Reading Sample

In this sample chapter, you’ll start in Chapter 2 by creating your first document and query in SAP BusinessObjects BI. In this process, we’ll explore the query panel, SAP BEx queries, query filters, and data sources. Then, in Chapter 3, we’ll walk through creating a report in Web Intelligence from start to finish.

“Creating New Documents and Queries”
“Creating a Report in Web Intelligence”

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Chapter 2

Creating New Documents and Queries

Create queries graphically with the highly intuitive and enhanced Query Panel in Web Intelligence. Use the Result Objects pane and Query Filters pane to access the data you need from universes, Excel or text files, free-hand SQL, analysis views or web services, and then create and share powerful analysis documents with business users.

This chapter takes you through the first steps of creating a Web Intelligence document from within the BI Launch Pad portal. It describes a simple workflow starting from a relational universe and describes how to create a query from it through the Query Panel, and filter the retrieved dataset with filters and prompts.

All these steps are easily done through Web Intelligence Query Panel which provides business users with an intuitive interface for retrieving and filtering data. Queries are created graphically by selecting objects (database fields) to query or to filter. This collection of objects is translated a generated SQL statement sent to the database.

Specific versions of this Query Panel are also available for other data sources: Excel and text files, Free-Hand SQL, web service and analysis views. Query Panel’s advanced capabilities, like accessing SAP data sources, multi-dimensional universes, query stripping or multi-queries are covered in Chapter 12 to Chapter 14.

Whatever your data source, you can set some useful options to your document.

2.1 Creating a Web Intelligence Document from a Universe

The portal interface in SAP BusinessObjects BI 4.2 provides two ways to launch the Web Intelligence query and analysis tool in the BI Launch Pad. After logging on to the BI Launch Pad and going to the Home tab, you’ll notice a column on the right-hand
2 Creating New Documents and Queries

The side of the page with six application shortcuts. These links are beneath the My Applications heading.

Figure 2.1 shows the shortcut icons for these six applications in the BI Launch Pad:

- Module
- Analysis Edition for OLAP
- Information Steward
- Crystal Reports for Enterprise
- BI Workspace
- Web Intelligence

Figure 2.1 Launching Web Intelligence from BI Launch Pad

An alternate method of launching Web Intelligence from within the BI Launch Pad is by clicking on the Applications link located in the top menu of the page. Links to the same six applications as previously described will appear but in a different order.

Figure 2.2 shows the result of clicking on the Applications menu link and selecting Web Intelligence from the list provided.

An alternate method of launching Web Intelligence is to click its icon in the bottom of the pane in the right side.

If you have set Web Intelligence Java Applet as your preferred client (see Chapter 1, Section 1.3.2), then it opens after the security warning and the splash screen. Otherwise, if you have selected the Web Intelligence HTML client, then the HTML version opens almost immediately.

In both cases, Web Intelligence displays to a blank screen with all of the shortcut icons disabled except for two choices:

- Create a new document (Ctrl+N)
- Open (retrieve) a document from the server (Ctrl+O)

From the Web Intelligence tab itself, you have additional options to interact with the document by clicking on one of three small icons located beside the document name. This is where you can enlarge the screen by opening the document in a new window or simply close the Web Intelligence application. There are three clickable icon options on the Web Intelligence tab:

- Open in a new window
- Pin (or unpin) this tab
- Close

Figure 2.3 shows the options available after launching the Web Intelligence application and before a document is created or opened.

Click on the Blank Document icon to create a new Web Intelligence document.
Creating New Documents and Queries

As shown in Figure 2.4, the Create a Document dialog box opens and proposes you to create a blank document based on seven possible data sources:

- **Universe**
- **Excel**
- **BEx**
- **SAP HANA**
- **SAP HANA Online**
- **Analysis View** (this data source is not supported in Web Intelligence HTML)
- **Free-hand SQL**

The No data source option allows you to start creating a document without any data source.

In addition of the data sources supported in HTML and Java Applet, two additional data sources can be used to create Web Intelligence documents while working in the Web Intelligence Rich Client (see Figure 2.5): **Text** and **Web Services**.

As this is the most common data source, to introduce you the Query Panel, we’ll first describe the workflow to create a new document from a universe; other data sources being presented in Section 2.6.

The patented SAP BusinessObjects semantic layer known as the universe remains the primary method for connecting reporting documents to traditional data warehouses and relational databases. Historically, universes were created in the tool named Designer, renamed into Universe Design Tool in SAP BusinessObjects BI 4.0. SAP BusinessObjects 4.0 also introduced the Information Design Tool, a new universe creation tool that creates a new universe format (UNX). This new universe format can be created from multiple sources and from multidimensional sources.
The objects in your universes should be consistently named with business terms to provide users with the simplest and most intuitive approach to retrieving the data they need.

Additional Reference

But little has changed from a user’s perspective when it comes to connecting to a universe to query a database. Database fields, known in the universe as objects, are used in the Query Panel to retrieve data and to restrict the results to return only the information needed.

After selecting Universe as the data source for a new document, you’re presented with a list of available universes that you have permission to access. Click on a universe in the list, and click on Select to proceed. Figure 2.6 shows an example list of available universes that can be used as a data source.

![Figure 2.6 Universe Selection](image)

After you make your universe selection, the Web Intelligence tool will be launched and opened to the Query Panel. Before you can begin analyzing information and creating reports, you need to retrieve information from your data source. The Query Panel is your window for accessing that data.

### 2.2 The Query Panel in Web Intelligence

The Query Panel in Web Intelligence provides an intuitive interface for selecting objects and retrieving results from universes.

Specific versions of this Query Panel are available to query other data sources and are described in:

- Section 2.6 for Excel and text files, Free-Hand SQL, web services and analysis views.
- Chapter 12 for multidimensional data sources, text files and web services.
- Chapter 13 for SAP BW and SAP HANA data sources.

Figure 2.7 shows a glimpse of the full Query Panel at the beginning of the query-building process after you have selected a relational universe as the data source. Query Panel advanced capabilities, including querying a multidimensional universe, are described in Chapter 12.

![Figure 2.7 Universe Query Panel](image)
As seen in Figure 2.7, the Query Panel consists of five major panes; you can display/hide four of them with the icons in the toolbar. These panes are:

- **Universe** pane (toggled with the icon)
  Contains the objects available in the connected data source.

- **Result Objects**
  Retrieves data from the database when you drag and drop objects from the Universe pane to this pane to begin creating a query.

- **Query Filters** (toggled with the icon)
  Restricts the results returned from the data source.

- **Data Preview** (toggled with the icon)
  Displays a preview of the result set based on the objects included in the Result Objects pane.

- **Scope of Analysis** (toggled with the icon)
  Shows the hierarchy and drill path of the objects in the universe.

### Table 2.1 Objects in Relational Universe Outline

<table>
<thead>
<tr>
<th>Icon</th>
<th>Object</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="icon" alt="Dimension" /></td>
<td>Dimension</td>
<td>A dimension is an object you want to query about in your data source. It can be a product, a service, a customer—any metadata for which you store data in your data source.</td>
</tr>
<tr>
<td><img src="icon" alt="Dimension Attribute" /></td>
<td>Dimension Attribute (also named detail)</td>
<td>A dimension attribute is always associated with a dimension. It provides descriptive data about this dimension. For example, a Customer dimension may have an Address attribute.</td>
</tr>
<tr>
<td><img src="icon" alt="Measure" /></td>
<td>Measure</td>
<td>A measure is mainly a numeric data on which aggregation functions can be applied. A measure is aggregated by the set of dimensions composing the query.</td>
</tr>
<tr>
<td><img src="icon" alt="Measure Attribute" /></td>
<td>Measure Attribute (also named detail)</td>
<td>An measure attribute is always associated with a measure. It provides descriptive data about this measure. For example, a Sales measure may have a Sales Percentage attribute.</td>
</tr>
<tr>
<td><img src="icon" alt="Filter" /></td>
<td>Filter</td>
<td>A filter is a condition object that limits the data returned by the query.</td>
</tr>
<tr>
<td><img src="icon" alt="Folder" /></td>
<td>Folder (also named class)</td>
<td>A folder is a container intended to logically organize the other objects. A folder can contain sub-folders.</td>
</tr>
</tbody>
</table>

### Note

The Scope of Analysis and Data Preview panes can’t be displayed at the same time. Toggle between these sections by using the shortcut icons in the toolbar.

#### 2.2.1 Creating the Query

The Universe outline pane is located on the left side of the document and shows you the database fields or objects that can be retrieved or used to filter the query.

The purpose of the Universe outline pane is to provide the list of objects available in the connected data source to be used as result objects or filters in the query. This pane contains the classes and objects that were previously set up in the universe. The terminology used for object aliasing in universe design begins to play an important role in the Query Panel when deciding which objects to include in the query.

A relational universe contains the objects described in Table 2.1.
To define your query to your data source, select objects from the Universe outline pane and drag and drop them into the Result Objects pane. You can also drag and drop a folder, which will add all objects of the folder in the Result Objects pane, as shown in Figure 2.9.

In the Result Objects pane, you can organize your query:
- Select an object and drag and drop it to change its place in the query
- Select an object and click the Delete icon to remove it from the query
- Click the Delete All icons to remove all objects from the query

2.2.2 Setting Query Properties

Query properties are used to set properties for eight different categories in the current query. You can access the properties by clicking on the Query Properties icon located at the top of the Query Panel, which opens the Query Properties dialog box, shown in Figure 2.10.

Let’s examine these properties:
- Name
  This property allows you to revise the name of any query in the document or Query Panel. This setting becomes very useful when multiple queries are added to a single Web Intelligence document (see Chapter 14).
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- **Universe**
  This property is read only and displays the name of the current universe.

- **Limits**
  You can apply the Max rows retrieved and Max retrieval time (s) settings to restrict the result size and retrieval duration of the query (in seconds) by clicking on the checkbox beside the desired setting and then revising the associated number to your preference.

- **Sample**
  Sampling enables you to retrieve a fixed or random sample of the data when querying databases that support it. Random sampling is applied by default unless Fixed is selected. Sampling is disabled if your database doesn’t support sampling.

- **Data**
  This property provides the option to retrieve duplicate rows or unique rows when refreshing. Both settings are unchecked by default. To optimize the query, you can also select the Enable query stripping option (see Chapter 12, Section 12.6).

- **Security**
  This section provides the option to allow other users to edit all queries and is checked by default. If unchecked, only the report developer can make revisions to the current document.

- **Prompt Order**
  This section allows you to change the order of the prompts if multiple prompted filter objects exist in the Query Filters pane.

- **Context**
  This setting provides the option to reset contexts upon refreshing (unchecked by default). A checkbox is provided to clear contexts before the next refresh.

**Tip**
Choosing to display the objects by hierarchies gives you an opportunity to see the relationship of the dimension objects in the universe. This is useful when setting up drillable report filters with cascading values.

Understanding the properties available in the Query Panel is important for effectively producing queries with a desired outcome, such as limiting the number of rows retrieved by a query or defining the order of prompted filters.

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2.2 The Query Panel in Web Intelligence

### 2.2.3 Previewing Data

The Data Preview panel can be helpful because it lets you preview a sample of the data based on the existing result objects and query filters before actually running a query.

Previewing data allows you to control the content of your query on a small dataset, preventing you from running the complete query that can take long and allowing you to do some adjustment to the query while you’re still in the Query Panel.

To view a preview of the data, open the Data Preview panel, and click on the Refresh icon located in the upper-right corner of the panel. A sample of the result data will be displayed inside the panel, as shown in Figure 2.11.

**Figure 2.11 Data Preview**

**Filter Preview Data**

While reviewing data in the Data Preview panel, you have the option to further restrict the result set by creating a query filter for a specific value. To do this, right-click on a value in the panel and select Create simple filter. This selection will add the...
object and value to the Query Filters panel. Click on Refresh in the Data Preview panel again to preview the updated data set.

Figure 2.12 shows the Data Preview panel if you right-clicked on Los Angeles in the City column. Select the Create simple filter: City equal to Los Angeles option to dynamically create a custom filter object in the Query Filters panel.

Figure 2.12 Creating Simple Filters from the Data Preview Section

Using Search to Filter Data Preview Values
If you’re looking for a specific value in a data set but are unable to locate it in the Data Preview panel, click in the search window located beneath the panel, and begin entering your term or phrase. The box will search through every row in the panel and immediately filter the results. Searching begins when a single letter or number is entered, and every column in each row is searched.

Figure 2.13 shows the letters “Trou” entered in the search bar with the Lines column selected. The data in the Data Preview panel filters the results immediately, and the rows with sweaters are easily located.

Figure 2.13 Dynamically Filtering Preview Data

By previewing a sample of the data set, you can identify areas to improve the query and further refine the information set to be retrieved from the data source.

2.2.4 Evaluating Generated SQL Script
After a query has been created, you have the opportunity to review script generated by the Query Panel. You can view the SQL script generated from the query by clicking on the View Script shortcut icon at the top of the Query Panel. Two options are available in the Query Script viewer to either view or edit the query script:

- Use the query script generated by your query.
- Use custom query script. The script becomes editable when you select the Use custom query script option (see Chapter 12, Section 12.5).

Figure 2.14 shows the options available when viewing the script of the query. The default selection is the Use the query script generated by your query radio button.

Figure 2.14 View Query Script Generated by the Query Panel
2.2.5 Running the Query

Once you have created your query, you have to run it to retrieve dataset. To do so, click the **Run Query** button in the top right side of the Query Panel. The Query Panel closes; a progress bar displays while the query is sent to the data source and the dataset is fetched.

After a query has been refreshed in Web Intelligence, the data is stored in memory in an unseen **microcube**. A microcube is a data storage structure in each report, used store the query results behind the scenes. Users can present any combination of the data with any type of data block or chart type, while keeping the ability to drill down and apply report-level or block-level filters.

The microcube allows you to analyze data using different dimensions in separate report tabs and report blocks, while revealing only the data that you request. This is done by storing the result data of each document for the last query that was successfully executed. Until the data becomes visible in a report, it remains stored behind the scenes in the microcube. The style, format, and presentation of the data is controlled by the report designer, so they may most effectively display data to solve business problems.

As described in next chapters, microcube can be used for complex calculations on the data it stores. At this point, the data, ready to be formatted and presented in a report, is displayed in the report as a simple table. You can then create your document with all the powerful filtering and visualization features available in Web Intelligence.

The Report Panel is displayed after a query has been refreshed allowing you to organize and format your document, as described in next chapters. To return to editing the query, you can in Design mode:

- Click on the **Data Access** tab, select the **Data Providers** tab, and then click on **Edit Query**.
- Click the **Edit** button in the toolbar, as shown in Figure 2.15.

![Figure 2.15 The Edit Icon](image)

This reopens the Query Panel with the query you have created in the first place. You can now add, remove or rearrange objects to and from the query, or add filters to restrict the dataset fetched from the database, as described next.

2.3 Query Filters

Query filters are used to generate the **Where** clause for the SQL script that is submitted to the data source. These objects work very closely with the **Result Objects** pane to provide a simple and intuitive interface for retrieving and restricting data from the data source. More details on query filters can be found in Chapter 10, Section 10.1 and Chapter 12, Section 12.1.

Query filters allow you to minimize the amount of data returned from the query by restricting the results to specific criteria. For example, you can add the **Month** dimension to the **Query Filters** pane and set it to **July**, and then add the **Year** dimension and set it to **2014**. Doing this will retrieve all the values for the objects included in the **Result Objects** pane for July 2014. Query filters offer you the following benefits:

- Ability to return only the data you need to fulfill reporting requirements
- Ability to restrict confidential data from being displayed in reports or being returned to the microcube
- Ability to retrieve manageable result sets that can be exported to Excel, exported as a PDF, or printed

Filters are identified by two major categories: predefined filters (or conditions) and custom filters.

2.3.1 Predefined Filters

**Predefined filters** are created by a developer or administrator and saved in the universe as **conditions**. These predefined conditions are easily recognizable in the Query Panel because a yellow filter icon appears to the left of the condition name.

An example of a very simple predefined filter is the **This Year** condition predefined in the demo eFashion universe. The following line of code was added to the **Where** section in the properties of the condition to create the filter:

```
Calendar_year_lookup.Yr = '2006'
```
A more accurate and user-friendly name for this object would be Year 2006 rather than This Year to minimize any potential confusion in the future.

Predefined filters are created in the universe and can contain a variety of complex SQL formulas. By creating predefined filters, users can easily and intuitively constrain their queries to return specific data sets without having to create their own filters.

### Condition Segments

Universe developers can create conditions containing any of the following segments:

- **Case statements**
  - Provide If/Else/Then logic to a condition or object.
- **And/or logic**
  - Multiple filters can be applied within a single condition.
- **In list**
  - Allows a condition to be created for many items in a list.

To add a predefined filter into your query, you can:

- Select it from the Universe outline and drag and drop it into the Query Filters pane
- Double-click it

### 2.3.2 Custom Filters

Custom filters are conditions created by report developers. These types of filters are created when dimension objects are dragged and dropped into the Query Filters pane, an operator is chosen, and a value is entered or selected.

After a dimension object has been added to the Query Filters pane, you can choose how to set up the filter. This includes modifying the operator and assignment type, and configuring the filter properties.

A dimension object can be set up as a filter with one of the following five types:

- **Constant**
  - Manually enters a custom value.
- **Value(s) from list**
  - Provides a list of values for one or more selections.
- **Prompt**
  - Prompts the user to enter or select a value when the query is refreshed.
- **Object from this query**
  - Provides the capability to select a predefined object or variable as the dimension value (although you can’t use the In list or Not in list operators).
- **Result from another query**
  - Allows filters to be created using a result object retrieved by a different query within the same document.

The default operator when a dimension is added to the Query Filters pane is In list, and the default assignment type is Constant.

As shown in Figure 2.16, the operators available when creating a condition are as follows:

- **In list**
  - Retrieves the data for one or more selected or entered values.
  - Example: City IN ('Austin', 'Boston', 'Chicago', 'Dallas')
- **Not in list**
  - Restricts the query from returning data for one or more selected or entered values.
  - Example: City NOT IN ('Austin', 'Boston', 'Chicago', 'Dallas')
- **Equal to (=)**
  - Obtains data equal to a selected or entered value.
  - Example: Lines = Sweaters
2.3 Query Filters

Note
The wild card character (%) is used to represent an indefinite number of characters. The underscore symbol (_) is used to represent a single character. An example of using three underscore wild card characters is a formula written as `City = 'Bos___'` used with the Matches pattern operator. The result returns Boston.

- **Not equal to** (<>)
  Obtains data not equal to a selected or entered value.
  *Example*: Lines <> Jackets

- **Greater than** (>)
  Retrieves only the data greater than an entered value.
  *Example*: Sales revenue > 1500

- **Greater than or Equal to** (>=)
  Retrieves only the data greater than or equal to a selected or entered value.
  *Example*: Sales revenue >= 1500

- **Less than** (<)
  Retrieves only the data less than a selected or entered value.
  *Example*: Sales revenue < 1500

- **Less than or Equal to** (<=)
  Retrieves only the data less than or equal to a selected or entered value.
  *Example*: Sales revenue <= 1500

- **Between**
  Retrieves only the data between two values.
  *Example*: Sales revenue Between 1500 and 2000

- **Not Between**
  Retrieves only the data not between two values.
  *Example*: Sales revenue Not Between 1500 and 2000

- **Is null**
  Retrieves only the values that don’t have data (i.e., have a null value).
  *Example*: Lines Is null

- **Is not null**
  Retrieves only the values that have data.
  *Example*: Lines Is not null

- **Matches pattern**
  Retrieves the data that matches the pattern of a selected or entered value. This operator is translated as `Like` when the SQL script is generated. In the example, rows for all objects where the lines begin with `S` will be returned.
  *Example*: Lines Matches pattern 'S%'
2.3.4 Nested Conditions

Query filter conditions can be grouped by using AND and OR to perform extended business logic with conditions.

Figure 2.18 shows a Query Filters pane with filters and predefined filters organized into nested conditions. These conditions are grouped to provide a more customized filtering technique.

2.4 Prompted Queries

You can group filters by following these steps:

1. Drop an object or predefined condition to the very bottom of the condition that you want to group it with.
2. By default, the objects will appear in an AND group.
3. If OR is required, double-click on the new AND group operator, and the group operator will become OR.

The example in will return only the values associated with last year’s Christmas period or the holiday period for this year.

Query filters minimize or completely eliminate returning unnecessary information. You can apply a combination of custom and predefined filters that accurately restricts information. You can also add prompted filters to documents that require user input when opening or refreshing reports.

2.4.1 Creating a Prompted Filter

To create a prompted filter, follow these steps:

1. In the Query Panel, after you have added an object in the Query Filters pane, click on the Properties button located to the right of the filter object to reveal five filter condition types, as shown in Figure 2.19.
2. Select **Prompt** as the condition type. A default label is entered as the prompt question: "Enter <object name>:".

3. Click on the **Prompt Properties** button located immediately to the left to open the **Prompt Properties** dialog box shown in Figure 2.20 where you can set up the properties for the prompted condition.

4. Modify the available prompt properties accordingly to how you want to display the prompt at refresh time. For the moment, let’s simply modify the **Prompt text** and add a different text than the default one. This prompt text lets you create customized and appropriate messages for business users when they are prompted to enter or select values.

5. Click OK to close the **Prompt Properties** dialog box and continue to add objects to your query.

### 2.4.2 Running the Query

When you have completed your query, it is time to run it.

Because you have added a prompt to your query, the **Prompts** dialog box opens before the query is sent to the data source. As shown in Figure 2.21, this dialog box gathers all prompts defined in the query and that can be answered before running the query.

The **Prompts Summary** displays the prompt text set when defining the prompt. To answer the prompt, you can either:

- Double-click a city name in the list of values proposed to you. The selected city will then be displayed in the **Selected Value(s)** text field.
- Type a city name in the **Type a value** text field and click the > button to move this name in the **Selected Value(s)** text field. This is possible since when we have defined the prompt, we have kept the **Select only from list** checkbox unselected. However, typing another city name will likely return no result if the data source contains no data for this city.
The OK button remains disabled until you have properly answered the required prompts. When this is the case, you can click it to run the query. The query is updated to take into consideration the value you have selected and filter the dataset with your answer to the prompt.

More details on prompts can be found in Chapter 9.

2.4.3 Data Source Prompts

In addition to the prompts that can be created in the query, some prompts may exist in your data sources. These prompts may require you to maintain several values before the dataset can be retrieved from this data source. Let’s look at these prompts now:

- **Universe context**
  
  When querying a relational universe creating in Universe Design Tool or Information Design Tool, the objects you have selected may return several possible answers. The Universe context prompt will require you to resolve these differences.

  Contexts are resolved in the Query Contexts dialog box as shown in Figure 2.22. They are prompted to you before the universe or user-defined prompts.

  ![Figure 2.22 Context Selection Prompt](image)

  - With more complex cases, you may have more than two contexts to resolve in the Query Contexts dialog box. Here, select a context defined a path in the data schema to answer the query. This path might also prompt you for other context choices and impact the other prompts you need to answer for the query.

- **Universe prompts**
  
  Universe prompts are also defined in the relational or multidimensional universe. These prompts are created by your universe designer to ask you for a value that will be used to filter the dataset. Such prompts are typically put in place to reduce the size of the dataset, avoiding database stress. You answer them also in the same Prompts dialog box, as described in Section 2.4.2.

- **SAP variables and input parameters (SAP HANA, SAP BW)**
  
  SAP systems (SAP BW or SAP HANA) may also expose some specific prompts named variables and input parameters. These prompts can modify the objects you can query in the Query Panel. Chapter 13 describes how you answer them.

  After you have created and refreshed your document, remember to save, so you don’t have to recreate it next time you need to run the same query.

2.5 Saving Your Document in the BI Platform Repository

To avoid you to recreate your query and document, you can save your document into the BI platform repository.

In the BI platform, you can save the document either in:

- The Public Folders folder or sub-folder, depending on the security rights your administrator has set to you

- Your personal folder, that only you can access. When working in a production environment, the best workflow is to save documents there first to make changes to the query or one of the reports before saving them in the Public Folders folder or one its sub-folder.

You can also save your document in your file system, and use it through the Web Intelligence Rich Client (see Chapter 21, Section 21.3.2).

When saving your document in your BI platform repository, you can:

- Give it a name, a description and keywords. These are useful to easily identify and find your document.

- Assign it some categories, public or private.

- Set some Web Intelligence settings:
  - Refresh on open: Use this option to force the document to be refreshed when it is opened (Section 2.5.3).
2 Creating New Documents and Queries

- **Permanent regional formatting**: Use this option to save the document locale in the document, allowing it to be displayed in the same locale, when opened by users from other regions.
- **Save document with comments**: This option is available only if you save an existing document under another name and want to duplicate its comments as well (see Chapter 18, Section 18.5).

The dialog box to save a document differs depending on the client you use: Web Intelligence Applet or HTML.

2.5.1 Save Document Dialog Box in Applet

In Web Intelligence Applet, follow these steps to save your document:

1. If your document has already been saved in the BI platform repository, click the **Save** icon located in the upper left corner of the report, in the **File** tab, to overwrite the existing version.

   If your document has never been saved, or if you click the drop-down menu under the **Save** icon (shown in Figure 2.23) to explicitly select the **Save As...** option, the **Save Document** dialog box opens. This dialog box (shown in Figure 2.24) allows you to enter the required details for saving this document.

2. Use the **Folders** tab to navigate in the folders structure and select the document destination folder.

3. You may click the **Categories** tab to select the categories to assign to the document.

4. Enter a name for this document in the **Name** text field.

5. Click the **Advanced** button to expand the **Save Document** dialog box and display the **Description**, **Keywords** and save options, as shown in Figure 2.25. If needed, fill these fields and modify the options.

6. Click **Save** to save your document.
2.5.2 Save Dialog Box in HTML

In Web Intelligence HTML, you can save your document by clicking the downward arrow beside the save icon located in the upper left corner of the report. This opens the Save As dialog box, as shown in Figure 2.26.

Then, to save the document, follow these steps:

1. In the tree list, you can navigate into the folder where the document will be saved. This folder can be in your personal folders (click Favorites Folder tray) or corporate (click Favorites Folder tray).
2. In the File Name text field, enter the name for the file.
3. To display more options, click the >> button beneath the Save As Type selection. As shown in Figure 2.27, this extends the dialog box to display Description, Keywords text fields and Assign Category tree and Refresh on open and Permanent regional formatting options.

4. Enter the appropriate options and click Save to save your document.

Small Screen

If you have a small screen, when you extend the save dialog box, you may not see the Save button anymore. Scroll down to the bottom of the window to access it.
2.5.3 Using Refresh on Open Option
You can force a document to be refreshed when it is opened by selecting the Refresh on open checkbox when saving it. This option can be set for the following reasons:
- To make sure the reader has the most recent data.
- When security has been defined to be applied, this forces this security to be applied to the current reader, preventing him to see data from a previous refresh by another user.
- If you have defined filter prompts when defining the query (Section 2.4), then before retrieving the dataset from the dataset, the Prompts dialog box pops up to allow you to select values for these prompts.

This option can be set either when saving the document (Section 2.5) and is available among the advanced options. Alternatively, you can also set the Refresh on open option in the Document Summary dialog box (Section 2.7).

Administrator Setting
Through security rights (see Appendix B), your administrator can force documents to be refreshed on open. This is the case to force data security to be applied at query time and prevent users to disable it.

2.6 Other Data Sources
As described in Section 2.1, one of Web Intelligence’s strengths is to allow you to query several data source types, in addition to the ones supported through the universe. The next sections describe the workflows for these other data sources, except SAP BW and SAP HANA, which are covered in Chapter 13.

2.6.1 Excel as a Data Source
Using Microsoft Excel, it is easy to quickly create a database and store data into spreadsheets. But this approach has some drawbacks:
- Because of this flexibility, many Excel files can be created, without any control, making them hard to maintain.
- The data they contain cannot be traceable.

By storing the Excel files in the BI platform repository, you can add controls on these files, and then use them as data sources for Web Intelligence documents.

To create a Web Intelligence document on an Excel file, follow these steps:
1. Once you have opened Web Intelligence, create a new document, as described in Section 2.1.
2. In the Create a Document dialog box (see Figure 2.4 or Figure 2.5), when you are asked to select a data source, select Excel and click OK.
3. In the Open a document from server dialog box that opens (see Figure 2.28), navigate in the BI platform repository folders to find the Excel file to use.

![Figure 2.28 Selecting Excel File in BI Platform Repository](image)

4. Select the Excel file to query and click Open.
5. In the Custom Data Provider – Excel window that opens (see Figure 2.29), you can define how the Excel file will be fetched:
   - In the Sheet Name drop down list, select the sheet name that contains the data.
In the Field Selection radio-buttons, select the fields to query: all of them (All Fields), by defining a range (Range Definition), or by selecting a range name already defined in the spreadsheet (Range Name).

Select the First row contains column names checkbox to accept the first row in the spreadsheet as column names. These column names are by default used to name the mapped objects.

Additionally, you can change the Excel file used as a source by clicking Browse and selecting another file. Click OK to move to the Query Panel for Excel.

6. As shown in Figure 2.30, this Query Panel has some differences with the universe Query Panel. The columns coming from the Excel file are displayed as objects in the Result Objects pane. The Data Samples pane shows you a preview of the dataset to be retrieved. You can select an object and in the Object Properties, modify:

- Its name
- Its qualification (dimension, measure or attribute)
- Its type
- Its aggregation function, if you have defined it as a measure
- Its associated dimension, if you have defined it as an attribute

7. In the Query Properties pane, you may:
   - Modify the query name in the Name text field
   - Modify the source Excel file by clicking the button beside the Source Path field
   - Unselect the Refreshable checkbox to not refresh the query when the document is refreshed.

8. In the Query Definition pane, you may click Edit settings to open the Custom Data Provider – Excel dialog box and modify the sheet and field selection defined when selecting the Excel file.

9. Click Run Query to close the Query Panel, get the dataset from the Excel file and display them in the report.

Once the dataset is displayed in the report, you can continue to build your report as defined in next chapters.

2.6.2 Free-Hand SQL as a Data Source

If your administrator has given you the right to do so, you can directly query a relational database by providing a SQL statement. This capability, named free-hand SQL, gives some flexibility to query but requires to know the underlying schema table.
This capability supports the ANSI SQL 89/92/98. The SQL query you enter can contain:

- Stored procedures
- @variable
- @prompt in the SQL, which allows you to parameter your query

However, the SQL is not run if it contains Data Definition Language (DDL) commands—DROP, ALTER,—that can modify the database.

If your SQL query is valid, you can define objects to map the returned columns and use them in the Web Intelligence document, as if they were returned by any other data source.

For each object, you can define the following properties:

- Its name
- Its qualification: dimension, attribute or measure
- Its type: string or numerical
- Its aggregate function, if you have defined it as a measure
- Its associated dimension, if you have defined it as an attribute

Creating a document from free-hand SQL can be done with Web Intelligence Rich Client, HTML or Java applet. It must be based on a connection stored in the BI repository, hence you must be connected to it.

To create a document with free-hand SQL, follow these steps:

1. From BI Launch Pad, select to create a new Web Intelligence document, or in Web Intelligence Rich Client, connect to the BI platform, then select to create a new document.

2. In the Create a Document dialog box (see Figure 2.4 or Figure 2.5), when you are asked to select a data source, select Free-hand SQL and click OK.

3. In the Select a relational connection dialog box that opens, navigate in the BI repository folders to select the connection to use. Select it and click OK.

4. In the Query Script editor dialog box (Figure 2.31), type the SQL statement, then click OK.

Figure 2.31 Free-Hand SQL Query Script Editor

5. The Query Panel opens. As shown in Figure 2.32, it has some differences with the universe Query Panel. The columns returned by your SQL are displayed as objects in the Result Objects pane. You can select an object and in the Object Properties pane, modify:
   - Its name
   - Its qualification (dimension, measure, or detail)
   - Its type
   - Its aggregation function, if you have defined it as a measure
   - Its associated dimension, if you have defined it as a detail
6. In the **Query Properties** pane, you may:
   - Modify the query name in the **Name** text field
   - Modify the relational connection by clicking the button beside the **Connection** field
   - Select the **Max Rows Retrieved** checkbox and then enter a value in the text field beside to limit the number of rows returned by the SQL query
   - Select the **Max Retrieval Times** checkbox and then enter a value in the text field beside to set the SQL query timeout (in seconds)

7. In the **Query Definition** pane, you may click **Edit SQL...** to open the **Query Script editor** dialog box and modify the SQL query.

8. Click **Run Query** to close the Query Panel, get the dataset from the SQL query and display it in the report.

   Once the dataset is displayed in the report, you can continue to build your report as defined in next chapters.

---

2.6 Other Data Sources

2.6.3 Text Files as a Data Source

Using a text file as the data source can only be done from Web Intelligence Rich Client. This option is not available in Web Intelligence HTML or Applet.

To create a document from a text file, follow these steps:

1. In Web Intelligence Rich Client, select to create a new document.
2. When you are proposed to select your data source, select **Text**.
3. The **Open a document** dialog box opens where you can navigate in your file system to choose your text file to use as data source.
4. Once you have selected it, click **Open** to validate your choice. The **Custom Data Provider – Text** dialog box is launched (see Figure 2.33).

   ![Custom Data Provider – Text Dialog Box](image)

5. Select the options for the **Data Separator** and **Text Delimiter** of the source text file. Other options include assigning the first row of the file as column names, and selecting the **Locale**, **Charset**, and **Date Format**.

6. Click **OK** to close the **Custom Data Provider – Text** dialog box and opens the Query Panel.

7. As shown in Figure 2.34, this Query Panel is very similar to the one for Excel.
8. The columns coming from the text file are displayed as objects in the **Result Objects** pane. The **Data Samples** pane shows you a preview of the dataset to be retrieved. You can select an object and in the **Object Properties**, modify its name, qualification, type, its aggregation function (if you have defined it as a measure) or its associated dimension (if you have defined it as an attribute).

![Figure 2.34 Text File Query Panel](image)

9. Click **Run Query** to close the Query Panel, get the dataset from the text file and display it in the report.

### 2.6.4 Web Services as a Data Source

In Web Intelligence Rich Client, you can also create Web Intelligence documents using web services as the data source. These web services can be created from Query as a Web Service Designer, data blocks published as web services from other Web Intelligence documents, or generic web services.

1. In Web Intelligence Rich Client, select to create a new document.
2. When you are proposed to select your data source, select **Web Services**.
3. The **Custom Data Provider – Web Services** dialog box, as shown in Figure 2.35. In the **Source URL** text field, enter your web service URL, then click **Submit**.

![Figure 2.35 Custom Data Provider – Web Services Dialog Box](image)

4. The dialog box is then extended to propose you more options, as shown in Figure 2.36.
   - In the **Service Name** drop down menu, among the services exposed by the web service, select the one to query.
   - In the **Port Name**, select the port used by the web service.
   - In the **Operation Name**, select the operation to query.

![Figure 2.36 Web Service Details](image)

5. The **Message Details** section is filled with the services details, as shown in Figure 2.37. You may click the **SSO Enabled** checkbox to use Single Sign-On for authentication.
6. This tree list behind describes the web service’s Web Service Definition Language (WSDL). This WSDL defines the web service contract. It allows you to set some values to pass to the web service when it is called.

![Web Service Details](image1)

**Figure 2.37 Web Service Details**

7. For example, go at the bottom of the tree and select *login*.
8. In the **Enter Value** text field, enter the username to authenticate, then click **Apply**.
9. Identically, select *password* and enter the password for this user then click **Apply**.
10. As shown in Figure 2.37, both branches are filled with the values you’ve entered.
    - **Click OK** to validate the web services definition.
11. The **Custom Data Provider – Web Services** closes and the Query Panel opens.
12. As seen in Figure 2.38, this Query Panel is very similar to the one for Excel and text file and you can perform the same actions.

![Web Service Query Panel](image2)

**Figure 2.38 Web Service Query Panel**

13. The columns coming from the web services are displayed as objects in the **Result Objects** pane. The **Data Samples** pane shows you a preview of the dataset to be retrieved. You can select an object and in the **Object Properties**, modify its name, qualification, type, its aggregation function (if you have defined it as a measure) or its associated dimension (if you have defined it as an attribute).
14. Click **Run Query** to close the Query Panel, get the dataset from the text file and display it in the report.

### 2.6.5 Analysis Views as a Data Source

**Analysis views** are created with SAP BusinessObjects Analysis for online analytical processing. This reporting tool is also available from within the BI Launch Pad and allows you to analyze multidimensional data source. Web Intelligence can use an analysis view to access a subset of data derived from an **analysis workspace** and a multidimensional data set, as shown in Figure 2.39. This capability provides a means of accessing a specific arrangement of cube data within the Web Intelligence application and outside of the analysis workspace.
Creating New Documents and Queries

2.7 Document Options

The Document Summary dialog box contains a couple of very important property settings to enhance the effectiveness of particular reports. The most commonly used options include Refresh on open for prompted reports, Auto-merge dimensions for queries with multiple data sources, and Enable query stripping to improve performance.

To open this dialog box, in Design mode, select the Properties tab, then click Document. The Document Summary dialog box opens, as shown in Figure 2.41. Modify your options, then click OK to validate them. Save your document so your new settings are saved in the document.

Figure 2.41 shows the Document Summary options accessed through the Properties tab in the Report Panel.
Let’s examine each of these Document Summary options:

- **Refresh on open**
  This option forces the query to be refreshed when the report is opened. This feature is useful in prompted reports and when the data is restricted to the user logged on to the BI Launch Pad. On SAP HANA Online mode (see Chapter 13, Section 13.6), this option is renamed **Update prompts on open**.

- **Permanent regional formatting**
  This option permanently sets the locale or regional formatting of the document.

- **Use query drill**
  This option modifies the underlying query when drilling down or drilling up in a report. Dimensions are added or removed to the Result Objects section of the query, and query filters are added dynamically based on the drill selection. The scope of analysis is also modified dynamically. The query drill feature is most commonly used when reports contain aggregate measures calculated at the database level.

- **Update shared element(s) on open**
  When opening a document linked to shared elements, this option can be used to automatically update them in the document if newer version of these shared elements have been published in the BI repository (see Chapter 19, Section 19.2).

- **Enable query stripping**
  This feature allows queries to be generated with only the objects used in the Report Panel, instead of all objects of the query. Retrieving only the needed objects used in the document is intended to improve the query performance (see Chapter 12, Section 12.6).

- **Hide warning icons in charts and tables**
  This feature hides general warnings that could potentially appear in the upper-left corner of a chart (see Chapter 12, Section 12.7).

- **Auto-merge dimensions**
  This option automatically merges dimensions when more than one query is added to the document that contains objects with the same name, same data type, and from the same universe (see Chapter 14, Section 14.3).

- **Right to Left Content Alignment**
  Defines the default direction to display the document content if in BI Launch Pad preferences, you have defined your preferred document orientation as “Default”.

- **Extend merged dimension values**
  This selection shows all of the data in a report that contains synchronized or merged dimension objects, not just the values relating to the merged objects (see Chapter 14, Section 14.3).

- **Merge prompts (BEx or HANA variables)**
  This selection is useful when multiple SAP BEx queries or SAP HANA are queried in a single document. Identical prompts appearing in each query are synchronized and only show the prompt a single time to the user. This option is supported to all access to SAP BEx and SAP HANA (see Chapter 13), except SAP HANA Online mode.
Creating New Documents and Queries

- SAP BEx direct access
- Relational or multidimensional universe (UNX) to SAP BEx query
- Relational or multidimensional universe (UNX) to SAP HANA
- SAP HANA direct access (relational or multidimensional)

- Check for shared element update(s) on open
  When opening documents linked to shared elements, this option can be used to prevent Web Intelligence to look if new updates of the shared elements have been published in the BI repository (see Chapter 19, Section 19.2).

- Default Style
  In the Default Style section, you can import or export the style used by the document.

- Comments
  In the Comments section, you can define if the comment displayed in the comment cell or tooltip if the first or last comment in the thread of discussion (see Chapter 18, Section 18.5).

**2.8 Summary**

Several features make Web Intelligence the best-in-class query and analysis solution for any data warehouse, data mart, or business intelligence reporting environment and one of them is the Query Panel.

In an intuitive web-based report development interface, using the drag-and-drop interface of the Query Panel, you can create queries to graphically transform prebuilt universe objects into analytical reports. The objects added to the Result Objects pane and Query Filter pane generate script to access data sources without having to write a single line of code; which makes Web Intelligence ideal for self-service data analysis and reporting.

Precise results are returned by constraining values at the database level with a rich set of operators for query filtering. You can group your conditions in nested pairings with the AND and OR operators for more complex filtering. You can learn to control your row counts by limiting the maximum number of rows retrieved by a query. Your DBAs will appreciate the reduced stress on the database when you set a maximum retrieval time on your queries.

Historically, Web Intelligence queries are based on universes, and all the data sources they support. But through variant versions of the Query Panel, you can also directly use Excel files, text files, free-hand SQL, web services or analysis views as Web Intelligence data sources.

Document properties can also be set to define various behaviors for this document. Once the dataset is retrieved and stored in the document microcube, you can start designing and formatting your report, as described in the next chapter.
Chapter 3
Creating a Report in Web Intelligence

Use Web Intelligence reports to analyze, present, and interact with highly formatted data for accurate and more informed decisions. You can use drill filters, input controls, charts, tables, block filters, and a lengthy set of report functions to produce highly customized reports. Additionally, with a powerful charting engine, Web Intelligence users are able to consume rich graphical reports.

Reports are your window to a business’s performance results and scorecards for tracking metrics from detailed granular data to summarized aggregate reports. A user’s role in an organization will dictate how they use Web Intelligence reports. This can vary from viewing and analyzing data to designing and editing existing reports. Reports can also be shared with other users in a secure, customized, and web-based delivery format. Behind the scenes, Web Intelligence reports are saved to the file repository server and delivered to the end user using the BI Launch Pad, the SAP BusinessObjects BI portal.

Web Intelligence enables you to present company data in your reports by adding data tables and charts to the Report Panel via several provided report templates. You’ll then be able to group data by adding multiple sections and breaks to produce analytical documents by including sorts and drill filters.

After creating a Web Intelligence reporting document, users can quickly share their findings with other users across the enterprise by saving reports in the folder structure storage area accessed with BI Launch Pad. Depending on permissions, users are either granted or denied access to view, schedule, or even edit documents while working within the BI Launch Pad.

The application also enables users to identify significant values by including conditional formatting in reports. Conditional formatting can be applied to rows and columns in a report, assigned to every column or row in a table, or applied to single columns and headers of table reporting elements.
Web Intelligence also allows users to create precisely designed reports by defining the formatting and object placement relationships of objects on the report canvas by assigning relative position attributes to report elements. This feature is accessed by going to the Layout properties of a chart or table after it has been added to a report. Due in part to the broad set of features available in the Web Intelligence Report Panel, report developers can create free-form presentations for displaying data in the most ideal way for their unique business need rather than having to force data into a template.

### 3.1 Adding Data to Report Elements

Data is added to reports by adding result objects or variables to any of the report elements such as a table, chart, map, or cell. Follow these steps to add a report element to the canvas of a Web Intelligence report after your query has been refreshed:

1. Click on Design. All document editing must be done in design mode rather than reading mode.
2. Select the Report Elements tab from the ribbon toolbar. (Note: If you’re using the Applet viewer then the tab is labeled Report Element; in the HTML viewer it’s labeled Report Elements.)
3. Select the Table (or Tables depending on viewer) subtab and then select the data table to be added.
4. Choose a location on the report canvas and click to insert the data table type selected, as shown in Figure 3.1.

![Figure 3.1 Selecting a Location on the Report Canvas to Insert the Selected Element](image)

#### 3.1.1 Populating a Cross Table

Table objects are the basic elements in reports; the following steps guide you through adding a cross table (crosstab) to a report. There are two methods for assigning objects to a report element.

### Dragging and Dropping Objects onto a Table

The first method is accomplished by dragging one or more result objects from the Available Objects tab in the side panel and then dropping them into the appropriate sections in an already inserted cross table. Figure 3.2 shows the [Sales revenue] measure object being added to a cross table.

![Figure 3.2 Drag and Drop a Sales Revenue Measure Object to a Crosstab](image)

Note

You can build the report elements without actually seeing the data by viewing the structure of the document pane, which is very useful when working with large sets of data. You can toggle between Structure only and With Data by using shortcut keys [Ctrl]+2 and [Ctrl]+3.
Assigning Data to Report Elements

The second method for assigning objects to a data table or chart is by right-clicking on a report element and selecting **Assign Data...**. Figure 3.3 shows the menu presented when right-clicking on a crosstab.

![Figure 3.3 Right-Clicking on a Crosstab to Assign Data](image)

**Note**
The **Assign Data...** option for connecting result objects and variables to report elements is available for both charts and data tables. Figure 3.4 shows the **Assign Data...** window for connecting data to a crosstab.

![Figure 3.4 Assign Data Window When Adding Objects to a Crosstab](image)

3.2 Sections and Breaks

Grouping data is accomplished by creating sections for dimension objects or applying breaks to columns displayed in tables. Sections are used to group data into visually separated segments while breaks provide the ability to create subtotals within the same segment. Now in SAP BusinessObjects BI 4.2 SP 3, you’ll see a new **Section** tab located within the primary **Result Objects** tab. Clicking on the **Section** tab will reveal the **Insert Section** button. Both are displayed in Figure 3.5.

![Figure 3.5 Inserting a Section with the Section Tab](image)

**3.2.1 Populating a Chart**
Charts can be populated with data objects very similarly to the way data tables are created. To get started with the editing and chart building process, be sure that you’re in design mode. The easiest method of assigning dimensions and measures to a chart is by dragging and dropping objects from the **Available Objects** tab on the side panel onto the chart. Objects can be dropped anywhere on the chart; the charting engine will know where to assign dimension and measure objects.

You will instantly see charted values after at least one dimension and one measure has been dropped onto the chart. If you’re in **Design structure only** mode, return to **Design with data** to see the data populated in the charts and tables.

**Note**
A chart must include at least one dimension object and one measure object, while a data table can contain a single object.

The next section discusses how you can use sections and breaks to enhance the readability and functionality of a report.
After adding a section to a report, you’ll need to select a dimensional object from the list of available objects.

You can add multiple sections to a single report with each subsequent section becoming a subsection of the original. One restriction of a section is that it can’t be a measure object.

### 3.2.1 Setting a Section

Figure 3.7 shows the City object in a vertical table being set as a section using the traditional method of right-clicking on the object and selecting **Set as Section**.

To add a section to a report, follow these steps:

1. Use an existing data table on a report that already has at least a one dimension object assigned to it. Identify the object to be used as the section.
2. Right-click on the object and select **Set as Section**. This will split the rows into groups based on the values of the dimension defined as the section.

After you’ve set an object as a section, it will be removed from the table and added as a table group (or section) header. The remaining values in the table will be grouped by the values of the section.

Figure 3.8 shows the outcome of setting the City result object column in the data table to a section. The City object has been added as a block header, and the object is no longer a column in the table.

<table>
<thead>
<tr>
<th>Austin</th>
<th>Quarter</th>
<th>Sales revenue</th>
<th>Quantity sold</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>01</td>
<td>$775,483</td>
<td>5,102</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>$657,859</td>
<td>4,016</td>
</tr>
<tr>
<td></td>
<td>03</td>
<td>$681,479</td>
<td>4,184</td>
</tr>
<tr>
<td></td>
<td>04</td>
<td>$674,879</td>
<td>3,776</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Boston</th>
<th>Quarter</th>
<th>Sales revenue</th>
<th>Quantity sold</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>01</td>
<td>$312,895</td>
<td>1,936</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>$291,431</td>
<td>1,647</td>
</tr>
<tr>
<td></td>
<td>03</td>
<td>$249,529</td>
<td>1,623</td>
</tr>
<tr>
<td></td>
<td>04</td>
<td>$429,859</td>
<td>2,470</td>
</tr>
</tbody>
</table>

To view the size of a section and identify the elements in it, switch to **Design structure only** mode. You can do this by clicking the downward arrow beside **Design** and selecting **Structure only**. This view of the report is also accessible by using shortcut keys Ctrl+3. Viewing the report structure allows you to resize the height of the section with regard to the objects and elements that will be presented inside it.
Figure 3.9 shows the structure view of the report that contains the section added in the previous step.

![Structure Only View of a Report](image)

**Figure 3.9 Structure Only View of a Report**

### Formatting Sections

To apply formatting to a section in a report, right-click anywhere in the section while in Design with data mode and select Format Section from the list of options. From the Format Section window, you can apply various settings, including the following in the General category:

- Bookmark section
- Hide section when the following are empty
- Hide always
- Hide when empty
- Hide when the following formula is true

The Appearance and Layout categories provide the following options:

- Background colors and images
- Vertical properties:
  - Start on a new page
  - Repeat on every page
  - Avoid page break

### Accessing the Minimum Top Offset Setting

To access the Minimum Top Offset setting, follow these steps:

1. Right-click on a section.
2. Select Format Section.
3. Select the Layout category.
4. Update the Minimum Top Offset function to 0.00.

This setting is pictured in Figure 3.30.

![Format Section](image)

**Figure 3.30 Locating the Minimum Top Offset Section Setting**

### 3.2.2 Grouping Data with Breaks

Another way of grouping table data in a Web Intelligence report is by using breaks. Breaks are similar to sections, except that when you add them, they don’t include block headings. When you add a break, a new set of break properties becomes available for customization.

Add a break by selecting an existing object in a table, right-clicking on the object, and then in the contextual menu, select Break • Add Break. Adding a break to a data table is useful for calculating subtotals. Breaks will appear as a subset of section values and the dimensional object selected as a break will remain visible within the report table, unlike when a section is added.

**A Second Way to Add a Break**

Another way of adding a break is by using the Break function in the ribbon toolbar. Begin by selecting an object in a table to create the break for, and then click the Break button located in the Analysis tab and Display subtab. This function is pictured in Figure 3.11.
3 Creating a Report in Web Intelligence

3.2 Creating a Break

Editing Breaks

To edit the properties of a break, click anywhere inside the table containing the break and then click the downward arrow beside Break in the Analysis tab and Display sub-tab. Next, select Manage Breaks. From this window, you’ll be able to apply break settings to all breaks within the selected report element.

Figure 3.12 shows the break properties available when designing a report.

3.2.3 Adding Custom Groups

Custom groups allow for more flexibility when grouping data on a report. This relatively new feature allows report designers to create if-then-else logic graphically with a window for easy selecting.

3.3 Outline Navigation

Like creating breaks, begin by selecting an object from an existing data table in a report. Next, click the Group button located in the Analysis tab and Display sub-tab. This is pictured in Figure 3.13.

Figure 3.13 Adding a Custom Group

We talk more about adding custom groups in Chapter 11.

3.3 Outline Navigation

The outline feature provides the ability for users to navigate a report by collapsing and expanding data tables based on break or section values to view details or totals. This method of analysis can be a real time-saver by adding interactivity to reports that provide users with the ability to jump right to the level of aggregation needed. Even when a table doesn’t have a break or section, the Outline Fold feature allows you to see the totals with two clicks. Outline, pictured in Figure 3.14, is one of the few toolbar choices available to users in Reading mode and is enabled/disabled with a standard click.

Enabling Outline will allow users to fold/unfold data blocks based on existing breaks to show all of the data available or to only show subtotals. It’s worth noting that multiple tables can exist on a single report page with breaks added at different levels and the Fold/Unfold feature functions independently on each table.

Figure 3.14 Locating Outline in the Reading Toolbar

When viewing a report in Reading mode, the Fold/Unfold feature is turned off by default, even when the Outline button has been toggled on. Figure 3.15 shows part of
Creating a Report in Web Intelligence

3.3.1 Putting Outline into Action

To begin folding data in a table, you need to click anywhere in the table to see how many levels of aggregations are available to be collapsed or expanded. Figure 3.16 shows the same table pictured in Figure 3.15 except that the Sales Revenue column heading was clicked. Folding and unfolding takes place when an individual arrow is clicked. This will either collapse all of the details within that break value or expand all.

Note

When the arrows are pointing down, the break is unfolded or expanded to its maximum size. When the arrow or arrows are pointing to the right, then folding has taken place.

Since a single report tab can contain multiple data tables with varying dimensions, breaks, and levels of aggregation, the table must be clicked to engage the folding features.

Even if a table doesn’t contain a break or section, when Outline is enabled, you can still click in the table to fold it and show column totals.
Also note that the arrows are now pointing to the right in the fourth break column. This tells the user that all values in the break are now showing totals within the hierarchies above it.

If you click one of the fold numbers like pictured in the lower-left corner of Figure 3.17, all breaks and folds beneath it will be hidden. Figure 3.18 shows how the report will look when fold 1 is clicked.

Figure 3.18 Folding at a Higher Level

### 3.3.2 Folding at Different Levels

Once you get the hang of how to fold and unfold breaks, you’ll be able to create custom views of data that show a combination of totals, subtotals, and details. This is especially useful when hiding less essential line items without completely removing them and to also compare values and percentages at different levels.

Figure 3.19 shows varying levels of folding applied to the same table as the previous examples.

#### Note

If it’s important to design a report for your audience to view data at very specific mixed levels, this can be achieved by following the example in Figure 3.21 and then toggling Outline mode to off.

Once Outline has been turned off, folding and unfolding will be disabled and the report can be used merely as an analytical document and to utilize other valuable features in Web Intelligence, without the need to reconfigure the folds and breaks to recreate a style or view of the data. The folds previously configured will remain in place with all future refreshes of the data.

### 3.4 Enhanced Sorting and Ranking

Sorting and ranking are two simple techniques that increase report readability by displaying the most significant information to report consumers in the shortest amount of time. In just a couple of clicks, columns can be sorted, or the rows in a table can be ranked to display the top 10 sales revenues by the dimension of your choice. Both functions are available to report consumers in design mode. Let’s begin by examining sorting.
3.4.1 Sorting

Sorting can be applied to tables or charts in a report and to either dimension objects or measures. Sorting is also always applied in breaks and sections. Figure 3.20 shows the Sort options available in the toolbar menu under the Analysis/Display tabs.

![Figure 3.20 Sort from the Toolbar Menu under Analysis/Display](image)

Four sort types are available to you while viewing a report in BI Launch Pad or when editing a Web Intelligence document:

- **None**
  Natural sorting occurs based on the type of data in the columns.

- **Ascending**
  Sorting begins with the smallest value at the top (e.g., A, B, C, or 2, 4, 6).

- **Descending**
  Sorting ends with the smallest value at the top (e.g., C, B, A, or 6, 4, 2).

- **Custom**
  Sorting is defined by the user; it often applies to character names but doesn’t apply to measures. It is accessible via Manage Sorts in the menu options.

Sorting data in charts or tables allows users to quickly access data points in alphabetical or numerical order.

### Applying Sorting

To apply sorting within a table, follow these steps:

1. Select the column or result object to be sorted.
2. Select the Sort option in the Analysis/Display tabs.
3. Select the sort type.
4. Select None to remove applied sorting and return to default.

### Applying Sorting to a Chart

To apply sorting within a chart, follow these steps:

1. Click on Design/Structure only located on the main toolbar to switch from data view to structure only view.
2. Click on the object in the chart to be sorted.
3. Select the Sort option on the Analysis/Display tabs.
4. Select the sort type.
5. Click on Design/With data to return to see the sort selected.
6. Return to the structure view, and add, remove, or edit an existing sort.
7. Click on the Sort icon again to remove the sort.

### Custom Sorting

Custom sorting is available only for dimension objects and while editing a document in the Report Panel.

When you select custom sorting, the dimension values of the object will be displayed in natural or ascending order. You can re-sort the item values by selecting values individually and clicking on the up or down arrows until the values are in the order that you prefer.

An example of custom sorting is when a month name object sorts alphabetically rather than chronologically, as shown in Figure 3.21. For months to appear in chronological order, you need to create a custom sort to reorder the values. If you have data only through June, then July through December values won’t appear in the list.

![Figure 3.21 Default or Natural Sorting Applied to the Month Abbreviation](image)
This is when you need to include temporary values. Enter the month names from July to December, add them to the existing list, and then order them chronologically rather than alphabetically. This will keep the month data sorted correctly for all future refreshes.

The only way to sort the months correctly is to apply a custom sort.

**Custom Sort Dialog Box**

Figure 3.22 shows the Custom Sort dialog box used to sort the month name values. Click on the values in the provided list box and then use the arrows to the right to move them up or down the list.

![Custom Sort Dialog Box](image)

The left side of the Custom Sort screen allows you to add temporary values for items that don’t currently appear within the list of values.

**Note**

Before a custom sort can be applied, the column has to already have a sort. After adding a sort to a column, view the advanced sort options to modify the custom sort order.

**Remove Custom Sort Value**

If a custom sort has been added but needs to be removed, view the sort by accessing the advanced menu and then click reset located just beneath the values button under custom order.

Figure 3.23 shows sorting being set on a measure within a data table.

![Figure 3.23 Sorting Sales Revenue in Descending Order](image)

**Custom Sorting Options**

To create a custom sort, click on the small downward arrow to the right of the Sort function, and then select the advanced option. This menu provides additional options for customizing sorts on the selected chart. The following options are available in the Manage Sorts window:

- Revise the priority of sorts if more than one sort has been added.
- Modify the direction or order of a chart between ascending or descending.
- Add a new object to be sorted, or remove an existing sort.
- Define a custom order to sort an object.
- Reset an existing custom sort object back to ascending or descending.
Enhanced Sorting

Sorting in charts and data tables is a very common requirement when analyzing data in reports. Now in SAP BusinessObjects BI 4.2, chart sorting has been enhanced to provide users with even more flexibility when displaying data visually in reports.

Sorting can become a necessary function when displaying data from two or more measures or dimensional objects. The Region Color feature, available when assigning data to charts, provides this capability by allowing charts to be created that display two-dimensional values for a single measure. Depending on the values being charted, this combination of measures and dimensions can be difficult to interpret. To ease the complexity of displaying and analyzing this type information, the sort feature now allows you to sort by dimension, measure, or by the dimensional value selected in the Region Color section. Figure 3.24 shows the Sort menu with a column chart selected that contains two dimension objects and a single measure object.

![Figure 3.24 Sorting by Group](image)

Note that in order to get the option of sorting a chart on two different groups, you’ll need to add a second dimension to the Region Color selection when assigning data to the chart. By default, Region Color is optional. Adding a dimension object to this area will further breakout the results of the dimension used in the Category Axis.

Figure 3.25 shows the Year dimension being added to the chart to see the Quantity sold values by City and broken out by the year. With this feature, you can apply sorts to dimensions in both groups and also to any measure object in the chart.

Figure 3.26 shows a chart sorted by two dimensions: City and Year.

![Figure 3.25 Adding a Second Optional Dimension with the Region Color Entry](image)

![Figure 3.26 Sorting a Chart by a Dimension and Measure](image)

Multigroup charting displays information in a compound format and is ideal when the number of values in both dimension objects is relatively small.

Sorting in a Cross Table (Crosstab)

Compound sorting isn’t reserved for charts only. Cross table report elements can also contain multiple sorts applied to the dimension objects in both the columns and rows in the table.
Figure 3.27 shows the sort selections applied in a cross table. The State object has been assigned to the vertical axis, and the Year object to the horizontal axis. To apply sorting to objects in the Columns and Rows sections, use the Advanced Sort option to set up custom sorting on either object. You can also simply select the data in the table and then select the sort direction in the toolbar.

Figure 3.27 Applying Sorts to a Crosstab

Ranking also helps report consumers access significant information quickly.

3.4.2 Ranking

Ranking is used to display the top or bottom number of objects within a block. Values are ranked by dimensions and are based on measures of several different types and calculation modes:

- **Top/Bottom**
  Select Top, Bottom, or both, and then use the up and down arrows or text box to set number of values.

- **Based on**
  Select a measure to use for ranking.

- **Ranked by** (optional)
  This selected dimension object is used by the ranking to create the top or bottom values.

- **Calculation mode:**
  - **Count:** This mode returns the top or bottom \( n \) records of the Based on selection.
  
- **Percentage:** This mode returns the top or bottom \( n\% \) of records of the total number of records and the Based on selection.
  
- **Cumulative sum:** This mode returns the top or bottom records for the cumulative sum of the measure selected and (optionally) the Based on selection; doesn’t exceed \( n \).
  
- **Cumulative percentage:** This mode returns the top or bottom records for the cumulative sum of the measure selected and (optionally) the Based on selection; doesn’t exceed \( n\% \).

Ranking takes precedence over any sorts previously set up in a report block.

### Note

Web Intelligence includes **tied rankings**, which means that if you want to display the top 10 values, and 3 records have the same value, 13 records will appear in the top 10 list.

To add a ranking, follow these steps:

1. Modify your Web Intelligence document. (Ranking can be applied only in Design mode.)
2. Select a table or chart to be ranked.
3. Click on the **Ranking** button located on the reporting toolbar on the Analysis tab and Filters subtab.
4. Select the **Ranking properties** in the Ranking dialog box.

Two options—**Edit Ranking** and **Remove Ranking**—will be available if a ranking has already been added to a report element, because only one ranking can be added to a report element.

Figure 3.28 shows the **Ranking** dialog box opened when Add Ranking or Edit Ranking is selected. This dialog box allows you to configure the ranking properties by checking the Top, Bottom, or both ranking property types, followed by selecting the Based on, Ranked by, or Calculation mode to create or edit a ranking.

The next section discusses conditional formatting rules and how they can be used to alert report consumers about important conditional elements in Web Intelligence reports.
3.5 Conditional Formatting

Web Intelligence reports use conditional formatting rules (previously known as alerters) to highlight values that meet a specified set of criteria. When a set of criteria has been met, values can be displayed with customized formatting. This includes the capability to modify the following areas:

- **Text**
  - Font, type, size, color, underline, strikethrough

- **Background**
  - Color, skin, image from URL, image from file

- **Border**
  - One or more sides, border size, color

**Note**

Because of the capability to add a background image in a conditional formatting rule, reports can be designed to function as scorecards and display trend icon images based on a value’s relation to a target value or threshold.

Figure 3.29 shows the **New Rule...** button for conditional formatting on the ribbon toolbar while using the HTML viewer.

Clicking the **New Rule...** button will launch the **Formatting Rule Editor** window, which is shown in Figure 3.30. From this window, modify the following settings to set up the criteria for the new conditional formatting rule:

- **Name**
  - Give the conditional rule a descriptive and unique name; this is important if you have many rules. The default value in this field is **Conditional Format**.

- **Description**
  - Enter a clear description of what each conditional rule will perform.

- **Filtered object or cell**
  - Select the field or result object to be evaluated.

- **Operator**
  - Select the operator to be used (e.g., **Equal to**, **Greater than**, etc.).

Figure 3.30 **Formatting Rule Editor**
3 Creating a Report in Web Intelligence

3.5 Conditional Formatting

- **Operands**
  Enter a value to represent the target or threshold to trigger the conditional format.

After configuring these five settings, click on the **Format** button to launch the **Formatting Rules Display** window used to define the visual attributes of the new rule (see Figure 3.31).

**Figure 3.31 Formatting Rules Display**

From this window, revise the following items to create the criteria for the conditional display:

- **Display**
  Can be used to write a formula or apply a specific number format to a data element when a specific condition is met.

- **Text**
  Change the default font size and font color. The default color is already selected to red, but you can choose another color by clicking on the down arrow and selecting from the color palette.

- **Background**
  Choose colors, patterns, or images to apply to the cell background.

- **Border**
  Choose any style for the cell border to accentuate the cell.

**Note**
Use the **Preview** area in the **Text** section of the **Formatting Rules Display** window to see how a rule will show the text, background, or borders configured in the rule.

After you’ve created a new conditional formatting rule, select a column or table heading, and then click on the **Formatting Rules** icon on the ribbon toolbar under the **Analysis/Conditional** tabs. All available conditional formatting will have an open checkbox located to the left of the conditional formatting name.

Check the rule that you want to apply to the selected column and click on **OK**. Figure 3.32 shows a conditional formatting rule being applied with these three steps:

1. Select the column to apply the conditional formatting to.
2. Click on the **Formatting Rules** icon.
3. Select the conditional settings to be applied to the selected column(s).

**Figure 3.32 Conditional Formatting Rules Applied to a Column in a Table**

Figure 3.33 shows the **Formatting Rule Editor** window with a basic condition in place to highlight any cell to light yellow and bold text when the value is greater than **15000**.

The next section explains how to modify report headers and footers and describes the method for including background images in reports.
3.6 Headers, Footers, and Background Images

To access headers and footers property window, click anywhere inside a header or footer, right-click, and then select either **Format header** or **Format footer**, depending on which you’re working on. The **Format header** window opens, as shown in Figure 3.34.

Both property windows allow you to apply the following formats:

- **Border**
  - **Style**
  - **Thickness**

- **Appearance**
  - **Color**
  - **Pattern**: Can include a color, skin, or image

- **Layout**
  - **Show header** (or footer)
  - **Header (or footer) Height**

The header and footer sections can be hidden or displayed depending on your preference or business requirements.

To toggle the header on or off, begin by entering **Design mode**, and then click the primary **Page Setup** tab. Next, select either the **Header** or **Footer** subtabs. Notice that the **Show** button will either be on or off. Figure 3.35 shows the **Show Header** icon with the header enabled and the header height at **0.55 inches**.

If the page header and footer have both been removed from a report, and you need to add them back in, follow these steps:

1. Click on the **Page Setup** • **Header** tab on the ribbon toolbar.
2. Click on the **Show** button to turn the header on. You can also set the height of the header in this step.
3. Click on the Page Setup • Footer tab on the ribbon toolbar.
4. Click on the Show button to turn the footer on. You can also set the height of the footer in this step.

Quite often, report developers need to include background images or company logos in Web Intelligence reporting documents. You can easily do this by following just a few steps:
1. Go to the Report Elements • Cell tab on the ribbon toolbar. Place the Blank icon onto the report canvas at your desired location.
2. After the blank cell has been added, right-click on it, select Format Cell, and choose Appearance in the Format Cell window. You can also click on the Appearance icon under Format/Style on the ribbon toolbar. Figure 3.36 shows the properties available for the blank cell under Appearance.

![Figure 3.36 Format Cell Appearance](image)

The Background dialog box opens to provide four options under Pattern (see Figure 3.37):

- None
- Default selection
- Skin
  Shows five predefined photos

- Image from address
  Opens a dialog box for manual URL entry
- Image from File
  Enables browsing to locate and select a local image

You can create background images with the following file types: PNG, BMP, GIF, JPG, or JPEG.

Images are presented with five different display types:
- Normal
- Stretch
- Tile
- Horizontal Tile
- Vertical Tile

The position of the images can be displayed in any of these combinations:
- Top, Center, Bottom
- Left, Center, Right

![Figure 3.37 Display Image Options for Formatting a Cell](image)
3 Creating a Report in Web Intelligence

Note
When images are selected as background images in a Blank Cell element, the recommended display selection should be set as the Stretch setting. This selection will resize the image to scale when the cell size is either increased or decreased.

Headers, footers, and background images can be used to add context to Web Intelligence reports. Report headers and footers can contain document names, company logos, dates, page numbers, and even custom messages such as confidentiality statements. Images can be useful because they can aid in illustrating concepts, add branding, or adding style to a report. Choosing the right placement for images and creating a consistent look and feel is imperative in achieving strong usability for report consumers.

3.7 Summary

Web Intelligence documents are created for viewing, analyzing, and sharing company data in a secure, customized, and drillable web-based delivery format. You can create reports by using the result objects and report elements, and by setting properties in the tabs provided in the side panel. Reports are physically presented in the document pane and easily enhanced with the extensive list of shortcut icons in five provided toolbars.

Web Intelligence allows you to present multiple reports within a single reporting document that contains a variety of data visualization component types. You also have the ability to create drillable and highly formatted reports that include sections, breaks, sorting, ranking, and report filters to produce effective analytical documents.

Changes in report data can be easily identified when detailed conditional formatting has been created.

SAP BusinessObjects provides a full spectrum of reporting components for displaying data. These include Available Objects tables, freehand cells, scorecarding capabilities through the use of conditional formatting, and 34 different types of charts.

The Report Panel provides a highly intuitive development canvas that allows business users to create, edit, and share reports with ease.

Chapter 4 describes how to navigate the Web Intelligence reporting interface and explains its ribbon-based toolbar. This is important because the Web Intelligence interface has changed from its previous releases. A bit of familiarization is necessary to get used to all the icons and their placements; however, you’ll find that the grouping of icons is much more intuitive because it’s based on their functional areas.
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