexandria	New South W
Coffs Harbour	New South W
2450	Coffs Harbou
Adriana Smith	2450
Aimee Guo	2450
Allison R. Young	2450
Ann A. Sara	2450

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6.6.6.1.9.10 Siblings

Description

Returns the member and sibling members of the hierarchy member within an aggregate function.

Function Group

Set

Syntax

```
member_set member.Siblings
```

Input

Parameter	Description	Type	Required
member	Any member	member	Yes

Notes

- `Siblings` is not used as a standalone function. It is used in the input parameter in aggregate functions that specifies the member set for aggregation.
- `member` is the current member of a hierarchy. When the hierarchy is not in the context of the block, the formula returns an empty value.
- Sibling members are members from the same level and with the same parent as `member`.

Examples

You have a time hierarchy and want to know the percentage of each Quarter within a year or the percentage of each year within the period.

```
=[Query 1].[Internet Sales].[Internet Sales Amount] / Sum([Query 1].[Internet
Sales].[Internet Sales Amount];{[Query 1].[Calendar].[Date.Calendar].Siblings()})
```

Date.Calendar	Internet Sales Amount	
All Periods	29,358,677.22	
CY 2001	3,266,373.66	11.13%
H2 CY 2001	3,266,373.66	100.00%
CY 2002	6,530,343.53	22.24%
H1 CY 2002	3,805,710.59	58.28%
H2 CY 2002	2,724,632.94	41.72%
CY 2003	9,791,060.3	33.35%
H1 CY 2003	3,037,501.36	31.02%
H2 CY 2003	6,753,558.94	68.98%
CY 2004	9,770,899.74	33.28%

In a free form cell you want to know the contribution of Year 2004 in the overall period :

```
=Sum([Query 1].[Internet Sales].[Internet Sales Amount];{[Query 1].[Calendar].
[Date.Calendar]&[All Periods].[CY 2004]}) / Sum([Query 1].[Internet Sales].
[Internet Sales Amount];{[Query 1].[Calendar].[Date.Calendar]&[All Periods].[CY
2004].Siblings()})
```

{CY 2001;CY 2002}	2004 percentage in 2001 to 2004 perdiod
9,796,717.18	33.28%

Date.Calendar	Internet Sales Amount	
⊟ All Periods	29,358,677.22	
⊟ CY 2001	3,266,373.66	11.13%
⊞ H2 CY 2001	3,266,373.66	100.00%
⊟ CY 2002	6,530,343.53	22.24%
⊞ H1 CY 2002	3,805,710.59	58.28%
⊞ H2 CY 2002	2,724,632.94	41.72%
⊟ CY 2003	9,791,060.3	33.35%
⊞ H1 CY 2003	3,037,501.36	31.02%
⊞ H2 CY 2003	6,753,558.94	68.98%
⊞ CY 2004	9,770,899.74	33.28%

Related Information

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6.6.6.1.10 Misc functions

6.6.6.1.10.1 BlockName

Description

Returns the block name

Function Group

Misc

Syntax

```
string BlockName()
```

Examples

`BlockName()` returns "Block1" if it is placed in a block called "Block1".

6.6.6.1.10.2 ColumnNumber

Description

Returns the column number

Function Group

Misc

Syntax

```
int ColumnNumber()
```

Examples

`ColumnNumber()` returns 2 if the formula is placed in the second column of a table.

6.6.6.1.10.3 Comment

Description

Returns the comment of a cell

Function Group

Misc

Syntax

```
string Comment()
```

Note

The comment returned by the function is either the first or last comment entered in the cell, depending on how you have set the parameter in the *Document Properties*.

Example

`Comment()` returns "Increase the gross margin in Q3" if the comment in the cell is "Increase the gross margin in Q3".

6.6.6.1.10.4 CurrentUser

Description

Returns the BI launch pad login of the current user

Function Group

Misc

Syntax

```
string CurrentUser()
```

Examples

`CurrentUser()` returns "gkn" if the current user's login is "gkn".

6.6.6.1.10.5 ForceMerge

Description

Includes synchronized dimensions in measure calculations when the dimensions are not in the measure's calculation context

Function Group

Misc

Syntax

```
num ForceMerge(measure)
```

Input

Parameter	Description	Type	Required
measure	Any measure	Measure	Yes

Output

The result of the calculation with the synchronized dimensions taken into account

Notes

- `ForceMerge` returns #MULTIVALUE if applied to a smart measure because the grouping set necessary to calculate the smart measure does not exist.
- `ForceMerge` is the equivalent of the BusinessObjects/Desktop Intelligence `Multicube` function.

Examples

`ForceMerge([Revenue])` returns the value of [Revenue], taking into account any synchronized dimensions that do not appear in the same block as the [Revenue] measure.

6.6.6.1.10.6 GetContentLocale

Description

Returns the locale of the data contained in the document (the Document Locale)

Function Group

Misc

Syntax

```
string GetContentLocale()
```

Notes

The Document Locale is used to format the data in a document.

Examples

`GetContentLocale()` returns "fr_FR" if the Document Locale is "French (France)".

6.6.6.1.10.7 GetDominantPreferredViewingLocale

Description

Returns the dominant locale in the user's Preferred Viewing Locale group

Function Group

Misc

Syntax

```
string GetDominantPreferredViewingLocale()
```

Notes

- Each group of related locales has a dominant locale, used as a base for all the other locales in the group. For example, US English ("en_US") is the dominant locale in the English locales group. New Zealand English ("en_NZ") is also a member of this group.
- The *Translation Manager Guide* lists all the Dominant Preferred Viewing Locales.

Examples

`GetDominantPreferredViewingLocale` returns "en_US" when the Preferred Viewing Locale is "English (New Zealand)".

Related Information

GetPreferredViewingLocale [page 690]

6.6.6.1.10.8 GetLocale

Description

Returns the user's locale used to format the user interface (the Product Locale)

Function Group

Misc

Syntax

```
string GetLocale()
```

Notes

The Product Locale is the locale of the user interface (for example, menu items and button text).

Examples

`GetLocale()` returns "en_US" if the user's Product Locale is "English (US)".

6.6.6.1.10.9 GetLocalized

Description

Returns a string localized according to the user's Preferred Viewing Locale

Syntax

```
string GetLocalized(string[;comment])
```

Input

Parameter	Description	Type	Required
string	The string to be translated	string	Yes
comment	A comment to aid translators	string	No

Notes

- The `string` parameter can be a string in any formula (for example, in a cell, an alerter message or a variable definition).
- When designing a report, you can use the `comment` parameter to provide further information to help translators translate the string. The comment appears with the string in the Translation Manager tool which translators use to translate reports.
- Each `string` + `comment` pair generates a separate string to be translated in the Translation Manager tool. As a result, `GetLocalized("Product Total";"Max 20 characters")` and `GetLocalized("Product Total";"Use no more than 20 characters")` might return different translations.

Examples

`GetLocalized("Total for all products")` returns the French translation of "Total for all products" if the Preferred Viewing Locale is "fr_FR".

`GetLocalized("Total for all products";"Try not to use more than 20 characters")` returns the German translation of "Total for all products" if the Preferred Viewing Locale is "de_DE". The function also tells the translator of the report not to use more than 20 characters if possible when translating the string.

Related Information

GetPreferredViewingLocale [page 690]

6.6.6.1.10.10 GetPreferredViewingLocale

Description

Returns the user's preferred locale for viewing document data (the Preferred Viewing Locale)

Function Group

Misc

Syntax

```
string GetPreferredViewingLocale()
```

Examples

`GetPreferredViewingLocale` returns "en_US" if the Preferred Viewing Locale is "English (US)".

Related Information

GetLocalized [page 688]
GetDominantPreferredViewingLocale [page 687]

6.6.6.1.10.11 If...Then...Else

Description

Returns a value based on whether an expression is true or false

Function Group

Misc

Syntax

```
If bool_value Then true_value [Else false_value]
```

Input

Parameter	Description	Type	Required
bool_value	A boolean value	Boolean	Yes
true_value	The value to return if `bool_value` is true	Any	Yes
false_value	The value to return if `bool_value` is false	Any	Yes if `Else` is included

Notes

- `true_value` and `false_value` can mix datatypes.
- You can use the boolean operators `And`, `Between`, `InList`, `Or` and `Not` with `If`.
- You can nest `If` conditions by replacing any `Else` clause with an `ElseIf` clause. This syntax describes one level of nesting:

  ```
  If bool_value Then true_value [ElseIf bool_value Then true_value Else
  false_value…]
  ```

- The original syntax of the `If` function, `If(bool_value;true_value;false_value)`, is also supported.

Examples

`If [Sales Revenue]>1000000 Then "High Revenue"` returns "High Revenue" for all rows whose revenue is larger than 1,000,000 and nothing for all other rows.

`If [Sales Revenue] >1000000 Then "High Revenue" Else [Revenue]` returns "High Revenue" for all rows whose revenue is larger than 1,000,000 and the revenue value for all other rows.

`If [Sales Revenue]>1000000 Then "High Revenue" Else "Low Revenue"` returns "High Revenue" for all rows whose revenue is larger than 1,000,000 and "Low Revenue" for all rows whose revenue is less than 1,000,000.

`If [Sales Revenue]>1000000 Then "High Revenue" ElseIf [Sales Revenue] > 800000 Then "Medium Revenue" Else "Low Revenue"` returns "High Revenue" for all rows whose revenue is larger than 1000000, "Medium Revenue" for all rows whose revenue is between 800000 and 1000000, and "Low Revenue" for all other rows.

Related Information

If [page 692]
And operator [page 707]
Between operator [page 708]
InList operator [page 709]
Or operator [page 707]
Not operator [page 708]

6.6.6.1.10.12 If

Description

Returns a value based on whether an expression is true or false

Function Group

Misc

Syntax

```
If(bool_value;true_value;false_value)
```

Input

Parameter	Description	Type	Required
bool_value	A boolean value	Boolean	Yes
true_value	The value to return if `bool_value` is true	Any	Yes
false_value	The value to return if `bool_value` is false	Any	Yes

Notes

- `true_value` and `false_value` can mix datatypes.
- You can nest `If` conditions by replacing `false_value` with additional `If` conditions. This syntax shows one level of nesting:

```
If(bool_value;true_value;If(bool_value;true_value;false_value);false_value)
```

- The `If...Then...Else` syntax is also supported.

Examples

`If([Sales Revenue]>1000000;"High Revenue";"Low Revenue")` returns "High Revenue" for all rows whose revenue is larger than 1,000,000 and "Low Revenue" for all rows whose revenue is less than 1,000,000.

`If([Sales Revenue]>1000000;"High Revenue";[Revenue])` returns "High Revenue" for all rows whose revenue is larger than 1,000,000 and the revenue value for all other rows.

Related Information

If...Then...Else [page 690]

6.6.6.1.10.13 LineNumber

Description

Returns the line number in a table

Function Group

Misc

Syntax

```
int LineNumber()
```

Notes

Numbering of the lines in a table starts with the header, which is line 1.

Examples

`LineNumber()` returns 2 when the function appears at the second line in a table.

6.6.6.1.10.14 NameOf

Description

Returns the name of an object

Function Group

Misc

Syntax

```
string NameOf(obj)
```

Input

Parameter	Description	Type	Required
obj	Any report object	Report object	Yes

Notes

The `NameOf` function appears in column and row headers in reports.

Examples

`NameOf([Reservation Date])` returns "Reservation Date".

6.6.6.1.10.15 NoFilter

Description

Ignores filters when calculating a value. NoFilter is used with measure objects. It does not apply to dimensions.

Function Group

Misc

Syntax

```
input_type NoFilter(obj[;All|Drill])
```

Input

Parameter	Description	Type	Required
obj	Any report object	Report object	Yes
All|Drill	• No keyword specified - ignore report and block filters • `All` - ignore all filters • `Drill` - ignore report and drill filters	Keyword	No

Notes

- `NoFilter(obj;Drill)` does not work in query drill mode because the drill filters are added to the query rather than applied to the report data.
- If you end drill mode with drill filters applied, the drill filters become report filters and can change the value of any objects to which `NoFilter(obj;Drill)` is applied.

Examples

When placed in a block footer, `NoFilter(Sum([Sales Revenue]))` returns the total sales revenue of all possible rows in the block, even when rows are filtered out of the block.

`NoFilter(Sum([Sales Revenue]);All)` returns the sum of the sales revenue for all countries including France, even though there is a filter that excludes France from the report.

`NoFilter(Sum([Sales Revenue]);Drill)` returns the sum of the sales revenue for all countries, even when there is a drill filter on the [Country] dimension.

6.6.6.1.10.16 NumberOfPages

Description

Returns the number of pages in a report

Function Group

Misc

Syntax

```
integer NumberOfPages()
```

Examples

`NumberOfDataPages()` returns 2 if the report has two pages.

6.6.6.1.10.17 Page

Description

Returns the current page number in a report

Function Group

Misc

Syntax

```
integer Page()
```

Example

`Page()` returns 2 if it appears in the second page of the report.

6.6.6.1.10.18 Previous

Description

Returns a previous value of an object

Function Group

Misc

Syntax

```
input_type Previous(dimension|measure|Self [;Row|col][;(reset_dims)][;offset]
[;NoNull])
```

Input

Parameter	Description	Type	Required
dimension|measure|Self	The dimension or measure whose previous value the function returns, or the Self keyword	Dimension, measure or keyword	Yes
Row/Col	Sets the calculation direction	Keyword	No
reset_dims	The list of dimensions used to reset the calculation	Dimension list	No
offset	Specifies the value of `dimension` or `measure` that is `offset` rows previous to the current row	Integer	No (default is 1)
NoNull	Tells the function to return the first non-null value starting from the offset	Keyword	No

Notes

- The default value of `offset` is 1. `Previous([Revenue];1)` and `Previous([Revenue])` are functionally the same.
- When you include the `NoNull` argument, the function returns the first non-null value of the object beginning from the cell `offset` rows before the current row and counting backwards.
- You can use extended syntax context operators with `Previous`.
- The `Self` operator allows you to refer to the previous value of a cell when it contains content other than one report object.
- You must always place dimensions in parentheses even if there is only one dimension in the list of reset dimensions.
- When you specify a set of reset dimensions you must separate them with semi-colons.
- `Previous` is applied after all report, section and block filters, and all sorts, are applied.
- You cannot apply sorts or filters on formulas that use `Previous`.
- If `Previous` is applied on a measure and the measure returns an undefined value, `Previous` returns an undefined value even if the previous line returned a value.
- `Previous` ignores breaks when placed outside a break header or footer.
- `Previous` returns the value in the previous instance of the footer when placed in a break footer.
- `Previous` is reset in each report section.
- When used in a crosstab, `Previous` does not treat the last value in a row as the previous value of the first value of the next row.

Examples

`Previous([Country];1)` returns the following values in the following table:

Table 281:

Country	Revenue	Previous
US	5,000,000	
UK	2,000,000	US
France	2,100,000	UK

`Previous([Revenue])` returns the following values in the following table:

Table 282:

Country	Revenue	Previous
US	5,000,000	
UK	2,000,000	5,000,000
France	2,100,000	2,000,000

`Previous([Revenue];([Country])` returns the following values in the following table:

Table 283:

Country	Region	Revenue	Previous
US	North	5,000,000	
	South	7,000,000	5,000,000
UK	North	3,000,000	
	South	4,000,000	3,000,000

`Previous([Revenue])` returns the following values in the following crosstab:

Table 284:

	2004	Previous	2005	Previous
US	5,000,000		6,000,000	5,000,000
UK	2,000,000		2,500,000	2,000,000
France	3,000,000		2,000,000	3,000,000

`Previous([Revenue])` returns the following values in the following table with a break on [Country]:

Table 285:

Country	Region	Revenue	Previous
US	North	5,000,000	
	South	7,000,000	5,000,000
US		12,000,000	

Table 286:

Country	Region	Revenue	Previous
UK	North	3,000,000	7,000,000
	South	4,000,000	3,000,000
UK		7,000,000	12,000,000

`Previous([Revenue]);2;NoNull)` returns the following values in the following table:

Table 287:

Year	Quarter	Revenue	Previous
2008	Q1	500	
2008	Q2		
2008	Q3	400	500
2008	Q4	700	500
2008	Q1	300	400
2008	Q2		700
2008	Q3		300
2008	Q4	200	300

`2*Previous(Self)` returns the sequence 2, 4, 6, 8, 10...

Related Information

Comparing values using the Previous function [page 737]
Self operator [page 718]

6.6.6.1.10.19 RefValue

Description

Returns the reference value of a report object when data tracking is activated

Function Group

Misc

Syntax

```
input_type RefValue(obj)
```

Examples

`RefValue([Top Performing Region])` returns "South West" if the value of the [Top Performing Region] variable is "South West" in the reference data.

`RefValue([Revenue])` returns 1000 if the value of the [Revenue] measure is 1000 in the reference data.

Notes

- The RefValue() function can be used with either a measure or a dimension object. However, when used in a variable qualified as a dimension or a detail, the RefValue() function will return the current values of that object, rather than its reference values. In order to get the reference values, the variable must be qualified as a measure.
- When created directly in a section, table, form, or chart, a formula will always be qualified as a measure, so if the formula uses the RefValue() function, it will return the expected reference values.

Example of RefValue function with a variable

We have the list of values for the [State] dimension: California, Florida, Texas and New York. After a data refresh, this list becomes: Arizona, California, Florida, Texas and New York. A variable such as Variable=RefValue([State]) will either return:

Table 288:

Variable is qualified as	List of values returned is
Dimension or detail	Arizona, California, Florida, Texas and New York
Measure	(null value), California, Florida, Texas and New York

6.6.6.1.10.20 RelativeValue

Description

Returns previous or subsequent values of an object

Function Group

Misc

Syntax

```
input_type RelativeValue(measure|detail;slicing_dims;offset)
```

Input

Parameter	Description	Type	Required
measure|detail	Any measure or a detail of a dimension in the block	Measure or detail	Yes
slicing_dims	The dimensions that provide the calculation context	Dimension list	Yes
offset	Specifies the value of `measure` or `detail` that is `offset` rows removed from the current row	Integer	Yes

Notes

- The object must be a measure or a detail of a dimension available in the block.
- The sort order of the list of values of the slicing dimensions is used to determine the output of the function. The sort order is determined by two factors: sorts applied to the slicing dimensions, and the order in which the slicing dimensions are listed in the function.
- A dimension used as a section master can be specified as a slicing dimension.
- All the slicing dimensions must be present in the block or section header of the block in which the function is placed. If a slicing dimension is later removed from the block, the function returns the #COMPUTATION error.
- If the offset exceeds the number of rows in the list of values of the slicing dimension, the function returns null.

- `RelativeValue` cannot be used recursively.
- You must always place dimensions in parentheses even if there is only one dimension in the list of slicing dimensions.

Examples

The RelativeValue column in the table below contains the following formula:

```
RelativeValue([Revenue];([Year]);-1)
```

Year	Quarter	Sales Person	Revenue	RelativeValue
2007	Q1	Smith	1000	
2007	Q2	Jones	2000	
2007	Q3	Wilson	1500	
2007	Q4	Harris	3000	
2008	Q1	Smith	4000	1000
2008	Q2	Jones	3400	2000
2008	Q3	Wilson	2000	1500
2008	Q4	Harris	1700	3000

Related Information

#COMPUTATION [page 732]
Comparing values using the RelativeValue function [page 737]

6.6.6.1.10.21 ReportName

Description

Returns the name of a report

Function Group

Misc

Syntax

```
string ReportName()
```

Examples

`ReportName()` returns "Sales Report" if it is placed in a report called "Sales Report".

6.6.6.1.10.22 RowIndex

Description

Returns the number of a row

Function Group

Misc

Syntax

```
integer RowIndex()
```

Notes

- Row numbering starts at 0.
- `RowIndex` returns #MULTIVALUE when placed in a table header or footer.

Examples

`RowIndex` returns 0 when it appears on the first row of a table.

6.6.6.1.10.23 UniqueNameOf

Description

Returns the unique name of an object

Function Group

Misc

Syntax

```
string UniqueNameOf(obj)
```

Input

Parameter	Description	Type	Required
obj	Any report object	Report object	Yes

Examples

`UniqueNameOf([Reservation Date])` returns "Reservation Date".

6.6.6.2 Function and formula operators

Operators link the various components in a formula.

Formulas can contain mathematical, conditional, logical, function-specific or extended syntax operators.

SAP HANA Online mode operators restrictions

The table below lists the operators that are not supported in SAP HANA Online mode.

Table 289:

Operator Type	Operator
Function-specific operators	Drill
	Index
	Where
Extended syntax operators	In
	ForEach
	ForAll

6.6.6.2.1 Mathematical operators

Mathematical operators are familiar from everyday arithmetic.

There are addition (+), subtraction (-), multiplication (*), division (/) operators that allow you to perform mathematical operations in a formula. The formula `[Sales Revenue] - [Cost of Sales]` contains a mathematical operator, in this case subtraction.

> **Note**
>
> When used with character strings, the '+' operator becomes a string concatenation operator. That is, it joins character strings. For example, the formula "John" + " Smith" returns "John Smith".

6.6.6.2.2 Conditional operators

Conditional operators determine the type of comparison to be made between values.

Table 290:

Operator	Description
=	Equal to
>	Greater than
<	Less than
>=	Greater than or equal to
<=	Less than or equal to
<>	Not equal to

You use conditional operators with the If function, as in:

```
If [Revenue]>10000 Then "High" Else "Low"
```

which returns "High" for all rows where the revenue is greater than or equal to 10000 and "Low" for all other rows.

6.6.6.2.3 Logical operators

The logical operators are `And`, `Or`, `Not`, `Between` and `InList`.

Logical operators are used in boolean expressions, which return `True` or `False`.

6.6.6.2.3.1 And operator

The `And` operator links boolean values.

Description

If all the boolean values linked by `And` return true, the combination of all the values also returns true.

Syntax

```
bool_value And bool_value [And bool_value...]
```

Examples

`If [Resort] = "Bahamas Beach" And [Revenue]>100000 Then "High Bahamas Revenue"` returns "High Bahamas Revenue" if [Resort] = "Bahamas Beach" And [Revenue]>100000.

6.6.6.2.3.2 Or operator

The `Or` operator links boolean values.

Description

If any one boolean value linked by `Or` returns true, the combination of all the values also returns true.

Syntax

```
bool_value Or bool_value [Or bool_value...]
```

Examples

`If [Resort] = "Bahamas Beach" Or [Resort]="Hawaiian Club" Then "US" Else "France"` returns "US" if [Resort]="Bahamas Beach" or "Hawaiian Club", or "France" otherwise.

6.6.6.2.3.3 Not operator

Description

The `Not` operator returns the opposite of a boolean value.

Syntax

```
bool Not(bool_value)
```

Examples

`If Not([Country] = "US") Then "Not US"` returns "Not US" if [Country] has any value other than "US".

6.6.6.2.3.4 Between operator

Description

The `Between` operator determines if a variable is between two values.

Syntax

```
bool Between(first_value;second_value)
```

Notes

- You use `Between` with the `If` function and the `Where` operator.
- Changing the document locale can impact the result returned by the Between operator.

Examples

`If [Sales revenue] Between(800000;900000) Then "Medium revenue"` returns "Medium revenue" if [Sales revenue] is between 800000 and 900000.

`[Sales revenue] Between (10000;20000)` returns true if the Sales revenue is between 10000 and 20000.

`If ([Sales revenue] Between (200000;500000);"Medium revenue";"Low/High revenue")` returns "Medium revenue" if [Sales revenue] is 300000.

Related Information

If...Then...Else [page 690]
Where operator [page 718]

6.6.6.2.3.5 InList operator

Description

The `InList` operator determines if a value is in a list of values.

Syntax

```
bool test_value InList(value_list)
```

Notes

It is the combination of `test_value` + `InList` that returns a boolean value, not `InList` alone.

Examples

`If Not ([Country] InList("England";"Scotland";"Wales")) Then "Not Britain" Else "Britain"` returns "Not Britain" if [Country] is not equal to "England", "Scotland" or "Wales", or "Britain" otherwise.

`If [Resort] InList("Bahamas Beach";"Hawaiian Club") Then "US Resort"` returns "US Resort" if [Resort] is equal to "Bahamas Beach" or "Hawaiian Club".

Related Information

If...Then...Else [page 690]
Where operator [page 718]

6.6.6.2.4 Function-specific operators

Some functions can take specific operators as arguments.

For example, the `Previous` function can take the `Self` operator.

All functions use `)` and `(` to enclose function arguments. Functions that accept multiple parameters use `;` to separate the parameters.

6.6.6.2.4.1 All operator

The `All` operator tells the `NoFilter` function to ignore all filters.

The `All` operator can also tell the `Count` function to count all values, including duplicates.

Related Information

Count [page 523]
Distinct/All operators [page 713]
NoFilter [page 695]

All/Drill operators [page 711]

6.6.6.2.4.2 All/Drill operators

The `All/Drill` operators work with the `NoFilter` function.

Description

The `All/Drill` operators determine which filters the `NoFilter` function ignores.

- Not specified - `NoFilter` ignores report and block filters
- All - `NoFilter` ignores all filters
- Drill - `NoFilter` ignores report filters and drill filters

6.6.6.2.4.3 Bottom/Top operators

The `Bottom/Top` operators work with the `Rank` function.

Description

The `Bottom/Top` operators tell the `Rank` function to rank in descending or ascending order.

- `Top` - ranks in descending order
- `Bottom` - ranks in ascending order

Examples

`Rank([Revenue];([Country]);Top)` ranks countries by revenue from highest to lowest.

Related Information

Rank [page 648]

6.6.6.2.4.4 Break operator

The `Break` operator works with the `Percentage` function.

Description

The `Break` operator tells `Percentage` function to account for table breaks.

Examples

The formula `Percentage([Revenue])` gives the following result in the following table (percentages are calculated on the total revenue in the block):

Table 291:

Year	Quarter	Revenue	Percentage
2005	Q1	10000	10%
2005	Q2	20000	20%
2006	Q1	30000	30%
2006	Q2	40000	40%

The formula `Percentage([Revenue];Break)` gives the following result in the following table (percentages are calculated on the total revenue in each part of the block):

Table 292:

Year	Quarter	Revenue	Percentage
2005	Q1	10000	33.3%
2005	Q2	20000	66.6%
2006	Q1	30000	42.9%
2006	Q2	40000	57.1%

Related Information

Percentage [page 533]

6.6.6.2.4.5 Distinct/All operators

The `Distinct/All` operators work with the `Count` function.

The `Distinct/All` operators tell the `Count` function to count distinct values only, or all values.

Examples

`Count([Revenue];Distinct)` returns 3 if [Revenue] has the values (5;5;6;4).

`Count([Revenue];All)` returns 4 if [Revenue] has the values (5;5;6;4).

Related Information

Count [page 523]

6.6.6.2.4.6 IncludeEmpty operator

The `IncludeEmpty` operator works with aggregate functions.

Description

The `IncludeEmpty` operator tells some aggregate functions (Average, Count, RunningAverage, RunningCount) to include empty values in calculations.

Examples

`Average([Revenue];IncludeEmpty)` returns 3 if [Revenue] has the values (5;3;<empty>;4).

Related Information

Average [page 522]
Count [page 523]
RunningAverage [page 537]
RunningCount [page 539]

6.6.6.2.4.7 Index operator

The `Index` operator works with the `UserResponse` and `RefValueUserResponse` functions.

Description

The `Index` operator tells the `UserResponse` and `RefValueUserResponse` functions to return the database primary key of the prompt response.

Related Information

UserResponse [page 610]
RefValueUserReponse [page 607]

6.6.6.2.4.8 Linear operator

The `Linear` operator works with the `Interpolation` function.

Description

The `Linear` operator tells the `Interpolation` function to use linear regression with least squares interpolation to supply missing measure values.

Linear regression with least squares interpolation calculates missing values by calculating a line equation in the form f(x) = ax + b that passes as closely as possible through all the available values of the measure.

Related Information

Interpolation [page 526]

6.6.6.2.4.9 NoNull operator

The `NoNull` operator works with the `Previous` function.

Description

The `NoNull` operator tells the `Previous` function to ignore null values.

When used with `NoNull`, `Previous` returns the first non-null value of the object, beginning from the cell `offset` rows before the current row and counting backwards.

Related Information

Previous [page 697]

6.6.6.2.4.10 NotOnBreak operator

The `NotOnBreak` operator works with the `Interpolation` function.

Description

The `NotOnBreak` operator tells the `Interpolation` function to ignore section and block breaks.

Related Information

Interpolation [page 526]

6.6.6.2.4.11 PointToPoint operator

The `PointToPoint` operator tells the `Interpolation` function to use point-to-point interpolation to supply missing measure values.

Description

Point-to point interpolation calculates missing values by calculating a line equation in the form f(x) = ax + b that passes through the two adjacent values of the missing value.

Related Information

Interpolation [page 526]

6.6.6.2.4.12 Row/Col operators

The `Row` operator calculates each value in the row as a percentage of the total value of all the rows in the embedding context. The `Col` operator calculates each value in the column as a percentage of the total value of all the columns in the embedding context.

Description

The `Row/Col` operators set the calculation direction of the following functions: `Percentage`, `Previous`, `RunningAverage`, `RunningCount`, `RunningMax`, `RunningMin`, `RunningProduct`, `RunningSum`.

Notes

In a crosstab, the value in each cell is calculated by default as a percentage of the total value in the crosstab. The `Row` operator calculates the values in the rows as percentages of the total value for the row. The `Col` operator calculates the values in the columns as percentages of the total value in the column.

Examples

In a crosstab, `Percentage([Measure])` gives the following result:

Table 293:

Measure	Percentage	Measure	Percentage
100	10%	500	50%
200	20%	200	20%

`Percentage([Measure];Row)` gives the following result:

Table 294:

Measure	Percentage	Measure	Percentage
100	16.7%	500	83.3%
200	50%	200	50%

`Percentage([Measure];Col)` gives the following result:

Table 295:

Measure	Percentage	Measure	Percentage
100	33.3%	500	83.3%
200	66.6%	200	16.7%

The Row operator calculates the running aggregate by row. The Col operator calculates the running aggregate by column.

In a crosstab, `RunningSum([Measure])` or `RunningSum([Measure];Row)` gives the following result:

Table 296:

Measure	RunningSum	Measure	RunningSum
100	100	200	300
400	700	250	950

In a crosstab, `RunningSum([Measure];Col)` gives the following result:

Table 297:

Measure	RunningSum	Measure	RunningSum
100	100	200	700
400	500	250	950

Related Information

Percentage [page 533]
RunningAverage [page 537]
RunningCount [page 539]
RunningMax [page 541]
RunningMin [page 543]

RunningProduct [page 545]
RunningSum [page 547]

6.6.6.2.4.13 Self operator

The `Self` operator works with the `Previous` function.

Description

Refers the `Previous` function to the previous cell when it does not contain a report object.

Examples

`5 + Previous(Self)` returns the sequence 5, 10, 15, 20, 25, 30...

`1 + 0.5 * Previous(Self)` returns the sequence 1, 1.5, 1.75, 1.88...

Related Information

Previous [page 697]

6.6.6.2.4.14 Where operator

Description

The `Where` operator restricts the data used to calculate a measure.

Examples

The formula `Average ([Sales Revenue]) Where ([Country] = "US")` calculates the average sales where the country is "US".

The formula `Average ([Sales Revenue]) Where ([Country] = "US" Or [Country] = "France")` calculates the average sales where the country is "US" or "France".

The formula `[Revenue] Where (Not ([Country] Inlist ("US"; "France")))` calculates the revenue for the countries other than US and France.

The variable [High Revenue] has the formula `[Revenue] Where [Revenue > 500000]`. When placed in a block, [High Revenue] displays either the revenue when its value is greater than 500000, or nothing. When placed in a footer at the bottom of the [High Revenue] column, the formula `Average ([High Revenue])` returns the average of all the revenues greater than 500000.

Related Information

And operator [page 707]
Between operator [page 708]
InList operator [page 709]
Or operator [page 707]
Not operator [page 708]

6.6.6.2.5 Extended syntax operators

You specify input and output contexts explicitly with context operators.

The following table lists the context operators:

Table 298:

Operator	Description
In	Specifies an explicit list of dimensions to use in the context.
ForEach	Adds dimensions to the default context
ForAll	Removes dimensions from the default context

The ForAll and ForEach operators are useful when you have a default context with many dimensions. It is often easier to add or subtract from the context using ForAll and ForEach than it is to specify the list explicitly using In.

6.6.6.2.5.1 In context operator

The `In context` operator specifies dimensions explicitly in a context.

Example

Using In to specify the dimensions in a context

In this example you have a report showing Year and Sales revenue. Your data provider also contains the Quarter object but you do not include this dimension in the block. Instead, you want to include an additional column to show the maximum revenue by quarter in each year. Your report looks like this:

Year	Sales revenue	Max Quarterly Revenue
2001	$8,096,123.60	$2,660,699.50
2002	$13,232,246.00	$4,186,120.00
2003	$15,059,142.80	$4,006,717.50

You can see where the values in the Max Quarterly Revenue column come from by examining this block in conjunction with a block that includes the Quarter dimension:

Year	Quarter	Sales revenue
2001	Q1	$2,660,699.50
2001	Q2	$2,279,003.00
2001	Q3	$1,367,841.00
2001	Q4	$1,788,580.00
	Max:	$2,660,699.50

Year	Quarter	Sales revenue
	Q1	$3,326,172.00
	Q2	$2,840,651.00
	Q3	$2,879,303.00
	Q4	$4,186,120.00
	Max:	$4,186,120.00

Year	Quarter	Sales revenue
	Q1	$3,742,989.00
	Q2	$4,006,717.50
	Q3	$3,953,395.00
	Q4	$3,356,041.00
	Max:	$4,006,717.50

The Max Quarterly Revenue column shows the highest quarterly revenue in each year. For example, Q4 has the highest revenue in 2002, so the Max Quarterly Revenue shows Q4 revenue on the row showing 2002.

Using the In operator, the formula for Max Quarterly Revenue is

```
Max ([Sales revenue] In ([Year];[Quarter])) In ([Year])
```

This formula calculates the maximum sales revenue for each (Year,Quarter) combination, then outputs this figure by year.

Note

Because the default output context of the block is Year, you do not need to specify the output context explicitly in this formula.

6.6.6.2.5.2 ForEach context operator

The `ForEach` operator adds dimensions to a context.

Example

Using ForEach to add dimensions to a context

The following table shows the maximum revenue for each Quarter in a report which contains the Quarter dimension but does not include it in the block:

Year	Sales revenue	Max Quarterly Revenue
2001	8096123.60	2660699.50
2002	13232246.00	4186120.00
2003	15059142.80	4006717.50

It is possible to create a formula for the Max Quarterly Revenue column that does not include the ForEach operator:

```
Max ([Sales revenue] In ([Year];[Quarter])) In ([Year])
```

Using the ForEach context operator, you can achieve the same result with the following formula:

```
Max ([Sales revenue] ForEach ([Quarter])) In ([Year])
```

Why? Because the Year dimension is the default input context in the block. By using the ForEach operator, you add the Quarter dimension to the context, giving an input context of ([Year];[Quarter]).

6.6.6.2.5.3 ForAll context operator

The `ForAll` context operator removes dimensions from a context.

Example

Using ForAll to remove dimensions from a context

You have a report showing Year, Quarter and Sales revenue and you want to add a column that shows the total revenue in each year, as shown in the following block:

Year	Quarter	Sales revenue	Yearly Total
2001	Q1	$2660700	$8096124
2001	Q2	$2279003	$8096124
2001	Q3	$1367841	$8096124
2001	Q4	$1788580	$8096124
2002	Q1	$3326172	$13232246
2002	Q2	$2840651	$13232246
2002	Q3	$2879303	$13232246
2002	Q4	$4186120	$13232246
2003	Q1	$3742989	$15059143
2003	Q2	$4006718	$15059143
2003	Q3	$3953395	$15059143
2003	Q4	$3356041	$15059143

To total revenues by year the input context needs to be (Year); by default it is (Year; Quarter). Therefore, you can remove Quarter from the input context by specifying `ForAll ([Quarter])` in the formula, which looks like this:

```
Sum([Sales revenue] ForAll ([Quarter]))
```

Note that you can use the In operator to achieve the same thing; in this case the formula is:

```
Sum([Sales revenue] In ([Year]))
```

This version of the formula explicitly specifies Year as the context, rather than removing Quarter to leave Year.

6.6.6.2.6 Set operators

Set operators work on members in hierarchical data.

6.6.6.2.6.1 Range operator

Description

The range operator (:) returns a set of members between and including two members at the same level

Syntax

```
first_member:last_member
```

Examples

`[Geography]&[US].[California].[Los Angeles]:[Geography]&[US].[California].[San Francisco]` returns [Los Angeles], [San Diego], [San Francisco] if the members at the level are in the order ... [Los Angeles], [San Diego], San Francisco]...

`Sum([Revenue];{[Geography]&[US].[California].[Los Angeles]:[Geography]&[US].[California].[San Francisco]})` returns the total revenue for Los Angeles, San Diego and San Francisco.

6.6.6.3 Extended syntax keywords

Extended syntax keywords are a form of shorthand that allows you to refer to dimensions in extended syntax without specifying those dimensions explicitly.

These keywords help future-proof reports. If formulas do not contain hard-coded references to dimensions, they will continue to work even if dimensions are added to or removed from a report.

There are five extended syntax keywords: Report, Section, Break, Block and Body.

> **Note**
>
> Extended syntax keywords are not supported in SAP HANA Online mode.

6.6.6.3.1 The Block keyword

This topic describes the dimensions referenced by the Block keyword, depending on where it is placed in a report. The Block keyword often encompasses the same data as the Section keyword.

The difference is that Block accounts for filters on a block whereas Section ignores them.

Table 299:

When placed in...	References this data...
A block	Data in the whole block, ignoring breaks, respecting filters
A block break (header or footer)	Data in the whole block, ignoring breaks, respecting filters
A section (header, footer, or outside a block)	Not applicable
Outside any blocks or sections	Not applicable

> **Example**
>
> **The Block keyword**
>
> You have a report showing Year, Quarter and Sales revenue. The report has a section based on Year. The block is filtered to exclude the third and fourth quarters.

2001

Quarter	Sales revenue	First Half Average	Yearly Average
Q1	$2,660,700	$2,469,851.25	$8,096,123.60
Q2	$2,279,003	$2,469,851.25	$8,096,123.60
Sum:	**4,939,702.5**		

2002

Quarter	Sales revenue	First Half Average	Yearly Average
Q1	$3,326,172	$3,083,411.50	$13,232,246.00
Q2	$2,840,651	$3,083,411.50	$13,232,246.00
Sum:	**6,166,823**		

2003

Quarter	Sales revenue	First Half Average	Yearly Average
Q1	$3,742,989	$3,874,853.20	$15,059,142.80
Q2	$4,006,718	$3,874,853.20	$15,059,142.80
Sum:	**7,749,706.4**		

The Yearly Average column uses the following formula:

```
Average([Sales revenue] In Section)
```

The First Half Average column uses the following formula:

```
Average ([Sales revenue]) In Block
```

You can see how the Block keyword takes account of the filter on the block.

6.6.6.3.2 The Body keyword

This topic describes the dimensions referenced by the keyword in a block Body, depending on where it is placed in a report.

Table 300:

When placed in...	References this data...
A block	Data in the block
A block break (header or footer)	Data in the block
A section (header, footer, or outside a block)	Data in the section

When placed in...	References this data...
Outside any blocks or sections	Data in the report

Example

The Body keyword

You have a report showing Year, Quarter and Sales revenue, with a break on Year. The report has a section based on Year and a break on Quarter.

Year	Quarter	Sales revenue	Body
2001	Q1	2,660,700	2,660,699.5
	Q2	2,279,003	2,279,003
	Q3	1,367,841	1,367,840.7
	Q4	1,788,580	1,788,580.4
2001		8,096,123.6	

The Body column has the formula

```
Sum ([Sales revenue]) In Body
```

The totals in the Body column are the same as those in the Sales revenue column because the Body keyword refers to the data in the block. If you were to remove the Month object, the figures in the Block column would change to correspond with the changed figures in the Sales revenue column. If you were to place the formula in the report footer it would return the total revenue for the body.

6.6.6.3.3 The Break keyword

The following table describes the dimensions referenced by the Break keyword depending on where it is placed in a report.

Table 301:

When placed in...	References this data...
A block	Data in the part of a block delimited by a break
A block break (header or footer)	Data in the part of a block delimited by a break
A section (header, footer, or outside a block)	Not applicable
Outside any blocks or sections	Not applicable

Example

The Break keyword

You have a report showing Year, Quarter and Sales revenue:

Year	Quarter	Sales revenue	Break Total
2001	Q1	$2,660,700	$8,096,124
	Q2	$2,279,003	$8,096,124
	Q3	$1,367,841	$8,096,124
	Q4	$1,788,580	$8,096,124

The report has break on Year. The Break Total column has the formula:

```
Sum ([Sales revenue]) In Break
```

Without the Break keyword this column would duplicate the figures in the Sales revenue column, because it would use the default output context ([Year];[Quarter]).

6.6.6.3.4 The Report keyword

This topic describes the data referenced by the Report keyword, depending on where it is placed in a report:

Table 302:

When placed in...	References this data...
A block	All data in the report
A block break (header or footer)	All data in the report
A section (header, footer, or outside a block)	All data in the report
Outside any blocks or sections	All data in the report

Example

The Report keyword

You have a report showing Year, Quarter and Sales revenue. The report has a column, Report Total, that shows the total of all revenue in the report.

Year	Quarter	Sales revenue	Report Total
2001	Q1	$2,660,700	36,387,512.4
2001	Q2	$2,279,003	36,387,512.4
2001	Q3	$1,367,841	36,387,512.4
2001	Q4	$1,788,580	36,387,512.4
2002	Q1	$3,326,172	36,387,512.4
2002	Q2	$2,840,651	36,387,512.4
2002	Q3	$2,879,303	36,387,512.4
2002	Q4	$4,186,120	36,387,512.4
2003	Q1	$3,742,989	36,387,512.4
2003	Q2	$4,006,718	36,387,512.4
2003	Q3	$3,953,395	36,387,512.4
2003	Q4	$3,356,041	36,387,512.4

The formula for the Report Total column is as follows:

```
Sum([Sales revenue]) In Report
```

Without the Report keyword, this column would duplicate the figures in the Sales Revenue column because it would use the default output context ([Year];[Quarter]).

6.6.6.3.5 The Section keyword

This topic describes the data referenced by the keyword for a Section, depending on where it is placed in a report.

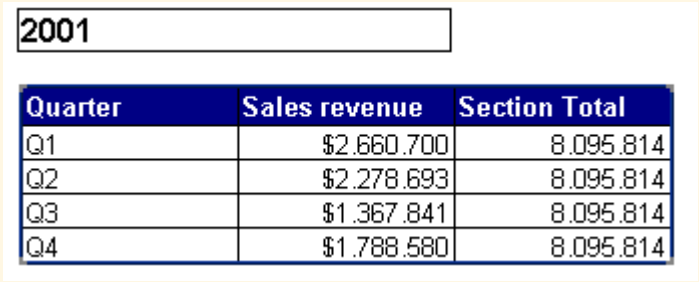
Table 303:

When placed in...	References this data...
A block	All data in the section
A block break (header or footer)	All data in the section
A section (header, footer, or outside a block)	All data in the section
Outside any blocks or sections	Not applicable

Example

The Section keyword

You have a report showing Year, Quarter, and Sales revenue.



2001

Quarter	Sales revenue	Section Total
Q1	$2.660.700	8.095.814
Q2	$2.278.693	8.095.814
Q3	$1.367.841	8.095.814
Q4	$1.788.580	8.095.814

The report has a section based on Year. The Section Total column has the formula:

```
Sum ([Sales revenue]) In Section
```

The figure in the Section Total column is the total revenue for 2001, because the section break occurs on the Year object. Without the Section keyword this column would duplicate the figures in the Sales revenue column, because it would use the default output context ([Year];[Quarter]).

6.6.6.4 Rounding and truncating numbers

Several functions contain a parameter that determines to what level the function rounds or truncates the value it returns.

This parameter accepts an integer that is either greater than 0, 0, or less than 0. The following table explains how numbers are rounded and truncated in these cases:

Parameter	Description
> 0	The function rounds/truncates to `<parameter>` decimal places. Examples: `Round(3.13;1)` returns 3.1 `Round(3.157;2)` returns 3.16
0	The function rounds/truncates to the nearest integer. Examples: `Truncate(3.7;0)` returns 3 `Truncate(4.164;0)` returns 4
< 0	The function rounds/truncates to the nearest 10 (parameter = -1), 100 (parameter = -2), 1000 (parameter = -3) and so on. Examples: Round(123.76;-1) returns 120

Parameter	Description
	Round(459.9;-2) returns 500 Truncate(1600;-3) returns 1000

> **Note**
>
> Numbers are represented internally using double-precision floating-point formats and have 15 to 17 digits of precision.

Related Information

Round [page 650]
Truncate [page 656]
EuroConvertTo [page 636]
EuroConvertFrom [page 635]
EuroFromRoundError [page 638]
EuroToRoundError [page 640]

6.6.6.5 Referring to members and member sets in hierarchies

You refer to members and member sets in functions using the syntax `[hierarchy]&path.function`.

The `path` and `function` parts are optional. In `path`, you refer to each member in square brackets, with members separated by full stops. The names of members and levels are case-sensitive.

> **Note**
>
> You use member sets to override the default calculation context for a hierarchy. In functions that accept member sets, you enclose the member set in {}.

You refer to ranges of members using a colon (:) between the start and end member, and with the full path specified for each member. A range includes all members at the same level as the specified members.

An example of range syntax is: `[Sales Hierarchy]&[Customer_Type].[ENTERPRISE];[Large].[Nancy Davolio]: [Sales Hierarchy]&[Customer_Type].[ENTERPRISE];[Large].[Andrew Smith]`.

> **Example**
>
> **Referring to members and member sets**
>
> You have the following hierarchy:

Table 304:

Sales Hierarchy		Order Amount
Customer_Type		277,290,434
ENTERPRISE		180,063,361
Large		113.905,997
	Nancy Davolio	44,855,689
	Janet Leverling	44,050,308
	Andrew Smith	30,000,000
GLOBAL		91,157,363

- `[Sales Hierarchy]&[Customer_Type].[ENTERPRISE].[Large].Children` refers to the [Nancy Davolio], [Janet Leverling] and [Andrew Smith] members.
- `Sum([Order Amount];{[Sales Hierarchy]&[Customer_Type].[ENTERPRISE].[Large].children})` returns 113,905,997 (the sum of the measure for the three child members).
- `[Sales Hierarchy]&[Customer_Type].[ENTERPRISE].[Large].[Janet Leverling]` refers to the `[Janet Leverling]` member.
- `Sum([Order Amount];{[Sales Hierarchy]&[Customer_Type].[ENTERPRISE].[Large].[Janet Leverling];[Sales Hierarchy]&[Customer_Type].[ENTERPRISE].[Large].[Nancy Davolio]})` returns 88,905,997 (the sum of the measure for the two members).
- `[Sales Hierarchy]&[Customer_Type].[ENTERPRISE].[Large].[Nancy Davolio]:[Sales Hierarchy]&[Customer_Type].[ENTERPRISE].[Large].[Andrew Smith]` refers to the [Nancy Davolio], [Janet Leverling] and [Andrew Smith] members.
- `Sum([Order Amount];{[Sales Hierarchy]&[Customer_Type].[ENTERPRISE].[Large].[Nancy Davolio]:[Sales Hierarchy]&[Customer_Type].[ENTERPRISE].[Large].[Andrew Smith]})` returns 113,905,997 (the sum of the measure for the three members in the range).
- `[Sales Hierarchy].children` refers to all members in the [Sales Hierarchy] hierarchy.
- `Sum([Order Amount];{Sales Hierarchy].children})` returns 277,290.434.

6.6.7 Troubleshooting formulas

6.6.7.1 Automatic rewrite formula mechanism

The succession of corrective maintenance releases for Web Intelligence can sometimes lead to calculation result differences between versions.

Since version 4.1 SP3, Web Intelligence provides an Automatic Formula Rewrite mechanism that automatically modifies a selection of formulas (see list below) in a document migrated from a previous version. These formulas follow a certain pattern. After modification, the formulas return the same result than before the calculation change. Therefore, it is recommended to save the document so that the modifications are stored in the document, thus completing the formula rewrite mechanism.

The Automatic Formula Rewrite mechanism is available by default for documents migrated to BI 4.1 SP3 and later, for the following formula patterns:

1. Where() operator with a dimension as parameter in a condition,
2. Running calculations with reset in sections,
3. Running calculations with reset in cross-tables.

This list of rules could be extended in future releases with more formula patterns.

Rule(1)

In previous versions, the data was calculated in a specific way if you had a Where() operator with a dimension as a parameter in a condition. Indeed, the dimension was added to the measure context. Rule(1) reproduces the former behavior.

This rules applies to every document migrated from XI 3.1 FP3.6, XI 3.1 FP4.1, XI 3.1 FP5.1 and. 4.0 SP5.

Rule(2)

In previous versions, running calculations in sections was not properly executed, as calculations would reset at each section instance. Rule(2) reproduces the former behavior.

This rules applies to every document migrated from XI R2 SP4.

Rule(3)

In previous versions, running calculations with reset cross-tables meant that calculations were executed in an “N” pattern (column after column) instead of a “Z” pattern (row after row).

Rule(3) introduced a FORCE_COL keyword that forces Web Intelligence to run calculations in a “N” pattern.

For example, with Rule(3), the RunningSum([Sales revenue];([State])) formula will be forced to execute column after column when modified as RunningSum([Sales revenue];FORCE_COL;([State])).

This rule applies to every document migrated from every version of XI 3.x, 4.0 Patch 2.20, 4.0 SP5, 4.0 SP6, 4.0 SP7, 4.1 and 4.1 SP1.

6.6.7.2 Formula error and information messages

You can format report data that returns error messages using conditional formatting.

In some cases a formula cannot return a value and returns an error or information message beginning with '#". The message appears in the cell in which the formula is placed.

6.6.7.2.1 #COMPUTATION

#COMPUTATION occurs when a slicing dimension specified in the `RelativeValue` function is no longer available in the calculation context of the block where the function is placed.

#COMPUTATION also occurs when a merged object containing a hierarchy is included in a report.

#COMPUTATION is also related to the misuse of context operators in a formula.

Related Information

RelativeValue [page 702]

6.6.7.2.2 #CONTEXT

#CONTEXT appears in a measure when the measure has a non-existent calculation context.

#CONTEXT is related to the #INCOMPATIBLE and #DATASYNC error messages, which appear in dimensions when a block contains a non-existent calculation context.

In the case of #INCOMPATIBLE the context is non-existent because the dimensions are incompatible; in the case of #DATASYNC the context is non-existent because the dimensions are from multiple unsynchronized data providers.

Example

Non-existent calculation context in a query

If a block based on the Island Resorts Marketing universe contains the Reservation Year and Revenue objects, the #CONTEXT error message appears because it is not possible to aggregate revenue by reservation year. (Reservations have not yet generated any revenue.)

6.6.7.2.3 #DATASYNC

#DATASYNC occurs when you place a dimension from a different data provider in a block containing dimensions from another data provider, and the two data providers are not synchronized through a merged dimension.

#DATASYNC appears in all dimensions in the block and #CONTEXT in the measures.

Example

Dimensions from different data providers in a block

If a report based on the Island Resorts Marketing universe contains data providers with the objects (Year, Revenue) and (Quarter), a block containing Year, Quarter and Revenue displays #DATASYNC in the Year and Quarter columns because the two data providers are not synchronized through a merged dimension.

6.6.7.2.4 #DIV/0

#DIV/0 occurs when a formula tries to divide a number by zero, which is mathematically impossible.

Zero can never appear as a divisor.

Example

Determining revenue per item

You have a report showing sales revenues, numbers of items sold and the revenue per item (which is calculated by dividing the sales revenue by the number of items sold).

You had a very bad quarter in which you didn't create any revenue; the Revenue per Item column returns #DIV/0 for this quarter, because the formula is attempting to divide by zero; that is, divide the revenue by zero number of items sold.

6.6.7.2.5 #ERROR

#ERROR is the default error message that covers all errors not covered by other error messages.

6.6.7.2.6 #EXTERNAL

#EXTERNAL occurs when a formula references an external function that is not available to use in Web Intelligence.

6.6.7.2.7 #INCOMPATIBLE

#INCOMPATIBLE occurs when a block contains incompatible objects.

Example

Incompatible objects in a query

If a block based on the Island Resorts Marketing universe contains the Year and Reservation Year dimensions, the columns containing these dimensions show #INCOMPATIBLE because these objects are incompatible.

6.6.7.2.8 #MIX

#MIX occurs when an aggregated measure has different units.

For example, a cell shows #MIX if it aggregates currency values denominated in different currencies.

6.6.7.2.9 #MULTIVALUE

#MULTIVALUE occurs when you place a formula that returns more than one value in a cell that outputs one value only.

Example

Multivalue in a cell

You have a report showing Country, Resort and Revenue and you add a cell to the report containing the formula [Revenue] ForEach ([Country]). This cell returns #MULTIVALUE because Country has two values in the report: 'US' and 'France'.

One cell cannot display the revenues for both the US and France. Placed outside the table, a cell containing revenue can only aggregate the revenues in the table in some way (for example by summing or averaging them).

If the report is broken into sections on Country, the formula is correct when placed in a section because there is only one value of Country per section. Outside a section, however, the formula still returns #MULTIVALUE

6.6.7.2.10 #N/A

When there is a value for a cell in report that is based on a value from a report that is not available on the underlying data base (for example, a BW error in a BEx Cell), the cell displays #N/A (not available), meaning that the cell is empty because the data cannot be retrieved.

6.6.7.2.11 #OVERFLOW

#OVERFLOW occurs when a calculation returns a value that is too large for the software to handle.

This value, in exponential form, is 1.7E308 (1.7 followed by 307 zeros).

6.6.7.2.12 #PARTIALRESULT

`#PARTIALRESULT` occurs when all rows associated with a report object were not retrieved.

If `#PARTIALRESULT` occurs often in your reports and you have the appropriate security rights, modify the `MaxRowsRetrieved` query property to allow the retrieval of more data. If you do not have the right to modify the query, contact the BI administrator.

If your report contains smart measures it is more likely to display `#PARTIALRESULT` because smart measures require the retrieval of larger amounts of data than classic measures.

6.6.7.2.13 #RANK

#RANK occurs when you try to rank data based on an object that depends on the order of values.

Objects that use the `Previous` function or any running aggregate function depend on the order of values.

Ranking causes these objects to recalculate their values, which then changes the ranking, resulting in a circular dependency. Such a dependency can occur either when you use the Rank dialog box to create a ranking, or when you use the `Rank` function.

Example

Ranking on running average or previous values

If you attempt to rank a block on a column that contains the `Previous` function or any running aggregate function, the entire block returns #RANK.

6.6.7.2.14 #RECURSIVE

#RECURSIVE occurs when it is not possible to perform a calculation due to a circular dependency.

Example

Using the NumberOfPages() function

If you place the `NumberOfPages` function in a cell whose Autofit Height or Autofit Width properties are set, the cell returns #RECURSIVE because the placing of this formula in an Autofit cell creates a circular dependency. The function needs the exact size of the report to return a value, but the size of the cell, which affects the size of the report, is determined by the cell content.

6.6.7.2.15 #REFRESH

#REFRESH appears in report cells whose values are derived from objects that were stripped from a query and then re-added to the query.

Objects are stripped from a query when the *Enable query stripping* query property is selected and the objects do not contribute to any reports based on the query.

The cells are re-populated with values from the objects when the query is refreshed.

6.6.7.2.16 #SECURITY

#SECURITY occurs when you attempt to use a function for which you do not have security rights.

Example

Using the DataProviderSQL() function

If a user who does not have the right to view data provider SQL places the DataProviderSQL() function in a cell, the #SECURITY message appears in the cell.

6.6.7.2.17 #SYNTAX

#SYNTAX occurs when a formula references an object that no longer exists in the report.

Example

Referencing a non-existent object

You have a report that originally showed Year, Quarter and Sales revenue, with an additional column showing difference between the revenue and the average yearly revenue. This figure is given by the variable Difference from Yearly Average.

If the Difference from Yearly Average variable is deleted from the report, the column containing it returns #SYNTAX.

6.6.7.2.18 #TOREFRESH

#TOREFRESH appears in cells based on smart measures when the value returned by the smart measure is not available.

This situation occurs when the grouping set containing the value is not available in the data provider.

You remove the #TOREFRESH error by refreshing the data.

Some of the measures are “delegated” (for BW, this refers to a measure which is not aggregating with SUM); when you define a table or calculation on a measure, this measure is queried in specific context of aggregation (the measure is given for a set of dimensions). If this set of dimensions is a subset of the query dimension set, the measure has to be aggregated along the given dimension set (or grouping set that is referring to a group by clause in SQL).

For normal measures the system is carrying out the aggregation, for delegated measures this aggregation is delegated to the underlying database. For this the system needs to query again this database. Since this is not automatic, it displays #TOREFRESH and waits for the user to proceed with a refresh. Once the user refreshes, the system will run the additional query to get the requested aggregation and then replace #TOREFRESH by the appropriate value.

6.6.7.2.19 #UNAVAILABLE

#UNAVAILABLE appears when it is not possible to calculate the value of a smart measure.

This occurs when it is not possible to display the values in a filtered smart measure without applying a filter to the query. Because this carries a risk of impacting other reports based on the same query, no filter is applied.

6.6.8 Comparing values using functions

6.6.8.1 Comparing values using the Previous function

The `Previous` function returns a comparative previous value of an expression.

The value returned depends on the layout of the report.

For more powerful comparison capabilities, use the `RelativeValue` function. `RelativeValue` returns a previous or subsequent comparative value of an expression. The value returned does not depend on the layout of the report.

Related Information

Previous [page 697]
RelativeValue [page 702]
Comparing values using the RelativeValue function [page 737]

6.6.8.2 Comparing values using the RelativeValue function

The `RelativeValue` function returns comparative values of an expression. The function returns these values independently of the layout of a report.

When using `RelativeValue`, you specify the following:

- The expression whose comparative value you want to find (the expression must be a measure or a detail of a dimension available in the block)
- The list of slicing dimensions
- The offset.

The function uses the slicing dimensions, the offset, and the sub-axis dimensions (which are implied by the slicing dimensions) to return a comparative value. The sub-axis dimensions are all the other dimensions in the calculation context apart from the slicing dimensions.

Expressed in general terms, `RelativeValue` returns the value of the expression in the row which, in the list of values of the slicing dimensions, is `offset` rows removed from the current row, and where the values of the sub-axis dimensions are the same as in the current row.

Note

All slicing dimensions must always be in the calculation context of the block in which the function is placed. If a slicing dimension is subsequently removed, the function returns #COMPUTATION.

Example

In this example, the RelativeValue column contains the following formula:

```
RelativeValue([Revenue];([Year]);-1)
```

- The expression is [Revenue];
- The slicing dimension is [Year];
- The offset is -1 (the function returns the immediately previous value in the list).

Year	Quarter	Sales Person	Revenue	RelativeValue
2007	Q1	Smith	1000	
2007	Q2	Jones	2000	
2007	Q3	Wilson	1500	
2007	Q4	Harris	3000	
2008	Q1	Smith	4000	1000
2008	Q2	Jones	3400	2000
2008	Q3	Wilson	2000	1500
2008	Q4	Harris	1700	3000

Expressed as a business question, the formula returns the revenue generated by the same sales person in the same quarter in the previous year.

Expressed as a calculation in words, the formula returns the value of [Revenue] (the expression) in the row where the value of [Year] (the slicing dimension) is the previous value from the list of values of the [Year] object, and where the values of [Quarter] and [Sales Person] (the sub-axis dimensions) are the same as in the current row.

Related Information

RelativeValue [page 702]

6.6.8.2.1 Slicing dimensions and the RelativeValue function

The `RelativeValue` function uses the list of values of the slicing dimensions to find the comparative row.

The function returns the comparative value of the expression specified in the function that is `offset` number of rows away in the list of slicing dimensions.

As a result, the sort order of the slicing dimensions is crucial in determining the function output.

Example

Multiple slicing dimensions

In the table below, the RelativeValue column has the following formula:

```
RelativeValue([Revenue];([Year];[Quarter]);-1)
```

- The expression is [Revenue];
- The slicing dimensions are ([Year];[Quarter]);
- The offset is -1 (the function returns the immediately previous value in the list).

Year	Quarter	Sales Person	Revenue	RelativeValue
2007	Q1	Smith	1000	
2007	Q2	Smith	2000	
2007	Q3	Smith	1500	
2007	Q4	Smith	3000*	
2007	Q1	Jones	4000	
2007	Q2	Jones	3400	
2007	Q3	Jones	2000	
2007	Q4	Jones	1700	
2008	Q1	Smith	5000**	3000*
2008	Q2	Smith	3000***	5000**
2008	Q3	Smith	2700****	3000***
2008	Q4	Smith	6800	2700****

Expressed as a business question, the formula returns the revenue generated by the same sales person in the previous quarter.

Expressed as a calculation in words, the formula returns the value of [Revenue] in the row where the values of [Year] and [Quarter] represent the previous value in the ([Year];[Quarter]) list of values, and where the value of [Sales Person] is the same as in the current row.

The function uses the list of values of the slicing dimensions to find the comparative revenue:

Year	Quarter	
2007	Q1	
2007	Q2	
2007	Q3	
2007	Q4	*
2008	Q1	**
2008	Q2	***
2008	Q3	****

Year	Quarter	
2008	Q4	

The sort order of the slicing dimensions determines the output of the function. The * in the tables show the sort order.

Related Information

RelativeValue [page 702]

6.6.8.2.2 Slicing dimensions and sections

A slicing dimension can be in the section master cell of a report.

Example

Slicing dimension in a section header

In the table below, the RelativeValue column has the following formula:

```
RelativeValue([Revenue];([Year];[Quarter]);-1)
```

2007

Quarter	Sales Person	Revenue	RelativeValue
Q1	Smith	1000	
Q2	Smith	2000	
Q3	Smith	1500	
Q4	Smith	3000*	
Q1	Jones	4000	
Q2	Jones	3400	
Q3	Jones	2000	
Q4	Jones	1700	

2008

Quarter	Sales Person	Revenue	RelativeValue
Q1	Smith	5000**	3000*
Q2	Smith	3000***	5000**
Q3	Smith	2700 ****	3000***

Quarter	Sales Person	Revenue	RelativeValue
Q4	Smith	6800	2700****

The function uses the list of values of the slicing dimensions to find the comparative revenue:

Year	Quarter	
2007	Q1	
2007	Q2	
2007	Q3	
2007	Q4	*
2008	Q1	**
2008	Q2	***
2008	Q3	****
2008	Q4	

The sort order of the slicing dimensions determines the output of the function. The * in the tables show the sort order.

Related Information

RelativeValue [page 702]

6.6.8.2.3 Order of slicing dimensions

Because the sort order of the list of values of the slicing dimensions determines the output of `RelativeValue`, the order in which the slicing dimensions are specified impacts the output of the function.

Example

Order of slicing dimensions

In the table below, the RelativeValue column has the following formula:

```
RelativeValue([Revenue];([Year];[Quarter]);-1)
```

Year	Quarter	Sales Person	Revenue	RelativeValue
2007	Q1	Smith	1000	
2007	Q2	Smith	2000	
2007	Q3	Smith	1500	
2007	Q4	Smith	3000*	

Year	Quarter	Sales Person	Revenue	RelativeValue
2007	Q1	Jones	4000	
2007	Q2	Jones	3400	
2007	Q3	Jones	2000	
2007	Q4	Jones	1700	
2008	Q1	Smith	5000**	3000*
2008	Q2	Smith	3000***	5000**
2008	Q3	Smith	2700****	3000***
2008	Q4	Smith	6800	2700****

Expressed as a business question, the formula returns the revenue generated by the same sales person in the previous quarter.

The sort order of the slicing dimensions is as follows:

Year	Quarter	
2007	Q1	
2007	Q2	
2007	Q3	
2007	Q4	*
2008	Q1	**
2008	Q2	***
2008	Q3	****
2008	Q4	

The function is changed to:

```
RelativeValue([Revenue];([Quarter];[Year]);-1)
```

The sort order of the slicing dimensions becomes:

Quarter	Year	
Q1	2007	*
Q1	2008	**
Q2	2007	***
Q2	2008	****
Q3	2007	*****
Q3	2008	******
Q4	2007	*******
Q4	2008	********

The sort order has the following impact on the function result:

Year	Quarter	Sales Person	Revenue	RelativeValue
2007	Q1	Smith	1000*	
2007	Q2	Smith	2000***	
2007	Q3	Smith	1500*****	
2007	Q4	Smith	3000*******	
2007	Q1	Jones	4000	
2007	Q2	Jones	3400	
2007	Q3	Jones	2000	
2007	Q4	Jones	1700	
2008	Q1	Smith	5000**	1000*
2008	Q2	Smith	3000****	2000***
2008	Q3	Smith	2700******	1500*****
2008	Q4	Smith	6800********	3000*******

Expressed as a business question, the formula now returns the revenue generated by the same sales person in the same quarter of the previous year.

The change in the sort order of the slicing dimension changes the meaning of the formula. The * in the tables indicate the sort order.

Related Information

RelativeValue [page 702]

6.6.8.2.4 Slicing dimensions and sorts

Because the sort order of the list of values of the slicing dimensions determines the function output, a sort applied to any dimension in the slicing dimensions impacts the function output.

Example

A custom sort applied to a slicing dimension

In the table below, the RelativeValue column has the following formula:

```
RelativeValue([Revenue];([Year];[Quarter]);-1)
```

A custom sort (Q1, Q2, Q4, Q3) is applied to [Quarter], giving the following result for the function:

Year	Quarter	Sales Person	Revenue	RelativeValue
2007	Q1	Smith	1000	

Year	Quarter	Sales Person	Revenue	RelativeValue
2007	Q2	Smith	2000	
2007	Q4	Smith	3000	
2007	Q3	Smith	1500*	
2007	Q1	Jones	4000	
2007	Q2	Jones	3400	
2007	Q4	Jones	1700	
2007	Q3	Jones	2000	
2008	Q1	Smith	5000**	1500*
2008	Q2	Smith	3000***	5000**
2008	Q4	Smith	6800****	3000***
2008	Q3	Smith	2700	6800****

The sorted list of slicing dimensions is as follows:

Year	Quarter	
2007	Q1	
2007	Q2	
2007	Q4	
2007	Q3	*
2008	Q1	**
2008	Q2	***
2008	Q4	****
2008	Q3	

The * in the tables show the sort order.

Related Information

RelativeValue [page 702]

6.6.8.2.5 Using RelativeValue in crosstabs

The `RelativeValue` function works in crosstabs in exactly the same way as in vertical tables.

The layout of the data in a crosstab has no impact on the function output.

Related Information

RelativeValue [page 702]

7 Introduction to scheduling and publishing

The following sections introduce you to the basic concepts and main functionalities of the scheduling and publishing services offered by the Business Intelligence Platform.

With scheduling and publishing operations, you can send publications with the latest information and data.

Both services are about managing assets of your Central Management Server (CMS) such as Web Intelligence documents. At the end of this guide, you will be able to schedule documents, publish them, and fine-tune both processes along the way.

This guide focuses mainly on the scheduling and publishing possibilities offered by the Business Intelligence Launch Pad. However, the Central Management Console (CMC) lets you schedule and publish documents as well.

To know more about the scheduling and publishing abilities of the CMC, read the corresponding sections in the *Business Intelligence Platform CMC Help* guide.

7.1 Scheduling and publishing concepts

7.1.1 Instances

An instance is a single version of a document. For each scheduled document that runs, the BI Platform saves a history of instances to the default Enterprise server.

For each document, the list of instances is available in the *History* dialog box in the contextual menu when you right-click it. The follwoing information are available:

- Instance time
- Title
- Status
- Created by
- Type
- Parameters

You can view discussions for an instance in the *History* dialog box or in the *Collaboration* drawer of the feed panel, if the BI launch pad is integrated with SAP Jam or SAP StreamWork.

7.1.2 Recurrence

The recurrence pattern defines how often you want the BI Platform to run a document.

Table 305:

Option	Description
Now	Runs the document once, immediately.
Once	Runs the document once at a specified time. If you schedule a document with events, it will run once if the event is triggered between the start and end times.
Hourly	Creates an instance every N hours and X minutes between the interval of dates you specify.
Daily	Runs the document once every N days between the interval of dates you specify. The first instance will be created at the specified start time, and instances will be created every N days at that time until the document stops running at the specified end time.
Weekly	Runs the document each week on selected days between the interval of dates you specify. The first instance will be created at the specified start time, and instances will be created each week on those days at that time until the document stops running at the specified end time.
Monthly	Runs the document once every N months between the interval of dates you specify. The first instance will be created at the specified start time, and instances will be created every N months at that time until the document stops running at the specified end time.
Nth Day of Month	Creates an instance each month on the specified day, at the specified start time. The first instance will be created at the specified start time, and instances will be created on the specified day of each month at that time until the document stops running at the specified end time.
1st Monday of Month	Creates an instance on the first Monday of each month between an interval of dates.
Last Day of Month	Creates an instance on the last day of each month between an interval of dates.
X Day of Nth Week of the Month	Creates an instance each month on a specified day and week at a specified start time between an interval of dates.

Option	Description
Calendar	Creates an instance on each calendar date you specify at a specified start time.

7.1.3 Prompts

A prompt is filter in the form of a question displayed by Web Intelligence that you answer by select specific values.

When you answer a prompt, it determines the data displayed in a report. If you are working in sales for example, and a prompt asks you to select a region, the document will only display data related to the region you selected.

When a document is scheduled, prompts can have static values and are specified when creating the scheduling job. For SAP Business Explorer (SAP BEx) queries, you can fill prompts dynamically using BW variables default values. This mechanism supports any type of SAP Business Warehouse (SAP BW) default values including SAP exit variables.

> **Note**
>
> To have dynamic prompt values in a scheduled document, make sure that:
>
> - You select the *Use BEx query defined default values at runtime* option in the *Variable Manager* wizard.
> - You purge document data using the *Purge Last Selected Prompt Values* option.
> - You purge the prompt(s) value(s) when creating the scheduling job.

The way that options appear in the tab might differ from a document to another, depending on how you system administrator has configured the prompts.

> **Note**
>
> If you cannot see the *Prompts* tab, that is beacause the document you are scheduling does not contain prompts.

For BEx queries, you can modifiy a prompt's value by clicking either *Modify* to edit a prompt value, *Dynamic Value* to set a prompt value as dynamic value or *Constant Value* to set a prompt value as a constant value.

When setting a prompt value as a dynamic value, you delegate its processing to the SAP BW data source. As a result, the SAP BW data source must be able to process the value provided for a prompt, otherwise the document execution fails. SAP BW exit or customer exit variables for example are often used as dynamic variables in prompts.

7.1.4 Formats

You can save an instance in different formats after the BI Platform generates it.

You can save an instance in the following formats:

- Web Intelligence: .WID

- Microsoft Excel: .XLSX
- Adobe Acrobat: .PDF
- Comma Separated Values (CSV): .CSV
- Plain text: .TXT

7.1.5 Caching

Each time the BI Platform runs a scheduled document, an instance is generated ans saved in the Output File Repository System. You can select the format used to cache the document.

Before selecting a cache format, make sure that:

- A context is set in the Web Intelligence document. If there are multiple contexts, refresh the document with the correct context before scheduling it
- Web Intelligence is selected as the output format for the document. If a different output format is selected, cache options will have no effect.

> ⚠ Caution
>
> If you do not select a cache format, the platform will not cache the document.

7.1.6 Events

Event-based scheduling and publishing provides you with additional control over scheduled documents and publications. You can set up events so that documents are processed only after a specified event occurs.

To successfully schedule a document with an event, you need to create the event first and then schedule the document. After you have created the event, you can select it as a mandatory condition to trigger the scheduling job. If and only if the event occurs, the BI Platform triggers the scheduling job.

You create events in the Central Management Console (CMC), and then select them in the BI launch pad when you schedule documents. For more information on how to create event, refer to the dedicated sections of the *SAP BusinessObjects Business Intelligence Platform User Guide*.

7.1.7 Scheduling server group

You can set the default server to run the scheduled document.

There are three available options regarding the server group:

- *Use the first available server*: runs the document on the server with the most resources free at the time of scheduling. This is the default selection.
- *Give preference to servers belonging to the selected group*: runs the document on servers in a particular server group. If no servers in the selected server group are available, the document runs on the next available server.

- *Only use servers belonging to the selected group*: runs the document only on servers in a particular server group. If no servers in the selected server group are available, the document runs on the next available server.

As a best practice, if your deployment of the BI Platform uses federation and you want to run the document at the site where it is located, check the *Run at origin site* option.

7.1.8 Destinations

You can schedule a document instance to be sent to a specific destination.

The destinations available depend on which destinations your system administrator enabled and on your access rights. If your administrator specified a destination for an object, that destination option is listed in the Schedule dialog box. You may be able to set options for the destination or to select a different destination. For most destinations, you must provide additional information.

> **Note**
>
> You can change options for the default Adaptive Job Server in the *Servers* area of the Central Management Console (CMC). For more information, refer to *SAP BusinessObjects Business Intelligence Platform Administrator Guide*.

Default Enterprise Location options

Table 306:

Option	Description
Destination	*Default Enterprise Location* The scheduled job will run on the Output File Repository Server (FRS). You do not need to set additional options for this destination. Historical instances are saved to the default Enterprise server but not to any other destination.

BI Inbox options

Table 307:

Option	Description
Destination	*BI Inbox*

Option	Description
Keep an instance in the history	Saves a copy of this instance in the document's history. This option in enabled by default. If you want the BI platform to automatically delete the instance from the Output FRS to minimize the number of instances on the server, uncheck the option.
Use default settings	Uses the default Adaptive Job Server values for BI Inboxes. If you do not want to use the default Adaptive Job Server values, disable the option, and set the destination recipient options that appear.
Available Recipients and *Selected Recipients*	In the *Available Recipients* list, select users or user groups to send the instance to, and click > to add the users or groups to the *Selected Recipients* list.
Find title (if available)	Enter a recipient's user name, full name, or email address in the *Find title* box to quickly locate the user in the *Available Recipients* list.
Target Name	• To use a system-generated file name for the instance, select *Use Automatically Generated Name*. • To choose a file name for the instance, select *Use Specific Name*, and enter a name or select variables for the file name from the *Add placeholder* list. You can select from several types of variables: *Title*, *ID*, *Owner*, *DateTime*, (your) *Email Address*, and (your) *User Full Name*, and *File Extension*.
Send As	• To send a shortcut to the instance to recipients, select *Shortcut*. • To send a copy of the instance to recipients, select *Copy*.

Email options

Table 308:

Option	Description
Destination	*Email*
Keep an instance in the history	Saves a copy of this instance in the document's history. This option in enabled by default. If you want the BI platform to automatically delete the instance from the Output FRS to minimize the number of instances on the server, uncheck the option.
Use default settings	Uses the default Adaptive Job Server values for emails. If you do not want to use the default Adaptive Job Server values, disable the option, and set the destination recipient options that appear.

Option	Description
From	Enter a return email address, or select variables for the email address from the *Add placeholder* list. You can select from several types of variables: *Title*, *ID*, *Owner*, *DateTime*, (your) *Email Address*, and (your) *User Full Name*. Click a variable to add it. Separate email addresses with a semicolon (;). This option might be unavailable depending on your system configuration.
To	Enter each email address that you want to send the instance to, or select variables for the email address from the *Add placeholder* list. You can select from several types of variables: *Title*, *ID*, *Owner*, *DateTime*, (your) *Email Address*, and (your) *User Full Name*. Click a variable to add it. Separate email addresses with a semicolon (;).
Cc	Enter each email address that you want to send a copy of the email and instance to, or select variables for the email address from the *Add placeholder* list. You can select from several types of variables: *Title*, *ID*, *Owner*, *DateTime*, (your) *Email Address*, and (your) *User Full Name*. Click a variable to add it. Separate email addresses with a semicolon (;).
Bcc	Enter the email address of each undisclosed recipient, or select variables for the email address from the *Add placeholder* list.You can select from several types of variables: *Title*, *ID*, *Owner*, *DateTime*, (your) *Email Address*, and (your) *User Full Name*. Click a variable to add it. Separate email addresses with a semicolon (;).
Subject	Enter the subject of the email, or select variables for the subject from the *Add placeholder* list. You can select from several types of variables: *Title*, *ID*, *Owner*, *DateTime*, (your) *Email Address*, and (your) *User Full Name*. Click a variable to add it.
Message	Enter the message for the body of the email, or select variables for the message from the *Add placeholder* list.You can select from several types of variables: *Title*, *ID*, *Owner*, *DateTime*, (your) *Email Address*, (your) *User Full Name*, *Viewer*, and *Document Name*. Click a variable to add it.
Add Attachment	Select this check box if you want to add an attachment to the email message containing the instance.
File Name	• To use a system-generated file name for the instance, check *Use Automatically Generated Name*. • To select the file name for the instance, check *Use Specific Name*, and enter a name or select variables for the file name from the *Add placeholder* list. You can select from several types of variables: *Title*, *ID*, *Owner*, *DateTime*, (your) *Email Address*, (your) *User Full Name*, and *File Extension*. Check *Add File Extension* to automatically add the file extension to the instance file name. If you do not add a file extension, you might be unable to open the document.
Enable SSL	

FTP Server options

Table 309:

Option	Description
Destination	*FTP Server*
Keep an instance in the history	Saves a copy of this instance in the document's history. This option in enabled by default. If you want the BI platform to automatically delete the instance from the Output FRS to minimize the number of instances on the server, uncheck the option.
Use default settings	Uses the default Adaptive Job Server values for FTP Servers. If you do not want to use the default Adaptive Job Server values, disable the option, and set the destination recipient options that appear. You can change the values in the *Servers* area of the CMC. For more information, refer to *SAP BusinessObjects Business Intelligence Platform Administrator Guide*.
Host	Enter the IP address of the FTP server host computer where you want to send the instance.
Port	Enter the port of the FTP server where you want to send the instance. The default is **21**.
User Name	Enter a user name with access rights to upload the object to the FTP server.
Password	Enter the password required to access the FTP server.
Account	Enter the account required to access the FTP server. The account is part of the standard FTP protocol but is rarely implemented. Enter an account only if your FTP server requires it.
Directory	Enter the path to the FTP directory where you want to send the instance.
File Name	• To use a system-generated file name for the instance, check *Use Automatically Generated Name*. • To select the file name for the instance, check *Use Specific Name*, and enter a name or select variables for the file name from the *Add placeholder* list. You can select from several types of variables: *Title*, *ID*, *Owner*, *DateTime*, (your) *Email Address*, (your) *User Full Name*, and *File Extension*. Check *Add File Extension* to automatically add the file extension to the instance file name. If you do not add a file extension, you might be unable to open the document.

File System options

Table 310:

Option	Description
Destination	*File System*
Keep an instance in the history	Saves a copy of this instance in the document's history. This option in enabled by default. If you want the BI platform to automatically delete the instance from the Output FRS to minimize the number of instances on the server, uncheck the option. Instances are required for auditing events. This check box is overruled if auditing is enabled for a scheduled object.
Use default settings	Uses the default Adaptive Job Server values for the file system. If you do not want to use the default Adaptive Job Server values, disable the option, and set the destination recipient options that appear.
User Name	Enter a user name with access rights to save files to the destination directory. You can specify a user name and password only for servers on Windows.
Password	Enter the user password that is required to access the destination directory. You can specify a user name and password only for servers on Windows.
Directory	Enter the path to a local hard disk location or mapped location or a UNC path to the directory where you want to send the instance. If you are scheduling a Web Intelligence document and want to create folders based on variables (such as the title of the instance, owner, date and time, or user names), use a placeholder. The placeholder is inserted after the text in the box.
File Name	• To use a system-generated file name for the instance, check *Use Automatically Generated Name*. • To select the file name for the instance, check *Use Specific Name*, and enter a name or select variables for the file name from the *Add placeholder* list. You can select from several types of variables: *Title*, *ID*, *Owner*, *DateTime*, (your) *Email Address*, (your) *User Full Name*, and *File Extension*. Check *Add File Extension* to automatically add the file extension to the instance file name. If you do not add a file extension, you might be unable to open the document.

7.1.9 Publications

A publication is a collection of documents that you send to a mass audience. Before distributing the documents, you, as the publisher, define the publication using a collection of metadata. The metadata include the publication source, its recipients, and the personalization applied.

Using publications, you send information to your organization efficiently. You can:

- Distribute information to users or groups of users and personalize the information each user or group receives.
- Deliver targeted business information to users or groups of users through a password-protected portal or across an intranet, an extranet, or the Internet.
- Minimize database access by eliminating the need for users to send process requests.

You can create publications using either the BI Launch Pad or the CMC.

Rights appendix

As a publisher, you own the publication and are responsible for scheduling it. You can view all publication instances for all recipients. Recipients can view only their own personalized publication instances.

These viewing rights ensure maximum security for publication data as only you, as a publisher, have rights to schedule publications and view all publication instances.

If you want to add yourself to a publication as a recipient, create two user accounts for yourself: a publisher account and a recipient account. The publisher account grants you access rights to design and to schedule publications, and the Recipient account grants you the access rights of a typical recipient.

The table below details the different rights necessary to each role to complete specific tasks.

Table 311: Publishing rights

Role	Task	Rights required
Document designer	Create a document to base a publication on	None
Document designer	Add a document to the BI platform	View right and Add right on the folder or category that the document will be added to
Document designer	Create a document to use as a dynamic recipient source	View right and Add right on the folder or category that the document will be added to
Publisher	Create a publication	• Add right on the folder where the publication is saved • View right on the users and the user groups intended as recipients • View right on the profile that will be used for personalization • View right on documents in the publication • Schedule right on documents in the publication • Schedule right on Enterprise recipients

Role	Task	Rights required
Publisher	Schedule a publication	Only the publisher should have the Schedule a publication right. • View right, Schedule right, Add right, and Modify Security right on the publication • Delete Instance right on the publication • View right on the users and the user groups intended as recipients • View right on the profile that will be used for personalization • View right and Schedule right on documents in the publication • View right and Refresh right on the dynamic recipient source • View right and Refresh right on the document that the delivery rule is set for • Data Access right on universes used by publication objects • Data Access right on universe connections used • When scheduling to a BI Inbox, Add right and View right on each recipient's BI Inbox • Modify the right users have to objects right on the folder containing the publication • Subscribe right on recipients • When a publisher wants to print publication instances, Print right on Crystal report source documents • If you selected *One database fetch per recipient*, Schedule on behalf of other users right on Enterprise recipients

Role	Task	Rights required
Publisher	Retry a failed publication instance	• Edit right on the publication instance • View right, Subscribe right, Add right, and Modify Security right on the publication • Delete Instance right on the publication • View right on the users and the user groups intended as recipients • View right on the profile that will be used for personalization • View right and Schedule right on documents in the publication • View right and Refresh right on the dynamic recipient source • View right and Refresh right on the document for which the delivery rule is set • Data Access right on universes used by publication objects • Data Access right on universe connections used • When scheduling to a BI Inbox, Add right and View right on each recipient's BI Inbox • Modify the right users have to objects right on the folder containing the publication • Subscribe right on recipients • When a publisher wants to print publication instances, Print right on Crystal report source documents • If you selected *One database fetch per recipient*, Schedule on behalf of other users right on Enterprise recipients
Publisher	Redistribute a publication instance	• View right, Schedule right, Add right, and Modify Security right on the publication • When scheduling to a BI Inbox, Add right and View right on each recipient's BI Inbox • View Instance right and Edit right on the publication instance

Role	Task	Rights required
Recipient	View a publication	Rights that enable you to see a publication object in the BI platform: • View right on the publication • View Instance right on the publication You do not need these rights to see content sent to a BI Inbox..
Recipient	Subscribe to or unsubscribe from a publication	• View right on the publication • Subscribe right on Enterprise recipients

7.1.10 Report Bursting

During publishing, data in documents is refreshed against data sources and personalized before a publication is delivered to recipients. This process is known as report bursting.

Depending on the size of a publication and how many recipients it is intended for, you can use the following report bursting methods:

- *One database fetch for all recipients*: All documents in a publication are refreshed once, personalized, and delivered to each recipient. This report bursting method uses the data source logon credentials of the publisher to refresh data.
  This is the default option for Web Intelligence document publications and the recommended option to minimize the impact of publishing on your database. The performance of this option depends on the number of recipients. This option is secure only when source documents are delivered as static documents. For example, a recipient who receives a Web Intelligence document in its original format can modify the document and view data associated with other recipients. However, if the document is delivered as a PDF file, data is secure.
- *One database fetch per recipient*: Data in a document is refreshed for every recipient. This report bursting method uses the data source logon credentials of the recipient to refresh data. For example, if there are five recipients for a publication, the publication is refreshed five times. This option is recommended for maximum security for delivered publications.

7.1.10.1 To select a report bursting method in the CMC

You select a report bursting method to determine how source documents are personalized, processed, and delivered in a publication.

Before selecting a report bursting method, ensure that the publication contains Web Intelligence documents intended for Enterprise recipients and that profiles used for personalization have filter expressions.

Report bursting methods use different filter types to personalize and process documents. For example, the *One database fetch for all recipients* option uses a report filter and the *One database fetch per recipient* option uses a

query filter. Each filter type supports a different set of operators. If a filter expression uses an operator that the report bursting method does not support, the publication can fail.

You can select a report bursting method only in the Central Management Console (CMC).

1. In the CMC, click Folders, and locate the publication to select a report bursting method for.
2. Right-click the publication job and select *Schedule*.
3. In the *Schedule* dialog box, expand *Additional Options*, and click *Advanced*.
4. Under *Report Bursting Method*, select a report bursting method.
5. Click *Schedule*.

7.1.11 Enterprise and dynamic recipients

You can send publications to enterprise recipients via a BI Inbox, email, FTP, the file system, and collaboration or to dynamic recipients via email.

Enterprise recipients are users who are part of the BI platform system.

Dynamic recipients are non-enterprise users, either outside of your network or not configured with users, groups, profiles, security, and so on. For example, dynamic recipients might be suppliers of your company's monthly office supplies and inventory. A BI Inbox is not a valid destination for dynamic recipients because they do not have a BusinessObjects Enterprise user account.

Dynamic recipients are different from enterprise recipients in the following ways:

- Publications can be sent to dynamic recipients only via email.
- Dynamic recipients can be used only with local profiles.

To create publications, you create a source file and a recipient file first, then set up the publication in the BI launch pad, and finally schedule the publication.

The source file contains raw data for the publication; a publication can include more than one source file. For example, for a monthly document report on suppliers, the source file might list inventory SKU numbers and categories and include a unique ID/supplier defined in a "Supplier ID" field. The recipient file must contain the same unique ID/supplier as the source file as well as recipients email addresses to map to the source file. In this example, the recipient file should include the same ID in a "Supplier ID" field, supplier names, and supplier email addresses.

7.1.12 Personalization

Personalization is the process of filtering data in source documents so that only relevant data appears to publication recipients.

With personalization, you alter the view of data but don't change the data being queried from the data source.

The following illustration explains how personalization works. You have created a document that contains different types of data, all included in the document: 1, 2, and 3. You have to send the document to three diferent recipients, each one them receiving a single type of data. The first recipient receives data of type 1, the second recipient receives data of type 2, and the third recipient receives data of type 3.

To personalize source documents:

- For Enterprise recipients, make sure to apply a profile when you design a publication. Before you can use profiles to personalize data for Enterprise recipients, the profiles must be configured in the BI Platform. If you need to add profiles to the BI Platform, contact your system administrator.
- For dynamic recipients, you can map a data field or column in the source document to data in the dynamic recipient source. For example, you can map a Customer ID field in a source document to the Recipient ID field in the dynamic recipient source.

To view a list of recipients who will receive unpersonalized publication instances after personalization, select *Additional Options* > *Advanced* in the *New Publication* dialog box, and select the *Display users who have no personalization applied* check box.

Related Information

Personalized placeholders for source document names [page 761]
Personalized placeholders for email fields [page 761]
To select personalized placeholders for source documents [page 769]
To select personalized placeholders for email fields [page 769]
To personalize a document with a global profile target [page 770]

To personlize a document by filtering fields [page 771]

7.1.12.1 Personalized placeholders for source document names

A placeholder is a container for variable data. Adding personalized placeholders to source file names helps recipients identify filtered data.

Recipients who belong to multiple user groups with different personalization values can distinguish between multiple versions of the same source document, without viewing its contents. If a publication contains more than one source document, the *Add placeholder* list for *Use Specific Name* contains personalized placeholders only if all source documents were filtered on the same field.

The following personalized placeholders are available for reports:

- %fieldname_VALUE%
  For example, when selecting the *Email Address* placeholder, *%SI_EMAIL_ADDRESS%* appears in the *Use Specific Name* box. At run-time, the placeholder is replaced by the value of the field used to filter the document. This placeholder is unique for each recipient.
- %fieldname_NAME%
  For example, when selecting the *Title* placeholder, *%SI_Name%* appears in the *Use Specific Name* box. At run-time, the placeholder is replaced by the actual name of the field. This placeholder is the same for all recipients.

Related Information

To select personalized placeholders for source documents [page 769]

7.1.12.2 Personalized placeholders for email fields

A placeholder is a container for variable data. You can use personalized placeholders in the *Subject* box and the *Message* box when sending a publication via email.

For each filter used in a document during personalization, the following placeholders appear in the Add placeholder list:

- %Field - Query 1-VALUE%
  At run-time, the placeholder is replaced by the personalized value used to filter the document. This placeholder is unique for each recipient.
- %Field - Query 1-NAME%
  At run-time, the placeholder is replaced by the name of the field. This placeholder is the same for all recipients.

Before being able to use personalized placeholders in the *Subject* or *Message* box, make sure to personalize all source documents for the publication on the same field. If a publication contains several source documents, the *Add placeholder* list for the *Subject* and *Message* boxes displays personalization parameters only when all source documents are filtered on the same field(s).

Related Information

To select personalized placeholders for email fields [page 769]

7.1.13 Delivery rules

You can set delivery rules to fine-tune the processing and distribution of publications.

When you set delivery rules to a document, the publication is delivered to recipients only if it meets certain conditions. The BI Platform supports several types of delivery rules. For Web Intelligence documents however, you can only set recipient delivery rules. There are two recipient delivery rules available:

- *Deliver individual document when condition is met*
- *Deliver all documents only when all conditions are met*

For each document of the publication, a delivery rule is always coupled with a condition. As a publisher, this is a way to fine-tune the publication process according to the recipients you want to deliver the publication to. There are several conditions you can choose from:

- *Always deliver*
- *Never deliver*
- *If scheduled content contains data*
- *If scheduled content has been fully refreshed*

If a document fails to meet the condition you have purposely selected, you can either cancel the delivery of that specific document or cancel the whole publication.

7.1.14 Publication extensions

A publication extension is a library of code that applies business logic to publications.

Use a publication extension to automatically customize publications after processing or delivery. You can use publication extensions to perform the following tasks:

- Merge documents of the same type (for example, merge multiple Excel spreadsheets into a single Excel workbook)
- Add password protection to or encrypt a document
- Convert a document to a different format
- Create custom log files for a publication job

You add publication extensions to publications in the Central Management Console (CMC) of the BI platform. (You cannot use publication extensions when designing a publication in the BI launch pad.) However, before you can add a publication extension, the extension must be deployed on machines that run the Adaptive Processing Server. The location of the server varies, depending on the operating system:

- On Windows, the location is `<InstallDir>\SAP BusinessObjects\SAP BusinessObjects Enterprise XI 4.0\java\lib\`.
- On Unix, the location is `<InstallDir>/sap_bobj/enterprise_xi40/java/lib/`.

Once an extension is deployed, you must restart the Adaptive Processing Server and any other servers that host a Publishing Service. For more information about publication extensions, see the *SAP BusinessObjects Business Intelligence Platform Java SDK Developer Guide*.

7.1.14.1 To add a publication extension in the CMC

1. In the CMC, click *Folders*, and locate the publication to add a publication extension to.
2. Right-click the publication and select *Properties*
3. Click *Additional Options* > *Publication Extension*.
4. Give a name for the extension.
5. In the *Class Name* box, enter the fully qualified class name for the extension.
6. Optional: In the *Parameter* box, enter a parameter name.
7. To use the extension after processing before or after delivery, above the *Before Publication Delivery* or *After Publication Delivery* list, click *Add*.
8. Click *Save*.

7.1.15 Publications for SAP recipients

A publication intended for SAP recipients works the same way as a publication intended for Enterprise or dynamic recipients.

However, there are differences in the publishing workflow for SAP recipients:

- You do not use personalization to design source documents for SAP recipients. Each SAP recipient has a profile value mapped to a user account outside of the BI platform, and the profile value serves as built-in personalization. You do not need to create profiles and profile values for SAP recipients in the platform or to map profiles to source document fields.
- The only report bursting method that works for a publication intended for SAP recipients is One database fetch per recipient. It maximizes security and individually processes the database logon credentials of each publication recipient.

For information about single sign-on configuration and authentication, see the *SAP BusinessObjects Business Intelligence Platform Administrator Guide*.

7.1.16 Publications for Live Office

When you design publications for use with SAP BusinessObjects Live Office, consider this information.

- Dynamic content documents can consist only of Web Intelligence documents in the original format.
- Dynamic recipients are not supported.
- The only destination option available is *Default Enterprise Location*.

- If recipients receive multiple publication instances after personalization, they can view only the first publication instance in the Live Office Client. Recipients who inherit multiple profile values from group membership may receive multiple instances. To avoid sending multiple instances, assign only necessary profile values to recipients.

7.1.17 Subscriptions

A subscription enables users who are not publication recipients to view the latest instance.

Enterprise recipients can unsubscribe from a publication at any time. Dynamic recipients can neither subscribe to or unsubscribe from a publication.

Users with the appropriate access rights can subscribe and unsubscribe other users. To subscribe to or unsubscribe from a publication, the following items are required:

- A BI Platform account
- Access to the BI Launch Pad or to the Central Management Console (CMC) in the platform
- View rights to see the publication
- Subscriber rights for the user account (Enterprise recipients)

Related Information

To subscribe to or unsubscribe from a publication [page 772]
To subscribe to or unsubscribe from a publication instance [page 773]

7.1.18 Viewing publications results

Results of a publications can be viewed by the publisher or recipients. A log file is also available for the publication job.

Viewing results as a publisher

After a publication runs, the publication history appears, listing publication instances, the times when the publication ran, and whether the publication succeeded or failed. In the *Instance Time* column, you can click a link to a publication instance to view instances generated for all recipients when the publication ran.

Viewing results as a recipient

The following table summarizes the ways you can view a publication.

Table 312:

Destination	To view the publication result
Default Enterprise Location	Dynamic recipients cannot log on to the BI platform to view publication results. As a recipient, you can view only your own personalized publication instances in the platform. You cannot view publication instances that are personalized for other recipients.
BI inbox	Dynamic recipients cannot log on to the BI launch pad to view publication results.
Email	Log on to your email to view embedded publication content or to download the attachment or attachments.
FTP Server	Log on to your FTP host.
SFTP Server	Log on to your SFTP host.
Local disk	Go to the location specified when the publication was designed.

Viewing log files for publications jobs

Log files are useful for troubleshooting a publication and for identifying which recipients did not receive a publication instance. The BI Platform logs publication job information as each batch of personalized publication instances is processed and then consolidates the details into one or more log files. The maximum log file size is 10 MB and is non-editable. If you run a high-volume publication with many details, expect the publication instance to have several log files.

You can view log files for a publication instance in the following ways in the *History* dialog box:

- To view the last log file in a series, in the *Status* column, click the status (Success, Failed, or Running), and click *View Log File* at the bottom of the *Instance Details* dialog box. You can view the last log file while a publication is running.
- To view all log files, in the *Instance Time* column, click the link for a publication instance. Log files are listed after the personalized instances.

Log files are updated with new information every two minutes. If a publication job has been running less than two minutes, the log file may have a status of Pending.

7.2 Scheduling documents

You can schedule documents to automatically run at specified times. Each time a scheduled document runs successfully, an instance of that document is created.

An instance is a version of the document containing data from the time the document ran. You can access the list of instances in the document's history. If you have access rights to view documents on demand, you can view and refresh any instance to retrieve the latest data from the data source. By scheduling and viewing instances, you ensure that documents have the most up-to-date information available for viewing, printing, and distributing.

The default time zone is local to the web server that runs the BI platform, not to the Central Management Server (CMS) that your machine connects to. Before scheduling documents, confirm that your local time zone is selected in the BI launch pad preferences. If you do not have access rights to view or to set your preferences, contact your system administrator.

7.2.1 To schedule a document

When scheduling a document, options are sometimes set up with specific settings by default. Feel free to modify these settings according to your needs.

Before scheduling a Web Intelligence document, confirm that a context is set in the document. If there are multiple contexts in the Web Intelligence document, refresh the document with the correct context before scheduling it.

1. In the *Documents* tab of the BI Launch Pad, right-click a document and click *Schedule*.
2. In the *Schedule* dialog box, in the *Instance Title* tab, give a name to the instance you want to schedule.
3. Click a tab in the navigation list, and set the options in that tab depending on your needs.

   Repeat this step for each tab in which you want to set options.
4. Click *Schedule*.
   The *History* dialog box appears and displays an instance of the document you have scheduled.

7.2.2 To view the latest instance of a document

You can view the latest instance of adocument.

1. Right-click a document.
2. Click *History*.
   The latest instance of the object appears in a viewer.
3. Optional: If you have refresh rights on the document, click  on the viewer toolbar to refresh the report or document with the latest information from the data source.
   The latest instance of the document displays in the viewer.

7.2.3 To view a specific instance of a document

1. Right-click a document.
2. Click *History*.
3. In the *History* dialog box, double-click a link in the *Instance Time* column to view a specific instance.

   You can filter the instances by hovering a column heading and clicking the  icon.

7.2.4 To pause or resume an instance

You can pause and resume instances of scheduled documents with a *Pending* or *Recurring* status.

For example, if a job server is down for maintenance, you can pause a scheduled instance to prevent the BI Platform from running the document. Scheduled jobs fail when the job server is not running. When the job server is running again, you can resume the scheduled instance.

1. Right-click a document.
2. Click *History*.
3. Right-click the instance you want to pause or resume.
4. Click *Pause* or *Resume*.

7.2.5 To delete instances from your BI Inbox

You can delete all instances from your BI Inbox.

1. On the *Documents* tab, expand the *My Documents* drawer, and click *Inbox*.
   The contents of your BI Inbox appear.
2. Click *Organize* > *Delete All Messages*.
3. When prompted, click *OK* to confirm the deletion.

7.3 Publishing documents

Publishing documents means that you make them available to an audience by sending them via email or an FTP sever and saving them to a disk. You can view, archive, retrieve or schedule published documents via the BI Platform.

Using the BI launch pad or the Central Management Console (CMC), you can tailor documents according to users and recipients you wan to send documents to, schedule them to run at a specific time, and send documents to multiple destinations, including BI Inboxes and email addresses.

7.3.1 To create a publication

1. On the *Documents* tab, expand the *Folders* drawer, and locate the folder to create a publication in.
2. Right-click the folder and select *New* > *Publication*.
   The *New Publication* dialog box appears, with general property options displayed.
3. Give a name to the publication.

   You can also enter a description and keywords in the corresponding text fields.

4. Click *Source Documents* in the navigation list, and click *Add*.
5. In the *Select Source Documents* dialog box, select one or more source documents to add to the publication, and click *OK*.

   Refresh At Runtime is enabled by default for each source document. This option refreshes the document against its data source when the publication runs. If you don't want to refresh source documents at runtime, uncheck the box.
6. Select the enterprise recipients and/or dynamic recipients you want to send the publication to.
7. Set up the available options by clicking each tab in the category tree list to fine tune your publication.

   The *Recurrence*, *Prompts*, *Formats*, *Events*, *Scheduling Server Group*, and *Destinations* categories have the exact same content as that of the Schedule dialog box when you schedule document. For more information about options available in these categories, use the links at the end of this topic to access the dedicated documentation.
8. Click *Save & Close*.

Related Information

Recurrence [page 747]
Prompts [page 748]
Formats [page 748]
Events [page 749]
Scheduling server group [page 749]
Destinations [page 750]

7.3.2 To open a publication

1. Do one of the following:
   - In the BI Launch Pad, on the *Documents* tab, expand the *Folders* tab.
   - In the Central Management Console (CMC) in the BI platform, click *Folders*.
2. Right-click a publication and click *View*.

7.3.3 To select an event to trigger a publication

Event-based scheduling gives you additional control over when a publication runs. Use events to trigger a publication to run or use a publication job to trigger an event.

For more information about events, refer to *SAP BusinessObjects Business Intelligence Platform User Guide*.

1. Right-click the publication to select events for and select *Schedule*.
2. Click *Events* in the list of categories.

3. Do one of the following:
    - To specify file-based and custom events for a publication, click the > button to move events from the *Available Events* list to the *Events* to wait for list.
      The events trigger the publication job to run.
    - To specify schedule events for a publication, click the > button to move events from the *Available Schedule Events* list to the *Events to trigger on completion* list.
      The events occur after the publication job runs.
4. Click *Schedule*.

7.3.4 To select personalized placeholders for source documents

You select personalized placeholders for a publication in the *Schedule* dialog box.

Before being able to use personalized placeholders in publication instance names, the publication's source documents must use personalization to filter data.

When scheduling a publication instance, you can use placeholders in the *Use Specific Name* field for source documents, and combine text and multiple placeholders in a publication name.

1. Right-click the publication to select placeholders for and select *Schedule*.
2. Click *Destinations* in the list of categories.
3. Under *Show options for selected destinations*, select *Use Specific Name* and choose a placeholder for the publication name from the *Add placeholder* list.
4. Optional: To add individual documents:
    - Under *Target Name*, select *Specific Name per Document*.
    - For each document title, select a placeholder from the *Add placeholder* list.
5. Click *OK*.

7.3.5 To select personalized placeholders for email fields

You select personalized placeholders for a publication in the *Schedule* dialog box.

You can combine text and multiple placeholders in any email field. When scheduling a publication to an email destination, you can use placeholders in the *From*, *To*, *Cc*, *Bcc*, *Subject*, *Message*, and *Use Specific Name* fields.

1. Right-click the publication to select placeholders for and select *Schedule*.
2. Click *Destinations* in the list of categories.
3. Select *Email*.
4. Set the destination options, including placeholders, as needed.
5. Click *OK*.

7.3.6 To embed content from a dynamic source document in an email

You embed content from a source document for a publication in the *Schedule* dialog box.

You can embed content from dynamic content documents in the body of an email. You can embed an entire document or a single report tab.

1. Right-click the publication to take the content from and select *Schedule*.
2. Click *Formats* in the list of categories.
3. Choose whether to publish the entire document or one report tab:
   - Under *Output Format*, select *mHTML*.
   - Under *Output Format Details*, select *All reports* or *Select one report* and choose a report tab in the list.
4. Click *Destinations* in the list of categories.
5. Under *Select Destinations*, select *Email*.
6. Fill in the entry field or select placeholders from the *Add placeholder* list.
   In the *From* entry field, you can enter Robert, Publisher, or publisher@sap.com. If you enter a name, the name is appended to your email server—for example, Publisher@<EmailServer>.
7. To embed dynamic content in the *Message* entry field, position the cursor where you want to embed content, and select *Report HTML Content* in the *Add placeholder* list.
   %SI_DOCUMENT_HTML_CONTENT% appears in the *Message* entry field. When the publication runs, the placeholder is replaced by personalized content from the dynamic content document.
8. Optional: If the publication contains other source documents, select the *Add Attachment*.

   Other source documents in the publication will be added to the email as attachments when the publication runs.
9. Click *OK*.

7.3.7 To personalize a document with a global profile target

You can personalize a document for Enterprise recipients by filtering with a global profile target.

- Before being able to use a profile to personalize data for Enterprise recipients, the profile must be configured in the BI Platform. If a profile is not configured in the platform, personalization will fail.
- Before personalizing a document, make sure that the profile has a global profile target.

When defining personalization under *Global Profiles*, you don't need to set personalization options under *Filters*. If you need profiles added to the BI Platform, contact your system administrator.

1. Right-click the document to personalize and select *Schedule*.
2. Click *Personalization* in the list of categories.
3. Under *Global Profiles*, in the *Enterprise Recipient Mapping* column, select a profile in the list.

   This profile maps the document to the universe field (global profile target) that is filtered for Enterprise recipients.
4. Click *OK*.

7.3.8 To personlize a document by filtering fields

Before being able to use a profile to personalize data for Enterprise recipients, the profile must be configured in the BI Platform. If a profile is not configured in the platform, personalization will fail.

Static-value profiles can filter only string fields in source documents. To filter other types of fields, use expression profile values. If you map an incorrect type of field to the profile, personalization will fail. If you need profiles added to the platform, contact your system administrator.

Scheduling and publishing a document to .WID format generates a .WID file. Filters in .WID files can be removed by any recipient with appropriate security rights. When sending the .WID file to recipients or destinations, use filters carefully. For example, if you filter a document to limit the information that recipients can see and then send the published .wid file to recipients, any recipient with security rights to edit the document can remove or update the filter and access data that should not be visible.

1. Right-click the document to personalize and select *Schedule*.
2. Click *Personalization* in the list of categories.
3. Under *Local Profiles*, for each profile listed in the *Title* column, select a profile from the list in the *Report Field* column.

   This profile maps the report field to profile values for Enterprise recipients.
4. Under *Local Profiles*, in the *Enterprise Recipient Mapping* column, select a profile.

   This profile maps the document to the universe field (global profile target) that is filtered for Enterprise recipients.
5. In the *Dynamic Recipient Mapping* column, select a profile.

   The field in the source document is mapped to the column that contains corresponding values in the dynamic recipient source.
6. Repeat steps 3 to 5 for each field to filter.
7. Click *OK*.

7.4 Managing publications and instances

At any point during or after publication design, you can view a publication's properties in the *Summary* dialog box —including the publication's title, location, description, source documents, the number of recipients who will receive the publication (sorted by recipient type, Enterprise or dynamic), how the publication is personalized, the distribution format, and the destination.

Click *Summary* to open the dialog box. You can use other options on the navigation panel to change the properties of and to save or schedule a publication.

7.4.1 To test a publication

Use the test mode in the BI Launch Pad to send a publication to yourself before sending it to recipients.

When testing a publication, you receive the exact same contact your recipients will receive. Destinations are automatically updated so that your BI Inbox or your email address is used instead of publication recipients' BI

Inbox or email address. If necessary, you can exclude selected recipients from the original group of recipients in test mode.

1. Right-click the publication to test and select *Test Mode*.
2. Optional: In the *Test Mode* dialog box, modify the list of Enterprise recipients:
   a. Click *Enteprise recipients*.
   b. Under *Available*, select users or groups, and click > to move the users or groups to the *Selected* list or the *Excluded* list.
3. Optional: Modify the list of dynamic recipients:
   a. Click *Dynamic recipients*.
   b. Under *Choose the source for the dynamic recipients*, select *Web Intelligence Report Dynamic Recipient Provider* in the list.
4. Click *Test*.

The publication runs in test mode and, once done, is sent to intended "test" recipients.

7.4.2 To view the progress or history of a publication

1. Right-click the publication job and select *History*.
   The *History* dialog box appears and shows the status (Success, Failed, or Running) of the job in the *Status* column.
2. To view the log file for the job, click *View Log File* at the bottom of the dialog box.

7.4.3 To subscribe to or unsubscribe from a publication

To subscribe to a publication after it is scheduled, subscribe to its recurring instance or reschedule the publication.

You must have appropriate access rights to a publication before you can subscribe to it.

Only Enterprise recipients can subscribe to or unsubscribe from a publication. Dynamic recipients cannot subscribe to or from publications.

1. In the *Folders* drawer on the *Documents* tab, locate and select the publication to subscribe to or unsubscribe from.
2. Do one of the following:
   - In the BI Launch Pad, right-click the publication and select *Subscribe* or *Unsubscribe*.
   - In the Central Management Console (CMC), select *Actions* > *Subscribe* or *Unsubscribe*.

7.4.4 To subscribe to or unsubscribe from a publication instance

After a recurring publication has been scheduled, Enterprise recipients can subscribe to its first recurring instance. For example, when a publication is scheduled to run twice a week, you can subscribe to the first publication instance but not the second one.

You must have appropriate access rights to a publication before you can subscribe to its instances.

1. Do one of the following:
   - In the BI Launch Pad, right-click the instance and select *History*.
   - In the Central Management Console (CMC), select *Actions* > *History*.
2. Do one of the following:
   - In the BI Launch Pad, right-click the instance and select *Subscribe* or *Unsubscribe*.
   - In the Central Management Console (CMC), select *Actions* > *Subscribe* or *Unsubscribe*.

7.4.5 To view publications sent to the Default Enterprise Location

As a recipient, you can view only your own personalized publication instances in the BI platform.

1. In the CMC, go to the *Folders* area, right-click a publication, and select *History*.
2. Click the link in the *Instance Time* column.
3. Double-click the instance to view.

7.4.6 To view publications sent to a BI Inbox

Dynamic recipients can view publications sent to a BI Inbox. They cannot log on to the BI launch pad to view publication results.

1. In the BI launch pad home screen, click *My Inbox*.
2. Double-click the instance to view.

7.4.7 To redistribute a publication instance

When you want to resend an instance to a recipient but do not want to rerun an entire publication, you can redistribute successful publication instances to all or some of the original recipients.

Only recipients specified when the publication was originally run can receive redistributed instances.

1. Do one of the following:
   - In the BI launch pad, right-click a publication and select *History*.
   - In the Central Management Console (CMC), right-click a publication and select *Actions* > *History*.
2. Select a successful publication instance.
3. Do one of the following:
   - In the BI launch pad, right-click a publication and select *More Actions* > *Reschedule*.
   - In the Central Management Console (CMC), right-click a publication and select *Actions* > *Reschedule*.
4. Choose which recipients will receive redistributed instances:
   - To redistribute an instance to Enterprise recipients, click *Enterprise Recipients*, and click > to move recipients from the *Available* list to the *Selected* list.
   - To redistribute an instance to dynamic recipients:
     1. Click Dynamic Recipients, and confirm that columns mapped to recipient IDs, full names, and email addresses are correct.
     2. Select *Use entire list* to redistribute the publication to all dynamic recipients or click > to move recipients from the *Available* list to the *Selected* list to select from a restricted list of dynamic recipients.
5. Click *Redistribute*.

The publication history appears, and the redistributed instance has a status of Running. The date in the *Instance Time* column is updated to reflect the redistribution time.

7.4.8 To retry a failed publication

Before retrying a failed publication, view the log file for the publication instance, address any errors, and reschedule the publication.

Using the option to "Retry" failed instances of a publication, you can:

- overwrite the failed instance (*Run Now* and *Reschedule* create new instances whereas *Retry* uses the failed instance).
- process only the failed recipients, in case of a partial failure.
- run the full job without creating a new instance, in case of a complete failure.

> **Note**
>
> You can also perform auto-retry by setting the *Number of retries allowed* and the *Retry interval in seconds* options under the *Recurrence* property of the publication. In case of a failure, it attempts to run the publication again.

1. Select the failed publication instance.
2. Do one of the following:
   - In the BI launch pad, select *More Actions* > *History*.
   - In the CMC, select *Actions* > *History*.

3. Right-click on the failed instance and click *Retry*.
   The instance status changes to *Running*. Wait until the status changes to *Success*.

7.5 Publication performance

You can improve publication performance by modifying the Adaptive Processing Server, the Publishing Service, and the Publishing Post Processing Service.

Adaptive Processing Server

Table 313:

Area	Consideration
CPU and memory	Move the Adaptive Processing Server to a faster machine that has more available CPUs and BI platform Feature Pack 3 or later installed. The server will automatically scale to use more CPUs.
	Isolate the Publishing Service and the Publication Post Processing Service on dedicated Adaptive Processing Servers and remove unused services hosted on those servers. Each service will consume more shared resources (requests to thread pool, memory, and CPU consumption) on an Adaptive Processing Server, and publishing performance may improve.

Publishing Service

Because publishing is a hard-drive-intensive process, the Publishing Service should be installed on a machine with fast I/O or SAN disks for the FRS.

Table 314:

Area	Consideration
Many publication instances that execute concurrently	If the underlying CMS, FRS, Adaptive Job Server, and report processing servers have been scaled appropriately, horizontally scale out the Publishing Service across multiple Adaptive Processing Servers, on one or more machines, to concurrently process more publication instances. A single publication job (for example, with one million recipients) is not shared across Publishing Services hosted on different Adaptive Processing Servers. Horizontally scaling out the Publishing Service will not improve processing time for a single publication, regardless of the number of recipients.

Area	Consideration
Publications with many recipients	Vertically scale the Adaptive Processing Server on machines with more CPUs and RAM to concurrently process more recipients and to generate more jobs on the Adaptive Processing Server. You may need to scale the Adaptive Job Server and report processing servers accordingly to increase throughput. You may need to increase the Adaptive Processing Server's heap size (that is, set -Xmx to 2 GB or more) when the server runs on a machine with more than eight CPU cores. The larger number of CPU cores enables the Adaptive Processing Server to spawn more threads and increase throughput. Note that more threads require more RAM.
Publishing cleanup option	For a large publication that does not need redistribution or to view artifacts in the report, do not select the default destination.
Web Intelligence publications	Select *One database fetch for all recipients* or *One database fetch per recipient*. When you select *One database fetch for all recipients* for a large publication, to break the database query into multiple, smaller queries, add the following command line option to speed disk delivery to all Adaptive Processing Servers that host the Publishing Service: `-Dcom.businessobjects.publisher.scopebatch.max.recipients=<integer>`
Large publications with slow disk delivery to a single folder on Windows	Search for "disable short file name generation" (article ID 210638) or for "NtfsDisable8dot3NameCreation" on Microsoft TechNet at http://technet.microsoft.com and follow the instructions.
Large publications with slow disk delivery to a single folder that contains more than 300,000 files on Windows	Search for "how NTFS works" at http://technet.microsoft.com and follow the instructions.

Publishing Post Processing Service

The Publishing Post Processing Service is called when the *Package as ZIP File* checkbox (in the Schedule dialog box) and/or the *Merge Exported PDF* checkbox (in the Destinations dialog box) is selected or when custom post-processing plugins are enabled on a publication.

Table 315:

Area	Consideration
Publications with both *Package as ZIP File* and *Merge Exported PDF* selected	Horizontally scale out the Publishing Post Processing Service to spread the ZIP and PDF merging workloads across multiple Publishing Post Processing Services hosted on different Adaptive Processing Servers.

7.5.1 Best practices for adding source documents

Below are best practices to help you add dynamic content documents to publications.

Use publication log files to troubleshoot errors in failed publications

When you schedule publications to run, log files are generated to record errors that may occur when the publications are processed. To view all log files for a publication instance, select *More Actions* > *History*. In the *History* dialog box, click the link for the instance in the *Instance Time* column. The instance details appear in a new window.

View and schedule individual dynamic content documents before adding them to a publication

If you can view and schedule dynamic content documents successfully, the data source connection is working properly and the source document data can be refreshed when the publication is scheduled. If you cannot view and schedule dynamic content documents, confirm that the data source connection settings are correct. To do so:

1. In the CMC, select a document and click *Manage* > *Default Settings*.
2. In the *Default Settings* dialog box, click *Report universes* on the navigation panel.

In some cases, you may have to open a dynamic content document in the designer to configure the data source connection and to re-export the file to the CMS repository and overwrite the previous copy. For more information about configuring data source connections for dynamic content documents, see the designer documentation.

Avoid unnecessary data refreshes

If a data refresh is unnecessary for a dynamic content document, in the *Source Documents* section, uncheck *Refresh At Runtime* for that document to improve overall publication performance.

7.5.2 Best practices for using dynamic recipient sources

Make sure to sort your dynamic recipients according to the *Recipient ID* column

In general, you should sort dynamic recipient sources by the *Recipient ID* column. This is especially important when you are running a high-volume publication because it can reduce the number of deliveries to recipients with multiple personalization values.

7.5.3 Best practices for sending and receiving email publication instances

If possible, view embedded-content email-publication instances in Outlook 2003

View embedded content in email publication instances in Outlook 2003 whenever possible. Embedded content in email publication instances may have formatting issues when viewed in Outlook 2007 or in web email accounts, such as Hotmail or Gmail.

Contact your administrator to confirm that the email settings are configured properly for the Destination Job Server

Make sure that email settings are properly configured for the Destination Job Server. Publications intended for email destinations may fail because email has not been configured properly as a destination for the Adaptive Job Server. For more information, refer to the *SAP BusinessObjects Business Intelligence Platform Administrator Guide*.

8 Sharing content with other applications

You can make Web Intelligence content available outside Web Intelligence documents by publishing report blocks (tables, charts or forms) as web services known as BI Services.

> **Note**
>
> You can only publish content as a web service in the Web Intelligence Applet interface and Web Intelligence Rich Client. This feature is not available for the Web Intelligence HTML interface.

Web services provide a standardized mechanism for sharing data between applications. You publish content to a server where other applications can access the web services that supply the content.

Each web service can publish multiple blocks which are made available to web applications through functions that correspond to the blocks. For example, a table published as a web service can be included in a dashboard which can perform filtering and drilling operations on the table through the web service functions.

The structure of a BI service is defined using WSDL (Web Service Definition Language), a standard format for describing web services. Web applications interact with BI services (by passing parameters to them and receiving data in return) using Simple Object Access Protocol (SOAP), a standard protocol for exchanging structured information.

Related Information

BI service structure [page 784]

8.1 Making data available for filtering in a web service

When you publish a report block as a web service, you can make report objects available that web applications can use to filter the data returned by the web service.

For example, if you publish a table containing [Country], [Region] and [Revenue], you can make the [Country] dimension available as a filter. Web applications accessing the web service can then filter on the [Country] dimension.

Filtering objects appear as `FilterCondition` parameters in the `GetReportBlock_<blockname>` function in the web service.

You make objects available for filtering in the *Define published content* screen of the *Publish Content* wizard. The screen lists all the objects in the report and selects the objects in the block you are publishing by default. You can deselect these objects and select any object in the report to make it available as a filter. For example, you can make the [Country] dimension available as a filter when you publish a table containing the [Region] and [Revenue] objects if the [Country] dimension appears in the report. You can also choose not to make the [Region] and [Revenue] objects available as filters.

You do not have to include any report objects as filters except for objects that appear in section headers. These appear selected and you cannot unselect them.

If you publish a block in a section, by default the web service filters on the value of the section object corresponding to the block you selected. For example, if you have a report containing [Country], [Region] and [Revenue] with [Country] as the section header, and you publish the block in the section where [Country]="France", the web service uses "France" as the default value of [Country]. A web application accessing the web service can supply a different value for [Country] and the data returned by the web service changes to correspond with the filter.

If you publish a block in a report containing report filters, the objects on which report filters are defined are selected by default in the screen. You can unselect these objects. If you publish the block without making the objects available as filters, the web service filters data according to the values of the report filters. If you make the objects available, web applications can apply the report filters using different values.

Related Information

GetReportBlock_<blockname> [page 785]

8.2 To publish a chart or table as a web service

You use the *Publish Content* wizard to publish a chart or table as a web service.

> **Restriction**
>
> This feature is only available in the Web Intelligence Rich Client and Applet interfaces. It is not available in the Web Intelligence HTML interface.

1. Open a Web Intelligence document in *Design* mode.
2. Select the table or chart that you want to publish, right-click and select *Publish as Web Service* to display the *Publish Content* wizard.
3. Click *Next* to move to the first publishing step.

   If the table or chart that you are publishing as a web service has already been published, the *Identify Duplicate Content* screen highlights the duplicated table or chart. The duplicate table or chart appears in bold beneath the web services that publish it.
4. Click *Next* to move to the next step.

   > **Note**
   >
   > If your query has prompts, the *Choose prompt* screen appears. In this case, continue to the next step. If your query has no prompts, the *Defined Published Content* screen appears. In this case, skip the next step.
5. In the *Choose Prompt* screen:
   a. Select or unselect the prompts you want to include or exclude in the list of prompts.

      Click *Select all* to select all prompts or *Clear all* to clear all prompts.

b. Click *Next* to move to the next step.

> **Note**
>
> For web services, to use multiple values in prompts, you must reproduce the prompt as many times as different responses are expected, and the user will be prompted for each response.

If you do not publish a prompt, the web service uses the prompt value supplied when the document was last refreshed and saved. For example, if a user answers "US" to a prompt on [Country], then saves the document, the web service filters data on [Country]="US" the next time it is called with the `refresh=true` parameter.

If a web service publishes prompts, web applications must supply values for the prompts in the custom data provider web service window if they call the web service with the `refresh=true` parameter. If the user does not enter values for the prompts, the last values entered are used.

6. In the *Define Published Content* screen:
   a. Type the name and description under which you want to publish the table.
   b. Select *Share report content for all consumers* when you want all web service consumers (sessions) get the table or chart content from the same (and single) instance of document.

      The *Share report content for all consumers* option below all web service consumers (sessions) to get the table or chart content from the same (and single) instance of document. This option reduces memory load on the processing server, and should be enabled when content is to be consumed by many concurrent users.

      Technically, the document is opened by the first consumer who sends a request for it, and is then consumed by any other consumer sending same request after 'on behalf' of first user (for example, using his authorization). Document security cannot therefore be applied with web service calls designed with this option. To avoid any conflicts, all consumers should be granted the permission to open the corresponding document. Users should also be granted permission to view/access data from the underlying data sources.

      > **Note**
      >
      > Filtering and drilling from a web service are not compatible with the *Share report content for all consumers* option. The only way to filter Web Intelligence document data from web services is to use report sections exposed as filters in the corresponding web service.

   c. Click *Set Filters* and select the objects you want to make available for filtering in the web service.

      When *Share report content for all consumers* is selected, the *Set Filters* option is disabled because consumers will not be able to use report filters, section filters being the only available way to filter content through mandatory input parameters.
   d. Select the server where you want to publish the content beneath *Host server*.
   e. To add, remove or edit servers in the list of host servers, click *Manage servers*, then click *Add*, *Edit* or *Remove* and update the list of servers.
   f. Click *Next* to move to the next step.
7. In the *Publish new content or re-publish existing content as Web Service* screen:
   a. To re-publish an existing web service, select the web service, click *Publish*.
   b. To publish a new web service, select the folder where you want to publish the content and click *Create* to display the *Publish Web Service* dialog box.

> **Note**
>
> Folders are optional, you publish to an existing web service or a new web service, and you can create folders in order to organize your work. Click *New Folder* to add a folder.

c. Type the name of the web service in the *Web service name* box and the service description in the *Description* box.
d. Select the authentication method for the web service from the *Authentication* list.
e. Click *OK* to close the dialog box and save and publish the web service.
f. Choose the web service where you want to publish to and click *Finish*.

8.3 Viewing and managing published content

You can browse the content published on different Web servers by using the *Web Service Publisher* pane.

The *Web Service Publisher* pane also allows you to edit published Web services and import QaaWS (Query as a Web Service) queries, which you can then republish as Web Intelligence content.

8.3.1 To view and manage published content

You can view and manage published Web Service content in the *Web Service Publisher* pane of the Side Panel.

1. Open a Web Intelligence document in *Design* mode.
2. Click the *Web Service Publisher* icon of the Side Panel.
3. In the *Web Service Publisher* pane, select the server from the *Host server* list.
4. Do one of the following:
   - To add, remove or edit servers in the list of host servers, click *Manage servers*, then click *Add*, *Edit* or *Remove* and update the list of servers.
   - From the *Views* dropdown list, select the way you want the content to be organized from the menu.

     Table 316:

Option	Description
View by web service	Published content is organized as web service > block
View by document and web service	Published content is organized as a document > web service > block
View by document and block	Published content is organized as a document > block > web service
Show Web Services queries	QaaWS (Query as a Web Service) queries appear below the published content. (QaaWS queries are stored in the same repository folder as BI services.

   - To edit a published block, right-click the block and select *Edit* to launch the *Publish Content* wizard.

- To delete published content, right-click the published block or the web service and select *Delete*.
- To rename a web service, right-click the web service, select *Rename* and type the new name.
- To refresh the list of published content, click the *Refresh* icon, or right-click on a folder or web service and select *Refresh list*.
- To search the list of web services, type the text you want to search for in the search box and select your search options from the search box dropdown list.

Table 317:

Option	Description
Case sensitive	Match case when searching
Case insensitive	Ignore case when searching
Match from start	Return only those web services or blocks whose name starts with the search text
Match anywhere	Return only those web services or blocks whose name contains the search text

Related Information

Importing and using QaaWS queries as a BI service [page 784]
To publish a chart or table as a web service [page 780]

8.3.2 To test published content

You can test published content and examine the structure of the web service that publishes it.

1. Open a Web Intelligence document in *Design* mode.
2. Click the *Web Service Publisher* icon of the Side Panel.
3. Select the web service you want to test and click the *Test* icon.
4. Select the web service function you want to test from the *Operation* dropdown list.
5. Select the parameters and operators for which you want to specify values in the *Input* pane and type their values beneath *Value*.
6. Click *Send* to call the web service with the values you specified.
   The data returned by the web service appears in the *Server Response* pane.
7. Click *Change to tree view* or *Change to table view* to toggle the web service data between a tree view and table format.

8.4 Importing and using QaaWS queries as a BI service

You can import QaaWS (Query as a Web Service) queries and run them to produce a block that is inserted in a new report.

When you import a QaaWS query, the application builds a query based on the structure of the QaaWS query, then runs this query and inserts the resulting block in a new report. The original QaaWS query is not modified.

Because Web Intelligence does not support the publication of QaaWS queries directly, you can publish QaaWS queries as BI services by publishing the resulting block as a BI service.

> **Note**
>
> There is no support for sorts defined on QaaWS queries. When you run the QaaWS query, any sorts it contains are lost.

8.4.1 To publish a QaaWS query

You can publish a QaaWS query in the *Publish Content* wizard.

1. Open a Web Intelligence document in *Design* mode.
2. Click the *Web Service Publisher* icon of the Side Panel.
3. Select *View* > *Display QaaWS queries* to display QaaWS queries.
4. Select the QaaWS query you want to import and click *Import Web Service query*.
   The QaaWS query is added to the document as a Web Intelligence query. A report tab is added with the same name as the QaaWS query. The report tab contains a table corresponding to the query objects.
5. Refresh the added query to display the web service query data.
6. Right-click the added table and select *Publish as Web Service* to publish the table as a web service.

Related Information

To publish a chart or table as a web service [page 780]

8.5 BI service structure

Applications use the Simple Object Access Protocol (SOAP) protocol to call the functions and receive the function output which they can then parse.

External web applications access Web Intelligence content published as web services by calling two functions:

- `GetReportBlock_<blockname>`

- `Drill_<blockname>`

In both these function calls, `<blockname>` is the name of the block as defined in the web service.

8.5.1 GetReportBlock_<blockname>

Function name

```
GetReportBlock_<blockname>
```

Input parameters

Name	Description	Mandatory?
`login`	CMS login	Yes, unless `sessionID` or `serializedSession` is specified.
`password`	CMS password	Yes, unless `sessionID` or `serializedSession` is specified.
`reportfilter`	One or more report filters. See the `reportfilter` table below for more information.	Yes when the report block contains section entries; no otherwise. Blocks with sections therefore have a mix of mandatory and optional `reportfilter` parameters.
`prompt`	Prompt values. See below for more information on `LovIndexValue` parameters	Yes when `refresh` = true and the prompt is mandatory. No otherwise (`refresh` = false). If you don't enter a prompt value, then the prompt takes the values previously defined values. The consumption of web services having prompts in Web Intelligence does not mean that you will be prompted, you must enter prompt values in the *Custom Data Provider* - Web Service window.
`closeDocument`	Forces the document to be closed once the web service has replied with the requested content. This behavior helps to optimize memory consumption on the server, as consumers can control how long documents are stored.	Boolean, default value : `false` (by default document is kept open, when web service is replied). Values: `false` or `true`.
`endRow`	Defines the last row number retrieved from the source. This parameter is used with the `startRow` parameter to define the chunk size to retrieve in table	Optional. If not declared, the entire table contents are retrieved. By default, the entire table contents are retrieved.

Name	Description	Mandatory?
	output parameter. For example, `startRow` = 10 / `endRow`= 55, will retrieve 46 rows between row 10 and row 55 included. The last row of a table has rank set equal to table size; any greater value is internally corrected to that number.	
`startRow`	Defines the first row number retrieved from the source. This parameter is used with the `endRow` parameter to define the chunk size to retrieve in table output parameter. For example, `startRow` = 10 / `endRow`= 55, will retrieve 46 rows between row 10 and row 55 included. If the first row of a table is 1, any lower value is internally corrected to 1.	Optional. If not declared, the entire table contents are retrieved. By default, the entire table contents are retrieved.
`resetState`	Re-opens the document when the web service is called, resetting drills and filters.	No. The default value is `false`.
`refresh`	Forces a document refresh.	No. The default value is `false`.
`getFromLatestDocumentInstance`	Retrieves data from the latest document instance.	No. The default value is `true`.
`getFromUserInstance`	Retrieves data from the user inbox if the document has been published.	No. The default value is `false`.
`turnOutputToVTable`	Turns the output to a vertical table. **Note** If the block is a chart, it is always turned into a vertical table, even if this parameter is set to `false`.	No. The default value is `false`.
`sessionID`	Session token to avoid submitting the login or password. Increases the session count when submitted.	No.
`serializedSession`	Serialized session to avoid submitting the login or password. Does not increase the session count when submitted.	No.

The reportfilter parameter

The reportfilter parameters contain two elements:

Name	Description	Values
filtering_value	The value used to filter the data	Any
filtering_operator	The filter operator	EQUAL (default)¦ GREATER ¦ GREATER_OR_EQUAL ¦ LESS ¦ LESS_OR_EQUAL ¦ NOT_EQUAL ¦ INLIST ¦ NOT_INLIST

Example of reportFilter parameter

The filter [Country]="US" is specified as follows:

```
<Country>
        <value>US</value>
  <operator>EQUAL</operator>
</Country>
```

Output parameters

Name	Type	Description
table	TTable	Table cells
headers	THeader	Table headers
footers	TFooter	Table footers
user	string	Login used by the web service call
documentation	string	The web service description supplied by the service designer
documentname	string	The document name
lastrefreshdate	dateTime	The date of the last document refresh
creationdate	dateTime	The date the web service was created
creator	string	User name of the web service creator
isScheduled	boolean	Specifies if document is scheduled
scheduleStartTime	dateTime	The schedule start time if the document is scheduled
scheduleEndTime	dateTime	The schedule end time if the document is scheduled
tableType	string	The table type
nbColumns	int	The number of columns in the output table
nbLines	int	The number of rows in the output table

Related Information

Drill_<blockname> [page 788]
Sample BI service return data [page 791]

8.5.2 Drill_<blockname>

Function name

```
Drill_<blockname>
```

> **Note**
>
> This web service call cannot be used when the document sharing option (*Share report content for all consumers* in the *Publish Content* wizard) is enabled because such methods will not be specified in web service WSDL file. An error will be returned to the consumer if the document is called when this option is enabled.

Input parameters

The syntax of the `Drill_<blockname>` function is similar to `GetReportBlock_<blockname>`, with the following differences:

- there are no `reportfilter` parameters
- there are additional `drillpath` parameters
- there are additional `drillfilter` parameters

Name	Description	Mandatory?
`drillpath`	Specifies a drill instruction	Yes
`drillfilter`	Specifies a filter to apply when drilling	No

The drillpath parameter

The `drillpath` parameters are of `DrillPath` type. They contain three elements:

Name	Description	Values
`from`	The dimension to drill	Any
`value`	The value to drill on	Any

Name	Description	Values
drilloperation	The type of drill operation	UP ¦ DOWN

> **Note**
>
> - As well as single values (for example "Los Angeles"), value can pass definitions such as "All Cities".
> - If the drill instruction is invalid, the web service returns the original table data.
> - At the end of the drill hierarchy, the web services returns the last available values in the drill hierarchy.
> - You can supply more than one drillpath parameter, providing that the parameters do not refer to different levels in the same drill hierarchy.

The drillfilter parameter

The drillpath parameters allow you to apply drill filters at the same time as drilling:

Name	Description	Values
dimension	The dimension to filter	Any.
value	The value to filter on	Any
operator	The filter operator	EQUAL ¦ GREATER ¦ GREATER_OR_EQUAL ¦ LESS ¦ LESS_OR_EQUAL ¦ NOT_EQUAL ¦ INLIST ¦ NOT_INLIST

> **Note**
>
> - As well as single values (for example "Los Angeles"), value can pass definitions such as "All Cities"
> - If the drill instruction is invalid, the web service returns the original table data
> - At the end of the drill hierarchy, the web services returns the last available values in the drill hierarchy
> - You can supply more than one drillpath parameter, providing that the parameters do not refer to different levels in the same drill hierarchy.

Related Information

GetReportBlock_<blockname> [page 785]

8.5.3 BI Services output parameters

There are several output parameters that can be returned by a BI service.

Name	Type	Description
table	TTable	Table cells
headers	THeader	Table headers cells
footers	TFooter	Table footers cells
user	string	Login used by the web service call
documentation	string	The web service description supplied by the service designer
documentname	string	The document name
lastrefreshdate	dateTime	The date of the last document refresh
creationdate	dateTime	The date the web service was created
creator	string	User name of the web service creator
isScheduled	boolean	Specifies if document is scheduled
scheduleStartTime	dateTime	The schedule start time if the document is scheduled
scheduleEndTime	dateTime	The schedule end time if the document is scheduled
tableType	string	The table type
nbColumns	int	The number of columns in the output table
nbLines	int	The number of rows in the output table

Example of table parameter

```
<table>
    <row>
               <cell xsi:type="xsd:string">Australia</cell>
               <cell xsi:type="xsd:string">Accommodation</cell>
               <cell xsi:type="xsd:string">Bungalow</cell>
               <cell xsi:type="xsd:double">172980</cell>
            </row>
            <row>
               <cell xsi:type="xsd:string">Australia</cell>
               <cell xsi:type="xsd:string">Accommodation</cell>
               <cell xsi:type="xsd:string">Hotel Room</cell>
               <cell xsi:type="xsd:double">345510</cell>
            </row>
...
</table>
```

Example of headers parameter

```
<headers>
    <row>
               <cell xsi:type="xsd:string">Country</cell>
               <cell xsi:type="xsd:string">Service Line</cell>
               <cell xsi:type="xsd:string">Service</cell>
               <cell xsi:type="xsd:string">Revenue</cell>
            </row>
</headers>
```

Related Information

Sample BI service return data [page 791]

8.5.4 Sample BI service return data

Web services return data using Simple Object Access Protocol (SOAP). The following is a sample SOAP file returned by a web service.

```
<soap:Envelope xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance...>
   <soap:Body>
      <GetReportBlock_Block1BeachResponse xmlns="multidocmultiuniversesmultime">
         <table>
            <row>
               <cell xsi:type="xsd:string">Australia</cell>
               <cell xsi:type="xsd:string">Accommodation</cell>
               <cell xsi:type="xsd:string">Bungalow</cell>
               <cell xsi:type="xsd:double">172980</cell>
            </row>
            <row>
               <cell xsi:type="xsd:string">Australia</cell>
               <cell xsi:type="xsd:string">Accommodation</cell>
               <cell xsi:type="xsd:string">Hotel Room</cell>
               <cell xsi:type="xsd:double">345510</cell>
            </row>
            <row>
               <cell xsi:type="xsd:string">Australia</cell>
               <cell xsi:type="xsd:string">Accommodation</cell>
               <cell xsi:type="xsd:string">Hotel Suite</cell>
               <cell xsi:type="xsd:double">464850</cell>
            </row>
            <row>
               <cell xsi:type="xsd:string">Australia</cell>
               <cell xsi:type="xsd:string">Food &amp;amp; Drinks</cell>
               <cell xsi:type="xsd:string">Fast Food</cell>
               <cell xsi:type="xsd:double">19530</cell>
            </row>
            <row>
               <cell xsi:type="xsd:string">Australia</cell>
               <cell xsi:type="xsd:string">Food &amp;amp; Drinks</cell>
               <cell xsi:type="xsd:string">Poolside Bar</cell>
               <cell xsi:type="xsd:double">27073</cell>
            </row>
            <row>
```

```
            <cell xsi:type="xsd:string">Australia</cell>
            <cell xsi:type="xsd:string">Food &amp;amp; Drinks</cell>
            <cell xsi:type="xsd:string">Restaurant</cell>
            <cell xsi:type="xsd:double">41160</cell>
         </row>
         <row>
            <cell xsi:type="xsd:string">Australia</cell>
            <cell xsi:type="xsd:string">Recreation</cell>
            <cell xsi:type="xsd:string">Activities</cell>
            <cell xsi:type="xsd:double">59820</cell>
         </row>
         <row>
            <cell xsi:type="xsd:string">Australia</cell>
            <cell xsi:type="xsd:string">Recreation</cell>
            <cell xsi:type="xsd:string">Excursion</cell>
            <cell xsi:type="xsd:double">113170</cell>
         </row>
         <row>
            <cell xsi:type="xsd:string">Australia</cell>
            <cell xsi:type="xsd:string">Recreation</cell>
            <cell xsi:type="xsd:string">Sports</cell>
            <cell xsi:type="xsd:double">69575</cell>
         </row>
         <row>
            <cell xsi:type="xsd:string">Australia</cell>
            <cell xsi:type="xsd:string">Travels</cell>
            <cell xsi:type="xsd:string">Car Rent</cell>
            <cell xsi:type="xsd:double">49160</cell>
         </row>
         <row>
            <cell xsi:type="xsd:string">Australia</cell>
            <cell xsi:type="xsd:string">Travels</cell>
            <cell xsi:type="xsd:string">Travel Reservation</cell>
            <cell xsi:type="xsd:double">63300</cell>
         </row>
         <row>
            <cell xsi:type="xsd:string">France</cell>
            <cell xsi:type="xsd:string">Accommodation</cell>
            <cell xsi:type="xsd:string">Bungalow</cell>
            <cell xsi:type="xsd:double">126240</cell>
         </row>
         <row>
            <cell xsi:type="xsd:string">France</cell>
            <cell xsi:type="xsd:string">Accommodation</cell>
            <cell xsi:type="xsd:string">Hotel Room</cell>
            <cell xsi:type="xsd:double">116790</cell>
         </row>
         <row>
            <cell xsi:type="xsd:string">France</cell>
            <cell xsi:type="xsd:string">Accommodation</cell>
            <cell xsi:type="xsd:string">Hotel Suite</cell>
            <cell xsi:type="xsd:double">320220</cell>
         </row>
         <row>
            <cell xsi:type="xsd:string">France</cell>
            <cell xsi:type="xsd:string">Food &amp;amp; Drinks</cell>
            <cell xsi:type="xsd:string">Fast Food</cell>
            <cell xsi:type="xsd:double">28440</cell>
         </row>
         <row>
            <cell xsi:type="xsd:string">France</cell>
            <cell xsi:type="xsd:string">Food &amp;amp; Drinks</cell>
            <cell xsi:type="xsd:string">Poolside Bar</cell>
            <cell xsi:type="xsd:double">46320</cell>
         </row>
         <row>
            <cell xsi:type="xsd:string">France</cell>
            <cell xsi:type="xsd:string">Food &amp;amp; Drinks</cell>
```

```
            <cell xsi:type="xsd:string">Restaurant</cell>
            <cell xsi:type="xsd:double">32640</cell>
         </row>
         <row>
            <cell xsi:type="xsd:string">France</cell>
            <cell xsi:type="xsd:string">Recreation</cell>
            <cell xsi:type="xsd:string">Activities</cell>
            <cell xsi:type="xsd:double">9000</cell>
         </row>
         <row>
            <cell xsi:type="xsd:string">France</cell>
            <cell xsi:type="xsd:string">Recreation</cell>
            <cell xsi:type="xsd:string">Excursion</cell>
            <cell xsi:type="xsd:double">120050</cell>
         </row>
         <row>
            <cell xsi:type="xsd:string">France</cell>
            <cell xsi:type="xsd:string">Recreation</cell>
            <cell xsi:type="xsd:string">Sports</cell>
            <cell xsi:type="xsd:double">35720</cell>
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            <cell xsi:type="xsd:string">Accommodation</cell>
            <cell xsi:type="xsd:string">Bungalow</cell>
            <cell xsi:type="xsd:double">323231</cell>
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            <cell xsi:type="xsd:string">Hotel Room</cell>
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            <cell xsi:type="xsd:string">Accommodation</cell>
            <cell xsi:type="xsd:string">Hotel Suite</cell>
            <cell xsi:type="xsd:double">320754</cell>
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         <row>
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            <cell xsi:type="xsd:string">Food &amp;amp; Drinks</cell>
            <cell xsi:type="xsd:string">Fast Food</cell>
            <cell xsi:type="xsd:double">32960</cell>
         </row>
         <row>
            <cell xsi:type="xsd:string">Nepal</cell>
            <cell xsi:type="xsd:string">Food &amp;amp; Drinks</cell>
            <cell xsi:type="xsd:string">Poolside Bar</cell>
            <cell xsi:type="xsd:double">37915</cell>
         </row>
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            <cell xsi:type="xsd:string">Food &amp;amp; Drinks</cell>
            <cell xsi:type="xsd:string">Restaurant</cell>
            <cell xsi:type="xsd:double">32980</cell>
         </row>
         <row>
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            <cell xsi:type="xsd:string">Recreation</cell>
            <cell xsi:type="xsd:string">Activities</cell>
            <cell xsi:type="xsd:double">78200</cell>
         </row>
         <row>
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            <cell xsi:type="xsd:string">Recreation</cell>
            <cell xsi:type="xsd:string">Excursion</cell>
            <cell xsi:type="xsd:double">96440</cell>
```

```
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               <cell xsi:type="xsd:string">Sports</cell>
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            </row>
            <row>
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               <cell xsi:type="xsd:string">Travels</cell>
               <cell xsi:type="xsd:string">Car Rent</cell>
               <cell xsi:type="xsd:double">56370</cell>
            </row>
            <row>
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               <cell xsi:type="xsd:string">Travels</cell>
               <cell xsi:type="xsd:string">Travel Reservation</cell>
               <cell xsi:type="xsd:double">74495</cell>
            </row>
            <row>
               <cell xsi:type="xsd:string">US</cell>
               <cell xsi:type="xsd:string">Accommodation</cell>
               <cell xsi:type="xsd:string">Bungalow</cell>
               <cell xsi:type="xsd:double">368870</cell>
            </row>
            <row>
               <cell xsi:type="xsd:string">US</cell>
               <cell xsi:type="xsd:string">Accommodation</cell>
               <cell xsi:type="xsd:string">Hotel Room</cell>
               <cell xsi:type="xsd:double">746828</cell>
            </row>
            <row>
               <cell xsi:type="xsd:string">US</cell>
               <cell xsi:type="xsd:string">Accommodation</cell>
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            </row>
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               <cell xsi:type="xsd:string">Food &amp;amp; Drinks</cell>
               <cell xsi:type="xsd:string">Fast Food</cell>
               <cell xsi:type="xsd:double">66330</cell>
            </row>
            <row>
               <cell xsi:type="xsd:string">US</cell>
               <cell xsi:type="xsd:string">Food &amp;amp; Drinks</cell>
               <cell xsi:type="xsd:string">Poolside Bar</cell>
               <cell xsi:type="xsd:double">88508</cell>
            </row>
            <row>
               <cell xsi:type="xsd:string">US</cell>
               <cell xsi:type="xsd:string">Food &amp;amp; Drinks</cell>
               <cell xsi:type="xsd:string">Restaurant</cell>
               <cell xsi:type="xsd:double">331860</cell>
            </row>
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               <cell xsi:type="xsd:string">Recreation</cell>
               <cell xsi:type="xsd:string">Activities</cell>
               <cell xsi:type="xsd:double">207950</cell>
            </row>
            <row>
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               <cell xsi:type="xsd:string">Recreation</cell>
               <cell xsi:type="xsd:string">Excursion</cell>
               <cell xsi:type="xsd:double">170305</cell>
            </row>
            <row>
```

```
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               <cell xsi:type="xsd:string">Sports</cell>
               <cell xsi:type="xsd:double">74060</cell>
            </row>
            <row>
               <cell xsi:type="xsd:string">US</cell>
               <cell xsi:type="xsd:string">Travels</cell>
               <cell xsi:type="xsd:string">Car Rent</cell>
               <cell xsi:type="xsd:double">34580</cell>
            </row>
            <row>
               <cell xsi:type="xsd:string">US</cell>
               <cell xsi:type="xsd:string">Travels</cell>
               <cell xsi:type="xsd:string">Travel Reservation</cell>
               <cell xsi:type="xsd:double">43200</cell>
            </row>
         </table>
         <headers>
            <row>
               <cell xsi:type="xsd:string">Country</cell>
               <cell xsi:type="xsd:string">Service Line</cell>
               <cell xsi:type="xsd:string">Service</cell>
               <cell xsi:type="xsd:string">Revenue</cell>
            </row>
         </headers>
         <footers />
         <user>Administrator</user>
         <documentation></documentation>
         <documentname>_DaaWSDivers1</documentname>
         <lastrefreshdate>2009-02-20T14:19:01.0</lastrefreshdate>
         <creationdate>2009-02-20T14:43:21.109</creationdate>
         <creator>Administrator</creator>
         <isScheduled>false</isScheduled>
         <tableType>Vertical Table</tableType>
         <nbColumns>4</nbColumns>
         <nbLines>42</nbLines>
      </GetReportBlock_Block1BeachResponse>
   </soap:Body></soap:Envelope>
```

8.5.5 BI service WSDL definition

```
<?xml version="1.0" encoding="utf-16"?>
<definitions xmlns:http="http://schemas.xmlsoap.org/wsdl/http/" xmlns:soap="http://
schemas.xmlsoap.org/wsdl/soap/" xmlns:s="http://www.w3.org/2001/XMLSchema"
xmlns:s0="zozo2" xmlns:tns1="dsws.businessobjects.com" targetNamespace="zozo2"
xmlns="http://schemas.xmlsoap.org/wsdl/" name="BIServices">
   <types>
      <s:schema elementFormDefault="qualified" targetNamespace="zozo2">
         <s:simpleType name="Operator">
            <s:restriction base="s:string">
               <s:enumeration value="EQUAL" />
               <s:enumeration value="GREATER" />
               <s:enumeration value="GREATER_OR_EQUAL" />
               <s:enumeration value="LESS" />
               <s:enumeration value="LESS_OR_EQUAL" />
               <s:enumeration value="NOT_EQUAL" />
               <s:enumeration value="INLIST" />
               <s:enumeration value="NOT_INLIST" />
            </s:restriction>
         </s:simpleType>
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            <s:sequence>
```

```
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            </s:sequence>
         </s:complexType>
         <s:complexType name="DrillFilter">
            <s:sequence>
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               <s:element name="value" type="s:string" />
               <s:element name="operator" type="s0:Operator" />
            </s:sequence>
         </s:complexType>
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nillable="true" />
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maxOccurs="unbounded" nillable="true" />
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minOccurs="0" maxOccurs="unbounded" nillable="true" />
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                  <s:element name="Enter_value_s__for_Country_"
type="s0:LovValueIndex" minOccurs="0" maxOccurs="unbounded" nillable="true" />
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nillable="true" />
                  <s:element name="refresh" type="s:boolean" minOccurs="0"
nillable="true" />
                  <s:element name="getFromLatestDocumentInstance" type="s:boolean"
minOccurs="0" nillable="true" />
                  <s:element name="getFromUserInstance" type="s:boolean"
minOccurs="0" nillable="true" />
                  <s:element name="turnOutputToVTable" type="s:boolean"
minOccurs="0" nillable="true" />
               </s:sequence>
            </s:complexType>
         </s:element>
         <s:element name="GetReportBlock_Block1ff">
            <s:complexType>
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nillable="true" />
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nillable="true" />
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maxOccurs="unbounded" nillable="true" />
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maxOccurs="unbounded" nillable="true" />
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maxOccurs="unbounded" nillable="true" />
                  <s:element name="Enter_value_s__for_Country_"
type="s0:LovValueIndex" minOccurs="0" maxOccurs="unbounded" nillable="true" />
                  <s:element name="resetState" type="s:boolean" minOccurs="0"
nillable="true" />
                  <s:element name="refresh" type="s:boolean" minOccurs="0"
nillable="true" />
```

```
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                  <s:element name="getFromUserInstance" type="s:boolean"
minOccurs="0" nillable="true" />
                  <s:element name="turnOutputToVTable" type="s:boolean"
minOccurs="0" nillable="true" />
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nillable="true" />
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minOccurs="0" nillable="true" />
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minOccurs="0" nillable="true" />
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minOccurs="0" nillable="true" />
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            </s:restriction>
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nillable="true" />
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nillable="true" />
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nillable="true" />
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```

```
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minOccurs="0" nillable="true" />
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minOccurs="0" nillable="true" />
                  <s:element name="turnOutputToVTable" type="s:boolean"
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nillable="true" />
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minOccurs="0" nillable="true" />
                  <s:element name="getFromUserInstance" type="s:boolean"
minOccurs="0" nillable="true" />
                  <s:element name="turnOutputToVTable" type="s:boolean"
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         <s:element name="footers" type="s0:TFooter" />
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         <s:element name="creator" type="s:string" />
         <s:element name="isScheduled" type="s:boolean" />
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      <s:sequence>
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         <s:element name="footers" type="s0:TFooter" />
         <s:element name="user" type="s:string" />
         <s:element name="documentation" type="s:string" />
         <s:element name="documentname" type="s:string" />
         <s:element name="lastrefreshdate" type="s:dateTime" />
         <s:element name="creationdate" type="s:dateTime" />
         <s:element name="creator" type="s:string" />
         <s:element name="isScheduled" type="s:boolean" />
         <s:element name="scheduleStartTime" type="s:dateTime" />
         <s:element name="scheduleEndTime" type="s:dateTime" />
         <s:element name="tableType" type="s:string" />
         <s:element name="nbColumns" type="s:int" />
         <s:element name="nbLines" type="s:int" />
      </s:sequence>
   </s:complexType>
</s:element>
<s:element name="GetReportBlock_Block1ffResponse">
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      <s:sequence>
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         <s:element name="headers" type="s0:THeader" />
         <s:element name="footers" type="s0:TFooter" />
         <s:element name="user" type="s:string" />
         <s:element name="documentation" type="s:string" />
         <s:element name="documentname" type="s:string" />
         <s:element name="lastrefreshdate" type="s:dateTime" />
         <s:element name="creationdate" type="s:dateTime" />
         <s:element name="creator" type="s:string" />
         <s:element name="isScheduled" type="s:boolean" />
         <s:element name="scheduleStartTime" type="s:dateTime" />
         <s:element name="scheduleEndTime" type="s:dateTime" />
         <s:element name="tableType" type="s:string" />
```

```
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                <s:element name="nbLines" type="s:int" />
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    </s:element>
    <s:element name="Drill_Block1ffResponse">
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                <s:element name="headers" type="s0:THeader" />
                <s:element name="footers" type="s0:TFooter" />
                <s:element name="user" type="s:string" />
                <s:element name="documentation" type="s:string" />
                <s:element name="documentname" type="s:string" />
                <s:element name="lastrefreshdate" type="s:dateTime" />
                <s:element name="creationdate" type="s:dateTime" />
                <s:element name="creator" type="s:string" />
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                <s:element name="scheduleStartTime" type="s:dateTime" />
                <s:element name="scheduleEndTime" type="s:dateTime" />
                <s:element name="tableType" type="s:string" />
                <s:element name="nbColumns" type="s:int" />
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    </s:element>
    <s:element name="GetReportBlock_Bloc1Response">
        <s:complexType>
            <s:sequence>
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                <s:element name="headers" type="s0:THeader" />
                <s:element name="footers" type="s0:TFooter" />
                <s:element name="user" type="s:string" />
                <s:element name="documentation" type="s:string" />
                <s:element name="documentname" type="s:string" />
                <s:element name="lastrefreshdate" type="s:dateTime" />
                <s:element name="creationdate" type="s:dateTime" />
                <s:element name="creator" type="s:string" />
                <s:element name="isScheduled" type="s:boolean" />
                <s:element name="scheduleStartTime" type="s:dateTime" />
                <s:element name="scheduleEndTime" type="s:dateTime" />
                <s:element name="tableType" type="s:string" />
                <s:element name="nbColumns" type="s:int" />
                <s:element name="nbLines" type="s:int" />
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        </s:complexType>
    </s:element>
    <s:element name="Drill_Bloc1Response">
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                <s:element name="headers" type="s0:THeader" />
                <s:element name="footers" type="s0:TFooter" />
                <s:element name="user" type="s:string" />
                <s:element name="documentation" type="s:string" />
                <s:element name="documentname" type="s:string" />
                <s:element name="lastrefreshdate" type="s:dateTime" />
                <s:element name="creationdate" type="s:dateTime" />
                <s:element name="creator" type="s:string" />
                <s:element name="isScheduled" type="s:boolean" />
                <s:element name="scheduleStartTime" type="s:dateTime" />
                <s:element name="scheduleEndTime" type="s:dateTime" />
                <s:element name="tableType" type="s:string" />
                <s:element name="nbColumns" type="s:int" />
                <s:element name="nbLines" type="s:int" />
            </s:sequence>
        </s:complexType>
    </s:element>
```

```
         <s:element name="QaaWSHeader">
            <s:complexType>
               <s:sequence>
                  <s:element name="sessionID" type="s:string" minOccurs="0"
maxOccurs="1" nillable="true" />
                  <s:element name="serializedSession" type="s:string" minOccurs="0"
maxOccurs="1" nillable="true" />
               </s:sequence>
            </s:complexType>
         </s:element>
      </s:schema>
   </types>
   <message name="GetReportBlock_Block1SoapIn">
      <part name="parameters" element="s0:GetReportBlock_Block1" />
      <part name="request_header" element="s0:QaaWSHeader" />
   </message>
   <message name="GetReportBlock_Block1SoapOut">
      <part name="parameters" element="s0:GetReportBlock_Block1Response" />
   </message>
   <message name="Drill_Block1SoapIn">
      <part name="parameters" element="s0:Drill_Block1" />
      <part name="request_header" element="s0:QaaWSHeader" />
   </message>
   <message name="Drill_Block1SoapOut">
      <part name="parameters" element="s0:Drill_Block1Response" />
   </message>
   <message name="GetReportBlock_Block1ffSoapIn">
      <part name="parameters" element="s0:GetReportBlock_Block1ff" />
      <part name="request_header" element="s0:QaaWSHeader" />
   </message>
   <message name="GetReportBlock_Block1ffSoapOut">
      <part name="parameters" element="s0:GetReportBlock_Block1ffResponse" />
   </message>
   <message name="Drill_Block1ffSoapIn">
      <part name="parameters" element="s0:Drill_Block1ff" />
      <part name="request_header" element="s0:QaaWSHeader" />
   </message>
   <message name="Drill_Block1ffSoapOut">
      <part name="parameters" element="s0:Drill_Block1ffResponse" />
   </message>
   <message name="GetReportBlock_Bloc1SoapIn">
      <part name="parameters" element="s0:GetReportBlock_Bloc1" />
      <part name="request_header" element="s0:QaaWSHeader" />
   </message>
   <message name="GetReportBlock_Bloc1SoapOut">
      <part name="parameters" element="s0:GetReportBlock_Bloc1Response" />
   </message>
   <message name="Drill_Bloc1SoapIn">
      <part name="parameters" element="s0:Drill_Bloc1" />
      <part name="request_header" element="s0:QaaWSHeader" />
   </message>
   <message name="Drill_Bloc1SoapOut">
      <part name="parameters" element="s0:Drill_Bloc1Response" />
   </message>
   <portType name="BIServicesSoap">
      <operation name="GetReportBlock_Block1">
         <documentation />
         <input message="s0:GetReportBlock_Block1SoapIn" />
         <output message="s0:GetReportBlock_Block1SoapOut" />
      </operation>
      <operation name="Drill_Block1">
         <documentation />
         <input message="s0:Drill_Block1SoapIn" />
         <output message="s0:Drill_Block1SoapOut" />
      </operation>
      <operation name="GetReportBlock_Block1ff">
         <documentation />
         <input message="s0:GetReportBlock_Block1ffSoapIn" />
```

```
         <output message="s0:GetReportBlock_Block1ffSoapOut" />
      </operation>
      <operation name="Drill_Block1ff">
         <documentation />
         <input message="s0:Drill_Block1ffSoapIn" />
         <output message="s0:Drill_Block1ffSoapOut" />
      </operation>
      <operation name="GetReportBlock_Bloc1">
         <documentation />
         <input message="s0:GetReportBlock_Bloc1SoapIn" />
         <output message="s0:GetReportBlock_Bloc1SoapOut" />
      </operation>
      <operation name="Drill_Bloc1">
         <documentation />
         <input message="s0:Drill_Bloc1SoapIn" />
         <output message="s0:Drill_Bloc1SoapOut" />
      </operation>
   </portType>
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      <soap:binding transport="http://schemas.xmlsoap.org/soap/http"
style="document" />
      <operation name="GetReportBlock_Block1">
         <documentation />
         <soap:operation soapAction="zozo2/GetReportBlock_Block1"
style="document" />
         <input>
            <soap:header message="s0:GetReportBlock_Block1SoapIn"
part="request_header" use="literal">
               <soap:headerfault message="s0:GetReportBlock_Block1SoapIn"
part="request_header" use="literal" />
            </soap:header>
            <soap:body use="literal" parts="parameters" />
         </input>
         <output>
            <soap:body use="literal" />
         </output>
      </operation>
      <operation name="Drill_Block1">
         <documentation />
         <soap:operation soapAction="zozo2/Drill_Block1" style="document" />
         <input>
            <soap:header message="s0:Drill_Block1SoapIn" part="request_header"
use="literal">
               <soap:headerfault message="s0:Drill_Block1SoapIn"
part="request_header" use="literal" />
            </soap:header>
            <soap:body use="literal" parts="parameters" />
         </input>
         <output>
            <soap:body use="literal" />
         </output>
      </operation>
      <operation name="GetReportBlock_Block1ff">
         <documentation />
         <soap:operation soapAction="zozo2/GetReportBlock_Block1ff"
style="document" />
         <input>
            <soap:header message="s0:GetReportBlock_Block1ffSoapIn"
part="request_header" use="literal">
               <soap:headerfault message="s0:GetReportBlock_Block1ffSoapIn"
part="request_header" use="literal" />
            </soap:header>
            <soap:body use="literal" parts="parameters" />
         </input>
         <output>
            <soap:body use="literal" />
         </output>
      </operation>
```

```
      <operation name="Drill_Block1ff">
         <documentation />
         <soap:operation soapAction="zozo2/Drill_Block1ff" style="document" />
         <input>
            <soap:header message="s0:Drill_Block1ffSoapIn" part="request_header"
use="literal">
               <soap:headerfault message="s0:Drill_Block1ffSoapIn"
part="request_header" use="literal" />
            </soap:header>
            <soap:body use="literal" parts="parameters" />
         </input>
         <output>
            <soap:body use="literal" />
         </output>
      </operation>
      <operation name="GetReportBlock_Bloc1">
         <documentation />
         <soap:operation soapAction="zozo2/GetReportBlock_Bloc1" style="document" />
         <input>
            <soap:header message="s0:GetReportBlock_Bloc1SoapIn"
part="request_header" use="literal">
               <soap:headerfault message="s0:GetReportBlock_Bloc1SoapIn"
part="request_header" use="literal" />
            </soap:header>
            <soap:body use="literal" parts="parameters" />
         </input>
         <output>
            <soap:body use="literal" />
         </output>
      </operation>
      <operation name="Drill_Bloc1">
         <documentation />
         <soap:operation soapAction="zozo2/Drill_Bloc1" style="document" />
         <input>
            <soap:header message="s0:Drill_Bloc1SoapIn" part="request_header"
use="literal">
               <soap:headerfault message="s0:Drill_Bloc1SoapIn"
part="request_header" use="literal" />
            </soap:header>
            <soap:body use="literal" parts="parameters" />
         </input>
         <output>
            <soap:body use="literal" />
         </output>
      </operation>
   </binding>
   <service name="zozo2">
      <documentation />
      <port name="BIServicesSoap" binding="s0:BIServicesSoap">
         <soap:address location="http://noux:8080/dswsbobje/qaawsservices/
queryasaservice?
&cuid=AduDhWyVezRPnnJM_FDS4S0&authType=secEnterprise&locale=en_US&timeout=60" />
      </port>
   </service>
</definitions>
```

9 Interacting with Web Intelligence documents in Reading mode

Web Intelligence shows complex and varied data in reports that you can understand quickly and easily.

Web Intelligence documents, based on queries created in one of several available applications, for example BEx or OLAP, are designed in *Design* mode to be viewed in *Reading* mode by any number of general or specific groups or individuals. This section explains or directs you to information on the functions you can perform while in the *Reading* mode.

Depending on the user security and access rights set for you by the BI administrator, when you open a Web Intelligence document in *Reading* mode, there are several actions you can perform on reports in the document.

Actions you can perform in a Web Intelligence document include:

- Create, open, save, print, refresh export, send documents.
- Search for a document in the Corporate or Personal documents or on your computer.
- View the history of a scheduled document or the document outline.
- Track changes in a document.
- Refine the data displayed through filters and drilling.

> **Note**
>
> If you plan to open Web Intelligence Rich Client from your computer to view documents, you need to complete certain processes. For more information, consult the *Setting up and using Web Intelligence Rich Client* section in this document or online help.

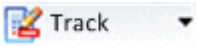
Related Information

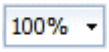
Features available in Web Intelligence Reading mode [page 805]
To start Web Intelligence in the BI launch pad [page 31]
About Web Intelligence [page 21]
Side Panel tabs in Web Intelligence [page 29]
About setting Web Intelligence preferences [page 44]
Choosing the viewing and design interfaces [page 44]
Saving and exporting documents in Reading mode [page 806]
Viewing modes [page 225]
Tracking changes in data [page 234]

9.1 Features available in Web Intelligence Reading mode

When you view Web Intelligence documents in the *Reading* mode, there are several buttons, icons and other features that you can use, depending on the user security and access rights set for you by the BI administrator.

Table 318: Reading mode features

Task	Icon	Description
Create documents		Click to create a document based on a universe or that does not require access to a data source.
Open documents		Click to open documents in the personal folder or from corporate folders to which access has been granted by the BI administrator.
Save documents		Click to save a document to the personal folder or to a corporate folder to which access has been granted by the BI administrator.
Print documents		Click to print a document.
Search for a document		Click to search for a document in the personal folder or in corporate folders to which access has been granted by the BI administrator.
View the document history		Click to view the history of the document.
Export documents or one of its reports		Click to export a document or one of its reports in a variety of formats.
Send a document		Click to send a document or one of its reports in a variety of formats.
Undo or redo an action		Click to control an action performed on a report in a document.
Refresh a document		Click to refresh a document so that the latest data appears.
Access help		Click to access the user help for Web Intelligence.
Track changes in a document		Click to activate the change tracking for a document.
Drill on data		Click to activate drilling in the document on any objects with more than one level.
Filter document data		Click to create a simple filter that limits the data shown.
Freeze table headers , rows and columns		Choose to freeze headers, rows and columns in tables so that they remain displayed you are scrolling through a table.

Task	Icon	Description
Show document outline		Click to show the outline of a document and its reports, if one exists.
Toggle between pages		You can move forward or backwards one page, enter a specific page number, or toggle to the beginning or end of a report in a document.
Toggle between page displays		You can toggle easily and quickly between Quick Display and Page mode.
Zoom in a report		You can zoom in and out on a displayed report.

Related Information

Choosing the viewing and design interfaces [page 44]

9.2 Saving and exporting documents in Reading mode

You use Web Intelligence to save and export the current document or active report in one or more locations or formats.

> **Note**
>
> You cannot use the *Save As* feature to save the document or report as a text, Excel or PDF file in the Web Intelligence HTML interface, however you can export documents or reports in those formats to your computer or another location.

Related Information

To save a document as a text file [page 407]
To save a document in the corporate repository [page 406]
To save a document as a PDF file [page 406]
To save a document as an Excel spreadsheet [page 405]
Exporting documents, reports or data [page 409]

9.3 Printing reports

You can print one or multiple reports from a Web Intelligence document.

You print documents directly from Web Intelligence Applet interface and Web Intelligence Rich Client. However, when you print from the Web Intelligence HTML interface, you export the document to a PDF file that you can then print.

> **Note**
>
> If a report is wider than the width of the paper size defined in the *Report Page Layout*, page breaks are inserted. The paper size and page orientation for printing can be different from the paper size and page orientation set for the reports when you view them in Web Intelligence Applet interface or Web Intelligence Rich Client.

9.3.1 To print reports in Web Intelligence

A variety of methods are available for printing reports in Web Intelligence.

1. Open a Web Intelligence document.
2. Do one of the following:
   - In the Web Intelligence HTML interface:
     - If you are in *Reading* mode, click the arrow next to the *Print* icon on the toolbar.
     - If you are in *Design* or *Data* mode, click the arrow next to the *Print* icon in the *File* tab toolbar.
   - In the Web Intelligence Applet interface or Web Intelligence Rich Client interface:
     - If you are in *Reading* mode, click the *Print* icon on the toolbar.
     - If you are in *Design* or *Data* mode, click the *Print* icon in the *File* tab toolbar.

   The *Print* dialog box appears.
3. Do one of the following:
   - In the Web Intelligence HTML interface: choose your printing options and click *Print*.
   - In the Web Intelligence Applet interface or Web Intelligence Rich Client interface: choose your printing options and click *OK*.
   - In the Web Intelligence HTML interface: the *File Download* dialog box appears. Open the PDF file and print the report.
   - In the Web Intelligence Applet interface or Web Intelligence Rich Client interface: the report is sent to the printer.

   > **Note**
   >
   > In the Web Intelligence HTML interface, click the *Print* icon to print the report with current settings.

9.4 Finding text in a report page

You can search for text in a report in a Web Intelligence document in *Reading* or *Design* mode.

1. Open a Web Intelligence document.
2. Do one of the following:
   - If you are in *Reading* mode, click the *Find* icon on the toolbar.
   - If you are in *Design* mode, click the *Find* icon on the toolbar in the *File* tab toolbar.

   The *Find* or *Search Bar* appears at the bottom of the report panel.
3. Type text in the *Find* or *Search Bar* box and press `Enter` or click the *Find* icon.

> **Note**
>
> To perform a case-sensitive search, click the arrow next to the box and select *Match case*.

4. If the text occurs more than once, click the *Next* or *Previous* icon to highlight other occurrences of the text.

> **Note**
>
> If you are creating a report using the Web Intelligence Applet interface or Web Intelligence Rich Client, you can click *Highlight all* to highlight all occurrences of the text on the page. This option is not available once you have saved or closed the document.

To close the *Find* or *Search Bar* box, click the *X* located at the far end of the *Find* or *Search Bar*.

9.5 To send a document by email

You can send a Web Intelligence document as an email attachment.

1. Open a Web Intelligence document.
2. Depending on the Web Intelligence interface you are using, do the following tasks:
   - In the Web Intelligence HTML interface:
     - In *Reading* mode, select *Send to Mail* from the *Send to* icon dropdown list.
     - In the *Design* mode, in the *File* tab, select *Send to Mail* from the *Send to* icon dropdown list.
   - In the Web Intelligence Applet interface:
     - In *Reading* mode, select *Send to email* from the *Send document* icon dropdown list.
     - In the *Design* or *Data* mode, in the *File* tab, select *Send to email* from the *Send document* icon dropdown list.
   - In Web Intelligence Rich Client:
     - In *Reading* mode, select a document format from the *Send by E-mail attachment* icon dropdown list.
     - In the *Design* or *Data* mode, in the *File* tab, select a document format from the *Send by E-mail attachment* icon dropdown list.

> **Note**
>
> If your user profile does not allow you to send files by email, then the options for sending a document by email do not appear, or you can encounter an error message if you try to use any of the options.

3. In the send by email dialog box, you can select the people to whom you wish to send an email, and enter a subject and message.
4. Deactivate *Add Attachment* if you do not want to send the document as an attachment.
5. If you do wish to send the document as an attachment and wish to use a different name from the document's name, select *Use Specific Name* and enter a different name.
6. Enter the addressees, any email text required, and send the email.

9.6 To send a document to another user or group in the CMS

You can send a Web Intelligence document to another user in the CMS from the Web Intelligence HTML or Web Intelligence Applet interface.

1. Open a Web Intelligence document in the Web Intelligence HTML or Web Intelligence Applet interface.
2. Do one of the following:
   - If you are in *Reading* mode, select *Send to User* from the *Send to* or *Send document* icon dropdown list.
   - If you are in *Design* or *Data* mode, in the *File* tab toolbar, select *Send to User* from the *Send to* or *Send document* icon dropdown list.

> **Note**
>
> This option is not available in the Web Intelligence Rich Client.

3. Select the users or groups to which you want to send the document from the list of users and groups.
4. Click *Use Automatically Generated Name* to send the document with an automatically-generated name.
5. Click *Use Specific Name* and type the name in the box to send if you want to name the document.
6. Click *Shortcut* to send a shortcut to the document or *Copy* to send a copy of the document.
7. Click *Send*.

9.7 To send a document by FTP

You can send a Web Intelligence document by FTP in the Web Intelligence HTML or Web Intelligence Applet interface.

1. Open a Web Intelligence document in the Web Intelligence HTML or Web Intelligence Applet interface.

> **Note**
>
> This option is not available in Web Intelligence Rich Client.

> **Note**
>
> Save any document changes before sending it.

2. Do one of the following:
   - If you are in *Reading* mode, from the *Send to* or *Send document* icon dropdown list, select *Send to Ftp*.
   - If you are in *Design* or *Data* mode, from the *Send to* or *Send document* icon dropdown list, select *Send to Ftp*.

> **Note**
>
> You must have the required permissions to send files via FTP. If you do not have the permissions, the *Send to FTP* dialog box does not appear, or appears with an error message.

3. Type the host name in the *Host* box.
4. Type the port in the *Port* box.
5. Type the username and password in the *User Name* and *Password* boxes.
6. Type the account in the *Account* box.
7. Type the directory in the *Directory* box.
8. Click *Use Automatically Generated Name* to send the document with an automatically-generated name.
9. Click *Use Specific Name* and type the name in the box to send if you want to name the document.
10. Click *Send*.

9.8 Viewing modes

In the *Reading* and *Design* document modes, you can view reports in different modes depending on how you want to work with data and how you want the data to appear.

The viewing modes are controlled by buttons at the bottom of the Web Intelligence screen, on the status bar.

9.8.1 Page view mode

In the *Reading* and *Design* document modes, the *Page* view mode displays the page layout of reports, including page margins, headers, and footers.

Use *Page* view mode when you want to fine-tune the formatting of tables and charts and the layout of report pages.

9.8.2 Quick Display view mode

In the *Reading* and *Design* document modes, the *Quick Display* view mode is the default display mode.

It is a pagination mode that is based on the data, rather than the physical size of report pages. The *Quick Display* view mode displays just the tables, reports, and free standing cells in reports and displays a maximum number of records vertically and horizontally, depending on the *Quick Display* settings. The *Quick Display* view mode also specifies the minimum page width and height and the amount of padding around the edges of the report.

Because the *Quick Display* view mode restricts the number of horizontal and vertical rows, a report might not contain all possible data.

Use the *Quick Display* view mode when you want to focus on analyzing results, add calculations or formulas, or add breaks or sorts to tables to organize results.

The *Quick Display* view mode properties are configurable either by the BI administrator, or directly in the interface.

Configuration	Property
BI administrator	• Maximum vertical records • Maximum horizontal records • Minimum page width • Minimum page height • Right padding • Bottom padding
Interface	• Vertical records per page **Note** ○ This property impacts only horizontal tables and cross tables. ○ Horizontal tables are never cut vertically. ○ The number of rows in a horizontal table is ignored in vertical records calculations. • Horizontal records per page **Note** ○ This property impacts only vertical tables, forms and cross tables. ○ The number of rows in a vertical table is ignored in horizontal records calculations.

Other notes:

- Table headers and footers do not count as rows.
- Free standing cells and charts do not count as rows.
- Section cells do not count as rows when the section is not empty.
- Sections cells count as vertical rows when the section is empty.
- The *Avoid Page Break in Block* option has no effect in *Quick Display* view mode.

9.8.3 To switch between viewing modes

You can switch between *Quick Display* and *Page* view modes.

1. Open a Web Intelligence document, in the *Reading* or *Design* document mode.
2. In the status bar at the bottom of the document, select one of the following icons:
   - To display a report in *Quick Display* view mode, click the *Quick Display* icon.
   - To display a report in *Page* view mode, click the *Page* icon.

9.9 Tracking changes in data

To make informed and effective business intelligence decisions, you need to understand how the data on which you base those decisions changes over time.

You can track and display data changes to help you focus your analysis on key areas and avoid wasting time exploring irrelevant data.

When you track data changes, you select a particular data refresh as a reference point. This data is known as the reference data. When you activate data tracking, you see your data in relation to the reference data.

Here are some examples of data tracking:

- If an outlet no longer appears in a list of the top outlets by sales, it would be interpreted as deleted from the list. You can use this information to investigate why the outlet is no longer a top performer.
- If sales have decreased in a region, data tracking displays the decrease. You can then drill down into the data for the region to understand why revenue is falling.

In both these cases, data tracking makes the current data more meaningful by placing it in context with older data. Without this context it is much more difficult to identify trends.

> **Note**
>
> - The information in the Status Bar at the bottom of the report indicates the document level status. An asterisk on a report tab indicates that change tracking is activated on the report.
> - Status “changes” of tracking data changes is only for a detail value when displayed with its associated dimension in the table. When the detail is given without it is associated dimension it is considered as a dimension and does not show the status changes (but only shows when the detail is inserted/deleted).

Related Information

Types of data change [page 235]
Automatic update tracking mode [page 235]
Absolute reference data tracking mode [page 235]
To activate data tracking [page 235]
To display changed data [page 237]

Configuring the appearance of changed data [page 236]
To configure the appearance of changed data [page 236]
How changed data is displayed in blocks [page 237]
How changed data is displayed in blocks with breaks [page 241]
How changed data is displayed in sections [page 239]
How changed data is displayed in reports with merged dimensions [page 238]
How changed data is displayed in charts [page 241]

9.10 Drilling on report data in Reading mode

Drilling on reports lets you look deeper into your data to discover the details behind a good or bad summary result displayed in tables, charts, or sections.

Example

Why did sales of accessories, outwear, and overcoats rise in Q3?

You work for a US national fashion retail chain, and are in charge of sales of accessories, outerwear and overcoat clothing lines in western states. You see that revenue is much higher for Q3 than the other quarters. To understand why, you drill down to look at the factors behind the result and you see that jewelry sales were much higher in July.

9.10.1 Setting drill options

Before you begin a drill session, you can set your drill options to specify how reports will change each time you drill.

How you set the drill options depends on the interface you are using:

- BI launch pad, if you are using the Web Intelligence HTML or Web Intelligence Applet interface.
- Your computer, if you are using Web Intelligence Rich Client from the BI platform deployment on your computer.

Related Information

To set drill options in the BI launch pad [page 434]
To set drill options in Web Intelligence Rich Client [page 434]
Synchronize drill on report blocks option [page 435]
Hide Drill toolbar on startup option [page 435]
Start drill session on existing report option [page 436]
Start drill session on a duplicate report option [page 436]

9.10.2 Drilling on measures in tables and sections

When you drill on a measure value, you drill one level down for each related dimension in the block, and you see the measure calculated for the displayed dimensions.

Example

Drill on annual sales revenue results to see the breakdown by city and quarter

For example, you drill down on the year 2003 sales revenue value for California, which is displayed on a crosstab that shows sales revenue by year and by state.

The drilled report displays sales revenue by quarter (one level below Year) and by city (one level below State) for California.

9.10.3 Drilling on dimensions in tables and sections

When you drill on a dimension to see the more data behind the displayed result, it is calculated according to the values to which you drill.

Dimensions typically represent character data, such as customer or business names, and dates. Calculations are based around the dimensions in a report. For example, a report calculates a region's total sales revenue for a given year where a Sales Revenue measure is calculated based on the State and Year dimensions.

If you drill on Year, you display sales revenue by state and quarter, because Quarter is the next dimension in the time hierarchy below Year.

Note

Detail objects cannot be drilled on in reports.

9.10.4 Drilling by other dimensions in a report

When you drill down or up, you move through a hierarchy one dimension at a time.

However, you can get another view of the data by slicing it in a different way, and then look at the data in other hierarchies. To do this, you drill by the other dimensions that interest you.

Note

You can only use *Drill by* with a dimension that is included in the scope of analysis of the document.

Example

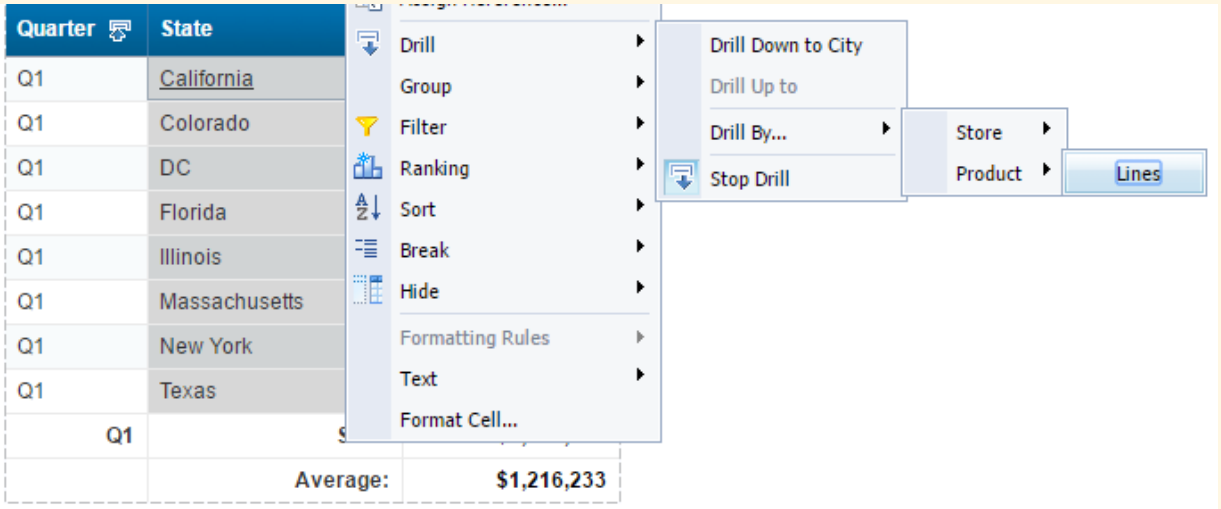
Drilling by the Products hierarchy to slice sales revenue results by product

You work as regional manager for California in a retail clothing store, and have been sent the following report that shows quarterly sales revenue by state:

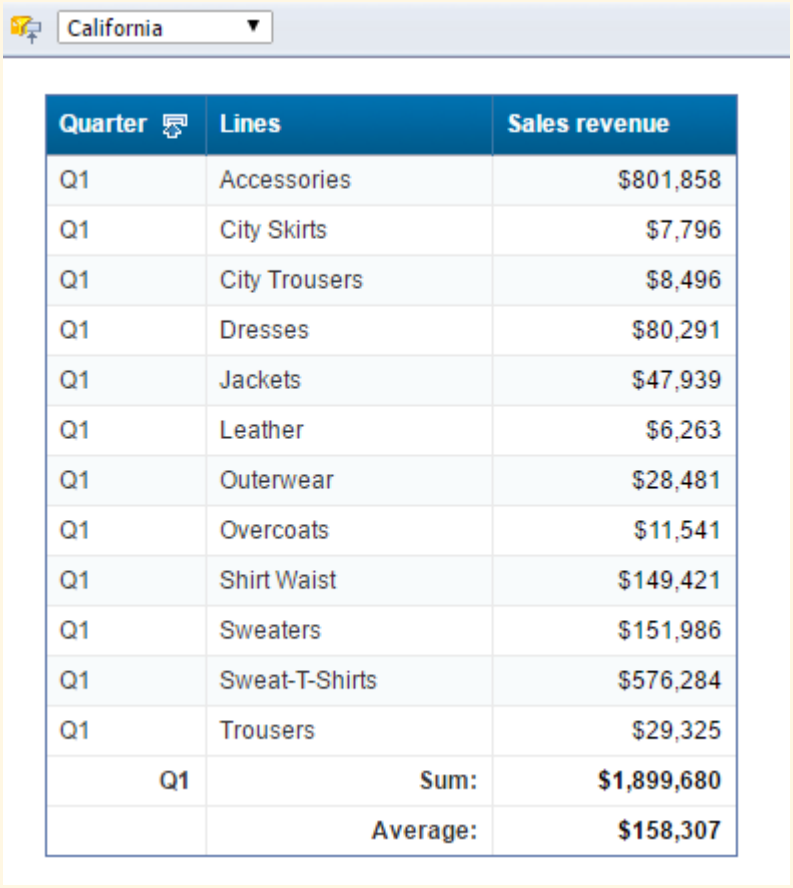
Quarter	State	Sales revenue
Q1	California	$1,899,680
Q1	Colorado	$525,682
Q1	DC	$766,822
Q1	Florida	$515,688
Q1	Illinois	$846,408
Q1	Massachusetts	$312,896
Q1	New York	$1,987,115
Q1	Texas	$2,875,569
Q1	Sum:	$9,729,861
	Average:	$1,216,233

You are only interested in analyzing the results in the state of California. In addition, you want to analyze the sales revenue broken down by each product line you sell. To drill on California data, you place your pointer on the table cell that says California.

If you drilled down now, however, you would drill to results for each city within California, because [City] is the dimension below [State]. Instead, you select *Drill by* from the drill menu and then you navigate through the dimensions on the Products hierarchy by selecting the sub-menus until you reach the [Lines] dimension.



The drilled report displays the detailed sales revenue results for each product line sold in California.



Quarter	Lines	Sales revenue
Q1	Accessories	$801,858
Q1	City Skirts	$7,796
Q1	City Trousers	$8,496
Q1	Dresses	$80,291
Q1	Jackets	$47,939
Q1	Leather	$6,263
Q1	Outerwear	$28,481
Q1	Overcoats	$11,541
Q1	Shirt Waist	$149,421
Q1	Sweaters	$151,986
Q1	Sweat-T-Shirts	$576,284
Q1	Trousers	$29,325
Q1	**Sum:**	**$1,899,680**
	Average:	**$158,307**

Related Information

Levels of scope of analysis [page 82]
Setting the scope of analysis [page 81]

9.10.5 Drilling on charts

Drilling down, up, or by on a chart, provides you with a graphical explanation for why summary results are particularly high or low.

You can drill on:

- dimensions – by drilling on chart axes or the chart legend
- measures – by drilling on the data bars or markers in the body of the chart

You cannot drill by dimensions on chart axes. However, you can drill by dimensions on chart legends.

Related Information

Drilling on axis legends [page 447]
Drilling on dimensions via chart axes [page 444]
Drilling on measures in charts [page 444]
Restrictions when drilling measures on charts [page 446]

9.10.6 To take a snapshot of report drill results

You can create a report in the existing document that contains the results of a drill action.

1. Open a Web Intelligence document in *Reading* or *Design* mode.
2. Activate the Drill mode:
   - If you are in *Reading* mode, select *Start Drill Mode* from the *Drill* dropdown list.
   - If you are in *Design* mode, go to the *Analysis* tab, and in the *Interact* subtab, select *Start Drill Mode* from the *Drill* dropdown list.
3. Do one of the following:
   - If you are in *Reading* mode, select *Snapshot* from the *Drill* dropdown list.
   - If you are in *Design* mode, go to the *Analysis* tab, and in the *Interact* subtab, select *Snapshot* from the *Drill* dropdown list.

9.11 Freezing table headers, columns and rows

When you view a Web Intelligence report in *Reading* mode, you can freeze headers, and rows or columns in tables to keep them displayed as you scroll through data.

You can freeze one or several zones of your table, depending on the type of table. The following table lists zones you can freeze according to the type of table:

Table 319:

Type of table	Zones you can freeze
Vertical table	Header or data columns or both.
Horizontal table	Header or data rows or both.
Cross table	Vertical header or horizontal header or both.

You can freeze up to 5 data rows or columns.

Related Information

Unfreezing table headers, columns and rows [page 819]

9.11.1 To freeze table headers

You can freeze table headers in a Web Intelligence document in *Reading* mode.

1. Open a Web Intelligence document in *Reading* mode.
2. In the *Status Bar* of the *Report Panel*, click the *Quick Display mode* button.
3. Select a cell in a table.
4. In the main toolbar, do one of the following:
   - Click the *Freeze* icon to freeze headers directly.
   - Click the *arrow* next to the *Freeze* icon and select *Freeze Header Rows* in vertical or cross tables, or *Freeze Header Columns* in horizontal or cross tables.

Headers are frozen.

9.11.2 To freeze top rows in a horizontal table

You can freeze the top rows in a table in a Web Intelligence document in *Reading* mode.

1. Open a Web Intelligence document in *Reading* mode.
2. In the *Status Bar* of the *Report Panel*, click the *Quick Display mode* button.
3. Select a cell in a horizontal table.
4. In the main toolbar, click the *arrow* next to the *Freeze* icon.
5. Under *Freeze Top Rows*, select the number of rows you want to freeze.

For example, if you select *2*, the two first top rows remain displayed while you scroll down in the table.

9.11.3 To freeze left columns in a vertical table

You can freeze columns in a table in a Web Intelligence document in *Reading* mode.

1. Open a Web Intelligence document in *Reading* mode.
2. In the *Status Bar* of the *Report Panel*, click the *Quick Display mode* button.
3. Select a cell in a vertical table.
4. In the main toolbar, click the *arrow* next to the *Freeze* icon.
5. Under *Freeze Left Columns*, select the number of columns you want to freeze.

For example, if you select *2*, the two first left columns remain displayed while you scroll sideways in the table.

9.12 Unfreezing table headers, columns and rows

To know which zones are frozen in a table, click the *arrow* next to the *Freeze* icon in the main toolbar.

If an element is selected, this element is frozen in the table.

Related Information

Freezing table headers, columns and rows [page 817]

9.12.1 To unfreeze table headers

You can unfreeze table headers in a Web Intelligence document in *Reading* mode.

1. Open a Web Intelligence document in *Reading* mode.
2. In the *Status Bar* of the *Report Panel*, click the *Quick Display Mode* button.
3. Select a cell in a table that contains frozen headers.
4. In the main toolbar, click the *arrow* next to the *Freeze* icon.
5. Select any of the following:
   - *Freeze Header Rows*
   - *Freeze Header Columns*

Headers are no longer frozen.

9.12.2 To unfreeze table rows and columns in vertical and horizontal tables

You can unfreeze rows and columns in a table in a Web Intelligence document in *Reading* mode.

1. Open a Web Intelligence document in *Reading* mode.
2. In the *Status Bar* of the *Report Panel*, click the *Quick Display mode* button.
3. Select a cell in a table that contains frozen rows or columns.
4. In the main toolbar, click the *arrow* next to the *Freeze* icon.
5. Select *0*.

Rows or columns are no longer frozen.

9.13 Using simple report filters

Simple report filters filter information in an open Web Intelligence report, not in the document or in specific objects in the report.

The *Report Filter* toolbar provides a quick method for adding simple report filters to reports.

You can filter on the following objects in a report:

- Dimension or detail objects
- Hierarchies, characteristics or attributes for OLAP universes or BEx queries (but not at the hierarchy level or on measures)

Simple report filters can only use the *Equal to* operator and can only filter on a single value. They can use the *All values* operator.

> **Restriction**
>
> In 4.2 SP3, available filter operators on attributes for queries based on OLAP sources are limited to “Equal to”, “In List” and “Matches pattern”. This only applies to attributes directly associated to hierarchies.

Related Information

To create simple report filters [page 460]

9.13.1 To create simple report filters

You can filter a report on the object value you select. For example, if you select "US" from the list of values of the Country object, the report is filtered to exclude all rows where Country does not have the value "US".

1. Open a Web Intelligence document.
2. Do one of the following:
   - In the *Reading* mode, click *Filter Bar*.
   - In *Design* mode, in the *Analysis* tab, select the *Interact* subtab and click *Filter Bar*.

   The *Report Filter* toolbar appears.

> **Note**
>
> When opening the filter bar, filters are automatically inserted when their report scopes are:
> - Single value (*Equal to* operator)
> - With the *All Values* operator
>
> Those filters are no longer displayed in the Filter box.

> **Note**
>
> When collapsing the *Report Filter* toolbar, all "simple filters" are put back as *Equal to* or *All values* report filters that filter on the entire report. To avoid creating *All values* filters, remove the object from the filter bar before you collapse it.

3. Click the *add simple report filter* icon on the toolbar and select the object on which you want to filter from the menu.

   You can add multiple objects to the toolbar to create multiple filters.

   > **Note**
   >
   > Depending on the data sources and selected objects, the values or objects available in a filter may depend on the values set in another filter object.

4. Select the value on which you want to filter from the dropdown list of values.

   > **Note**
   >
   > For non-hierarchical objects, the list contains all values contained in the report for this object after applying all other report scope filters. For example if you have an *In List* filter reducing this object values, you will have this list of values for the filter bar *Equal to* filter.
   >
   > For hierarchical objects, the list contains the flat list of all member values at any level. This list is in tree view order, not alphabetical order.

   > **Tip**
   >
   > In the Web Intelligence Applet interface, or in Web Intelligence Rich Client, you can drag objects from the tree view to the *Report Filter* toolbar.

To remove a filter:

- In the Web Intelligence HTML interface in *Reading* or *Design* mode, from the dropdown list for the operator in the *Report Filter* toolbar, select *(Remove)*.
- In the Web Intelligence Applet interface or Web Intelligence Rich Client in *Design* mode, select the filter and drag and drop it into the report.

Related Information

To create, edit, and delete standard report filters [page 457]

9.14 Folding and unfolding report data

You can hide and display report data by folding and unfolding the display of different report elements.

You can fold and unfold sections, breaks and tables. Data is concealed and displayed in different ways depending on the report element.

Report element	Result
Section	When a section is folded, section details are hidden and free cells only are displayed. In *Reading* mode, you can fold and unfold sections.
Table or break	When a table or break is folded, the rows are concealed, and only headers and footers are displayed. Tables must have headers and footers to be folded and unfolded. Vertical tables, horizontal tables and cross tables can be folded and unfolded. In *Reading* mode, you can fold and unfold sections.

9.14.1 To fold and unfold report data

You can fold and unfold data in *Reading* and *Design* mode by activating the outline.

1. Open a Web Intelligence document.
2. Select a cell in the table.
3. Do one of the following:
   - In the *Reading* mode, click *Outline*.
   - In the *Design* mode, in the *Analysis* tab, select the *Interact* subtab and click *Outline*.

   The fold and unfold bars appear to the side of and above the report panel, depending on the report structure.
4. Use the +/- or arrow icons on the bars, which correspond to and are aligned with individual report elements, to fold and unfold them.
5. Use the icons at the side or upper part of the bar to fold and unfold all instances of a type of report element.

9.15 Warning icons in charts

Warning icons in charts can alert you when there are chart and data object errors.

The warning icons available are:

- General Warnings, icons displayed on the top left corner of the chart.

  Red X in a white background: impossible to generate the chart. (This could be due to a cache problem - try clearing temporary objects from cache.

White X in a red circle: cannot find the image, the BI administrator should check load balancing settings and enable service monitoring as described in the Business Intelligence Platform Administrator Guide.

Yellow warning: for example dataset too large (technical limit of the server), need to refresh the dataset, other cube errors.

Blue alert: limit for optimal rendering

The display of the General Warning icons is controlled by the *Hide warning icons in chart* setting in the Web Intelligence document properties. If this setting is activated, then no General Warning icons appear in the charts.

- An incompatible chart data warning, small yellow warning icon displayed on the data point.
  These occur if *Show alert when the data is incompatible with the chart* is activated in the chart format options and the dataset is inconsistent with the chart parameters. For example, a warning can appear in a Pie chart with negative values, negative values for a logarithmic scale, or inconsistent hierarchical values for a Tree Map.

Restriction	Definition	Result
Technical limits of the data received from the Visualization Service, which is responsible for displaying data in the chart	Max number of rows = 50,000 **⚠ Restriction** This is a non-configurable parameter. It is hard-coded into the product and cannot be changed by properties of the APS server in CMC or by manually changing an XML file.	Only part of the dataset is rendered and a warning icon appears, as well as an informational tooltip.
Data restricted for optimal rendering	The data is restricted by the chart type and size for optimal appearance.	An alert icon appears, as well as a tooltip showing optimization guidelines.

Related Information

Viewing document properties [page 205]

10 Web Intelligence error messages

Error messages may appear while you are using Web Intelligence.

This section lists the messages and their descriptions grouped by the different components that make up Web Intelligence.

10.1 Web Intelligence (WIJ) Error Messages

Web Intelligence Java interface error messages include the following:

Table 320:

Range	Category
WIJ 10000 - WIJ 77778	Web Intelligence Java interface

10.1.1 `You need to use the Formula Editor to create a formula. (Error: WIJ 10000)`

Cause

You typed a formula into a cell using the Cell Properties panel instead of the Formula Editor.

Action

Launch the Formula Editor and define the formula in the Formula Definition pane.

10.1.2 You cannot position this report component in relation to a block, cell, or section that is positioned relative to this report component. Select a different block, cell or section in the dropdown list or unselect the Relative To option. (WIJ 10500)

Cause

When you position a report component in relation to another report component that references the selected one, you create a circular attachment.

Action

Remove relative positioning, or select a different block, cell, or section for relative positioning.

10.1.3 Web Intelligence requires the Java Runtime Environment (JRE) 1.4.2_01. The currently installed JRE is {0}. Contact your administrator to upgrade to 1.4.2_01 or select the [default VM] entry in the [Java Plug-in Control Panel], if you already have the required version installed. (WIJ 11111)

Cause

When you use the Java interface, a Java applet is installed on your local PC. The Java Runtime Environment 1.4.2_01 (or later version) needs to be installed and selected in order for the report panel to function.

Action

If Java Runtime Environment 1.4.2_01 (or later version) is already installed on your PC, then launch the Java Plugin Control panel. To do this:

- Select the Windows menu: *Start* > *Settings* > *Control Panel*.
- Double-click Java Plug-in.
- On the *Advanced* tab, select Use Java Plug-in Default, then click Apply.

Or

Contact your administrator, and request help with installing Java Runtime Environment 1.4.2_01 (or later version).

10.1.4 An error occurred while the document was being decoded. Try to open the document in the BI Launch Pad, or contact your administrator for further information. (WIJ 20000)

Cause

Web Intelligence cannot decode and open the document in the Java Report Panel.

Action

Open the document in InfoView by clicking the document title where the document is listed on the InfoView Corporate Documents or Personal Documents page.

If this does not work, see your administrator.

10.1.5 An unexpected problem occurred when during document refresh and open. The data source has been modified or deleted, or a prompt on the document has no value selected. (WIJ 20001)

Cause

The document has the Refresh on open option selected. One or more of the following explanations can account for this error:

- The data source has been modified since the document was created.
- The data source has been deleted since the document was created.
- One or more prompts have no values selected.

Action

See your administrator.

10.1.6 Unexpected error. If you cannot reconnect to the server, close your session and start again. (WIJ 20002)

Cause

The server may be down or your user session may be closed.

Action

See your administrator.

10.1.7 Unable to get the first page of the current report.\nCheck the validity of your report. (ERR WIJ 20003).

Cause

The report cannot be displayed because it contains structural errors.

Action

Do one of the following:

- View the report in Structure View and verify the report structure. For example, errors can be caused if report blocks overlap or if the structure of a table contains cells that create an asymmetrical table format. Modify the report structure appropriately.
- Contact your administrator and request them to search for structural anomalies in the report.

10.1.8 The current query contains unresolvable objects. The query will be updated (WIJ 20004).

Cause

There are objects that cannot be resolved in the query.

Action

Check that the related objects have not been deleted from the data source.

10.1.9 The current request has returned corrupted data. Contact your administrator for further information (WIJ 20005).

Cause

The returned data is corrupted. This could be due to data source or network issues.

Action

Contact your administrator.

10.1.10 Unable to contact the application server. Contact your administrator for further information (WIJ 20010).

Cause

The application server could be down, or address different to the one expected.

Action

Contact your administrator.

10.1.11 The {0,number} MB report element you want to copy is too large to be exported to an external application.\nThe maximum allowed size is {1,number} MB. (Error: WIJ 30004)

Cause

The report element you want to copy is too large to be copied.

Action

Do not attempt to copy the report element.

10.1.12 Your user profile does not give you access to a document domain to save corporate documents. Save this document as a personal document or contact your administrator (ERR WIJ 40000).

Cause

You do not have the rights to save the document to the corporate repository.

Action

Save the document as a personal document or ask your administrator for the rights to save the document to the repository.

10.1.13 The query in this document is empty. Check that the Result Objects pane on the query tab includes objects before running the query (ERR WIJ 30000).

Cause

The query does not contain any result objects.

Action

Edit the query and add result objects..

10.1.14 At least one query in this document is empty. Check that the Result Objects pane on each query tab includes objects before running the queries (ERR WIJ 30001).

Cause

A query does not contain any result objects.

Action

Add the result objects to the empty query.

10.1.15 Out of memory. Reduce the browser window size or re-launch the report panel. (WIJ 30003).

Cause

Your computer has run out of the memory. This may be because your browser window size is too large.

Action

Do one of the following:

- Reduce the size of the browser window.
- Relaunch the Java interface.

10.1.16 Your user profile does not allow you to save personal or corporate documents. Contact your administrator for further details. (WIJ 40001)

Cause

Your user profile, defined by your administrator, does not allow you to save personal or corporate documents.

Action

If you think you need to be allowed to save personal documents and/or corporate documents to InfoView, contact your administrator to request they modify your security profile.

10.1.17 An unexpected error occurred. (WIJ 44444)

Cause

An unexpected error was encountered.

Action

Please contact your administrator with details of the actions you performed before the error occurred.

10.1.18 Your version of Web Intelligence Rich Client is not up-to-date to connect to this system (ERR WIJ 50003).You must upgrade your Web Intelligence Rich Client by clicking here.

Cause

Your version of Web Intelligence Rich Client is not recent enough to connect to the repository.

Action

Upgrade your version of Web Intelligence Rich Client by following the link.

10.1.19 The information sent to the server contains invalid character(s). Use the Undo button to cancel the latest changes to the document and then retry. (Error: WIJ 55555)

Cause

There is an error in the XML sent to the server by the application.

Action

Use the *Undo* feature to remove the erroneous modification made to the document, and then run the query or refresh the document again.

10.1.20 The session timed out. The document {document_name}.wid has been autosaved in the Favorites\~InteractiveAnalysis folder. Click Restore to retrieve it. (WIJ 60001)

Cause

Due to a server timeout, the current document was autosaved in the Favorites\~InteractiveAnalysis folder.

Action

Click *Restore* to retrieve the autosaved document.

If you cannot restore the document automatically, retrieve it manually from the folder. The name of the autosaved document is the original document name with an automatically-generated prefix and postfix.

Retrieve the document from the autosave folder as quickly as possible. This folder is not a permanent storage location for autosaved documents.

10.1.21 The session timed out, but the document could not be autosaved because the following security rights are not assigned (WIJ 60002): {list_of_rights}

Cause

The document could not be autosaved because you do not have some or all of the following security rights:

- Edit object
- Delete object
- Add object

Action

Ask your administrator to assign you the appropriate security rights.

10.1.22 The document cannot be retrieved due to a server problem (WIJ 77777).

Cause

The document cannot be retrieved because the server is down.

Action

See your administrator.

10.1.23 Your session timed out. Please close the Java interface and log on again. (WIJ 77778)

Cause

You have remained logged in to the Bi launch pad without using the Java interface for longer than the maximum time allowed by the system.

Action

Log out and then log back into the BI launch pad to continue using the Java interface (you will lose any unsaved modifications you made previous to timeout).

To increase the length of time you are allowed to remain logged in to the BI launch pad ask your administrator to increase your session timeout parameter.

10.1.24 The Central Management System is not functioning. Contact your administrator for further information. (WIJ 77779)

Cause

The Central Management System (CMS) is not running.

Action

Contact your administrator.

10.1.25 `Your user profile does not allow you to edit or create documents based on Free-hand SQL. Please contact your BI administrator to be granted this right. (WIJ 77780)`

Cause

The rights that you were assigned for Web Intelligence do not include the right to edit SQL/MDX query scripts in Web Intelligence , which you need to be able to create documents based on Free-hand SQL.

Action

If you need to create Web Intelligence documents based on a Free-hand SQL statement, contact your BI administrator to request the right to edit SQL/MDX query scripts in Web Intelligence.

10.2 Web Intelligence Desktop HTML Interface (WIH) Error Messages

Web Intelligence Desktop HTML interface error messages include the following:

Table 321:

Range	Category
WIH 00000 - WIH 00020	Web Intelligence Desktop HTML interface

10.2.1 `Invalid session. Please close your browser and log on again. (WIH 00013)`

Cause

This error message occurs when more than one document is open in the BI launch pad and you try to work with a document that has been inactive longer than session expiration time.

Action

Log out of the BI launch pad and close the browser, and then log into the BI launch pad again.

10.2.2 The document could not be saved. (WIH 00014)

Cause

The document could not be saved to the repository. This error can occur for a number of reasons. For example: you do not have the security rights to the folder where you tried to save the document.

Action

See your administrator to determine why you could not save the document.

10.2.3 The session timed out. The document {document_name}.wid has been autosaved in the Favorites\~WebIntelligence folder. Click Restore to retrieve it. (WIH 00015)

Cause

Due to a server timeout, the current document was autosaved in the Favorites\~WebIntelligence folder.

Action

Click *Restore* to retrieve the autosaved document.

If you cannot restore the document automatically, retrieve it manually from the folder. The name of the autosaved document is the original document name with an automatically-generated prefix and postfix.

Retrieve the document from the autosave folder as quickly as possible. This folder is not a permanent storage location for autosaved documents.

10.2.4 The session timed out, but the document could not be autosaved because the following security rights are not assigned (WIH 00016): {list_of_rights}

Cause

The document could not be autosaved because you do not have some or all of the following security rights:

- Edit object
- Delete object
- Add object

Action

Ask your administrator to assign you the appropriate security rights.

10.2.5 An unexpected error occurred. For information about this error, please refer to SAP Knowledge Base Article 2054722 on the SAP Support Portal. (WIH 44444)

Cause

The server has failed without able to identify the root cause of the error.

Action

Close the document and reopen it again.

If this does not resolve the issue, contact your BI administrator.

If you are a BI administrator and need more information about this error, please refer to the SAP Knowledge Base Article 2054722 on the SAP Support Portal.

10.3 Web Intelligence Desktop (WIO) Error Messages

Web Intelligence Desktop (Rich Client) error messages include the following:

Table 322:

Range	Category
WIO 00001 - WIS 30284	Web Intelligence Desktop

10.3.1 Web Intelligence Desktop cannot log in. (WIO 00001)

Cause

The browser cache might be full – under certain circumstances this can prevent Web Intelligence Desktop from logging in.

Action

Empty the browser cache if it is full. If Web Intelligence Desktop still cannot log in, see your administrator.

10.3.2 Cannot open the hyperlink (WIO 00002).

Cause

- The URL in the hyperlink is incorrectly constructed.
- The hyperlink references a document in the Central Management Console (CMC). Documents in the CMC are not always accessible from Web Intelligence Rich Client for two reasons:
  - The hyperlink does not specify the name of the server hosting the document because the *Use complete URL path to build document hyperlink* setting is not selected. Incomplete URLs are invalid when used outside the BI launch pad.
  - The hyperlink builds the complete URL, but the server specified in the URL is not accessible from the computer running Web Intelligence Rich Client.

Action

Correct the hyperlink or see your IT administrator for help.

10.3.3 There is no more memory available. (WIS 30280) (WIO 30280)

Cause

Your system is out of memory.

Action

Close open documents to free memory.

10.3.4 Cannot continue because memory is low. Please close documents to free memory. (WIO 30284)

Cause

Your system memory is low.

Action

Close open documents to free memory.

10.4 Web Intelligence Server (WIS) Error Messages

Web Intelligence Server error messages include the following:

Table 323:

Range	Category
WIS 30000 - WIS 40000	Web Intelligence Server

10.4.1 The query in this document is empty. (WIS 30000)

Cause

No data is defined for this document.

Action

Add result objects to the query.

10.4.2 At least one query in the document is empty. (WIS 30001)

Cause

No data is defined for at least one of the queries in this document.

Action

Add result objects to the query.

10.4.3 Your security profile does not include permission to edit queries. (WIS 30251)

Cause

You do not have the right to edit queries.

Action

Contact your administrator to request the ability to edit the queries in documents.

10.4.4 Your security profile does not include permission to edit documents. (WIS 30252)

Cause

You do not have the right to edit documents.

Action

Contact your administrator and request the ability to edit documents.

10.4.5 Your security profile does not include permission to refresh documents. (WIS 30253)

Cause

You do not have the right to refresh documents.

Action

Contact your administrator to request the ability to refresh documents.

10.4.6 Your security profile does not include permission to refresh lists of values. (WIS 30254)

Cause

You do not have permission to refresh lists of values.

Action

Contact your administrator to request the ability to refresh lists of values in documents.

10.4.7 Your security profile does not include permission to use lists of values. (WIS 30255)

Cause

You do not have permission to use lists of values.

Action

Contact your administrator to request the ability to use lists of values in documents.

10.4.8 Your security profile does not include permission to view the script generated by the query. (WIS 30256)

Cause

You do not have the permission to view the script generated by the query.

Action

Contact your administrator to request the ability to view the script in queries.

10.4.9 Your security profile does not include permission to use the formula language. (WIS 30257)

Cause

You do not have permission to use the formula language or create variables.

Action

Contact your administrator to request the ability to use the formula language and create variables in documents.

10.4.10 Your security profile does not include permission to perform drill analysis. (WIS 30258)

Cause

You do not have permission to perform drill analysis.

Action

Contact your administrator to request the ability to drill on reports.

10.4.11 Your security profile does not include permission to extend the scope of analysis. (WIS 30259)

Cause

You attempted to perform a drill operation outside the defined scope of analysis, and you do not have permission to drill outside the scope of analysis.

Action

Contact your administrator.

10.4.12 An internal error occurred while calling the {api_name} API. (WIS 30270)

Cause

Information about the document or the data source is invalid or not available.

Action

Your administrator can trace the problem that caused the error by activating the tracking and verifying the trace associated with the API.

10.4.13 The document is too large to be processed by the server. (WIS 30271)

Cause

When you view a document in Portable Document Format (PDF) or Microsoft Excel format, the server generates binary based output, which is then interpreted by your web browser. This error occurs if the size of the binary output is greater than the maximum size specified by your administrator for the server.

Action

Contact your administrator and ask them to increase the maximum size.

10.4.14 The document is too large to be processed by the server. (WIS 30272)

Cause

When you view a document in HTML format, the server generates character-based output, which is then interpreted by your web browser. This error occurs if the size of the character output is greater than the maximum size specified by your administrator for the server.

Action

Ask your administrator to increase the maximum document size.

10.4.15 The query or report could not be generated.(WIS 30351)

Cause

It was not possible to complete one or more of the steps required to define a query and generate a report. This is due to one of the following reasons:

- the document was not initialized
- the data source is not valid
- the query was not defined
- the query context was not defined at the universe level
- no values were specified for prompts at the universe level

Action

Contact your administrator and ask them to check the connection to the data source, and that the universe does not contain unspecified contexts and prompt values.

10.4.16 A query with this name already exists. (WIS 30371)

Cause

Another query used in this document already has this name.

Action

Enter a different name for this query.

10.4.17 The Web Intelligence server memory is full. Log off and try to connect later. If the problem persists, contact your administrator. (Error: ERR_WIS_30280) (WIS 30280)

Cause

The server memory is full.

Action

Try again later. If the problem persists, see your administrator.

10.4.18 The Web Intelligence server is busy. Save any pending change and try again later. If the problem persists, contact your administrator. (Error: ERR_WIS_30284) (WIS 30284)

Cause

The server is busy.

Action

Save any changes and try again later. If the problem persists, see your administrator.

10.4.19 The Web Intelligence server is running out of memory, your document has been closed. If the problem persists, contact your administrator. (Error: ERR_WIS_30285) (WIS 30285)

Cause

The server memory is full.

Action

Try again later. If the problem persists, see your administrator.

10.4.20 You cannot edit this document because the query property option "Allow other users to edit the query" was not enabled when the document was created. (WIS 30381)

Cause

The creator of the document did not select the query property option: "Allow other users to edit the query".

Action

Do one of the following:

- Ask the document creator to enable the option and re-save the document.
- Save a copy of the document as a personal document and then edit the query in the copy.

10.4.21 An internal error has been generated by the WIQT. (WIS 30551)

Cause

An unexpected error occurred on the WIQT.

Action

Contact your administrator.

10.4.22 Your WIQT session has reached timeout. Log out and log in again to the BI launch pad. (WIS 30553)

Cause

You have remained logged into the BI launch pad without using Web Intelligence for longer than the maximum time allowed by the system.

Action

Log out and then log back into the BI launch pad (you will lose any unsaved modifications you made previous to timeout).

To increase the length of time you are allowed to remain logged in to the BI launch pad, ask your administrator to increase your session timeout parameter.

10.4.23 No more WIQT servers are available. The maximum number of concurrent users is already logged in. (WIS 30554)

Cause

The maximum number users are already logged in.

Action

Try again later, or ask your administrator to increase the maximum number of concurrent users.

10.4.24 Your security profile does not include permission to save documents as corporate documents or to send documents using the BI launch pad. (WIS 30555)

Cause

Your security profile does not allow you to save documents as personal or corporate documents, or to schedule documents.

Action

Contact your administrator to request the ability to do the following:

- Save corporate documents
- Send documents to users in own groups
- Send documents to users in other groups

10.4.25 A corporate document with this name already exists. Your security profile does not include permission to delete corporate documents created by other users. (WIS 30556)

Cause

Your security profile does not allow you to overwrite existing corporate documents.

Action

Contact your administrator to request the ability to delete corporate documents saved by other users.

10.4.26 There is no document with this name in the repository. Specify a different document name. (WIS 30557)

Cause

There is no document with this name in the repository for one of the following reasons:

- You have typed the document name incorrectly
- The document with this name has been deleted from the repository

Action

Check that you have entered the document correctly.

> **Note**
>
> Deleted documents cannot be retrieved.

10.4.27 Cannot perform the intended action on this document. (WIS 30650)

Cause

The server is unable to complete the current task because of lack of resources or access problems.

Action

Do one of the following:

- Close your session, log out of the BI launch pad then log in again.
- Ask your administrator to verify that your security profile allows you access to the corporate repository.

10.4.28 The server failed to load the XML document. (WIS 30751)

Cause

When you migrate a BusinessObjects document to Web Intelligence 6.x, an XML file is created that can be opened by the Web Intelligence Report Server. (The related module on the Administration Console is called the

WIReportServer). In this case an unexpected error occurred on the Web Intelligence Report Server while migrating a document to Web Intelligence 6.x.

Action

Your administrator can trace the problem that caused this error by activating the tracking and verifying the trace associated with the WIReportServer. Contact your administrator with this information.

10.4.29 `The XML file for this document cannot be opened. Contact your administrator. (WIS 30752)`

Cause

When you migrate a Desktop Intelligence document to Web Intelligence 6.x, an XML file is created that can be opened by the server. This error occurs when the XML file cannot be opened by the server, and so migration cannot be completed. There are two common causes:

- The XML is Read Only.
- The file path to the XML file is incorrect.

Action

Contact your administrator with this information.

10.4.30 `An error occurred while parsing the XML document. Contact your administrator. (WIS 30753)`

Cause

When you migrate a Desktop Intelligence document to Web Intelligence 6.x, an XML file is created that can be opened by the server. This error occurs when the XML file contains structural anomalies that the server cannot interpret, and so migration cannot be completed.

Action

There are two possible actions that an administrator can take to solve this problem:

- Open the XML file with an XML editing tool and verify the structure of the document.
- Activate the tracking and verify the trace associated with the WIReportServer.

10.4.31 The Web Intelligence 2.x document could not be migrated. (WIS 30761)

Cause

An unexpected error occurred when trying to migrate a Web Intelligence 2.x document to the current document format.

Action

An administrator may be able to identify the cause of this error by activating the tracking and verifying the trace associated with the server. Contact your administrator with this information.

10.4.32 This document cannot be migrated. The query and report of the original Web Intelligence 2.x document are not synchronized. Try to refresh and save the original document; then attempt migration again. (WIS 30762)

Cause

In the original Web Intelligence 2.x document, there is a discrepancy between the objects included in the query and the objects included in the report. This means that the server is unable to interpret the document correctly to migrate it to the current document format.

Action

To synchronize the data definition in the query and report of the original Web Intelligence 2.x document:

1. Use Web Intelligence 2.x to open the original document again.
2. Either run the query or refresh the document data.
3. Save the refreshed document.
4. Try to migrate the document again using the Migration Tool.

If you do not have access to Web Intelligence 2.x or the Migration Tool, contact your administrator with this information.

10.4.33 The Web Intelligence 2.x document could not be migrated, because the WIQT module returned an error. Contact your administrator. (WIS 30763)

Cause

The original Web Intelligence 2.x document could not be migrated to the current document format, due to an error generated by the WIQT process.

Action

Your administrator can trace the problem that caused this error by activating the tracking and verifying the trace associated with the WIQT. Contact your administrator with this information.

10.4.34 Your user profile does not provide you with access to a document domain to save corporate documents. Save this document as a personal document or contact your administrator. (WIS 40000)

Cause

Your user profile does not include permission to save documents to a corporate document domain in the repository.

Action

Do one of the following:

- Save the document as a personal document.
- Contact your administrator and request access to a corporate document domain.

10.5 Information Engine Services (IES) Error Messages

Information Engine Services error messages include the following:

Table 324:

Range	Category
IES 00001 - IES 01031	Query execution errors
IES 01501 - IES 01513	Graph execution errors
IES 10001 - IES 10903	Query execution errors (specific to Web Intelligence)

10.5.1 IES 00001 -IES 01031 Query execution errors

10.5.1.1 `Some objects are no longer available in the universe. (IES 00001)`

Cause

One or more objects in a universe are no longer available to a document.

Action

Delete the missing objects from the query by comparing the objects in the query with the available objects.

10.5.1.2 `Query can't be refreshed. You don't have sufficient rights or some objects are not available to your user profile. Contact your administrator to request the necessary rights. (IES 00002)`

Cause

You do not have the correct user rights to access the data for one or more objects included in a query or the object is not available in your profile. Therefore, you cannot refresh the report.

Action

Ask your administrator to change your user profile to make these objects accessible.

10.5.1.3 Some pre-defined filters are no longer available in the universe. (IES 00003)

Cause

Compare the available universe objects with query objects. Perhaps the objects are no longer available or you don't have the rights.

Action

Compare universe objects with query objects. If you don't have rights, contact your universe designer or administrator.

10.5.1.4 Some database tables are no longer available in the universe. (IES 00004)

Cause

One or more database tables referenced by objects in the universe are no longer available. The tables may have been renamed, or removed from the database.

Action

Ask your universe designer to refresh the universe to remove non-existent tables or update table names.

10.5.1.5 Invalid prompt definition. (IES 00005)

Cause

The syntax in a prompt is not valid, or the prompt makes reference to an object that no longer exists in the universe

Action

Ask your universe designer to verify the prompt.

10.5.1.6 Invalid aggregate aware definition. (IES 00006)

Cause

One or more objects in the query use aggregate awareness, and the aggregate awareness syntax in the universe is not valid.

Action

Ask your universe designer to verify the aggregate awareness syntax.

10.5.1.7 A filter contains a wrong value. You cannot run this query. (IES 00007)

Cause

A filter has a incorrect operand. For example, a filter has an empty constant, or a filter that expects a numeric value is defined with an alphanumeric value.

Action

Correct the filter.

10.5.1.8 The query cannot run because it contains objects that reference incompatible tables. (IES 00008)

Cause

The query contains objects that return data sets that cannot be combined or synchronized, possibly because the universe does not allow multiple SQL statements for each context or measure.

Action

Ask your universe designer to do the following:

- Allow multiple SQL statements for each context and measure.
- Create a new context that includes the incompatible objects.

10.5.1.9 `You cannot run the query because an advanced filter contains an incompatible object. Try simplifying the filter set and run your query again. (IES 00009)`

Cause

An advanced filter uses incompatible objects.

Action

Change the advanced filter to use compatible objects only.

10.5.1.10 `The universe does not allow using a complex expression in a GROUP BY statement. You cannot run this query. (IES 00010)`

Cause

A query contains a GROUP BY clause that uses formulas or aliases. The universe does not allow these expressions in GROUP BY clauses. The behavior is determined by the parameter

```
<Parameter Name="GROUPBY_EXCLUDE_COMPLEX">Y</Parameter>
```

in the PRM file for the target RDBMS.

Action

- Modify the query so that objects using formulas or aliases are not included in the query.
- If your RDBMS supports complex GROUP BY expressions, ask your universe designer to change the value of the `GROUPBY_EXCLUDE_COMPLEX` parameter to `N`.

10.5.1.11 The expression "{0}" contains multiple attributes. This syntax is not supported in this version. (IES 00011)

Cause

One or more objects in the query use a comma (",") instead of a concatenation operator in their definition. This syntax is no longer supported.

Action

Ask your universe designer to perform one of the following actions:

- Redefine the objects that use the comma to concatenate the data for two objects using the standard concatenation operator for the RDBMS.
- Add the following line to the PRM file for the target RDBMS:

  ```
  <Parameter Name = "REPLACE_COMMA_BY_SEPARATOR"=Y>
  ```

  This will enable the comma to be accepted syntax for concatenation in object definitions.
- Set the value of REPLACE_COMMA_BY_CONCAT to "Yes" in the universe.

10.5.1.12 You cannot run this query because it will produce a Cartesian product. (IES 00012)

Cause

The query will produce a Cartesian product. A Cartesian product returns all possible combinations of rows from the tables referenced by objects in the query and is rarely correct.

Action

Ask your universe designer to perform one of the following actions:

- Prevent Cartesian products by modifying the universe table schema to include appropriate joins and restrictions.
- Allow the universe to return Cartesian products if they are acceptable.

10.5.1.13 Query script generation failed. See your administrator. {0} (IES 00013)

Cause

Errors occurred during generation of the query SQL.

Action

Ask your universe designer to verify the SQL.

10.5.1.14 Aggregate aware resolution failed. (IES 00014)

Cause

The query objects exclude all possible SQL choices for an aggregate aware function.

Action

Ask your universe designer to remove the incompatibility between the objects.

10.5.1.15 Multiple Query Filters contain a prompt with the same text, but different operand type or operator count of values. (IES 00015)

Cause

The query has multiple prompts that display the same message. Prompts with the same message are usually combined, but this is not possible if some require you to enter one value and others require multiple values.

Action

Modify the prompts so they all require one or multiple values.

10.5.1.16 The query contains a @script() function, which is not supported. (IES 00016)

Cause

The SQL generated by the query for this document includes a @script() function, which is not supported.

Action

Ask your universe designer to remove the @script() function.

10.5.1.17 The following objects cannot be used as Result Objects: {0}. See your administrator. (IES 00017)

Cause

The query includes objects that cannot be used as result objects in queries.

Action

Remove the objects, or ask your universe designer to allow the objects to be included in as result objects in queries.

10.5.1.18 The following objects cannot be used as query filters: {0}. Contact your administrator. (IES 00018)

Cause

The query contains objects used as query filters that are not valid as query filters.

Action

Remove the objects, or ask your universe designer to allow them as query filters.

10.5.1.19 A query filter object contains too many values for the object to be used in a query filter. (IES 00019)

Cause

A query filter contains too many values.

Action

Select fewer values.

10.5.1.20 The only authorized SQL statement is SELECT. {0} (IES 00020)

Cause

The SQL generated by the query is invalid.

Action

Ask your universe designer to verify the SQL.

10.5.1.21 The combined query cannot run because one of the queries contains incompatible objects. (IES 00021)

Cause

A query in a combined query contains incompatible objects.

Action

Remove the incompatible objects.

10.5.1.22 The query does not reference any table when attempting to build the WHERE clause. (IES 00022)

Cause

The WHERE clause of the generated SQL does not reference a table.

Action

Modify the query to reference a table.

10.5.1.23 Invalid sub-query filter. Either data cannot be retrieved (null) or no result objects are defined. (IES 00023)

Cause

The query contains an invalid sub-query. Either data cannot be retrieved or no result objects are defined.

Action

Modify the sub-query.

10.5.1.24 Incompatible object types in the sub-query filter. (IES 00024)

Cause

The subquery contains incompatible object types.

Action

Remove the incompatible object types.

10.5.1.25 The query is too complex to apply a sampling function. When the function is applied, no SQL is generated so query aborts. Try to simplify your query (such as, combined query, or query with JOIN or SYNCHRO operators). (IES 00025)

Cause

The query is too complex to apply a sampling function.

Action

Try to simplify the query.

10.5.1.26 Failed to regenerate SQL for optional prompts, the following required prompts were skipped: {0}.(IES 00026)

Cause

The SQL relating to optional prompts could not be regenerated.

Action

See your universe designer.

10.5.1.27 Removing optional prompts from the query will introduce new prompts. This introduces complexities that cannot be supported. (IES 00027)

Cause

The query cannot be processed due to optional prompts.

Action

Remove the optional prompts from the query.

10.5.1.28 No value specified for the Keydate parameter. (IES 00028)

Cause

No value was specified for the Keydate parameter.

Action

Specify a value for the Keydate.

10.5.1.29 The universe is already open with write permission by another user. (IES 00029)

Cause

The universe could not be opened because it is already opened with write permission by another user.

Action

See your administrator.

10.5.1.30 Queries that do not contain a measure are not allowed to run on this universe. (IES 00030)

Cause

The query does not contain a measure, and therefore cannot be used with the universe.

Action

Check that the query definition is correct, add the relevant measure if necessary.

10.5.1.31 The Free-hand SQL query does not contain a valid executable statement: {detail_message} (IES 00031)

Cause

Either the SQL contains forbidden SQL keys, or the SQL statement or the call to a stored procedure is invalid.

Action

Remove the forbidden SQL keys from the SQL and verify the SQL statement.

If the issue is still not resolved, contact your IT administrator for assistance.

10.5.1.32 Universe not found. Either the universe was deleted from the repository or you do not have sufficient rights to see the universe in the repository. (IES 00501)

Cause

Cannot find the universe.

Action

Check with your administrator or universe designer to find out why the universe is not available.

10.5.1.33 The appropriate user rights were not found. Contact your administrator. (IES 00502)

Cause

You cannot perform this action because your user rights cannot be found.

Action

Ensure that you have used the correct logon credentials. If the are correct, verify with your IT administrator that your user rights have not been deleted.

10.5.1.34 You are not authorized to access the universe {0}. Contact your administrator to request the appropriate rights. (IES 00503)

Cause

Your user rights do not permit this action.

Action

Ask your IT administrator to check that your user credentials are correctly defined.

10.5.1.35 You do not have the right to access data for this universe. Contact your administrator to request the appropriate rights. (IES 00504)

Cause

Your current user rights do not allow you to access the data.

Action

Ask your IT administrator to check that your user credentials are correctly defined.

10.5.1.36 You do not have the right to access data for this universe connection. Contact your administrator to request the appropriate rights. (IES 00505)

Cause

Your current user rights do not allow you to access the connection.

Action

Ask your IT administrator to check that your user credentials are correctly defined.

10.5.1.37 Failed to download universe {0} from repository {1}. Check that there is enough memory available and try again. (IES 00506)

Cause

Cannot download the universe.

Action

Contact your administrator to report the problem.

10.5.1.38 You do not have the right to access data for this core universe. Contact your administrator to request the appropriate rights. (IES 00507)

Cause

Your current user rights do not allow you to access the data.

Action

Ask your IT administrator to check that your user credentials are correctly defined.

10.5.1.39 Universe data connection could not be found. The connection has been deleted or you do not have the right to use it. (IES 00509)

Cause

The connection has been lost.

Action

Contact your administrator to report the problem.

10.5.1.40 Cannot generate the SQL for this query because one of its objects is based on a derived table (table_name) that contains a loop in its definition. (IES 00510)

Cause

When a derived table contains a loop, it is not possible to generate the SQL.

Action

Redefine your query, or try to avoid having a loop in the derived table.

10.5.1.41 Cannot generate the SQL for this query because one of its objects is based on a derived table (table_name) that is unknown. (IES 00511)

Cause

The SQL cannot be generated.

Action

Check that the derived table is correctly defined and can be used. Check that your query is correct.

10.5.1.42 Cannot generate the SQL for this query because one of its objects is based on a derived table (table_name) with an incorrect definition. (IES 00512)

Cause

The dervied table is not correctly defined.

Action

Check the definition of the derived table and correct it if necessary.

10.5.1.43 The query statement cannot be generated because of a syntax error. Check the syntax of the statement that uses the @Variable function. (IES 00513)

Cause

Your query contains one or more syntax errors.

Action

Check the syntax of the SQL statement that uses the @Variable function. Refer to the @Functions section of the Universe Designer user documentation (pdf document or online help)

10.5.1.44 The database SQL generation parameters file could not be loaded ({database_name}, {network_layer}) . (IES 00514)

Cause

Cannot find the relevant SQL parameter file.

Action

Contact your administrator.

10.5.1.45 Unexpected enumerated type {0}. (IES 01001)

Cause

A new enumerated type has been declared but is not supported.

Action

Contact your administrator.

10.5.1.46 Nested @aggregate_aware functions are not supported. (IES 01002)

Cause

The expression contains nested @aggregate_aware functions.

Action

The designer can edit the business layer and remove nested @agreggate_aware functions.

10.5.1.47 Circular references: check the references to other business layer objects in the expression. (IES 01003)

Cause

The expression contains circular references.

Action

The designer can edit the business layer and check for circular references between business layer objects.

10.5.1.48 Invalid @Select reference. Check the definition of the @Select declaration. (IES 01004)

Cause

The expression contains and invalid reference to the @Select function.

Action

The designer can edit the business layer and validate the use of the @Select function in the object expression.

10.5.1.49 Invalid @Where reference. Check the definition of the @Where declaration. (IES 01005)

Cause

The expression contains and invalid reference to the @Where function.

Action

The designer can edit the business layer and validate the use of the @Where function in the object expression.

10.5.1.50 Some prompt parameters are no longer available in the universe. (IES 01006)

Cause

The expression contains and invalid reference to the @Prompt function.

Action

The designer can edit the query or the business layer and validate the use of the @Prompt function in the object expression.

10.5.1.51 Bad hierarchy reference. (IES 01007)

Cause

The hierarchy declared in the query contains an error.

Action

Check the query expression for errors.

10.5.1.52 Catalog for source "{0}" cannot be retrieved. Check Data Foundation connection. (IES 01008)

Cause

Catalog for source "{0}" cannot be retrieved.

Action

Check the connection to the data source in the data foundation.

10.5.1.53 The prompt cannot be validated but it may be correct. Associate a list of values or at least one default value to the prompt. (IES 01010)

Cause

The prompt cannot be validated but it may be correct.

Action

Associate a list of values or at least one default value to the prompt.

10.5.1.54 More than 100 levels of nested derived tables is not supported. (IES 01015)

Cause

There are more than 100 levels of nested derived tables.

Action

Edit the @DerivedTable expression to reduce the number of nested levels.

10.5.1.55 The definiton of the list of values {0} is invalid. The list or the current column is hidden. (IES 01025)

Cause

The list of values is hidden, or the current column is hidden.

Action

Check for hidden objects in the universe or business layer. Either make the objects active or redefine the list of values expression.

10.5.2 IES 01501 - IES 01513 Graph execution errors

10.5.2.1 Detection cannot take place because the data foundation contains cycles. Use the Visualize Loops command to visualize the cycles. Modify the cardinality of the joins involved in the cycles before detecting aliases or contexts. (IES 01501)

Cause

The data foundation contains loops.

Action

In the information design tool, edit the data foundation and use the Visualize Loops command to find loops in the data foundation. Modify the cardinality of the joins involved in the loops before detecting aliases or contexts.

10.5.2.2 Detection cannot take place because some tables have at least two joins with opposite cardinalities: {0}. Modify the joins between these tables. (IES 01502)

Cause

Some tables in the data foundation have at least two joins with opposite cardinalities.

Action

In the information design tool, edit the data foundation and modify the joins between these tables.

10.5.2.3 Detection cannot take place because all join cardinalities have not been set. Set all the join cardinalities. (IES 01504)

Cause

All join cardinalities have not been set in the data foundation.

Action

In the information design tool, edit the data foundation and detect or set the cardinalities for all joins.

10.5.2.4 Automatic detections will fail as long as some cardinalities are many-to-many. (IES 01505)

Cause

Some joins in the data foundation have cardinality many-to-many.

Action

In the information design tool, edit the data foundation modify the cardinality for these joins.

10.5.2.5 Detection cannot take place because no fact table was detected. A fact table is always joined to other tables with a 'many to one' join, with the 'many' side of the join connected to the fact table. The problem could be the cardinalities that are currently set on the data foundation joins, or the way the database schema is built. (IES 01510)

Cause

No fact table was detected. A fact table relates other tables only with many-to-one cardinality joins, with many being on the side of the join connected to the fact table.

Action

In the information design tool, edit the data foundation check the cardinality of the joins. There might be a problem with the cardinalities that are currently set on the data foundation joins or with the way the database schema is built.

10.5.2.6 Detection cannot take place because there are loops in the schema. Use the Detect Aliases command to detect the alias tables that will resolve the loops. (IES 01512)

Cause

The data foundation contains loops.

Action

In the information design tool, edit the data foundation and use the Detect Aliases command to detect the alias tables that will resolve the loops.

10.5.3 IES 10001 - IES 10903 Query execution errors (Web Intelligence only)

10.5.3.1 Syntax error in formula '%1%' at position %2%. (IES 10001)

Cause

There is a syntax error in your formula at the position indicated.

Action

Correct the formula.

10.5.3.2 Problem initializing the dictionary of functions. (IES 10002)

Cause

The dictionary of functions could not be initialized.

Action

See your administrator.

10.5.3.3 The object '%1%' at position '%2%' is not unique in the report. (IES 10005)

Cause

An object has a name that conflicts with the name of another object in the report

Action

Use the fully-qualified name for the object.

10.5.3.4 The object '%1%' at position '%2%' does not exist in the report. (IES 10006)

Cause

The formula refers to an object that no longer exists in the report.

Action

Remove the reference to the object from the formula.

10.5.3.5 Unexpected empty expression after '='. (IES 10009)

Cause

The expression appears to be incomplete.

Action

Check the syntax of your expression and correct it.

10.5.3.6 The integer '%1%' at position '%2%' is too long. (IES 10013)

Cause

An integer in a formula exceeds the maximum limit.

Action

Edit the formula.

10.5.3.7 The number '%1%' at position '%2%' has a format that is incompatible with your regional settings. (IES 10014)

Cause

The format of the real number {number} is not compatible with your regional settings.

Action

Change the number format to conform with the format permitted by your regional settings.

10.5.3.8 Missing quotation mark after '%1%' at position '%2%'. (IES 10016)

Cause

There is a missing closing quotation mark in the formula.

Action

Add the closing quotation mark.

10.5.3.9 The list of dimensions in the input or output context is empty. (IES 10032)

Cause

The list of dimensions in the input or output context is empty.

Action

Specify a list of dimensions.

10.5.3.10 The variable '%1%' cannot be deleted because it has dependant formulas or variables linked to: '%2%'. (IES 10033)

Cause

The variable cannot be deleted because it is referenced by other variables or formulas.

Action

Delete the dependent formulas/variables before deleting the variable.

10.5.3.11 You attempted to create a variable or update a variable name using a variable name that already exists. (IES 10034)

Cause

You attempted to create a variable or update a variable name using a variable name that already exists.

Action

Choose a variable name that does not already exist.

10.5.3.12 The date or time format '%1%' at position '%2%' is not valid. (IES 10035)

Cause

The formula contains an invalid date/time format (for example, "bb/MM/yyyy").

Action

Specify a valid date/time format in the formula.

10.5.3.13 The expression or sub-expression at position '%2%' is not valid. (IES 10036)

Cause

The formula contains an invalid expression/sub-expression.

Action

Specify a valid expression/sub-expression.

10.5.3.14 The expression or sub-expression at position '%2%' in the '%1%' function uses an invalid data type. (IES 10037)

Cause

An expression contains an invalid data type. (For example, you have attempted to pass a string to a function that requires a date.)

Action

Use a valid data type in the expression.

10.5.3.15 Invalid character '%1%' in variable name at position '%2%'. (IES 10038)

Cause

The character {character} is not valid in the variable name.

Action

Remove {character} from the variable name.

10.5.3.16 The formula for variable '%1%' contains a reference to a variable with the same short name. (IES 10040)

Cause

The formula of a variable references another variable with the same short name.

Action

To resolve this issue, remove the reference to the variable with the same short name from the formula.

10.5.3.17 Incorrect use of multiple comparison operators (<,>,<>,<=,>=,=) at position '%2%'. (IES 10041)

Cause

The formula uses multiple comparison operators incorrectly (for example: if(1<2=3;0;-1)).

Action

Re-structure the formula to avoid using comparison operators incorrectly.

10.5.3.18 There is a circular reference because the formula for variable '%1%' references a variable whose formula references '%1%' .(IES 10042)

Cause

A formula contains a circular reference.

Action

Remove the circular reference.

10.5.3.19 There is no opening parenthesis after function '%1%' at position %2%. (IES 10060)

Cause

There is no opening parenthesis in the location indicated by the error message.

Action

Add an opening parenthesis in the location indicated.

10.5.3.20 The function '%1%' has missing arguments or closing parenthesis at position %2%. (IES 10061)

Cause

Arguments or a closing parenthesis are missing from the formula.

Action

Supply the arguments or closing parenthesis.

10.5.3.21 Missing ';' before argument in function '%1%' at position %2%.(IES 10062)

Cause

The syntax of your expression is incorrect

Action

Check the syntax and correct the expression.

10.5.3.22 Missing ';' or closing parenthesis in function '%1%' at position %2%. (IES 10063)

Cause

The syntax is incorrect.

Action

Check the syntax and correct your expression.

10.5.3.23 Missing ';' or closing parenthesis in list '%1%' at position %2%. (IES 10064)

Cause

A semicolon or closing parenthesis is missing from the formula.

Action

Supply the semicolon or closing parenthesis.

10.5.3.24 Missing closing parenthesis in function '%1%' at position %2%. (IES 10065)

Cause

The syntax is incorrect.

Action

Check the expression and correct the syntax.

10.5.3.25 Missing aggregate operator or closing parenthesis in function '%1%' at position %2%. (IES 10066)

Cause

The syntax is incorrect.

Action

Check the expression and correct the syntax.

10.5.3.26 Missing operator or closing parenthesis in '%1%' at position %2%. (IES 10067)

Cause

The syntax is incorrect.

Action

Check the expression and correct the syntax.

10.5.3.27 Missing list element in '%1%' at position %2%. (IES 10068)

Cause

The syntax is incorrect. An element is missing.

Action

Check the expression and correct the issue.

10.5.3.28 Missing object identifier in '%1%' at position %2%. (IES 10069)

Cause

An object identifier is missing from the formula.

Action

Correct the formula.

10.5.3.29 Missing or bad operand in '%1%' expression at position %2%. (IES 10070)

Cause

Elther the operand is not compatible, or the operand is missing.

Action

Check the syntax and correct the expression.

10.5.3.30 Incorrect calculation context %1%' at position %2%. (IES 10071)

Cause

The calculation context is incorrect.

Action

Check the syntax of your expression and correct it.

10.5.3.31 Incorrect reset context at position %2%. (IES 10072)

Cause

The formula contains an incorrect reset context.

Action

Correct the reset context.

10.5.3.32 Invalid Where clause in function '%1%': a dimension is missing at position %2%. (IES 10073)

Cause

The expression is missing an expression.

Action

Check the syntax of the expression and ensure that there is the expected dimension.

10.5.3.33 Incompatible object '%1%' at position %2%. (IES 10076)

Cause

You cannot use this type of object.

Action

Ensure that the correct object has been declared.

10.5.3.34 The object '%1%' at position %2% is incompatible. (IES 10077)

Cause

The formula contains an incompatible object.

Action

Correct the formula.

10.5.3.35 Invalid character '%1%' at position %2%. (IES 10080)

Cause

There is an invalid character in the expression.

Action

Check the syntax of the expression.

10.5.3.36 Invalid string '%1%' at position %2%. (IES 10082)

Cause

The formula contains an invalid string.

Action

Correct the string.

10.5.3.37 The qualification of the variable '%1%' cannot be changed. (IES 10083)

Cause

You cannot change the qualification of the variable. (For example, you cannot change a measure to a dimension if its definition includes an aggregate.)

Action

Create a new variable with the appropriate qualification.

10.5.3.38 Expecting object member in '%1%' at position %2%. (IES 10084)

Cause

There is no object member.

Action

Check the syntax of teh expression and correct it as necessary.

10.5.3.39 Invalid member '%1%' at position %2%. (IES 10085)

Cause

You cannot use this type of member in this context.

Action

Correct the expression.

10.5.3.40 Invalid set definition. (IES 10086)

Cause

A query contains an invalid set definition.

Action

Verify the query.

10.5.3.41 Custom functions could not be loaded. (IES 10100)

Cause

The custom function library could not be loaded because it is not correctly defined. This could be due to invalid XML, a duplicate function name or duplicate function ID.

Action

See the trace log for more details and provide these details to your administrator.

10.5.3.42 Your database server does not support the Both and Except operators. (IES 10701)

Cause

The database on which this document is based does not support the Both and Except operators. This means that you cannot use the Both operator or the Except operator when you define filters on the query.

Action

Remove the operators from the query filters.

10.5.3.43 A filter is defined on an object that is incompatible with the result objects. (IES 10702)

Cause

One of the query filters is defined on an object which is incompatible with all the result objects returned by the query.

Action

Remove the query filter or the result objects.

10.5.3.44 The numeric value for the query filter based on '{object}' is invalid. (IES 10703)

Cause

You specified an invalid numeric value for a query filter.

Action

Edit the query filter and specify a valid numeric value.

10.5.3.45 The date for the prompt '{prompt}' is invalid. (IES 1070) (IES 10704)

Cause

You specified an invalid date for a query filter.

Action

Edit the query filter and specify a valid date.

10.5.3.46 The prompt '{prompt}' contains an invalid numeric value. (IES 10705)

Cause

You specified an invalid numeric value for a prompt.

Action

Specify a valid numeric value.

10.5.3.47 The date for the prompt '{prompt}' is invalid. (IES 10706)

Cause

You specified an invalid date for a prompt.

Action

Edit the prompt and specify a valid date.

10.5.3.48 The server cannot build the SQL for the query. (IES 10707)

Cause

Your query cannot be converted to SQL to run against the database.

Action

Reformulate the query or see your administrator.

10.5.3.49 The object '{ObjName}' in the prompt '{PromptName}' can no longer display a list of values. Remove the prompt from the query or contact your administrator to clear the "Select only from list" option of the object properties tab. (IES 10708)

Cause

The object in the prompt can no longer display a list of values.

Action

Remove the prompt, or ask your administrator to allow the prompt to accept values not selected from a list.

10.5.3.50 A class already exists with this name : '{ClassName}' . (IES 10709)

Cause

You cannot have two classes with the same name.

Action

Use a different name for the class.

10.5.3.51 You do not have the right to refresh this document. (IES 10801)

Cause

Your user profile does not permit you to view data for one of the objects included in the query for this document.

Action

Cancel the refresh, or ask your administrator for the security rights necessary to refresh the document.

10.5.3.52 The query SQL has {nbHaving} instead of {nbWanted} columns. (IES 10810)

Cause

The SQL generated by the query has an invalid number of columns.

Action

See your administrator.

10.5.3.53 The data type of a column in the query is not valid. (IES 10811)

Cause

The data type of a column in the query is not valid.

Action

See your administrator.

10.5.3.54 Custom SQL cannot contain optional prompts. (IES 10812)

Cause

Optional prompts are not supported in custom SQL.

Action

Remove the optional prompts.

10.5.3.55 Incompatible objects cannot be used in combined queries. (IES 10820)

Cause

A combined query contains incompatible objects.

Action

Edit the combined query and remove the incompatible objects.

10.5.3.56 A subquery in the '{dp_name}' data provider has missing objects. (IES 10830)

Cause

Objects necessary to generate query SQL are missing from a subquery in the {dp_name} data provider.

Action

Edit the subquery and add the missing objects.

10.5.3.57 The filtered object is missing in a ranking in the '{dp_name}' data provider. (IES 10831)

Cause

The filtered object is missing in a ranking.

Action

Edit the ranking and add the filtered object.

10.5.3.58 The rank-based object is missing in a ranking in the '{dp_name}' data provider. (IES 10832)

Cause

The rank-based object is missing in a ranking.

Action

Edit the ranking and add the rank-based object.

10.5.3.59 The document cannot be loaded. (IES 10833)

Cause

The interactive analysis document could not be loaded.

Action

See your administrator.

10.5.3.60 Additional context resolution is not supported with optional prompts. (IES 10834)

Cause

The optional prompts in a query generate additional query context resolution that is not supported.

Action

Remove the optional prompts or make them obligatory.

10.5.3.61 Invalid data in column "{col_name}". (IES 10840)

Cause

A database column referenced by the query contains invalid data.

Action

See your administrator.

10.5.3.62 Invalid UTF-8 string in column "{col_name}". (IES 10841)

Cause

A database column referenced by the query contains invalid data.

Action

See your administrator.

10.5.3.63 Sorry, your Data Refresh action cannot be completed because the maximum amount of concurrent Data Refresh actions is currently being processed by the server {nb_thread} / {nb_max_thread}. Please, try again later. (IES 10845)

Cause

You have used the data refresh option more than the maximum refresh actions allowed.

Action

Please wait and retry the refresh action later.

10.5.3.64 The file that is required to create or update the query cannot be found on the file system. File not found: "{filename}". (IES 10850)

Cause

The file {filename} cannot be found on the file system.

Action

Check the location of {filename} or see your administrator.

10.5.3.65 The file that is required to refresh the query cannot be found on the file system. File not found: "{filename}" (IES 10851)

Cause

The file seems to be missing, deleted, or renamed.

Action

Check with your administrator.

10.5.3.66 Unable to refresh the query on this file: the structure of file "{filename}" does not match. (IES 10852)

Cause

The file might have been modified since the query was last run.

Action

Check with the administrator or universe designer that the file has not been modified.

10.5.3.67 Error originates from the Personal Data Provider: {message}. (IES 10853)

Cause

The file that supplies data to a personal data provider might be corrupt or missing.

Action

Check that the file is present, and that it does not contain errors.

10.5.3.68 The query cannot be refreshed; the structure of "{dpName}" does not match. (IES 10854)

Cause

The columns returned by the database do not match with those of data provider objects.

Action

In the Web Intelligence document, open the Query Panel and check that you have the right objects in your query compared to the database.

10.5.3.69 Unable to create or update the Excel personal data provider: the file path is invalid. (IES 10870)

Cause

The Excel file could not be found on the file system.

Action

See your administrator.

10.5.3.70 Unable to create or update the Excel personal data provider: cannot retrieve the named ranges. (IES 10872) (IES 10871)

Cause

The Excel personal data provider could not be created or updated because the workbook is protected.

Action

Remove the protection from the Excel workbook or see your administrator if you do not have access to the Excel file.

10.5.3.71 Unable to create or update the Excel personal data provider: cannot open the workbook. (IES 10872)

Cause

The Excel file could not be opened.

Action

Verify the Excel file or see your administrator.

10.5.3.72 Unable to create or update the Excel personal data provider: cannot retrieve the named ranges. (IES 10873)

Cause

Data could not be retrieved from a named range of cells.

Action

Check the Excel file or see your administrator.

10.5.3.73 Unable to create or update the Excel personal data provider: cannot retrieve data from the file. (IES 10874)

Cause

Data could not be retirieved from the Excel file.

Action

Verify the file or see your administrator.

10.5.3.74 Unable to create or update the Excel personal data provider: cannot retrieve data from the file. (IES 10875)

Cause

No data could be retrieved from the Excel file.

Action

Verify the file or see your administrator.

10.5.3.75 Unable to create or update the Excel personal data provider: cannot build the iterator on the data set. (IES 10876)

Cause

An error occurred when retrieving data from the Excel file.

Action

Verify the file or see your administrator.

10.5.3.76 Unable to create or update the Excel personal data provider: no worksheet available. (IES 10877)

Cause

No worksheet could be found in the Excel file.

Action

Verify the file or see your administrator.

10.5.3.77 Unable to create or update the Excel personal data provider: unable to retrieve the list of worksheets. (IES 10878)

Cause

The list of worksheets could not be retrieved from the Excel file.

Action

Verify the file or see your administrator.

10.5.3.78 Unable to create or update the Excel personal data provider: invalid data retrieved from the selected range. (IES 10879)

Cause

The data retrieved from a range in the Excel file is invalid.

Action

Verify the file or see your administrator.

10.5.3.79 Unable to create or update the Excel personal data provider: the selected worksheet is invalid. (IES 10880)

Cause

The Excel worksheet is invalid.

Action

Verify the Excel file or see your administrator.

10.5.3.80 Unable to create or update the Excel personal data provider: an error occurred while retrieving the data sampling. (IES 10881)

Cause

An error occurred during data retrieval from the Excel file.

Action

Verify the file or see your administrator.

10.5.3.81 Unable to create or update the Excel personal data provider: an error occurred while creating the data iterator. (IES 10882)

Cause

An error occurred during data retrieval from the Excel file.

Action

See your administrator.

10.5.3.82 Unable to create or update the Excel personal data provider: an error occurred during data retrieval. (IES 10883)

Cause

An error occurred during data retrieval from the Excel file.

Action

See your administrator.

10.5.3.83 Unable to create or update the Excel personal data provider: an internal error occurred. (IES 10884)

Cause

An error occurred during data retrieval from the Excel file.

Action

See your administrator.

10.5.3.84 Unable to create or update the Excel personal data provider: the range selection is invalid. (IES 10885)

Cause

An error occurred during data retrieval from the Excel file because the range selected was not valid.

Action

Verify the file or see your administrator.

10.5.3.85 Unable to create or update the Excel personal data provider: the range selection does not match the worksheet. (IES 10886)

Cause

An error occurred during data retrieval from the Excel file because the range selection does not match the worksheet.

Action

Verify the file or see your administrator.

10.5.3.86 A condition on an object refers to an object from another query that has a different type. (IES 10887)

Cause

The object in the other query has a different data type from the object in the condition.

Action

Correct the condition.

10.5.3.87 A condition on an object refers to an object in another query that does not exist. (IES 10888)

Cause

Either the object or query referred to by the condition does not exist.

Action

Correct the condition.

10.5.3.88 There is a circular dependency in the query. (IES 10889)

Cause

The query has a circular dependency.

Action

Edit the query to remove the circular dependency.

10.5.3.89 Database error: {error_db}. (IES 10901)

Cause

The database returned the error given in the message.

Action

See your administrator with the details of the error that occurred.

10.5.3.90 Query exceeded fixed time limit: {error_db}. (IES 10902)

Cause

The query could not return data because it took too long to run.

Action

Run the query again. If the problem persists see your administrator.

10.5.3.91 `Invalid Database Field Type : {db_fieldname}. (IES 10903)`

Cause

The database field given in the message contains an invalid data type.

Action

See your administrator.

10.6 ReportEngine Web Intelligence (RWI) Error Messages

ReportEngine Web Intelligence error messages include the following:

Range	Category
RWI 00000 - RWI 00850	ReportEngine Web Intelligence

10.6.1 RWI 00000 - RWI 00314

10.6.1.1 `User input is required for the prompt in the query. (RWI 00000)`

Cause

The server requires prompt values in order to fulfill the request.

Action

Enter values for all mandatory prompts.

10.6.1.2 User input is required to select an universe context for the query. (RWI 00001)

Cause

The server requires context(s) selection in order to fulfill the request.

Action

Supply context(s) choice.

10.6.1.3 The argument cannot be null. (RWI 00010)

Cause

The specified argument is "null".

Action

Enter a non-null value for the argument.

10.6.1.4 Invalid value: {0}. (RWI 00011)

Cause

The specified argument value is invalid.

Action

Enter a valid value for the argument.

10.6.1.5 The argument is out of range. (RWI 00012)

Cause

The specified argument value is not within the allowed range.

Action

Specify a value within the allowed range.

10.6.1.6 Unable to retrieve the requested report part(s). Either the report part references are invalid, or the corresponding data does not exist anymore. (RWI 00013)

Cause

One or more report part references are invalid, or the corresponding data is not available.

Action

Ensure that you are using valid report part references. Subsequently, ensure that the requested data is available after refreshing the document's data providers.

10.6.1.7 Cannot retrieve more than one report part simultaneously in DHTML output format. (RWI 00014)

Cause

You cannot retrieve more than one report part in DHTML output format simultaneously.

Action

Enter a single report part reference.

10.6.1.8 Cannot turn off search mode for delegated search. (RWI 00015)

Cause

A list of values defined as "delegated" search cannot have search mode disabled.

Action

Before disabling the search mode, check if the list of values is defined as "delegated search".

10.6.1.9 One of the supplied OutputCacheEntry instances is invalid or not supported by the Web Intelligence server. (RWI 00016)

Cause

While preloading the server output cache, one or more output formats specified are invalid or unsupported.

Action

Ensure that the requested output formats are valid and supported.

10.6.1.10 Could not read {0}bytes from the specified stream. (RWI 00017)

Cause

Upon upload of the resource into a document, the supplied data could not be read.

Action

Ensure that the specified parameters are correct and consistent.

10.6.1.11 The Web Intelligence server returned an invalid XML output. Contact your administrator. (RWI 00200)

Cause

The server returned an invalid or incorrect XML output.

Action

Contact your technical support.

10.6.1.12 Could not get page number. (RWI 00223)

Cause

The requested page could not be retrieved because of an invalid page number.

Action

Ensure that the requested page number is valid.

10.6.1.13 Cannot initialize Report Engine server. (RWI 00226)

Cause

Communication with the server could not be established. This may occur when attempting to create or open a document.

Action

Ensure that the server is installed correctly. Also, check if the server is started and enabled.

10.6.1.14 Your Web Intelligence session is no longer valid because of a timeout. (RWI 00235)

Cause

The server session allocated to a particular document has been closed, either explicitly or because of a timeout.

Action

Ensure that the document has not been explicitly closed. Alternatively, increase the <server session ttmeout> value.

To modify the server session timeout value:

1. Log on to the Business Intelligence platform Central Management Console (CMC).
2. Click Servers.
3. Expand Server Categories, and click Web Intelligence Services.
4. Under Server name, double-click WebIntelligenceProcessingServer. The Properties window appears.
5. In Properties window, under Web Intelligence Core Service, enter the value for Idle Connection Timeout.

10.6.1.15 The Web Intelligence server cannot be reached. Contact your administrator. (RWI 00236)

Cause

An error occurred while attempting to communicate with the server.

Action

Contact the administrator to ensure that the server is enabled and running. Also, check for network problems.

10.6.1.16 Cannot write output stream. Contact your administrator. (RWI 00237)

Cause

An I/O error occurred when writing data in response to a view request.

Action

Contact the administrator to ensure that the specified destination parameter is valid.

10.6.1.17 `Connection failed. The server has reached the maximum number of simultaneous connections. (RWI 00239)`

Cause

The maximum number of server connections allowed has been reached.

Action

Either raise the value of the `<maximum connections>` server parameter, or add another server instance.

To modify the maximum connections value:

1. Log on to the Business Intelligence platform Central Management Console (CMC).
2. Click Servers.
3. Expand Server Categories, and click Web Intelligence.
4. Under Server name, double-click WebIntelligenceProcessingServer. The Properties window appears.
5. In Properties window, under Web Intelligence Core Service, enter the value for Maximum Connections.

10.6.1.18 `Your server version is incompatible with this client version. Contact your administrator. (RWI 00240)`

Cause

The server does not support this SDK version.

Action

Contact the administrator to ensure that the server version is compatible with the client version.

10.6.1.19 Cannot find an XML transformer. (RWI 00301)

Cause

Unable to instantiate the XSLT transformer used for XML to HTML transformation.

Action

Try again later.

10.6.1.20 Cannot create translet. (RWI 00309)

Cause

Unable to compile the XSLT stylesheet used for XML to HTML transformation.

Action

Try again later.

10.6.1.21 Cannot get an output file for the document. (RWI 00314)

Cause

While serializing a document state, an error occurred. This might be due to insufficient memory or an I/O error.

Action

Ensure that there is sufficient memory available. Also, check for any <webi.properties> customization.

10.6.2 RWI 00315 - RWI 00605

10.6.2.1 Cannot retrieve an XML parser ID. (RWI 00316)

Cause

An error occurred during XSLT transformation. This might be because you are requesting output in XML format using a client supplied stylesheet.

Action

Ensure that the specified XSLT stylesheet is correct.

10.6.2.2 Cannot transform XML to HTML. (RWI 00317)

Cause

During XSLT transformation, an error occurred while requesting output in HTML.

Action

Try again later.

10.6.2.3 The Java Runtime Environment does not support UTF-8 encoding. (RWI 00321)

Cause

The JRE does not support UTF-8 encoding.

Action

Switch to a JRE that supports UTF-8 encoding.

10.6.2.4 An error occurred while retrieving the document from the storage token. (RWI 00322)

Cause

An error occurred during document state deserialization. This might be due to insufficient memory or an I/O error.

Action

Ensure that there is sufficient memory available. Also check for any <webi.properties> customization.

10.6.2.5 Cannot retrieve the document with the passed obsolete token. (RWI 00323)

Cause

An error occurred during document state deserialization. This might be caused by a storage token that identifies a document state, which is no longer available in the storage tokens stack.

Action

In the <webi.properties> file, increase the value of < storage tokens stack size>. Also, ensure that the storage token is valid before using it.

10.6.2.6 Cannot retrieve the document with the passed malformed token. (RWI 00324)

Cause

An error occurred during document state deserialization. This might be due to an invalid storage token.

Action

Specify a valid storage token.

10.6.2.7 There are too many operands for the current operator. (RWI 00501)

Cause

For the current operator, the condition or filter has too many operands to be able to add a new one.

Action

Remove existing operands before attempting to add a new one.

10.6.2.8 There are not enough operands for the current operator. (RWI 00502)

Cause

The condition or filter does not have enough operands with respect to the current operator.

Action

Add operand(s) to the condition or filter.

10.6.2.9 Prompts are not supported on filters created at the report level. (RWI 00503)

Cause

Report filters do not support prompts. Only query conditions support prompts.

Action

Do not use prompts in report filters.

10.6.2.10 You cannot modify operators and operands in predefined filters. (RWI 00504)

Cause

While using a pre-defined condition, you cannot specify an operator for a condition or filter.

Action

Ensure that the operator in the pre-defined condition does not have any filters or conditions.

10.6.2.11 LIKE and NOT_LIKE operators are allowed only on ObjectType.TEXT objects. (RWI 00506)

Cause

You attempted to use "LIKE" or "NOT_LIKE" operators for objects that are not of *character* type.

Action

When the object used in a filter is not of <character> type, ensure that you do not use the "LIKE" and "NOT_LIKE" operators.

10.6.2.12 The specified operator cannot be applied to a document filter. (RWI 00507)

Cause

The specified operator cannot be used with report filters. It can be used only with query conditions.

Action

Do not use this operator when working with report filters.

10.6.2.13 Web Intelligence is unable to attach a LOV (List of Values) to the prompt because the associated source object does not have a LOV. (RWI 00508)

Cause

Cannot use a list of values with the prompt being defined. This is because the object used in this condition does not contain a LOV.

Action

Before requesting the prompt to use the list of values, ensure that the object used within the condition has a defined list of values.

10.6.2.14 There are incompatible data source objects in the filter condition comparison. (RWI 00509)

Cause

You have attempted to compare two objects of different types within a condition.

Action

Use objects of the same type.

10.6.2.15 Cannot create a report filter on a formula. (RWI 00511)

Cause

Formulas cannot be used as report filters. Only data providers and variable expressions can be used.

Action

Use a data provider or variable expression when defining a report filter.

10.6.2.16 A percentage rank cannot have values greater than 100. (RWI 00512)

Cause

When you defined the percentage ranking, you chose a rank size that was greater than 100.

Action

Ensure that the rank size is less than 100.

10.6.2.17 The expression is not available in the axis. (RWI 00602)

Cause

You have attempted to create a break, calculation, or sort using an expression that is not in the axis.

Action

Use an expression that is available in the axis.

10.6.2.18 Only measure objects can be included on the y-axis. (RWI 00603)

Cause

You have attempted to add an expression to the axis, where the expression is not of <measure> type.

Action

Specify an expression of <measure> type.

10.6.2.19 You cannot base a section on a measure. (RWI 00604)

Cause

A section cannot be based on an expression of <measure> type.

Action

Do not use an expression of <measure> type as the basis for a section.

10.6.2.20 You cannot add more than one expression to a section axis. (RWI 00605)

Cause

A section axis does not support more than one expression.

Action

Do not use several expressions in a section axis.

10.6.3 RWI 00606 - RWI 00850

10.6.3.1 You cannot include a circular attachment in a document. (RWI 00606)

Cause

You have attempted to define a report attachment that causes a circular attachment.

Action

Define a report that does not generate a circular attachment.

10.6.3.2 The expression is different from the table cell expression. (RWI 00607)

Cause

You have attempted to create a calculation on a table cell, specifying an expression different from the one contained in the table cell.

Action

Create a calculation table with the expression that is already defined in the table cell.

10.6.3.3 You cannot copy a ReportElement object to an element in a different ReportElementContainer. (RWI 00608)

Cause

Report attachments can only be defined between report elements belonging to the same container.

Action

Ensure that you are creating report attachments between report elements that belong to the same container.

10.6.3.4 You cannot create a horizontal attachment on a section. (RWI 00609)

Cause

You have attempted to create a horizontal attachment in a section.

Action

Do not create horizontal attachments in a section, as sections cannot exceed the maximum allowed width.

10.6.3.5 You cannot remove all rows and columns from the table body. The table must contain at least one row and column. (RWI 00610)

Cause

You have attempted to remove the last row or column in a table body.

Action

Ensure that the table contains at least one row and column.

10.6.3.6 Dimension and detail objects only are allowed on this axis. (RWI 00611)

Cause

You have attempted to add an expression of incompatible type on an axis where only dimension and detail expression types are allowed.

Action

Specify an expression of compatible type.

10.6.3.7 Additional objects cannot be added to the block axis based on the block shape. (RWI 00612)

Cause

Cannot add more expressions to the specified block axis.

Action

Do not add more expressions.

10.6.3.8 This report element cannot have a double side attachment. (RWI 00613)

Cause

A report element cannot be horizontally and vertically attached to two distinct report elements.

Action

Ensure that the report element is attached (horizontally and vertically) to the same report element.

10.6.3.9 The table cell has been removed from its table. (RWI 00614)

Cause

You have attempted to use a table cell that has been removed from its containing table.

Action

You cannot use a table cell after it has been removed from its containing table.

10.6.3.10 Alerter isn't defined in current document. (RWI 00619)

Cause

Alerter referenced in report doesn't belong to alerter dictionary of document.

Action

Add alerter in dictionary.

10.6.3.11 Track data change mode should be active to perform a track data change action. (RWI 00620)

Cause

Unable to perform track data change action because track data was not activated.

Action

Enable track data changes mode in the Web Intelligence document.

10.6.3.12 An exception occured in the visualization framework. (RWI 00621)

Cause

An exception occured in the visualization framework.

Action

Check the inner exception.

10.6.3.13 Drill mode should be active to perform drill actions (RWI 00624)

Cause

Unable to perform drill action due to drill state.

Action

Activate the drill mode in the Web Intelligence document.

10.6.3.14 You cannot run an empty query. (RWI 00701)

Cause

You have attempted to run an empty query.

Action

Before running a query, add result objects to it.

10.6.3.15 Cannot delete the last data provider. (RWI 00702)

Cause

You have attempted to delete the last data provider in a document.

Action

A document must contain at least one data provider.

10.6.3.16 A data provider with this name already exists. (RWI 00703)

Cause

You have attempted to give a data provider a name that already exists in the document.

Action

Every data provider within a document must have a unique name.

10.6.3.17 Combined queries are incompatible with sampling mode activated. (RWI 00706)

Cause

Sampling cannot be used with combined queries.

Action

Do not use sampling with combined queries.

10.6.3.18 Processing remove data source objects while there are only two data source expressions. (RWI 00800)

Cause

You have attempted to remove an expression from a synchronized dimension that contains only two expressions.

Action

Ensure that a synchronized dimension always contains at least two expressions.

10.6.3.19 Cannot create a Link with a name that already exists ({0}). (RWI 00801)

Cause

You have attempted to create a synchronized dimension with a name that already exists.

Action

Provide a unique name for each synchronized dimension.

10.6.3.20 Cannot update CustomSortLov with a new list of values more than the size supported by CustomSortLov. (RWI 00825)

Cause

You have attempted to update the list of values of a custom sort definition with more values than allowed.

Action

Ensure that the number of values in the list is within the specified custom sort range.

10.6.3.21 Cannot create CustomSortLov while Report Expression's Lov size is greater than the size supported by CustomSortLov . (RWI 00826)

Cause

You have attempted to create the list of values of a custom sort definition with more values than allowed.

Action

Ensure that the number of values in the list is within the specified custom sort range.

10.6.3.22 The provided expression violates one of the feed restrictions. (RWI 00830)

Cause

The provided expression violates one of the feed restrictions.

Action

There is an error in the formula. Check the feed restrictions before adding a formula.

10.6.3.23 {0} feature is not supported. (RWI 00850)

Cause

You have attempted to use a particular feature that is not supported in the current context.

Action

Before using this feature, ensure that it is supported.

10.7 Custom Data Source (CDS) Framework Error Messages

Custom Data Source (CDS) Framework error messages include the following categories:

Range	Category
CDS 00001 - CDS 00013	Custom Data Source User Interface Framework error messages
CDS 10100 - CDS 10400	Web Services Custom Data Source Plugin error messages
CDS 15102 - CDS 15122	Custom Data Source Framework error messages

10.7.1 Custom Data Source User Interface Framework error messages

10.7.1.1 The selected file extension is not correct. (CDS 00001)

Cause

The extension of the file is not as expected or is different from the previously selected file.

Action

Check whether the correct file is selected.

10.7.1.2 Cannot access the file. (CDS 00002)

Cause

You have entered an incorrect file path.

Action

Check whether the correct path is entered.

10.7.1.3 The file does not exist. (CDS 00003)

Cause

The file does not exist at the path specified.

Action

Check whether you have specified valid path and filename.

10.7.1.4 The selected file is a directory. (CDS 00004)

Cause

The path entered points to a directory instead of a file.

Action

Enter the correct filename.

10.7.1.5 Error in processing data source - There was an invalid operation for the plug-in. (CDS 00005)

Cause

The plugin is not able to retrieve all the data source parameters.

Action

Check the logs and verify that the plug-in code is working properly.

10.7.1.6 An error occurred in the user interface of the plug-in. (CDS 00006)

Cause

An error has occurred in the plug-in user interface.

Action

Check the logs and verify that the plug-in code is working properly.

10.7.1.7 An error occurred while accessing the updated inputs. (CDS 00007)

Cause

An error occurred while accessing the data source parameters retrieved from the plug-in.

Action

Check the logs and verify that the plug-in code is working properly.

10.7.1.8 An object with this name already exists. (CDS 00008)

Cause

Another object with this name exists.

Action

Change the name of the object to a unique value.

10.7.1.9 The query with this name already exists. (CDS 00009)

Cause

Another query with this name exists.

Action

Change the name of the query to a unique value.

10.7.1.10 A problem was detected with the install. Please check and try again. (CDS 00010)

Cause

A problem was detected with the install.

Action

Check the installation setup. Refer to the documentation for more details.

10.7.1.11 Error in processing data source. (CDS 00011)

Cause

A problem was detected while identifying the data source.

Action

Check the logs to get the detailed error message.

10.7.1.12 The requested action could not be completed. (CDS 00012)

Cause

An error was detected.

Action

Check the logs to get the detailed error message.

10.7.1.13 Could not retrieve plug-in display component. (CDS 00013)

Cause

A error occurred while retrieving the plug-in component.

Action

Check the logs to get the detailed error message. Verify that the plugin-in code is correct.

10.7.2 Web Services Custom Data Source Plugin error messages

10.7.2.1 An error occurred while processing the requested action. (CDS 10100)

Cause

An unexpected error occurred while processing the requested action.

Action

Contact your enterprise administrator.

10.7.2.2 No selection made in Output Message panel. (CDS 10101)

Cause

User has not selected the field(s) for the query from the Output Message panel.

Action

Select the field(s) that need to be displayed in the report from the Output Message panel.

10.7.2.3 An error occurred while invoking Web Service. {0}(CDS 10200)

Cause

An error occurred while invoking a web service.

Action

Contact your enterprise administrator.

10.7.2.4 Error executing web service: "{0}" (CDS 10201)

Cause

The Web Service Endpoint could not be invoked because of incorrect input parameters.

Action

Enter the correct values while invoking the Web Service.

10.7.2.5 An error occurred while instantiating the Web Service plugin. (CDS 10202)

Cause

The extension descriptor of the web service plug-in did not return the correct dstype.

Action

Contact your administrator to fix the problem.

10.7.2.6 Parsing Exception: The input WSDL type or structure is not supported. (CDS 10203)

Cause

The structure of the WSDL is not supported by Web Services Custom Data Source plug-in.

Action

Refer the documentation for supported WSDLs.

10.7.2.7 WSDLs that refer to Microsoft's types namespace are not supported. (CDS 10204)

Cause

WSDLs that refer to http://microsoft.com/wsdl/types/ namespace are not supported.

Action

Modify the WSDL or select the supported WSDL.

10.7.2.8 WSDLs that have cyclical references are not supported. (CDS 10205)

Cause

WSDL type definitions contain cyclical references.

Action

Modify the WSDL or select the supported WSDL.

10.7.2.9 WSDLs that do not have type definitions are not supported. (CDS 10206)

Cause

WSDL does not contain any type definitions in <types> tags.

Action

Modify the WSDL or select the supported WSDL.

10.7.2.10 Unable to send SOAP request as the target URL is malformed. (CDS 10207)

Cause

The SOAP action target URL mentioned for this service in the WSDL is malformed.

Action

Modify the WSDL or select another WSDL that is supported.

10.7.2.11 WSDLs that use encoded messages are not supported. (CDS 10208)

Cause

The WSDL has operations that expect encoded messages.

Action

Modify the WSDL or select another WSDL that is supported.

10.7.2.12 An error was detected while parsing the response. (CDS 10400)

Cause

An error was detected while parsing the response from server.

Action

Check the product logs to get the actual cause of error.

10.7.3 Custom Data Source Framework error messages

10.7.3.1 Unable to create or update the Custom Data Provider : unable to retrieve information from the provided source. (CDS 15102)

Cause

An unexpected error occurred while trying to retrieve information from the provided source.

Action

Contact your administrator to resolve the error.

10.7.3.2 Unable to create or update the Custom Data Provider : unable to retrieve structure information from the provided source. (CDS 15103)

Cause

An unexpected error occurred while trying to retrieve the structure information from the provided source.

Action

Contact the plug-in support to verify that the plug-in is working properly. If the error is not resolved contact SAP support to resolve the error.

10.7.3.3 Unable to create or update the Custom Data Provider : unable to build the iterator on the data set. (CDS 15104)

Cause

An unexpected error occurred while trying to build the iterator on the dataset.

Action

Contact the plug-in support to verify that the plug-in is working properly. If the error is not resolved contac support to resolve the error.

10.7.3.4 Unable to create or update the Custom Data Provider : a problem was encountered in Data Source plug-in management and the requested action cannot be completed. (CDS 15106)

Cause

An unexpected error has occurred.

Action

Contact support to resolve the error.

10.7.3.5 Unable to create or update the query on this file : the file "{filename}" does not exist in the file system. (CDS 15107)

Cause

The file does not exist at the specified location.

Action

Check whether the file path specified for source file is correct.

10.7.3.6 Unable to create or update the Custom Data Provider : the path is invalid. (CDS 15108)

Cause

The file path mentioned is incorrect.

Action

Check that the path specified for the source is correct.

10.7.3.7 Unable to create or update the Custom Data Provider : invalid information retrieved while trying to get the structure. (CDS 15109)

Cause

An error occurred while trying to retrieve the structure information from the data provider.

Action

Contact the plug-in support to verify that the plug-in is working properly. If the error is not resolved, contact support to resolve the error.

10.7.3.8 Unable to create or update the Custom Data Provider : could not find matching Data Source plug-in for this request. (CDS 15110)

Cause

An error occurred while trying to retrieve the plug-in information.

Action

Check that plug-in implementation returns required plug-in information correctly. Refer to documentation for information on configuring the plug-in.

10.7.3.9 Unable to create or update the Custom Data Provider : could not instantiate matching Data Source plug-in for this request. (CDS 15111)

Cause

An error occurred while trying to instantiate the plug-in.

Action

Check that the plug-in details and MODULE-PATH in the plug-in MANIFEST file is correct. Refer to the documentation for information on configuring the plug-in.

10.7.3.10 `Unable to create or update the Custom Data Provider : could not instantiate Data Source plug-in's Data Provider for this request. (CDS 15112)`

Cause

An error occurred while trying to instantiate the Data Provider component of the plug-in extension.

Action

Contact the plug-in support to verify if the plug-in is working properly.

10.7.3.11 `Unable to create or update the Custom Data Provider : an error occurred while retrieving the data sampling. (CDS 15113)`

Cause

An error occurred in the plug-in while trying to retrieve sample data from the data provider.

Action

Contact the plug-in support to verify if the plug-in is working properly.

10.7.3.12 `Unable to retrieve data from the Custom Data Provider : an error occurred while creating the data iterator. (CDS 15114)`

Cause

An error occurred in the plug-in while trying to retrieve the data iterator.

Action

Contact the plug-in support to verify if the plug-in is working properly.

10.7.3.13 Unable to retrieve data from the Custom Data Provider : an error occurred while fetching data through the iterator. (CDS 15115)

Cause

An error occurred in the plug-in while trying to fetch the data through the iterator.

Action

Contact the plug-in support to verify if the plug-in is working properly.

10.7.3.14 Unable to create or update the Custom Data Provider : unsupported object type was provided by the Data Source plug-in while trying to get the structure. (CDS 15116)

Cause

The plug-in has data types that are not supported.

Action

Refer to the documentation for the list of supported data types.

10.7.3.15 Unable to create or update the Custom Data Provider : an internal error occurred while trying to open the session. (CDS 15117)

Cause

An error occurred in the plug-in while trying to open a session.

Action

Contact the plug-in support to verify if the plug-in is working properly.

10.7.3.16 Unable to create or update the Custom Data Provider : the source in the provided path is protected. (CDS 15118)

Cause

The plug-in could not proceed as the source file provided is a password-protected file.

Action

Refer to the plug-in documentation.

10.7.3.17 Unable to create or update the Custom Data Provider : the provided URL is invalid. (CDS 15119)

Cause

The plug-in could not proceed as the URL is invalid.

Action

Refer to the plug-in documentation.

10.7.3.18 Unable to create or update the Custom Data Provider : the provided URL cannot be found. (CDS 15120)

Cause

The plug-in could not proceed as the provided URL could not be found.

Action

Refer to the plug-in documentation.

10.7.3.19 Unable to interact with the Custom Data Provider on the provided source. (CDS 15121)

Cause

An unexpected error has occurred.

Action

Contact support to resolve the error.

10.7.3.20 A problem was encountered. The requested action cannot be completed. (CDS 15122)

Cause

An unexpected error has occurred.

Action

Contact support to resolve the error.

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