Oracle Utilities Business Intelligence

Administration and Business Process Guide

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Oracle Utilities Business Intelligence Administration and Business Process Guide

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Oracle Utilities Business Intelligence

This section documents the business processes and administrative functions for the Oracle Utilities Business Intelligence application.

➤ **Note:** References to Portals and Zones in this document apply only to the user interface used in Oracle Utilities Business Intelligence versions 2.0.5 and 2.2.x. If you are using Oracle Utilities Business Intelligence v2.3.0 or later, please refer to the Oracle Utilities Business Intelligence Metric Reference Guides for information about the dashboards and answers provided with the application, and the Oracle Business Intelligence Enterprise Edition documentation for information on creating and configuring Oracle Business Intelligence Enterprise Edition dashboards and answers.

Oracle Utilities Business Intelligence Portals and Zones

Oracle Utilities Business Intelligence data is displayed in a variety of *portals and zones*. The contents of this chapter describe features and functions unique to Oracle Utilities Business Intelligence portals and zones.

● **FMI:** Refer to *Introduction to System Wide Standards* for a description of functionality shared by many products.

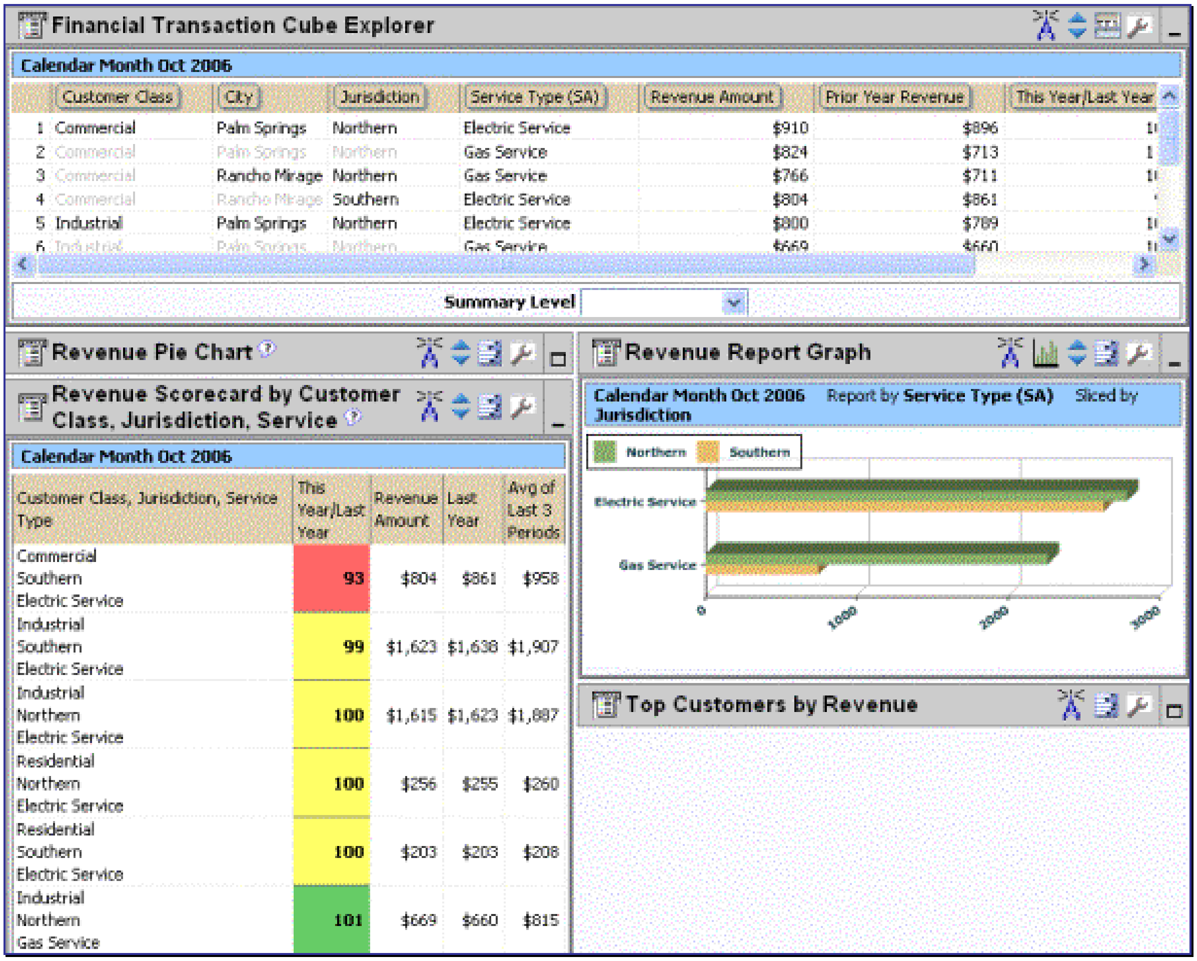
➤ **Note:** The concepts described in this chapter apply only to the user interface used in Oracle Utilities Business Intelligence versions 2.0.5 and 2.2.x. If you are using Oracle Utilities Business Intelligence v2.3.0 or later, please refer to the Oracle Utilities Business Intelligence Metric Reference Guides for information about the dashboards and answers provided with the application, and the Oracle Business Intelligence Enterprise Edition documentation for information on creating and configuring Oracle Business Intelligence Enterprise Edition dashboards and answers.

Portals Are Made Up Of Analytic Zones

Your implementation will configure portal pages to contain a variety of zones. Each zone will display some type of analytic data. For example,

- A Complaints Portal would contain zones that show how your organization is doing with regard to customer complaints.
- A Financial Portal would contain zones showing your organization's financial performance.

An example will help; the following illustrates a simple Financial Portal with 5 zones (2 are collapsed):



Financial Transaction Cube Explorer

Calendar Month Oct 2006

	Customer Class	City	Jurisdiction	Service Type (SA)	Revenue Amount	Prior Year Revenue	This Year/Last Year
1	Commercial	Palm Springs	Northern	Electric Service	$910	$896	1
2	Commercial	Palm Springs	Northern	Gas Service	$824	$713	1
3	Commercial	Rancho Mirage	Northern	Gas Service	$766	$711	1
4	Commercial	Rancho Mirage	Southern	Electric Service	$804	$861	
5	Industrial	Palm Springs	Northern	Electric Service	$800	$789	1
6	Industrial	Palm Springs	Northern	Gas Service	$669	$660	1

Summary Level

Revenue Pie Chart

Revenue Scorecard by Customer Class, Jurisdiction, Service

Calendar Month Oct 2006

Customer Class, Jurisdiction, Service Type	This Year/Last Year	Revenue Amount	Last Year	Avg of Last 3 Periods
Commercial Southern Electric Service	93	$804	$861	$958
Industrial Southern Electric Service	99	$1,623	$1,638	$1,907
Industrial Northern Electric Service	100	$1,615	$1,623	$1,887
Residential Northern Electric Service	100	$256	$255	$260
Residential Southern Electric Service	100	$203	$203	$208
Industrial Northern Gas Service	101	$669	$660	$815

Revenue Report Graph

Calendar Month Oct 2006 Report by **Service Type (SA)** Sliced by **Jurisdiction**

Top Customers by Revenue

The following topics describe how portals are configured and organized.

Portal Configuration

You will not find any portals in the base-package. Why? Because every customer has different analytic requirements and therefore each implementation must design portals and zones to match their requirements. In other words, until you configure the system, you will not be able to see your analytic data as no portals or zones are supplied with the base-package.

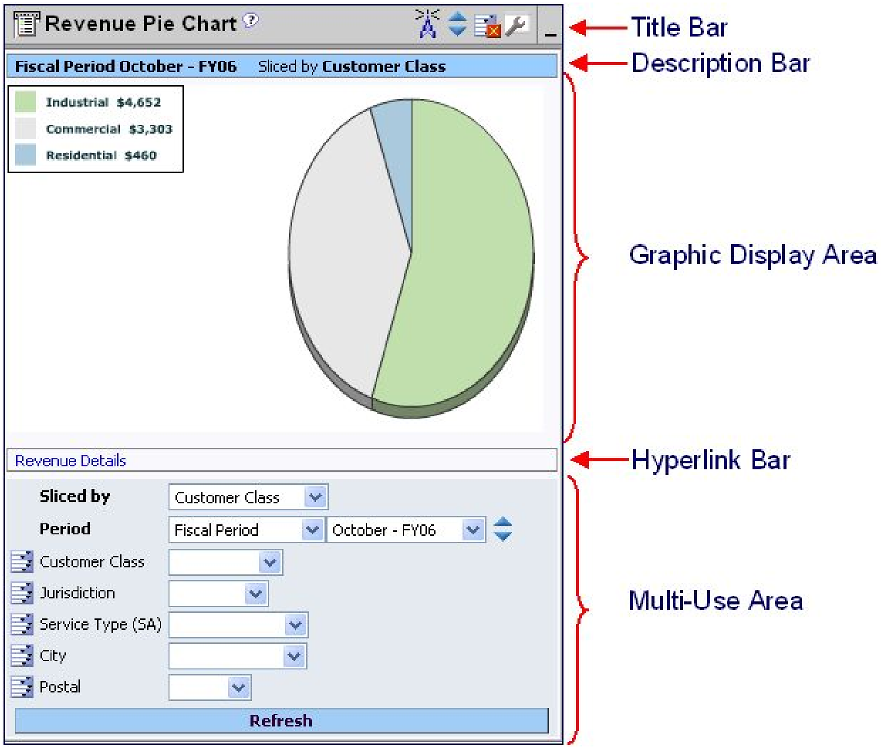
But don't think you have to develop your portals and zones from scratch. We deliver Oracle Utilities Business Intelligence with a wide-variety of zone templates (which we call " *Zone Types*") ready for configuration. This approach allows your zones to contain the data that you need. Refer to *Configuration Tasks* for more information.

Organizing Portals and Zones

While you can configure Oracle Utilities Business Intelligence to have any number of independent portals (e.g., a financial portal, a complaints portal), we strongly recommend that you organize your portals into hierarchies. Refer to *Portals Can Be Structured into Hierarchies* for more information.

Characteristics Common To All Oracle Utilities Business Intelligence Zones

As described above, the number and type of zones that appear on your portals is a configuration task (because every implementation has different analytic requirements). While the zones vary in what they show, most share a common layout. The following pie chart zone highlights the common elements of most Oracle Utilities Business Intelligence zones.



Revenue Pie Chart

Fiscal Period October - FY06 Sliced by Customer Class

🟩	Industrial $4,652
⬜	Commercial $3,303
🟦	Residential $460

Revenue Details

Sliced by	Customer Class
Period	Fiscal Period · October - FY06
Customer Class	
Jurisdiction	
Service Type (SA)	
City	
Postal	

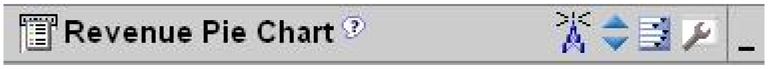
Refresh

The topics in this section describe each area.

Title Bar

The Title Bar contains the zone's description as well as icons and menu items that perform a variety of tasks.

In the corner of the Title Bar, you'll see an indication if the zone is collapsed (i.e., minimized) or expanded. Each time you click the indicator, the zone toggles between being expanded and collapsed. The following is an example of how a zone looks when it's not collapsed:



Revenue Pie Chart

> **Note:** Recommendation. We recommend that *Portal Preferences* be set up to collapse zones that aren't needed every time a portal is displayed. Why? Because the system doesn't build collapsed zones when a portal is displayed. Rather, collapsed zones are only built when a user expands them. In other words, indicating a zone is collapsed improves response times.

The topics in this section describe each icon and menu item.

Business Intelligence Zone Menu

This section describes the menu items that appear when you click the zone menu icon.

Copy Filters

Select the Copy Filters menu item to transfer the time-period and filter values to the clipboard (for eventual pasting into another zone). After copying the values, select the Paste Filters menu item in the target zone to apply the copied values.

Paste Filters

Select the Paste Filters menu item to transfer the time-period and filter values from the clipboard to a zone (these values are put into the clipboard when you select the Copy Filters menu item in another zone).

Reset Zone

Select the Reset Zone menu item to refresh the zone using its default values.

Export To Excel

Select the Export to Excel menu item to download the zone's data to Excel. This menu item is suppressed if the zone has been configured to not download rows to Excel.

The default setting in Internet Explorer causes Excel to open in the same browser window. If you'd prefer to open Excel in a separate window, follow the instruction that applies to your operating system:

- **Windows 98.** Click on My Computer. Go to **View** on the top menu bar and then go to **Options**. Now go to the **File Types** tab. Among the file types listed, find Microsoft Excel Worksheet and double-click it. A window will open displaying options. Unclick the option Browse in same window . Excel files will now open in a separate window.
- **Windows NT, 2000.** Click on My Computer. Go to **Tools** on the top menu bar and click on **Folder Options** then click on the **File Types** tab. Among the file types listed, find Microsoft Excel Worksheet and double-click it. A window will open displaying options. Unclick the option Browse in same window . Excel files will now open in a separate window.
- **Windows XP.** Click on My Computer. Go to **Tools** on the top menu bar and click on **Folder Options** then click on the **File Types** tab. Among the file types listed, find Microsoft Excel Worksheet and click the **Advanced** button. A window will open displaying options. Unclick the option Browse in same window for the Open action. Excel files will now open in a separate window.

Print Zone

Select the Print Zone menu item to print the zone.

Show Service Data

Select the Show Service Data menu item to open a pop-up window containing the "raw" data retrieved from the server.

Note: Debug mode only. This menu item only appears when the system operates in *Debug* mode.

Show SQL

Select the Show SQL menu item to open a pop-up window containing the SQL statement(s) that the system uses to retrieve the zone's data. Note, this pop-up only contains information if you've turned on the **Global debug** checkbox in the upper corner of the browser (and make sure to refresh the zone after turning on this checkbox).

Global debug ☑

Note: Debug mode only. This icon only appears when the system operates in *Debug* mode.

Zone Help Text

If the zone has help text, a help icon suffixes the zone's description. Clicking this icon causes the zone's help text to appear in a pop-up.

➤ **Note:** A zone's help text is defined on the zone's *configuration*.

Hyperlinks To Initiate Business Processes and Other Applications

A zone can be configured to show up to 5 actions in its title bar. The actions can appear as a hyperlink, icon or button. The action can also be provided as an HTML string. These actions can initiate a business process assistant script or navigate to an external URL.

Broadcast

Click the broadcast icon to send the zone's filter values to the other zones in the portal.

Note, there are alternate ways to broadcast values from a zone:

- Click on a *dimensional scorecard* row to broadcast the combination of dimensions (as filters)
- Click on a bubble, line or bar on a *chronological graph* to broadcast the segment's time period.
- Click on a bar in a *report graph* to broadcast the report by value (as a filter).
- Click on a slice in a *pie chart* to broadcast the dimensional value (as a filter).
- Click on a row in a *cube explorer* to broadcast the combination of dimensions (as filters).

In addition, clicking on a hyperlink (in the *hyperlink bar*) broadcasts the zone's filter values to all of the zones in the associated portal.

Design for broadcasting. The broadcast feature is very powerful when your zones are designed with broadcasting in mind. For example, you might broadcast from a pie chart to limit the data shown in other zones to the selected dimensional value.

Move Period Up / Down

▲▼

These icons move the zone's base time-period up or down one period. For example, if the zone currently shows March 2006, clicking the "up" icon will cause the zone to show April 2006.

➤ **Note:** These icons do not appear if the zone has been configured to not use time periods.

Show Filters

Click the **show filters** icon to show the *Filter Area* in the *Multi-Use Area*. This button only appears if the zone has been configured to have filters.

When the filters appear in the multi-use area, a "red x" is superimposed on top of the filters icon. If you push the icon again, the multi-use area will be suppressed.

Show Explorer Options

Click the **show explorer options** icon to show the *Explorer Options Area* in the *Multi-Use Area*. This button only appears if the zone has been configured to allow columns to be dragged and dropped into the Report Area.

When the explorer options are shown in the multi-use area, a "red x" is superimposed on top of the show explorer options icon. If you push the icon again, the multi-use area will be suppressed.

Show Graph Options

Click the **show graph options** icon to show the *Graph Options Area* in the *Multi-Use Area*. This button only appears if a graph is shown in the *Graphic Display Area*.

When the graph options appear in the multi-use area, a "red x" is superimposed on top of the graph options icon. If you push the icon again, the multi-use area will be suppressed.

Wrench (Open Zone)

Click the wrench icon to transfer to the zone's *zone maintenance* page. On this page, you can change the parameters that control the zone's behavior.

➤ **Note: Debug mode only.** This icon only appears when the system operates in *Debug* mode.

Description Bar

The Description Bar appears at the top of the zone. It describes the time-period and dimensions used to build the zone.

➤ **Note: Drag and drop zones.** The description bar has three potential states on *Cube Explorer* and *Detail Data Explorer* zones. The initial state contains a description of the time-period and filters used when the zone was built. The second state is a "discard region"; the bar morphs to this state while you drag fields off the explorer (into the discard region). The third state is a "refresh button"; this state appears after you have dragged fields on and off the explorer (you can click the "refresh button" to reload the zone with the new field configuration).

Graphic Display Area

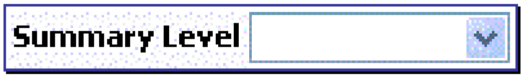
The Graphic Display area contains the graphic used to display the analytic data. Refer to *Zone Types* for a description of the various graphical metaphors.

Hyperlink Bar

The Hyperlink Bar only appears if the zone has been configured to have a hyperlink to another portal. Clicking the hyperlink will drill down to the portal.

➤ **Note: Broadcasting.** If the zone has filters, the filter values will be broadcast to all zones on the target portal when the hyperlink is clicked.

Summary Level



The **Summary Level** dropdown only appears when a *cube explorer* is shown in the graphic display area.

The dropdown contains an entry for each dimension in the explorer. When you click an entry in the dropdown the zone reloads showing information summarized at the selected level. This allows you to change the granularity of the summary information without having to drag / drop dimensions on / off the explorer.

Multi-Use Area

The multi-use area is located beneath the *Graphic Display Area*. Clicking the various "show" and "close" buttons in the zone's title bar causes this area's content to change to match the desired usage. The topics in this section describe this area's possible content.

Initially Suppressed

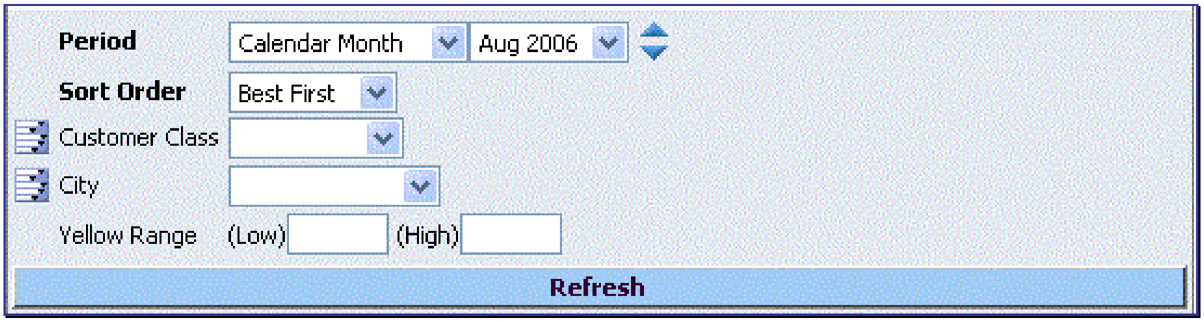
When a portal page is initially displayed, the multi-use area is suppressed on most zones. You must press one of the "show" buttons described above to display one of the following areas.

Filter Area

Click *Show Filters* to expose the Filter Area. You can use this area to filter the information that appears in the zone by different values. For example, you can use the Filter Area to:

- change the zone's time-period
- change the zone's filters
- change the object being "sliced" in a *Graph* or *Pie Chart*
- change the object being "reported on" in a *Report Graph*
- toggle between the worst or best objects in a *Dimensional Scorecard*

As can be deduced from the above points, the contents of the Filter Area differ depending on the zone's *graphical metaphor*. The following is an example of how the Filter Area looks for a *Dimensional Scorecard* zone (keep in mind that the zone's configuration controls the fields that appear in this area):



Period Calendar Month Aug 2006

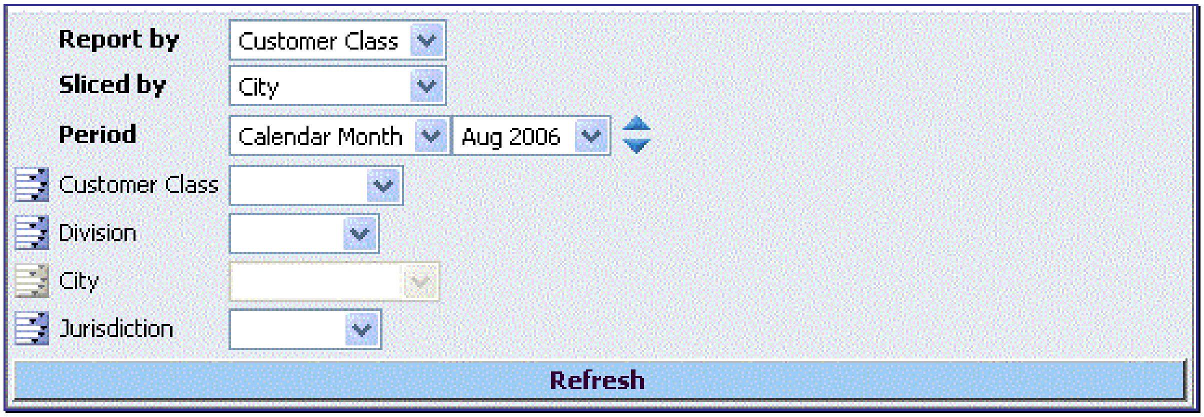
Sort Order Best First

Customer Class

City

Yellow Range (Low) (High)

Whereas the following shows how the filter area looks for a *Report Graph* that supports slicing:

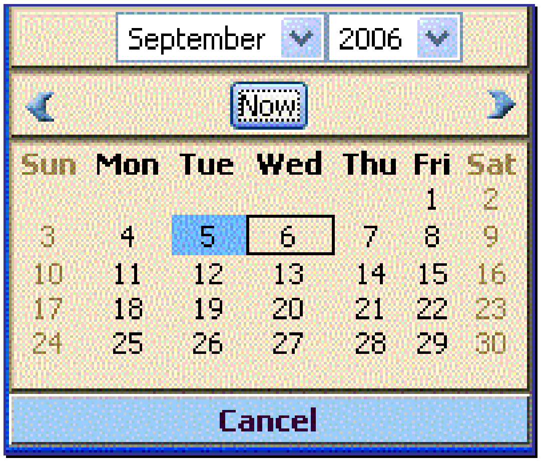


Report by Customer Class
Sliced by City
Period Calendar Month Aug 2006
Customer Class
Division
City
Jurisdiction

The following points describe how to use the various functions available in the Filter Area:

- Use the fields adjacent to **Period** to change the zone's time-period.
- The first field defines the periodicity (e.g., calendar month, fiscal year, etc.). The contents of this dropdown and the default value are defined in the zone's configuration. Note, you cannot change the periodicity on *Top X Lists* (the periodicity is defined in the zone's configuration).
- The second field defines the zone's "base-period". The default base-period is defined on the zone's configuration. Fields on the *installation record* control the number of entries in the drop down. You can use the up / down arrows to move forward and back one time-period. Use the dropdown to select a different base-period.

Note, the base-period dropdown is replaced with a date selection pop-up for the Calendar Day periodicity. Clicking on **Now** will select "today"; clicking on a day in the calendar will select the respective day:



September 2006

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

- Use the filters (i.e., the various fields that appear under **Period**) to restrict the information highlighted in a zone. For example, rather than viewing revenue for all customers, you could limit the zone to residential customers in the northern division. You do this by selecting the desired values in the filters **Customer Class** and **Jurisdiction** and then clicking the **Refresh** button. Note, the number and type of filters that appear in a zone are controlled by the zone's configuration.

You can click the ☰ button adjacent to a filter to select more than one value (for example, you could select two customer classes). If at least one entry is selected, the adjacent drop down is protected and the icon becomes red. To unprotect it, click the ☰ button again and then press the **Clear** button.

If the zone has multiple filters on the same dimension, the zone can be configured to limit the filter values to those related to a "parent" filter. For example, if Filter 1 is City, and Filter 2 is Postal Code, the zone can be configured to only show Postal Codes in the selected City.

- Some zones have been configured to have a **Slice by** option; this option allows you to change the object being sliced. For example, a pie chart can be configured to initially slice revenue by Customer Class ; you could use this option to re-slice it by another filter on the zone. Please note:
- The **Slice by** values are the same as the zone's filters
- When you slice by a given dimensional filter's values, the respective dimensional filter is disabled.
- *Report graphs* have a **Report by** option that allows you to change the object being reported on. For example, a report graph zone can be configured to initially display slices by Customer Class ; you could then use this option to report on another filter on the zone.
- *Dimensional Scorecards* have a **Sort Order** that controls if the best or worst combinations are shown first. The default value is defined in the zone's configuration.

➤ **Note: Bold versus normal fonts.** Labels that appear in the Filter Area are either shown in bold or normal font. Bold labels are used to highlight that the zone will be automatically refreshed when the corresponding dropdown value is selected. Normal font labels are used to highlight that any change to the corresponding dropdown will NOT cause the zone to be automatically refreshed. Rather, the zone will only be refreshed when the user presses the **Refresh** button.

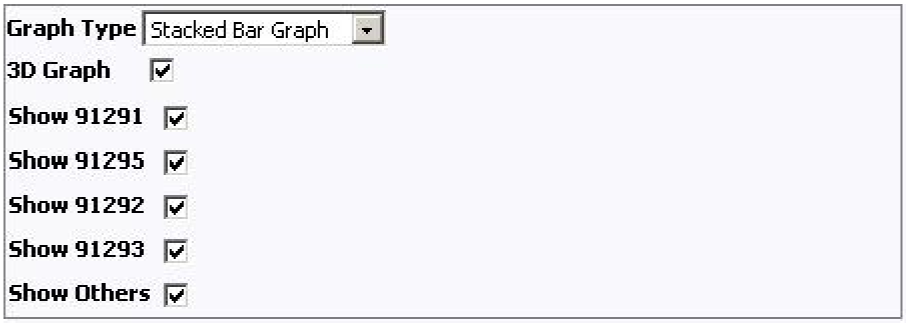
Graph Options Area

➤ **Note: Only appears for graphs.** The Graph Options Area is only available when a graph is shown in the *Graphic Display Area*.

Expose the Graph Options Area (by clicking *Show Graph Options*) if you want to do any of the following:

- Change the type of graph (e.g., from a line graph to a bubble graph)
- Change the 3-D effect
- Hide one or more data slices

The following is an example of how the Help Text Area looks:



Graph Type Stacked Bar Graph

3D Graph ☑

Show 91291 ☑

Show 91295 ☑

Show 91292 ☑

Show 91293 ☑

Show Others ☑

The following points describe how to use the various functions available in the Filter Area:

- Use **Graph Type** to change the type of graph. The default value is defined in the zone's configuration.
- Toggle **3D Graph** to change the 3D effect. The default value is defined in the zone's configuration.
- Suppress one or more lines (or bars) that appear in a graph by toggling the switch that appears adjacent to the line's description. For example, if you've sliced a revenue graph by customer class, separate lines (or bars) are shown for each customer class. You can hide one or more customer classes to make the graph easier to read.

Explorer Options Area

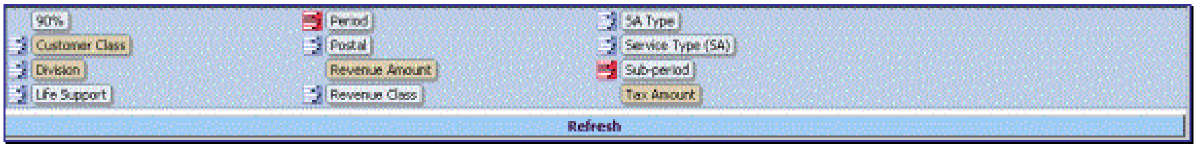
➤ **Note: Only appears for explorers.** The Explorer Options Area is only available when a *cube explorer* or *detail data explorer* is shown in the *Graphic Display Area*.

Click *Show Explorer Options* icon to expose the Explorer Options Area. You can use this area to change the information that appears in the zone by different values. For example, you can use the Filter Area to:

- Show the superset of fields that can be "dragged" into the explorer's grid
- Change the filters used to limit the information shown in the zone
- Change the zone's time period

> **Note: Static reports.** One of the zone's configuration options allows you to define if the *Explorer Options Area* should always be suppressed when the zone is displayed. You might want to do this to implement a "static" report that cannot be changed.

The following is an example of how the Explorer Options Area looks for a sample zone:



The Explorer Options Area contains a separate entry for every field that can appear in the explorer (the number and type of entries are controlled by the zone's configuration).

The following points describe how to use the entries in this area to reconfigure the explorer:

- A brown entry means the field already appears in the explorer. To remove such a field from an explorer, click on the field's heading (in the explorer area) and drag it up to the "discard" bar and release it. After releasing the mouse, the "discard" bar will become a **Refresh** button; click it to reload the zone.
- A blue entry means the field does not appear in the explorer. To move it into the explorer, click the box and drag it to the appropriate position in the explorer. After releasing the mouse, click the **Refresh** button to reload the zone.
- Adjacent to some entries is a "filter box" - ☰ . You can use this button to limit the data shown in the zone. For example, rather than show all customer classes, you can click the filter box to select specific customer classes.

If at least one entry is selected in a filter box, the filter box becomes red. To unprotect it, click the ☰ button again and then press the **Clear** button.

> **Note: Filters always apply.** If you specify filters for a field that doesn't appear in the explorer, the filters will still be used to limit the data that appears in the explorer.

Zone Types

There are several graphical metaphors (zone types) that can be used to represent the data shown in zones. The following sections describe these graphical metaphors.

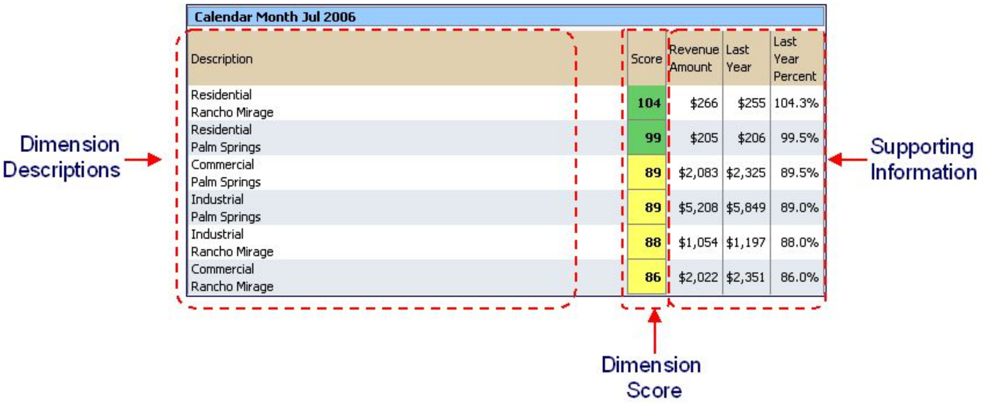
Dimensional Scorecard

Dimensional scorecards rank a combination of dimensional attributes in respect of a KPI. For example, you could set up dimensional scorecards to:

- Highlight the regions with the best (or worst) revenue performance,
- Show customer class and division combinations with problematic arrearage, or
- List user groups whose average case resolution time is problematic.
- …

Everything is configurable. Virtually every aspect of a dimensional scorecard is controlled by its zone configuration. Refer to the *dimensional scorecard zone parameters* for the details.

The following shows a dimensional scorecard that summarizes revenue by Customer Class and City:



Calendar Month Jul 2006

Description	Score	Revenue Amount	Last Year	Last Year Percent
Residential Rancho Mirage	104	$266	$255	104.3%
Residential Palm Springs	99	$205	$206	99.5%
Commercial Palm Springs	89	$2,083	$2,325	89.5%
Industrial Palm Springs	89	$5,208	$5,849	89.0%
Industrial Rancho Mirage	88	$1,054	$1,197	88.0%
Commercial Rancho Mirage	86	$2,022	$2,351	86.0%

Dimensional scorecards can show up to 5 columns; the content of each column is defined in the zone's configuration. The following points describe the potential contents:

- The score column highlights the state of a key performance indicator (KPI) for a given combination of dimensions. The score is derived as follows:
- A score is calculated using a formula defined in the zone's parameters.
- The score's color is derived using a formula defined in the zone's parameters. Note, you can change the range of values that result in a yellow score in the zone's *Filter Area*.

The zone's configuration controls if the best or worst scores are shown first. You can toggle the sort order by opening the zone's *Filter Area*.

- The dimension descriptions column defines the unique combination of dimensions that were scored.
- The supporting information columns display additional values.

Hover text. The zone can be configured to show hover text when you hover the mouse over the score.

Broadcasting. Click on a description to broadcast the dimensions (as filters) to all other zones on the portal.

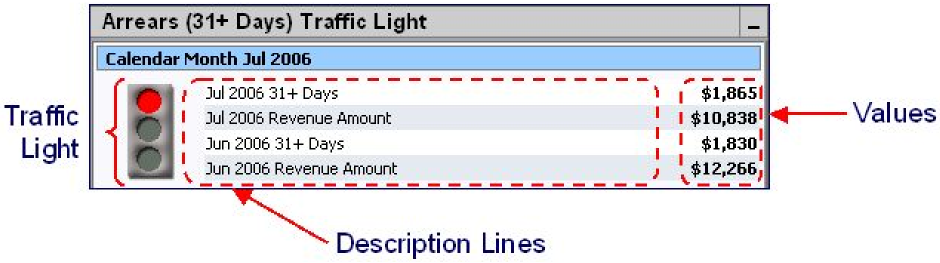
Traffic Light

Traffic light zones highlight the state of a key performance indicator (KPI) in a given period. For example, you could use traffic light zones to highlight:

- Revenue compared to budget revenue
- Outage duration compared to a target value
- Asset repair counts compared to the same time last year
- …

Everything is configurable. Your implementation team controls virtually every aspect of a traffic light zone. Refer to the *traffic light zone parameters* for the details.

The following shows a traffic light that contrasts revenue to overdue debt in two adjacent periods:



Arrears (31+ Days) Traffic Light

Calendar Month Jul 2006

Jul 2006 31+ Days	$1,865
Jul 2006 Revenue Amount	$10,838
Jun 2006 31+ Days	$1,830
Jun 2006 Revenue Amount	$12,266

The color of the traffic light graphic is derived as follows:

- A KPI is calculated using a formula defined in the zone's parameters.

- The KPI's color is derived using a formula defined in the zone's parameters.

The description lines show up to 4 lines of information. The information shown is defined in the zone's parameters.

The value of each line is shown on the right side of the zone. Each value and its format are defined in the zone's parameters.

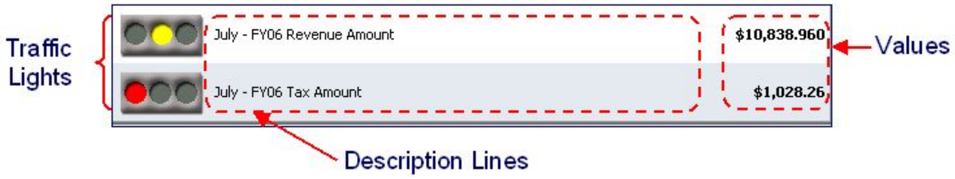
Note: Hover text. The zone can be configured to show hover text when you hover the mouse over the traffic light.

Multi KPI

Multi-KPI zones are used to present multiple *traffic lights* in a concise fashion.

Note: Everything is configurable. Your implementation team controls virtually every aspect of a multi-KPI zone. It should be noted that the zone configuration simply references multiple traffic light zones. Therefore, if you need to change how a line looks, you'll typically change the related traffic light zone. Refer to the *multi-KPI zone parameters* for the details.

The following example shows a multi-KPI zone with two traffic lights:



July - FY06 Revenue Amount $10,838.960

July - FY06 Tax Amount $1,028.26

Multi-KPI zones can show up to 3 columns; the content of each column is defined in the zone's configuration. The following points describe the potential contents:

- The traffic light column contains the traffic light graphic from the related zone (notice it's turned on its side to save real estate). If the related traffic light zone has a *hyperlink*, you can click the traffic light to drill to its hyperlink destination.
- The description line column contains one of the lines from the traffic light (the specific line is defined on the zone's parameters).
- The value column contains one of the values from the traffic light (the specific value is defined on the zone's parameters).

Note: No description bar. Multi-KPI zones do not contain a *description bar* because the various traffic lights have different descriptive values.

Note: Hover text. If the related traffic light zone has been configured to show hover text, hover text will appear when you hover the mouse over a traffic light.

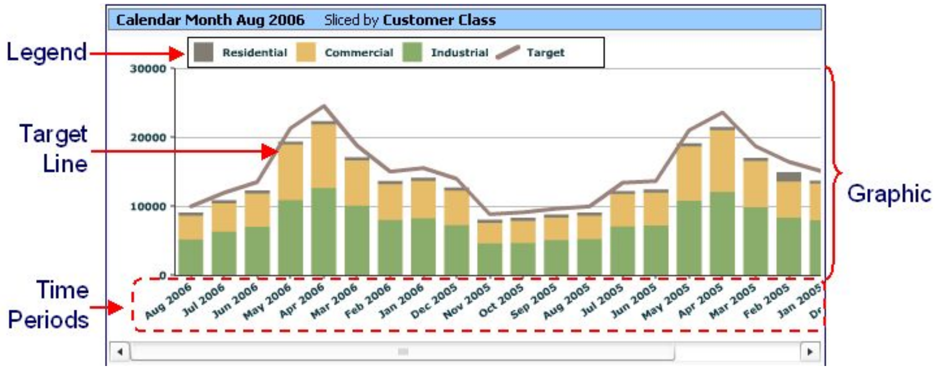
Chronological Graphs

Chronological graph zones show changes over time. For example, you can set up chronological graph zones to do the following:

- Highlight how revenue changes over time
- Highlight the count of cases over time
- Highlight the average amount of usage over time
- Plot the number of assets put in for repairs over time
- etc

Everything is configurable. Your implementation team controls virtually every aspect of a chronological graph zone. Refer to the *chronological graph zone parameters* for the details.

The following shows an example of a chronological graph sliced by the account's customer class:



The following points describe the components of a chronological graph:

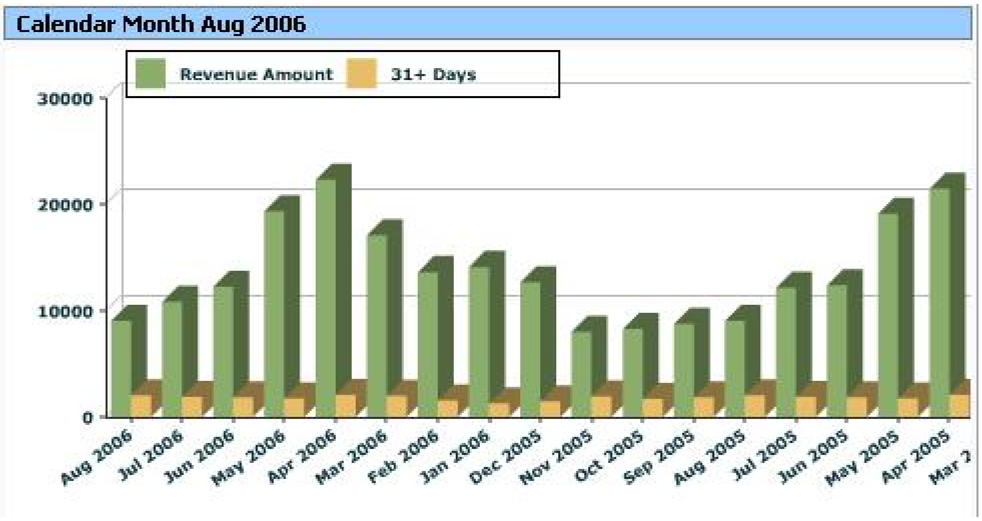
- The Graphic area contains the graph. Please note that the zone's configuration controls many aspects of how the graph looks including:
- The type of graph. Oracle Utilities Business Intelligence supports several different types of graph (e.g., line graphs, bar graphs, etc). The end-user can change the type of graph by clicking *Show Graph Options* and then choosing the desired Graph Type in the *Graph Options Area*.
- If it appears in 3D. The end-user can change the 3D effect by clicking the *Show Graph Options Button* and then toggling the 3D Effect switch in the *Graph Options Area*.
- If a target line appears.
- If the graph is animated when it loads.
- If the graph is sliceable. You can click the *Show Filters* button and then choose the desired "slice by" object in the *Filter Area*.
- …

➤ **Note: Hover text.** The zone can be configured to show hover text when you hover the mouse over a bar / line / bubble.

Broadcasting. Click a bar, bubble or line in the graph to copy the filters and time period to all other zones in the portal.

- The Time Periods area shows the time-periods of the information appearing in the graph. Please note that the zone's configuration controls many aspects of this area:
- The default periodicity of the time-periods (e.g., weeks, months, quarters). You can change the periodicity of the graph by clicking *Show Filters* and then choosing the desired periodicity in the *Filter Area*.
- The number of time-periods shown.
- If the time-periods appear in ascending or descending order.
- If past or future periods are shown.
- The Legend area shows what the different colors mean.

The above example illustrated a graph that showed a single value over time. We'd like to stress that chronological graphs (just like most zones) can be configured to show more than one value. For example, you could set up a graph to show two values: revenue and arrearage older than 30 days.



If the graph is configured to show more than one value, you cannot slice it by a dimensional attribute.

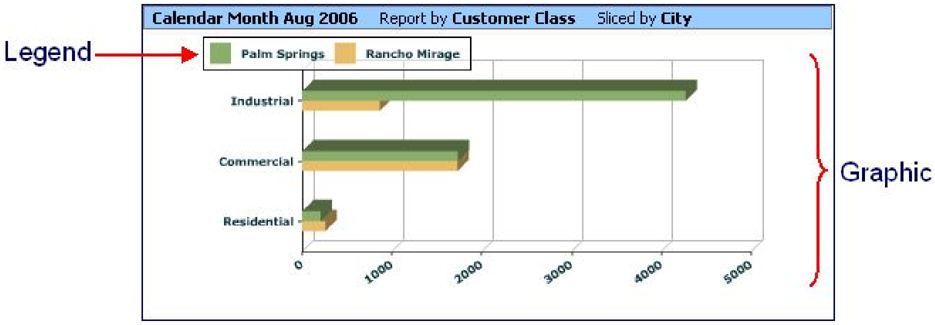
Report Graphs

A report graph shows the value of a measure for a given dimensional attribute in a specific time-period (the x-axis shows the quantity, the y-axis shows the distinct values of the dimensional attribute). For example, you can set up a report graph that lists revenue (a single value) by customer class.

The main difference between report and *chronological graphs* is that report graphs show information for a specific time-period whereas chronological graphs show information for many time-periods. Because a time dimension isn't shown, report graphs support two levels of dimensional slicing. For example, you can report on revenue by customer class (slice 1), and slice each customer class by region (slice 2).

Everything is configurable. Your implementation team controls virtually every aspect of a report graph zone. Refer to the *report graph zone parameters* for the details.

The following is an example of a report graph. This graph shows the amount of revenue for each customer class (and it further slices each customer class by the city in which the revenue was derived):



- The Graphic area contains the graph. Please note that the zone's configuration controls many aspects of how the graph looks including:
- The type of graph. Oracle Utilities Business Intelligence supports several different types of graph (e.g., cluster bar versus stacked bar). The end-user can change the type of graph by clicking *Show Graph Options* and then choosing the desired Graph Type in the *Graph Options Area*.
- If it appears in 3D. The end-user can change the 3D effect by pressing the *Show Graph Options* and then toggling the 3D Effect switch in the *Graph Options Area*.
- If the graph is animated when it loads.
- If the graph is sliceable. You can click the *Show Filters* button and then choose the desired "slice by" object in the *Filter Area*.

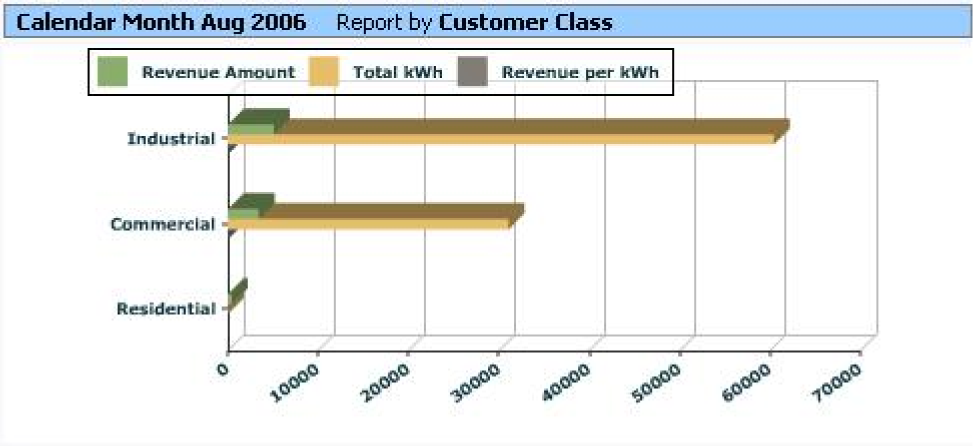
- …

➤ **Note: Hover text.** The zone can be configured to show hover text when you hover the mouse over a bar.

Broadcasting. Click a bar to copy the report value (as a filter) to all other zones in the portal.

- The Legend area shows what the different colors mean. Note, this area only appears if a graph has been "sliced".

The above example illustrated a graph that shows a single value. We'd like to stress that report graphs (just like most zones) can be configured to show more than one value. For example, you could set up a graph to show three values: revenue, total kWh consumption, and the amount of revenue per kWh.



If the graph is configured to show more than one value, you cannot slice it by a dimensional attribute.

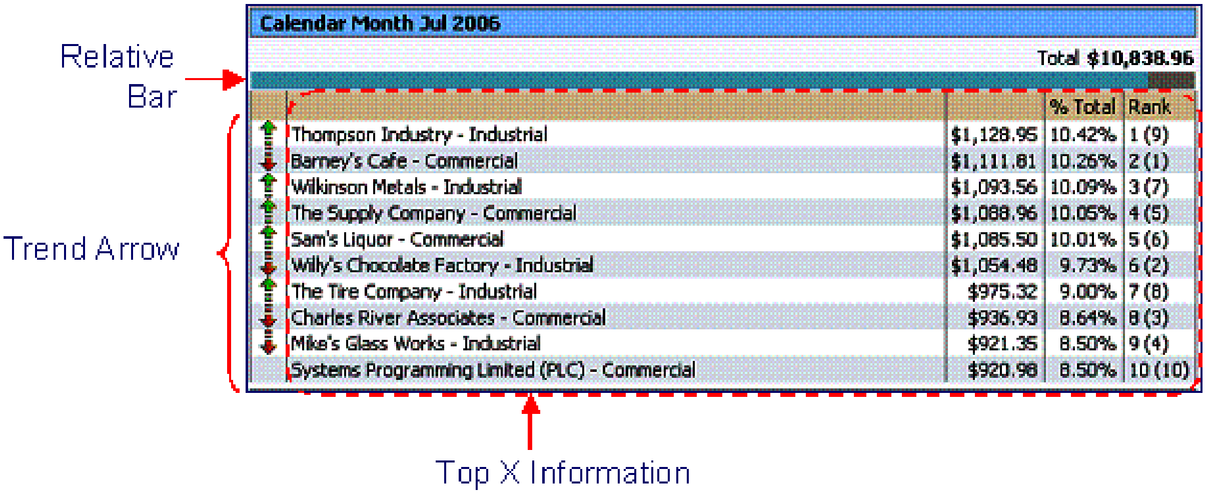
Top X List

Top x zone types show the top objects in respect of a measure on a fact. You might set top x list zones to:

- Show the top 10 revenue producing customers, or
- Show the top 20 cases that have taken the longest amount of time to complete.

Everything is configurable. Virtually every aspect of the top x list zone is controlled in the zone configuration settings. For more information on zone configuration please refer to the *zone parameters for top x lists*.

The following shows an example of a top x list zone that has been set up to show the top revenue producing customers in a given period:



Calendar Month Jul 2006

Total $10,838.96

			% Total	Rank
↑	Thompson Industry - Industrial	$1,128.95	10.42%	1 (9)
↓	Barney's Cafe - Commercial	$1,111.81	10.26%	2 (1)
↑	Wilkinson Metals - Industrial	$1,093.56	10.09%	3 (7)
↑	The Supply Company - Commercial	$1,088.96	10.05%	4 (5)
↑	Sam's Liquor - Commercial	$1,085.50	10.01%	5 (6)
↓	Willy's Chocolate Factory - Industrial	$1,054.48	9.73%	6 (2)
↑	The Tire Company - Industrial	$975.32	9.00%	7 (8)
↓	Charles River Associates - Commercial	$936.93	8.64%	8 (3)
↓	Mike's Glass Works - Industrial	$921.35	8.50%	9 (4)
	Systems Programming Limited (PLC) - Commercial	$920.98	8.50%	10 (10)

The Relative Bar represents the value of the objects in the top x list relative to all objects. To display text describing the total value and relative percentage represented by the bar, hover the mouse over the appropriate section. In the above example:

- The colored portion of the bar represents the values listed in the top x list.
- The gray portion of the bar represents other values that are not represented in the list.

The Top X Information section shows the following:

- A description of the object such as the customer name or property address. If this information is blue, you can click on it to open the source application and review more details. Whether or not a hyperlink is displayed is determined by the zone's configuration.
- The amount of the object and the percentage are displayed. These values are calculated using all objects for the time period, not just the objects in the list.
- The rank of each object in the period shown. The value in parenthesis shows the rank of the object in the previous period.

The Trend Arrow indicates whether the rank of the object has trended up, down or stayed the same. This is in comparison to the ranking from the previous period. The color of this arrow is determined when the zone is configured.

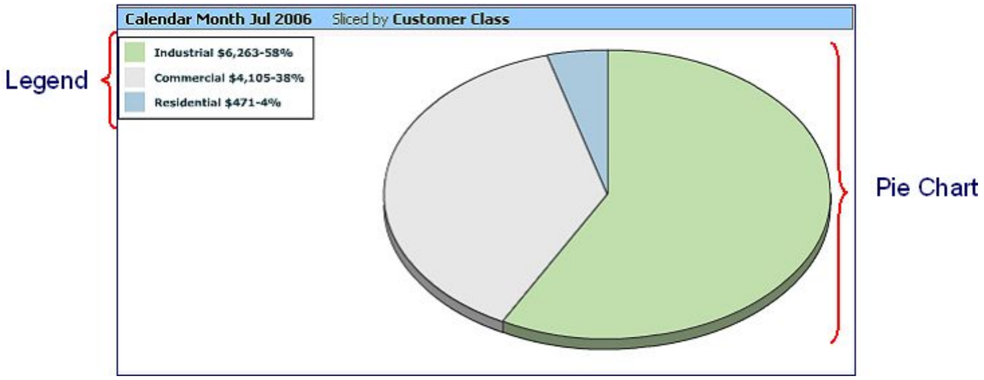
Pie Chart

A pie chart zone shows one or more slices where each slice's size highlights its portion of the total amount. For example, a pie chart could show:

- Total revenue sliced by customer class (or region or …)
- Churn by region
- Customer contacts by contact type
- Complaints by region
- Tenders by type
- …

Everything is configurable. Virtually every aspect of a pie chart is controlled by its zone configuration. Refer to the *pie chart zone parameters* for the details.

The following shows a pie chart that slices total monthly revenue by customer class:



The Legend explains what each color in the pie chart means. The information shown is defined in the zone's parameters.

Note: Hover text. The zone can be configured to show hover text when you hover the mouse over a slice.

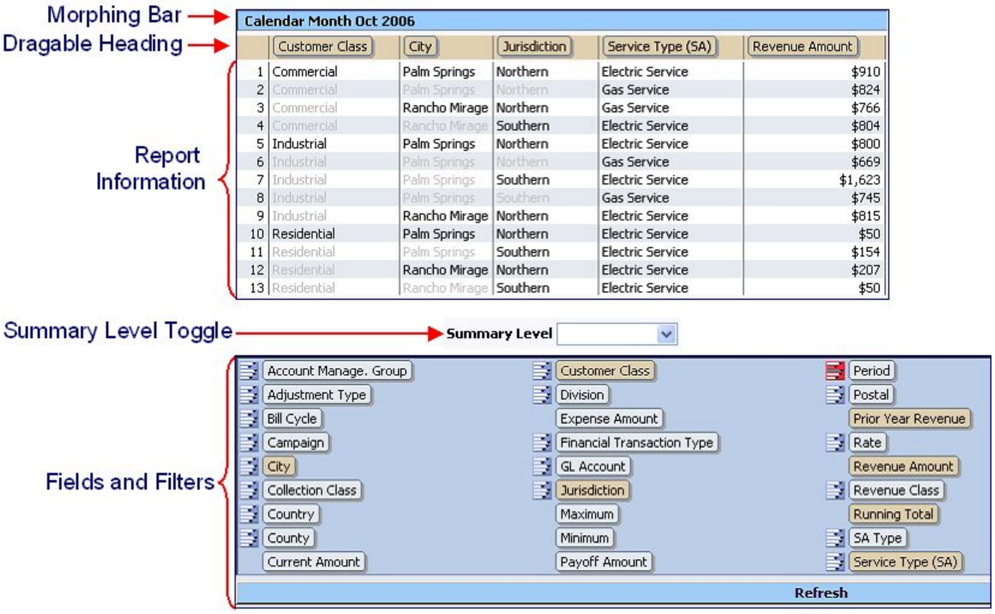
Broadcasting. Click a segment in the pie chart to broadcast the slices value (as a filter) to all other zones in the portal.

Cube Explorer

Cube explorer zones are reports showing summarized values from one or more facts and/or goals. For example, you could set up a zone to produce a summary of aged debt by customer class, premise type and rate schedule. After the zone is initially displayed, end users can change how the report looks by dragging and dropping fields onto (and off of) the report.

➤ **Note: Everything is configurable.** Virtually every aspect of a cube explorer is controlled by its zone configuration. Refer to the *cube explorer zone parameters* for the details.

The following shows a cube explorer that reports on monthly revenue:



Calendar Month Oct 2006

	Customer Class	City	Jurisdiction	Service Type (SA)	Revenue Amount
1	Commercial	Palm Springs	Northern	Electric Service	$910
2	Commercial	Palm Springs	Northern	Gas Service	$824
3	Commercial	Rancho Mirage	Northern	Gas Service	$766
4	Commercial	Rancho Mirage	Southern	Electric Service	$804
5	Industrial	Palm Springs	Northern	Electric Service	$800
6	Industrial	Palm Springs	Northern	Gas Service	$669
7	Industrial	Palm Springs	Southern	Electric Service	$1,623
8	Industrial	Palm Springs	Southern	Gas Service	$745
9	Industrial	Rancho Mirage	Northern	Electric Service	$815
10	Residential	Palm Springs	Northern	Electric Service	$50
11	Residential	Palm Springs	Southern	Electric Service	$154
12	Residential	Rancho Mirage	Northern	Electric Service	$207
13	Residential	Rancho Mirage	Southern	Electric Service	$50

The Morphing Bar has three potential states:

- The initial state displays the time-period and filters used to build the Report Information .
- The second state is a "discard region"; the bar morphs to this state while you drag fields off the report.
- The third state is a **Refresh** button; the bar morphs to this state after you change the report (by dragging fields on and off). You can click this button to rebuild the Report Information .

➤ **Note: Locking the zone.** One of the zone's configuration options allows you to define if the *Explorer Options Area* should be suppressed when the zone is displayed. If you configure a zone like this, the end user cannot add, remove or rearrange columns on the explorer and therefore the Morphing Bar will never morph (it will always contains the description of the time period and filters that were used to build the zone).

The Dragable Headings describe the fields on the report. If the zone hasn't been locked (see prior note), you can drag a heading sideways to reposition it on the report. You can also drag a heading up to the Morphing Bar to remove it from the report. After moving or removing a heading, you can press the **Refresh** button to rebuild the Report Information .

The **Report Information** shows the details of the report. Note, dimension descriptions are dimmed to highlight "breaks" of values

Broadcasting. Click a row to broadcast its dimension values (as filters) to all other zones in the portal.

The **Summary Level** dropdown contains an entry for each dimension in the Report Information (shown in the order in which they appear on the report). When you select a value from the dropdown, the Report Information will be rebuilt leaving all dimensions beneath the selected dimension blank. This allows you to change the granularity of the summary information without having to drag / drop dimension on / off the explorer.

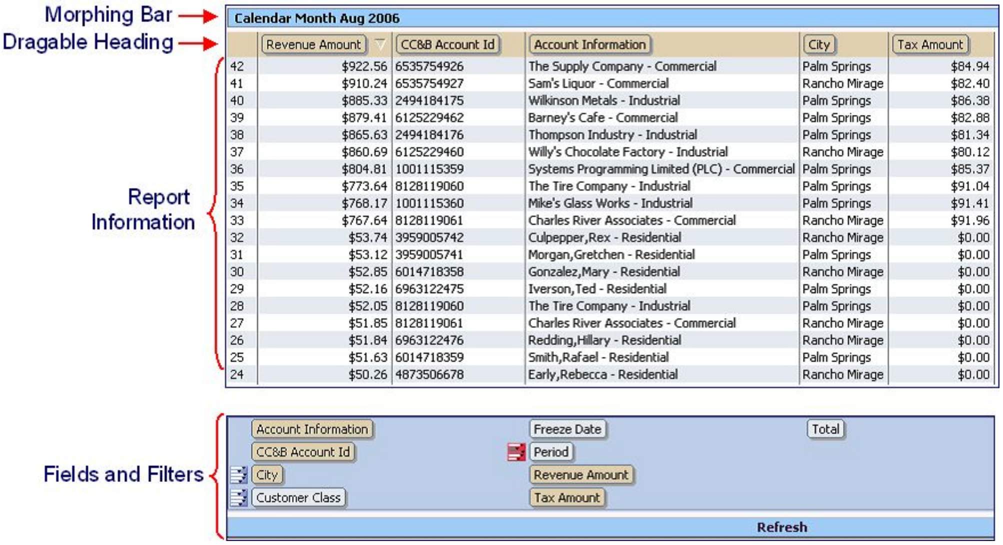
Refer to *Explorer Options Area* for a description of the Fields and Filters area.

Detail Data Explorer

Detail explorer zones are reports showing individual rows on a fact or goal. For example, you could set up a zone to produce a report showing information about individual bill segments. After the zone is initially displayed, end users can change how the report looks by dragging and dropping field onto (and off of) the report.

➤ **Note: Everything is configurable.** Virtually every aspect of a detail data explorer is controlled by its zone configuration. Refer to the *detail data explorer zone parameters* for the details.

The following shows a detail data explorer that reports on revenue on individual bill segments:



Calendar Month Aug 2006

	Revenue Amount	CC&B Account Id	Account Information	City	Tax Amount
42	$922.56	6535754926	The Supply Company - Commercial	Palm Springs	$84.94
41	$910.24	6535754927	Sam's Liquor - Commercial	Rancho Mirage	$82.40
40	$885.33	2494184175	Wilkinson Metals - Industrial	Palm Springs	$86.38
39	$879.41	6125229462	Barney's Cafe - Commercial	Palm Springs	$82.88
38	$865.63	2494184176	Thompson Industry - Industrial	Palm Springs	$81.34
37	$860.69	6125229460	Willy's Chocolate Factory - Industrial	Rancho Mirage	$80.12
36	$804.81	1001115359	Systems Programming Limited (PLC) - Commercial	Palm Springs	$85.37
35	$773.64	8128119060	The Tire Company - Industrial	Palm Springs	$91.04
34	$768.17	1001115360	Mike's Glass Works - Industrial	Palm Springs	$91.41
33	$767.64	8128119061	Charles River Associates - Commercial	Rancho Mirage	$91.96
32	$53.74	3959005742	Culpepper,Rex - Residential	Rancho Mirage	$0.00
31	$53.12	3959005741	Morgan,Gretchen - Residential	Palm Springs	$0.00
30	$52.85	6014718358	Gonzalez,Mary - Residential	Rancho Mirage	$0.00
29	$52.16	6963122475	Iverson,Ted - Residential	Palm Springs	$0.00
28	$52.05	8128119060	The Tire Company - Industrial	Palm Springs	$0.00
27	$51.85	8128119061	Charles River Associates - Commercial	Rancho Mirage	$0.00
26	$51.84	6963122476	Redding,Hillary - Residential	Rancho Mirage	$0.00
25	$51.63	6014718359	Smith,Rafael - Residential	Palm Springs	$0.00
24	$50.26	4873506678	Early,Rebecca - Residential	Rancho Mirage	$0.00

The Morphing Bar has three potential states:

- The initial state displays the time-period and filters used to build the Report Information .
- The second state is a "discard region"; the bar morphs to this state while you drag fields off the report.
- The third state is a **Refresh** button; the bar morphs to this state after you change the fields on the report. You can click this button to rebuild the Report Information .

➤ **Note: Locking the zone.** One of the zone's configuration options allows you to define if the *Explorer Options Area* should be suppressed when the zone is displayed. If you configure a zone like this, the end user cannot add, remove or rearrange columns on the explorer and therefore the Morphing Bar will never morph (it will always contains the description of the time period and filters that were used to build the zone).

The Dragable Headings describe the fields on the report. If the zone hasn't been locked (see prior note), you can drag a heading sideways to reposition it on the report. You can also drag a heading up to the Morphing Bar to remove it from the report. After moving or removing a heading, you can press the **Refresh** button to rebuild the Report Information .

The **Report Information** shows the details of the report.

Broadcasting. Click a row to broadcast its dimension values (as filters) to all other zones in the portal.

Refer to *Explorer Options Area* for a description of the Fields and Filters area.

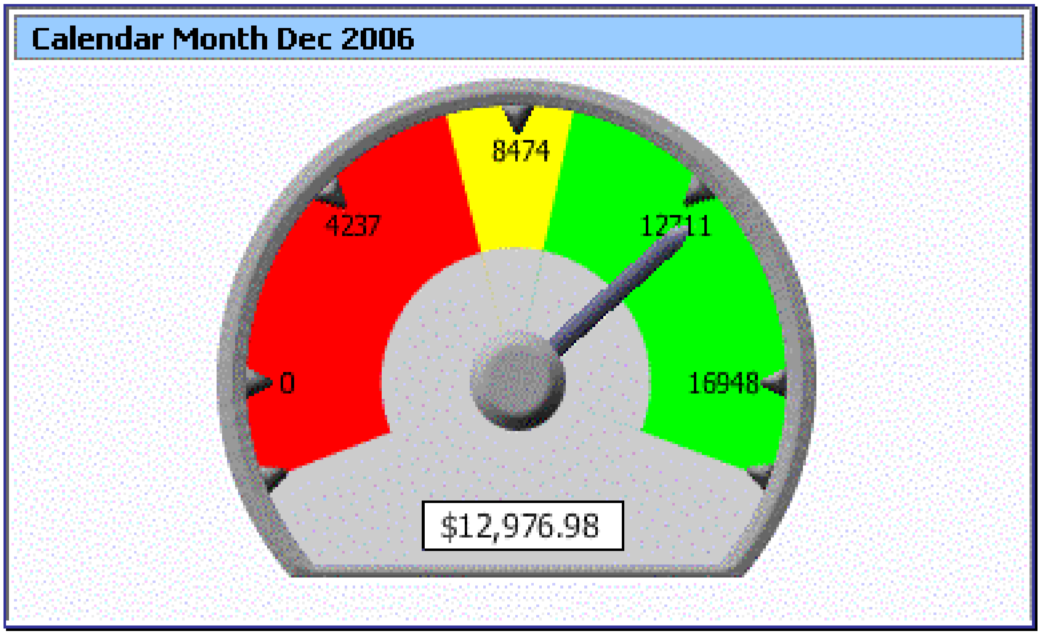
Gauge

Gauge zones highlight the state of a key performance indicator (KPI) in a given period. For example, you could use gauge zones to highlight:

- Revenue compared to budget revenue
- Outage duration compared to a target value
- Asset repair counts compared to the same time last year
- …

Everything is configurable. Your implementation team controls virtually every aspect of a gauge zone. Refer to the *gauge zone parameters* for the details.

The following shows a gauge that highlights how far a given period's revenue deviates from the prior period's revenue:



The ranges in the gauge and their colors are derived as follows:

- A KPI is calculated using a formula defined in the zone's parameters.
- The gauge's color bands are derived using formulae defined in the zone's parameters.

➤ **Note: Hover text.** The zone can be configured to show hover text when you hover the mouse over the gauge.

Geographic Map

△ **Caution:** Geographic map zones extract coordinate points and present them on a geographical map; they do not perform aggregation. This means that these types of zones should NOT be used against large volumes of data due to potential performance issues. Please refer to your mapping software for optimum data performance considerations.

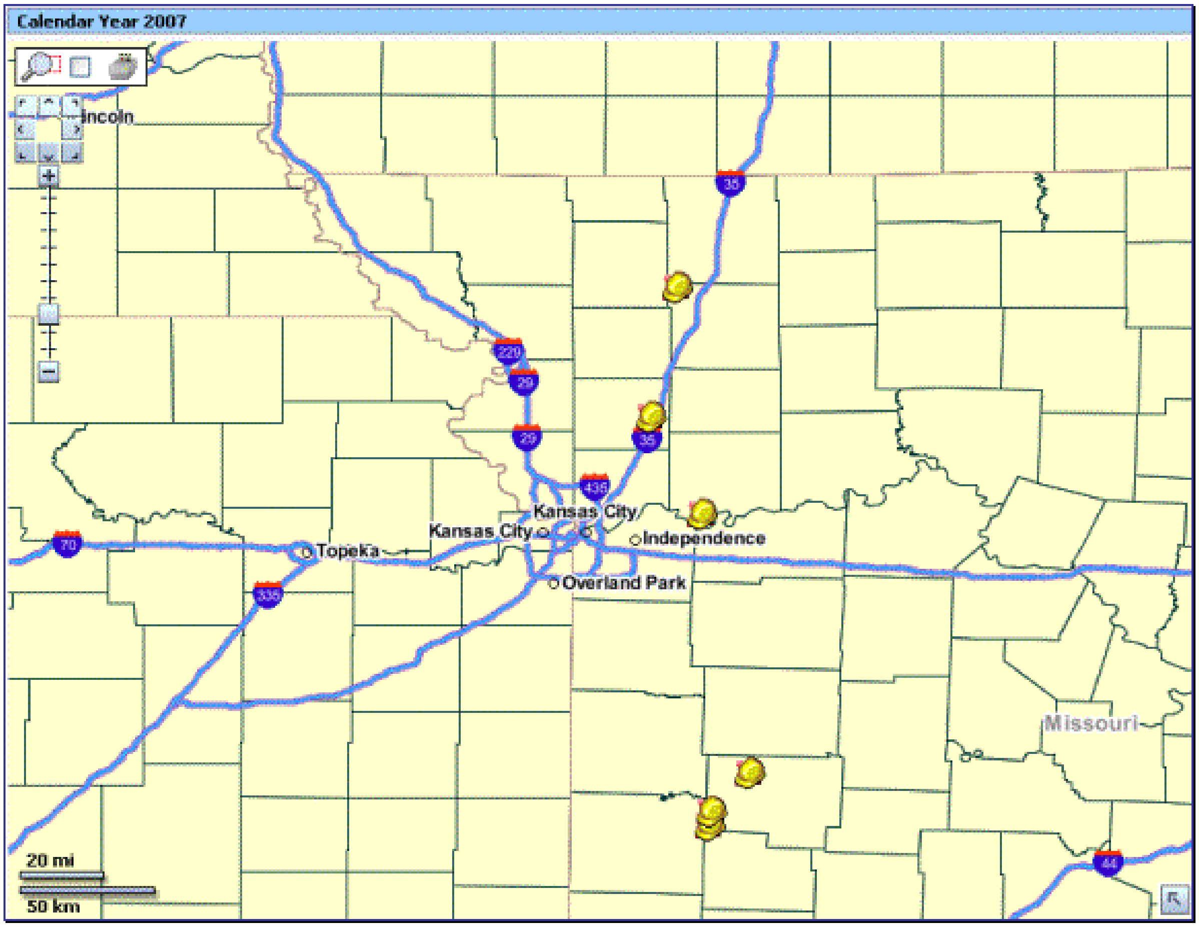
Geographic map zones are used to show geographic coordinate-oriented points of interest. For example, a map zone can show where:

- Outages have occurred
- Field crews are currently located
- Power sub-stations are located

- ….

Everything is configurable. Your implementation team controls virtually every aspect of a geographic map zone. Refer to the *geographic map parameters* for the details.

The following shows a geographic map zone that highlights outages in a geographic area:



The Oracle Mapviewer provides many standard features:

- Scale
- Zoom control to zoom into (and out) of an area for greater detail.
- Marquee area selection to highlight and area to zoom into.
- Ability to use the mouse to move around the map using drag and drop.
- A (collapsible) legend

This example is a presentation using Oracle Mapviewer and maps provided as part of the Oracle Mapviewer database.

Preparing To Implement Oracle Utilities Business Intelligence

Most data-warehouse products are simply development tools that require extensive programming before your analytic data is viewable. You will find that Oracle Utilities Business Intelligence is much more than an empty toolset. Rather, it is a rich set of star-schemas and graphic templates that allow you to quickly build a system that satisfies your organization's analytic requirements.

Before you can configure the application, you must form an intuitive understanding of the system's design principles. To do this, we recommend reading the following chapters:

- *Oracle Utilities Business Intelligence Fundamentals*. This chapter describes how data-warehousing theory has been implemented in Oracle Utilities Business Intelligence.
- *Business Intelligence Portals and Zones*. This chapter describes the user interface metaphors used to display your analytic data.
- *Configuring Analytic Zones*. This chapter describes how to configure the user interface.
- *Oracle Warehouse Builder*. This chapter describes the extract-transform-load (ETL) methodology used to populate the data warehouse.
- *Business Intelligence Configuration Tasks*. This chapter takes you through a case study that illustrates how to configure the system.

When have finished reviewing the above chapters, you will have compiled the meta-data necessary to configure the system. After you've added this meta-data, you'll be ready to extract the data from your system and load your data-warehouse with historical data and then view it using your portals and zones.

● **FMI:** For an overview of the application security set up tasks, please refer to The Big Picture of Application Security.

Oracle Utilities Business Intelligence Fundamentals

This chapter describes fundamental Oracle Utilities Business Intelligence concepts. After understanding the concepts in this chapter, refer to *Configuration Tasks* for a recommended approach to designing and setting up Oracle Utilities Business Intelligence.

General Data-Warehousing Concepts

There is a great deal of theory and jargon that is unique to the data-warehousing world. Sometimes, just coming to grips with this theory can be overwhelming. The topics in this section summarize this theory and explain how it has been implemented in Oracle Utilities Business Intelligence.

➤ **Note:** The standard dashboards in the Oracle Utilities Business Intelligence v2.3.1 and later were created assuming that specific data is stored in various *user-defined field* (UDF) and *user-defined measure* (UDM) fields. These assumptions were based on the Demo Database delivered with Oracle Utilities Business Intelligence 2.2.x, meaning that if the UDF and UDM populations are based on how the Demo Database is configured, then there should be no issues during an upgrade. However, if your implementation is different from this, then changes may have to be made when upgrading.

For example, all of the Answers created for Oracle Utilities Business Intelligence 2.3.1 assume that the Account Class from CC&B is stored in the UDF1 field in the CD_ACCT dimension. If some other data is stored in this field, then the following choices are available:

1. Make no changes to either the data or the answers, in which case all of the answers will show the data and label from the UDF1 field on all answers in place of the Customer Class.
2. Modify the extract and migrate the old data to store the Customer Class in the UDF1 field. Then the Customer Class will be shown on all answers as designed.
3. Assuming that the customer class is stored in some other UDF field, modify all of the answers to use the current UDF field that stores the Customer Class data. If this choice is made, then further changes to the Materialized Views will also have to be made to use the new UDF field instead of UDF1.

This same analysis will need to be made for all fields that differ from the standard.

Data Warehouse

The Oracle Utilities Business Intelligence data-warehouse is a separate database from your operational database(s). This database is organized into a variety of *star-schemas* that contain data extracted from applications.

The following points describe the main uses of the Oracle Utilities Business Intelligence data-warehouse:

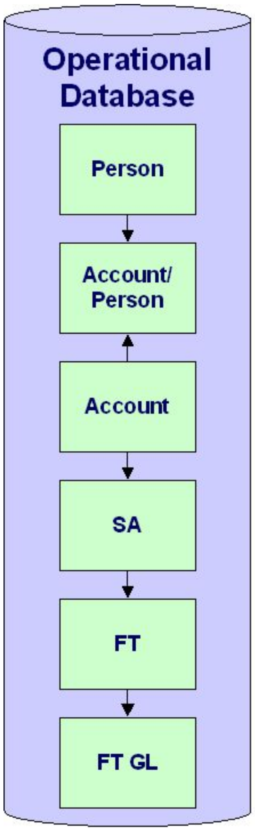
- Its data structures are designed to be easily accessible by end-users for their reporting needs.
- Large volumes of data can be retrieved quickly. This allows for the fast rendering of the graphics that show key performance indicators (KPIs).

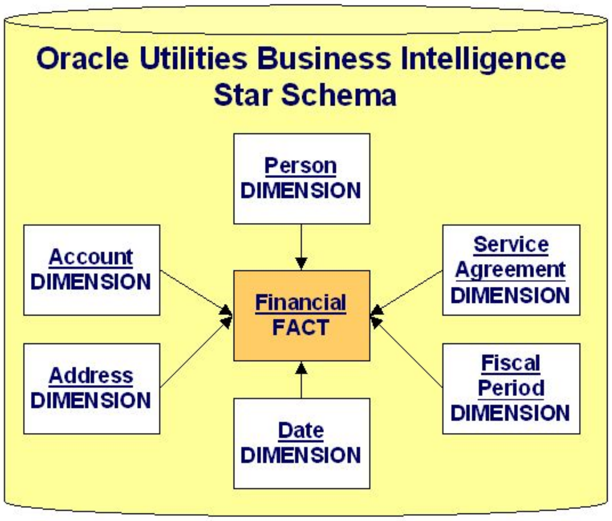
You can add additional star schemas. Oracle Utilities Business Intelligence has been delivered with star-schemas and graphics suited to data from various Oracle applications. You can use the development tools to add additional star-schemas and graphics.

Star Schema

All data that is extracted from your production system and transferred to the Oracle Utilities Business Intelligence data-warehouse is held in "star schemas". A star schema is nothing more than the shape of the tables that hold a given type of factual data from your production system. Consider the following entity relationship diagrams (ERD):

- The first shows the relational tables holding financial information in an operational database.
- The second shows the star-schema that holds the equivalent data in a data-warehouse.





The following points highlight important differences between a star-schema and an operational database structure:

The tables in a star-schema are divided into two categories: **facts** and **dimensions**. Every star-schema has a single fact table (at the center of the star) and one or more dimensions.

- `Fact` tables contain individual rows for every occurrence of a fact in the production system. Fact tables contain columns called **measures**. It is these columns that are aggregated to calculate key performance indicators (KPIs). Refer to *User Defined Measure (UDMs)* for more information about measures.

- `Dimension` tables are used to "slice" the facts in different ways. For example, the star schema above would allow users to "slice" the financial fact by the attributes on the 6 dimensions linked to it. Refer to *User Defined Fields (UDFs)* for more information about "slicing" facts using dimensional attributes.

Cube = Star Schema. Some people refer to star-schemas as "data cubes" due to their multi-dimensional nature (but cubes imply there are only 3 dimensions and most star-schemas support many more than 3 dimensions). The picture above implies that the Financial fact has 6 dimensions; in reality it has more.

Contrast the operational database's ERD with that of the star-schema. Notice that the operational data structure has very "deep" relations (i.e., it has many levels of one-to-many's). Contrast this to the depth of a star-schema. Notice that a star schema is only one-level deep. This is no accident. Star-schemas are meant to be simple in structure to allow simple access paths.

A separate star-schema is maintained for every "fact" held in a data-warehouse. A fact is a record of an event that occurs in your operational system. For example, one fact might exist to record every bill and payment; whereas a different fact might exist to record every purchase order.

Use the data dictionary. The *data dictionary* in the *application viewer* can be used to view the facts and dimensions. If you toggle the data dictionary to physical name order, you can take advantage of the fact that all fact tables are prefixed with CF , and all dimension tables are prefixed with CD .

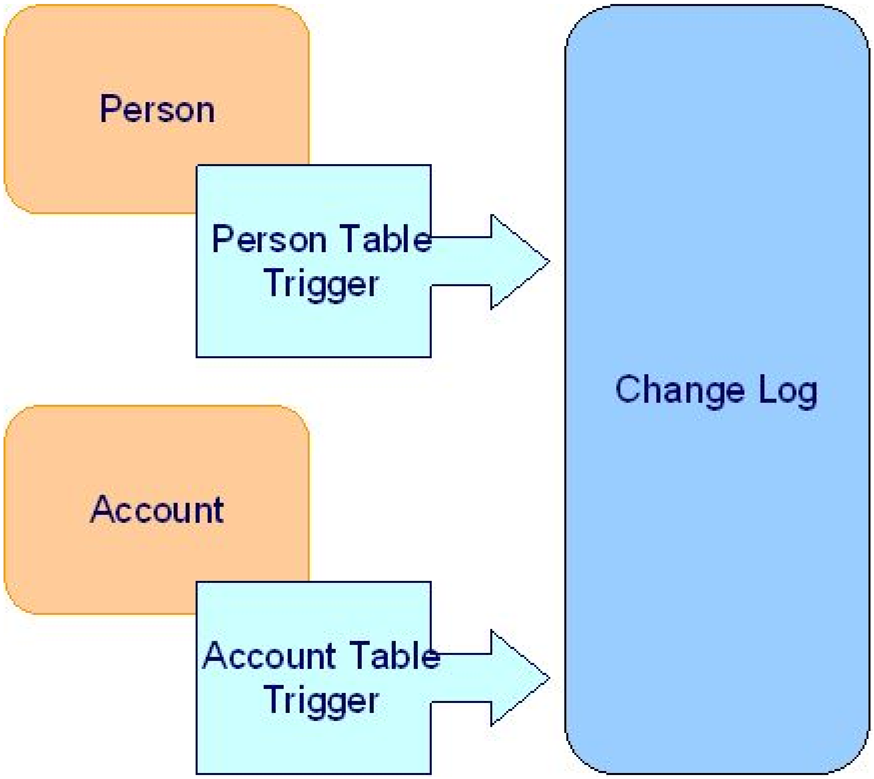
➤ **Note: Use the table mapping portal.** The *Table Mapping Portal* provides an alternate way to explore the facts and dimensions. In addition, this portal also documents how each column in the facts and dimensions is populated by the ETL processing.

Change Data Capture

When data-warehouse is first set up, all of the relevant data in the production system(s) is loaded into the data-warehouse.

● **FMI:** Refer to *Two Modes of Execution* for a description of how the *extract programs* are used to initially load the data-warehouse.

After the initial load, only changes in the production system(s) are sent to the data-warehouse. It is the job of the change-data-capture mechanism to identify the data that has changed. The change data capture architecture used by Oracle Utilities Business Intelligence consists of database triggers that populate a Change Log table.



Triggers are procedures stored in the production database that are executed when records are added, updated, or deleted. The Oracle Utilities Business Intelligence triggers insert a row into the Change Log table.

Alternatives to triggers. Other change data capture methods, such as Oracle Streams, can be used with Oracle Utilities Business Intelligence. The primary requirement is that the Change Log be populated appropriately when a change occurs.

The **Change Log** table is an Oracle Utilities Business Intelligence -specific table in the production database that is used to track which objects have been changed. The programs that extract production data to the data-warehouse read this table to identify the incremental changes that need to be made to the data-warehouse.

● **FMI:** Refer to *Capturing Changes In Source Data* for all of the details.

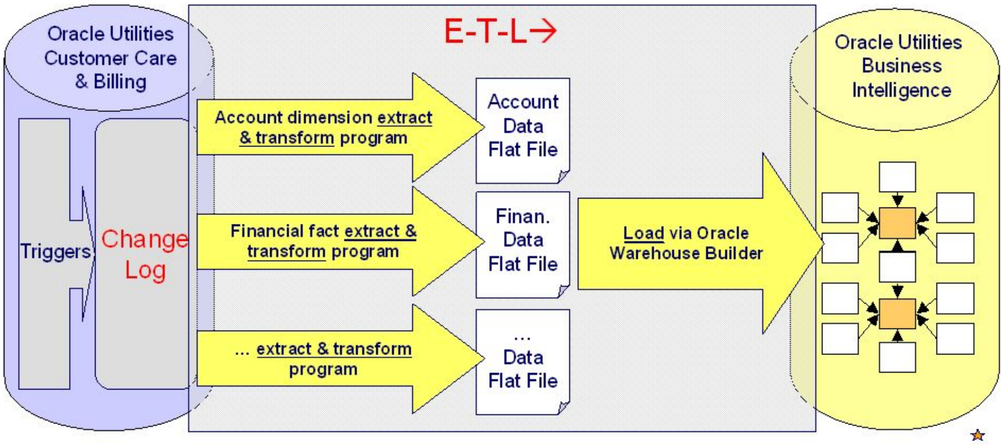
Extract-Transform-Load (ETL)

The *star schemas* in a data-warehouse are populated via a series of programs that do the following:

- `extract` data from an operational system source system(s)
- `transform` the data to suit the data warehouse
- `load` the data into the warehouse's star-schemas

Collectively, these programs are referred to by the acronym ETL.

ETL programs are supplied for every fact and dimension in Oracle Utilities Business Intelligence. The following diagram provides an overview of these programs and how they are executed:


Oracle Utilities Customer Care & Billing
Triggers
Change Log
E-T-L→
Account dimension extract & transform program
Financial fact extract & transform program
... extract & transform program
Account Data Flat File
Finan. Data Flat File
... Data Flat File
Load via Oracle Warehouse Builder
Oracle Utilities Business Intelligence

Extract Programs

The extract programs execute in the operational database (as they are extracting operational data). A separate extract program is used for every distinct fact and dimension.

All extract programs extract their data into flat files. The flat files serve as input to Oracle Utilities Business Intelligence.

● **FMI:** Refer to *Extract Processes* for technical information about how to submit these programs in the respective source systems.

Transform Programs

There are no programs dedicated to the transformation effort. This is because extract programs perform some transformation activities, while the load programs perform others.

Load Programs

The flat files produced by the *extract programs* serve as input to the load programs. The load programs use this data to populate the *star schemas* in the data-warehouse.

While any data-warehouse product can be used to build the star schemas, Oracle Utilities Business Intelligence uses Oracle Warehouse-Builder to perform this task. Oracle Utilities Business Intelligence is supplied with all of the meta-data necessary to transform the extracted data and load the data warehouse. See *Oracle Warehouse Builder* for more information.

Materialized Views

Fact tables typically contain many rows. In order for the queries to perform adequately, the facts must be summarized. While OLAP (online analytic processing) servers are designed to perform this task, we recommend a less costly approach - use "materialized views" to hold your summarized analytic data.

Materialized views are SQL statements whose results are saved on the database. Whenever the database receives an SQL statement that is the same (or similar) to a materialized view, it retrieves the data from the materialized view rather than performing the joins against the base tables. If you do not create materialized views to summarize your analytic data, the database must summarize the facts "on the fly" and this may have an adverse impact on performance. In other words, materialized views allow your end-users to have good response times.

Standard Materialized Views are provided in the Oracle Warehouse Builder metadata, and refresh process flows are provided that can be used to update materialized views after data is loaded into a fact table.

● **FMI:** Refer to *Working with Materialized Views* for guidelines on how to build and maintain your materialized views.

The amount of time it takes to create materialized views is dependent on the number of rows in your *facts* and the variety of options in your zones. However, the payback can be large as whenever users need to access this data, the summarization of large volumes of data is obviated (i.e., response times will be fast). Note, materialized views only have to be generated after the data in the warehouse has changed (i.e., after having ETL'ed new operational data).

➤ **Note: If you don't rebuild your materialized views.** If you do not rebuild the associated materialized views after loading the data-warehouse with new facts and dimensions, the associated materialized views will become "stale". The database will not use "stale" views and will have no choice but to summarize the facts "on the fly" if a query is received that requires this data (i.e., response times will be slower).

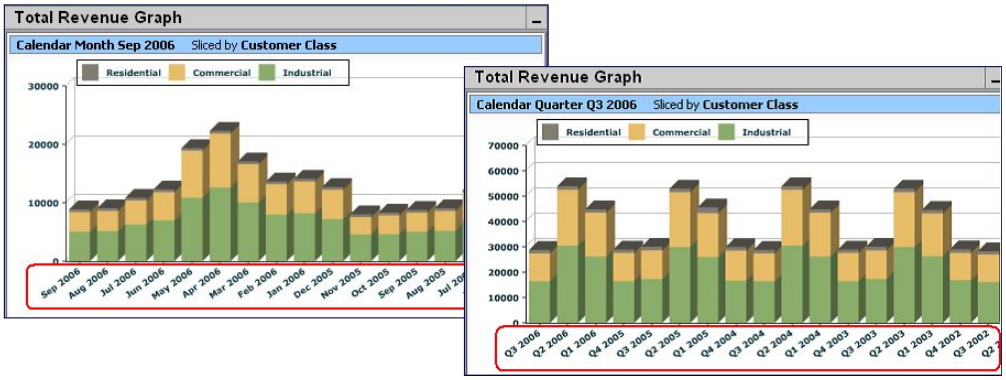
➤ **Note: Abort if no materialized view.** You can configure all Oracle Utilities Business Intelligence zones to produce an error (rather than access the individual fact rows) if a materialized view does not exist to satisfy the zone's query. You would turn this option on for zones that can potentially access a large amount of data. This configuration is not possible for the 2.3.x Dashboards, but it is possible to configure Oracle Business Intelligence Enterprise Edition to abort long-running queries. Refer to the Oracle Business Intelligence Enterprise Edition documentation for more information on how to set this up.

Periodicities

After a data-warehouse is populated, various *portals and zones* are used to graphically represent the data to users. Zones group the data into time-periods (e.g., weeks, months, quarters, years). We use the term "periodicity" to reference a unique method of grouping data in respect of time. For example,

- A periodicity of Calendar Month groups analytic data into months
- A periodicity of Calendar Quarter groups analytic data into quarters

The following zones show total revenue grouped using two periodicities - Calendar Month and Calendar Quarter :



The following periodicities are supported in Oracle Utilities Business Intelligence:

- Fiscal year
- Fiscal period
- Calendar year
- Calendar quarter
- Calendar month
- Calendar week
- Calendar day
- Hourly

Some zones only support a subset of these periodicities due to the following factors:

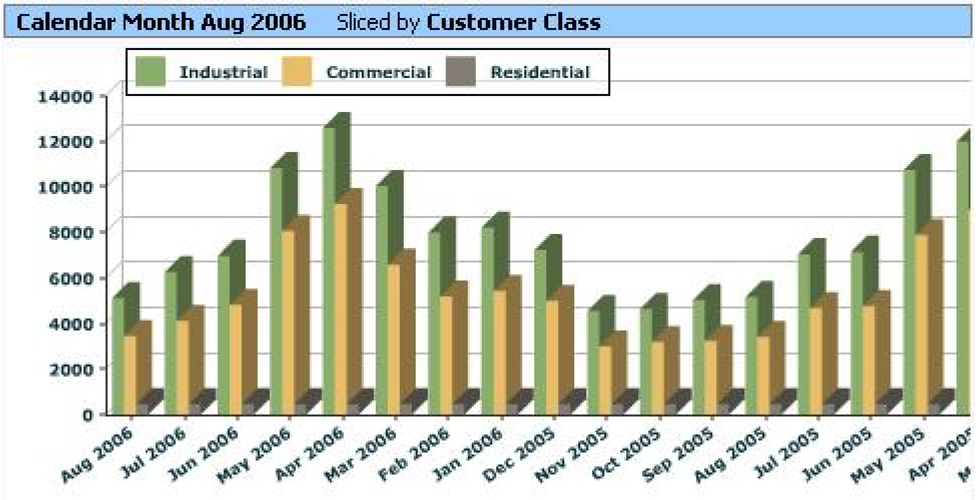
- Some facts are not related to the general ledger. These types of facts do not support the Fiscal Year and Fiscal Month periodicities.
- Some facts do not have a time dimension. These types of facts do not support the Hourly periodicity.
- You may decide to restrict the number of periodicities available to your end users. Why? Because the number of periodicities is closely related to the number of *materialized views* and therefore you may choose to limit the periodicities to reduce the number of materialized views.

A zone's configuration defines the periodicity used when it's initially displayed. For example, you can configure one zone to initially group information into Fiscal Years , and another zone to group information into Calendar Weeks .

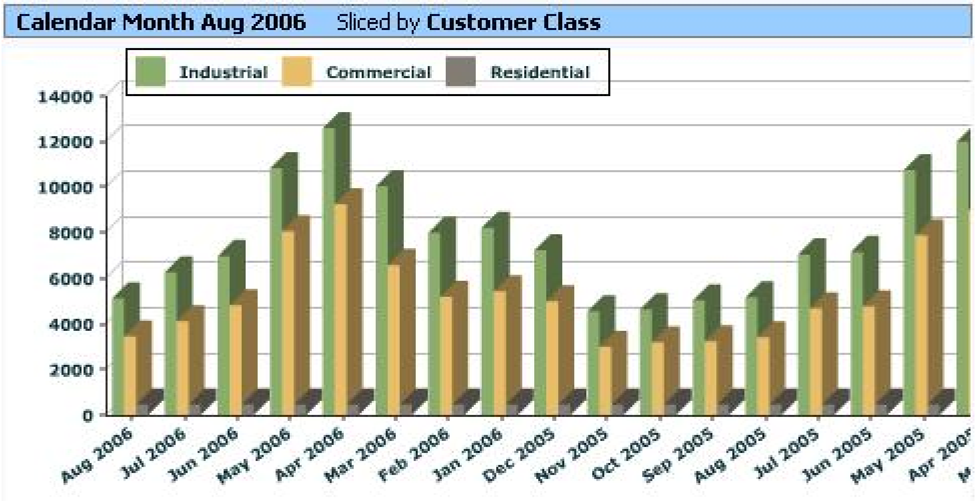
After a zone is presented to a user, the user can change its periodicity (e.g., from quarter to month) by clicking the *Show Filters Button* and selecting the desired value in the filter area. Remember that the zone's configuration controls the periodicities that a user can select.

User Defined Fields (UDFs)

Users look at the facts in the data-warehouse by slicing and filtering the analytic data by different dimensions. For example, the following zone shows revenue sliced by customer class (i.e., the financial fact is sliced by the customer class field on the account dimension):



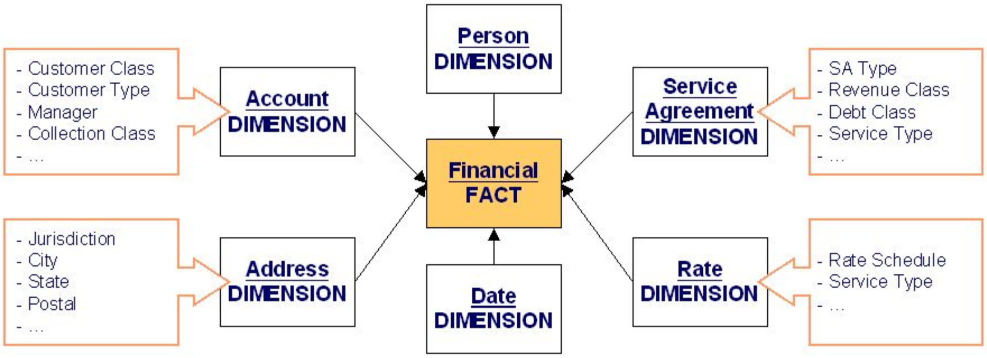
Whereas the following zone slices the same fact by a different field on a different dimension (i.e., the city on the address dimension). In addition, it limits the analysis to a specific customer class - Commercial.



The above examples show how a single zone can be sliced and filtered by different dimensional attributes.

Your users can "slice and filter" a fact using any field on any dimension linked to the analytic's fact. For example, users can slice zones related to the Financial fact by any field on its dimensions.

The following simplified data-model of the Financial fact's *star schema* will help clarify this concept:



This data-model shows that the Financial fact has 6 dimensions. This means that zones can be configured to allow end users to slice the financial fact by any of the attributes on the 6 dimensions. For example, you could set up a zone to slice the financial fact by any combination of:

- the Account Dimension's Customer Class and Manager
- the Address Dimension's Jurisdiction
- the Service Agreement Dimension's Revenue Class
- the Rate Schedule Dimension's Rate
- . . .

You could set up another zone to slice and filter this fact by a different combination of fields. Also be aware that this example is simplified. In reality, most facts have more than 6 dimensions and most dimensions have several fields.

Use the data dictionary. The *data dictionary* in the *application viewer* can be used to view the dimensions linked to a fact.

Oracle Utilities Business Intelligence does not "hard code" fields on dimensions. Rather, as part of your *configuration tasks*, you can define the fields that should be included on each dimension. The acronym UDF (user-defined field) is used to reference the configurable fields on dimensions. Please refer to *Configure The Source Application* for instructions on how to configure UDFs.

An artificial limit. While Oracle Utilities Business Intelligence allows you to slice and filter a fact by any field on its dimension, you may want to limit the number of fields on your zones to a discreet group. Why? Because the *materialized views* that you set up to make the system perform may become unwieldy if they contain too many fields.

If you wish to change the fields on your dimensions at a future date, you can. The following points summarize the major steps involved in doing this:

- Update the meta-data to define the new fields on the respective dimensions.
- Update the dimensions extract program to extract the new fields.
- Run the respective extract in "extract everything" mode.

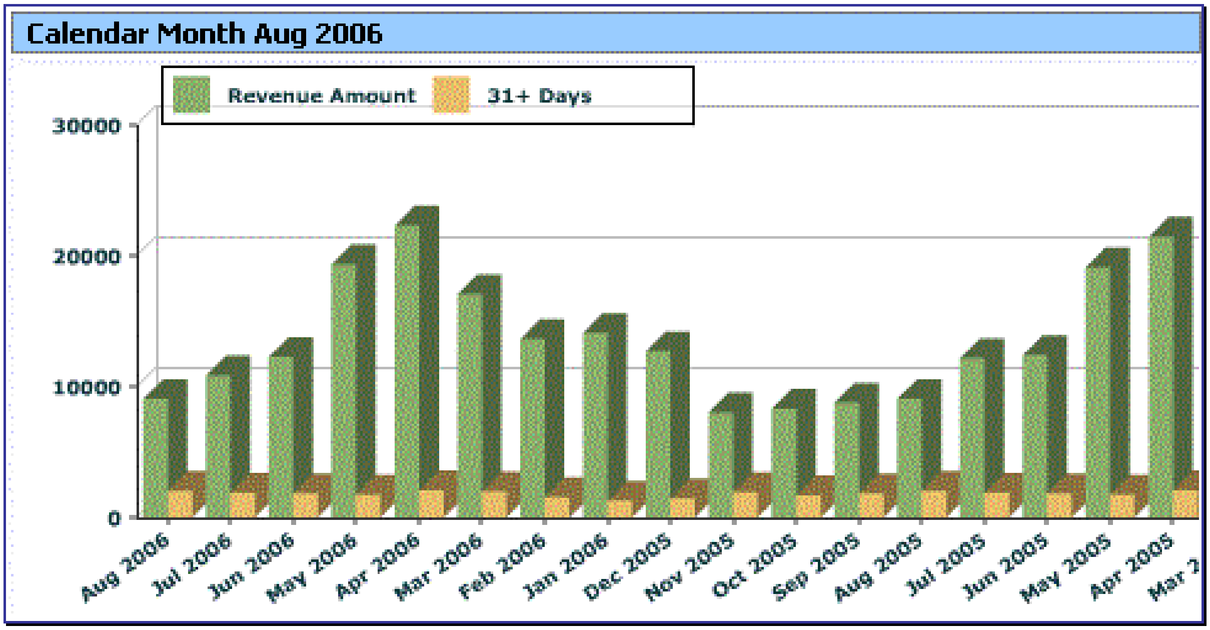
Doing the above allows all new facts to be sliced and filtered by the newly added UDFs. If you want to "slice and filter" historical facts by the new fields, you must update the historical dimensions to contain the current value of the new UDFs.

User-Defined Measure (UDMs)

A **measure** is a column on a fact that holds a measurable value. For example, the financial fact has a measure that holds the amount of revenue produced by a bill.

Most facts in the Oracle Utilities Business Intelligence data-warehouse have several measures. For example, in addition to the revenue measure, the financial fact also has measures holding the total taxes and other charges on a bill.

When you set up zones, in addition to defining the *User Defined Fields (UDFs)* used to slice and filter the fact, you also define which measures are aggregated. For example, the following zone shows two measures - Revenue and Aged Debt Older than 31 Days:



The above zone highlights several important concepts:

- Most zones can show multiple measures
- The measures are not limited to a single fact. The above example contains measures from two different facts - the financial fact and the arrears snapshot fact.

Use the application viewer to see a fact's measures. The *data dictionary* in the *application viewer* should be used to view a fact's measures.

The facts and their extract programs are delivered with all of the obvious measures populated. However, if your implementation requires additional measures you can populate user-defined measures (UDM) on the facts. To do this, you introduce logic to the fact's extract program (in a user exit) to populate one or more UDM's accordingly. We'd like to stress that no database or OWB changes are necessary as both the data-warehouse and OWB are delivered ready to support the newly populated UDM's.

UDM. We use the acronym UDM (user-defined measure) to reference the measures on the facts that you populate with implementation-specific measures.

Refer to *Configure the Source Application* for how to set up a fact's UDMs.

User Defined Dimension (UDDs)

As described under *User Defined Fields (UDFs)*, you can set up analytic zones to "slice and filter" a fact using any field on the dimensions linked to the fact.

Oracle Utilities Business Intelligence delivers facts referencing the obvious dimensions. However, your implementation may need to link additional dimensions to some facts. For example, the financial fact is delivered assuming that the revenue, tax, and expense amounts should be aggregated regardless of the GL (general ledger) accounts impacted by a financial transaction (e.g., if a given adjustment references 6 revenue GL accounts, all 6 revenue amounts are summarized onto a single financial fact). This means that you cannot "slice and filter" revenue by specific general ledger accounts. If you want to offer this option to your users, you must introduce an additional dimension to the financial fact (in addition, you must change the fact's extract program to extract at this new level of granularity).

UDD. We use the acronym UDD (user-defined dimension) to reference implementation-specific dimensions on the fact tables. All fact tables are delivered referencing several empty UDD's for you to use.

The following points summarize how to set up a new UDD:

- You must create database trigger(s) to cause new and changed dimensions to be interfaced to the data-warehouse. There are many examples of dimensional triggers in the operational system that can be used as samples for your new triggers.
- You must create a new program to *extract* the new dimension's values. This extract will be executed in the operational system and will produce a flat-file containing the dimension's values. There are many examples of dimensional extract programs in the operational system that can be used as a basis of your new program.
- The flat-file produced by your extract is the input to Oracle Warehouse Builder. Oracle Warehouse Builder is delivered preconfigured to load the data-warehouse from the flat-file.
- Run the new extract program in "extract everything" mode and let Oracle Warehouse Builder populate the dimension's rows.
- Return to Oracle Utilities Business Intelligence and display the *UDD table*. Enter the appropriate Override Label of each *User Defined Fields (UDFs)* on the table (these are the dimensional attributes that users use to slice and filter the dimension's facts). For example, if the dimension is meant to hold GL accounts, it would make sense to define at least two UDFs:
  - The GL account number
  - The GL account type (e.g., revenue, expense, tax)
- The information on the override label is used in many ways in Oracle Utilities Business Intelligence.
- Transfer to the operational system (e.g., **Oracle Utilities Customer Care & Billing**) and introduce user-exit code to the extract program to the appropriate UDD values for the fact. Refer to the fact and dimension chapter for more information about the extract programs and their parameters.
- When you extract the facts after this point, the flat-file supplied to Oracle Warehouse Builder will be populated with the appropriate references to your UDD(s).

Increasing Granularity

UDDs may or may not increase the granularity of the fact. By increasing granularity, we mean that the number of rows or records extracted for the fact (i.e., the grains of detail) increases. Adding a UDD that does not change the number of rows in a fact does not impact the granularity of the fact.

Granularity Increased

An example showing an increase in granularity would be adding a UDD for distribution code. Prior to adding a UDD for distribution code one bill results in one financial fact record. After adding the UDD one bill results in many financial fact records (one per distribution code referenced on the bill segment). Increasing the number of records extracted means increasing the granularity.

When a UDD results in an increase in granularity, the implementation needs to include a change to the base code for the extract (i.e., develop a new extract by copying the base-package version).

Granularity NOT Increased

An example showing no increase in granularity would be adding a UDD for adjustment type. Since each financial transaction can only reference one adjustment type, adding this as a UDD would not increase the number of fact records produced by a financial transaction, and would therefore not increase granularity.

In this case, you only need to develop a new extract to extract the adjustment types, and make a simple change to the financial extract to populate a UDD with the adjustment type for the financial transaction.

After you have set up *User Defined Dimension (UDDs)*, *User Defined Measure (UDMs)*, and *User Defined Fields (UDFs)*, you can then set up *zones* to view this information.

User-Defined Degenerate Dimensions (UDDGENs)

Degenerate dimension (UDDGEN) columns reside directly on fact tables and can be used to filter fact data in the same way that *User Defined Fields (UDFs)* are. For example, currency code columns are commonly used UDDGENs in Oracle Utilities Business Intelligence. These columns exist on most of the fact tables and can be used to limit fact data shown in zones to a given currency code.

Most fact tables in Oracle Utilities Business Intelligence are delivered with multiple UDDGENs. These columns are populated by introducing user-exit code in the respective fact extract programs.

The main benefit of using UDDGENs as opposed to using *User Defined Dimension (UDDs)* is that UDDGENs can be populated in the fact extract program and therefore reduce implementation time.

User-Defined Foreign Key Dimensions (UDDFKs)

Earlier, two techniques to add additional dimensions to a base-package fact were described:

- *User Defined Dimension (UDDs)* described how you can set up new dimensions.
- *User Defined Degenerate Dimensions (UDDGENs)* described how you can populate a degenerate dimension on a fact.

However, there may be requirements that can be easily satisfied by adding an existing dimension to a fact. For example, the case fact is not delivered referencing the service agreement dimension. If your users require analytics that "slice and filter" cases by service agreement dimensional attributes, you can configure the system to reference the existing service agreement dimension on the case fact.

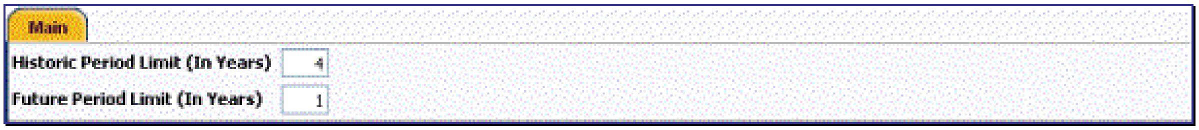
Facts that support this type of extension contain columns called user defined foreign keys (UDDFKs). If you do not see these columns on a fact, then this functionality is not available. If you do see these types of fields, refer to *Add References To Existing Dimensions* for detailed instructions.

Installation Options

The topics in this section describe the various installation options that control various aspects of the system that are specific to the Oracle Utilities Business Intelligence product.

● **FMI:** Refer to *Installation Options - Base* for a description of common options.

Select **Admin Menu, Installation Options -BI** to define Oracle Utilities Business Intelligence installation options.



Historic Period Limit (In Years)	4
Future Period Limit (In Years)	1

Historic Period Limit (In Years) is the number of past years users can view in the analytic zones. Specifically, the value of this field impacts the number of time-periods shown in the Period dropdowns that appear on the various **Oracle Utilities Business Intelligence** zones. The data warehouse might contain data much older than this value; this value simply restricts what users can see in the zones.

Future Period Limit (In Years) is the number of years in the future that users can see in the analytic zones. It almost always makes sense to set this to 1 .

Capturing Changes In Source-Data

Every production database table used to populate the data-warehouse must be monitored for changes so that these changes can be reflected in the data-warehouse. Triggers insert a row into the Change Log when the source tables change. The topics in this section describe the Change Log and the triggers that populate it. This is only applicable to Oracle Utilities Customer Care and Billing. Oracle Utilities Network Management System and Oracle Utilities Work and Asset Management have built in functionality that identifies changed data, which may not make use of the Change Log table.

You don't have to use triggers. Oracle Utilities Business Intelligence recommends using "triggers" to highlight new and changed data in your operational system. We recommend this approach because it is easily maintainable by your implementation team. However, there are several other approaches that can be used to identify new and changed objects (e.g., Oracle streams). If you prefer to use one of these approaches, make sure that you populate the prime-key of the new and changed objects in the change log (or, alternatively, just produce the flat file in the same format as is done by Oracle Utilities Business Intelligence's extract programs). As of release version 2.3.2, default triggers are available for Oracle Utilities Customer Care and Billing that support the standard extract procedures and configuration.

Fields On The Change Log

Because the sole job of triggers is to populate the Change Log, understanding the fields of the Change Log table is essential to understanding the triggers. The following are the primary fields on the Change Log:

- **Change Log ID.** This is a random prime key of the Change Log and is generated by the trigger.
- **Batch Code.** This is the code for the extract process that will process this change. For more information on batch codes, refer to *Basic Parameters Supplied To Extract Processes*.
- **Batch Number.** This is the current run number for the extract process.
- **Change Date and Time.** The date and time of the change. The system date and time is used.
- **Change Type.** This indicates if a row in the table was inserted, updated, or deleted. This is for information and auditing purposes only.
- **Table Name.** This is the name of the table that was changed. This is used for information and auditing purposes only.
- **Prime Key 1-5.** This is the prime key of the object that was affected. The Change Log accommodates prime keys with up to five parts.

The prime key stored on the Change Log is not the prime key of the record that was changed but the prime key of the object. For example, if the phone number of a person was changed, these prime key fields would contain the prime key of the person object, not the prime key of the phone number record. When any field on an object is changed, the entire object must be re-extracted.

Typical Structure of Triggers

Since all triggers populate the Change Log, they are similar in that:

- They determine if a row needs to be inserted into the Change Log. Not all table changes need to be reflected in the data-warehouse, and so, not all changes need to be noted in the Change Log. For example, if an unfrozen financial transaction is created, a Change Log record does not need to be inserted if the data-warehouse only tracks frozen financial transactions.
- They generate a prime key for the Change Log;
- They know the code(s) for the appropriate extract process(es) that will handle the table change.
- They retrieve the current run number(s) for the extract process(es).
- They determine the prime key of the main object.

Rows In the Change Log

A record in the Change Log is processed by only one extract process. If multiple extract processes are needed to handle a single change in a source table (for example, a new object requires the addition of multiple facts or dimensions), then multiple rows must be inserted into Change Log. This can be accomplished with one trigger inserting multiple rows into the Change Log or with multiple triggers on the same table, each trigger inserting one row.

Extract Processes

Every *fact and dimension* has an extract process. These batch processes extract data from the source system and transfer it to flat files. Along with each flat file containing the extract data (data file), a single-record control file containing the batch information about the extractor program is also generated. The data and the control flat files, in turn, are loaded into the Oracle Utilities Business Intelligence data-warehouse. The topics in this section describe aspects common to these batch processes.

Use the table mapping portal. The *Table Mapping Portal* documents how each product's facts and dimensions are populated are by the ETL processing.

● **FMI:** Refer to *Configure The Source Application* for a recommended approach describing how to configure the extract programs.

● **FMI:** Refer to *ETL Process* for a description of how Oracle Warehouse Builder is used to upload the data produced by the extract programs.

● **FMI:** Refer to the product-specific Data Mapping Guides for detailed descriptions of the mapping from each product to the Oracle Utilities Business Intelligence data-warehouse tables.

Extracts and Triggers in the Source Application

The installation of Oracle Utilities Business Intelligence also affects the source application (e.g., **Oracle Utilities Customer Care & Billing**). The source application is impacted in two ways:

- New background processes (i.e., the extract programs) are installed to extract the data from the source application
- Triggers are installed on the source application's database

The extract programs identify the recent changes by querying the Change Log table. The Change Log is a very simple table that contains the prime-key of every object that is added or changed. Database triggers populate the change log whenever an object is added or a field is changed. The triggers will only create a log record when objects and fields that are transferred to the data-warehouse are modified.

● **FMI:** Refer to *Capturing Changes In Source Data* for more information on triggers and the Change Log.

● **FMI:** Refer to *Configure The Source Application* for how to configure the extract programs and the triggers.

Two Modes of Execution

Most extract programs support two modes of execution (you control the mode by a parameter supplied to the extract process):

- `Extract everything mode.` This mode extracts every row on the operational table. You would use this mode to instantiate the data-warehouse. For example, if you run the extract accounts program in "extract everything mode", every account will be extracted.
- `Extract recent changes mode.` This mode only extracts data that was added or changed since the last time the extract was executed. For example, if you run the extract accounts program in "extract recent changes mode", every account that was added or changed since the last execution will be extracted.

Basic Parameters Supplied To Extract Processes

All extract processes are submitted in their source system (e.g., programs that extract data from Oracle Utilities Customer Care & Billing are submitted in Oracle Utilities Customer Care & Billing). The following points describe the hard parameters that are supplied to these processes for Oracle Utilities Customer Care and Billing.

- `Batch code.` Batch code is the unique identifier of the extract process. The batch code for each extract process is identified in the description of the various facts and dimensions. Refer to the appropriate fact and dimension chapter for the details.

- `Batch thread number.` Thread number is only used for extract processes that can be run in multiple parallel threads. It contains the relative thread number of the process. For example, if the arrears process has been set up to run in 20 parallel threads, each of the 20 instances receives its relative thread number (1 through 20). Refer to `Optimal Thread Count for Parallel Background Processes` in the background process chapter of the source system for more information.
- `Batch thread count.` Thread count is only used for extract processes that can be run in multiple parallel threads. It contains the total number of parallel threads that have been scheduled. For example, if the billing process has been set up to run in 20 parallel threads, each of the 20 instances receives a thread count of 20. Refer to `Optimal Thread Count for Parallel Background Processes` in the background process chapter of the source system for more information.
- `Batch rerun number.` Rerun number should only be supplied if you need to download an historical run (rather than the latest run).
- `Batch business date.` Business date is only used for extract processes that use the current date in their processing. For example, the Oracle Utilities Customer Care & Billing arrears extracts use the business date to extract arrears as of a given date. If this parameter is left blank, the system date is used. If supplied, this date must be in the format YYYY-MM-DD. This parameter is only used to test how processes behave over time.
- `Override maximum minutes between cursor re-initiation.` This parameter is optional and overrides each extract process's Standard Cursor Re-Initiation Minutes (each extract process reinitiates cursors every 15 minutes You would reduce these values, for example, if you were submitting a job during the day and you wanted more frequent commits to release held resources (or more frequent cursor initiations). You might want to increase these values when an extract process is executed at night (or weekends) and you have a lot of memory available on the servers.

  The maximum minute between cursor re-initiation parameter is relevant for Oracle implementations only. Most of the system extract processes contain an outermost loop / cursor. The cursor is opened at the beginning of the process and closed at the end. If Oracle detects that the cursor is open for too long, it may incorrectly interpret this as a problem and will display an error that the snapshot is too old. The processing for the extract processes is designed to refresh the cursor based on the minutes between cursor re-initiation in order to prevent this error.
- `User ID.` Please be aware of the following in respect of user ID:
- The user ID is a user who should have access to all application services in the system. This is because some batch processes call application services to perform maintenance functions (e.g., when an account is updated, the batch process may call the account maintenance application service).
- This user ID's *display profile* controls how dates and currency values are formatted in messages.
- `Password.` Password is not currently used.
- `Language Code.` All language-sensitive data is extracted in this language. In addition, all error messages are presented in this language.
- `Trace program at start` (Y/N), `trace program exit` (Y/N), `trace SQL` (Y/N) and `output trace` (Y/N). These switches are only used during QA and benchmarking. If trace program start is set to Y, a message is displayed whenever a program is started. If trace program at exist is set to Y, a message is displayed whenever a program is exited. If trace SQL is set to Y, a message is displayed whenever an SQL statement is executed. If output trace is set to Y, special messages formatted by the extract process are written.
- The information displayed when the output trace switch is turned on depends on each extract process. It is possible that an extract process displays no special information for this switch.
- `Initial Load Switch.` This switch controls whether the extract program is run in *extract everything mode or extract recent changes mode*.
- `File Path and File Name.` These parameters define the file path and/or file name for the output file. When supplying a FILE-PATH variable, the directory specified in the FILE-PATH must already exist and must grant write access to the Oracle Utilities Business Intelligence administrator account. You may need to verify a proper location with your system administrator. The syntax of the FILE-PATH depends on the platform used for your Oracle Utilities Business Intelligence application server. Contact your system administrator for verification. For example, if the platform is UNIX, use forward slashes and be sure to put a trailing slash, for example / spltemp/filepath/ .
- ➤ **Note:** The control file is created with the same name as the data file but with a fixed extension of **CTL**. For this reason, do not use **CTL** as the extension when defining value for FILE-NAME parameter.

> ➤ **Note:** In order to avoid overwriting the flat files generated during the previous execution, the extractor programs insert a string containing the concatenated values of data source indicator, batch number and the batch thread number in the name of the generated data and the control file. The value is inserted just before the extension of the file name specified.

- `Maximum Errors.` This parameter is not currently used.
- `UDF and UDMs.` Refer to *Parameters To Populate UDFs and UDMs* for the details.

Parameters To Populate UDFs and UDMs

Most extract processes support populating *User Defined Fields (UDFs)* and *User Defined Measure (UDMs)* fields on their flat file records with specific fields from the source system. For example, you can set up the premise extract program to populate the first UDF on its flat file with the premise's city (or county or any address-oriented field).

You tell an extract program which fields to populate on the flat file by populating the batch process's parameters. The number and type of parameters differs depending on the extract and type of information being extracted, but in general, there are two types of fields that can be transferred to the flat file:

- `Columns.` Many *dimensional* extracts allow predefined columns to be populated on the flat file. For example, you can set up the premise extract program to populate the first UDF on its flat file with the premise's city (or county or any address-oriented column). An analogous concept is used to populate UDMs on the *fact* extracts.
- `Characteristics.` Many *dimensional* extracts allow characteristics to be populated on the flat file. For example, you can set up the premise extract program to populate the first UDF on its flat file with the premise's "tax zone" characteristic (or and premise-oriented characteristic).

> ➤ **Note: Characteristics and UDM's.** Most dimensional extracts support the population of their UDFs with characteristic values. A limited number of *fact* extracts allow characteristics to be used to populate UDMs (this is because most of the transaction files that trigger the fact extracts do not contain characteristics).

You identify how an extract populates its UDFs and UDMs by populating parameters. Specifically, each UDF / UDM supported by an extract has two parameters that must be populated:

- `Type.` This parameter defines if the field is a true column or a characteristic. Enter PROG if you want to populate a UDF / UDM with a column. Enter CHAR if you want to populate the UDF / UDM with a characteristic.
- `Value.` This parameter defines the respective column or characteristic.
  - To define a column, the value should be in the formation Table.Column (e.g., CI_PREM.CITY_UPR - would be used on the address extract to populate a UDF with the upper-case format of an address's city).
  - To define a characteristic, enter the characteristic's type code. Note, as of the current release only predefined value characteristics are supported.

> ● **FMI:** Refer to the relevant fact and dimension chapter for a description of each extract program and the various UDF and UDM parameters that are supported in each.

Extracting Additional Fields

While the extract programs are delivered to populate their flat files with commonly used information, you may want to populate the *User Defined Fields (UDFs)* and *User Defined Measure (UDMs)* with information not supported by the base-package. To do this, you must introduce "user-exit" code to the respective extract programs. Refer to your technical implementation team if you require this type of processing.

Configuring Analytic Zones

Your users will use numerous *portals and zones* to view the data in the warehouse. This chapter describes how to configure Oracle Utilities Business Intelligence zones.

➤ **Note: Assumption.** This chapter assumes that you are familiar with the zone types that are supplied with the base package (a unique zone type exists for each *graphical metaphor*). These zone types are highly configurable and therefore your implementation should not need to develop additional zone types. Rather, you'll configure a multitude of zones that reference the base-package zone types.

➤ **Note: Design methodology.** Refer to *Configuration Tasks* for a suggested methodology to design your zones.

➤ **Note:** The concepts described in this chapter apply only to the user interface used in Oracle Utilities Business Intelligence versions 2.0.5 and 2.2.x. If you are using Oracle Utilities Business Intelligence v2.3.0 or later, please refer to the Oracle Utilities Business Intelligence Metric Reference Guides for information about the dashboards and answers provided with the application, and the Oracle Business Intelligence Enterprise Edition documentation for information on creating and configuring Oracle Business Intelligence Enterprise Edition dashboards and answers.

Configuration Mode

Oracle Utilities Business Intelligence can be run in a special mode that will facilitate configuring the system. To enable this mode, enter ?debug=true at the end of the URL that you use to access the system. For example, if the standard URL was http://sf-pdnt-009:7031/cis.jsp , you'd enter http://sf-pdnt-009:7031/cis.jsp?debug=true to enable configuration mode.

The following points describe the features that are enabled in configuration mode:

- Refer to *Title Bar* for a description of several menu items and icons that only appear in the zone's title bar if configuration mode is enabled.
- In "normal" mode, the system displays the descriptions of dimensional attributes in the *Filter Area* of your zones. In configuration mode, the system suffixes the descriptions with the dimensional attribute codes. This has been done to facilitate setting up *fixed filters* in the zone parameters (fixed filters are defined using dimensional attribute codes).

Concepts and Techniques

Your users will use numerous *portals and zones* to view the data in the warehouse. The system's zones are feature-rich. These features are enabled by configuring each zone's parameters accordingly. The topics in this section describe a variety of concepts and techniques to help you understand these features so you can configure your zones accordingly.

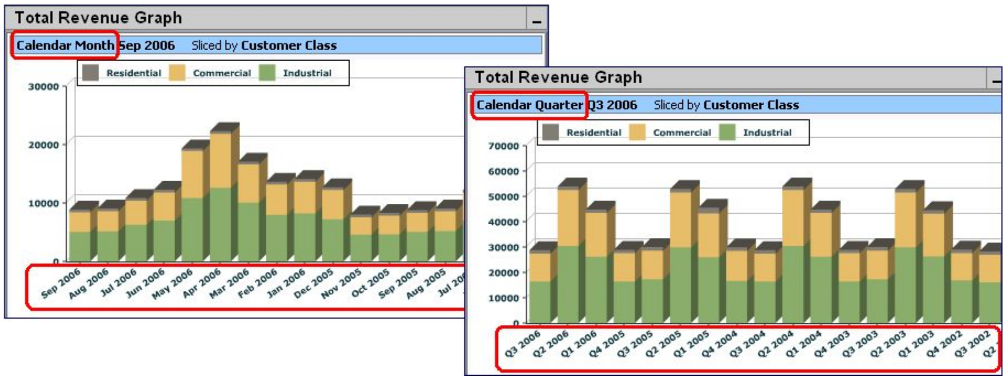
➤ **Note: Just concepts.** This section describes concepts that will help you configure your portals and zones. For a detailed description of the various parameters associated with each zone type, refer to *Parameters Used to Configure Zones*. For a detailed description of the various graphical metaphors, refer to *Oracle Utilities Business Intelligence Zone Types*.

Time Periods

The topics in this section describe how information from different time-periods can be displayed in zones.

Periodicities

When a zone is built, it aggregates data using a specific unit of time (e.g., days, weeks, months, quarters, years). For example, the following *chronological graph* zones show total revenue grouped using two different units of time - Calendar Month and Calendar Quarter :



Note: Disabling time-periods. You can configure most zones to disable the grouping of information by time period (*chronological graphs* and *top X lists* are the only exceptions as they are intrinsically time-oriented). This type of configuration is typically only applicable to zones that show facts holding "active" operational information (e.g., facts that contain information about current outages).

The term "periodicity" refers to the unit of time used to construct a zone. The following periodicities are supported:

- Fiscal year
- Fiscal period
- Calendar year
- Calendar quarter
- Calendar month
- Calendar week
- Calendar day
- Hourly
- Refer to *Pseudo Periodicities* for a description of how to implement other periodicities

Note: Periodicity is always displayed. A zone's periodicity is displayed in the zone's *Description Bar*.

Please be aware that not all facts support all periodicities:

- Facts that are not related to the general ledger do not support the Fiscal Year and Fiscal Period periodicities.
- Facts that do not have a time dimension do not support the Hourly periodicity.

A zone's configuration controls:

- The default periodicity used when the zone is initially displayed.
- Other periodicities that can be selected by a user after the zone is built. Users can override a zone's periodicity (e.g., from Calendar Month to Calendar Quarter) by clicking the *Show Filters Button* and selecting the desired value.

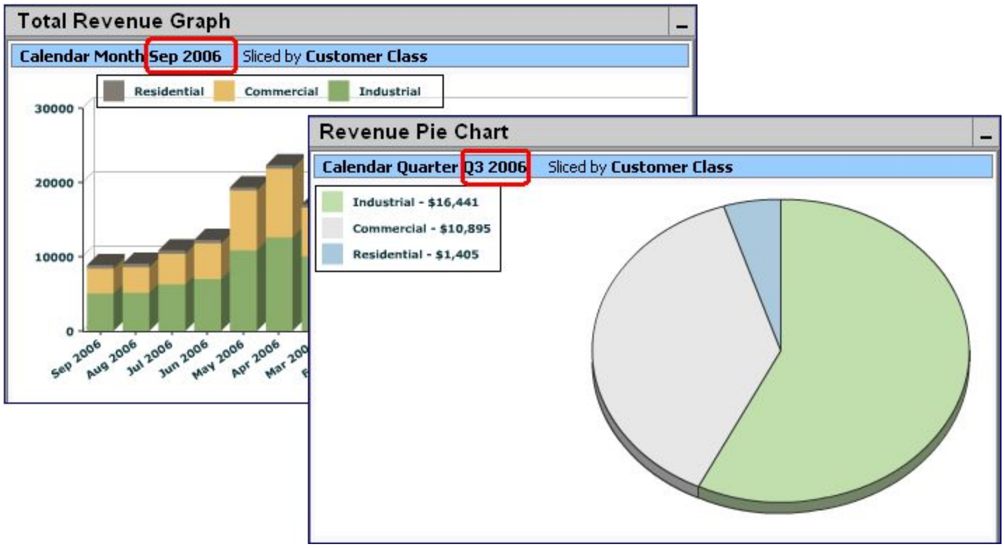
●

FMI: Refer to *General Zone Parameters* (see the **Valid Periodicities** parameter) for a description of how a zone's valid periodicities are defined.

Note: Materialized views. You may decide to restrict the number of periodicities available to your end users. Why? Because the number of periodicities defined on your zones impacts the number of *materialized views* required for a fact. Therefore, you can limit the number of materialized views by restricting the number of periodicities on your zones.

The Base Period

Most zones are constructed relative to a "base period". For example, the following *chronological graph's* base period is Sep 2006 whereas the *pie chart's* base period is Q3 2006 (notice that these zones use different *periodicities*):



Note: The base period is always displayed. A zone's base period is displayed in the zone's *Description Bar*.

Note: Subtly different uses. Notice how the chronological graph shows many time periods relative to the base period. However the pie chart shows a single time-period (i.e., the base period).

A zone's configuration defines its default base period. The following options are supported:

- **The most recently complete time-period.** For example, if the zone's periodicity is Calendar Week , the most recent complete week will be the zone's base period.
- **Another time period BEFORE the last complete period.** For example, if the zone's periodicity is Calendar Month , a zone can be configured to have a default base period x months before the last complete month.
- **Another time period AFTER the last complete period.** For example, if the zone's periodicity is Calendar Month , a zone can be configured to have a default base period of the current month.

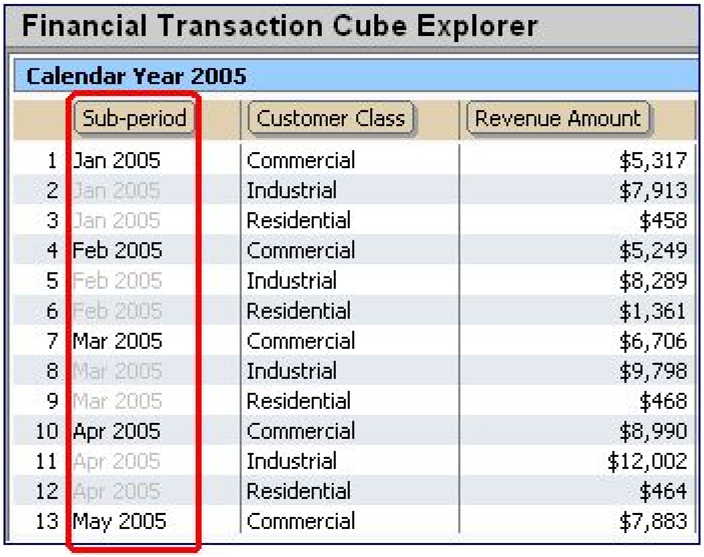
FMI: Refer to *General Zone Parameters* (see the **Override Default Base Period** parameter) for the configuration options.

Users can select a different base period by clicking the *Show Filters Button* and selecting the desired **Period** in the filter area. Users can also click the *Move Period Up / Down* button to toggle the zone's base period.

Note: Controlling the time-periods. Fields on the *installation record* control the number of past and future periods shown in the *Filter Area*.

Sub-period

You can configure *chronological graph* and *cube explorer* zones to show "sub-periods". Sub-periods are subtotals by a smaller unit of time than the primary periodicity. For example, the following cube explorer has a primary periodicity of Calendar Year and a sub-periodicity of Calendar Month ; notice how subtotals are shown for each calendar month within the selected year:



Financial Transaction Cube Explorer

Calendar Year 2005

	Sub-period	Customer Class	Revenue Amount
1	Jan 2005	Commercial	$5,317
2	Jan 2005	Industrial	$7,913
3	Jan 2005	Residential	$458
4	Feb 2005	Commercial	$5,249
5	Feb 2005	Industrial	$8,289
6	Feb 2005	Residential	$1,361
7	Mar 2005	Commercial	$6,706
8	Mar 2005	Industrial	$9,798
9	Mar 2005	Residential	$468
10	Apr 2005	Commercial	$8,990
11	Apr 2005	Industrial	$12,002
12	Apr 2005	Residential	$464
13	May 2005	Commercial	$7,883

A zone's configuration controls:

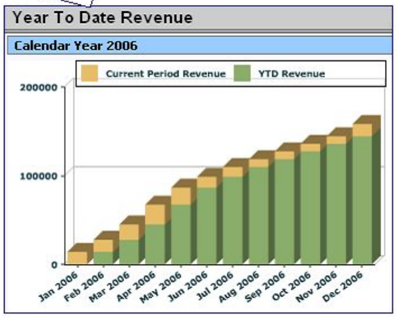
- Whether sub-periods are supported,
- The default sub-period used when the zone is initially displayed,
- Other sub-periods that can be selected by a user after the zone is built. Users can override a zone's sub-period (e.g., from Calendar Month to Calendar Quarter) by clicking the *Show Filters Button* and selecting the desired value.

● **FMI:** Refer to *Chronological Graph Zone Parameters* (see the **Sub Periodicity** parameter) for the configuration options.

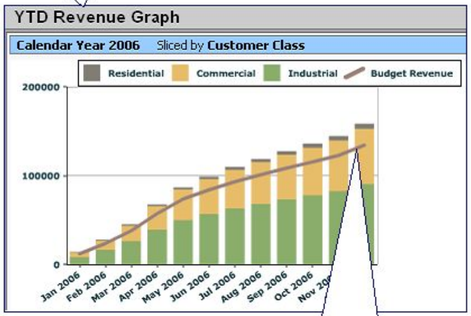
Year-to-Date Zones

You can set up *chronological graph* and *cube explorer* zones to show the marginal and accumulated revenue in each time period. For example, the zone on the left shows the marginal revenue for each month in a year; the zone on the right shows the accumulated revenue for each month in a year (sliced by customer class).

Each period shows YTD revenue and marginal revenue



Each period shows YTD revenue sliced by a dimensional attribute



Notice that this graph has been configured to have a target line

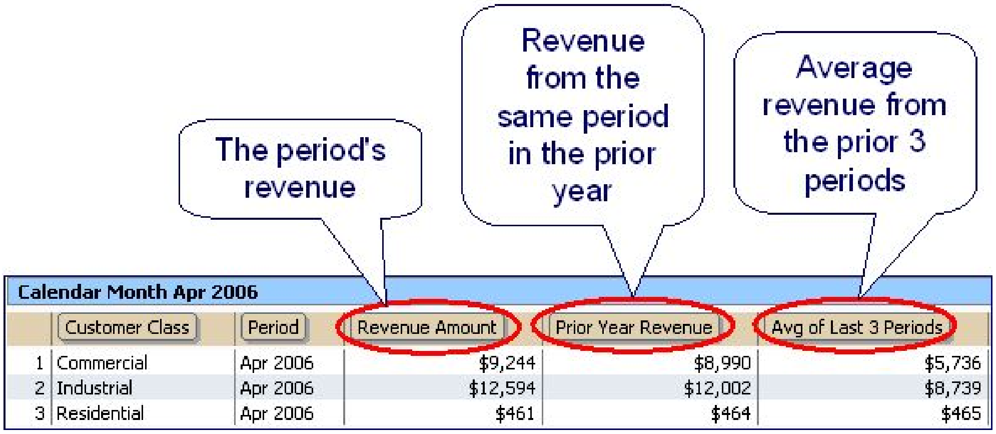
The following points summarize the high-level configuration tasks need to configure a "year to date" zone:

- Set up a default periodicity of Calendar Year (or Fiscal Year)
- Set up a default sub-period of Calendar Month (or Fiscal Period)
- Set up the desired measure
- Set up a calculated value using the ACC (accumulate) *set function* to derive each period's YTD revenue
- Indicate the graph should be shown in ASC (ascending) order
- Refer to *set function* for the technique used to show the first graph
- The second graph requires the definition of a "slice by" dimensional attribute

Note: Other "To Dates". While the above example shows how using sub periods and the ACC (accumulate) set function can be used to create YTD graphs; you can use these same concepts to show many of "to date" graphs. For example, you could set up a Month-to-Date Graph that shows the individual days (or weeks) within a month.

Alternate Periods On The Same Zone

Zones display values derived from the measures on your facts. When you configure a zone, you tell it which measurements to retrieve. It's important to understand that you can configure zones to retrieve data from a variety of time-periods. For example, the following zone has been configured to show the same measurement (i.e., revenue) from 3 different time periods:



The period's revenue

Revenue from the same period in the prior year

Average revenue from the prior 3 periods

Calendar Month Apr 2006

	Customer Class	Period	Revenue Amount	Prior Year Revenue	Avg of Last 3 Periods
1	Commercial	Apr 2006	$9,244	$8,990	$5,736
2	Industrial	Apr 2006	$12,594	$12,002	$8,739
3	Residential	Apr 2006	$461	$464	$465

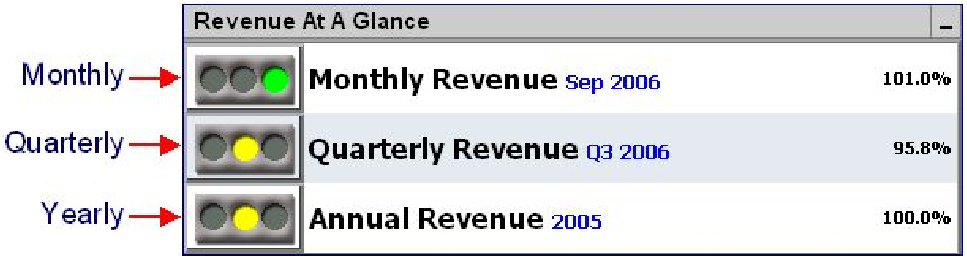
The zone's parameters control which period(s) are accumulated for each measure. The following points explain how this works:

- When you define a measure, you can optionally indicate that an alternate time-period should be used. In the above example:
  - The 1 st measure does not require an alternate time period to be defined as the row's period is used
  - The 2 nd measure contains data from the same period in the preceding year; therefore, this measure requires an alternate time period to be defined on its zone parameter.
  - The 3 rd measure contains data accumulated from the 3 periods preceding the row's period; therefore, an alternate time period must be defined on its zone parameter.
- The following options are available when defining a measure's alternate time-period:
  - You can indicate the same period in an alternate year should be used. In the above example, the 2 nd measure was configured to retrieve the value from the same period in the prior year.
  - You can indicate a range of periods relative to the row's time-period should be used. For example, the 3 rd measure was configured to retrieve the sum of the values from the 3 preceding periods (and the result was then divided by 3 to calculate the average amount in each period).
  - You can combine the previous options. For example, you can set up a measure to retrieve the value from the previous month in the previous year.

FMI: Refer to *General Zone Parameters* (see the **Measure** parameter) for the configuration options.

Multiple Periodicities On The Same Zone

Most zones show data for a single *periodicity*. While users can typically change a zone's periodicity (by clicking the *Show Filters Button* and selecting the desired value), only *multi-KPI* zones can show rows with different periodicities. For example, the following zone shows data aggregated into Calendar Month , Calendar Quarter and Calendar Year periodicities.



Revenue At A Glance

Monthly Revenue Sep 2006 101.0%

Quarterly Revenue Q3 2006 95.8%

Annual Revenue 2005 100.0%

➤ **Note: Sub-periods.** One can argue that zones that support *sub-periods* show multiple periodicities. But this isn't 100% true as a zone configured to show a sub-period only aggregates data into a single periodicity - the sub-period's periodicity.

Identifying Patterns Over Time

Your implementation can configure the fiscal calendar, date, and time dimensions to allow users to more easily visualize patterns over time. For example, you can create a zone that highlights which day of the week (or hour in a day, or month in a year, or ...) in which you receive the most complaints. To implement this:

- Populate a *user defined field* (UDF) on the fiscal calendar, date, and/or time dimension with each row's category. To continue with our example, you would populate a UDF on the date dimension with each date's day of the week (i.e., Monday through Sunday).
- Set up zones that reference this UDF as one of the filters. For example:
  - You can set up a report graph to report on the count of complaints (i.e., cases) by "Day of the Week".
  - You can set up a pie chart to slice a period by the count of complaints by "Day of the Week".
  - You can set up a dimensional scorecard to produce a report showing the count of complaints by "day of the Week".
  - Etc.

➤ **Note: Populating the UDF's.** Your implementation team must write a simple SQL statement to populate the UDF's on the date and time dimensions with the desired time categories.

Pseudo Periodicities

You might want to think of the *periodicities* supported by the base-package as "predefined" *filters* that appear on most zones that allow users to filter the data by time. If your implementation has additional periodicities other than those supported by the base-package, you can use the following technique:

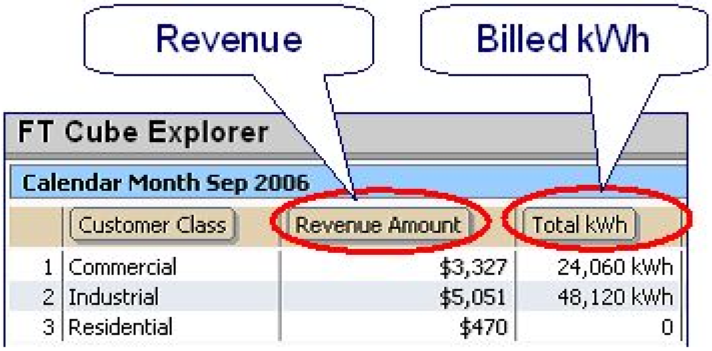
- Populate a *user defined field* (UDF) on the fiscal calendar, date, and/or time dimension with each row's category. For example, you could populate a UDF on the fiscal period dimension with each period's fiscal quarter (i.e., Q1 through Q4).
- Set up zones that reference this UDF as one of the filters. For example:
  - You can set up a report graph to report on the fiscal quarters in a fiscal year
  - You can set up a pie chart to slice a fiscal year into fiscal quarters
  - You can set up a traffic light to show a separate line for each quarter in a given fiscal year
  - Etc.

Measures and Calculated Values

The topics in this section describe how measures and calculated values are displayed in zones.

Multiple Measures Can Appear In A Zone

Zones display values derived from the measures on your facts and goals. When you configure a zone, you tell it which measures to retrieve. It's important to understand that you can configure zones to retrieve measures from any combination of facts and goals. For example, the following *cube explorer* zone has been configured to show two measures from different facts: Revenue Amount comes from the financial transaction fact, while Total kWh comes from the billed usage fact.



FT Cube Explorer

Calendar Month Sep 2006

	Customer Class	Revenue Amount	Total kWh
1	Commercial	$3,327	24,060 kWh
2	Industrial	$5,051	48,120 kWh
3	Residential	$470	0

You control which fact(s) and/or goal(s) are accessed when you define each measurement on the zone's parameters. In addition to defining the measurement's fact table and/or goal type, you must define:

- The column that holds the measurement
- The SQL aggregation function (i.e., SUM, MAX, MIN, AVG, MEDIAN, STATS_MODE, STDDEV)
- The name of the column on the fact or goal table that contains the date used to group the facts into a time-period

Please see the remaining topics in this section for additional options that can be defined when you set up a zone's measures.

FMI: Refer to *General Zone Parameters* (see the **Measure** parameter) for the configuration options.

Dynamically Derived Measures

When you set up a zone, you must define the measurement(s) that are aggregated. Many requirements can be satisfied by referencing a *UDM* or a dedicated measurement column. However, consider the following requirements:

- Show the count of negative adjustments.
- Show the value of negative adjustments.

If the related fact does not reference a dimension that indicates if a specific row's value is positive or negative, you would have the following options:

- Populate one of the fact's *degenerate dimensions* with one of two values: P - Positive, N - Negative. The fact's extract and transform logic would then be extended to populate the respective value for each fact. With this is place; you could use a *fixed filter* to limit the aggregated rows to those that have a value of N (Negative).
- Populate two of the fact's *user defined measures* (UDM): one of the UDMs would contain a value of 0 if the adjustment is not negative and a value of 1 if it is negative; the other UDM would be populated with the adjustment's value if it is negative and 0 if it is not negative.

Both of the above options require a technician to populate additional column(s) on a fact and change the corresponding ETL logic. While these options are acceptable, there is an alternative option that should be considered. This option involves defining a **dynamically derived measure** in the zone's configuration. A dynamically derived measure is derived from other columns on a fact using an SQL expression. For example,

- To dynamically derive the count of negative adjustments, the following SQL expression would be defined in the measurement's parameter value:

decode(abs(z),z,0,1) where z would reference the measure holding the value of the adjustment

The above expression dynamically computes a value of 1 if the value of z does not equal its absolute value and this only happens if z is a negative number.

- To dynamically derive the value of negative adjustments, the following SQL expression would be defined in the measurement's parameter value:

decode(abs(z),z,0,z) where z would reference the measure holding the value of the adjustment

The above expression returns a value of z if the value of z does not equal its absolute value and this only happens if z is a negative number.

The above examples are straightforward. Let's consider a more complicated requirement. Assume a zone should show the count of To Do entries classified into the following age buckets: < 10 days old, 10 - 30 days old, > 30 days old. To implement this, set up 3 dynamically derived measures on such a zone as follows:

- decode (floor ((SYSDATE - z) /10) 0,1,0) where z would reference the date/time column on the fact that holds its create date

The above expression returns a value of 1 when z is less than 10 days old.

- decode (floor ((SYSDATE - z - 10) /21),0,1,0)

The above expression returns a value of 1 when z is between 10 and 30 days old.

- decode (floor ((SYSDATE - z) /31),0,0,1)

The above expression returns a value of 1 when z is more than 30 days old.

The major benefit of using a dynamically derived measure is that a technician does not have to change the star schemas or the corresponding transform and load logic. In other words, the implementation team simply configures the zone rather than changes the data warehouse and corresponding ETL logic.

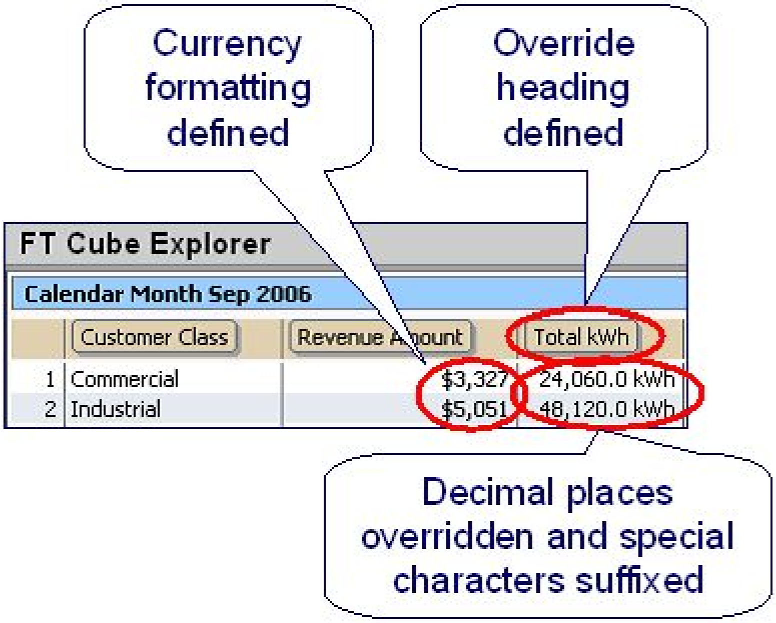
While powerful, this technique must be used wisely. This is because not all SQL expressions can have their results held in a materialized view. If you use a decode function that contains a SQL expression that cannot be *materialized* and the underlying fact table has many rows, the system will retrieve every row from the fact each time the zone is displayed and this will result in poor response times. The following is a list of keywords that cannot be materialized and therefore these should only be used on low volume facts: UID, USER, ROWNUM, SYSDATE, CURRENT_TIMESTAMP, MAXVALUE, CURRVAL, NEXTVAL.

The previous paragraph means that the negative adjustment requirements can be satisfied using a decode SQL expression as the absolute value expression can be materialized. But the date range requirement can only be satisfied using the decode function if the fact contains a limited number of rows.

FMI: Refer to *General Zone Parameters* (see the **Measure** parameter) for the configuration options.

Formatting Values For Display

In addition to telling the zone how to retrieve measures from the data warehouse, you can optionally define how the resultant values appear in the zone. We'll use the following simple zone to explain:



Currency formatting defined

Override heading defined

FT Cube Explorer

Calendar Month Sep 2006

	Customer Class	Revenue Amount	Total kWh
1	Commercial	$3,327	24,060.0 kWh
2	Industrial	$5,051	48,120.0 kWh

Decimal places overridden and special characters suffixed

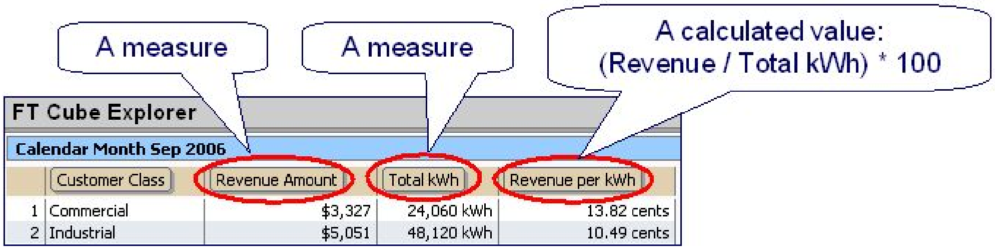
By default, numeric values are formatted using the user's display profile with no decimal places. When you set up a measure in the zone's configuration, you can override the default format as follows:

- You can indicate the formatting defined on a specific *currency code* should be applied. The Revenue Amount shown above uses this option.
- You can override the number of decimal places and define if rounding or truncation should be performed. The Total kWh shown above uses this option. Note, overriding the decimal places for display purposes will not impact subsequent calculations using the value (i.e., all decimal places on the database will be used).
- You can prefix and / or suffix the measure with a special character. The Total kWh shown above uses this option.
- You can override the measure's label. The Total kWh column heading was defined using an override label (as this is not the label defined on *Table - Field* for the measure).

FMI: Refer to *General Zone Parameters* (see the **Measure** parameter) for the configuration options.

Calculated Values

Many values in your zones are simply accumulations of measures held on your facts and goals. For example, the Revenue Amount and Total kWh columns below are measure accumulations. However, you may need to show other values that are derived because there is no related measure. For example, the Revenue per kWh column must be calculated as there is no measure that holds this value:



A measure

A measure

A calculated value: (Revenue / Total kWh) * 100

FT Cube Explorer

Calendar Month Sep 2006

	Customer Class	Revenue Amount	Total kWh	Revenue per kWh
1	Commercial	$3,327	24,060 kWh	13.82 cents
2	Industrial	$5,051	48,120 kWh	10.49 cents

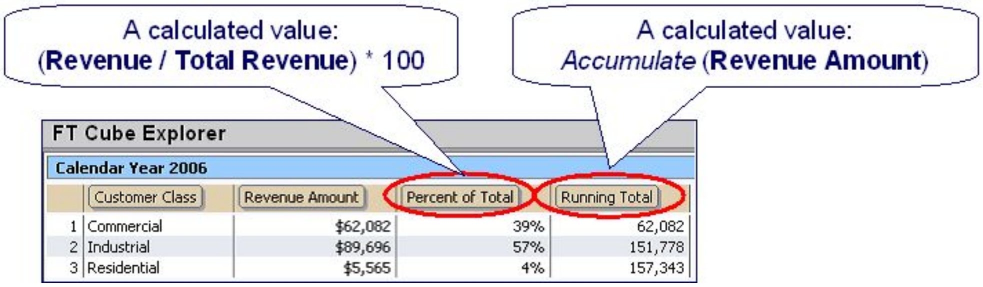
When you set up a calculated value for a zone, you define its formula and how it should be formatted for display. The system's formula syntax allows you to reference any of the zone's measures and it supports a wide variety of algebraic and trigonometric operators. The formula syntax also allows you to reference other calculated values.

Note: Display format. You define how each calculated value is displayed on the zone using the same techniques described above under *Formatting Values For Display*.

FMI: Refer to *General Zone Parameters* (see the **Calculated Value** parameter) for the configuration options.

Set Functions In Calculated Values

Sometimes a calculated value must be derived using the superset of information in a zone. We'll use the following simple zone to explain:



A calculated value: (**Revenue / Total Revenue**) * 100

A calculated value: *Accumulate* (**Revenue Amount**)

FT Cube Explorer

Calendar Year 2006

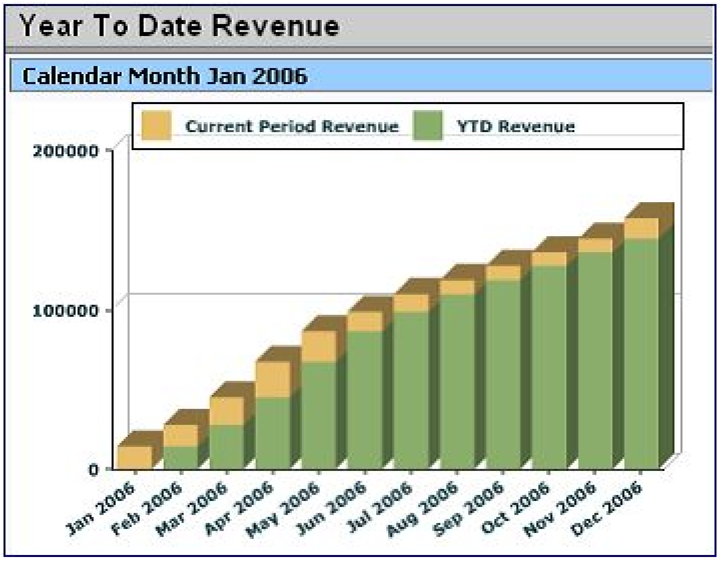
	Customer Class	Revenue Amount	Percent of Total	Running Total
1	Commercial	$62,082	39%	62,082
2	Industrial	$89,696	57%	151,778
3	Residential	$5,565	4%	157,343

Neither Percent of Total nor Running Total can be directly computed using only information on the row being displayed. Rather, their computation requires accessing the superset of all rows in the zone.

When you set up a calculated value, you can optionally indicate that its value is derived from the superset of zone information. You do this be declaring a "set function" on the calculated value's zone parameter. For example,

- Percent of Total requires two calculated values:
  - The first computes the Total Revenue Amount from all rows in the zone. This calculated value references the TOT (total) set function. Please note that this calculated value is not displayed in the zone; it is only used for subsequent calculation purposes.
  - The second computes each row's Percent of Total . This calculated value doesn't require a set function as it simply computes Revenue Amount / Total Revenue Amount * 100 (i.e., the Percent of Total). In other words, this calculated value references the measure on the row and the previous calculated value.
- Running Balance requires a single calculated value that references the ACC (accumulate) set function. This function simply accumulates the total value of earlier rows.

You'll find the ACC set function useful for year-to-date graphs. For example, the following graph shows monthly marginal revenue and YTD revenue for each month in a year:



Year To Date Revenue

Calendar Month Jan 2006

This Current Period Revenue comes from a measure on a fact and therefore doesn't require a calculated value. YTD Revenue is more sophisticated - it is equal to the YTD revenue for a period minus the current period's revenue. This requires two calculated values:

- The first computes the Accumulated Revenue Amount from all historical periods shown in the graph. This calculated value references the ACC (accumulate) set function. Please note that this value is not displayed in the zone; it is only used for subsequent calculation purposes.
- The second subtracts each period's revenue from the accumulated total (otherwise there'd be double-counting of each period's revenue). This calculated value doesn't require a set function as it simply computes YTD Revenue - Current Period Revenue. In other words, this calculated value references the measure on the row and the previous calculated value.

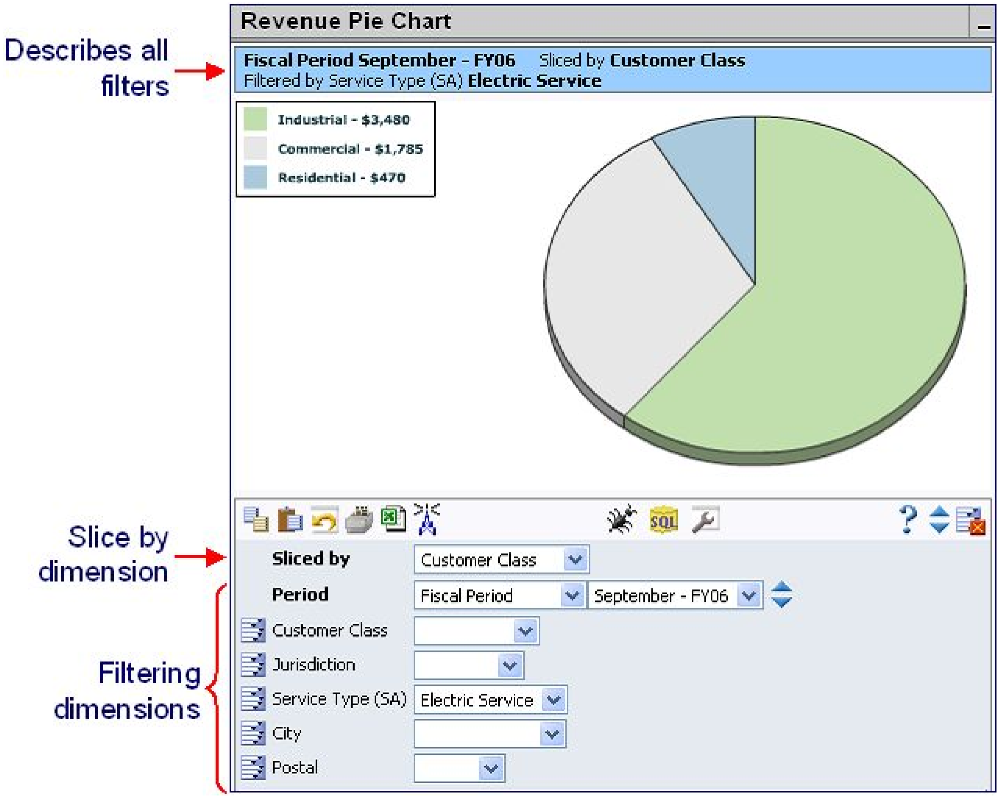
● **FMI:** Refer to *General Zone Parameters* (see the **Calculated Value** parameter) for the configuration options.

Filters

The topics in this section describe how filters are used in zones.

Dimensional Attribute Filters

Most zones allow you to define several dimensional attribute filters. For example, the following pie chart shows electric revenue slice by customer class. This zone requires at least two dimensional attributes - customer class and service type.



Revenue Pie Chart

Fiscal Period September - FY06 Sliced by **Customer Class**
Filtered by Service Type (SA) **Electric Service**

Sliced by Customer Class
Period Fiscal Period September - FY06
Customer Class
Jurisdiction
Service Type (SA) Electric Service
City
Postal

➤ **Note: Filters are always displayed.** All filters that were used to build the zone's information are displayed in the zone's *Description Bar*.

A zone's configuration defines:

- The dimensional attributes that can be used to slice and/or filter the zone's information. Note, both *Periodicity* and *Base Period* are implicit filters on most zones.

- The default filter used to slice the zone's information when it is initially displayed. Note, only some zone types support slicing.

Users can re-slice and / or filter a zone using different value by clicking the *Show Filters Button* and then selecting the desired values in the *filter area*.

Note: Broadcasting. Users can *broadcast* filter values from other zones on the same portal.

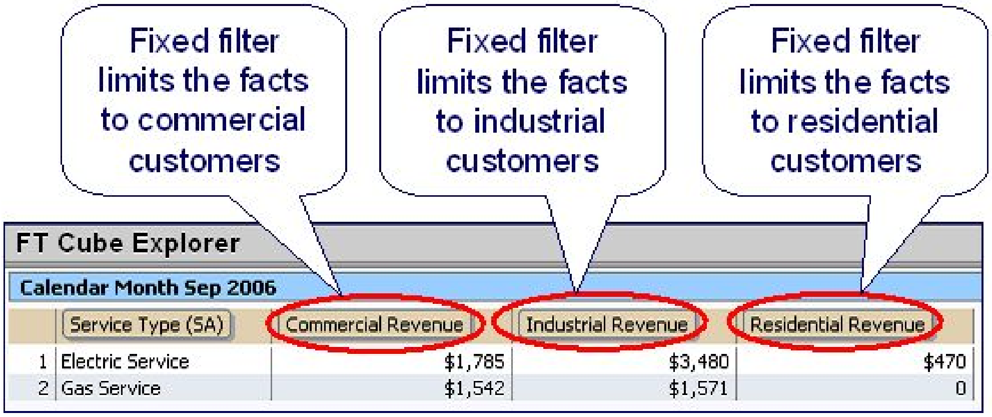
If a zone has multiple filters on the same dimension, the zone can be configured to limit the filter values to those related to a "parent" filter. For example, if Filter 1 is City, and Filter 2 is Postal Code, the zone can be configured to only show Postal Codes in the selected City when a user views the filter values for Postal Code.

FMI: Refer to *General Zone Parameters* (see the **Dimensional Filter** parameter) for the configuration options.

Fixed Filters

Earlier, we described how a zone's configuration contains the measures used to build the zone. In addition to defining each measure's fact or goal type, you can optionally define "fixed filters" to limit the facts that are retrieved. For example, the case fact contains a row for every open and closed case. If you have a zone that should only display information about closed cases, you must set up a fixed filter for the measure.

Fixed filters can also be used a form of "slicing". The following *cube explorer* zone has been configured with 3 measures where each has been defined with a different fixed filter.



Fixed filter limits the facts to commercial customers

Fixed filter limits the facts to industrial customers

Fixed filter limits the facts to residential customers

FT Cube Explorer

Calendar Month Sep 2006

	Service Type (SA)	Commercial Revenue	Industrial Revenue	Residential Revenue
1	Electric Service	$1,785	$3,480	$470
2	Gas Service	$1,542	$1,571	0

Note: Fixed filters are not displayed in the description bar. You'll notice that fixed filters are not displayed in the zone's *Description Bar*. This is intentional as they can differ per measure (and multiple measures can be shown in a zone).

Fixed filter criteria can support any combination of attributes from the dimensions related to the measure's fact. For example, you could set up a fixed filter to restrict a measure's accumulation to Commercial and Industrial customers living in Paris and Lyon .

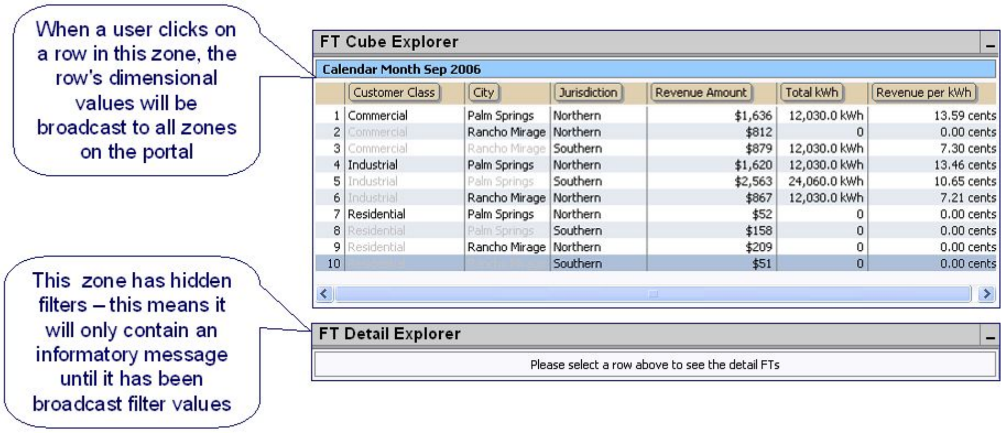
FMI: Refer to *General Zone Parameters* (see the **Fixed Filter** parameter) for the configuration options.

Fixed filters also play a part in implementing row level-security. For example, if only certain users are allowed to look at data associated with Commercial customers, you'd set up zones with fixed filters to limit the facts accordingly. In addition to setting up zones with the appropriate fixed filters, you must configure the system's portal and zone security to define the user groups that have access to the respective portals and zones. Refer to *Granting Access to A Portal* and *Granting Access to Zones* for the details.

Hidden Filters

Hidden filters are used on zones that exist to show "drill down" details of dimensional values *broadcasts* from other zones on the same portal. For example, you might have a portal that contains a *dimensional scorecard* that highlights problematic regions. When a user clicks on a line in the scorecard (i.e., when they broadcast the line's region to the other zones on the portal), zones with hidden filters will be populated with data for the broadcast region.

Zones with hidden filters contain an informational message if they have not been broadcast their filter values. The following is an example of a portal with two zones where the 2 nd zone has hidden filters and the user has not clicked on a row in the 1 st zone:


When a user clicks on a row in this zone, the row's dimensional values will be broadcast to all zones on the portal
This zone has hidden filters – this means it will only contain an informatory message until it has been broadcast filter values

FT Cube Explorer

Calendar Month Sep 2006

	Customer Class	City	Jurisdiction	Revenue Amount	Total kWh	Revenue per kWh
1	Commercial	Palm Springs	Northern	$1,636	12,030.0 kWh	13.59 cents
2	Commercial	Rancho Mirage	Northern	$812	0	0.00 cents
3	Commercial	Rancho Mirage	Southern	$879	12,030.0 kWh	7.30 cents
4	Industrial	Palm Springs	Northern	$1,620	12,030.0 kWh	13.46 cents
5	Industrial	Palm Springs	Southern	$2,563	24,060.0 kWh	10.65 cents
6	Industrial	Rancho Mirage	Northern	$867	12,030.0 kWh	7.21 cents
7	Residential	Palm Springs	Northern	$52	0	0.00 cents
8	Residential	Palm Springs	Southern	$158	0	0.00 cents
9	Residential	Rancho Mirage	Northern	$209	0	0.00 cents
10			Southern	$51	0	0.00 cents

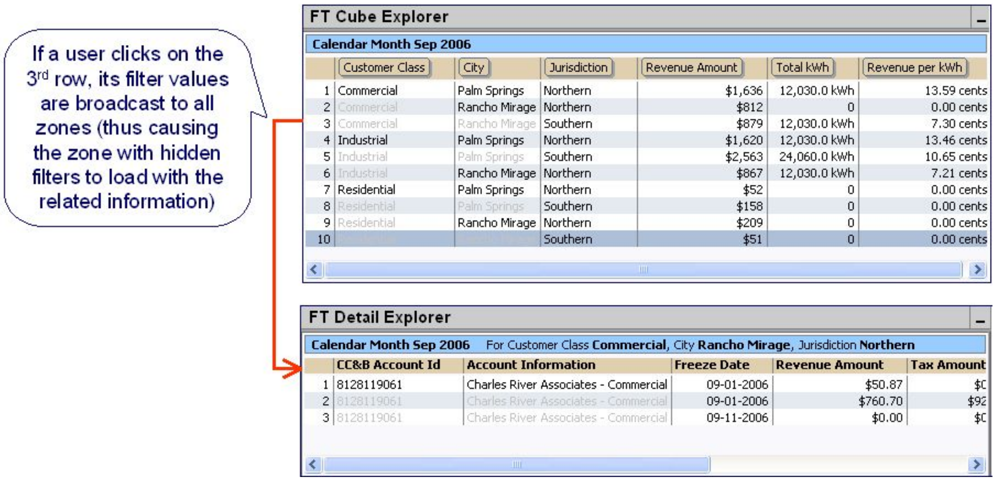
FT Detail Explorer

Please select a row above to see the detail FTs

Note: You control the message. The message appearing in the zone with hidden filters can be defined in the zone's configuration.

FMI: Refer to *General Zone Parameters* (see the **Hidden Filter** parameter) for the configuration options.

When the user clicks on a row in the 1st zone, the zone's filter values are broadcast thus causing the zone with hidden filter to populate with related information:


If a user clicks on the 3rd row, its filter values are broadcast to all zones (thus causing the zone with hidden filters to load with the related information)

FT Cube Explorer

Calendar Month Sep 2006

	Customer Class	City	Jurisdiction	Revenue Amount	Total kWh	Revenue per kWh
1	Commercial	Palm Springs	Northern	$1,636	12,030.0 kWh	13.59 cents
2	Commercial	Rancho Mirage	Northern	$812	0	0.00 cents
3	Commercial	Rancho Mirage	Southern	$879	12,030.0 kWh	7.30 cents
4	Industrial	Palm Springs	Northern	$1,620	12,030.0 kWh	13.46 cents
5	Industrial	Palm Springs	Southern	$2,563	24,060.0 kWh	10.65 cents
6	Industrial	Rancho Mirage	Northern	$867	12,030.0 kWh	7.21 cents
7	Residential	Palm Springs	Northern	$52	0	0.00 cents
8	Residential	Palm Springs	Southern	$158	0	0.00 cents
9	Residential	Rancho Mirage	Northern	$209	0	0.00 cents
10			Southern	$51	0	0.00 cents

FT Detail Explorer

Calendar Month Sep 2006 For Customer Class **Commercial**, City **Rancho Mirage**, Jurisdiction **Northern**

	CC&B Account Id	Account Information	Freeze Date	Revenue Amount	Tax Amount
1	8128119061	Charles River Associates - Commercial	09-01-2006	$50.87	$C
2	8128119061	Charles River Associates - Commercial	09-01-2006	$760.70	$92
3	8128119061	Charles River Associates - Commercial	09-11-2006	$0.00	$C

Note: Hidden filters in the description bar. All hidden filters that were used to build the zone's information are displayed in the zone's *Description Bar*.

Goals

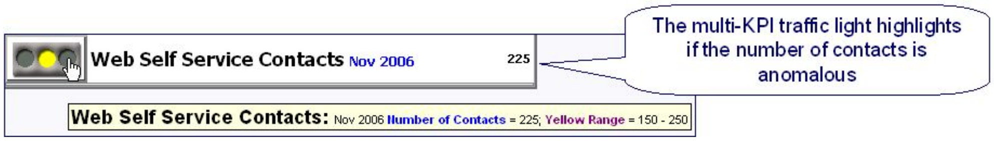
This section provides examples of how *goals* can be used on zones.

Using Goals To Highlight Anomalies

You can define target values using goals and then use these values to highlight deviations from targets. We'll use an example to explain, let's assume:

- Your organization has a target number of web self service logins during a month. A goal exists that holds the low and high ranges of the "cautionary" range of web self service contacts for each customer class for each calendar month during a year. If the number of contacts is lower than the low end of the cautionary range, there's a problem.
- A customer contact is stored each time a customer logs in via the web.

You can now set up a variety of zones to highlight when the number of web self service contacts falls beneath the cautionary range. For example, you can set up a traffic light whose color highlights anomalous situations:



Web Self Service Contacts Nov 2006 225

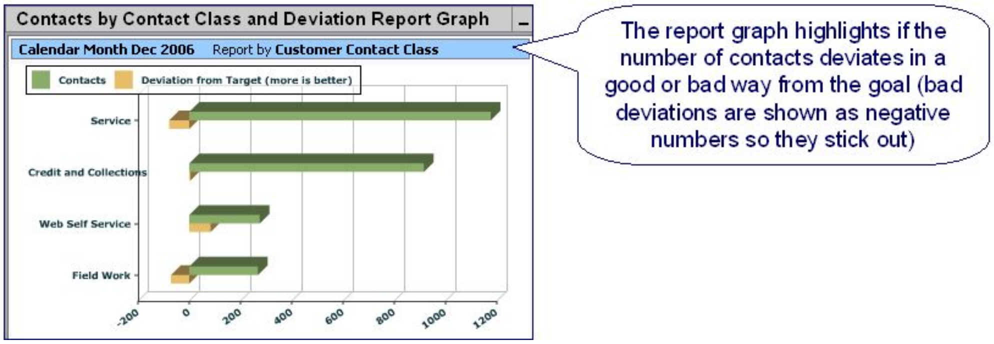
Web Self Service Contacts: Nov 2006 **Number of Contacts** = 225; **Yellow Range** = 150 - 250

The multi-KPI traffic light highlights if the number of contacts is anomalous

The following points summarize the high-level configuration tasks for such a zone:

- Set up a measure that calculates the total count of web self service customer contacts (held on the customer contact fact)
- Set up a measure that calculates the low end of the cautionary range of web self service contacts (held in a goal)
- Set up a measure that calculates the high end of the cautionary range of web self service contacts (held in a goal)
- Set up the traffic light's color control to red if the number of contacts is less than the cautionary range (this assume that too few web self service contacts is bad).

You could also set up a report graph that shows how actual contacts compare with the target number for a specific period (where bad deviations show a negative bar on the graph):



Contacts by Contact Class and Deviation Report Graph

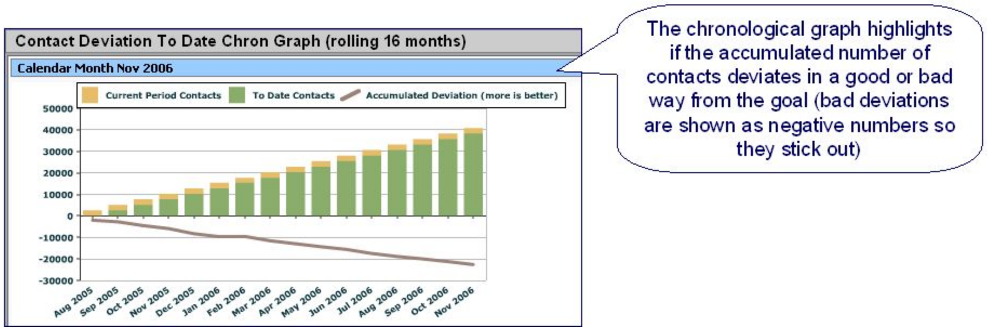
Calendar Month Dec 2006 Report by **Customer Contact Class**

The report graph highlights if the number of contacts deviates in a good or bad way from the goal (bad deviations are shown as negative numbers so they stick out)

The following points summarize the high-level configuration tasks for such a zone:

- Set up a measure that calculates the total count of web self service customer contacts (held on the customer contact fact)
- Set up a measure that calculates the low end of the cautionary range of web self service contacts (held in a goal)
- Set up a measure that calculates the high end of the cautionary range of web self service contacts (held in a goal)
- Set up a measure that retrieves whether deviations that are less than the target are considered bad - this measure is either -1 or +1 (where -1 is used when you want actual contacts to be below the target value, e.g., credit and collections contacts, and +1 is used when you want actual contact to be above the target value, e.g., web self service contacts). This value is held in the same goal that holds the yellow range.
- Set up a calculated value that contains the mid-point of the low and high cautionary range; we'll call this the target value
- Set up a calculated value that subtracts the target value from actual contacts and multiplies the result by the good / bad indicator (a negative number means a bad situation). We'll call this the deviation amount.
- Indicate that you want to graph the actual contacts (the first measure) and the deviation amount (the last calculated value).

You could also set up a chronological graph that shows how actual contacts compare with the target number over time (where bad deviations show a negative line on the graph):



The chronological graph highlights if the accumulated number of contacts deviates in a good or bad way from the goal (bad deviations are shown as negative numbers so they stick out)

The following points summarize the high-level configuration tasks for such a zone:

- Set up measures and values as described for the report graph
- Set up a calculated value that contains the accumulated target deviation amount (this allows the graph to net out deviations over time)
- Set up a calculated value that contains the accumulated number of contacts over time
- Indicate that you want to graph the accumulated target deviation amount and the accumulated contacts over time.

Using Goals To Highlight Causal Effects

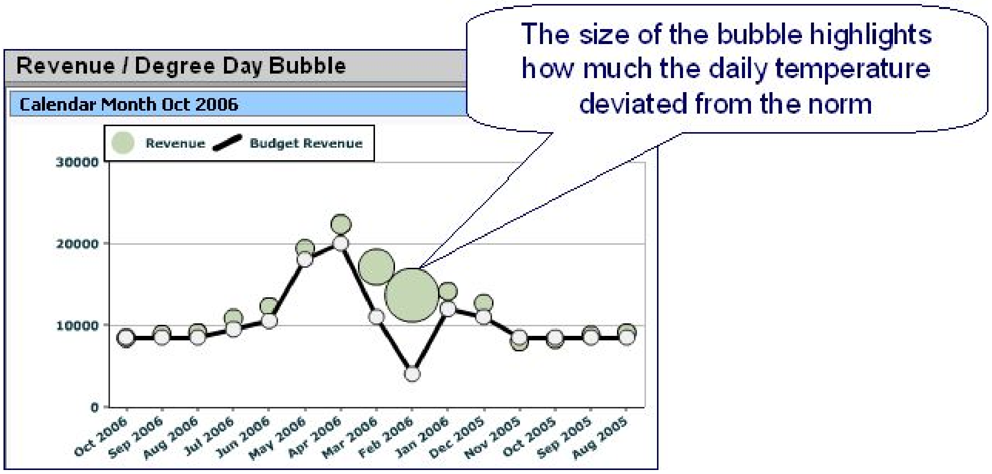
Let's assume that your users want to see a chronological graph that shows three things:

- Total revenue
- Budget revenue
- An indication of whether abnormal temperature variations contributed to differences between total and budget revenue

Let's also assume that you have two goals:

- Goal 1 holds two values: the actual average temperature for each day, and the normal average temperature for a day
- Goal 2 holds each month's budget revenue

You can use a bubble graph to provide your users what they want:



The size of the bubble highlights how much the daily temperature deviated from the norm

The following points summarize the high-level configuration tasks for such a zone:

- Set up a measure that calculates the sum of revenue for each period (held on the financial fact)
- Set up a measure that contains the sum of actual temperatures for the time period (held in a goal)
- Set up a measure that contains the sum of normal temperatures for the time period (held in a goal)
- Set up a measure that contains the budget revenue for each period (held in a goal)

- Set up a calculated value that contains the absolute value of the difference between the actual temperature and the normal temperature
- Set up a calculated value that references the first measure and indicate that its count is equal to the 1 st calculated value (i.e., the temperature variation for the period)
- Set up the graph type to be Bubble . Note, bubble graphs allow you to display an additional dimension on chronological graphs because the size of the bubble has meaning.
- Indicate that the 2 nd calculated value (actual revenue where count = temperature variation) should be graphed
- Indicate that the 4 th measure (budget revenue) should appear as the graph's target line

While the above technique satisfied a very specific requirement, you can use these concepts to satisfy other design patterns where you need to illustrate both amounts AND magnitudes in the same graph. You might want to think of this technique as a "work around" for graphs only supporting a single y-axis.

Drill Down / Drill Back

The topics in this section describe the various drill-down / drill-back features that can be configured into your zones.

Hierarchical Portals

Refer to *Portal Hierarchies* for how you can set up "summary zones" that can drill down to portals containing "detail zones".

Broadcasting

Refer to *Broadcast* for a description of how users can broadcast dimensional attributes (as *regular filters* and *hidden filters*) to the other zones on the same portal. The demonstration database has many examples of this technique. We strongly recommend familiarizing yourself with the various patterns.

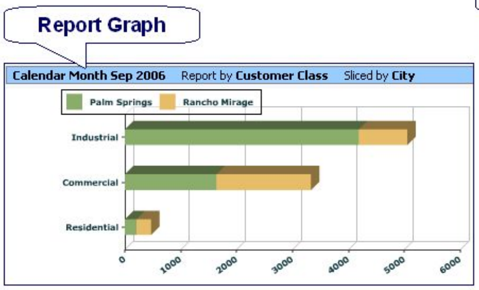
Drill-back To The Source System

Top X and *Detail Data Explorer* zones can be configured to drill back to the source application:

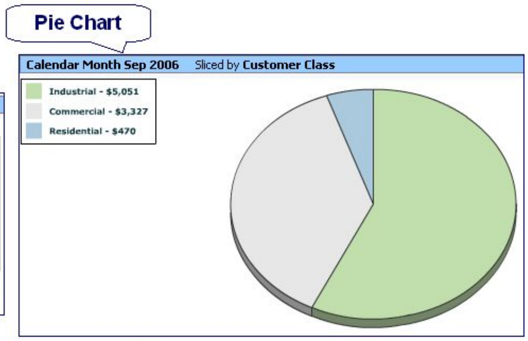
- Refer to the definition of the Other Column parameter on the *Data Explorer Zone Parameters* for the details.
- Refer to the definition of the Source System Navigation Option parameter on the *Top X List Zone Parameters* for the details.

Numerous Ways To Slice Information

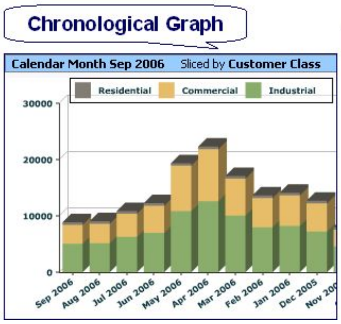
Many zone types support the notion of showing data sliced by one or more dimensional attributes. The following illustrates several examples:


Report Graph

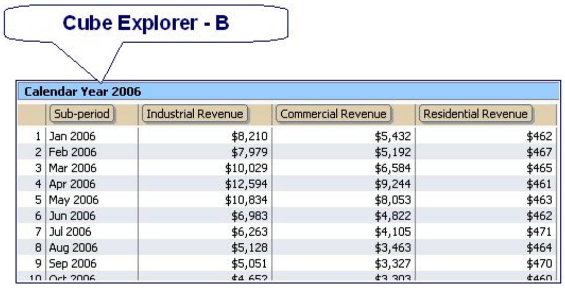
Calendar Month Sep 2006 Report by Customer Class Sliced by City


Pie Chart

Calendar Month Sep 2006 Sliced by Customer Class

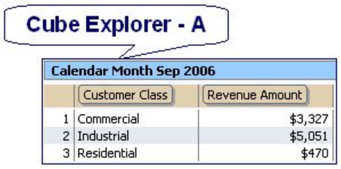

Chronological Graph

Calendar Month Sep 2006 Sliced by Customer Class


Cube Explorer - B

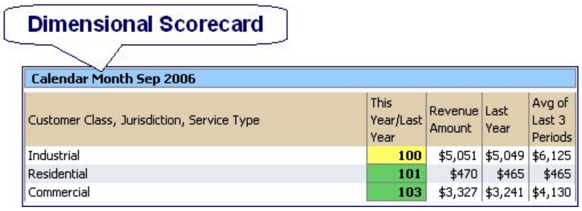
Calendar Year 2006

	Sub-period	Industrial Revenue	Commercial Revenue	Residential Revenue
1	Jan 2006	$8,210	$5,432	$462
2	Feb 2006	$7,979	$5,192	$467
3	Mar 2006	$10,029	$6,584	$465
4	Apr 2006	$12,594	$9,244	$461
5	May 2006	$10,834	$8,053	$463
6	Jun 2006	$6,983	$4,822	$462
7	Jul 2006	$6,263	$4,105	$471
8	Aug 2006	$5,128	$3,463	$464
9	Sep 2006	$5,051	$3,327	$470
10	Oct 2006	$4,652	$3,303	$460


Cube Explorer - A

Calendar Month Sep 2006

	Customer Class	Revenue Amount
1	Commercial	$3,327
2	Industrial	$5,051
3	Residential	$470


Dimensional Scorecard

Calendar Month Sep 2006

Customer Class, Jurisdiction, Service Type	This Year/Last Year	Revenue Amount	Last Year	Avg of Last 3 Periods
Industrial	100	$5,051	$5,049	$6,125
Residential	101	$470	$465	$465
Commercial	103	$3,327	$3,241	$4,130

Each of the above zones shows monthly revenue sliced by customer class. The following points describe the pros and cons of each metaphor.

Graphical Metaphor	Pros	Cons
Report graphs	Each "report by" value can by further sliced. The above example shows how each customer class's revenue is further sliced by city.	Reports graphs report by a given dimensional attribute (e.g., customer class). You can optionally configure report graphs to EITHER slice by a 2^{nd} dimensional attribute OR display multiple measures / calculated values for the "report by" dimension. If the report graph has been set up to slice, only the top 5 slices are shown; all remaining slice values are kept in an "others" slice. Report graphs typically show a single period. However, you can use the following techniques to show time in other ways: - you can report on / slice by *dimensional attributes on the date and time dimensions* (for example, you could report on the days of the week during a year that have the most complaints) - you can show values from *alternate periods* for each "report by" value (for example, you could show both current period revenue and prior period revenue)

Graphical Metaphor	Pros	Cons
Chronological graphs	Sliced values for multiple periods are shown. Bubble graphs allow you to use the size of the bubble to present a 3 rd dimension (the size of the bubble is related to the relative number of rows associated with the value being displayed).	Chronological graphs allow you to EITHER slice by a dimensional attribute or display multiple measures / calculated values for each period. If the graph has been set up to slice, the slice values are limited to a single dimensional attribute. In addition, only the top 5 slices are shown; all remaining slice values are kept in an "others" slice. While each period can be sliced by a dimensional attribute, you cannot slice the slices. For example, while the above chronological graph shows revenue over time by customer class; you cannot further slice each customer class by city.
Pie charts	While graphs are limited to 5 slice values, pie charts can show many slice values (but there is a finite limit to the number of slices in a pie chart).	The slice values are limited to a single dimensional attribute. Pie charts slice data for a single period.
Cube Explorers	Many periods can be shown in a cube explorer (if the explorer contains a *sub-period* column). The slice values are not limited to a single dimensional attribute (each row on a cube explorer is sliced by the dimensional attributes shown in the explorer). Many measure / calculated values can be shown for each slice value and period combination. End-users can change the dimensions and measures / calculated values being sliced.	The information is not shown graphically (however, you can set up a graphical zone on the same portal to display similar information graphically; this is especially useful if you design with *broadcasting* in mind).
Dimensional scorecards	Dimensional scorecards can slice combinations of up to 5 dimensional attributes. The dimensional attribute combinations are scored and displayed in score order (so that problematic dimensions appear first / last). Up to 3 measure / calculated values can be shown for each slice value.	Dimensional scorecards typically show a single period. However, you can use the following techniques to show time in other ways: - you can slice by *dimensional attributes on the date and time dimensions* (for example, you could slice by the days of the week during a year that have the most complaints) - you can show values from *alternate periods* for each slice value (for example, you could show both current period revenue and prior period revenue for every combination of dimensional attributes)

Dynamic Reports

The topics in this section describe the various techniques that can be used to implement dynamic reports.

Excel Downloads

Users can download a zone's supporting information to Excel by clicking the zone's *download button* (note, *multi-KPI* zones do not support this feature).

Caution: Important! Refer to *client setup* for a description of how to configure the client machines so that Excel opens in a separate window.

Please note the following about the contents of the downloaded information:

- Every measure and calculated value defined on the zone's configuration is downloaded to Excel, even those values that are not displayed in the zone. This allows you to show more information in Excel than in the zone (for example, you could show historical averages in Excel, but not in the zone).
- You can configure a zone to download more rows to Excel than what are shown in the zone. For example, you might show 500 rows in a *cube explorer* and download 10,000 rows to Excel. Please note that the maximum number of rows that can be downloaded to Excel is limited by Excel.

The above means that users can request an "on demand" for most zones by simply clicking the zone's download button.

Cube Explorers and Detail Explorers

Cube explorer and *detail explorer* zones are, by definition, reports. Cube explorers show summary information from one or more facts, detail explorers show individual rows on facts.

When you configure these zones, you define the information that appears when the zone first appears. You can also define additional attributes that can be dragged onto the report (thus allowing using to change the report).

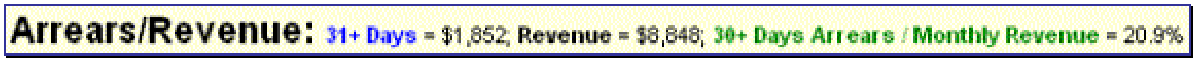
Please be aware of the following techniques:

- If you want to implement static (i.e., non-changeable) reports, configure the zone to suppress the zone's *explorer options area*. All drag and drop features are disabled on zones configured like this. Refer to the *hidden filters* section above for an example (the detail explorer zone in this example has been configured to be static, you can tell because the drag and drop headings are suppressed).
- You can configure a portal to contain reports that only appear when a user broadcasts dimensional filters from other zones. You do this by defining *hidden filters* on the "hidden zones". Doing this allows you to set up portals with "parent" and "child" zones (where the child zones exist to show details of dimensions broadcast from the parent zones). Refer to the *hidden filters* section above for an example.
- Refer to the *Excel Downloads* for a description of how you can download more columns and rows than what appear in the explorer's report area.
- You could set up a separate portal for each report (i.e., explorer zone) and arrange these portals in a menu hierarchy so users can easily select reports by functional area.

Alternatively, you could put numerous explorer zones on a single portal and then let users expand the desired zone when they want a report generated. If you use this technique, we STRONGLY recommend that each user's portal preferences be configured to collapse ALL zones by default otherwise performance will suffer.

HTML Formatting

Traffic light, *dimensional scorecard*, and *multi-KPI* zones allow you to define the verbiage that appears in the zone's hover text (and, for traffic lights - on each line in the traffic light). The verbiage defined in the zone's configuration can contain a variety of HTML tags. For example, the following hover text was formatted using HTML tags:



Arrears/Revenue: 31+ Days = $1,852; Revenue = $8,848; 30+ Days Arrears / Monthly Revenue = 20.9%

The following illustrates how the zone parameter would be configured to support the above message:

```
'<font size=4><b>Arrears/Revenue:
```

```
</b></font><font color=blue><b>31+
Days</b></font> = '
```

```
M1
```

```
'; <b>Revenue</b> = '
```

```
M2
```

```
'; <font color=green><b>30+ Days
Arrears / Monthly Revenue</b></font> = '
```

```
V1
```

Note:

`<font size=4 color=blue>` and `</font>` are the HTML tags used to indicate that the surrounded text should be blue with a larger font size than the normal font.

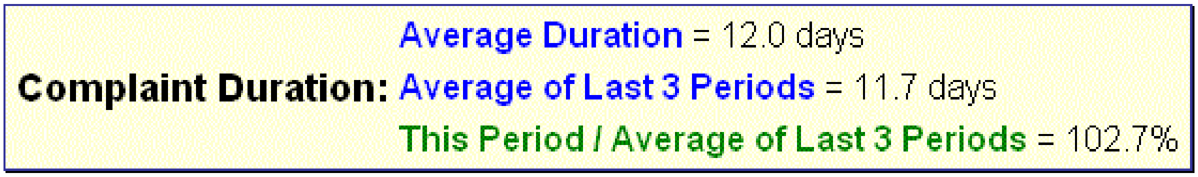
The references to M1, M2, and V1 mean that the values of measure 1, measure 2, and calculated value 1 should be included in the respective positions. The following points contain the complete list of fields that can be included in a text string:

Mx	These fields hold a measurement. For example, M1 holds the first measurement.
Nx	These fields hold the count of fact / goal rows that were used to derive the measurement. For example, N1 holds the number of fact rows used to derive the first measurement.
Mx-label	These fields hold the label of a measurement. For example, M1-label holds the name of the first measurement.
Px	These fields hold the label of a measurement's time-period. For example, P1 holds the time period of the first measurement.
Vx	These fields hold a calculated value. For example, V1 would be used to reference the first calculated value.
Vx-label	These fields contain the label of a calculated value. For example, V1-label holds the name of the first measurement.

Other common HTML tags that can be applied:

- `<b>` and `</b>` are the HTML tags used to indicate that the surrounded text should be bold
- `<br>` causes a line break in a text string. If you use `<br><br>`, a blank line will appear
- `<i> and </i>` cause the surrounded text to be italicized

The following is another example of hover text that has been formatted using HTML:



	Average Duration = 12.0 days
Complaint Duration:	Average of Last 3 Periods = 11.7 days
	This Period / Average of Last 3 Periods = 102.7%

The HTML required to implement the above uses "table tags" to set up an implicit two column table with three rows:

```
<table border="0">
<tr>
- <td></td> <td>' V1-label ' = ' V1 '</td> </tr>
<tr>
- <td><font size=4><b>Complaint
Duration:</b></font></td>
<td>' V5-label ' = ' V5 '</td></tr>
<tr>
- <td></td><td>' V6-label ' = ' V6 '</td></tr>
</table>'
```

You can also use spans to customize the look of the contents of a text string. For example, `<span style="font-family:Courier; font-size:large; font-weight:bold;>revenue</span>` would make the word "revenue" appear in large, bold, Courier text. Please refer to a Cascading Style Sheets (CSS) reference manual or Web site for more examples.

For additional HTML examples, refer to an HTML reference manual or Web site.

Parameters Used to Configure Zones

The look and functionality of every analytic zone is determined by its zone parameters. The topics in this section describe these parameters.

➤ **Note: Familiarize yourself with the graphical metaphors.** Refer to *Oracle Utilities Business Intelligence Zone Types* for a description of the graphical metaphors supplied with the base-package.

General Zone Parameters

When you set up a *zone*, you define a variety of parameters that control its look and feel. The following table describes parameters that are common to most zone types. Refer to the subsequent sections for a description of parameters that are unique to the various zone types.

Parm Type	Description
Zone Type	The zone type defines zone's graphical metaphor (e.g., traffic light, graph, top x list).
Application Service	The application service controls which users can access the zone. Refer to *Granting Access To Zones* for more information.
Width	Width controls whether the zone is a half sized or full sized.
Help Text	Use the help text parameter to describe the functionality of the zone. For example, you might describe the conditions that would cause a traffic light to be red. HTML can be used to format this text. Refer to *Zone Help Text* for more information about HTML formatting. Refer to *Graph Options Area* for information about how the help text is displayed.
Valid Periodicities	Zones always show data grouped into some unit of time (e.g., days, weeks, months, quarters, ...). We use the term "periodicity" to reflect a given unit of time. This field serves two purposes:

Parm Type	Description
	1. It defines the valid periodicities in which a zone's data can be grouped 2. It defines the default periodicity used when the zone is initially shown The valid values are: FY . Fiscal Year FP . Fiscal Period CY . Calendar Year CQ . Calendar Quarter CM . Calendar Month CW . Calendar Week CD . Calendar Day HR . Hourly NONE . No periodicity (this value is not supported on chronological graphs and top X lists). Also note, if NONE is specified, no other periodicities may be specified (i.e., a zone either supports periodicities or it doesn't). If multiple periodicities are supported, separate each with a space. For example if the zone supports Calendar Month and Calendar Week, enter CM CW . The first value in the list is the zone's default periodicity. This parameter is very important because your implementation defines which periodicities are "pre aggregated" when you define your materialized views. If you allow a user to select a periodicity that has not been aggregated on a materialized view, the raw fact data will be accessed when this zone is built and this will have an adverse impact on response times.
Override Default Base Period	We use the term "base period" to reference the time period used to build the zone's information. For example, a traffic light with a base period of Jan 2006 will show measures and goals computed relative to Jan 2006 . This parameter controls the base period used when either of the following events occur: - when a zone is first built, and - when a user changes a zone's periodicity Note - users can subsequently define a specific base period by entering the desired value in the zone's Filter Area. If this parameter is left blank, the default base period is the last complete period for the respective periodicity. For example, if a zone's periodicity is Calendar Quarter , the last complete quarter is used. If you want the default base period to be something other than the last complete period, enter a value in this parameter. This parameter is entered in the format: default=DEFAULT_RELATIVE_NBR PERIODICITY=RELATIVE_NBR where:

Parm Type	Description
	- **DEFAULT_RELATIVE_NBR** is the number of periods relative to the last complete period that will be used by default (if not overridden for a specific periodicity). A positive number means the base period will be after the last complete period. For example, default=3 means 3 periods AFTER the last complete period. A negative number means the base period will be before the last complete period. For example, default=-3 means 3 periods BEFORE the last complete period. - **PERIODICITY**= **RELATIVE_NBR** is used to compute a different base period depending on the periodicity. To do this, enter the periodicity's identification (see Valid Periodicities above) and the relative number of periods. You can define as many override periodicities as necessary. For example, - If you want the base period to be the current period except when the periodicity is Calendar Year , when you want it to be the last complete year, you'd enter default=1 CY=0 . - If you want the base period to be 12 hours ago and the only supported periodicity is Hourly , you'd enter default=-11 .
Dimensional Filter 1 through 5	You can define up to 5 filters in the *Filter Area* of most zones. Users use these filters to *limit the facts shown in the zone*. Filters are defined in the format tf=TABLE.COLUMN hier=HIERARCHY_LEVEL factfield= FACT_TABLE.DIM_FK_COLUMN label=LABEL visible=VISIBLE_IND type=TYPE likeable=LIKEABLE where: - If the column used to restrict the fact rows resides on a dimension: • **TABLE** is the name of the dimension table (e.g. CD_ACCT) that holds the dimensional attribute key being used to restrict the fact rows. • **COLUMN** is the name of the column on the TABLE that holds the dimensional attribute used to restrict the rows. - If the column used to restrict the fact rows resides in a degenerate dimension on the fact itself: • **TABLE** is the name of the fact table (e.g. CF_FT). • **COLUMN** is the name of the degenerate dimension column on the fact table. - **FACT_TABLE.DIM_FK_COLUMN** is only required if the facts on the zone's measures have multiple FK's to the dimension. If this occurs, you must resolve the ambiguity by defining the name of the fact table and the column that holds the FK to the dimension. There are two potential use patterns that may be setup:

Parm Type	Description
	Let's assume the zone needs separate filters for each reference to the dimension (e.g., the zone needs a filter for "from status" and "to status"). In this scenario, you'd set up two filters and define on each its respective **FACT_TABLE.DIM_FK_COLUMN.** Let's assume the zone needs a single filter and this filter has multiple references on the zone's facts. In this scenario, you'd set up a single filter and define the appropriate **FACT_TABLE.DIM_FK_COLUMN** for each (i.e., multiple references of this mnemonic will be declared for the dimension, for example, factfield=A.B factfield=Z.Y). - **LABEL** overrides a dimension's label (the label appears in headings and text strings). If not defined, the system uses the default label defined on Table.Field. There are two ways to define an override label: You can reference a field name whose label should be used. You can simply enter a text string in single quotes. Please be aware that using this method means the zone will not be "multi-lingual". **- HIERARCHY_LEVEL** is only required if the zone has multiple filters on the same dimension and the dropdown list should only contain values related to a "parent" filter. For example, if 1st Filter is City, and the 2nd Filter is Postal Code, you can use this parameter to only show Postal Codes in the selected City. To do this, define each dimension's level in the hierarchy. For example, if UDF1 contains City and UDF7 contains Postal Code, you would enter tf=CD_ADDR.UDF1_CD hier=1 for the 1st filter, and tf=CD_ADDR.UDF7_CD hier=2 for the 2nd filter - **VISIBLE_IND** controls if the filter is visible in the zone's Filter Area. Valid values are Y and N where Y is the default. This parameter would only be used on Graphs and Pie Charts to prevent users from changing the default Slice by and Report by values. Note, if the zone supports measures from multiple facts, the dimensional filters do not necessarily have to be supported on all such facts / goals. Please see the Measure description below for how to control how the system handles a measurement whose fact / goal table doesn't support one or more dimensional filters. Think carefully about the filters because your implementation defines which dimensional attributes are "pre aggregated" when you define the materialized views. If you define a dimensional attribute that has not been aggregated onto a materialized view, the raw fact data will be accessed when this zone is built and this will have an adverse impact on response times. - **TYPE** is only used when the filter's value can be entered by a user in a freeform input field (rather than selecting the filter value from a dropdown). The valid value is freeform . The likeable= mnemonic can be used with type=freeform to automatically perform likeable searches using the input value. - **LIKEABLE** is only used when type=freeform has been declared for the filter. It determines if the filter value entered by the user should be treated as likeable or not. The following values are supported: • S (suffix % to the filter value) • P (prefix % to the filter value) • PS (prefix AND suffix % to the filter value)

Parm Type	Description
Hidden Filter 1 through 5	You can define up to 5 *hidden filters* on a zone. The system uses these filters to *limit the facts shown in the zone* to those with filter values that match the values *broadcast* from other zones. We'd like to stress that you only define hidden filters on zones that exist to show "drill down" details. For example, you might have a portal that contains a dimensional scorecard that highlights problematic regions. When a user clicks on a line in the scorecard (i.e., when they broadcast the line's region to the other zones on the portal), zones with hidden filters will be populated with data related to the region. Prior to receiving the filter value, these types of zones simply contain a message describing why they are empty (you can define the message in the next parameter). Filters are defined in the format tf=TABLE.COLUMN poprule=POP_INDICATOR factfield= FACT_TABLE.DIM_FK_COLUMN label=LABEL where: - **TABLE** is the name of the hidden filter's dimension table (e.g. CD_ACCT). - **COLUMN** is the name of the column on the TABLE that holds the hidden filter's dimensional attribute. - **POP_INDICATOR** controls what happens when filter values are broadcast to this zone, but this specific filter is not referenced: If this parameter is set to R (required), the zone will be set to the "empty state" (i.e., the "please broadcast" message will appear in the zone). This is the default value. If this parameter is set to O (optional), the zone will be built and this filter will be ignored. Please note that if all hidden filters are set to O (optional), at least one of the filters must be broadcast for the zone to be built. - **FACT_TABLE.DIM_FK_COLUMN** is only required if the facts on the zone's measures have multiple FK's to the dimension. If this occurs, you must resolve the ambiguity by defining the name of the fact table and the column that holds the FK to the dimension. There are two potential use patterns that may be setup: Let's assume the zone needs separate filters for each reference to the dimension (e.g., the zone needs a filter for "from status" and "to status"). In this scenario, you'd set up two filters and define on each its respective **FACT_TABLE.DIM_FK_COLUMN.** Let's assume the zone needs a single filter and this filter has multiple references on the zone's facts. In this scenario, you'd set up a single filter and define the appropriate **FACT_TABLE.DIM_FK_COLUMN** for each (i.e., multiple references of this mnemonic will be declared for the dimension, for example, factfield=A.B factfield=Z.Y).

Parm Type	Description
	- **LABEL** overrides a dimension's label (the label appears in text strings). If not defined, the system uses the default label defined on Table.Field. There are two ways to define an override label: You can reference a field name whose label should be used. You can simply enter a text string in single quotes. Please be aware that using this method means the zone will not be "multi-lingual". Note, if the zone supports measures from multiple facts, the filters do not necessarily have to be supported on all such facts / goals. Please see the Measure description below for how to control how the system handles a measurement whose fact / goal table doesn't support one or more dimensional filters.
Hidden Filters Are Empty Override Message	If "required" hidden filters are specified and they have not been populated via a broadcast, the zone is set to the "empty state" with a generic message describing why. If you'd like to override this message, enter the message category and number of the override message (e.g., 90000, 10001). Alternatively, you can enter the message in single quotes, for example, 'Please select an outage above to view the affected customers'.
Fiscal Calendar Code	Most financial-oriented facts associate a fiscal period with each fact. For example, every financial fact has the "revenue month" in which its revenue is booked in the general ledger. Fiscal periods exist in respect of a fiscal calendar. Most organizations have just one fiscal calendar, but multiple are possible for organizations with multiple companies (where each company has a separate accounting calendar). For zones associated with these types of facts, specify the Fiscal Calendar Code for the facts in the zone. This fiscal calendar code controls two important functions: Only facts associated with this fiscal calendar are amalgamated (this feature is only useful if you have multiple fiscal calendars). The periods shown in the period dropdown of the *Filter Area* are limited to this calendar's fiscal periods (when the user selects a "fiscal-oriented" *periodicity*). Note well - if the zone supports fiscal periodicities (see Valid Periodicities above), all facts and goals referenced on the zone's measures must reference the fiscal calendar dimension.
Navigation Option	You can design a hierarchy of portals when you set up your system. For example, at the top of the hierarchy you might have a portal that has a zone for each fact. At the next level in the hierarchy, you can construct portals whose zones have detailed information about each fact. If you want to provide a "drill down" hyperlink to a lower-level portal, specify the Navigation Option Code of the lower-level portal. If you don't want such a hyperlink to appear in the zone, leave this value blank. On *Top X Lists*, you can also specify a link back to the source application.
Measure 1 through 10	This parameter and the next are used to define a measurement value. You set up measurements for the following reasons: You want to show the measurement's value in a zone You need to calculate a value using the measurement's value. For example, to show a percentage equal to (100 * (arrears in a period / revenue in a period)), you'd need to set up two measurements: arrears and revenue.

Parm Type	Description

	You want to download the measurement's value when the zone's information is downloaded to Excel. NB, when a user downloads a zone's data to Excel, EVERY measure defined in the zone parameters will appear in the spreadsheet, even those that do not appear in the zone's visual image.
	In this parameter (the measurement), you define where the measurement resides in the star schema and how it looks in the zone. In the following parameter (the fixed filter), you can optionally define criteria to restrict the rows to those with specific dimensional attribute values.
	The parameter's value is entered in the format
	tf=FACT_TABLE.MEASURE_COLUMN or SQL_EXPRESSION
	gf=GOALTYPE.MEASURE_COLUMN or SQL_EXPRESSION
	func=SQL_FUNCTION
	dt=DATEKEY_COLUMN
	tm=TIMEKEY_COLUMN
	per=PERIOD
	year=YEAR
	cur=CURRENCY_CODE
	dec=DECIMAL
	char=SPECIAL_CHAR
	label=LABEL
	dimrule=DIMRULE
	suppress=SUPPRESS
	where:
	- **FACT_TABLE** is the name of the fact table that holds the rows being aggregated.
	- **GOALTYPE** is the Goal Type Code for which the goal data will be aggregated.
	- **MEASURE_COLUMN** is the name of the column on the TABLE or GOALTYPE that holds the measure. Note, in addition to referencing a fact's measures, a limited number of calculated measures are supported via SQL functions. To do this, make sure to enclose the measure in parenthesis. For example, you could enter (SYSDATE - OUT-DTTM) to calculate the sum of the difference between the current date/time and a measure containing the outage date/time. Please note that using a dynamic value like SYSDATE means that the SQL cannot be rewritten to a materialized view and this could have an adverse impact on response times.
	- SQL_EXPRESSION is an expression that can include references to FACT_TABLE.MEASURE_COLUMN and GOALTYPE.MEASURE_COLUMN values). For example,
	-tf= DECODE(FLOOR((SYSDATE "CF_RECENT_TODO.CREATE_DTTM)/10),0,1,0) would return a value of 1 is the CREATE_DTTM is less than 10 days old.
	- tf= DECODE(ABS(CF_FT.CURR_AMT),CF_FT.CURR_AMT,0,1) would return a value of 1 if CURR_AMT is negative.

Parm Type	Description
	- gf= 1 would return a value of 1 Take care when using this feature as some SQL expressions cannot be materialized and their use on a high volume fact will result in poor response times. - **SQL_FUNCTION** is the aggregation function applied to the measure. The following functions are supported: SUM , MAX , MIN , AVG, MEDIAN, STATS_MODE and STDDEV . Note, STATS_MODE is used to calculate the value that occurs with the greatest frequency. - **DATEKEY_COLUMN** is the name of the column on the TABLE or GOALTYPE that holds the date used to aggregate the measure. - **TIMEKEY_COLUMN** is only supplied if the zone supports the Hourly periodicity. It defines the name of the column on the TABLE that holds the time used to aggregate the measure. - **PERIOD** overrides the time-period being aggregated. If not defined, the zone's base period (the one defined in the zone's filter area) is used. Any of the following formats can be used: -n . For example, entering per=-1 aggregates the measure from the period preceding the base period. -n:-n . For example, entering per=-1:-3 aggregates the measure from the 3 periods preceding the base period. - **YEAR** override the time-period being aggregated. If not defined, the zone's base period (the one defined in the zone's filter area) is used. Any of the following formats can be used: -n . For example, entering year=-1 aggregates the measure from the period in the preceding year. Note, you can use any combination of per and / or year . For example, entering year=-1 aggregates the value from the base period from the preceding year. Entering per=-1 year=-1 aggregates the value from the preceding period from the preceding year. - **CURRENCY_CODE** overrides how the measure is displayed in the zone and in Excel using the CURRENCY_CODE's format. Note that the currency control table defines where the currency symbol appears and the number of decimal places shown. For example, entering curr=USD will apply the currency formatting of the USD currency code. If not defined, the user's display profile is used (and all decimals are suppressed (and rounded)). - **DECIMAL** overrides the number of decimal places shown in the zone and in Excel (by default, all decimals are suppressed (and rounded)). This field is entered in the format n or nR where n is the number of decimal places to show. Suffixing the number of decimal places with R means that the system should round up / down. Simply specifying n (without an R) means that decimal places should be truncated. For example, entering dec=4 will display 4 decimal places and truncate the remainder. NB, this parameter is only used for formatting, it does not impact the precision used for the measure in subsequent calculations. For example, if a measure contains 6 significant digits and the edit mask has 0 digits, the measure will be shown with no decimal places, however any references to the measure in subsequent calculated values will use 6 decimal places. Also note, this parameter overrides the decimal placed defined on the CURRENCY_CODE (if specified). - **SPECIAL_CHAR** applies special character(s) to the value shown in the zone and in Excel. This field is entered in the

Parm Type	Description
	format 'x[ ]x' . Where x references the literal value to display and [ ] defines the relative position of the characters (before or after the value). You need only include the [ ] if you want to position characters in front of the value. For example, char='%' will place a percent sign after the value. If you want to position the word minutes before a value, enter char='minutes [ ]' . If you want to output a value like BUDGET $123.12 (YTD) , you'd enter char='BUDGET [ ] (YTD)' . - **LABEL** overrides a measure's label (the label appears in headings and text strings). If not defined, the system uses the default label (the default label is a concatenation of the measurement's Table.Field description and the Function referenced above). There are two ways to define an override label: You can reference a field name whose label should be used. You can simply enter a text string in single quotes. Please be aware that using this method means the zone will not be "multi-lingual". The following are examples of override labels: CM_CHURN . This is an example of a field name. 'Revenue Amount' . This is an example of a text string. - **DIMRULE** is only used if the zone has dimensional filters AND multiple measures from multiple facts. You use this parameter to control what the system does if the fact / goal doesn't support one of the dimensional filters. The following options are supported: R . This means that if the fact / goal doesn't support a dimensional filter defined by the user, the zone will be in error. O . This means that only dimensions supported by the fact / goal will be used to extract its data. I . This means that no dimensional filters will be applied when accessing the fact / goal. - **SUPPRESS** is only used if the measure is declared to support the derivation of other values. Measures defined with suppress=true will not be downloaded to Excel and will not appear in the zone's report area (if any). The following is an example of a measure holding the average revenue from the prior 3 periods: tf=CF_FT.REVENUE_AMT func=AVG dt=FREEZE_DT_KEY per=-1:-3 cur=USD label='Avg Historic Revenue' The following is an example of a measure holding a Goal data for the prior period: gf=GOALTYPE1.GOAL_AMT1 func=SUM per=-1 label='Total Budget'
Fixed Filters 1 through 10	In the previous parameter, you defined a measurement; in this parameter, you can optionally define "fixed filter" criteria to restrict the rows aggregated to derive the measure. For example, you could use this parameter to restrict the rows to those with a given unit of measure, or transaction type, or city or ... Fixed filters are defined in the format tf=TABLE.COLUMN oper=OPERATOR(VALUE) factfield=DIM_FK_COLUMN

Parm Type	Description
	where: - **TABLE** is the name of the table (e.g. CD_ACCT) that holds the dimensional attribute key being used to restrict the fact rows. This can be a dimension table, a goal type, or a fact table. Dimension tables are used when the attribute used to restrict the facts resides in a dimensional attribute key. Fact tables are used when the attribute used to restrict the facts resides in a degenerate dimension on the fact table. Goal type is used when the attribute used to restrict the fact resides in a degenerate dimension on the goal table. - **COLUMN** is the name of the column on the TABLE that holds the dimensional attribute used to restrict the rows. **- OPERATOR(VALUE)** is the criteria that must be satisfied for a fact / goal row to be aggregated in the zone. The following Operators are supported: =, <, >, >=, <=, <>, IN, NOT IN, LIKE. For example: = (PARIS) IN (PARIS, LONDON) LIKE (EUR%) - **DIM_FK_COLUMN** is only required if the fact has multiple FK's to the dimension. If this occurs, you must resolve the ambiguity by defining the name of the column that holds the FK to the dimension. The following is an example of a fixed filter: tf=CD_ADDR. UDF1_CD oper=(PARIS). Multiple fixed filters can be entered by separating each condition with the word AND or OR . For example, to restrict a measurement to facts associated with residential and commercial customers in Paris, you would enter tf=CD_ADDR.UDF1_CD oper==(PARIS) AND tf=CD_ACCT.UDF1_CD oper=IN(R,C)
Calculated Value 1 through 10	This parameter defines a calculated value. You set up calculated values for the following reasons: You need to show the value in a zone and the value is not a measure (defined above) You need the value in order to calculate another value You want to download the value when the zone's information is downloaded to Excel. NB, when a user downloads a zone's data to Excel, all calculated values will appear in the spreadsheet, even those that do not appear in the zone. Calculated values are defined in the format formula=FORMULA label=LABEL cur=CURRENCY_CODE dec=DECIMAL char=SPECIAL_CHAR setfunc=SET_FUNCTION count=COUNT_FORMULA suppress=SUPPRESS where: - **FORMULA** defines how the value is calculated. The formula can contain numeric **constants**, **operators** and **field names**. The following **operators** are supported: *, /, -, +, ABS, NEGATE, ROUND, FLOOR (meaning to round down), CEILING (meaning to round up), SIN, ASIN, COS, ACOS, TAN, ATAN, LOG, LOG10, EXP, EXP10, SQRT, **

Parm Type	Description
	The following **field names** can be referenced in the formula: Mx (where x is one of the measurements defined above). These fields contain the measurement value defined above. For example, M1 holds the first measurement. Nx . These fields contain the number of the fact / goal rows that were used to derive the measurement. For example, N1 holds the number of fact rows used to derive the first measurement. Vx . These fields contain a reference to an earlier calculated value. For example, V1 holds the first calculated value. - **SET_FUNCTION** is used if the value is calculated from the set of all rows. This parameter is only applicable to chronological graphs, report graphs, cube explorers, and detail data explorer zones. The following values can be referenced in this parameter: MAX . This derives the maximum value of all rows. MIN . This derives the minimum value of all rows. TOT . This derives the total value of all rows. ACC . This derives the total value of all rows up to and including the current row (useful for running totals). - See the description for the Measure 1 parameter for how **CURRENCY_CODE**, **DECIMAL** and **SPECIAL_CHAR** are used. **- LABEL** defines the label used to describe the calculated value. Labels are defined in the same manner as described above for measures. NB - you must define a label for a calculated value as there is no table / field description from which to derive a default label. - **COUNT_FORMULA** is only necessary if the calculated value is displayed on a chronological bubble graph. This formula defines how the count that's affects the size of the bubble is calculated. The same syntax defined for **FORMULA** can be entered. - **SUPPRESS** is only used if the calculated value is declared to support the derivation of other values. Calculated values defined with suppress=true will not be downloaded to Excel and will not appear in the zone's report area (if any). The following are examples of calculated values: formula=M1 setfunc=ACC cur=USD dec=2 label=CM_YTD_REV formula=M1/24 dec=0 label='Duration (in days)' char=' days' formula=(V4/M2)*.80 label='Target Value' dec=3R
Timeout Period	Whenever a zone is refreshed, the database is sent a request to get the necessary data. This parameter is used to define the maximum number of seconds that the database can spend retrieving the data. If this parameter is left blank, no database retrieval time limit will be imposed. However, it's possible for the application server to abort the request if the request exceeds the application server's time limit (the application server time limit is not controllable via a zone parameter).
Abort If No Materialized View	Your implementation can set up materialized views to pre-accumulate data. The existence of these views means that the database won't have to access the detailed information to accumulate the values requested by a zone (and therefore response times will be fast). You can use this parameter

Parm Type	Description
	to cause the database to abort the request for data if an appropriate materialized view does not exist. The valid values are Y and N . The default is N.
Number of Rows To Download	This controls the number of rows that are downloaded to Excel when a user presses the Excel download button in a zone. The default is 1000. This parameter is only applicable to cube explorers, detail data explorers, and top X zones.
Zone Refresh Rate	This controls if and how frequently the zone's data is automatically refreshed by the system. The value is defined in minutes. Valid values are 0 to 60 where 0 means the zone is only refreshed manually (by a user). The default is 0.

Traffic Light Zone Parameters

The following table describes the parameters that control *traffic light zones*.

➤ **Note: General parameters.** The *general listing of parameters* describes additional parameters.

Parm Type	Description
Color Control	This parameter controls how the traffic light color is derived. This parameter is entered in the format kpi=KPI yellowrange=LOWVAL:HIGHVAL underlow=RED/GREEN where: - **KPI** references the field whose value determines the color of the traffic light. The following fields can be referenced: Mx . For example, M1 holds the first measurement. Nx . These fields contain the number of the fact / goal rows that were used to derive a measurement. For example, N1 holds the number of fact rows used to derive the first measurement. Vx . For example, V1 holds the first calculated value. - **LOWVAL** and **HIGHVAL** reference the fields holding the range of values that cause the traffic light to be yellow (inclusive). You can reference any measurement, measurement count, or calculated value as defined above. You can also reference numeric constants. - **RED/GREEN** defines the color of the traffic light if the **KPI** is < the **LOWVAL**. You can enter a value of R (red) or G (green). The following are examples: kpi=V1 yellowrange=V2:V3 underlow=R kpi=V1 yellowrange=80:90 underlow=G
Traffic Light Hover Text	When a user hovers over a traffic light, a message appears describing how the traffic light color was derived. You use this parameter to define what is shown in the hover text. There are two ways to define what is shown: You can reference a message category and number and define the fields that are substituted into its substitution placeholders.

Parm Type	Description
	You can simply reference the fields to be concatenated in the hover text. Please be aware that using this method means the zone will not be multi-lingual. The following fields can be referenced: Mx . These fields hold a measurement. For example, M1 holds the first measurement. Nx . These fields hold the count of fact / goal rows that were used to derive the measurement. For example, N1 holds the number of fact rows used to derive the first measurement. Mx-label . These fields hold the label of a measurement. For example, M1-label holds the name of the first measurement. Px . These fields hold the label of a measurement's time-period. For example, P1 holds the time period of the first measurement. Vx . These fields hold a calculated value. For example, V1 would be used to reference the first calculated value. Vx-label . These fields contain the label of a calculated value. For example, V1-label holds the name of the first measurement. 'any value' . Any value between single quotes can be referenced. You can also include HTML within the literal value if you want to apply colors or styles to the hover text. Please note that the system does not automatically include a space between literal values and adjacent fields. For example, if you wanted the hover text to be Percent of Goal: 50% - Revenue $100,000 / Budget Revenue $200,000 , you can achieve this in two ways: You can set up a message (say 90000, 1001) with the text "Percent of Goal: %1 - Revenue %2 / Budget Revenue %3" and then define this parameter as msg=90000,1001 %1=V1 %2=M1 %3=M2 You can define this parameter as 'Percent of Goal: ' V1 ' - ' M1-label M1 ' / ' M2-label M2
Line 1 Text String ... Line 4 Text String	Traffic lights show up to 4 lines of information where each line contains two pieces of information: a text string and a value. This field and the next control the information display in the first line of the traffic light. In this field (the text string), you define the format of the string using the same formatting as defined for Traffic Light Hover Text (see above). The following are samples: P1 M1-label . This would result in a text string like May 2006 Revenue . P1 M1-label '#: ' N1 . This would result in a text string like May 2006 Revenue #: 2,123,121 .
Line 1 Value ... Line 4 Value	In this field (the line value), you define the value shown in the first line of the traffic light (i.e., the value in the far column). The following fields can be referenced: Mx . For example, M1 holds the first measurement. Nx . For example, N1 holds the number of fact rows used to derive the first measurement.

Parm Type	Description
	Vx . For example, V1 holds the first calculated value.

Multi-KPI Parameters

The following table describes the parameters that control *multi-KPI zones*.

Parm Type	Description
Source Traffic Light 1 ... 30	Each line in a Multi-KPI zone shows a score color and a text string; both values are derived from a traffic light. This field defines the name of the traffic light and the line in the traffic light that holds the text string. This parameter's values is entered in the format zone=ZONECODE text=LINEID where: - **ZONECODE** is the zone code of the traffic light zone from which the color will be derived - **LINEID** is the identity of the line on the traffic light that contains the text shown adjacent to the color. The valid values are: HT. This values means the traffic light's hover text is shown. L1. This value means the first line in the traffic light is shown. L2. This value means the second line in the traffic light is shown. L3. This value means the third line in the traffic light is shown. L4. This value means the fourth line in the traffic light is shown.
Column 1 ... Column 3	Multi-KPI zones can show up to three columns. Use these parameters to define what is displayed in each column. AMOUNT. Use this value to display the traffic light's amount. TL . Use this value to display the traffic light's graphic. TEXT . Use this value to display the traffic light's text.

Chronological Graph Zone Parameters

The following table describes the parameters that control *chronological graph zones*.

➤ **Note: General parameters.** The *general listing of parameters* describes additional parameters.

Parm Type	Description
Graph Value 1 ... Graph Value 5	You can configure graphs in two ways: You can graph a single value. Doing this allows users to slice the information that appears in the graph by different dimensional attributes (e.g., you could define a single value of "revenue" and then the user can slice it by customer class). You can graph multiple values where each is shown as a separate slice on the graph. If you set up multiple values, users cannot slice the graph by a filter value. Each value references one of the fields defined above. The following fields can be referenced: Mx . For example, M1 holds the first measurement.

Parm Type	Description
	Nx . For example, N1 holds the number of fact rows used to derive the first measurement. Vx . For example, V1 holds the first calculated value.
Value 1 Override Legend Text ... Value 5 Override Legend Text	Graphs contain a legend that describes what the slices mean. You can use this parameter to override the contents of the legend. If you leave this field blank, the legend is constructed as follows: If a single measure is graphed and it is not sliced, no legend appears. If a single measure is graphed and it is sliced, the legend contains the description of the sliced values. If multiple measures are graphed, the legend contains the label of each graphed value. If you specify an override legend text value, it is entered in the same fashion described for Traffic Light Hover Text. The only difference is that you can also reference S-label to define if / where the sliced value appears in the legend. For example, you could enter M1-label to show the label of the first measure.
Value 1 Override Hover Text ... Value 5 Override Hover Text	When a user hovers over a segment of a graph, hover text appears to provide details of the section of the graph. You use this parameter to override the contents of the hover text. If you leave this field blank, the hover text is constructed as follows: If a single measure is graphed and it is not sliced, the hover text contains the period, the label of the graphed value and the value. If a single measure is graphed and it is sliced, the hover text contains the period, the sliced value's description, and the value for each slice. If multiple measures are graphed, the hover text contains the period, the label of each graphed value, and its value. If you specify an override hover text value, it is entered in the same fashion described for Traffic Light Hover Text. The only differences are: You can also reference S-label to define if / where the sliced value appears in the legend. The hover text is always prefixed with the description of the period. For example, you could enter M1-label M1 to show the label and amount of the first measure.
Target Value	If you want a target line to appear on the graph, enter the measurement or value. If you don't want a target line, leave this parameter blank. The following fields can be referenced: Mx . For example, M1 holds the first measurement. Nx . These fields contain the number of the fact / goal rows that were used to derive a measurement. For example, N1 holds the number of fact rows used to derive the first measurement.

Parm Type	Description
	Vx . For example, V1 holds the first calculated value.
Target Value Legend Text	Graphs contain a legend that describes what the slices mean. If a target line is shown, the legend also contains an entry to describe the target. This field is used to define the legend text for the target line. The text string can be formatted in the same fashion described for Traffic Light Hover Text. For example, you could enter 'Target Duration' to show a fixed text string.
Target Hover Text	When a user hovers over a segment of a graph, hover text appears to provide details of the section of the graph. If a target line appears, the hover text also contains an entry to describe the target. The text string is formatted in the same fashion described for Traffic Light Hover Text. For example, you could enter 'Target' V2 to show a fixed label and the value of the 2nd calculated value as the target's hover text.
Sub Periodicity	This parameter allows a user to break the zone's periodicity into smaller time periods. For example, if the periodicity is Calendar Year and the sub period is Calendar Month, the graph will show each month in the year. This parameter serves three purposes: 1. It controls if a sub periodicity appears on the zone 2. It defines the valid sub periodicities in which a zone's data can be grouped 3. It defines the default sub periodicity used when the zone is initially shown The valid values are: FY . Fiscal Year FP . Fiscal Period CY . Calendar Year CQ . Calendar Quarter CM . Calendar Month CW . Calendar Week CD . Calendar Day HR . Hourly If multiple sub periodicities are supported, separate each with a space. For example, if the zone supports a periodicity of Calendar Year, you could set up the zone to allow both Calendar Month and Calendar Quarter sub-periodicities by entering CM CQ . The first value in the list is the zone's default sub-periodicity.
Slicing Option	This parameter controls: - If the graph is initially sliced by one of the dimensional filters - If the user is allowed to subsequently change the filter used to slice the graph If this parameter is not specified, the graph will not be sliced.

Parm Type	Description
	Note well - this parameter is ignored if the graph contains multiple measures (as slicing is not supported for multiple measure graphs). This parameter is entered in the format initialsliceby=FILTER_DEFINITION changeable=CHANGEABLE_INDICATOR where: - **FILTER_DEFINITION** identifies the dimensional filter that is used to slice the values. Valid values are F1 to F5 and N/A . A value of N/A means that the graph will not initially be sliced. **- CHANGEABLE_INDICATOR** indicates if the user is allowed to change the filter used to slice the graph. The valid values are Y -yes, N -No; the default is Y . A value of N means that the zone's filter area will not contain a Slice by dropdown.
Number of Periods to Display	This parameter controls the number of periods displayed on the graph. This parameter is entered in the format default=DEFAULT_PERIODS direction=PAST_FUTURE PERIODICITY=NBR_OF_PERIODS where: - **DEFAULT_PERIODS** is the default number of time periods. The default is the 15. - **PAST_FUTURE** indicates if historic or future periods should be retrieved. The valid values are P-Past, F-Future; the default is P (past) - **PERIODICITY**= **NBR_OF_PERIODS** is used to retrieve a different number of periods depending on the periodicity. To do this, enter the periodicity's identification (see Valid Periodicities above) and the number of periods to retrieve. You can define as many override periodicities as necessary. For example, if you want 10 historic periods to be displayed by default, and 24 historic months to be displayed when the Calendar Month periodicity is selected, and 4 historic years to be displayed when the Calendar Year periodicity is selected, you'd enter default=10 direction=P cm=24 cy=4 .
Chronological Order of Periods	This parameter controls whether the bars are shown in ascending or descending order. The valid values are: ASC . The bars appear in ascending order (i.e., oldest time periods are shown first) DESC . The bars appear in descending order (i.e., the newest time periods are shown first)
Type of Graph	This parameter controls the type of graph that is displayed. The valid values are: CLUSTERED BAR . A bar graph where the slices (if any) or graphed values are shown side-by-side STACKED BAR . A bar graph where the slices (if any) or graphed values are shown stacked on top of each other LINE . A line graph where the slices (if any) or graphed values are shown as separate lines

Parm Type	Description
	BUBBLE . A bubble graph where the slices (if any) or graphed values are shown as separate bubbles where the size of the bubble is related to the relative number of facts retrieved.
Display a 3D Graph?	This parameter controls whether or not the graph is displayed in 3D. Valid entries are Y (yes) and N (no). It is recommended that you do not use 3D if you use a target line. The target line will also be shown in 3D and this can be difficult to read.
Animate the Graph?	This parameter controls if the graph is "animated." The valid values are Y and N .
Override Labels	These parameters can be used to override the default labels used on a graph. For each, enter a field name or a text string in single quotes to display the description for that field as the label text. Use `Override Others Label` to override the label that appears in the legend and hover text if a graph with a single value is sliced by a dimension that has more than 5 values. Use `Override Total Label` to override the label that appears by the total amount (totals only appear in the hover text if the graph has a single value and it is not sliced by a user).

Report Graph Zone Parameters

The following table describes the parameters that control *report graph zones*.

➤ **Note: General parameters.** The *general listing of parameters* describes additional parameters.

Parm Type	Description
Graph Value 1 ... Graph Value 5	You can configure graphs in two ways: You can define a single value. Doing this allows users to slice the information that appears in the graph by different dimensional attributes (e.g., you could define a single value of "revenue" and then the user can slice it by customer class). You can define multiple values where each is shown as a separate slice on the graph. If you set up multiple values, users cannot slice the graph by a filter value. Each value references one of the fields defined above. The following fields can be referenced: Mx . For example, M1 holds the first measurement. Nx . For example, N1 holds the number of fact rows used to derive the first measurement. Vx . For example, V1 holds the first calculated value.
Value 1 Override Legend Text ... Value 5 Override Legend Text	Graphs contain a legend that describes what the slices mean. You can use this parameter to override the contents of the legend. If you leave this field blank, the legend is constructed as follows: If a single measure is graphed and it is not sliced, no legend appears.

Parm Type	Description
	If a single measure is graphed and it is sliced, the legend contains the description of the sliced values. If multiple measures are graphed, the legend contains the label of each graphed value. If you specify override legend text, it is entered in the same fashion described for Traffic Light Hover Text. The only difference is that you can also reference S-label to define if / where the sliced value appears in the legend. .
Value 1 Override Hover Text ... Value 5 Override Hover Text	When a user hovers over a segment of a graph, hover text appears to provide details of the section of the graph. You use this parameter to override the contents of the hover text. If you leave this field blank, the hover text is constructed as follows: If a single measure is graphed and it is not sliced, the hover text contains the "report by" attribute's description, the label of the graphed value and the value. If a single measure is graphed and it is sliced, the hover text contains the "report by" attribute's description, the description of the slice, and the value being graphed. If multiple measures are graphed, the hover text contains the "report by" attribute's description, the label of each graphed value, and its value. If you specify an override hover text value, it is entered in the same fashion described for Traffic Light Hover Text. The only differences are: You can also reference S-label to define if / where the sliced value appears in the legend. The hover text is always prefixed with the description of the report by attribute.
Default Report By	Specify the filter whose values are reported on when the graph is initially built. Reference the filter in the format Fx .
Display Report By Dropdown?	Controls whether the 'Report By' dropdown appears in the filter section. Valid values Y/N (default is N).
Reporting Category Order	Controls if the filter values of the Report By parameter are displayed in quantity order or alphabet order. Valid values QTY / ALPHA (default is ALPHA).
Slicing Option	This parameter controls: - If the graph is initially sliced by one of the dimensional filters - If the user is allowed to subsequently change the filter used to slice the graph If this parameter is not specified, the graph will not be sliced. Note well - this parameter is ignored if the graph contains multiple measures (as slicing is not supported for multiple measure graphs). This parameter is entered in the format initialsliceby=FILTER_DEFINITION changeable=CHANGEABLE_INDICATOR where:

Parm Type	Description
	- **FILTER_DEFINITION** identifies the dimensional filter that is used to slice the values. Valid values are F1 to F5 and N/A . A value of N/A means that the graph will not initially be sliced. **- CHANGEABLE_INDICATOR** indicates if the user is allowed to change the filter used to slice the graph. The valid values are Y -yes, N -No; the default is Y . A value of N means that the zone's filter area will not contain a Slice by dropdown.
Type of Graph	This parameter controls the type of graph that is displayed. The valid values are: CLUSTERED BAR . A bar graph where the slices (if any) or graphed values are shown side-by-side STACKED BAR . A bar graph where the slices (if any) or graphed values are shown stacked on top of each other
Display a 3D Graph?	This parameter controls whether or not the graph is displayed in 3D. Valid entries are Y (yes) and N (no). It is recommended that you do not use 3D if you use a target line. The target line will also be shown in 3D and this can be difficult to read.
Animate the Graph?	This parameter controls if the graph is "animated" (it's hard to explain, try it and see if you like the effect). The value values are Y and N .
Override Labels	These parameters can be used to override the default labels used on a graph. For each, enter a field name or text string in single quotes to display the description for that field as the label text. Use `Override Others Label` to override the label that appears by the other amount (the "others" label only appears if a user slices by a dimension that has more than 5 values). Use `Override Total Label` to override the label that appears by the total amount (totals only appear if the graph has a single Graph Value and is not sliced by a user).

Dimensional Scorecard Zone Parameters

The following table describes the parameters that control *dimensional scorecards zones*.

➤ **Note: General parameters.** The *general listing of parameters* describes additional parameters.

Parm Type	Description
Dimensional Attributes 1 through 5	These dimensional attributes define the combination of dimensions that are "scored" by this zone. You may define up to five dimensional attributes (and at least one is required). We'll use an example to explain these attributes - if you want to score revenue for every combination of customer class, jurisdiction and service type; you'd define three dimensional attributes on the revenue scorecard zone. All filters are defined in the format `TABLE.COLUMN`. For example, if customer class is held in the first user-defined field (UDF) in the account dimension, you would enter CD_ACCT.UDF1_CD in the first filter.

Parm Type	Description
	Note, the dimensional attributes can be any attribute from any dimension associated with the zone type's fact table (which is defined in the zone type's description). After you know the name of the fact table, you can use the Data Dictionary to view the fact's dimensions and each dimension's dimensional attributes. In addition to controlling the dimensional combinations that are scored, these attributes appear as filters beneath the scorecard when the *Show Filters Button* is clicked. This allows users to restrict the scoring to specific dimensional values. For example, a user could restrict the scoring to the Residential customer class. These fields are very important because your implementation defines which dimensional attributes are "pre aggregated" when you define your materialized views. If you define a dimensional attribute that has not been aggregated onto a materialized view, the raw fact data will be accessed when this zone is built and this will have an adverse impact on response times.
Column 1 ... Column 5	Dimensional scorecards can show up to five columns. Use these parameters to define what is displayed in each column. Mx . For example, M1 holds the first measurement. Nx . For example, N1 holds the number of fact rows used to derive the first measurement. Vx . For example, V1 holds the first calculated value. SCORE . Use this value to display the calculated score (with the appropriate color). DESCRIPTION . Use this value to display the descriptions of the dimensional attributes.
Number of Entries to Display	This parameter controls the number of rows displayed in the zone. You can enter any value from 1 to 100 .
Color Control	Rows in dimensional scorecard have a column containing the row's score. This parameter controls how the score is shown. This parameter is entered in the format kpi=KPI yellowrange=LOWVAL:HIGHVAL underlow=RED/GREEN where: - **KPI** references the field whose value determines the color of the score. The following fields can be referenced: Mx . For example, M1 holds the first measurement. Nx . These fields contain the number of the fact / goal rows that were used to derive a measurement. For example, N1 holds the number of fact rows used to derive the first measurement. Vx . For example, V1 holds the first calculated value. - **LOWVAL** and **HIGHVAL** reference the fields holding the range of values that cause the score to be yellow (inclusive). You can reference any measurement, measurement count, or calculated value as defined above. You can also reference numeric constants. - **RED/GREEN** defines the color of the score if the **KPI** is < the **LOWVAL**. You can enter a value of R (red) or G (green). The following are examples: kpi=V1 yellowrange=V2:V3 underlow=R

Parm Type	Description
	kpi=V1 yellowrange=80:90 underlow=G
Score Hover Text	When a user hovers over a score, a message appears describing how the score is derived. You use this parameter to define what is shown in the hover text. See the Traffic Light Hover Text for a description of the possible formats.
Show Worst First?	This controls if the worst dimensional combinations are shown first (or last). If you'd like the worst combinations to appear first, enter Y; otherwise enter N. The default is Y.
Override Score, Description	These parameters allow you to override the default headings for the `Score` and `Description` headings. Enter a field name or text string in single quotes to display the description for that field as the heading text.

Cube Explorer Zone Parameters

The following table describes the parameters that control *cube explorer zones*.

➤ **Note: General parameters.** The *general listing of parameters* describes additional parameters.

Parm Type	Description
Dimensional Filter 1 ... Dimensional Filter 20	Cube explorers support 20 dimensional filters. See General Zone Parameters for the format.
Measure 1 through 10	The following additional mnemonics are supported for measures: The order= mnemonic defines the column's default sort order. The valid values are ASC and DESC (ascending and descending). ASC is the default. The bgcolor= mnemonic defines the override background color of a cell. The color value can be either explicitly declared using either an HTML color (e.g., red, yellow, green, etc) or an RGB combination (e.g., #FF0000, #CCCCCC, etc) or derived by invoking a service script (where the service script returns either an HTML color or an RGB combination). If a service script is used, it should be defined in quotes and the input= and output= mnemonics should be defined. The input= mnemonic is used when a service script is invoked to return the override background color of a cell (i.e., when bgcolor='service script' is used). The value is defined in the format [ELEMENT_NAME=ELEMENT_REF ELEMENT_NAME=ELEMENT_REF] where: ELEMENT_NAME is the name of the element / field passed to the service script ELEMENT_REF is the value of the element / field passed to the field. ELEMENT_REF may reference any of the following: o Cx . These fields hold a value defined in an earlier column. For example, C1 holds the first column's value. o Mx . These fields hold a value defined in a Measure. For example, M1 holds the first measure's value. o Nx . These fields contain the number of the fact / goal rows that were used to derive the measure. For

Parm Type	Description
	example, N1 holds the number of fact rows used to derive the first measure. o Vx . These fields hold a value defined in a calculated value. For example, V1 holds the first calculated value's value. o 'any value' . Any value between single quotes can be referenced. The output= mnemonic is used when a service script is invoked to return the override the background color of a cell. It contains the name of the element that contains the cell's color (this element can hold any of the values defined on the bgcolor= mnemonic).
Calculated Value 1 through 10	The following additional mnemonics are supported for calculated values: The order= mnemonic defines the column's default sort order. The valid values are ASC and DESC (ascending and descending). ASC is the default.
Number of Entries to Display	This parameter controls the number of rows displayed in the zone. You can enter any value from 1 to 10,000. The default value is 1,000.
Sub Periodicity	This parameter causes a second time unit to appear in the explorer. This would allow a user to break a higher-level periodicity (e.g., quarters) into smaller time periods (e.g., months). This parameter serves three purposes: It controls if a sub periodicity appears It defines the valid sub periodicities in which a zone's data can be grouped It defines the default sub periodicity used when the zone is initially shown The valid values are: FY . Fiscal Year FP . Fiscal Period CY . Calendar Year CQ . Calendar Quarter CM . Calendar Month CW . Calendar Week CD . Calendar Day HR . Hourly If multiple sub periodicities are supported, separate each with a space. For example, if the zone supports a periodicity of Calendar Year, you could set up the zone to allow both Calendar Month and Calendar Quarter sub-periodicities by entering CM CQ . The first value in the list is the zone's default sub-periodicity.
Configuration Area Visibility	This parameter controls how the explorer's configuration area appears. The valid values are:

Parm Type	Description
	Closed . This value causes the zone's configuration area to be closed when the zone is initially built. A user can subsequently click the configuration area button to open the area. Open . This value causes the zone's configuration area to be open when the zone is initially built. A user can subsequently click the configuration area close button to close it. Never . This value causes the zone's configuration area to be closed when the zone is initially built and a user cannot subsequently click the configuration area button to open it (i.e., the configuration area button is suppressed from the zone). The default value is Closed .
Height of Report	This parameter controls the height of the report area. This is a percentage ranging from 10 to 100. The default is 50.
Initial Display Columns	This parameter controls the columns that appear in the explorer when the zone is initially built. The valid values are: PERIOD . This shows the period. SUBPERIOD. This shows the row's sub period. Mx . These fields contain a reference to one of the zone's measures. For example, M1 holds the first measurement. Fx . These fields contain a reference to one of the zone's filters. For example, F1 holds the first calculated value. Vx . These fields contain a reference to one of the zone's calculated values. For example, V1 holds the first calculated value. If multiple columns are displayed, separate each with a space. For example, if you want to display the first to filters followed by the first 2 measures, you'd enter F1 F2 M1 M2 .
Column 1 through 10	Up to 10 additional columns whose content can be derived using the standard explorer column derivation techniques. Refer to the View a list of explorer column mnemonics tip that appears when you navigate to the zone page for a complete description of the mnemonics that are supported by these new zone parameters.
Accept Row	You can further limit the rows retrieved by specifying a service script that will return true or false. If the value returned is false for a given row, then the row will not be displayed. This parameter is entered in the format script=SCRIPT_NAME input=[ELEMENT_NAME1=ELEMENT_REF1 ELEMENT_NAME2=ELEMENT_REF2 ...] output=OUTPUT_NAME where: - **SCRIPT** is the name of the service script to execute. ATTRIBUTE_REF . This means the field's value was retrieved from analytic attributes. The value can be Cx, Mx, Vx, Ox, Hx, Fx,PERIOD and SUBPERIOD where x is number. Note: Ox is only applicable to Detail Explorer. 'any value' . This means the service script's code is defined using a literal. Any value can be entered in single quotes. - **INPUT** is a list of variable where ELEMENT_NAME is the name of the element to which the script can refer and ELEMENT_REF is what it should be populated with. The following fields can be referenced:

Parm Type	Description
	ATTRIBUTE_REF . This means the field's value was retrieved from analytic attributes. The value can be Cx, Mx, Vx, Ox, Hx, Fx,PERIOD and SUBPERIOD where x is number. Note: Ox is only applicable to Detail Explorer. 'any value' . This means the service script's code is defined using a literal. Any value can be entered in single quotes. - **OUTPUT** reference the element returned from the service script that will hold the true or false value. For example: script='ZZLM-ZONEVAL' input=[toDoTypeCD=F1] output=returnFlag

Column Mnemonics

Cube and data explorers support the definition of "columns" whose contents are derived using the mnemonics in the following table.

The following are examples of parameter values using these mnemonics:

- source=FORMULA formula=C1/C2 *100 label='Percent of Last Year' char='%' type=NUMBER width=200
- source=FKREF fkref=PERSON input=[PER_ID=C1]
- source=MSG msg=[11001,101 %1=M1] order=DESC label='my label' width=300

Mnemonic	Description
type	This mnemonic defines how the column's value is displayed; the following values can be defined: STRING . Columns of this type contain a string. This is the default value. DATE . Columns of this type contain a date (in database format) and will be displayed using the user's display profile. TIME . Columns of this type contain a time (in database format) and will be displayed using the user's display profile. DATE/TIME . Columns of this type contain a date and time (in database format) and will be displayed using the user's display profile. MONEY . Columns of this type contain a monetary value. Columns of this type can optionally reference the cur mnemonic. NUMBER . Columns of this type contain a number. Columns of this type can optionally reference the decimals mnemonic. Note, all of the above column types can support the following optional mnemonics: If a hyperlink should appear under the field (or if an icon is clickable), one of the following additional parameter combinations must be specified: o navopt is used to navigate to another page. o bpa is used to initiate a BPA script To define or override a column's heading, use the label mnemonic. To apply optional formatting to numeric columns, use the cur and dec mnemonics.

Mnemonic	Description
source	This mnemonic defines how the column's value is derived; the following values can be defined: BO . The source of this column's value is an element from a business object. Use the bo , input , and output mnemonics to define how to interact with the business object. BS . The source of this column's value is an element from a business service. Use the bs , input , and output mnemonics to define how to interact with the business service. SS . The source of this column's value is an element from a service script. Use the ss , input , and output mnemonics to define how to interact with the business service. FORMULA . The source of this column's value is calculated using a formula. Use the formula mnemonic to define the formula. SETFUNC . The source of this column's value is calculated using the superset of values from the rows in the SQL statement. Use the setfunc mnemonic to define the function used to derive the value. ICON . The source of this column's value is an icon reference (meaning that an icon will be displayed in the column). Use the icon mnemonic to define the icon reference. Note, the type mnemonic (see above) is not applicable as this source means an icon will be displayed in the column. FKREF . The source of this column's value is a FK reference (meaning that a FK ref's context menu and info string will be displayed in the column). Use the fkref and input mnemonics to define how to interact with the foreign key reference. Note, the type mnemonic (see above) is not applicable as this source means a FK ref's context menu and info string will be displayed in the column. SPECIFIED . The source is specified by concatenating literals and other column values. Use the spec mnemonic to specify how the column's value is derived. MSG. The source of this column is a message from the message catalog (along with any substitution variables). Use the msg= mnemonic to define the message.
msg	The msg= mnemonic is used when source=MSG . It specifies how to construct the message displayed in the column. It is defined in the format **[message category,message number %1=value %2=value %3=value ...]** where: - message category and message number are the message's unique identifier. - value define the source of each substitution variable referenced in the message text (if any). The following values can be referenced: Cx . This means the variable's value is defined in an earlier column. For example, C1 holds the first column's value. COLUMN_NAME . This means the variable's value was retrieved by the SELECT statement. The value should match the name defined in the SELECT clause. 'any value' . This means the variable's value is defined using a literal. Any value can be entered in single quotes.

Mnemonic	Description
label	This mnemonic overrides a column's label (the label appears in headings and text strings). If not defined, the system uses the default label (the default label differs depending on the column's source). There are two ways to define an override label: You can reference a field name whose label should be used. You can simply enter a text string in single quotes. Please be aware that using this method means the zone will not be "multi-lingual". The following are examples of override labels: label=SA_ID . This is an example of a field name. label='Revenue Amount' . This is an example of a text string.
spec	This mnemonic is used when source=SPECIFIED . It defines the string that should appear in the column. There are two ways to define the string: You can reference a message category and number. If this message contains substitution placeholders (e.g., %1), you must define each placeholder's field value. You can reference fields to be concatenated in the string. Please be aware that using this method means the column may not be multi-lingual. The following fields can be referenced: Cx . These fields hold a value defined in an earlier column. For example, C1 holds the first column's value. Cx-label . These fields hold the label of an earlier column. For example, C1-label holds the first column's label. Mx . These fields hold a value defined in a Measure. For example, M1 holds the first measure's value. Mx-label . These fields hold the label of a Measure. For example, M1-label holds the first measure's label. Nx . These fields contain the number of the fact / goal rows that were used to derive the measure. For example, N1 holds the number of fact rows used to derive the first measure.. Vx . These fields hold a value defined in a calculated value. For example, V1 holds the first calculated value's value. Vx-label . These fields hold the label of a calculated value. For example, V1-label holds the first calculated value's label. 'any value' . Any value between single quotes can be referenced. You can also include HTML within the literal value if you want to apply colors or styles to the hover text. Please note that the system does not automatically include a space between literal values and adjacent fields. The following are examples of this mnemonic: Let's assume a message (say 90000, 1001) exists with the text "Freeze Date: %1 Freeze User: %2", this mnemonic is defined as spec=[msg=90000,1001 %1=C1 %2=C2] You could construct the same message as follows spec=['Freeze Date: ' C1 ' Freeze User: ' C2]

Mnemonic	Description
	Alternatively, you could use the column labels rather than literals spec=[C1-label C1 C2-label C2]
icon	This mnemonic is used when source=ICON . It is used to define the icon's reference code. Note, we recommend using this mnemonic in conjunction with the navopt or script mnemonics to define what happens when a user clicks on the icon. The following values can be referenced: Cx . These values hold a value defined in an earlier column. For example, C1 holds the first column's value. Ox . These values hold a value defined in an Other value. For example, O1 holds the first other's value. 'any value' . Any value can be entered in single quotes. The following are examples: icon='BILL' icon=FK_CHAR_VAL
bo	This mnemonic is used when source=BO . It defines the business object that holds the column's value (note, this mnemonic must be used in conjunction with the input and output mnemonics to define how information is sent to / received from the BO). The following values can be referenced: Cx . These values hold a value defined in an earlier column. For example, C1 holds the first column's value. Ox . These values hold a value defined in an Other value. For example, O1 holds the first other's value. 'any value' . Any value can be entered in single quotes. The following are examples: bo='IND_TAXPAY' bo=BO_TYPE_CD
bs	This mnemonic is used when source=BS . It defines the business service that retrieves the column's value (note, this mnemonic must be used in conjunction with the input and output mnemonics to define how information is sent to / received from the business service). The following values can be referenced: Cx . These values hold a value defined in an earlier column. For example, C1 holds the first column's value. Ox . These values hold a value defined in an Other value. For example, O1 holds the first other's value. 'any value' . A value can be entered in single quotes. The following are examples: bs='GET_CREDIT' bs=C1
ss	This mnemonic is used when source=SS . It defines the "server script code" that retrieves the column's value (note, this mnemonic must be used in conjunction with the input and output mnemonics to define how information is sent to /

Mnemonic	Description
	received from the server script). The following values can be referenced: Cx . These values hold a value defined in an earlier column. For example, C1 holds the first column's value. Ox . These values hold a value defined in an Other value. For example, O1 holds the first other's value. 'any value' . A value can be entered in single quotes. The following are examples: ss='Retrieve Balance' ss=C1
fkref	This mnemonic is used when source=FKREF . It defines the foreign key reference code that retrieves the column's value (the info string and HL). Note, this mnemonic must be used in conjunction with the input mnemonic to define how information is sent to the FK reference's info routine. The following values can be referenced: Cx . These values hold a value defined in an earlier column. For example, C1 holds the first column's value. Ox . These values hold a value defined in an Other value. For example, O1 holds the first other's value. 'any value' . A value can be entered in single quotes. The following are examples: fkref='PREM' fkref='SA'
formula	This mnemonic defines how FORMULA column types are calculated. The formula can contain numeric **constants**, **operators** and **field names**. The following **operators** are supported: *, /, -, +, ABS, NEGATE, ROUND, FLOOR (meaning to round down), CEILING (meaning to round up), SIN, ASIN, COS, ACOS, TAN, ATAN, LOG, LOG10, EXP, EXP10, SQRT, ** The following **field names** can be referenced in the formula: Cx . These fields hold a value defined in an earlier column. For example, C1 holds the first column's value. Mx . These fields hold a value defined in a Measure. For example, M1 holds the first measure's value. Nx . These fields contain the number of the fact / goal rows that were used to derive the measure. For example, N1 holds the number of fact rows used to derive the first measure.. Vx . These fields hold a value defined in a calculated value. For example, V1 holds the first calculated value's value. The following are examples: formula=C1*.90/P2 formula=(C1/C2)*100

Mnemonic	Description
setfunc	This mnemonic defines the function applied to the set of rows retrieved in the SQL statement. It is defined in the format FUNCTION(COL_REFERENCE) where: FUNCTION is the function applied to the set of rows. The following values can be referenced in this parameter: MAX . This derives the maximum value of all rows. MIN . This derives the minimum value of all rows. TOT . This derives the total value of all rows. ACC . This derives the total value of all rows up to and including the current row (useful for running totals). COL_REFERENCE defines the column that the set function is applied. The following values can be applied: Cx . These fields reference a column defined earlier. For example, C1 holds the first column's value. Mx . These fields hold a value defined in a Measure. For example, M1 holds the first measure's value. Nx . These fields contain the number of the fact / goal rows that were used to derive the measure. For example, N1 holds the number of fact rows used to derive the first measure. Vx . These fields hold a value defined in a calculated value. For example, V1 holds the first calculated value's value. The following are examples: setfunc=MAX(C3)
input	This mnemonic is used to define how data is passed to business objects, business services, service scripts, and FK references. It is defined in the format [ELEMENT_NAME=ELEMENT_REF ELEMENT_NAME=ELEMENT_REF] where: ELEMENT_NAME is the name of the element / field passed to the target ELEMENT_REF is the value of the element / field passed to the field. ELEMENT_REF may reference any of the following: Cx . These fields hold a value defined in an earlier column. For example, C1 holds the first column's value. Mx . These fields hold a value defined in a Measure. For example, M1 holds the first measure's value. Nx . These fields contain the number of the fact / goal rows that were used to derive the measure. For example, N1 holds the number of fact rows used to derive the first measure. Vx . These fields hold a value defined in a calculated value. For example, V1 holds the first calculated value's value. 'any value' . Any value between single quotes can be referenced. The following are examples: input=[SA_ID=C1] input=[SA_ID=SA_ID]

Mnemonic	Description

output	This mnemonic is used to define the name of the element retrieved from business objects, business services, and service scripts. The following are examples:
	output=CurrentBalance
	output=PersonInfo

navopt	This mnemonic is used to place a hyperlink under any column (except for fkref's where this mnemonic defines the drill down location). The following values can be referenced: Cx . These values hold a value defined in an earlier column. For example, C1 holds the first column's value. Ox . These values hold a value defined in an Other value. For example, O1 holds the first other's value. 'any value' . A value can be entered in single quotes. The following are examples: navopt='billMaint' navopt=MAIN_PORTAL Note, this mnemonic should be used in conjunction with the context mnemonic to define what information is sent to the navigation option's target transaction.
context	This mnemonic is used to define how data is passed to the target transaction identified by the navopt mnemonic. It is defined in the format [FIELD_NAME=FIELD_REF FIELD_NAME=FIELD_REF] where: FIELD_NAME is the name of the field passed to the target transaction. FIELD_REF is the value of the field. FIELD_REF may reference any of the following: Cx . These fields hold a value defined in an earlier column. For example, C1 holds the first column's value. Ox . These values hold a value defined in an Other value. For example, O1 holds the first other's value 'any value' . Any value between single quotes can be referenced. The following are examples: context=[SA_ID=C1] context=[SA_ID=SA_ID]
bpa	This mnemonic is used to place a hyperlink under any column (except for icons where this mnemonic defines the BPA script to be executed). The following values can be referenced: Cx . These values hold a value defined in an earlier column. For example, C1 holds the first column's value. Ox . These values hold a value defined in an Other value. For example, O1 holds the first other's value 'any value' . A value can be entered in single quotes. The following are examples:

Mnemonic	Description

	bpa='CI_STOP'
	bpa='CI_AUTOPAY'
	Note, this mnemonic should be used in conjunction with the tempstorage mnemonic to define the temporary storage values that will be initiated when the script is executed.

tempstorage	This mnemonic is used to define the temporary storage variables initiated when the bpa mnemonic is used. It is defined in the format [FIELD_NAME=FIELD_REF FIELD_NAME=FIELD_REF] where: FIELD_NAME is the name of the temporary storage field. FIELD_REF is the value of the field. FIELD_REF may reference any of the following: Cx . These fields hold a value defined in an earlier column. For example, C1 holds the first column's value. Ox . These values hold a value defined in an Other value. For example, O1 holds the first other's value 'any value' . Any value between single quotes can be referenced. The following are examples: tempstorage=[SA_ID=C1] tempstorage=[SA_ID=SA_ID]
cur	This mnemonic is used to apply a given currency code's formatting to a numeric column (this is typically only used for calculated values as elements retrieved via SQL or from calls to BO's, BS's and service scripts define if they are money). For example, entering cur=USD will apply the currency formatting of the USD currency code.
dec	This mnemonic overrides the number of decimal places used for calculated values. This parameter is entered in the format n or nR where n is the number of decimal places to show. Suffixing the number of decimal places with R means that the system should round up / down. Simply specifying n (without an R) means that decimal places should be truncated. For example, entering dec=4 will display 4 decimal places and truncate the remainder.
char	This mnemonic applies special character(s) to the column's value. This field is entered in the format 'x[ ]x' . Where x references the literal value to display and [ ] defines the relative position of the characters (before or after the value). You need only include the [ ] if you want to position characters in front of the value. For example, char='%' will place a percent sign after the value. If you want to position the word minutes before a value, enter char='minutes [ ]' . If you want to output a value like BUDGET $123.12 (YTD) , you'd enter char='BUDGET [ ] (YTD)' .
suppress	This mnemonic is used to indicate a column should be suppressed (i.e., it is defined for calculation purposes only) and will not be a dragable attribute. The valid values are Y and N . N is the default.
width	This mnemonic is used to indicate the zone display width in a portal. Any number is a valid value.

Mnemonic	Description
order	This mnemonic defines the column's default sort order. The valid values are ASC and DESC (ascending and descending). ASC is the default.
color	This mnemonic overrides the column's text color. You can enter either of the following: A valid HTML "named" color (red , yellow , green , etc). An RGB combination (#FF0000, #CCCCCC, etc). Note: the # is required.
bgcolor	This mnemonic overrides the column's background color. You can enter either of the following: A valid HTML "named" color (red , yellow , green , etc). An RGB combination (#FF0000, #CCCCCC, etc). Note: the # is required.

Pie Chart Zone Parameters

The following table describes the parameters that control *pie chart zones*.

➤ **Note: General parameters.**The *general listing of parameters* describes additional parameters.

Parm Type	Description
Slice Value	Enter the value that is sliced in the pie chart. The following fields can be referenced: Mx . For example, M1 holds the first measurement. Nx . These fields contain the number of the fact / goal rows that were used to derive a measurement. For example, N1 holds the number of fact rows used to derive the first measurement. Vx . For example, V1 holds the first calculated value.
Slice Value Legend Text	Pie charts contain a legend that defines what each slice mean. This field is used to define the legend text. Note, the legend text will be prefixed with a description of the dimensional attribute therefore you can leave this field blank if the legend only describes each dimension's description. By default, the legend will contain the descriptions of the dimensional attribute values that appear in the pie chart , therefore you can leave this field blank if this is what you want. The text string can be formatted in the same fashion described for Traffic Light Hover Text. The only difference is that you can also specify the following fields: - %. Shows the relative percentage of the slice. - S-label. This field contains the description of the dimensional attribute that appears in a slice. For example, you could enter S-label M1 '-' % to show the slice's dimensional description, its measure amount, and the measure's relative percentage in the pie chart.

Parm Type	Description
Slice Hover Text	When a user hovers over a segment of a pie chart, hover text appears to provide details of the section of the pie. The text string is formatted in the same fashion described for Slice Value Legend.
Number of Slices	Specify the number of slices shown in the pie chart. You can enter any value from 1 to 13. The default is 13.
Minimum Percentage	If a given slice's percentage is less than this value, the slice will be combined into the "other" slice. The range of this value is 0 - 100.
Slicing Option	This parameter controls: - The dimensional filter used to derive the slices in the pie chart - If the user is allowed to subsequently change the filter used to slice the pie chart This parameter is entered in the format initialsliceby=FILTER_DEFINITION changeable=CHANGEABLE_INDICATOR where: - **FILTER_DEFINITION** identifies the dimensional filter that is used to slice the values. Valid values are F1 to F5 . **- CHANGEABLE_INDICATOR** indicates if the user is allowed to change the filter used to slice the pie chart. The valid values are Y -yes, N -No; the default is Y . A value of N means that the zone's filter area will not contain a Slice by dropdown.
Display in 3D?	This parameter controls whether or not the pie chart is displayed in 3D. Valid entries are Y (yes) and N (no).
Animate?	This parameter controls if the pie chart is "animated" (it's hard to explain, try it and see if you like the effect). The value values are Y and N .
Override Other Label	Use `Override Others Label` to override the label that appears by the other amount (only if users slice by a dimension that has more than the maximum number of slices). You can enter a field name or a text string as defined for measures.

Top X List Zone Parameters

The following table describes the parameters that control *top X zones*.

Note: General parameters. The *general listing of parameters* describes additional parameters. Please note that top X list zones have a single fact, a single measure, and no calculated values.

Parm Type	Description
Dimensional Attributes 1 through 3	These dimensional attributes define the combination of dimensions that are "scored" by this zone. You may define up to three dimensional attributes (and at least one is required). We'll use an example to explain these attributes - if you want to score revenue for every combination of customer class, jurisdiction and service type; you'd define three dimensional attributes on the revenue scorecard zone. Dimensional attributes are defined in the format tf=TABLE.COLUMN descfield=DESCR factfield=DIMENSION_FK where: - **TABLE** is the name of the dimension table (e.g. CD_ACCT) that holds the dimensional attribute key being used to restrict the fact rows. - **COLUMN** is the name of the column on the TABLE that holds the dimensional attribute used to filter the rows. - **DESCR** is the name of the column holding the description of the object on the TABLE - **DIMENSON_FK** is only required if the fact has more than one reference to the dimension. In this situation, you must define the column on the fact that holds the FK to desired dimension. For example, to rank accounts you'd enter tf=CD_ACCT.SRC_ACCT_ID descfield=ACCT_INFO See the Data Dictionary for the possible dimensions and columns for the fact defined above.
Conversion Factor	If you want to convert the resulting measurement amount into a different value before it is displayed, specify a mathematical operator and number. For example, / 24 would divide the number of hours by 24 (to derive days) before it is displayed.
Number of Entries to Display	This parameter controls the number of ranks displayed in the zone. You can enter any value from 1 to 100 . It should be stressed that all "ties" (i.e., multiple rows with the same value) count as 1. This means that a given top X list could show more than this number of rows.
Is Up Good?	This zone type contains an arrow to highlight if the object being ranked has moved up or down in the ranking (as compared to the previous period). This parameter controls the color of this arrow. If moving up in the ranking is considered good, enter Y ; otherwise enter N .
Source System Navigation Option	Use this parameter to support drill back to the source application. When this parameter is specified, a hyperlink appears under the dimensional attribute description in the top X list. When clicked, the user is transferred to the source system with the key field(s) displayed in the target transaction. Note well - drill back can only be supported if the dimensional attribute(s) defined above contain a "natural key" from the source application (e.g., an account ID). This parameter is entered in the format: navopt=NAVIGATION_OPTION DAx=CONTEXT_FIELD_NAME where: - **NAVIGATION_OPTION** is the code of the navigation option that defines the drill back application. This navigation

Parm Type	Description
	option must reference a navigation key that contains a URL to the drill back transaction. For example, if you want to drill back to OU CC&B's Control Central, you'd set up a navigation option that references a target transaction (target transactions are defined using a navigation key) with a URL Override of `http://URL:port/cis.jsp?location=controlCentralQuery&tabIndex=1` (note, ?location references the navigation option of the transaction in OU CC&B). - **DAx=CONTEXT_FIELD_NAME** is used to pass the value of a key to the drill back transaction (e.g., if you want to pass an account ID to the drill back transaction). The CONTEXT_FIELD_NAME is the name of the navigation option's context field and DAx (where x is a number) references one of the dimensional attributes (defined above). For example, if the first dimensional attribute holds the account ID to be passed to the drill back transaction, you'd enter DA1=ACCT_ID . You can pass more than one key value if the navigation option references multiple context fields. For example, if you want to pass both the account ID and premise ID you could enter DA1=ACCT_ID DA2=PREM_ID (assuming the premise ID is held in the second dimensional attribute).
Contrast Period	A top x list contrasts the current period with another period; the value of this parameter controls the other period. - Enter N if the other period is the period that immediately precedes the current period. - Enter Y if the period is the same period in the prior year. The default is N.
Override Arrow, Description, Value, % Total, and Rank	These parameters allow you to override the default headings for the `Arrow`, `Description`, `Value`, `% Total`, and `Rank` headings. Enter a field name or text string in single quotes to display the description for that field as the heading text.
Override Dimensional Attribute Text	Top X rows contain text that describes what the row details. Use this parameter to override the contents of this text. If you leave this field blank, the text is constructed as by placing the dimensional attributes descriptions in the cell as a column. There are two ways to define override text: - You can reference a message category and number and define the fields that are substituted into its substitution placeholders. - You can simply reference the fields to be concatenated in the text. The following fields can be referenced: - Dx. These fields hold a dimensional attribute value. For example, D1 holds the first dimensional attribute value. - Dx-label. These fields hold the label of a dimensional attribute. For example, - D1-label shows the label of the first dimensional attribute - msg=90000,1001 %1=D1-label will substitute dimensional attribute 1's label in the message

Detail Explorer Zone Parameters

The following table describes the parameters that control *detail data explorer zones*.

➤ **Note: General parameters.** The *general listing of parameters* describes parameters that are common to all zone types. Note, detail explorers have subtly different uses of the following: Dimensional Filters, Measures, and Calculated Values

Parm Type	Description
Table Name	This field defines the fact whose rows are shown in the zone. The parameter's value is entered in the format t=FACT_TABLE g=GOALTYPE dt=DATEKEY_COLUMN tm=TIMEKEY_COLUMN where: - **FACT_TABLE** is the name of the fact table that holds the rows being displayed. - **GOALTYPE** is the Goal Type Code for which the goal data will be aggregated. - **DATEKEY_COLUMN** is the name of the column on the table that holds the date used to retrieve the rows. - **TIMEKEY_COLUMN** is the name of the column on the table that holds the time (if any) used to retrieve the rows. For example, t=CF_FT dt=FREEZE_DT_KEY Note t or g and dt are required. See the Data Dictionary for the names of the fact tables (note, all fact table names are prefixed with "CF_", e.g., CF_FT, CF_ARREARS, ...).
Dimensional Filter 1 ... Dimensional Filter 20	Detail explorers support 20 dimensional filters. See *General Zone Parameters* for the format.
Measures 1 through 10	Detail explorers differ from the other zones in that all measures are derived from the same fact using the same date key. Therefore, the fact table name and date key are not referenced in measure names as they are in other zones. In addition, only 5 measures are supported. Finally, because data is not aggregated in a detail explorer, no aggregation function or period mnemonic are defined. The parameter's value is entered in the format f=COLUMN label=LABEL cur=CURRENCY_CODE dec=DECIMAL char=SPECIAL_CHAR order=ORDER bgcolor=BGCOLOR input=INPUT output=OUTPUT where: - **COLUMN** is the name of the column on the TABLE that holds the measure. Note, in addition to referencing a fact's measures, a limited number of calculated measures are supported via SQL functions. To do this, make sure to enclose the measure in parenthesis. For example, you could enter (SYSDATE - OUT-DTTM) to calculate the sum of the difference between the

Parm Type	Description
	current date/time and a measure containing the outage date/ time. - See the description for parameter M1 under General Zone Parameters for how **CURRENCY_CODE**, **DECIMAL**, **SPECIAL_CHAR** and **ORDER** are used. - See the description for parameter M1 under Cube Explorer Zone Parameters for how **BGCOLOR**, **INPUT**, and **OUTPUT** are used to override a cell's background color. - **LABEL** overrides a measure's label (the label appears in headings and text strings). If not defined, the system uses the default label (the default label is a concatenation of the measurement's Table.Field description and the Function referenced above). There are two ways to define an override label: You can reference a field name whose label should be used. You can simply enter a text string in single quotes. Please be aware that using this method means the zone will not be "multi-lingual". The following are examples of override labels: CM_ID . This is an example of a field name. 'Revenue Amount' . This is an example of a text string. The following is an example of a measure holding the average revenue from the prior 3 periods: f=REVENUE_AMT cur=USD dec=.2R
Calculated Values 1 through 10	See *General Zone Parameters* for the standard mnemonics. In addition, the following mnemonics are also supported: The order= mnemonic defines the column's default sort order. The valid values are ASC and DESC (ascending and descending). ASC is the default.
Other Values 1 through 10	In addition to displaying measures and dimensional filter values, detail explorer zones can show other columns from the fact or its dimensions. For example, you may want to display the related account's natural key (i.e., the account ID in the source system), the transaction's prime-key in the source system, and one or more of the fact's dates. These parameters are entered in the format tf=TABLE.COLUMN navopt=NAVOPT label=LABEL order=ORDER where: - **TABLE** is the name of the fact / goal table or dimension table - **COLUMN** is the name of the column that holds the value. If the column references a date key on the fact or goal, a date will be shown in the zone - **NAVOPT** can optionally be used to support drill-back to the source application. This option should only be used if the column contains a "natural key" from the source application (e.g., an account ID). To implement this, set up a navigation option that references a navigation key that contains a URL to the target transaction. For example, if you want to drill into OU CC&B's Control Central for a given account ID, you'd set up a navigation option that references a target transaction (target transactions

Parm Type	Description
	are defined using a navigation key) with a URL Override of http://URL:port/cis.jsp?location=controlCentralQuery&tabIndex=1 (note, ?location references the navigation option of the transaction in OU CC&B). The new navigation option must also reference a Context Field with the name of the key in the target system (e.g., ACCT_ID in our example). When you define this navigation option in the column's NAVOPT mnemonic, a hyperlink appears under the field in the explorer. When clicked, the user is transferred to the source system with the key field displayed in the target transaction. - **LABEL** overrides the table / field's (the label appears in the column heading). If not defined, the system uses the default label (the default label is the Table.Field's description). There are two ways to define an override label: You can reference a field name whose label should be used. You can simply enter a text string in single quotes. Please be aware that using this method means the zone will not be "multi-lingual". - **ORDER** defines the column's default sort order. The valid values are ASC and DESC (ascending and descending). ASC is the default.
Number of Entries to Display	This parameter controls the number of rows displayed in the zone. You can enter any value from 1 to 10,000 . The default value is 1000 .
Configuration Area Visibility	This parameter controls how the explorer's configuration area appears. The valid values are: Closed . This value causes the zone's configuration area to be closed when the zone is initially built. A user can subsequently click the configuration area button to open the area. Open . This value causes the zone's configuration area to be open when the zone is initially built. A user can subsequently click the configuration area close button to close it. Never . This value causes the zone's configuration area to be closed when the zone is initially built and a user cannot subsequently click the configuration area button to open it (i.e., the configuration area button is suppressed from the zone). The default value is Closed .
Explorer Report Area Height	This parameter controls the height of the report area of the explorer zone. This is a number (used as a percentage) ranging from 10 to 100. The default is 50.
Initial Display Columns	This parameter controls the columns that appear in the explorer when the zone is initially built. The valid values are: Ox . These fields contain a reference to one of the zone's "other" fields. For example, O1 holds the first "other" field. Mx . These fields contain a reference to one of the zone's measures. For example, M1 holds the first measurement.

Parm Type	Description
	Fx . These fields contain a reference to one of the zone's filters. For example, F1 holds the first calculated value. Vx . These fields contain a reference to one of the zone's calculated values. For example, V1 holds the first calculated value. If multiple columns are displayed, separate each with a space. For example, if you want to display the first to filters followed by the first 2 measures, you'd enter F1 F2 M1 M2 .
Column 1 through 10	Up to 10 additional columns whose content can be derived using the standard explorer column derivation techniques. Refer to *Column Mnemonics* for a complete description of the mnemonics that are supported by these new zone parameters.
Accept Row	You can further limit the rows retrieved by specifying a service script that will return true or false. If the value returned is false for a given row, then the row will not be displayed. This parameter is entered in the format script=SCRIPT_NAME input=[ELEMENT_NAME1=ELEMENT_REF1 ELEMENT_NAME2=ELEMENT_REF2 ...] output=OUTPUT_NAME where: - **SCRIPT** is the name of the service script to execute. ATTRIBUTE_REF . This means the field's value was retrieved from analytic attributes. The value can be Cx, Mx, Vx, Ox, Hx, Fx,PERIOD and SUBPERIOD where x is number. Note: Ox is only applicable to Detail Explorer. 'any value' . This means the service script's code is defined using a literal. Any value can be entered in single quotes. - **INPUT** is a list of variable where ELEMENT_NAME is the name of the element to which the script can refer and ELEMENT_REF is what it should be populated with. The following fields can be referenced: ATTRIBUTE_REF . This means the field's value was retrieved from analytic attributes. The value can be Cx, Mx, Vx, Ox, Hx, Fx,PERIOD and SUBPERIOD where x is number. Note: Ox is only applicable to Detail Explorer. 'any value' . This means the service script's code is defined using a literal. Any value can be entered in single quotes. - **OUTPUT** reference the element returned from the service script that will hold the true or false value. For example: script='ZZLM-ZONEVAL' input=[toDoTypeCD=F1] output=returnFlag

Gauge Zone Parameters

The following table describes the parameters that control *gauge zones*.

➤ **Note: General parameters.** The *general listing of parameters* describes additional parameters.

Parm Type	Description
Gauge Text	You use this parameter to define what is shown in the gauge hover text. There are two ways to define what is shown: - You can reference a message category and number and define the fields that are substituted into its substitution placeholders. - You can simply reference the fields to be concatenated in the hover text. The following fields can be referenced: - Mx . These fields hold a measurement. For example, M1 holds the first measurement. - Nx . These fields hold the count of fact / goal rows that were used to derive the measurement. For example, N1 holds the number of fact rows used to derive the first measurement. - Mx-label . These fields hold the label of a measurement. For example, M1-label holds the name of the first measurement. - Px . These fields hold the label of a measurement's time-period. For example, P1 holds the time period of the first measurement. - Vx . These fields hold a calculated value. For example, V1 would be used to reference the first calculated value. - Vx-label . These fields contain the label of a calculated value. For example, V1-label holds the name of the first measurement. - 'any value' . Any value between single quotes can be referenced. You can also include HTML within the literal value if you want to apply colors or styles to the hover text. Please note that the system does not automatically include a space between literal values and adjacent fields. For example, if you wanted the hover text to be Percent of Goal: 50% - Revenue $100,000 / Budget Revenue $200,000 , you can achieve this in two ways: - You can set up a message (say 90000, 1001) with the text "Percent of Goal: %1 - Revenue %2 / Budget Revenue %3" and then define this parameter as msg=90000,1001 %1=V1 %2=M1 %3=M2 - You can define this parameter as 'Percent of Goal: ' V1 ' - ' M1-label M1 ' / ' M2-label M2
Gauge Value	In this field (the gauge value), you define the value shown by the needle on the gauge. The following fields can be referenced: - Mx . For example, M1 holds the first measurement. - Nx . For example, N1 holds the number of fact rows used to derive the first measurement. - Vx . For example, V1 holds the first calculated value.
Range 1 to 5	This parameter controls how the color ranges in the guage are derived. This parameter is entered in the format lowval=LOWVAL highval=HIGHVAL color=COLOR where:

Parm Type	Description
	LOWVAL and **HIGHVAL** references the fields holding the range of values that cause the range in the gauge to be the specified color (inclusive). You can reference any measurement (e.g., Mx), measurement count (e.g., Nx), or calculated value (e.g., Vx) as defined above. You can also reference numeric constants. **COLOR** defines the color of the range in the gauge. The following values can be defined: - R , G , Y - red , green , yellow - Hexadecimal not greater than FFFFFF (example: 1919AB, #0000FF). "#" can be optionally appended for readability purposes. The following are examples: lowval=10 highval=100 color=R lowval=V1 highval=V2 color=#191970 Note: The order that the ranges are defined is unimportant. However, when the gauge is built, the colors are presented in the defined order and therefore, higher defined range colors may overlay lower defined range colors

Changing The Default Colors

The colors used in the various zones are defined in the standard OU FW stylesheet. These can be over-ridden if your implementation prefers another aesthetic.

Your implementation can override the standard colors by adding a "customer modification" (CM) stylesheet file. This file MUST be placed in the standard customer modification folder (DefaultWebApp/cm) and it MUST be called cmStyles.css . It is a standard stylesheet include file (a sample is included below). The following table lists the styles that can be overridden.

Style	Where Used
#analyticsGraphColor1	The color assigned to the first segment in graphs
#analyticsGraphColor2	The color assigned to the second segment in graphs
#analyticsGraphColor3	The color assigned to the third segment in graphs
#analyticsGraphColor4	The color assigned to the fourth segment in graphs
#analyticsGraphColor5	The color assigned to the fifth segment in graphs
#analyticsGraphColorTarget	The color assigned to target lines in graphs
#analyticsScorecardRedColor	The color used on dimensional scorecards for "red" entries
#analyticsScorecardYellowColor	The color used on dimensional scorecards for "yellow" entries
#analyticsScorecardGreenColor	The color used on the dimensional scorecard for "green" entries
#analyticsTopNListColor	The color used on the Top X bar (across the top) that displays the percentage displayed
#analyticsTopNRestColor	The color used on the Top N bar (across the top) that displays the percentage of the rest

You may override any entries in any combination or order. For example, you can override #analyticsGraphColor2 and leave the other graph colors with their default values.

To override an entry, specify a "background-color" attribute and value. The value MUST be in RGB format (i.e. #FF0000). The following is an example:

```
#analyticsGraphColor1 {

background-color: #000000;

}

#analyticsGraphColor2 {

background-color: #FF0000;

}

#analyticsScorecardRedColor {

background-color: #FF00FF;

}
```

ETL Process

This chapter describes the Oracle Utilities Business Intelligence Extract-Transform-Load (ETL) process

Oracle Warehouse Builder

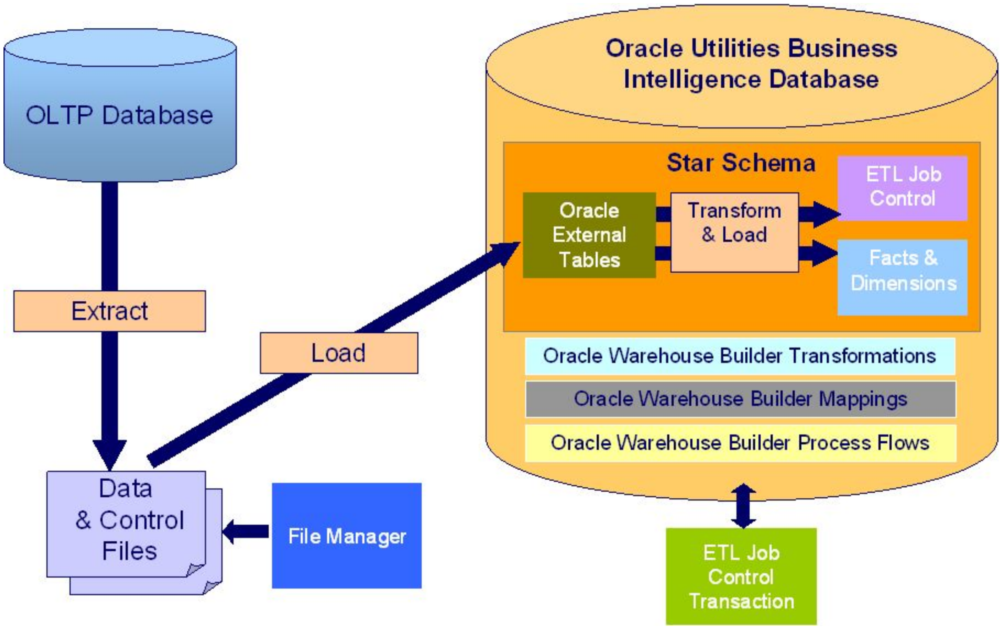
Oracle Warehouse Builder is Oracle's data warehousing tool. Oracle Utilities Business Intelligence uses this tool as follows:

- It holds the table design of the star-schemas.
- It holds the data mappings that are used to generate that batch jobs that perform *extract-transform-load (ETL)* operations.
- It holds the process flows that validate the extracted information, load the star-schemas, and perform exception handling.

FMI: Refer to Oracle's documentation for the detailed information on Oracle Warehouse Builder and Oracle Workflow.

ETL Methodology

The following diagram illustrates the components involved in Oracle Utilities Business Intelligence's ETL methodology:


OLTP Database
Extract
Load
Data & Control Files
File Manager
Oracle Utilities Business Intelligence Database
Star Schema
Oracle External Tables
Transform & Load
ETL Job Control
Facts & Dimensions
Oracle Warehouse Builder Transformations
Oracle Warehouse Builder Mappings
Oracle Warehouse Builder Process Flows
ETL Job Control Transaction

The topics in the section describe how this works.

Extracts and External Tables

Extract programs execute in the source application. They produce flat files containing the data extracted from the source system. Each process creates:

- A single-record control file containing information about the entire batch job.
- Data files containing the information to be loaded into the warehouse. These files are referred to as the "staging" files.

Oracle external tables are defined in the warehouse for each type of control and data file (to be specific - two external tables are defined for each fact and dimension that is loaded from flat files). These external tables provide an SQL-based interface to the data in the flat files by the data mappings (a data mapping exists for each fact and dimension).

File Manager

The file manager is a PERL program that resides on the database server. The program is responsible for performing housekeeping activities against the files holding the extracted information; it also ensures that the files are supplied in the correct order.

The program accepts the following parameters:

- The name of the file that the external table reads the data from. Note - this name should match the value of the FILE-NAME parameter on the extract batch program.
- The location of the files.
- Mode of execution: the program can be executed in Pre-mapping and Post-mapping modes.
- Processing condition: Success or Failure.

In the Pre-mapping mode, the file manager performs the following functions:

- Creates "error" and "processed" files inside the folder the files are located.
- Sorts to get the name of the earliest control and data files that match the file name specified by the parameter passed.
- Copies the data file and the control file to the files that the external table reads. This is required because the external tables are defined to read data from one particular file and the extractor programs insert the data source indicator, batch number and batch thread number in the data and control file names to avoid overwriting the generated files.

- Saves the name of the file being processed in a temporary file. This file is later used in Post-mapping stage to know the name of the file that was processed. It is also used by the subsequent executions to know if a file is being processed.

In Post-mapping mode, depending on the processing condition specified, the file manager moves the processed control and data file to either the "error" or the "processed" folder. It also removes the temporary file created in the Pre-mapping mode.

Oracle Warehouse Builder Transformations

The contents of this section describe the various transformations used to load the extracted information into the data-warehouse.

Pre and Post Mapping Functions

The topics in this section describe how the pre and post mapping functions validate and load extracted information into the warehouse. Note, these functions are invoked by process flows before and after the data mappings are executed.

SPL_PREMAP_PROCESS_FNC (Pre-Mapping)

Description	This function is used to validate and load the contents of a control file into the ETL Job Control table before the mapping loads the data file. The function performs the following validations: The file has not been loaded previously Another file is not being processed at the same time If a previous load process failed, the file belongs to the same batch, i.e., it has the same batch number as the failed process. In other words, the function ensures that all the files of a batch are loaded successfully before another batch can be loaded. Once the validations have been made, the function inserts or updates an ETL Job Control record and marks it "In Progress".
Parameters	The function accepts the name of the external table for the control file to be processed as the input parameter.

SPL_POSTMAP_PROCESS_FNC (Pre-Mapping)

Description	This function updates the ETL Job Control record to "Completed" or "In Error" depending on the status of the data mapping.
Parameters	The function accepts the name of the external table for the control file being processed and the value of 1 for success and 0 for error status of the data mapping.

Setup Procedures

Setup processes are database-stored procedures used to populate some of the dimensions in the warehouse. The following setup processes are included:

SPL_LOADDATE

Description	This process generates data in the DATE dimension table (CD_DATE) for a range of dates. This process should be executed only when setting up the data warehouse for the first time.

Parameters	This stored procedure accepts start date and end date as input parameters. The dates should be defined in the format: start date: to_date('19800101','YYYYMMDD') end date: to_date('20101231','YYYYMMDD') If this process is executed AFTER the data has been loaded into the star schemas, ensure that same start date is passed.

SPL_LOADSNAPTYPE

Description	The process generates data in the SNAPSHOT TYPE dimension table (*CD_SNAPTYPE*).
Parameters	NA

SPL_LOAD_DEFAULT_VALUE

Description	The process seeds the various dimension tables with '0' key value and '***' dimensional attribute codes. This value is referenced on fact rows that do not contain a reference to a given dimension (i.e., they avoid optional foreign keys on the various fact tables).
Parameters	This stored procedure accepts description for the dimensional attribute code value of '***' as an optional parameter. The default description for '***' code is 'None'.

Dimension Update Procedures

Type-II slowly changing dimensions (SCD) are dimensions where a history of all changes is kept (to allow for time-series analysis). The following points describe what happens when a change to a dimension is detected:

- The effective end date on the latest record is updated to the change date
- A new dimension record is created with the effective start date

Data mappings for such dimensions can be very complex to create. We workaround this problem by creating an update procedure for each such dimension. These procedures are called by the pre-mapping functions to update and insert the dimensional records when a change occurs.

Note: Dimension documentation. For a list of the various type-II dimensions and their update procedures, please use the *Table Search* zone and limit the tables shown to dimensions.

OUBI_REFRESH_MV_FNC Function

Description	This function refreshes a materialized view.
Parameters	This stored procedure accepts the name of the materialized view as a required parameter.
Return Value	This function returns 1 if the refresh was done without error, 0 if an Oracle error is encountered.

Data Mappings

The data mappings load data from the external tables (produced by the extracts) into the facts and dimensions in the warehouse.

For a list of the facts and dimensions, their external tables, and the related data mappings, refer to the *table mapping portal*. This portal describes the source application's facts and dimensions and how they are populated.

Process Flows

The topics in this section describe the process flows used to manage the various ETL tasks.

Setup Process Flows

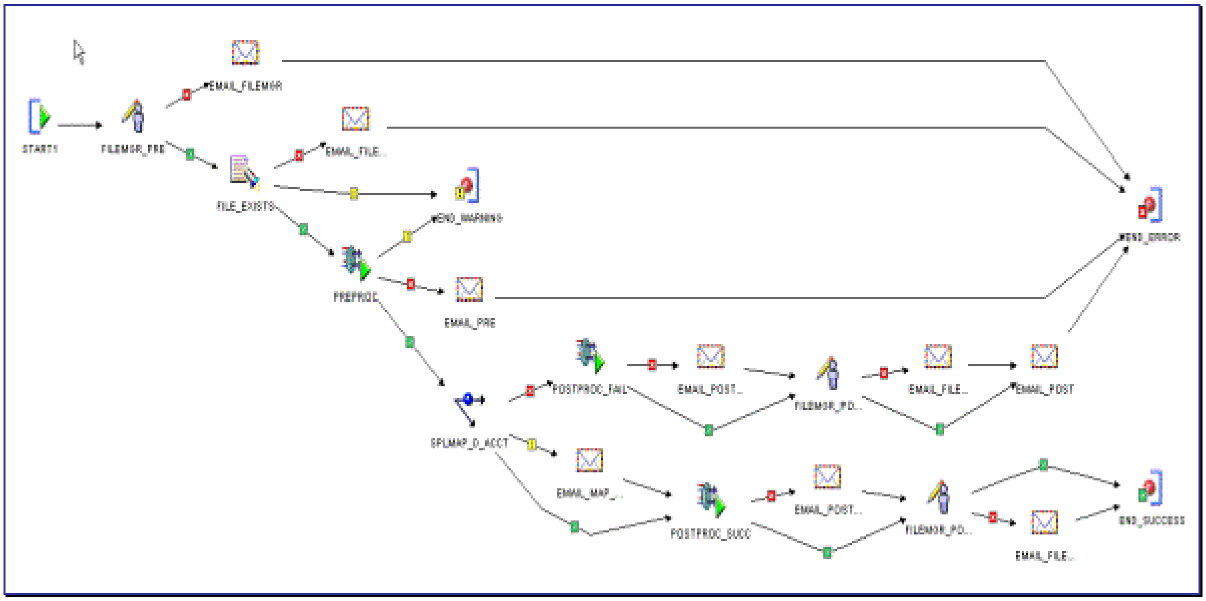
The process flows to execute the setup procedures are grouped under the INIT_PKG package. These process flows are designed to send e-mail if the set up process generates an error.

> **Note:** You must customize the e-mail addresses and the input parameters for the setup procedures on the process flows.

Data Load Process Flows

A separate process flow exists to execute each mapping along with the pre and post mapping processes.

A typical process flow looks as follows:



Each data load process flow is designed to:

- Execute the file manager to housekeep the data and control files in pre and post-mapping modes
- Execute the pre and post-mapping functions to validate, load and maintain batch information in the control into ETL Job Control transaction
- Execute the data mappings once the file is available and has been validated
- Send an email if an error occurs. Also, if an error occurs before the mapping executes, the process flow aborts the complete process. Otherwise, it sends an email and continues.

For easier administration, process flows are grouped under the following packages:

- **DIM**. This package contains process flows for dimensions delivered in Oracle Utilities Business Intelligence versions 2.0.5 and earlier.
- **DIM2.** This package contains process flows for dimensions delivered in Oracle Utilities Business Intelligence versions 2.2.
- **FACT.** This package contains process flows to load all of the fact tables in Oracle Utilities Business Intelligence.
- **MV_RFSH.** This package contains process flows to refresh the default materialized views created for each Fact table. If custom materialized views are created, then a copy of the fact table process flow should be created and the new materialized view refresh added to the copied process flow. Note that the refresh of the materialized views are done in parallel.

- **LOADRFSH.** This package contains process flows that loads a fact table and then refreshes the materialized views for that fact table.

> **Note: Change the email address.** You must customize the e-mail addresses, file names and location on each process flow.

Please note the following about the various process flows:

- They can be scheduled for execution using the Oracle's scheduler.
- Process flows for dimensions **must** be executed before the fact process flows.
- Each process flow executes its data mapping using set-based processing with a commit frequency set to 0.

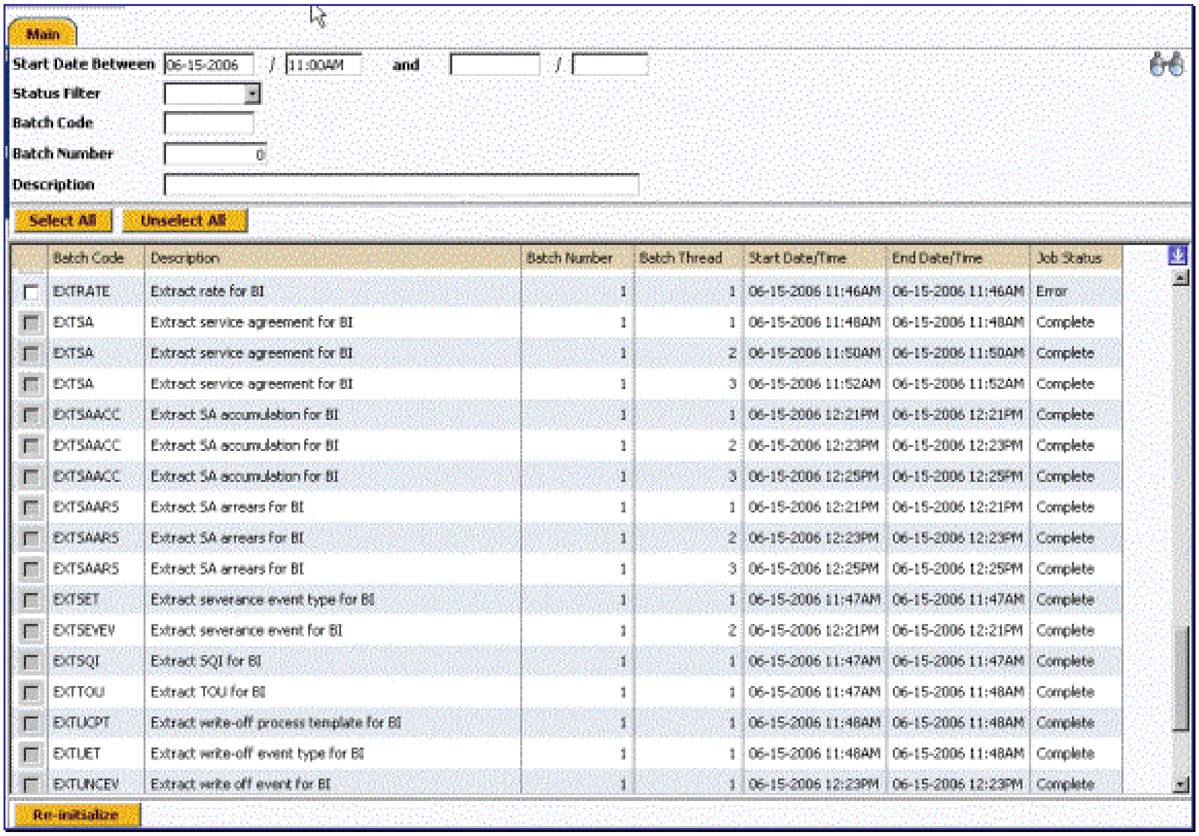
Maintaining ETL Job Controls

This transaction is used to view the status of the data load jobs. In addition, this transaction can be used to restart failed uploads when necessary.

The batch information on ETL Job Controls is carried forward from the extract batch programs that generate the data and the control files. This means, the batch codes, batch numbers and batch thread number you see are associated with the extract batch jobs that were executed in the source applications.

ETL Job Control - Main

To maintain ETL Job Controls, open **Batch, ETL Job Control**.



Start Date Between	06-15-2006 / 11:00AM and /
Status Filter	
Batch Code	
Batch Number	0
Description	

	Batch Code	Description	Batch Number	Batch Thread	Start Date/Time	End Date/Time	Job Status
□	EXTRATE	Extract rate for BI	1	1	06-15-2006 11:46AM	06-15-2006 11:46AM	Error
□	EXTSA	Extract service agreement for BI	1	1	06-15-2006 11:48AM	06-15-2006 11:48AM	Complete
□	EXTSA	Extract service agreement for BI	1	2	06-15-2006 11:50AM	06-15-2006 11:50AM	Complete
□	EXTSA	Extract service agreement for BI	1	3	06-15-2006 11:52AM	06-15-2006 11:52AM	Complete
□	EXTSAACC	Extract SA accumulation for BI	1	1	06-15-2006 12:21PM	06-15-2006 12:21PM	Complete
□	EXTSAACC	Extract SA accumulation for BI	1	2	06-15-2006 12:23PM	06-15-2006 12:23PM	Complete
□	EXTSAACC	Extract SA accumulation for BI	1	3	06-15-2006 12:25PM	06-15-2006 12:25PM	Complete
□	EXTSAARS	Extract SA arrears for BI	1	1	06-15-2006 12:21PM	06-15-2006 12:21PM	Complete
□	EXTSAARS	Extract SA arrears for BI	1	2	06-15-2006 12:23PM	06-15-2006 12:23PM	Complete
□	EXTSAARS	Extract SA arrears for BI	1	3	06-15-2006 12:25PM	06-15-2006 12:25PM	Complete
□	EXTSET	Extract severance event type for BI	1	1	06-15-2006 11:47AM	06-15-2006 11:47AM	Complete
□	EXTSEVEV	Extract severance event for BI	1	2	06-15-2006 12:21PM	06-15-2006 12:21PM	Complete
□	EXTSQI	Extract SQI for BI	1	1	06-15-2006 11:47AM	06-15-2006 11:47AM	Complete
□	EXTTOU	Extract TOU for BI	1	1	06-15-2006 11:47AM	06-15-2006 11:48AM	Complete
□	EXTUCPT	Extract write-off process template for BI	1	1	06-15-2006 11:48AM	06-15-2006 11:48AM	Complete
□	EXTUET	Extract write-off event type for BI	1	1	06-15-2006 11:48AM	06-15-2006 11:48AM	Complete
□	EXTUNCEV	Extract write off event for BI	1	1	06-15-2006 12:23PM	06-15-2006 12:23PM	Complete

The page allows searching the data by the following fields:

- **Start Date** range. The lower value of the range is mandatory and defaults to start of the current day. The upper value is optional.
- **Job status flag**
- **Batch Code** of the extractor job
- **Batch Number** of the extractor job

- **Description** of the extractor batch program

The data area displays the following fields:

- **Batch Code** of the extractor job
- **Description** of the extractor batch program
- **Batch Number** of the extractor job
- **Batch Thread Number** of the extractor job
- **Start date and time** for the data load job
- **End date and time** for the data load job. This date is only set for the jobs that have successfully completed.
- **Status** of the load job

To restart the failed job, select the individual failed jobs and press Re-initialize button. Alternatively, you can use restart all the failed jobs by using Select All button.

➤ **Note: Move the files after re-initialization.** After re-initializing a failed job, you must move the data and the control files out of the "error" folder so they will be processed next time.

Configuration Tasks

Setting up Oracle Utilities Business Intelligence involves populating meta-data that describes your facts, dimensions, portals, and zones. The topics in this section provide an overview of the configuration tasks.

The concepts described in *Business Intelligence Fundamentals* and *Configuring Oracle Utilities Business Intelligence Portals and Zones* are essential prerequisites to this chapter.

Setting Up the System

The topics in this section describe how to set up the system.

Understand the Facts and Dimensions

The first step in configuring the system is to understand the *facts and their associated dimensions and measures*. The topics in the section describe the various methods that can be used to gain this understanding.

Table Mapping Portal

The Table Mapping portal is used to view and maintain information about the tables behind the *star schemas*. This information includes everything from the list of columns to how each column is populated during *Extract Transform Load (ETL)* processing. Navigate to **Admin Menu, Table Mapping** to open this portal.

The topics in this section describe the zones on this portal.

Table Search

Every star schema is composed of a fact table that references multiple dimensions. Most fact and dimension tables are populated using an **ETL load process** that reads records on two flat files:

- The **control file** holds a summary record about a given extract;
- The **staging file** contains the extracted records.

Information about a given load process is stored on an "ETL map". This zone shows the fact and dimension tables and their related ETL maps. This zone also contains numerous buttons that initiate business processes that maintain this information. Please refer to the zone's help text for a detailed description of what each button does.

➤ **Note: Most facts and dimensions have a single ETL load process.** While most facts and dimensions are populated using a single extract process, it's possible for a given fact or dimension to be populated by several extracts. When this is the case, you will see the fact or dimension multiple times in this zone's search results.

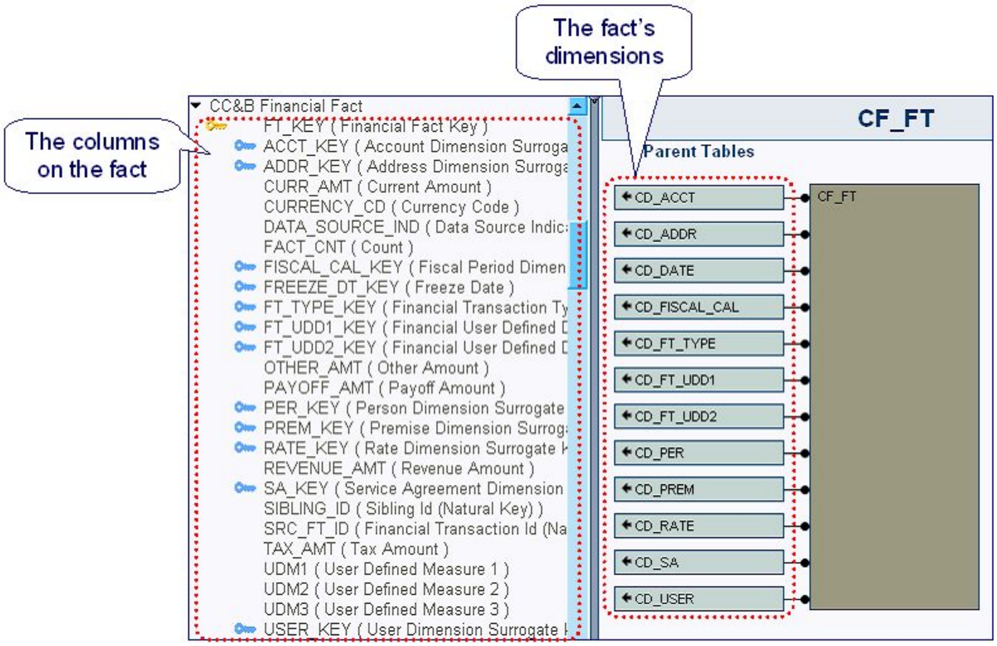
➤ **Note: This portal is the ETL mapping documentation.** The base-package is delivered with all of the ETL maps preconfigured for the base-package extracts. You should use this zone to explore the base-package ETL mappings to understand how each column is populated. You will only use this zone to modify ETL mapping information if you need to set up a *user-defined foreign key*.

Field Mapping Information

This zone appears after an ETL map is broadcast from the *Table Search* zone. It shows how each column on the ETL map's related fact or dimension is populated. This zone also contains buttons that initiate business processes that maintain this information. Please refer to the zone's help text for a detailed description of what each button does.

Data Dictionary

The *data dictionary* provides an alternate way to explore the system's facts and dimensions. The following is an example of how the application viewer looks with a specific fact displayed.



The fact's dimensions

The columns on the fact

CC&B Financial Fact
FT_KEY (Financial Fact Key)
ACCT_KEY (Account Dimension Surroga
ADDR_KEY (Address Dimension Surroga
CURR_AMT (Current Amount)
CURRENCY_CD (Currency Code)
DATA_SOURCE_IND (Data Source Indic
FACT_CNT (Count)
FISCAL_CAL_KEY (Fiscal Period Dimen
FREEZE_DT_KEY (Freeze Date)
FT_TYPE_KEY (Financial Transaction Ty
FT_UDD1_KEY (Financial User Defined D
FT_UDD2_KEY (Financial User Defined D
OTHER_AMT (Other Amount)
PAYOFF_AMT (Payoff Amount)
PER_KEY (Person Dimension Surrogate
PREM_KEY (Premise Dimension Surrog
RATE_KEY (Rate Dimension Surrogate K
REVENUE_AMT (Revenue Amount)
SA_KEY (Service Agreement Dimension
SIBLING_ID (Sibling Id (Natural Key))
SRC_FT_ID (Financial Transaction Id (Na
TAX_AMT (Tax Amount)
UDM1 (User Defined Measure 1)
UDM2 (User Defined Measure 2)
UDM3 (User Defined Measure 3)
USER_KEY (User Dimension Surrogate K

CF_FT
Parent Tables
CD_ACCT
CD_ADDR
CD_DATE
CD_FISCAL_CAL
CD_FT_TYPE
CD_FT_UDD1
CD_FT_UDD2
CD_PER
CD_PREM
CD_RATE
CD_SA
CD_USER
CF_FT

The left side of the data dictionary shows the columns on the fact columns. These columns can be logically divided into the following groups:

- `Dimensions`. The dimension columns are prefixed with a blue key (you can also see the dimensions on the right side of the data dictionary (shown as the `Parent Tables` of the fact)).

Dimension columns simply hold foreign-keys to the dimension tables. You can click on a dimension's table name (on the right side of the data dictionary) to view the dimension's attributes. At this point, the dimensions' attributes won't be very interesting because they haven't been configured. But, by the end of this case study, you will have defined the attributes for each dimension.

Why are dimensions important? Because, when you set up your zones, you define which of these attributes users can use to "slice and dice" the fact's data.

- `Measures`. There is no visual clue provided if a column is a measure. To find out what the measures are and what they contain, return to the chapter that describes the fact; you will find the fact's measures documented under each fact's General Information section.

Why are measures important? Because, when you set up a zone, you define the measure used to derive the zone's key performance indicator (KPI).

- Other. You will find that there are other columns on a fact (e.g., columns containing the prime-keys of source transactions).

Finding the table name. Use the *Table Search* zone to find the names of the facts and dimensions associated with a given source application. For example, you can use this zone to display a list of the facts populated from Oracle Utilities Customer Care and Billing.

Populate the Date Dimension

The date dimension contains a separate row for every date in Oracle Utilities Business Intelligence. This dimension is unusual in that it does NOT have an extract program. Rather, a utility generates the rows in this dimension. This utility is supplied in the form of a database-stored procedure called SPL_LOADDATE. This stored procedure is delivered with the Oracle Warehouse Builder package. Note, the same procedure is also included in the initial data warehouse setup workflow package called INIT_PKG for the execution. This stored procedure has start date and end date as input parameters. These dates should be defined in the format:

- start date: to_date('20000101','YYYYMMDD')
- end date: to_date('20090331','YYYYMMDD')

Enter the Description Of Each UDF

Enter the description of each *user-defined fields* (UDF) for every dimension.

Take special care with the value you enter. Why? Because this description appears in headings and labels throughout Oracle Utilities Business Intelligence. For example, it appears in the Filter Description, the *Filter Area*, the Slice By values in the *Graph Options Area*, etc.

To define a dimension's UDF descriptions:

- Display the dimension on the *Table - Main* page.
- Enter the desired description of each UDF in the Override Label field.

➤ **Note:** If you are using Oracle Utilities Business Intelligence v2.3.0 or later, default descriptions for each UDF field will already be entered for each table, so you will only need to update the descriptions for those UDFs that are not extracted by default, or if the default extract is changed.

Add Indexes for UDF Columns

Oracle Utilities Business Intelligence is not delivered with indexes on every *user-defined field* (UDF) because we anticipate that each implementation would use only a small subset of UDFs. If you choose to use a UDF column on a dimension table, you should strongly consider adding an Oracle bitmapped index on each UDF code and description that your implementation uses. This will greatly improve performance when the application retrieves the distinct values for each UDF (these values appear throughout the application).

Since the Oracle Business Intelligence Enterprise Edition Dashboards use materialized views in most cases, this is not a necessary step unless performance issues are seen when selecting drop-down values from dashboard prompts.

Enter the Description Of Each UDM

Enter the description of each *user-defined measure* (UDM) for every fact that necessitates such (this should be rare).

Take special care with the value you enter. Why? Because this description appears everywhere that the data for the UDM is shown in Oracle Utilities Business Intelligence.

To define a fact's UDM descriptions:

- Display the fact on the *table page*.
- Enter the desired description of each UDM in the Override Label field.

Note: If you are using Oracle Utilities Business Intelligence v2.3.0 or later, default descriptions for each UDM field will already be entered for each table, so you will only need to update the descriptions for those UDMs that are not extracted by default, or if the default extract is changed.

Enter the Description Of Each UDDGEN

Enter the description of each *user-defined degenerate dimension* (UDDGEN) for every degenerate dimension.

Take special care with the value you enter. Why? Because this description appears in headings and labels throughout Oracle Utilities Business Intelligence. For example, it appears in the Filter Description, the *Filter Area*, the `Slice By` values in the *Graph Options Area*, etc.

To define a UDDGEN's description:

- Display the fact on the *Table - Main* page.
- Enter the desired description of each UDDGEN in the `Override Label` field.

If the UDDGEN appears as a filter in a zone:

- Define a predefined value characteristic type for the UDDGEN:
  - This characteristic type must be configured with a characteristic entity of BI Table Field .
  - A characteristic value should be defined for every value of the UDDGEN; the characteristic value's description is the value that appears in the headings, labels and dropdowns.
- Link the characteristic type to the UDDGEN column using the table transaction described above.

Note: If you are using Oracle Utilities Business Intelligence v2.3.0 or later, default descriptions for each UDDGEN field will already be entered for each table, so you will only need to update the descriptions for those UDDGENs that are not extracted by default, or if the default extract is changed.

Add References To Existing Dimensions

Note: Not all facts support this feature. A limited number of facts allow an implementation to introduce references to existing dimensions. The following section explains how to determine if a fact supports this feature.

Facts are delivered referencing the dimensions required by most implementations. However, there are requirements that can only be satisfied by changing the fact to reference an existing dimension. We will use a case study to explain. Assume that the case fact is not delivered with a reference to the service agreement dimension. Also assume that your users need to slice and filter cases by dimensional attributes on the service agreement dimension. If this is a requirement, you must perform the following tasks to add the service agreement dimension to the case fact:

- Find the case fact on the *Table Search* zone and then click the **Edit Staging** button adjacent to the fact's **Staging Table** name. This will cause the **ETL Staging Table Maintenance** dialog to open with the fields on the case fact's staging table displayed. Look for fields that contain `UDDFK`. These fields are placeholders that implementations can use to add references to existing dimensions; if you don't see such fields on the staging table, then its fact does not support the ability to add references to existing dimensions. If you do see such fields, nominate one of them to hold the natural key of the service agreement.
- Update the UDDFK field to 0 for any existing records. This will allow the Foreign Key constraint to be defined.
- Create a foreign key constraint in the database from the case fact to the service agreement dimension for the UDDFK field chosen above. For example, assuming that UDDFK1_KEY field was chosen, use the following SQL statement to create the foreign key constraint:

```
alter table CF_CASE
add constraint UDDF1_R1X FOREIGN KEY (UDDF1_KEY)
REFERENCES CD_SA (SA_KEY);
```

- Modify the case table metadata for the UDDFK field. This needs to be done in the **Table Maintenance** screen. The label for the UDDFK field should be changed to indicate that it is now used as a Foreign key to the service agreement dimension. Also, a new foreign key constraint needs to be added on the Constraints tab.
- The name of the foreign key constraint should be 'CM_UDDF1_R1X'

- The Constraint Type Flag should be 'Foreign Key'
- The Enable Referential Integrity should be checked
- The Referring Constraint ID can be selected by pressing the Lookup Icon and searching for the CD_SA table
- The Constraint Field(s) field should be UDDF1_KEY
- The sequence should be 1
- Find a fact that already references the service agreement dimension. The easiest way to do this is to open the *data dictionary* and display the dimension. You'll see a list of all of the facts that reference the dimension. Pick one of these facts (we'll refer to this as the "sample fact" below).
- Find the sample fact on the *Table Search* zone and then click the broadcast button adjacent to the fact's table name to open the *Field Mapping Information* zone. This zone lists every field on the sample fact. Click the **Edit** icon adjacent to the field that contains the foreign key to the service agreement dimension. This will cause the **ETL Map Fact Field Maintenance** dialog to open with the ETL mapping rules used to populate the service agreement dimension on the sample fact. You should note these mapping rules as almost identical rules will be used to populate the dimension on the case fact.
- Redisplay the case fact on the *Table Search* zone and then click the broadcast button adjacent to the fact's table name to open the *Field Mapping Information* zone. Click the **Edit** icon adjacent to the UDDFK field that will hold a reference to the SA dimension on the case fact. This will cause the **ETL Map Fact Field Maintenance** dialog to open with the ETL mapping rules ready to be populated. You should enter rules almost identically to the rules from the sample fact. The only difference should be the value of the **Source Field on Staging**; this should reference the UDDFK field on the staging record nominated in the first step.
- At this point, you are finished updating the meta-data that will be used to generate the OWB transform and load logic. To complete the population of the UDDFK you must now:
- Update the case extract program to populate the service agreement's natural key in the respective UDDFK field on the case extract staging file.
- Regenerate OWB so it will use the new mapping rules to translate the natural service agreement ID on the staging table to a foreign key to the service agreement dimension.

To regenerate OWB, the following steps should be followed:

- Run the GenOWB.exe file for the fact table. This program can be found in the scripts folder in the Database Package.

```
GenOWB.exe -d spluser,spluser_pw,BICONN -t CF_CASE -m M -x Y
GenOWB.exe -d spluser,spluser_pw,BICONN -t CF_CASE -m W -x Y
```

- This will create the following two files: source SPLMAP_F_CASE.TCL and SPLWF_F_CASE.TCL
- Load the TCL scripts created above into the OWB repository using OMBPlus from the OWB administrator menu
- Connect to the repository as described using one of the following OMBCONNECT commands depending on the OWB version you are using. (Note that the database connection settings will have to be changed).

```
OMBCONNECT birepo/birepo@sf-hpd01.splwg.com:1521:BI2200WF
           USE REPOS 'BIREPOWN' /* owb10G */
OMBCONNECT birepown/birepown@sf-lindb-08.splwg.com:1521:BI2200QN
           USE REPOS 'SPLBIREP' /* owb 11g */
```

- Load the Mapping first using this OMBPlus command: source SPLMAP_F_CASE.TCL
- Then Load the Workflow using this OMBPlus command: source SPLWF_F_CASE.TCL
- Finally run the EditFP.tcl and editmail.tcl scripts used when OWB was initially set up for OUBI to set the Folder and Mail setting for the modified Mappings and Process Flows
- Enter the OMBCOMMIT command to save the changes in the repository
- After the TCL files are loaded, the modified Mapping and Process flows need to be deployed in OWB.
- The SPLMAP_F_CASE Mapping should be deployed first, using the Replace deployment action.
- The FACT process flow package can then be deployed, also using the Replace deployment action.

Configure the Source Application

The installation of Oracle Utilities Business Intelligence also affects the source application (e.g., Oracle Utilities Customer Care & Billing). The source application is impacted in two ways:

- New background processes are installed to *extract the data* from the source application
- Triggers are installed on the source application's database

The topics in this section describe configuration tasks in the source application.

Confirm the Triggers In the Source System

When you installed Oracle Utilities Business Intelligence's components in the source application, triggers were introduced onto the database. These triggers insert a record on the change log table whenever an object whose data is held in Oracle Utilities Business Intelligence is added or changed. If you have not introduced user-exit code to the extract programs to extract additional information, you shouldn't have to change these triggers. However, it would be a good idea to confirm that they have been installed and are operational at this point.

● **FMI:** Refer to *Capturing Changes In Source Data* for more information about triggers and the Change Log.

Recommendation. The base-package triggers should be considered as samples. These sample triggers contain logic that creates a change log whenever Oracle Utilities Business Intelligence sensitive fields are changed. Your implementation probably only cares about a subset of these fields (e.g., you might only use 3 fields on the address dimension, but the trigger caters for 10 fields). We therefore recommend that you excise logic from the sample triggers for unused fields. By excising this extraneous logic, you will reduce the number of rows on your dimensions.

Product-Specific Configuration Tasks

The topics in this section describe configuration tasks unique to each source product.

Customer Care and Billing

When you installed Oracle Utilities Business Intelligence's components in the Oracle Utilities Customer Care and Billing product, background processes were introduced. These processes *extract data* from the source application. Perform the following tasks before executing these programs:

- Display each extract process's batch control in the source application and populate its parameters accordingly. Keep in mind that those extract programs that populate UDFs and UDMs must have their parameters set up accordingly.
- Populate a **Feature Configuration** with the file path in which the extract flat files will be placed. This feature will have a **Feature Type** of Extract Analytics ; and a single O **ption Type** of File Path with an **Option Value** of the location of the flat files produced by the extract processes. When supplying the File Path option value, the directory specified in the File Path must already exist and must grant write access to the administrator account. You may need to verify a proper location with your system administrator. The syntax of the File Path depends on the platform used for your application server. Contact your system administrator for verification. For example, if the platform is UNIX, use forward slashes and be sure to put a trailing slash, for example /extracts/filepath/ .

Extract documentation. Refer to *Common Behavior Of Extract Processes* for a generic description of the various parameters supplied to all extract batch processes. For a description of a specific extract process's parameters, navigate to the *Table Search* zone and click the **Edit Mapping** button adjacent to a given fact or dimension.

Extract recent changes mode. Every extract has a parameter that controls if the process *extracts everything OR only recent changes*. We strongly recommend setting this parameter on the batch control to extract recent changes as you will only execute the extract in "extract everything mode" once.

Network Management System

Most of the Oracle Utilities Network Management Systems *fact and dimensions* have an extract process which is called by one or more of the following Oracle Utilities Network Management Systems scripts: nrt_extractor, bi_common_extractor, bi_customer_extractor and bi_event_extractor. These PL/SQL processes extract data from Oracle Utilities Network Management Systems system and transfer it to flat files. Along with each flat file containing the extract data (data file), a one-line control file containing the batch information about the extractor program is also generated. The data and the control flat files, in turn, are loaded into the Oracle Utilities Business Intelligence data warehouse as described in *Business Intelligence Fundamentals*. The topics in this section describe aspects common to these extract processes.

Extracts and Triggers in Network Management System

The installation of Oracle Utilities Business Intelligence also affects the source application (e.g., Oracle Utilities Network Management Systems). The Oracle Utilities Network Management Systems application is impacted in three ways:

- A new field is added to source tables that do not have a field that indicates when the record was last updated. This field is called LAST_UPDATE_TIME. Note that tables that already have modification date fields (such as NETWORK_COMPONENTS) do not have this field added.
- Triggers are installed in the Oracle Utilities Network Management Systems database that update this newly added field when records are inserted or updated, or the keys for deleted records are inserted into a new Delete Log table when a record is deleted. These triggers are only added for tables that required the LAST_UPDATE_TIME field added.
- Views are created that merge the data written by each extract process with a value of when the data last changed.

The extract programs identify the recent change by querying the appropriate Oracle Utilities Network Management Systems view and looking for records that have been modified since the last run of the extractor. The last run time for an extractor is stored in the BI_EXTRACTOR_LOG table. The triggers will update the LAST_UPDATE_TIME field when any field in transferred tables is modified.

Mode of Execution in Network Management System

The Oracle Utilities Network Management Systems extract programs only support one mode of execution. Oracle Utilities Network Management Systems data always extract data that has been modified since the last extraction process. However, when the Oracle Utilities Business Intelligence application is first installed in the Oracle Utilities Network Management Systems database by running the install_business_intelligence script, the Last Extraction Time stored in the BI_EXTRACTOR_LOG table for each extractor is set to a default value of 01-JAN-1990, which will cause all of the Oracle Utilities Network Management Systems data to be extracted when the extractor programs are first run.

If all of the data needs to be re-extracted, then the install_business_intelligence script can be rerun which will reset the Last Extraction Time for all of the extractors.

Populating UDFs and UDMs in Network Management System

Most extract processes support populating *User Defined Fields (UDFs)* and *User Defined Measure (UDMs)* fields on their flat file records with specific fields from the source system. For example, you can set up the premise extract program to populate the first UDF on its flat file with the premise's city (or county or any address-oriented field).

You indicate which fields to populate on the flat file by changing the definition of the Oracle Utilities Network Management Systems view that is used to extract the data. This change should be made by creating a project-specific version of the base view definition file, and by changing the definition of this file to extract what is required for the project. Any information in the Oracle Utilities Network Management Systems database is available for extracting. However, if changes to tables that currently do not have a modification date field need to be extracted, then triggers would have to be defined for these tables.

If changes are made to the view definitions, then the script **refresh_business_intelligence** can be run to recreate the PL/SQL extractor programs stored in the database, and reload the view definitions for each of the extract views. This will not cause all of the data to be re-extracted; it will just change the data that is stored in the extract files going forward.

Oracle Utilities Work and Asset Management

Oracle Utilities Business Intelligence for Oracle Utilities Work & Asset Management uses extraction programs packaged with the Oracle Utilities Application Framework. The extraction programs for Oracle Utilities Work & Asset Management are written in PL/SQL and are loaded into Oracle Utilities Business Intelligence using Oracle Utilities Application Framework

Users can view batch control records, submit batch jobs and view the batch run tree using the Oracle Utilities Work & Asset Management application.

● **FMI:** Please refer to the Oracle Utilities Work & Asset Management Configuration Guide for details on the required configurations or contact your Oracle representative for more information.

Extract Everything From the Source Application

At this point, you are ready to schedule the extract processes. To do this, execute every extract process in *extract everything mode*. Each extract will produce a flat file. These flat files will contain the data to be transferred from the source application to Oracle Utilities Business Intelligence. After the flat files exist, transfer to Oracle Utilities Business Intelligence and upload these flat files using the *Oracle Warehouse Builder* workflow engine.

Prepare To Extract Recent Changes

Set up your batch scheduler in the source application to periodically execute every extract process in *extract recent changes mode*. Each extract will produce a flat file. These flat files will contain changes to the facts and dimensions that took place since the last time the extract was executed. You must also set up the *Oracle Warehouse Builder* workflow engine to upload these files.

Set Up Zones

Having determined the Facts and Dimensions you wish to display in an analytic, it now needs to be configured using Zone Maintenance. The parameter descriptions provide a rich source of information about the available settings for the parameter and, often, there is an example. All required parameters must be given a value but there are also many optional parameters that you can use to enhance the analytic (some of which have default values).

The Demo environment provided with the Oracle Utilities Business Intelligence release contains many example zones. These can be examined for techniques regarding zone configuration, or simply copied if they fulfill the requirements.

The only thing left to do is determine if you are going to restrict *access to specific zones*. We anticipate that this will be fairly rare because we assume most implementations will simply restrict access to portals (and if a user doesn't have access to a portal, they can't see any of its zones).

If you want to restrict access to specific zones, you must set up an *application service* for the zone. We would recommend naming this application service the same as the zone's code.

If you only plan to implement security at the portal level, create a single application service (e.g., CM UNSECUR). You will then define this application service on your zones.

➤ **Note:** This only applies only to the user interface used in Oracle Utilities Business Intelligence versions 2.0.5 and 2.2.x. If you are using Oracle Utilities Business Intelligence v2.3.0 or later, standard answers will already be part of the delivery.

Set Up Portals

After your zones have been set up, you can set up your portals. The following points describe how to do this:

- Add a new *portal* and specify its zones.
- When the portal is added, the system also adds an *application service* behind the scenes (the name is shown on the portal page). You will need to grant the appropriate *user groups* access to this application service before their users can see the portal. Refer to *Granting Access To A Portal* for the details.
- When the portal is added, the system also adds a *navigation option* behind the scenes (the name is shown on the portal page). You must specify this navigation option on the appropriate *menu* before it appears on a menu. You should also consider updating this navigation option's usage so it can be used as a *favorite transaction* by your users.

➤ **Note:** This only applies only to the user interface used in Oracle Utilities Business Intelligence versions 2.0.5 and 2.2.x. If you are using Oracle Utilities Business Intelligence v2.3.0 or later, standard dashboards will already be part of the delivery.

Set Up Materialized Views

After your zones are set up, you must set up *materialized views* so the SQL generated from the zones performs adequately.

➤ **Note:** This only applies only to the user interface used in Oracle Utilities Business Intelligence versions 2.0.5 and 2.2.x. If you are using Oracle Utilities Business Intelligence v2.3.0 or later, standard materialized views will already be part of the delivery, as described in the Working With Materialized Views section below.

Configure Oracle Warehouse Builder

The following points describe how to configure *Oracle Warehouse Builder*:

- Define the email address of the recipient of emails sent by Oracle Warehouse Builder. This is defined on the various *process flows*.
- Define the file location in which the extract flat files are placed (this must be the same location as defined for the *extract jobs*). The file location is defined on the various *data load process flows* (in the parameters passed to the *file manager*). The same location must be used when registering the flat file locations during Oracle Warehouse Builder deployment.
- Finally, set up the job scheduling engine that your implementation will use to periodically execute the various process flows.

Working With Materialized Views

The topics in this section provide background information about materialized views.

● **FMI:** This section summarizes how materialized views are used in Oracle Utilities Business Intelligence; it is not meant to replace Oracle's documentation. Refer to Oracle's Data Warehousing Guide for a thorough description of materialized views.

The Need for Materialized Views

Fact tables typically contain many rows. In order for the queries against a data-warehouse to perform adequately, the facts must be summarized. While online analytic processing (OLAP) servers are designed to perform this task, we recommend a less costly approach - use "materialized views" to hold your summarized analytic data.

A materialized view is a database object that stores the results of a query. In data warehouses, materialized views are used to compute and store aggregated data such as sums, averages and counts.

Materialized views improve query performance by pre-calculating resource intensive joins between fact and dimension tables and aggregation operations on the database prior to execution and storing the results in the database. Additionally, the query optimizer automatically recognizes when an existing materialized view can be used to satisfy a request. It then transparently rewrites the request to use the materialized view. Queries go directly to the materialized view and not to the underlying tables. In general, rewriting queries to use materialized views rather than underlying tables improves response.

Materialized views are similar to indexes in several ways:

- The purpose of a materialized view is to increase query execution performance.
- The existence of a materialized view is transparent to SQL applications. A database administrator (DBA) can create or drop materialized views at any time without affecting the validity of SQL applications.
- A materialized view contains data and consumes storage space.
- Materialized views must be updated when the underlying tables are modified.

Unlike indexes, materialized views can be accessed directly using a SELECT statement.

Periodic Refreshing of Materialized Views

During the ***ETL (Extract, Transform, and Load)*** process, new and changed data from the source application is loaded into the data warehouse schema. After the load processing is complete, you would typically build indexes, validate constraints, and take backups before making the new data available to end-users. An additional step is required when materialized views exist - you must refresh the materialized view to reflect the latest data.

Oracle offers the ability to update materialized views automatically (e.g., when the underlying tables are changing) or refresh them on demand. Oracle also allows you to indicate whether a materialized view is rebuilt completely or incrementally.

● **FMI:** Refer to Oracle's Data Warehousing Guide for the details on these options.

Query Rewrite is the Key

One of the major benefits of creating and maintaining materialized views is the ability to take advantage of "query rewrite". Query rewrite transforms an SQL statement expressed in terms of facts and dimension tables into a statement accessing one or more materialized views. The transformation is transparent to the end user or application, requiring no intervention and no reference to the materialized view in the SQL statement. Because query rewrite is transparent, materialized views can be added or dropped just like indexes without invalidating the SQL in the application code.

Before the query is rewritten, it is subjected to several checks to determine whether it is a candidate for query rewrite. If the query fails any of the checks, the query is applied directly to the fact and the dimension tables rather than the materialized view. This is not desirable since it can be costly in terms of response time and processing power.

The Oracle optimizer uses two different methods to recognize when to rewrite a query in terms of one or more materialized views. The first method is based on matching the SQL text of the query with the SQL text of the materialized view definition. If the first method fails, the optimizer uses a more general method in which it compares joins, selections, data columns, grouping columns, and aggregate functions between the query and a materialized view.

When using query rewrite, you may want to create a materialized view that satisfies multiple queries. For example, if you identify 10 answers for a fact table, you might be able to satisfy them all with a few, well-written materialized views.

A query is rewritten only when a certain number of conditions are met:

- Query rewrite is enabled for the session.
- A materialized view is enabled for query rewrite.
- The rewrite integrity level set for the session allows the use of the materialized view.
- The database must be able to resolve the executed query by fetching results from the existing materialized views.

To assist in designing and using materialized view, Oracle provides an explain rewrite procedure which will advise whether query rewrite is possible on a query and if so, which materialized views will be used.

To help design materialized views, Oracle provides a set of advisory procedures in the DBMS_OLAP package to help in designing and evaluating materialized views for query rewrite. These functions are also known as the Summary Advisor. Oracle's Enterprise Manager provides user interface to work with Summary Advisor.

● **FMI:** Refer to Oracle's Data Warehousing Guide to learn more about Query Rewrite functionality.

Materialized Views in Oracle Utilities Business Intelligence

Oracle Utilities Business Intelligence answers retrieve data from the fact and dimension tables and are unaware of the existence of materialized views in the database. To get faster response, materialized views must be created and maintained in the database.

The following features are built into Oracle Utilities Business Intelligence to support the usage of materialized views:

- Oracle Utilities Business Intelligence star-schemas abide by classic data-warehousing theory, i.e., the dimension tables join directly to the fact table and "snowflakes" (i.e., dimensions referencing other dimensions) are avoided.
- Foreign key constraints between the fact tables and their dimension tables are defined in the database.
- Foreign keys on facts are always populated (a dimension's default value is referenced on a fact if the fact doesn't reference a given dimension).
- Hierarchies between dimensional attributes are defined when appropriate.
- Date and Fiscal calendar dimension tables have been designed to avoid the date-folding issues.
- The default Oracle Business Intelligence Enterprise Edition answers delivered in Oracle Utilities Business Intelligence generate star-queries that can be rewritten using the standard materialized views that are provided with the base installation package.

Creating Standard Materialized Views

The standard materialized views are defined in the OWB metadata for Oracle Utilities Customer Care and Billing, Oracle Utilities Work and Asset Management, and Oracle Utilities Network Management System. For Oracle Utilities Meter Data Management, the materialized views documented in the Oracle Utilities Meter Data Management Business Intelligence Data Mapping Guide will need to be created in the Meter Data Management database before the Meter Data Management analytics will be usable.

To create a materialized view, follow the OWB configuration steps in the Installation documentation for deploying the materialized views. Note that it’s possible to wait to deploy the materialized views until after the initial load of data from the edge app. This will limit the change capture data needed in the materialized view logs for each materialized view.

FMI: Refer to Oracle's Data Warehousing Guide to learn more about configuring materialized views.

Customizing Materialized Views

We recommend creating copies of the Materialized views instead of modifying the default materialized views if any changes are made for custom changes. The following list describes customizations that will require changes to the materialized views:

- **Non-standard data requirements**: If any answers have new fields added that are not already present in an existing materialized view, then they will need to be added to an existing materialized view.
- **Parallelism**: The materialized views do not include any parallelism clauses, so if the data warehouse supports parallelism then a parallel hint can be added to the Select query of the materialized view creation statement.

Refreshing Materialized Views

The Materialized view creation statements make use of the FAST option when the underlying data can support a Fast refresh. However, a few materialized views can not always be maintained using Fast refresh, so these materialized views default to FORCE, which means that the refresh will be Fast if possible, but Complete otherwise.

Materialized View Logs on the underlying tables have been created based on the standard columns in each of the materialized views. If customizations are required, then the materialized view logs for each table can be modified to contain extra columns that are not present by default in the standard materialized views.

To refresh a materialized view, the DBMS_MVIEW.REFRESH procedure can be used. For example, to refresh the B1_WRKORD_TK_MON_MV1 view, use this SQL command:

```
exec dbms_mview.refresh( 'B1_WRKORD_TK_MON_MV1' );
```

The refresh of the materialized views are supported in OWB by calling the OUBI_REFRESH_MV_FNC for the materialized view that should be refreshed.

A refresh should be run after data is loaded into the Fact table that the materialized view is created from. So in the refresh example above, the B1_WRKORD_TK_MON_MV1 view should be refreshed after the CF_WRKORD_TK table is loaded with new extract files. To refresh materialized views after loading data into a fact table, call the appropriate load function in the LOADRFSH package. This should be scheduled instead of the load function in the FACT process flow package.

For Oracle Utilities Meter Data Management, there is no standard refresh mechanism built into the Oracle Utilities Meter Data Management software. A SQL script will need to be created and scheduled that will refresh the materialized views used by the Meter Data Management analytics dashboards. This materialized refresh script should be scheduled to run after the MDM aggregation batch job is completed. By default this aggregation batch job is named “Aggregation Monitor Batch Job”. Please note that these materialized views are shipped with Meter Data Management release 2.0.1, Service Pack 2, which is a pre-requisite for Oracle Utilities Meter Data Analytics.

● **FMI:** Refer to Oracle's Data Warehousing Guide to learn more about refreshing materialized views.

Standard Materialized Views

This table lists all of the standard materialized views delivered with Oracle Utilities Business Intelligence, the fact table, the date key, the periodicity, the Dashboards they will be used on, and the standard Measurements and Dimensional Attributes included in the materialized view definition.

Note that in order to support Fast Refresh, all materialized views will contain a COUNT(*) and COUNT(measure) column, which will not be listed in the following tables. No standard answers use these count columns, but Oracle requires that they exist so that fast refresh can be performed when data is added or updated in the underlying fact table.

Materialized View Description	Measurements	Dimensional Attributes

B1_BILLEDUSAGE_MON_MV1
Fact: CF_BILLED_USAGE
Date Key: BILL_DATE_KEY
Periodicity: Monthly
Analytics: Revenue
	SUM(CALC_AMT)
	SUM(BILLED_QTY)
	SUM(FACT_CNT)
		CD_DATE.CAL_YEAR
		CD_DATE.UDF5_DESCR
		CD_DATE.ABS_MONTH_NBR
		CD_UOM.UOM_DESCR
		CD_TOU.TOU_DESCR
		CD_SQI.SQI_DESCR
		CD_ACCT.UDF1_DESCR
		CD_ACCT.UDF1_CD
		CD_SA.UDF1_DESCR
		CD_RATE.RATE_SCHED_CD
		CD_PREM.UDF2_DESCR
		CD_PREM.UDF1_DESCR
		CD_ADDR.UDF4_DESCR
		CD_ADDR.UDF1_DESCR
		CD_ADDR.UDF3_DESCR

B1_FT_MON_MV1
Fact: CF_FT
Date Key: FISCAL_CAL_KEY
Periodicity: Fiscal Period
Analytics: Revenue, Credit and Collection
	Sum(REVENUE_AMT)
	Sum(OTHER_AMT)
	Sum(FACT_CNT) sum(case when CD_FT_TYPE.FT_TYPE_CD in ('AD', 'AX', 'BS', 'BX') then REVENUE_AMT else 0 end)
		CD_FISCAL_CAL.FISCAL_CAL_DESCR
		CD_FISCAL_CAL.FISCAL_YEAR
		CD_FISCAL_CAL.UDF2_DESCR
		CD_FISCAL_CAL.PERIOD_DESCR
		CD_FISCAL_CAL.ABS_PERIOD_NBR
		CD_FISCAL_CAL.PERIOD_START_DT

Materialized View Description	Measurements	Dimensional Attributes
	sum(case when CD_FT_TYPE.FT_TYPE_CD in ('PS', 'PX') then OTHER_AMT * -1 else 0 end)	CD_FISCAL_CAL.FISCAL_CAL_KEY CD_ACCT.UDF1_DESCR CD_ACCT.UDF1_CD CD_SA.UDF1_DESCR CD_RATE.RATE_SCHED_DESCR CD_RATE.RATE_SCHED_CD CD_PREM.UDF2_DESCR CD_PREM.UDF1_DESCR CD_ADDR.UDF1_DESCR CD_ADDR.UDF3_DESCR CD_FT_TYPE.FT_TYPE_CD

B1_ARREARS_MON_MV1
Fact: CF_ARREARS
Date Key: FISCAL_CAL_KEY
Periodicity: Fiscal Period
Analytics: Credit and Collection
	Sum(UDM5)
	SUM(UDM4)
	SUM(UDM3)
	SUM(UDM2)
	Sum(.UDM1)
	sum(CURR_BAL_AMT)
	sum(FACT_CNT)
		CD_FISCAL_CAL.FISCAL_YEAR
		CD_FISCAL_CAL.PERIOD_DESCR
		CD_FISCAL_CAL.FISCAL_CAL_DESCR
		CD_FISCAL_CAL.ABS_PERIOD_NBR
		CD_FISCAL_CAL.PERIOD_START_DT
		CD_FISCAL_CAL.UDF2_DESCR
		CD_FISCAL_CAL.FISCAL_CAL_KEY
		CD_ACCT.UDF1_DESCR
		CD_ACCT.UDF1_CD
		CD_SA.UDF1_DESCR
		CD_SA.UDF3_DESCR
		CD_RATE.RATE_SCHED_DESCR
		CD_RATE.RATE_SCHED_CD
		CD_PREM.UDF2_DESCR
		CD_PREM.UDF1_DESCR
		CD_ADDR.UDF4_DESCR
		CD_ADDR.UDF1_DESCR
		CD_ADDR.UDF3_DESCR

B1_COLLPROC_MON_MV1
Fact: CF_COLL_PROC
Date Key: START_DATE_KEY
Periodicity: Monthly
Analytics: Credit and Collection
	SUM(ARRS_AT_END)
	SUM(ARRS_AT_START)
	SUM(FACT_CNT)
	MAX(ARRS_AT_START)
	MIN(ARRS_AT_START)
	MAX(COLLPROC_DURATION)
	MIN(COLLPROC_DURATION)
		CD_DATE.CAL_YEAR
		CD_DATE.UDF5_DESCR
		CD_DATE.ABS_MONTH_NBR
		CD_DATE.MONTH_END_DT
		CD_ACCT.UDF1_DESCR
		CD_ACCT.UDF1_CD
		CD_PREM.UDF2_DESCR

Materialized View Description	Measurements	Dimensional Attributes

	SUM(COLLPROC_DURATION)
	COUNT(ARRS_AT_START)
	COUNT(COLLPROC_DURATION)
		CD_PREM.UDF1_DESCR
		CD_ADDR.UDF4_DESCR
		CD_ADDR.UDF1_DESCR
		CD_ADDR.UDF3_DESCR
		CD_COLLPROC_STATUS.COLPROC_STAT_CD

B1_COLLPROC_MON_MV2
Fact: CF_COLL_PROC
Date Key: END_DATE_KEY
Periodicity: Monthly
Analytics: Credit and Collection
	SUM(ARRS_AT_END
	SUM(ARRS_AT_START)
	SUM(FACT_CNT)
		CD_ACCT.UDF1_DESCR
		CD_ACCT.UDF1_CD
		CD_PREM.UDF2_DESCR
		CD_PREM.UDF1_DESCR
		CD_ADDR.UDF4_DESCR
		CD_ADDR.UDF1_DESCR
		CD_ADDR.UDF3_DESCR
		CD_DATE.CAL_YEAR
		CD_DATE.UDF5_DESCR
		CD_DATE.ABS_MONTH_NBR
		CD_DATE.MONTH_END_DT
		CD_COLLPROC_STATUS.COLPROC_STAT_CD

B1_UCOLLPROC_MON_MV1
Fact: CF_UCOL_PROC
Date Key: START_DATE_KEY
Periodicity: Monthly
Analytics: Credit and Collection
	SUM(ARRS_AT_START)
	SUM(ARRS_AT_END)
	SUM(FACT_CNT)
	COUNT(ARRS_AT_START)
	MAX(ARRS_AT_START)
	MIN(ARRS_AT_START)
	MAX(UCPROC_DURATION)
	MIN(UCPROC_DURATION)
	SUM(UCPROC_DURATION)
	COUNT(UCPROC_DURATION)
	SUM(case when CD_UCOLPROC_STATUS.UCPROC_STAT_CD in ('20', '30') then ARRS_AT_START else 0 end)
	SUM(case when CD_UCOLPROC_STATUS.UCPROC_STAT_CD in ('20', '30') then ARRS_AT_END else 0 end)
		CD_UCOLPROC_STATUS.UCPROC_STAT_CD
		CD_ACCT.UDF1_DESCR
		CD_ACCT.UDF1_CD
		CD_PREM.UDF2_DESCR
		CD_PREM.UDF1_DESCR
		CD_ADDR.UDF4_DESCR
		CD_ADDR.UDF1_DESCR
		CD_ADDR.UDF3_DESCR
		CD_DATE.CAL_YEAR
		CD_DATE.UDF5_DESCR
		CD_DATE.ABS_MONTH_NBR
		CD_DATE.MONTH_END_DT

B1_UCOLLPROC_MON_MV2
Fact: CF_UCOL_PROC
Date Key: END_DATE_KEY
Periodicity: Monthly
	SUM(ARRS_AT_START)
	SUM(ARRS_AT_END)
	SUM(FACT_CNT)
	COUNT(ARRS_AT_START)
		CD_UCOLPROC_STATUS.UCPROC_STAT_CD
		CD_ACCT.UDF1_DESCR
		CD_ACCT.UDF1_CD
		CD_PREM.UDF2_DESCR

Materialized View Description	Measurements	Dimensional Attributes

Analytics: Credit and Collection	MAX(ARRS_AT_START)
	MIN(ARRS_AT_START)
	MAX(UCPROC_DURATION)
	MIN(UCPROC_DURATION)
	SUM(UCPROC_DURATION)
	COUNT(UCPROC_DURATION)
	SUM(case when CD_UCOLPROC_STATUS.UCPROC_STAT_CD in ('20', '30') then ARRS_AT_START else 0 end)
	SUM(case when CD_UCOLPROC_STATUS.UCPROC_STAT_CD in ('20', '30') then ARRS_AT_END else 0 end)
		CD_PREM.UDF1_DESCR
		CD_ADDR.UDF4_DESCR
		CD_ADDR.UDF1_DESCR
		CD_ADDR.UDF3_DESCR
		CD_DATE.CAL_YEAR
		CD_DATE.UDF5_DESCR
		CD_DATE.ABS_MONTH_NBR
		CD_DATE.MONTH_END_DT

B1_CASE_MON_MV1
Fact: CF_CASE
Date Key: OPEN_DATE_KEY
Periodicity: Monthly
Analytics: Revenue
	SUM(CASE_LEN)
	COUNT(CASE_LEN)
	SUM(FACT_CNT)
	MAX(CASE_LEN)
	MIN(CASE_LEN)
	sum(case when CD_CASETYPE_STATUS.CASE_STATUS_CD in ('CASETY1') or CD_CASE_COND.CASE_COND_CD in ('CLSD') then FACT_CNT else 0 end)
		CD_DATE.CAL_YEAR
		CD_DATE.UDF5_DESCR
		CD_CASE_COND.CASE_COND_DESCR
		CD_CASETYPE_STATUS.CASE_TYPE_DESCR
		CD_CASETYPE_STATUS.CASE_STATUS_DESCR
		CD_CASETYPE_STATUS.CASE_STATUS_CD
		CD_CASE_COND.CASE_COND_CD
		CD_ACCT.UDF1_DESCR
		CD_ACCT.UDF1_CD
		CD_ADDR.UDF3_DESCR
		CD_ADDR.UDF1_DESCR
		CD_ADDR.UDF4_DESCR
		CD_PREM.UDF1_DESCR
		CD_DATE.MONTH_END_DT
		CD_DATE.ABS_MONTH_NBR

B1_CASE_MON_MV2
Fact: CF_CASE
Date Key: CLOSE_DATE_KEY <> 0
Periodicity: Monthly
Analytics: Revenue
	SUM(CASE_LEN)
	COUNT(CASE_LEN)
	SUM(FACT_CNT)
	MAX(CASE_LEN)
	MIN(CASE_LEN)
	sum(case when CD_CASETYPE_STATUS.CASE_STATUS_CD in ('CASETY1') or CD_CASE_COND.CASE_COND_CD in ('CLSD') then FACT_CNT else 0 end)
		CD_DATE.CAL_YEAR
		CD_DATE.UDF5_DESCR
		CD_CASE_COND.CASE_COND_DESCR
		CD_CASETYPE_STATUS.CASE_TYPE_DESCR
		CD_CASETYPE_STATUS.CASE_STATUS_DESCR
		CD_CASETYPE_STATUS.CASE_STATUS_CD
		CD_CASE_COND.CASE_COND_CD
		CD_ACCT.UDF1_DESCR
		CD_ACCT.UDF1_CD
		CD_ADDR.UDF3_DESCR

Materialized View Description	Measurements	Dimensional Attributes
		CD_ADDR.UDF1_DESCR CD_ADDR.UDF4_DESCR CD_PREM.UDF1_DESCR CD_DATE.MONTH_END_DT CD_DATE.ABS_MONTH_NBR

B1_CASELOG_MON_MV1
Fact: CF_CASE_LOG
Date Key: OPEN_DATE_KEY
Periodicity: Monthly
Analytics: Revenue
	SUM(TIME_IN_PREV_ST)
	COUNT(TIME_IN_PREV_ST)
	SUM(FACT_CNT)
		CD_DATE.CAL_YEAR
		CD_DATE.UDF5_DESCR
		CD_CASETYPE_STATUS.CASE_TYPE_DESCR
		CD_CASETYPE_STATUS.CASE_STATUS_DESCR
		CD_CASETYPE_STATUS.CASE_STATUS_CD
		CD_ACCT.UDF1_DESCR
		CD_ADDR.UDF4_DESCR
		CD_ADDR.UDF1_DESCR
		CD_ADDR.UDF3_DESCR
		CD_DATE.ABS_MONTH_NBR

B1_CC_HOU_MV1 Fact: CF_CC Date Key: CC_DATE_KEY Periodicity: Monthly Analytics: Revenue	SUM(FACT_CNT)	CD_DATE.CAL_YEAR CD_DATE.UDF5_DESCR CD_DATE.UDF1_DESCR CD_DATE.DAY_NBR_IN_WEEK CD_DATE.ABS_MONTH_NBR CD_TIME.UDF4_DESCR CD_TIME.UDF4_CD CD_TIME.HOUR CD_ACCT.UDF1_DESCR CD_CC_TYPE.CC_CL_DESCR CD_CC_TYPE.CC_CL_CD CD_CC_TYPE.CC_TYPE_DESCR CD_ADDR.UDF4_DESCR CD_ADDR.UDF1_DESCR CD_ADDR.UDF3_DESCR
B1_CC_MON_MV1 Fact: CF_CC Date Key: CC_DATE_KEY Periodicity: Monthly Analytics: Revenue	SUM(FACT_CNT)	CD_DATE.CAL_YEAR CD_DATE.UDF5_DESCR CD_DATE.ABS_MONTH_NBR CD_ACCT.UDF1_DESCR CD_CC_TYPE.CC_CL_DESCR CD_CC_TYPE.CC_TYPE_DESCR

Materialized View Description	Measurements	Dimensional Attributes
		CD_CC_TYPE.CC_CL_CD CD_CC_TYPE.CC_TYPE_CD CD_ADDR.UDF4_DESCR CD_ADDR.UDF1_DESCR CD_ADDR.UDF3_DESCR
B1_SA_MON_MV1 Fact: CF_SA Date Key: START_DATE_KEY Periodicity: Monthly Analytics: Revenue	SUM(FACT_CNT)	CD_DATE.CAL_YEAR CD_DATE.UDF5_DESCR CD_SA.UDF1_DESCR CD_SA.UDF2_DESCR CD_SA.UDF3_DESCR CD_ACCT.UDF1_DESCR CD_ACCT.UDF1_CD CD_ADDR.UDF3_DESCR CD_ADDR.UDF1_DESCR CD_ADDR.UDF4_DESCR CD_PREM.UDF1_DESCR CD_DATE.MONTH_END_DT CD_DATE.ABS_MONTH_NBR
B1_SA_MON_MV2 Fact: CF_SA Date Key: END_DATE_KEY <> 0 Periodicity: Monthly Analytics: Revenue	SUM(FACT_CNT)	CD_DATE.CAL_YEAR CD_DATE.UDF5_DESCR CD_SA.UDF1_DESCR CD_SA.UDF2_DESCR CD_SA.UDF3_DESCR CD_ACCT.UDF1_DESCR CD_ACCT.UDF1_CD CD_ADDR.UDF3_DESCR CD_ADDR.UDF1_DESCR CD_ADDR.UDF4_DESCR CD_PREM.UDF1_DESCR CD_DATE.MONTH_END_DT CD_DATE.ABS_MONTH_NBR

B1_FEEDER_DLVRD_MON_MV1
Fact: CF_FEEDER_DLVRD_LOAD
Date Key: SNAPSHOT_DATE_KEY
Periodicity: Monthly
Analytics: Distribution
	SUM(KVA)
	COUNT(KVA)
	SUM(KW)
	COUNT(KW)
	SUM(KVAR)
		CF_FEEDER_DLVRD_LOAD.UDDGEN1
		CF_FEEDER_DLVRD_LOAD.VOLTAGE
		CD_CTRL_ZONE.UDF1_DESCR
		CD_CTRL_ZONE.UDF2_DESCR
		CD_CTRL_ZONE.UDF3_DESCR

Materialized View Description	Measurements	Dimensional Attributes

	COUNT(KVAR)
	SUM(AMP)
	COUNT(AMP)
	MAX(KVA)
	MAX(KW)
	MAX(KVAR)
	MAX(AMP)
	MAX(BRKR_AMP_LIMIT)
	SUM(FACT_CNT)
		CD_FEEDER.FEEDER_NAME
		CD_DATE.CAL_YEAR
		CD_DATE.UDF5_DESCR
		CD_DATE.MONTH_END_DT
		CD_DATE.ABS_MONTH_NBR

B1_CUST_RST_OUTG_MON_MV1
Fact: CF_CUST_RST_OUTG
Date Key: BEGIN_DATE_KEY
Periodicity: Monthly
Analytics: Outage
	Sum(FACT_CNT)
	Sum(CMI)
		CD_STORM.SRC_STORM_NAME
		CD_CTRL_ZONE.UDF1_DESCR
		CD_CTRL_ZONE.UDF2_DESCR
		CD_CTRL_ZONE.UDF3_DESCR
		CD_CTRL_ZONE.UDF4_DESCR
		CD_CTRL_ZONE.UDF5_DESCR
		CD_PREM.UDF6_DESCR
		CD_PREM.UDF7_DESCR
		CD_PREM.UDF8_DESCR
		CD_PREM.UDF9_DESCR
		CD_EVENT.UDF9_DESCR
		CD_ADDR.UDF3_DESCR
		CD_DATE.MONTH_END_DT
		CD_EVENT.EVENT_STATE_DESCR
		CD_DATE.CAL_YEAR
		CD_DATE.UDF5_DESCR
		CD_DEVICE.DEVICE_TYPE_DESCR

B1_CUST_RST_OUTG_MON_MV2
Fact: CF_CUST_RST_OUTG
Date Key: BEGIN_DATE_KEY
Periodicity: Monthly
Analytics: Outage
	Sum(FACT_CNT)
	Sum(CMI)
		CD_STORM.SRC_STORM_NAME
		CD_CTRL_ZONE.UDF1_DESCR
		CD_CTRL_ZONE.UDF2_DESCR
		CD_CTRL_ZONE.UDF3_DESCR
		CD_CTRL_ZONE.UDF4_DESCR
		CD_CTRL_ZONE.UDF5_DESCR
		CD_PREM.UDF6_DESCR
		CD_PREM.UDF7_DESCR
		CD_PREM.UDF8_DESCR
		CD_PREM.UDF9_DESCR

Materialized View Description	Measurements	Dimensional Attributes
		CD_EVENT.UDF9_DESCR CD_EVENT.EVENT_NBR CD_ADDR.UDF3_DESCR CD_DATE.MONTH_END_DT CD_EVENT.EVENT_STATE_DESCR CD_DATE.CAL_YEAR CD_DATE.UDF5_DESCR CD_DEVICE.DEVICE_TYPE_DESCR

B1_OUTG_MON_MV1
Fact: CF_OUTG
Date Key: SNAPSHOT_DATE_KEY
Periodicity: Monthly
Analytics: Outage
	SUM(NUM_CUST_OUTG)
	SUM(NUM_CALL)
	SUM(NUM_CREW_DISP
	SUM(NUM_NEW_EVENT
	SUM(NUM_CUST_RST)
	SUM(FACT_CNT)
		CD_CTRL_ZONE.UDF1_DESCR
		CD_CTRL_ZONE.UDF2_DESCR
		CD_CTRL_ZONE.UDF3_DESCR
		CD_CTRL_ZONE.UDF4_DESCR
		CD_CTRL_ZONE.UDF5_DESCR
		CD_TIME.SECOND
		CD_TIME.MINUTE
		CD_TIME.MINUTE
		CD_DATE.CAL_YEAR
		CD_DATE.UDF5_DESCR
		CD_DATE.MONTH_END_DT

B1_RST_CALL_MON_MV1 Fact: CF_RST_CALL Date Key: CALL_DATE_KEY Periodicity: Monthly Analytics: Outage	SUM(FACT_CNT)	CD_CTRL_ZONE.UDF1_DESCR CD_CTRL_ZONE.UDF2_DESCR CD_CTRL_ZONE.UDF3_DESCR CD_CTRL_ZONE.UDF4_DESCR CD_CTRL_ZONE.UDF5_DESCR CD_EVENT.UDF9_DESCR CD_EVENT.EVENT_STATE_DESCR CD_DATE.CAL_YEAR CD_DATE.MONTH_END_DT CD_DATE.UDF5_DESCR
B1_RST_CALL_MON_MV2 Fact: CF_RST_CALL Date Key: CALL_DATE_KEY Periodicity: Monthly Analytics: Outage	SUM(FACT_CNT)	CD_CTRL_ZONE.UDF1_DESCR CD_CTRL_ZONE.UDF2_DESCR CD_CTRL_ZONE.UDF3_DESCR CD_CTRL_ZONE.UDF4_DESCR CD_CTRL_ZONE.UDF5_DESCR CD_EVENT.UDF9_DESCR CD_EVENT.EVENT_STATE_DESCR

Materialized View Description	Measurements	Dimensional Attributes
		CD_DATE.CAL_YEAR CD_DATE.MONTH_END_DT CD_DATE.UDF5_DESCR
B1_RST_JOB_MON_MV1 Fact: CF_RST_JOB Date Key: EST_RST_DATE_KEY Periodicity: Monthly Analytics: Outage	SUM(FACT_CNT)	CD_STORM.SRC_STORM_NAME CD_CTRL_ZONE.UDF1_DESCR CD_CTRL_ZONE.UDF2_DESCR CD_CTRL_ZONE.UDF3_DESCR CD_CTRL_ZONE.UDF4_DESCR CD_CTRL_ZONE.UDF5_DESCR CD_EVENT.UDF8_DESCR CD_EVENT.UDF9_DESCR CD_EVENT.UDF10_DESCR CD_DATE.CAL_YEAR CD_DATE.UDF5_DESCR CD_DEVICE.DEVICE_TYPE_DESCR CD_DATE.MONTH_END_DT CD_DATE.ABS_MONTH_NBR

B1_RST_JOB_MON_MV2
Fact: CF_RST_JOB
Date Key: BEGIN_DATE_KEY and RST_DATE_KEY
Periodicity: Monthly
Analytics: Outage and Distribution
	SUM(CF_RST_JOB.FACT_CNT)
	AVG(case when CF_RST_JOB.EST_RST_DATE_KEY = 0 then 0 else ROUND((CAST((CAST(cast(CF_RST_JOB.BEGIN_DTTM as DATE) as DATE) + (cast((CF_RST_JOB.EST_RST_DATE_KEY - CF_RST_JOB.BEGIN_DATE_KEY) * 24 * 60 * 60 + CF_RST_JOB.EST_RST_TIME_KEY - CF_RST_JOB.BEGIN_TIME_KEY as INTEGER) / 86400)) as DATE) - CAST(CF_RST_JOB.RST_DTTM as DATE)) * 1440) end)
	SUM(case when CF_RST_JOB.EST_RST_DATE_KEY = 0 then 0 else ROUND((CAST((CAST(cast(CF_RST_JOB.BEGIN_DTTM as DATE) as DATE) + (cast((CF_RST_JOB.EST_RST_DATE_KEY - CF_RST_JOB.BEGIN_DATE_KEY) * 24 * 60 * 60 + CF_RST_JOB.EST_RST_TIME_KEY - CF_RST_JOB.BEGIN_TIME_KEY as INTEGER) / 86400)) as DATE) - CAST(CF_RST_JOB.RST_DTTM as DATE)) * 1440) end)
	COUNT(case when CF_RST_JOB.EST_RST_DATE_KEY = 0 then 0 else ROUND((CAST((CAST(cast(CF_RST_JOB.BEGIN_DTTM as DATE) as DATE) +
		CD_STORM.SRC_STORM_NAME
		CD_CTRL_ZONE.UDF1_DESCR
		CD_CTRL_ZONE.UDF2_DESCR
		CD_CTRL_ZONE.UDF3_DESCR
		CD_CTRL_ZONE.UDF4_DESCR
		CD_CTRL_ZONE.UDF5_DESCR
		CD_EVENT.UDF8_DESCR
		CD_EVENT.UDF9_DESCR
		CD_EVENT.UDF10_DESCR
		BEGIN_DATE.CAL_YEAR
		BEGIN_DATE.UDF5_DESCR
		BEGIN_DATE.MONTH_END_DT
		BEGIN_DATE.ABS_MONTH_NBR
		RST_DATE.CAL_YEAR
		RST_DATE.UDF5_DESCR
		RST_DATE.MONTH_END_DT
		RST_DATE.ABS_MONTH_NBR
		CD_DEVICE.DEVICE_TYPE_DESCR
		CF_RST_JOB.EXCLUDE_IND

Materialized View Description	Measurements	Dimensional Attributes
	(cast((CF_RST_JOB.EST_RST_DATE_KEY - CF_RST_JOB.BEGIN_DATE_KEY) * 24 * 60 * 60 + CF_RST_JOB.EST_RST_TIME_KEY - CF_RST_JOB.BEGIN_TIME_KEY as INTEGER) / 86400)) as DATE) - CAST(CF_RST_JOB.RST_DTTM as DATE)) * 1440) end)	

B1_RST_JOB_MON_MV3
Fact: CF_RST_JOB
Date Key: BEGIN_DATE_KEY
Periodicity: Monthly
Analytics: Outage
	SUM(FACT_CNT)
	max(case when EST_RST_DATE_KEY = 0 then cast(NULL as DATE) else (CAST(cast(CF_RST_JOB.BEGIN_DTTM as DATE) as DATE) + (cast((CF_RST_JOB.EST_RST_DATE_KEY - CF_RST_JOB.BEGIN_DATE_KEY) * 24 * 60 * 60 + CF_RST_JOB.EST_RST_TIME_KEY - CF_RST_JOB.BEGIN_TIME_KEY as INTEGER) / 86400)) end)
	max(RST_DTTM)
	max(BEGIN_DTTM)
	sum(OUTG_DURATION)
		CD_STORM.SRC_STORM_NAME
		CD_CTRL_ZONE.UDF1_DESCR
		CD_CTRL_ZONE.UDF2_DESCR
		CD_CTRL_ZONE.UDF3_DESCR
		CD_CTRL_ZONE.UDF4_DESCR
		CD_CTRL_ZONE.UDF5_DESCR
		CD_EVENT.UDF8_DESCR
		CD_EVENT.UDF9_DESCR
		CD_EVENT.UDF10_DESCR
		CD_EVENT.EVENT_NBR
		CD_EVENT.EVENT_STATE_DESCR
		CD_DATE.CAL_YEAR
		CD_DATE.UDF5_DESCR
		CD_DEVICE.DEVICE_TYPE_DESCR
		CD_DATE.MONTH_END_DT
		CF_RST_JOB.BEGIN_DATE_KEY
		CD_DATE.ABS_MONTH_NBR

B1_OP_ACTG_MON_MV1
Fact: CF_OP_ACTG
Date Key: TRANS_DATE_KEY
Periodicity: Monthly
Analytics: Work and Asset
	SUM(TRANS_AMT)
	SUM(FACT_CNT)
		CD_ASSET.UDF2_DESCR
		CD_ASSET.UDF1_DESCR
		CD_ASSET.UDF3_DESCR
		CD_ASSET.UDF4_DESCR
		CD_ASSET.UDF5_DESCR
		CD_OP_ACCT.UDF5_DESCR
		CD_ASSET.ASSET_CD
		CD_ASSET.ASSET_DESCR
		CD_ASSET.UDF1_CD
		CD_DATE.CAL_YEAR
		CD_DATE.UDF5_DESCR
		CD_DATE.ABS_MONTH_NBR
		CD_DATE.MONTH_END_DT

B1_STRM_INV_MON_MV1	SUM(FACT_CNT)	CD_STRM.STRM_DESCR

Materialized View Description	Measurements	Dimensional Attributes

Fact: CF_STRM_INV
Date Key: SNAPSHOT_DATE_KEY
Periodicity: Monthly
Analytics: Work and Asset
	SUM(TOTAL_VALUE)
	SUM(VALUE_OVER_MAX)
		CD_STOCK_ITMTY.UDF2_DESCR
		CD_STOCK_ITMTY.UDF3_DESCR
		CD_STOCK_ITMTY.UDF4_DESCR
		CD_STOCK_ITMTY.UDF5_DESCR
		CD_STRM.UDF2_DESCR
		CD_STRM.UDF3_DESCR
		CD_STRM.UDF4_DESCR
		CD_DATE.CAL_YEAR
		CD_DATE.UDF5_DESCR
		CD_DATE.ABS_MONTH_NBR
		CD_DATE.MONTH_END_DT

B1_STRM_TR_MON_MV1
Fact: CF_STRM_TR
Date Key: TRANS_DT_KEY
Periodicity: Monthly
Analytics: Work and Asset
	SUM(TRANS_AMT)
	SUM(FACT_CNT)
		CD_STRM.STRM_DESCR
		CD_STOCK_ITMTY.UDF2_DESCR
		CD_STOCK_ITMTY.UDF3_DESCR
		CD_STOCK_ITMTY.UDF4_DESCR
		CD_STOCK_ITMTY.UDF5_DESCR
		CD_STRM.UDF2_DESCR
		CD_STRM.UDF3_DESCR
		CD_STRM.UDF4_DESCR
		CD_DATE.UDF5_DESCR
		CD_DATE.CAL_YEAR
		CD_DATE.ABS_MONTH_NBR
		CD_STRM.STRM_CD
		CF_STRM_TR.STOCK_OUT_IND
		CD_DATE.MONTH_END_DT

B1_WRKORD_TK_MON_MV1
Fact: CF_WRKORD_TK
Date Key: FINISH_DT_KEY
Periodicity: Monthly
Analytics: Work and Asset
	SUM(CASE WHEN CD_WRKORD_TY.WRKORD_TY_DESCR = 'Preventive Maintenance' THEN 1 ELSE 0 END)
	sum(case when CD_WRKORD_TY.WRKORD_TY_CD <> 'P' then 1 else 0 end) as SUM_WRKORD_TY_CD,
	SUM(EST_TOT_AMT)
	SUM(ACT_TOT_AMT)
	SUM(ACT_SERVCON_AMT)
	SUM(EST_SERVCON_AMT)
	SUM(ACT_LBR_AMT)
	SUM(EST_LBR_AMT)
		CD_WRKORD_TY.WRKORD_TY_DESCR
		CD_PLANNER.PLANNER_DESCR
		CD_CREW.CREW_DESCR
		CD_FAILURE.FAILURE_DESCR
		CD_ROOT_CAUSE.ROOT_CAUSE_DESCR
		CD_REPAIR.REPAIR_DESCR
		CD_ASSET.UDF1_DESCR
		CD_ASSET.UDF2_DESCR
		CD_ASSET.UDF3_DESCR
		CD_ASSET.UDF4_DESCR
		CD_ASSET.UDF5_DESCR

Materialized View Description	Measurements	Dimensional Attributes
	SUM(ACT_MAT_AMT)	CD_ASSET.UDF7_DESCR
	SUM(EST_MAT_AMT)	CD_ASSET.UDF9_DESCR
	COUNT(SRC_WRKORD_TK_ID)	CD_ASSET.UDF8_DESCR
	SUM(UDM2)	CD_ASSET.ASSET_DESCR
	SUM(ACT_LBR_HOURS)	CD_OP_ACCT.UDF5_DESCR
	COUNT(ACT_LBR_HOURS)	CD_DATE.CAL_YEAR
	COUNT(SRC_WRKORD_TK_ID)	CD_DATE.UDF5_DESCR
	SUM(FACT_CNT)	CD_DATE.ABS_MONTH_NBR
	SUM(EST_LBR_HOURS)	CD_FAILURE.FAILURE_CD
		CD_WRKORD_TY.WRKORD_TY_CD
		CD_ASSET.ASSET_CD
		CD_ASSET.UDF1_CD
		CD_DATE.MONTH_END_DT

Goals and User Defined Facts

Goals allow your zones to highlight when actual performance deviates from target performance. For example:

- A *year-to-date graph* could be configured to contrast actual revenue against budget revenue.
- A *dimensional scorecard* could highlight regions where the average duration of high-bill complaints exceeds the regulated duration.
- A *traffic light* could highlight when consumption is outside minimum and maximum usage bands.
- A *dimensional scorecard* could highlight customer classes where "churn" (a measurement of lost customers to new customers) is outside of a target value.
- ...

Goals can hold a wide variety of target amounts, for example:

- You can set up a goal to hold each fiscal period's budget revenue. You can then configure zones to highlight when actual revenue deviates from budget revenue.
- You can set up a goal to hold the target average duration of high bill complaint cases. You can then configure zones to compare the actual average duration against the target duration.
- You could set up a goal to hold the minimum and maximum usage bands for each week within a year. You can then configure zones to show when actual usage is outside the minimum and maximum values.
- You could set up a goal to hold the target number of new customers each quarter. You can then configure zones to contrast actual new customers to the target.
- ...

Note: Not just for targets. While the above examples illustrate how goals can be set up to allows zones to highlight variances from targets, the goal design can also be used to hold a variety of *user-defined facts*.

The topics in this chapter describe how to set up goals.

Note: References to Portals and Zones in this chapter apply only to the user interface used in Oracle Utilities Business Intelligence versions 2.0.5 and 2.2.x. If you are using Oracle Utilities Business Intelligence v2.3.0 or later, please refer to the Oracle Utilities Business Intelligence Metric Reference Guides for information about the dashboards and answers provided with the application, and the Oracle Business Intelligence Enterprise

Edition documentation for information on creating and configuring Oracle Business Intelligence Enterprise Edition dashboards and answers.

The Big Picture of Goal Types

You must set up a *goal type* to define the structure of each goal. For example, if you have a goal that holds "budget revenue", and another that holds "target average complaint duration", you'd need two goal types.

On a goal type you define:

- The goal's related *fact table*. This field is important because the fact's dimensions are the goal's potential dimensions.

  Note: Multi-fact fact goals. You may have goals that span facts. For example, you might have a target KPI that is computed by dividing monthly revenue by the total amount of debt that is older than 30 days. When you set up this variety of goal type, just pick one of the associated fact tables (it doesn't matter which one).
- The goal's **granularity**. We'll use an example to explain - if your organization budgets revenue at the customer class and region level, these two attributes define the goal's granularity (customer class comes from the account dimension, and region comes from the address dimension). Please note the following:
- When you set up a goal type, you define its related *fact table*. The dimensions that are related to this table define the set of dimensional attributes that can be used when defining the goal's granularity. For example, if a goal's related fact references the Address and Unit-of-Measure dimensions, this means the goal can be defined for any combination of dimensional attributes on the Address and Unit-of-Measure dimensions.
- You can define a goal's granularity using any combination of attributes from the related fact's dimensions.
- The type of **goal amounts**. You can define several amounts on a goal. For example, the goal type that holds the target average complaint duration can also hold the target minimum and maximum durations.
- The name of the **physical table** on which the goal's data is stored. Please be aware that a single physical table can hold the data for an unlimited number of goal types (e.g., you can store budget revenue and target complaint duration on the same physical table).
- The base package is supplied with a sample physical table to hold your goal data. If you require additional physical tables, please copy the columns on it verbatim. The name of this physical table is B1_GOAL_DATA .
- The goal's *periodicity*. For example, you can define that the revenue budget goal is held at the Fiscal Period level, whereas the target complaint duration goal is held at the Calendar Month level.

If a zone requires a periodicity that is greater than the goal's periodicity, the system accumulates the goal data as appropriate. For example, if you have a goal that's defined at the Calendar Month level, and a zone that shows information grouped by Calendar Quarter , the system will accumulate the goal data from each quarter's months.

User-Defined Facts

The word "goal" typically means a target value against which actual performance is compared. It's important to understand that you can use the goal objects to hold things other than target values. For example,

- If your users want a zone that contrasts revenue versus expenses and the data-warehouse doesn't contain expenses, you can:
  - Set up a goal type to hold expenses.
  - Have users enter monthly expenses using the goal transaction.
  - After the expenses are entered, you can contrast revenue (held in a "real" fact) with expenses (held in a goal) on any number of zones.
- If your users want a zone that shows the correlation between temperature variations and revenue trends, you can:
  - Set up a goal type to hold daily temperature deviations from the norm (some refer to this as a "degree day").
  - Have users enter the temperature variations (perhaps by region).
  - After the degree days exist, you can use them to calculate normalized revenue (using a calculated value on a zone) and show the calculated value on graphs and other zones.

The list is limited only by your imagination.

➤ **Note: User defined facts.** You may find it useful to think of a goal type as the meta-data that defines *the structure* of a user-defined fact.

When A Fact Has Multiple Goal Types

Whether or not a fact has one or more goal types depends on the nature of your goals and your organization's structure. The following points will help explain:

- **Different periodicities will result in different goal types.** When you set up a goal type, you define the periodicity in which the goal is entered. For example, if budget revenue is defined per **month**, and degree-days are defined for each **day**, you'd need two goal types (one with a periodicity of Calendar Month , the other with a periodicity of Daily).
- **Different granularity will result in different goal types.** When you set up a goal type, you define the dimensional attribute combinations in which the goal is entered. For example, if budget revenue is defined for combinations of customer class and division; and degree days are entered per climate zone; you'd need two goal types (one with dimensions of Customer Class and Division, the other with a dimension of Climate Zone).

The Big Picture of Goal Events

After you've set up goal types, you set up goal events to define the goal values. A goal event is a record of goal values that are active for a given time-period. For example, if you've set up a goal type for budget revenue, you'll create a goal event whenever budgets are published or revised.

Please be aware that you can override specific time periods without losing the original values. We will use an example to explain:

- Let's assume that the annual budget is published sometime before the fiscal year begins. At this time, you'd create a goal event with the budget amounts for each fiscal period. You'd then indicate all time periods in the event are active.
- Sometime during the budget year, the finance department publishes a revised budget for the remaining periods in the year. At this time, you can create a new budget event for the remaining periods (rather than override the original budget values). You would then need to return to the original budget event and indicate that it's only active during the first part of the budget year.

Using and Displaying Goals On Zones

A zone can be configured to retrieve values from any combination of facts and goals. For example, you could configure a zone to show actual revenue (from the financial fact) and budget revenue (from the budget goal type). You tell the zone how to retrieve a value when you set up the zone's measures.

● **FMI:** Refer to *General Zone Parameters* (see the **Measure** parameter) for the configuration options.

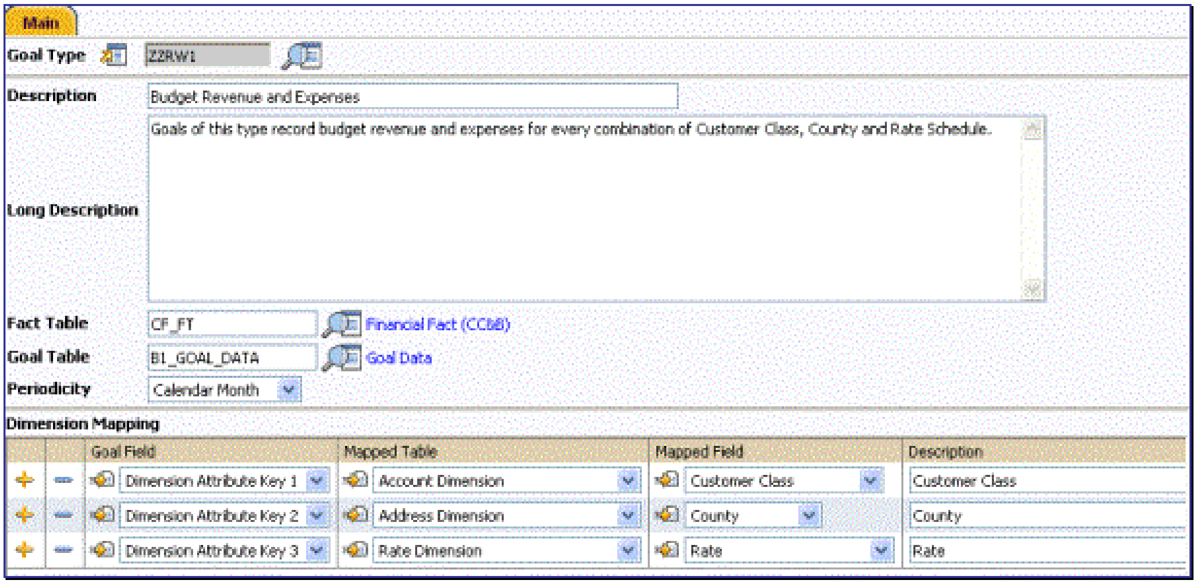
Sample Zones Using Goals

Refer to *Goal Samples* various ideas on how to integrate goals into your zones.

Defining Goal Types

Select **Admin Menu, Goal Type** to maintain goal types.

● **FMI:** Refer to *The Big Picture of Goal Types* for background information.



Main

Goal Type Z2RW1

Description Budget Revenue and Expenses

Long Description Goals of this type record budget revenue and expenses for every combination of Customer Class, County and Rate Schedule.

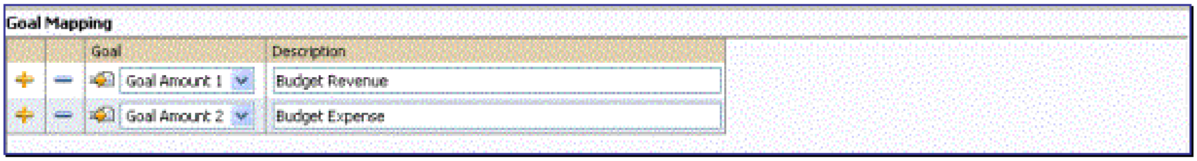
Fact Table CF_FT Financial Fact (CC&B)

Goal Table B1_GOAL_DATA Goal Data

Periodicity Calendar Month

Dimension Mapping

Goal Field	Mapped Table	Mapped Field	Description
Dimension Attribute Key 1	Account Dimension	Customer Class	Customer Class
Dimension Attribute Key 2	Address Dimension	County	County
Dimension Attribute Key 3	Rate Dimension	Rate	Rate



Goal Mapping

Goal	Description
Goal Amount 1	Budget Revenue
Goal Amount 2	Budget Expense

Description of Page

Specify an easily recognizable `Zone Type` identifier and `Description`. Use the `Long Description` to describe in detail what the zone type does.

Define the principal **Fact Table** associated with this goal. The attributes on this fact's dimensions define the possible *granularity* of this goal. You define the specific dimensional attributes at which this goal is defined in the **Dimension Mapping** grid below.

Define the **Goal Table** on which the goal's data is physically stored. Please be aware that a single physical table can hold the data for an unlimited number of goal types (e.g., you can store budget revenue and target complaint duration on the same physical table). The base package is supplied with a sample physical table to hold your goal data. If you require additional physical tables, please copy the columns on it verbatim. The name of this physical table is B1_GOAL_DATA .

Define the **Periodicity** in which the goal's data is entered. For example, you can define that the budget goal is held at the Fiscal Period level, whereas the target complaint duration goal is held at the Calendar Month level.

➤ **Note: Accumulating lower level periodicities.** If a zone requires a periodicity that is greater than the goal's periodicity, the system accumulates the goal data as appropriate. For example, if the goal is defined at the Calendar Month level and a zone needs information grouped by Calendar Quarter , the system accumulates the goal data from each quarter's months.

The **Dimension Mapping** grid defines the *granularity* of this goal. For example, if your organization budgets revenue at the customer class and region level, you'd need two entries in the grid. The following information is defined for each dimensional mapping:

- **Goal Field** defines that attribute on the Goal Table that holds the dimensional attribute's value.
- **Mapped Table** defines the table on which the dimensional attribute resides. Dimensional attributes can reside on any of the Fact Table's dimensions. In addition, you can also define goals for any degenerate dimension on the Fact Table.

- **Mapped Field** defines the column on the Mapped Table whose values have goals defined. If the Mapped Table is a dimension, you can reference any of its dimensional attribute codes. If the Mapped Table is the Fact Table, you can reference any of its degenerate dimensions.
- **Description** is the name of the dimensional attribute.

The **Goal Mapping** grid defines the fields that hold the goal amounts. For example, the goal type that holds the target average complaint duration can also hold the target minimum and maximum durations. The following information is defined for each goal value:

- **Goal** defines that attribute on the Goal Table that holds the goal's value.
- **Description** is the name of the goal.

Where Used

Follow this link to open the data dictionary where you can view the tables that reference *B1_GOAL_TYPE*.

Defining Goal Events

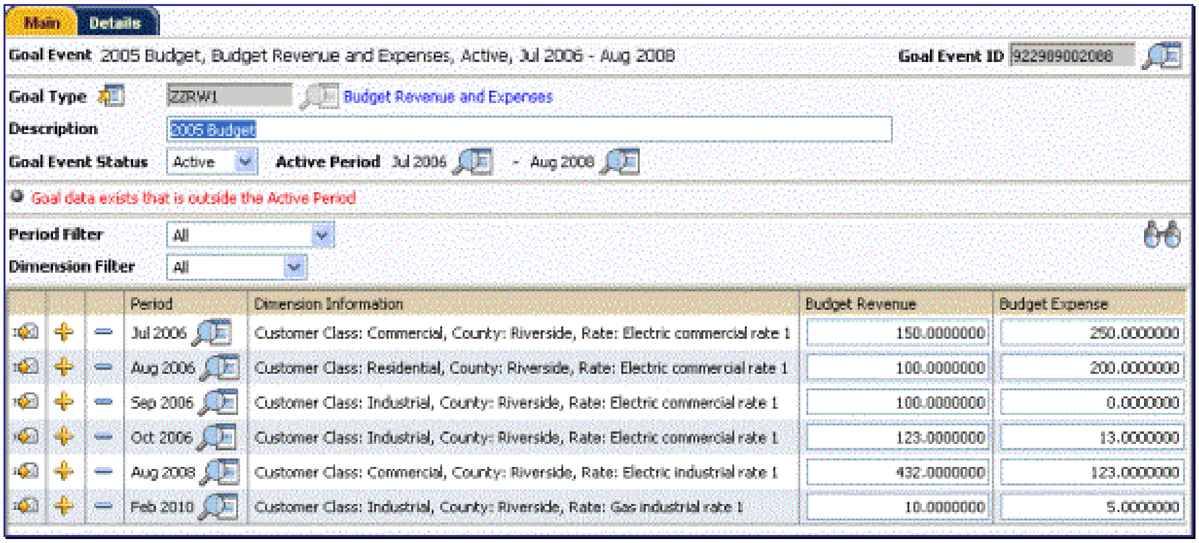
The topics in this section describe how to maintain goal events.

Goal Event - Main

This page is used to maintain goals.

● **FMI:** Refer to *The Big Picture of Goal Events* for background information.

Select **Admin Menu, Goal Event** to maintain goals (note, some of this information can be maintained on the **Details** tab).



Goal Event 2005 Budget, Budget Revenue and Expenses, Active, Jul 2006 - Aug 2008 **Goal Event ID** 922989002088

Goal Type ZZRW1 Budget Revenue and Expenses

Description 2005 Budget

Goal Event Status Active **Active Period** Jul 2006 - Aug 2008

Goal data exists that is outside the Active Period

Period Filter All

Dimension Filter All

Period	Dimension Information	Budget Revenue	Budget Expense
Jul 2006	Customer Class: Commercial, County: Riverside, Rate: Electric commercial rate 1	150.0000000	250.0000000
Aug 2006	Customer Class: Residential, County: Riverside, Rate: Electric commercial rate 1	100.0000000	200.0000000
Sep 2006	Customer Class: Industrial, County: Riverside, Rate: Electric commercial rate 1	100.0000000	0.0000000
Oct 2006	Customer Class: Industrial, County: Riverside, Rate: Electric commercial rate 1	123.0000000	13.0000000
Aug 2008	Customer Class: Commercial, County: Riverside, Rate: Electric industrial rate 1	432.0000000	123.0000000
Feb 2010	Customer Class: Industrial, County: Riverside, Rate: Gas industrial rate 1	10.0000000	5.0000000

Description of Page

Goal Event contains a concatenation of basic information about the goal event. **Goal Event ID** is the system-assigned unique identifier of the goal event. These values only appear after the goal event is added to the database.

Use **Goal Type** to define this event's goal type.

Use **Description** to describe the event.

Goal Event Status defines the state of the goal event. The following values are possible:

- Active . Goal data for events in this state will be retrieved by the various zones.

- Inactive . Goal data for inactive events is ignored by the various zones.

If the event is Active , use **Active Period** to define the range of periods whose data will be retrieved by zones. This feature allows you to activate a subset of the periods. If goal data (defined in the following grid) exists outside of the Active Period, a warning will appear.

The filters provide you with options to control the goal data that appears in the grid. The following points describe the various options:

- Use **Period Filter** to restrict the goal data based on time-period. The following options are available:
    - All . This option shows all goals regardless of time-period.
    - Specific Time Period . This option allows you to restrict the goals to specific time periods. When this option is selected, you must define the **Start Period** and **End Period**.
- Use **Dimension Filter** to restrict the goal data to a specific dimensional attribute value. The following options are available:
    - All . This option shows all goals regardless of the related dimensional attribute value.
    - Dimension description. This option allows you to restrict the goals to those referencing a specific dimensional attribute value. A separate dimension description exists for each dimension mapped on the event's Goal Type.

Note: Don't forget to click the search button after changing the filters.

There are two ways to enter / update goal data. You can use the scroll on the next tab OR the grid below. The major difference between these two metaphors is that the following grid does not allow you to define the dimensional attribute values (i.e., it's meant to be used to update existing goal values or to enter goal values when the goal type doesn't reference dimensions). The following information appears in the grid:

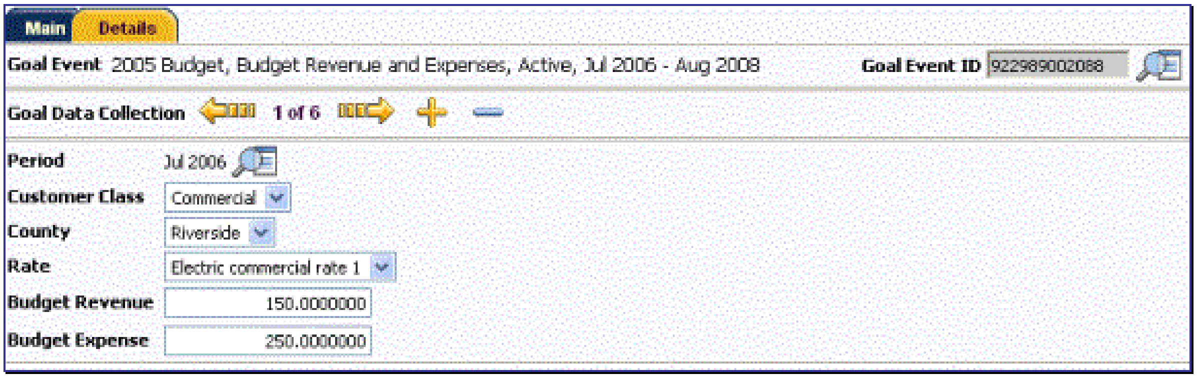
- **Period**. Use the search to select the goal's time-period. Only time-periods consistent with the goal type's periodicity can be selected.
- **Dimension Information**. This column contains a concatenation of the dimensional attributes associated with the goal (these values are entered on the next tab).
- Goal amounts. The remaining columns hold the goal amounts defined for the Goal Type.

Goal Event - Details

This page is used to maintain goals.

FMI: Refer to *The Big Picture of Goal Events* for background information.

Select **Admin Menu, Goal Event** and navigate to the **Details** tab to maintain goals (note, a subset of this information can be maintained on the **Main** tab).



Goal Event 2005 Budget, Budget Revenue and Expenses, Active, Jul 2006 - Aug 2008

Goal Event ID 922989002088

Goal Data Collection

Period Jul 2006

Customer Class Commercial

County Riverside

Rate Electric commercial rate 1

Budget Revenue 150.0000000

Budget Expense 250.0000000

Description of Page

Goal Event contains a concatenation of basic information about the goal event. **Goal Event ID** is the system-assigned unique identifier of the goal event. These values only appear after the goal event is added to the database.

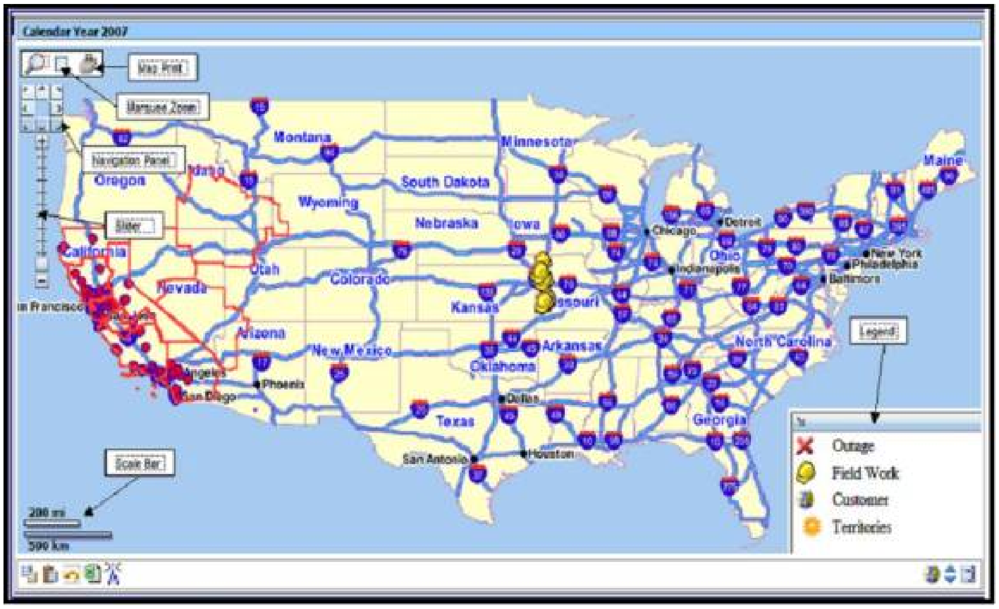
The **Goal Data** scroll contains the goal data. The information that appears in this scroll differs depending on how the goal event's goal type has been configured. The following points describe the dynamic attributes:

- **Period**. Use the search to select the goal's time-period. Only time-periods consistent with the goal type's periodicity can be selected.
- Dimensional attributes. A separate field exists for each of the goal type's dimensional attributes.
- Goal amounts. A separate field exists for each of the goal type's goals.

➤ **Note: Faster way to maintain information.** You can navigate to a specific goal using the go to button in the grid on the Main tab. To do this, use the filters to narrow down the goals shown in the grid. Then press the associated "go to" button in the grid to transfer to this tab with the goal displayed.

Maps (Portals and Zones)

Mapping feature in Oracle Utilities Business Intelligence v2.2.x is implemented through the geographic map zone type. A map zone is able to display points of interest on an actual geographical map. The geographical map is built and stored in a mapping database. The points of interest come from data stored in the system star schema database.



➤ **Note:** The concepts described in this chapter apply only to the user interface used in Oracle Utilities Business Intelligence versions 2.0.5 and 2.2.x. If you are using Oracle Utilities Business Intelligence v2.3.0 or later, please refer to the Oracle Utilities Business Intelligence Metric Reference Guides for information about the dashboards and answers provided with the application, and the Oracle Business Intelligence Enterprise Edition documentation for information on creating and configuring Oracle Business Intelligence Enterprise Edition dashboards and answers.

Technical Components

The components necessary to render a geographic map zone are:

- Oracle Locator
- Oracle MapViewer
- Geographic coordinates

The Oracle Utilities Business Intelligence product is delivered with Oracle Locator and some default maps.

Oracle Locator

Oracle Locator is a feature of Oracle Database Standard and Enterprise Editions. It stores g *eographic information system data and* fully integrates it in the Oracle server itself. Locator provides significant capabilities required to support Internet and wireless service-based applications and partner-based GIS solutions.

➤ **Note:** Refer to Oracle's documentation for the detailed information on Oracle Locator.

Oracle MapViewer

Oracle MapViewer is an Oracle Application Server Java component and JDeveloper extension used for map rendering and viewing geospatial data managed by Oracle Spatial or Locator. It complements the geographic data management capacity of the Oracle Database by providing a generic web-based means of delivering and viewing any geographic data in the database.

MapViewer includes a feature called Oracle Maps, which consists of a map cache server and an AJAX based web mapping client library. Geographic map zone type uses Oracle Maps' JavaScript API.

➤ **Note:** Refer to Oracle's documentation for the detailed information on Oracle MapViewer.

Geographic Coordinates

In order to place information on a geographic map, the fact must reference the full latitude and longitude coordinates. Populating the latitude and longitude coordinates is referred to as geocoding.

Geocoding can be performed in several ways:

- Oracle Spatial provides an embedded Geocoding engine (Oracle Spatial is not included with the product)
- By purchasing datasets from suppliers, for example Navteq
- There are resources on the Internet (e.g. U.S. Census Bureau Gazatteer)

Structure of a Map

Internally, map contents are organized into layers, visual representations of geographic features that share certain common attributes.

All the layers except the fixed figures layer get automatically updated and realigned by the client library when the map is dragged or zoomed. The fixed figures layer will never be moved.

➤ **Note:** Refer to Oracle's documentation for the detailed information on map layers.

Base Map Layers

Base map layer displays a background map. It consists of multiple adjacent map tiles, fixed-size map image files that cover a small, pre-determined area of the overall map coverage.

➤ **Note:** When associated with a MapViewer base map the map image tiles in a map cache instance are generated by MapViewer using its own rendering engine.

Theme Based FOI Layers

Theme based Features of Interest (FOI) layers displays Features of Interest that respond to mouse rollover with tool-tip like info window. Attributes of each Feature of Interest are accessible through the JavaScript API.

User Defined FOI Layer

User defined Features of Interest (FOI) layer displays individual, dynamically created Features Of Interest.

Info Window Layer

An info window is a small pop-up window that displays customizable content in the map. It is typically associated with FOIs and is placed directly above the user defined FOI layer.

Fixed Figures Layer

The topmost layer contains fixed figures, which are immovable elements such as copyright notes, scale bar and navigation panel.

Building a Map

The essential steps to building the geographic map application using the Oracle Maps JavaScript API are:

- Loading the Oracle Maps JavaScript API library, a single file named oraclemaps.js , from the MapViewer server into the browser in the beginning of the oraGeoMap.jsp page:

```
<script language="Javascript" src="code/oraclemaps.js"></script>
```

- Placing an HTML DIV component that serves as the master map container on the page. It can be placed anywhere on the Web page. The unique id should be passed to the Oracle Maps library so that it knows where to display the map content.

```
<div id="map" style="left:0px; top:0px; width:100%; height:100%"></div>
```

- Writing custom JavaScript code to set up initial map contents (base-map, FOI layers, etc) and implement application specific logic. This custom JavaScrip has to be loaded in the beginning of the oraGeoMap.jsp page :

```
<script language="Javascript" src="code/oraGeoMap.js"></script>
```

```
<script language="Javascript" src="code/oraGeoMapSupport.js"></script>
```

- Next the browser invokes the oraShowMap() function on the page load to execute the application logic and display the map.

```
<body onload="oraShowMap()">
```

Configuring a Map

Once the initial map contents and the application specific logic are implemented in the oraGeoMap.jsp page the next step is to configure a *feature configuration* using the Geo Map Default Attributes feature type with default settings for all map zones.

Creating a Map Zone

Geographic Map Feature Configuration

The following table describes the parameters that control *geographic map zones*.

Geographic maps require some technical information such as URLs and zoom levels. These can often be shared among all maps used by an installation. These parameter values have been made available as a Feature Configuration that means that many map zones can omit this information while still being able to override the value. Below is a description of the Geo Map Default Attributes options and example values:

Option	Description
Map URL	Is a URL to the map browser file. This could be an HTML file or a JSP file, etc. For example b1/oraGeoMap.jsp
Map Server	Is a URL to the Oracle MapViewer server (or the server of an alternate mapping tool). For example http://yourServer:8888/mapviewer
Base Map	Is the identifier of the basic map (often a city, state or country). It is in the format of dataSource.mapName. For example mvDemo.DEMO_MAP.
Center Coordinates	Is the coordinates where the map should be centered on the initial view, This is in the formation of latitude,longitutde. For example -122.22,37.77.
Zoom Level	The zoom level for when the map is initially displayed. This is a number based upon the available zoom levels defined in the map viewer when the map is created. For example 4 (often a region level zoom).
Street Zoom Level	The zoom level (number) which is necessary to see street details. For example 8.
City Zoom Level	The zoom level (number) which is necessary to see city details. For example 6.
Region Zoom Level	The zoom level (number) which is necessary to see region details (for example, county or state detail). For example 4.
Legend	Defines if the legend should be displayed or not. It may be set to true or false . If this is not defined, true is the default value.

Geographic Map Parameters

The following table describes the parameters that control *geographic map zones*.

➤ **Note: General parameters.** The *general listing of parameters* describes additional parameters.

Parm Type	Description
Override Map Defaults	Use this parameter to override mapping defaults provided in the *Configuration Features*. The available overrides are: - **MAPURL** is a URL to the map browser file. This could be an HTML file or a JSP file, etc. **- MAPSERVER** is a URL to the mapviewer server. - **BASEMAP** is the identifier of the basic map (often a city, state or country). It is in the format of dataSource.mapName. For example baseMap=mvDemo.DEMO_MAP **- CENTERCOORDINATE** is the coordinates where the map should be centered on the initial view, This is in the formation of latitude,longitutde. For example centerCoordinate=-122.22,37.77 - **ZOOM** is the zoom level for when the map is initially displayed. This is a number based upon the available zoom levels defined in the map viewer when the map is created.

Parm Type	Description
	- **STREETZOOM** is the zoom level (number) which is necessary to see street details. - **CITYZOOM** is the zoom level (number) which is necessary to see city details. - **REGIONZOOM** is the zoom level (number) which is necessary to see region details (for example, county or state detail). All of these mnemonics are optional. Each individual option may be overridden or left to the default values. For Example: zoom=2 would adjust the initial zoom level of the display to a high detail (probably street level) mapUrl= b1/oraGeoMap.jsp mapServer=http://localhost:8888/mapviewer baseMap=mvdemo.demo_map centerCoordinates= -122.22,37.77 zoom=2 streetZoom=4 cityZoom==6 regionZoom=8 adjusts many of the default options. It points to a new map url and server (perhaps because it contains alternate maps) along with adjusting the center point of the display map and the zoom levels.
Theme Map 1 to 3	Theme maps can be used to display additional, non-coordinate specific, detail. This could be highways, county boundaries, rivers, etc. - **THEME** is the theme identifier in the format of dtaSource.mapName. - **ICON** defines the icon to display on the map for the coordinate point. It can be a reference to a Display Icon or an explicit folder path. - **LABEL** defines the label to be used for the coordinate point. This can be either a field or a 'value' This will appear in the map legend and map options. For example: theme=mvdemo.highways label='Highways' icon=ROAD displays a layer on the map showing all the highways. The ROAD icon and the label 'Highways' appears in the legend and Map Options.
Coordinate 1 to 3	This defines the information necessary to build a coordinate point on the map. Each coordinate (1 to 3) defines a different type of point that should be presented on the map. - **LONG** is in the format of TABLE.FIELD and defines the coordinate to be used for longitude - **LAT** is in the format of TABLE.FIELD and defines the coordinate to be used for latitude - **ICON** defines the icon to display on the map for the coordinate point. It can be a reference to a Display Icon or an explicit folder path. - **LABEL** defines the label to be used for the coordinate point. This can be either a field or a 'value' This will appear in the map legend and map options. - **FACTFIELD** (optional) is used when there are more than one dimensional key fields on the fact table. For example:

Parm Type	Description
	long=CD_EVENT.X_COORDINATE lat=CD_EVENT.Y_COORDINATE icon=WORKER label=WORKER_LBL defines the position of a field worker along with the icon to display on the map (and a label field)
Coordinate Hover Text 1 to 3	This parameter defines the text that will appear when the mouse is over a coordinate point on the map. This can be defined in two ways: - You can reference a message category and number and define the fields that are substituted into the substitution placeholders. - You can specify a value (with variables) directly. The following fields can be referenced: - Mx . For example, M1 holds the first measurement. - Mx-label . For example, M1-label holds the label of the first measurement. - Nx . For example, N1 holds the number of fact rows used to derive the first measurement. - Vx . For example, V1 holds the first calculated value. - Vx-label . For example, V1-label holds the label of the first calculated value. - CDx . For example, CD1 holds the value of the first coordinate detailed description. - CDx-label . For example, CD1-label holds the label of the first coordinate detailed description - 'any value' . This is a specified value For example: M1-label '(' M1 ')' display the label from measure 1 followed by the value of measure 1 inside parenthesis. msg=90000,1001 %1=M1 displays the message defined by category 90000, number 1001 and substitutes %1 for the value of measure 1. If the hover text is not defined, the value of coordinate detailed description 1 will be displayed.
Coordinate Detailed Description 1 to 10 (for Coordinates 1 to 3)	This parameter controls what to display when a coordinate point is clicked. Up to 10 pieces of information may be displayed per coordinate. - **SOURCE** defines what value to display. It can be in the format of TABLE.FIELD, Mx, Nx or Vx - **LABEL** defines what to text to display against the value. This can be either a field or a 'value'. If it is not provided, it will be defaulted from the **SOURCE** label. - **BROADCAST** defines if the value can be broadcast to other zones. It can be true or false. The default is true. For example: source=CD_EVENT.FIRST_CALL_ADDR broadcast=false defines a detailed description line that contains the First Call Address (with a label taken from CD_EVENT.FIRST_CALL_ADDR) that is not broadcastable.

Parm Type	Description
	source=CD_EVENT.REMEDY_CD label=ACTION_TO_FIX_LBL defines a detailed description line that contains the Remedy Code (with a label taken from a field) that is broadcastable.

Additional Toolbar Options for Geographic Maps

Show Map Options

Click the **show map options** icon to show the *Graph Options Area* in the *Multi-Use Area*. This button only appears if a graph is shown in the *Graphic Display Area*.

When the graph options appear in the multi-use area, a "red x" is superimposed on top of the graph options icon. If you push the icon again, the multi-use area will be suppressed.

Additional Display Areas for Geographic Maps

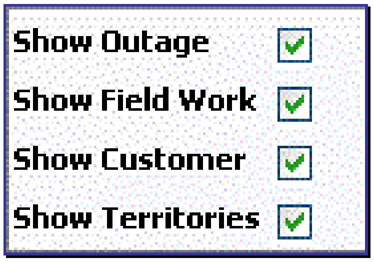
Map Options Area

Note: Only appears for geographic maps. The Map Options Area is only available when a map is shown in the *Graphic Display Area*.

Expose the Map Options Area (by clicking *Show Map Options*) if you want to do the following:

- Hide one or more visible layers (themes or coordinate point information)

The following is an example of how the Map Options area looks:



Show Outage ☑

Show Field Work ☑

Show Customer ☑

Show Territories ☑

Maps (Oracle Business Intelligence Enterprise Edition)

Mapping feature in Oracle Utilities Business Intelligence 2.3.x is implemented using an HTML Static Text box in an answer that queries Geographical Data from the Data Warehouse. The geographical data must match predefined geographical data stored in MapViewer geographical features, typically State, County, City and Zip Code boundaries. It can also match geographical entities present in the Oracle Utilities Network Management network model, or any other geographical feature that may exist in the MapViewer configuration and in the Data Warehouse tables.

Note: The concepts described in this chapter apply only to the user interface used in Oracle Utilities Business Intelligence versions 2.3.0 or later. If you are using Oracle Utilities Business Intelligence v2.0.5 or 2.2., please refer to the previous section describing Maps with Portals and Zones.

Technical Components

The components necessary to render a geographic map are:

- Oracle eLocation, Google Maps, or Bing Maps
- Oracle Map Viewer
- Geographic Spatial Data

The Oracle Utilities Business Intelligence product is delivered configured to use Oracle eLocation and contain some default maps that will not work unless a customer loads Geographic Spatial data.

Oracle eLocation

Oracle eLocation is an Oracle-hosted web site that contains a number of components including geocoding, mapping and a routing engine ,that combines to give you a very comprehensive location mapping tool. Location Services is 100% Java, it uses Oracle Application Server, Oracle Spatial and NAVTEQ data. We use this web site as the default base map that all other spatial data is displayed on top of.

We also provide support for using Google Maps or Yahoo maps as a base map. The base map can be changed in the Map Attribute Profile screen from the Oracle Utilities Business Intelligence Application, as described in the Oracle Utilities Advanced Spatial Analytics Installation Guide.

Oracle Map Viewer

Oracle MapViewer is an Oracle Application Server Java component and JDeveloper extension used for map rendering and viewing geospatial data managed by Oracle Spatial or Locator. It complements the geographic data management capacity of the Oracle Database by providing a generic web-based means of delivering and viewing any geographic data in the database.

MapViewer includes a feature called Oracle Maps, which consists of a map cache server and an AJAX based web mapping client library. Geographic maps use Oracle Maps' JavaScript API to render a map in an answer. The Oracle MapViewer server must be setup on the same server as Oracle Business Intelligence Enterprise Edition, since URLs are created from one server to another based on the current URL address.

Oracle MapViewer is also used to import Geographical data for display on top of the Base Map, based on matching data queried from the data warehouse.

For instructions on how to setup and configure Oracle MapViewer, refer to the Oracle Utilities Advanced Spatial Analytics Installation Guide.

➤ **Note:** Refer to Oracle's documentation for the detailed information on Oracle MapViewer.

Geographic Spatial Data

In order to place information on a geographic map, data in the data warehouse must match Geographic data (Themes) that is configured in Oracle MapViewer.

The standard map answers delivered with Oracle Utilities Business Intelligence include maps that query State, City, County, Zip Code and Network Model summary data. Since Oracle Utilities Business Intelligence does not have access to this spatial data (and each customer would require different spatial data), it is the responsibility of the implementation team to setup the Geographic Themes used in the maps. For detailed instructions on how to setup these standard spatial themes, refer to the Oracle Utilities Advanced Spatial Analytics Installation Guide.

Disabling Map Answers

By default, the maps answers delivered with the product will be displayed whether or not MapViewer is installed. If MapViewer is not installed, then error message will be displayed, and each answer will be empty. So if a customer does not want to display maps, a global variable has been setup in the UtilitiesBusinessAnalytics232.rpd file that enables or disables the display of Map answers.

To turn off the display of map answers, follow these steps:

1. Open UtilitiesBusinessAnalytics232.rpd using the Oracle Business Intelligence Administration Tool.
2. Select Manage -> Variables.
3. Click on Repository -> Variables -> Static.
4. Edit the OUBI_SPATIAL_ENABLED variable, changing the Default Initializer from ‘Y’ to ‘N’.
5. Save the RPD file changes and restart the Oracle Business Intelligence Enterprise Edition Server.

Configuring Maps

This section provides guidelines for configuring maps used with Oracle Business Intelligence Enterprise Edition.

Global Settings

Once the MapViewer contents are installed, the next step is to configure a feature configuration using the Map Attribute Profile feature type with default settings for all map answers.

The following parameters are available for global Map setup:

Base Map	Specifies the base map to used. The default value is: b1_world_map. Change this only if you do not follow the standard installation steps and create a different base map.
Profile Cache	Specifies whether to cache all map attribute and theme profile settings. Valid values are true or false.
Copyright Text	Defines copyright text to display on each map.
Default Data Source	Database Connection String for the database that contains the MapViewer data
Weather Bug API Key	The API Key provided by Weather Bug. Used only if using Weather Bug to display radar images on maps.
Weather Bug PID Key	The PID Key provided by Weather Bug . Used only if using Weather Bug to display radar images on maps.
User Third Party Map Type	Specifies type of Map to display if using Google or Bing Maps.
User Third Party Map	Specifies the third party map type to use. Valid values are google, bing, none
Bing Map Source	The URL for Bing Map. Used only if using Bing maps. For example: http://ecn.dev.virtualearth.net/mapcontrol/mapcontrol.ashx?v=6.2
Bing Map API Key	The API key for Bing maps. Used only if using Bing Maps.
Google Map Source	The URL for Google Maps. Used only if using Google maps. For example: http://maps.google.com/maps?file=api&v=2
Google Map API Key	The API key for Google maps. Used only if using Google Maps.

Map Theme Settings

Each map answer displays data in a map based on Themes defined in the Map Theme Profile menu from the Oracle Utilities Business Intelligence Application. Assuming a standard installation with no configuration changes, none of the pre-defined themes will need to be modified.

To view the themes that are used in a Answer, open the answer using the Oracle Business Intelligence Enterprise Edition Answers Tool, select the Results Tab, and click the Edit View icon on the Static Text box. Note that using Internet Explorer is recommended for this since Firefox may truncate the Static text if there is a large amount of code.

After opening the static text, you will see code similar to this code from the Arrears Map answer:

```
<div id="MapNode1"
style="margin:0px;padding:0px;width=100%;height=600px;"></div>
<script language="javascript"
src="/mapviewer/fsmc/jslib/obiee_mapping_inc.js"></script>
<script language="javascript">
    setMapUrl('/mapviewer/fsmc/oraGeoMap.jsp');

    var parm1 = new Array();
    parm1['nodeId'] = 'MapNode1';
    parm1['themeProfile'] = 'B1-012-THEME';
    parm1['legendSelected'] = 'Y';
    parm1['legendLabel'] =
 '@{biServer.variables['NQ_SESSION.CD_ADDR_UDF3_DESCR']}';
    parm1['geographicalKeyColumn'] = parm1['legendLabel'];
    parm1['valueColumn'] =
 '@{biServer.variables['NQ_SESSION.CF_ARREARS_UDM5']}';
    parm1['legendTitle'] =
 '@{biServer.variables['NQ_SESSION.B1_LEGEND_LBL']}';
    parm1['getAnalyticColumn'] = 'Y';
    parm1['legendLabel'] = ' ';
    addNSDPThemeParameter(1, parm1);

    showBirdseyeMap();

</script>
```

In this example, the Map Theme Profile being used is B1-012-THEME. The other parameters set in this code override the base settings in the Map Theme Profile, allowing us to send configuration text to the Labels, which is not possible in the Map Theme Profile configuration.

The first 4 lines and last two lines must be present in every map answer, and the following line of text must exist in an HTML block on the dashboard:

```
<script language="javascript"
src="/mapviewer/fsmc/jslib/obiee_mapping_inc.js"></script>
```

By default, this line of text exists in an Initialize JS HTML text block just above the map answer on every dashboard page that contains a map.