Hierarchies is a series of many-to-one relationships and can be of different levels. A Region hierarchy consists of: Region → Country → State → City → Street. Hierarchies follow top-down or bottom-up approach.

Logical dimensions or dimension hierarchies are created in BMM layer. There are two types of dimensional hierarchies that are possible −

- Dimensions with level-based hierarchies.
- Dimension with Parent-Child hierarchies.

In level-based hierarchies, members can be of different types and members of the same type come only at single level.

In Parent-Child hierarchies, all members are of the same type.

Dimensions with Level-based Hierarchies

Level-based dimension hierarchies can also contain parent-child relationships. The common sequence to create level-based hierarchies is to start with grand total level and then working down to lower levels.

Level-based hierarchies allows you to perform −

- Level-based calculated measures.
- Aggregate navigation.
- Drill down to child level in dashboards.

Each dimension can only have one grand total level and it doesn't have a level key or dimension attributes. You can associate measures with grand total level and default aggregation for these measures are grand total always.

All lower levels should have at least one column and each dimension contains one or more hierarchies. Each lower level also contains a level key which defines unique value at that level.

Types of Level-based Hierarchies

Unbalanced Hierarchies

Unbalanced hierarchies are those where all the lower levels don't have the same depth.

Example − For one product, for one month you can have data for weeks and for other month you can have data available for day level.

Skip Level Hierarchies

In skip-level hierarchies, few members don't have values at higher level.

Example − For one city, you have state → country → Region. However for other city, you have only state and it doesn't fall under any country or region.

Dimension with Parent-child Hierarchies

In parent-child hierarchy, all the members are of the same type. The most common example of parent-child hierarchy is the reporting structure in an organization. Parent-child hierarchy is based on a single logical table. Each row contains two keys – one for the member and another for the parent of the member.

Level-based measures are created to perform calculation at a specific level of aggregation. They allow to return data at multiple levels of aggregation with one single query. It also allows to create share measures.

Example

Let us say there is a company XYZ Electronics which sells its products in many regions, countries and cities. Now the company President wants to see the total revenue at country level - one level below region and one level above cities. So total revenue measure should be summed up to the country level.

These type of measures are called level-based measures. Similarly, you can apply level-based measures on the time hierarchies.

Once the dimension hierarchies are created, level-based measures can be created by double clicking on the total revenue column in the logical table and setting the level in the levels tab.

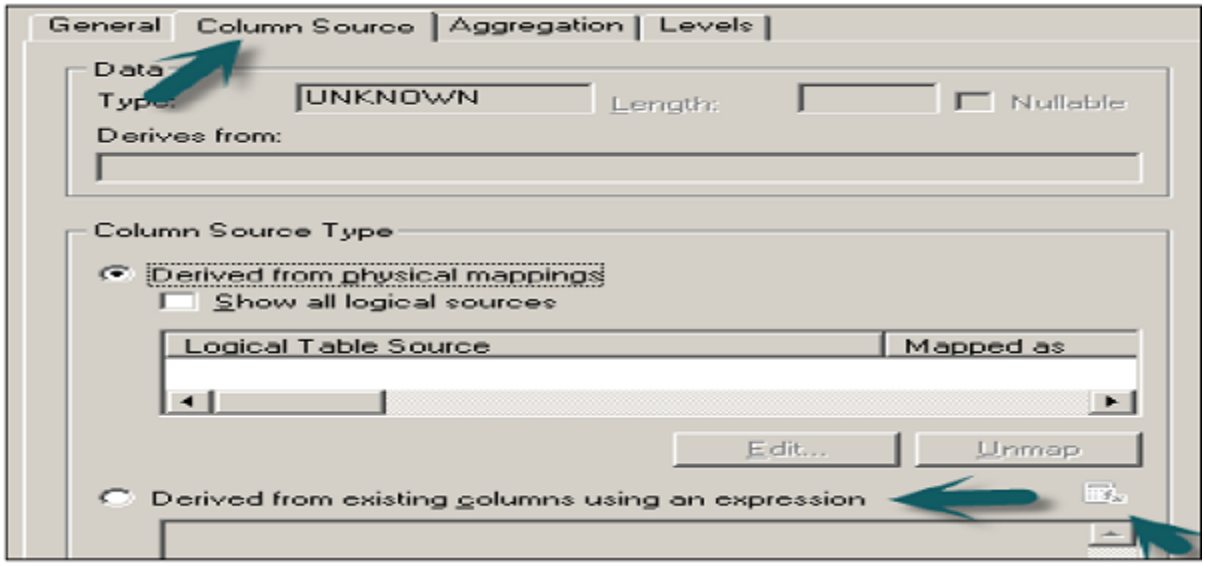
Create Level-Based Measures

Open the repository in offline mode. Go to File → Open → Offline.

Select .rpd file and click open → Enter repository password and click Ok.

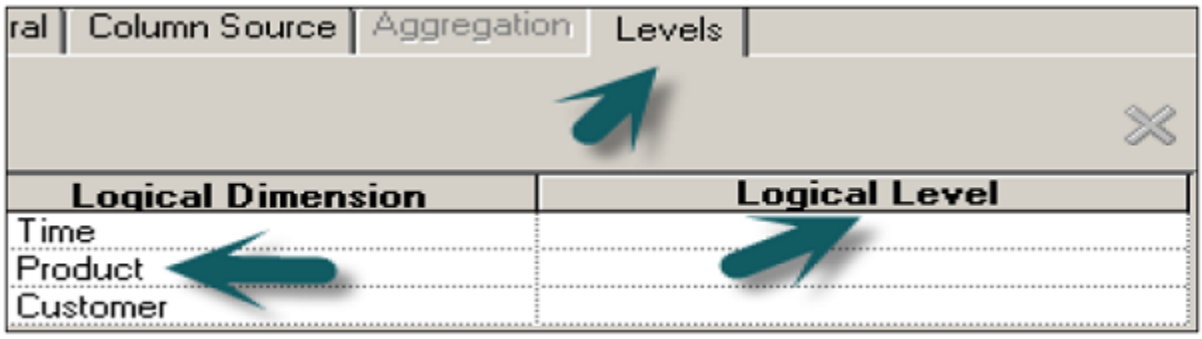
In BMM layer, right-click on Total Revenue column → New Object → Logical column.

It will open the logical column dialog box. Enter the name of logical column total revenue. Go to column source tab → Check derived from existing columns using an expression.



Once you select this option, expression edit wizard will be highlighted. In expression builder wizard, select the logical table → Column name → Total revenue from the left side menu → Click OK.

Now go to level tab in logical column dialog box → Click on logical dimension to select it as grand total under logical level. This specifies that the measure should be calculated at grand total level in the dimension hierarchy.



Once you click OK → Total Revenue logical table will appear under the logical dimension and Fact tables.

This column can be dragged to presentation layer in the subject area to be used by end users to generate reports. You can drag this column from fact tables or from logical dimension.