Building SAP BusinessObjects Web Intelligence queries based on BEx queries
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1 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 23]
1.1 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
- 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

1.2 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.
### Table 1: How BEx query metadata is mapped

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

### 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.

1.3 Restrictions when using BEx queries

Note

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

<table>
<thead>
<tr>
<th>BEx query feature</th>
<th>Web Intelligence restriction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local calculations (&quot;Rank&quot;, “Minimum”)…</td>
<td>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.</td>
</tr>
</tbody>
</table>
### BEx query feature | Web Intelligence restriction
---|---
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.

### Table 3: Data characteristics

| 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. |
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. |
### Table 4: Filters

<table>
<thead>
<tr>
<th>BEx query feature</th>
<th>Web Intelligence restriction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filters as default values</td>
<td>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.</td>
</tr>
<tr>
<td>Measures</td>
<td>Cannot be used in filters.</td>
</tr>
</tbody>
</table>

### Table 5: Hierarchies

<table>
<thead>
<tr>
<th>BEx query feature</th>
<th>Web Intelligence restriction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linked nodes</td>
<td>Linked nodes are not displayed.</td>
</tr>
<tr>
<td>Lower level nodes</td>
<td>Lower level nodes are always shown after the main node.</td>
</tr>
<tr>
<td>Row/Column display as hierarchy</td>
<td>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.</td>
</tr>
<tr>
<td>Expand to level</td>
<td>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.</td>
</tr>
<tr>
<td>Ranking and hierarchies</td>
<td>Ranking on a table where there is a hierarchy does 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.</td>
</tr>
<tr>
<td>Position of lower level nodes</td>
<td>These are always below the upper levels.</td>
</tr>
</tbody>
</table>
1.4 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.

<table>
<thead>
<tr>
<th>BEx query feature</th>
<th>Web Intelligence restriction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hierarchical measure structures</td>
<td>Hierarchical measure structures are displayed as a flat list of measures, but you can use hierarchical non-measure structures.</td>
</tr>
<tr>
<td>Hierarchical display of an entire axis</td>
<td>This is not supported. You can achieve similar results directly within Web Intelligence.</td>
</tr>
<tr>
<td>Hierarchies in result sets and filters</td>
<td>Cannot be used in the result set and in filters at the same time.</td>
</tr>
</tbody>
</table>

Table 6: Prompts

<table>
<thead>
<tr>
<th>BEx query feature</th>
<th>Web Intelligence restriction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables ready for input</td>
<td>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.</td>
</tr>
</tbody>
</table>

Table 7: Query structure

<table>
<thead>
<tr>
<th>BEx query feature</th>
<th>Web Intelligence restriction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of objects allowed in a query</td>
<td>Do not use more than 50 objects in a BEx query, otherwise an error occurs.</td>
</tr>
<tr>
<td>Variables dependent on compound characteristics and the parent object</td>
<td>When there are dependencies between variables in compound characteristics and their parent, the dependencies are not guaranteed.</td>
</tr>
<tr>
<td>Query stripping</td>
<td>Available for .unv, OLAP, and BEx query sources. For other types of sources it is not available.</td>
</tr>
<tr>
<td>Query exceptions</td>
<td>These are not taken into account in Web Intelligence. Apply conditional formatting in Web Intelligence instead.</td>
</tr>
<tr>
<td>Conditions</td>
<td>Do not use conditions. When the query is run, the conditions, if present in the query, are not applied.</td>
</tr>
</tbody>
</table>
| 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 |
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.

### 1.4.1 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.

**Procedure**

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.

### 1.4.2 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).

**Prerequisites**

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

**Context**

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

**Procedure**

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.

Next Steps

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

1.4.3 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.

Procedure

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.

Results

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

1.5 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.
1.5.1 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.

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 8:

<table>
<thead>
<tr>
<th>Customers</th>
<th>Unit Sales</th>
<th>Store Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Customers</td>
<td>364,707</td>
<td>371,579</td>
</tr>
<tr>
<td>US</td>
<td>276,773</td>
<td>234,555</td>
</tr>
<tr>
<td>CA</td>
<td>45,506</td>
<td>67,999</td>
</tr>
<tr>
<td>OR</td>
<td>32,104</td>
<td>56,700</td>
</tr>
<tr>
<td>Albany</td>
<td>10,324</td>
<td>12,325</td>
</tr>
</tbody>
</table>

Related Information

Hierarchical member selection in BEx queries [page 14]

1.5.2 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.

Note
You create, edit and refresh documents and reports based on BEx queries using the Web Intelligence Applet interface or Web Intelligence Rich Client.

1.5.3 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.

Note
You create, edit and refresh documents and reports based on BEx queries using the Web Intelligence Applet interface or Web Intelligence Rich Client.
1.5.4 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.

**Note**

You create, edit and refresh documents and reports based on BEx queries using the Web Intelligence Applet interface or Web Intelligence Rich Client.

The following hierarchy illustrates member selection behavior in BEx queries.

Table 9:

<table>
<thead>
<tr>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>EMEA</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Europe</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Middle East</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Africa</td>
</tr>
<tr>
<td>North America</td>
</tr>
<tr>
<td>Asia PAC</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Asia</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Pacific</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Australia</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Philippines</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>New Zealand</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>South America</td>
</tr>
</tbody>
</table>

Table 10: Hierarchy selection rules

<table>
<thead>
<tr>
<th>Rule</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>When you select a member of a hierarchy at a given level, all of the parent members in the hierarchy are selected.</td>
<td>The root is always selected. It is not possible to select one specific level.</td>
</tr>
</tbody>
</table>
| 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 |
<table>
<thead>
<tr>
<th>Rule</th>
<th>Example</th>
</tr>
</thead>
</table>
| 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 6]
Hierarchical member selection in BEx queries [page 14]

**1.5.4.1 To select BEx query hierarchy members by relationship**

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

**Context**

**Note**

You can only edit documents based on a BEx query data source in Web Intelligence Applet interface or Web Intelligence Rich Client.

**Procedure**

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 11:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Children</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Descendants</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Parent</strong></td>
<td>The Parent function is not available in BEx queries.</td>
</tr>
<tr>
<td><strong>Ancestors</strong></td>
<td>The Ancestors function is not available in BEx queries.</td>
</tr>
<tr>
<td><strong>Siblings</strong></td>
<td>The Siblings function is not available in BEx queries.</td>
</tr>
<tr>
<td><strong>Descendants until Named Level</strong></td>
<td>Use the list of level names to choose the level.</td>
</tr>
<tr>
<td><strong>Descendants until</strong></td>
<td>Choose the number of levels that you want to include in the selection.</td>
</tr>
</tbody>
</table>

**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.

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.

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 build prompts for selecting members using the Member Selector dialog box [page 18]

1.5.4.2 To search for members in the Member Selector dialog box

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

Procedure

1. Open a Web Intelligence document in Design or Data mode.

   ! Note
   You create, edit and refresh documents and reports based on BEx queries using the Web Intelligence Applet interface or Web Intelligence Rich Client.

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 12:
<table>
<thead>
<tr>
<th>Wildcard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
<td>Replaces any string of characters</td>
</tr>
<tr>
<td>?</td>
<td>Replaces any individual character</td>
</tr>
</tbody>
</table>

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.
1.5.4.3 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.

Context

Note

- In documents, you can only edit report elements based on a BEx query data source in the Web Intelligence Applet or Web Intelligence Rich Client interface.
- 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:

Procedure

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 15]

1.5.4.4 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.

Context

⚠️ 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.

ℹ️ 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.
- You create, edit and refresh documents and reports based on BEx queries using the Web Intelligence Applet interface or Web Intelligence Rich Client.

Procedure

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.

**Results**

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.

### 1.5.4.5 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.

**Procedure**

1. Open in **Design** or **Data** mode a Web Intelligence document that uses a BEx query.

   **Note**
   
   You create, edit and refresh documents and reports based on BEx queries using the Web Intelligence Applet interface or Web Intelligence Rich Client.

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.

**Results**

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.
1.5.5 About the Set Variables dialog box

You use the Set Variables dialog box to enter or modify values for the variables in the BEx query.

**Note**

You create, edit and refresh documents and reports based on BEx queries using the Web Intelligence Applet interface or Web Intelligence Rich Client.

When you first create a document based on a BEx query that contains variables, when the BEx query contains at least one mandatory variable that does not have a default value, the Set Variables dialog box automatically appears and displays all the variables and their default values, if any (including optional variables). 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.

1.5.6 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 \textit{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 \textit{Purge Last Selected Prompt Values}, the query will retrieve ‘A’ as the default prompt value, since \textit{Use BEx query defined default values at runtime} was selected at query design time.  
- Does not select \textit{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 \textit{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 \textit{Purge Last Selected Prompt Values}, the query will retrieve ‘A’ as the default prompt value, since \textit{Use BEx query defined default values at runtime} was selected at query design time.  
- Does not select \textit{Purge Last Selected Prompt Values}, the query will retrieve ‘B’ as the default prompt value, since this value was selected in the \textit{Set Variables} dialog box at query design time.

1.5.7 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 \textit{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.

1.5.8 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.

Prerequisites

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

Procedure

1. In a Web Intelligence document in Design or Data mode, click the New icon in the File toolbar.

   Note
   You create, edit and refresh documents and reports based on BEx queries using the Web Intelligence Applet interface or Web Intelligence Rich Client.

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 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
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. To run the query, 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.

1.5.9 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.

Procedure

1. In a Web Intelligence document in Design or Data mode, click the New icon in the File toolbar.

   **i Note**
   You create, edit and refresh documents and reports based on BEx queries using the Web Intelligence Applet interface or Web Intelligence Rich Client.

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.

   **i 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.
Results

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 13: Setting variables for BEx queries

<table>
<thead>
<tr>
<th>When the BEx Query has...</th>
<th>Do this...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandatory variable(s) where at least one variable has no default value.</td>
<td>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 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.</td>
</tr>
<tr>
<td>Mandatory variable(s) with default values (optional variables have no effect on the behavior).</td>
<td>The Set Variables automatically appears when the transient universe is created, the Query Panel displays the metadata.</td>
</tr>
<tr>
<td>Only optional variable(s), at least one of the variables has no default.</td>
<td>The transient universe is created and the Query Panel displays the metadata without opening the Set Variables dialog box.</td>
</tr>
<tr>
<td>Optional variables that all have default values. There are no mandatory variables.</td>
<td>The transient universe is created and the Query Panel displays the metadata without opening the Set Variables dialog box.</td>
</tr>
</tbody>
</table>

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.

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.

1.5.10 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.

Procedure

1. In a Web Intelligence document in Design or Data mode, click the Add new data provider icon in the File toolbar.
You create, edit and refresh documents and reports based on BEx queries using the Web Intelligence Applet interface or Web Intelligence Rich Client.

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.
Results

Table 14: Setting variables for an additional BEx query

<table>
<thead>
<tr>
<th>When the BEx Query has...</th>
<th>Do this...</th>
</tr>
</thead>
</table>
| 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. |

1.5.11 To edit a document based on a BEx query

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

Prerequisites

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

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.

Procedure

1. In a Web Intelligence document, in the Data Access tab, click Edit.

   **Note**
   
   You create, edit and refresh documents and reports based on BEx queries using the Web Intelligence Applet interface or Web Intelligence Rich Client.

   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 variables 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 variables 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.

Results

When you have entered the prompt values, you can run the query for the document.
1.5.12 To cancel an edit

You can cancel an edit action in a BEx query.

**Context**

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

**Procedure**

1. In the *Data Access* tab, click *Edit*.

   **Note**
   
   You create, edit and refresh documents and reports based on BEx queries using the Web Intelligence Applet interface or Web Intelligence Rich Client.

   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.

1.5.13 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.

**Note**

You create, edit and refresh documents and reports based on BEx queries using the Web Intelligence Applet interface or Web Intelligence Rich Client.
1.6 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 15:

<table>
<thead>
<tr>
<th>Option</th>
<th>Possible Values</th>
<th>Description</th>
<th>In 4.0, as of:</th>
<th>In 4.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long name:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sap.sl.bics.detectMdxCompliance</td>
<td>rfcPerInfoQuery</td>
<td>Set the Multidimensional Expression (MDX) compliance detection mechanism</td>
<td>SP04</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>rfcProperty</td>
<td>for BEx queries when browsing BW infoareas/infocubes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>infoArea</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>false</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short name:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>detectMdxCompliance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Default value:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>rfcPerInfoQuery</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SP04</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long name:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sap.sl.bics.browsingImplementation</td>
<td>bics</td>
<td>Set the SL implementation to use for BW query browsing.</td>
<td>SP05</td>
<td>Yes</td>
</tr>
<tr>
<td>Default value:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>olapClient</td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Building SAP BusinessObjects Web Intelligence queries based on BEx queries
Building queries on BEx queries

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### List of Values

**Table 16:**

<table>
<thead>
<tr>
<th>Option</th>
<th>Possible Values</th>
<th>Description</th>
<th>In 4.0</th>
<th>In 4.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long name: sap.sl.bics.bicslovlimit</td>
<td>$n &gt; 0$</td>
<td>Set the maximum number of members for a list of values.</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Short name: bicslovlimit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Default value: 5000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long name: sap.sl.bics.intervalLimitForBigSets</td>
<td>$n &gt; 0$</td>
<td>Set the maximum number of intervals that can be retrieved for members that exceed the number of LOV (see property bicslovlimit).</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Short name: intervalLimitForBigSets</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Default value: 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long name: sap.sl.bics.variableComplexSelectionMapping</td>
<td>multivalue interval</td>
<td>Defines the method of selecting values for BEx characteristic variables of the type Selection Option.</td>
<td>No</td>
<td>Yes as of SP05</td>
</tr>
<tr>
<td>Short name: variableComplexSelectionMapping</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Default value: interval</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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.
### Member Selection and Result Set Scope

Table 17:

<table>
<thead>
<tr>
<th>Option</th>
<th>Possible Values</th>
<th>Description</th>
<th>In 4.0</th>
<th>In 4.1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Long name:</strong> sap.sl.bics.expandToLevel</td>
<td>$n &gt; 0$</td>
<td>Set the expandToLevel value for hierarchies when fetching data; $n$ is 1-based, 0 means &quot;use the expand-to-level value of the BEx query&quot;.</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Short name:</strong> expandToLevel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Default value:</strong> 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Long name:</strong> sap.sl.bics.expandNotAssignedNodes</td>
<td>true/false</td>
<td>Expand the not assigned node when no member selection has been set on a dimension or hierarchy.</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Short name:</strong> expandNotAssignedNodes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Default value:</strong> false</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| **Long name:** sap.sl.bics.depthRelativeTo | 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 18:

<table>
<thead>
<tr>
<th>Option</th>
<th>Possible Values</th>
<th>Description</th>
<th>In 4.0</th>
<th>In 4.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long name: sap.sl.bics.profileRFC</td>
<td>true false</td>
<td>Enable/disable the BW RFC tracing, and choose a specific tracing format if enabled.</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Short name: profile_rfc</td>
<td>txt xml csv</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Default value: false</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

## Miscellaneous

Table 19:

<table>
<thead>
<tr>
<th>Option</th>
<th>Possible Values</th>
<th>Description</th>
<th>In 4.0</th>
<th>In 4.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long name: sap.sl.bics.reverseKeyFigureStructure</td>
<td>1 undefined</td>
<td>Reverse axis of Structure containing KeyFigures (ROWS &lt;-&gt; COL-UMNS).</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Short name: Reverse_KF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Default value: undefined</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<p>| Long name: sap.ul.bics.retrieveBWLevels     | true false      | Retrieve the BW levels for every hierarchy, or completely skip them.         | No     | Yes   |
| Short name: retrieveBWLevels                |                 |                                                                             |        |       |
| Default value: true                         |                 |                                                                             |        |       |</p>
<table>
<thead>
<tr>
<th>Option</th>
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<th>In 4.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>sap.sl.bics.recycleGroupingSetView</td>
<td>true, false</td>
<td>Recycle and share a single query view for all grouping sets.</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>sap.sl.bics.inlineGroupingSet</td>
<td>true, false</td>
<td>Inline grouping set in the main query if possible.</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>sap.sl.bics.displayKeyInResultSet</td>
<td>true, false</td>
<td>Always fetch the member display keys when executing a query.</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>sap.sl.bics.useDesignTimeServices</td>
<td>true, false</td>
<td>Use the design time services of BICS/BW.</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>sap.sl.bics.useDesignTimeQueryForRefresh</td>
<td>true, false</td>
<td>Use the design-time query for refresh workflows as well.</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Option</td>
<td>Possible Values</td>
<td>Description</td>
<td>In 4.0</td>
<td>In 4.1</td>
</tr>
<tr>
<td>--------</td>
<td>----------------</td>
<td>-------------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td><strong>Long name:</strong> sap.sl.bics.useConcurrentDesignTimeQuery</td>
<td>true, false</td>
<td>Instantiate the design-time query early in a concurrent thread.</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Short name:</strong> useConcurrentDesignTimeQuery</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Default value:</strong> true</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Long name:</strong> sap.sl.bics.activateMemberResolutionFallbackWithKey</td>
<td>true, false</td>
<td>If text is not found, input is considered a key; 4.0 SP8 and 4.1 SP2+.</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Short name:</strong> activateMemberResolutionFallbackWithKey</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Default value:</strong> false</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Long name:</strong> sap.sl.bics.hierarchyVariableAlwaysMandatory</td>
<td>true, false</td>
<td>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.</td>
<td>No</td>
<td>Yes as of SP0 5</td>
</tr>
<tr>
<td><strong>Short name:</strong> hierarchyVariableAlwaysMandatory</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Default value:</strong> false</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 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.
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