

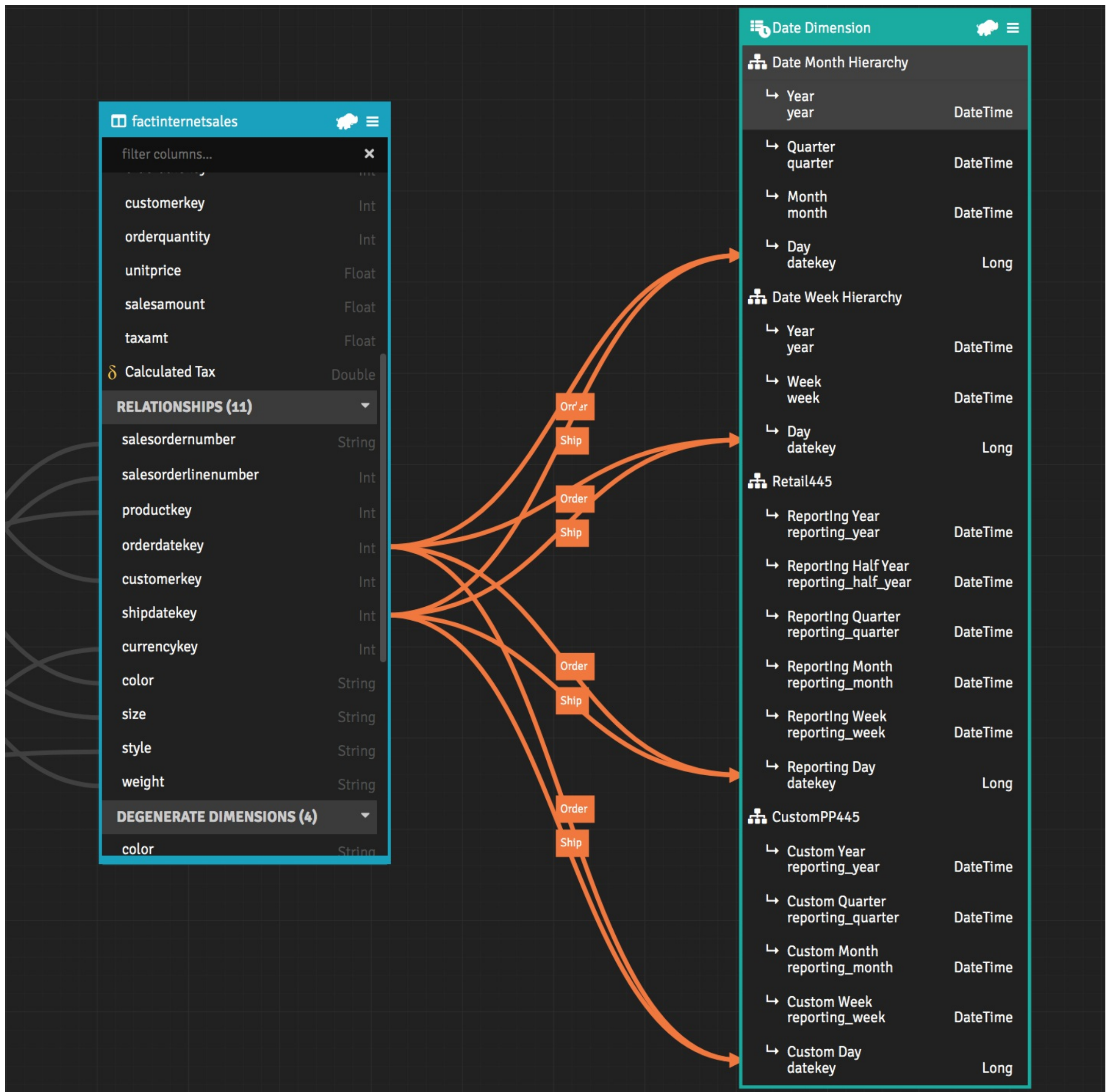
Role-Playing Relationships

Whenever you create a relationship to a dimension, whether from a fact table to a dimension or from one dimension to another dimension, an instance of that dimension is added to the cube model. In some cases, the same dimension may be referenced in more than one context in the same cube. A role-playing relationship is what differentiates multiple instances of the same dimension in a cube.

Basics Of Role-Playing

For example, suppose that you want to create a relationship between the `orderdatekey` and `shipdatekey` keys in a fact dataset and the Day level in the Date Month and Date Week hierarchies in the Date dimension. The results would look like the top four relationship lines of the model on this Cube Designer canvas:

Figure 1. Role-playing relationships: the Date dimension is in relationships to `orderdatekey` and `shipdatekey` in a fact dataset. The top four relationships trace to the Month and Week Hierarchies of the Date Dimension.



The Date dimension is in relationships with orderdatekey and shipdatekey. Each relationship is labeled with a role-playing name.

You first drag orderdatekey to the Day level. The Create a Relationship dialog appears. In that dialog, under Relationship Settings, the **Role-Playing Template** appears. Use the dimension variable **{0}** to insert the role-played dimension name by setting **"Order {0}"** (or something else appropriate) as the role-playing prefix.

Figure 2. The Create a Relationship Dialogue with the Role-Playing Template

To dictate where the role-playing name will appear, place the dimension variable **{0}** where you wish the input to appear. Valid inputs for the **Role-Playing Template** are as follows:

- ▲ "Order {0}" = **Prefix**
- ▲ "{0} Order" = **Suffix**
- ▲ "Order {0} Sales" = **Prefix and Suffix**

Note: If the user enters text into the role-playing text box that does not include the dimension variable **{0}**, then AtScale will assume that the input is a prefix and append **{0}** to the end of the text when saving.

The role-playing feature is backwards compatible with role-played dimensions from previous versions of AtScale. No migration steps are necessary when upgrading from versions previous to AtScale 2020.2.0.

After upgrading to 2023.4.1 or later, you need to upgrade the role-playing relationships in your current models to remove duplicates. For more information, see [Changes Related to Upgrades](#).

Setting A Role-Playing Prefix

To set a role-playing prefix append the dimension variable **{0}** to the Role-playing name in the role-playing template dialogue.

1. Drag orderdatekey to the day level of the Date Month Hierarchy within the date dimension.
2. Enter **"Order {0}"** into the role-playing template dialogue.
3. Click save.
4. Double click the role-played relationship (orange line) to open the Edit a Relationship dialogue if desired.

Figure 3. Setting a role-playing prefix

The prefix "**Order**" will be appended to every attribute of the Date dimension for queries involving order dates. To preview the changes, pin the **Library** panel to the side bar and search for your role-playing relationship. Additionally, the **Cube Data Preview** area displays the Date attributes all prefixed with "**Order**":

Figure 4. Role-playing prefix "Order {0}" on the Date Month Hierarchy in the Cube Data Preview tab.

	SALES AMOUNT
All	\$46,193,766.99
Calendar 2005	\$5,135,541.73
Quarter 3, 2005	\$2,268,492.65
July 2005	\$741,832.58
August 2005	\$787,137.99
September 2005	\$739,522.08
Quarter 4, 2005	\$2,867,049.08
Calendar 2006	\$10,276,314.17
Calendar 2007	\$15,551,188.55
Calendar 2008	\$15,230,722.54

If you set Order Year, Order Quarter, Order Month, and Order Day as the rows to use in Cube Data Preview, and set orderquantity as the column, the Design Center generates this MDX query for the preview. The query also uses the "**Order**" prefix.

```

SELECT
{ [Measures].[orderquantity1] }
ON COLUMNS,
NON EMPTY Hierarchize({ [Order Date Dimension].[Order Date Month Hierarchy].[Order YearMonth].Members,
[Order Date Dimension].[Order Date Month Hierarchy].[Order Quarter].Members, [Order Date Dimension].
[Order Date Month Hierarchy].[Order Month].Members, [Order Date Dimension].[Order Date Month Hierarchy].
[Order DayMonth].Members })
ON ROWS
FROM [Internet Sales Cube]

```

Setting A Role-Playing Suffix

To set a role-playing suffix, prepend the dimension variable **{0}** to the input in the role-playing template dialogue.

1. Drag shipdatekey to the day level of the Date Month Hierarchy within the date dimension.
2. Enter "**{0} Ship**" into the role-playing template dialogue.
3. Click save.
4. Double click the role-played relationship (orange line) to open the Edit a Relationship dialogue if desired.

Figure 5. Setting a role-playing suffix

Figure 6. Role-playing suffix "Ship {0}" on the Date Month Hierarchy in the Cube Data Preview tab.

The screenshot shows the ATSCALE Cube Designer interface. The top navigation bar includes PROJECTS, QUERIES, AGGREGATES, SETTINGS, SECURITY, and SUPPORT. The user is logged in as Admin. The main area is titled 'Sales Insights' and 'CUBE DATA PREVIEW'. The table displays 'ORDER QUANTITY' for various dates in 2005, with a total of 1528 for the year. The 'Rows' panel on the right is configured with 'Year Ship', 'Quarter Ship', 'Month Ship', and 'Day Ship'. The 'Columns' panel is set to 'Order Quantity'. The 'Dimensions' panel shows a hierarchy of Customer Attributes, Date Attributes, Orders, and Product Attributes. The 'Measures' panel shows Customer Metrics, Product Metrics, Sales Metrics, and Time Relative.

	ORDER QUANTITY
Calendar 2005	1528
Quarter 3, 2005	650
July 2005	167
Friday, July 08 2005	14
Saturday, July 09 2005	5
Sunday, July 10 2005	5
Monday, July 11 2005	5
Tuesday, July 12 2005	10
Wednesday, July 13 2005	4
Thursday, July 14 2005	5
Friday, July 15 2005	5
Saturday, July 16 2005	11
Sunday, July 17 2005	3
Monday, July 18 2005	5
Tuesday, July 19 2005	6
Wednesday, July 20 2005	2
Thursday, July 21 2005	13
Friday, July 22 2005	8
Saturday, July 23 2005	6
Sunday, July 24 2005	7
Monday, July 25 2005	2
Tuesday, July 26 2005	16
Wednesday, July 27 2005	6

If you set Year Ship, Quarter Ship, Month Ship, and Day Ship as the rows to use in Cube Data Preview, and set orderquantity as the column, the Design Center generates this MDX query for the preview. The query also uses the "Ship " suffix.

```
SELECT
{ [Measures].[orderquantity1] }
ON COLUMNS,
SUBSET(
Hierarchize(
{ [Date Dimension Ship].[Date Month Hierarchy Ship].[YearMonth Ship].Members,
[Date Dimension Ship].[Date Month Hierarchy Ship].[Quarter Ship].Members,
[Date Dimension Ship].[Date Month Hierarchy Ship].[Month1 Ship].Members,
[Date Dimension Ship].[Date Month Hierarchy Ship].[DayMonth Ship].Members } ),
0,
300)
ON ROWS
FROM [Internet Sales Cube]
```

Though this example demonstrates the creation of role-playing relationships between a fact table and a dimension, you can also create role-playing relationships between a dimension and another dimension. To do so, on the main cube designer canvas you double-click the heading of the dimension that the relationships will be created from. On the dimension canvas, add the second dimension from the project library, which you can open by clicking the Library icon on the canvas toolbar. Then, create the role-playing relationships as described in the foregoing example.

Setting A Role-Playing Prefix And Suffix

To add a suffix and prefix to your role-playing relationship, place the dimension variable **{0}** between the two inputs you wish to see.

1. Drag orderdatekey to the day level of the Retail hierarchy within the date dimension.
2. Enter "**Order {0} Finance**" into the role-playing template dialogue.

Figure 7. Setting a role-playing prefix and suffix

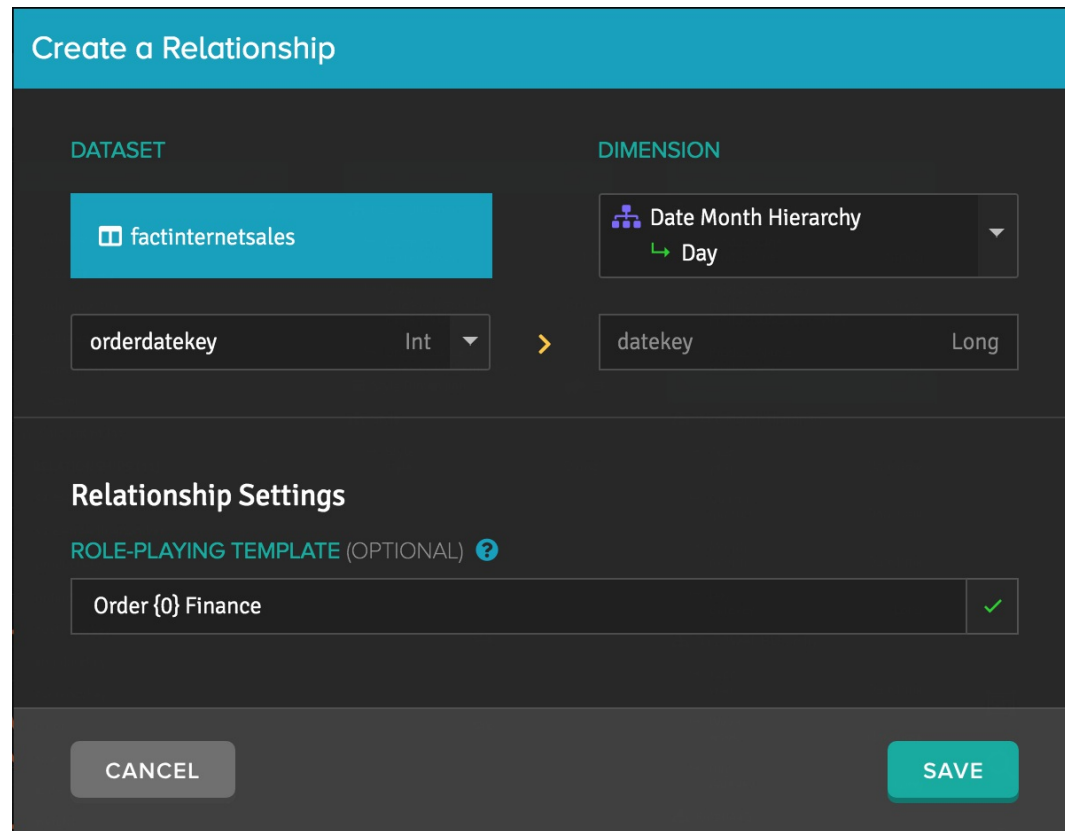


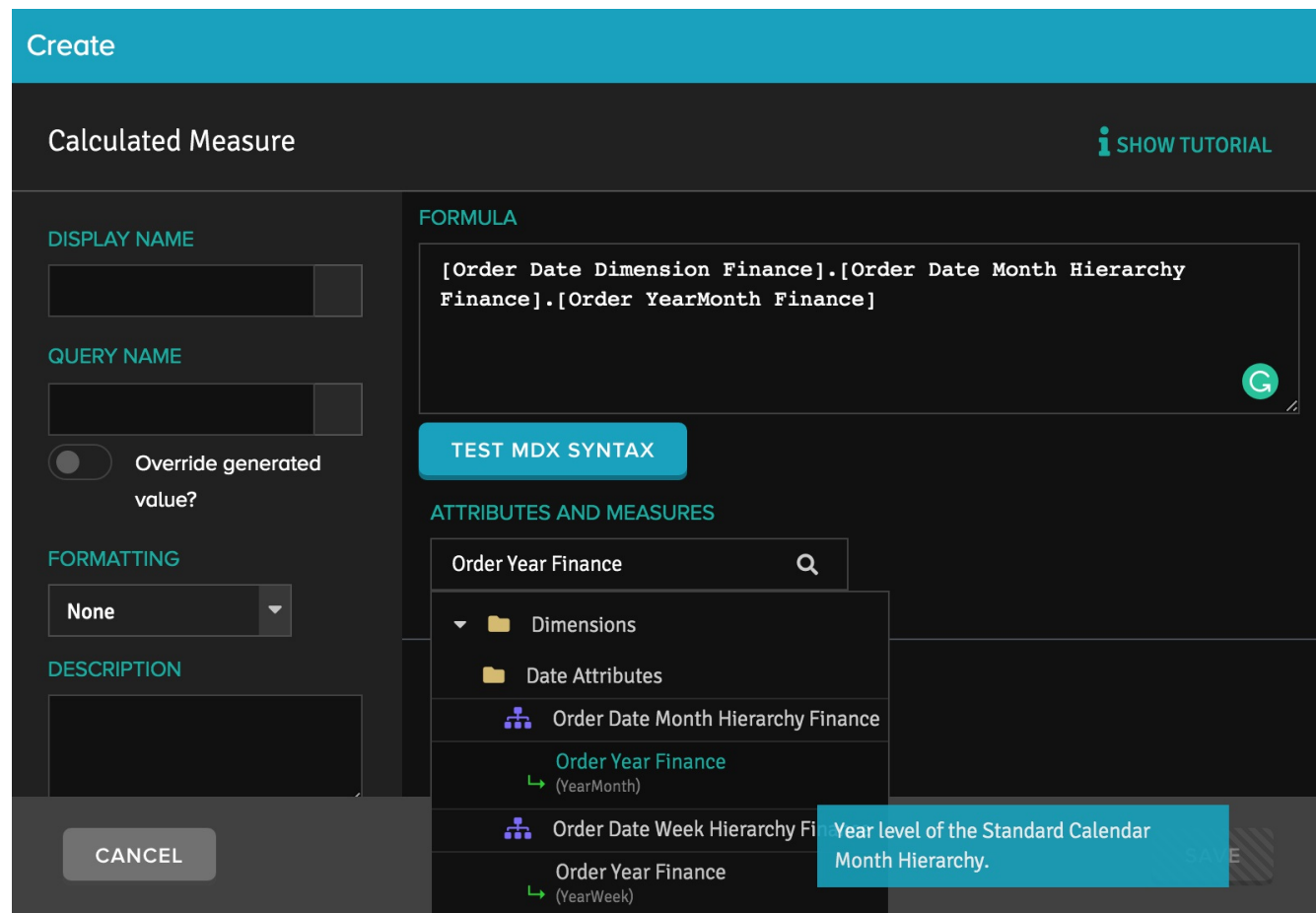
Figure 8. Role-playing prefix/suffix "Order {0} Finance" on the Date Month Hierarchy in the Cube Data Preview tab.

Calendar 2005	ORDER QUANTITY
Calendar 2005	1597
Quarter 3, 2005	706
July 2005	234
Friday, July 01 2005	14
Saturday, July 02 2005	5
Sunday, July 03 2005	5
Monday, July 04 2005	5
Tuesday, July 05 2005	10
Wednesday, July 06 2005	4
Thursday, July 07 2005	5
Friday, July 08 2005	5
Saturday, July 09 2005	11
Sunday, July 10 2005	3
Monday, July 11 2005	5
Tuesday, July 12 2005	6
Wednesday, July 13 2005	2
Thursday, July 14 2005	13
Friday, July 15 2005	8
Saturday, July 16 2005	6

Role-Playing Dimensions: In Cube Data Preview, UDA, Perspective, And Calculated Measure Dialogues

When referencing a role-playing dimension with a prefix, suffix or both within the Cube Data Preview, Perspective, User Defined Aggregate, or Calculated Measure dialogues, you will see the expanded role-playing syntax.

Figure 9. Role-playing suffix "Order {0} Finance" on the Date Month Hierarchy in the Create Calculated Measure dialogue:



The role-playing expansion applies to the dimension, hierarchy, and level component in the canonical syntax. Given **Order {0} Finance**, the role-played dimension appears expanded as such : `[Order Date Dimension Finance].[Order Date Month Hierarchy Finance].[Order YearMonth Finance]`

Recursion

Role-playing becomes recursive when you create role-playing relationships both between a fact table and a dimension and between that dimension and another dimension.

For a simple example, suppose that you have a fact table and two dimensions.

Fact table: fact_auction_transactions

Among other fields, each transaction recorded contains keys for buyers and for sellers.

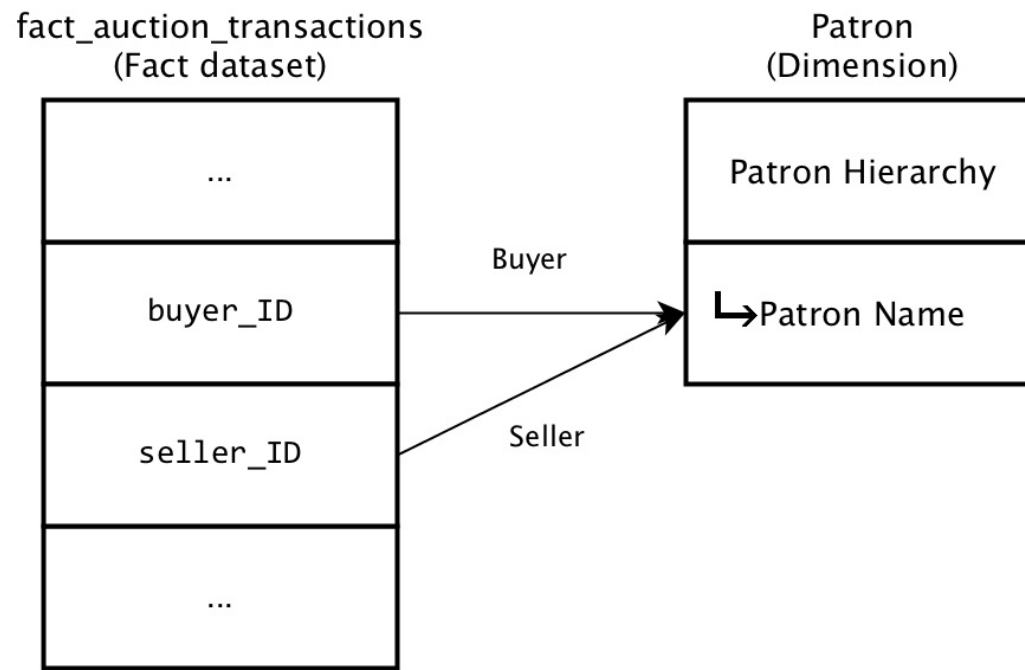
Dimension: Person

Among other attributes, each person has a name, a key for a billing zipcode, and a key for a shipping zipcode.

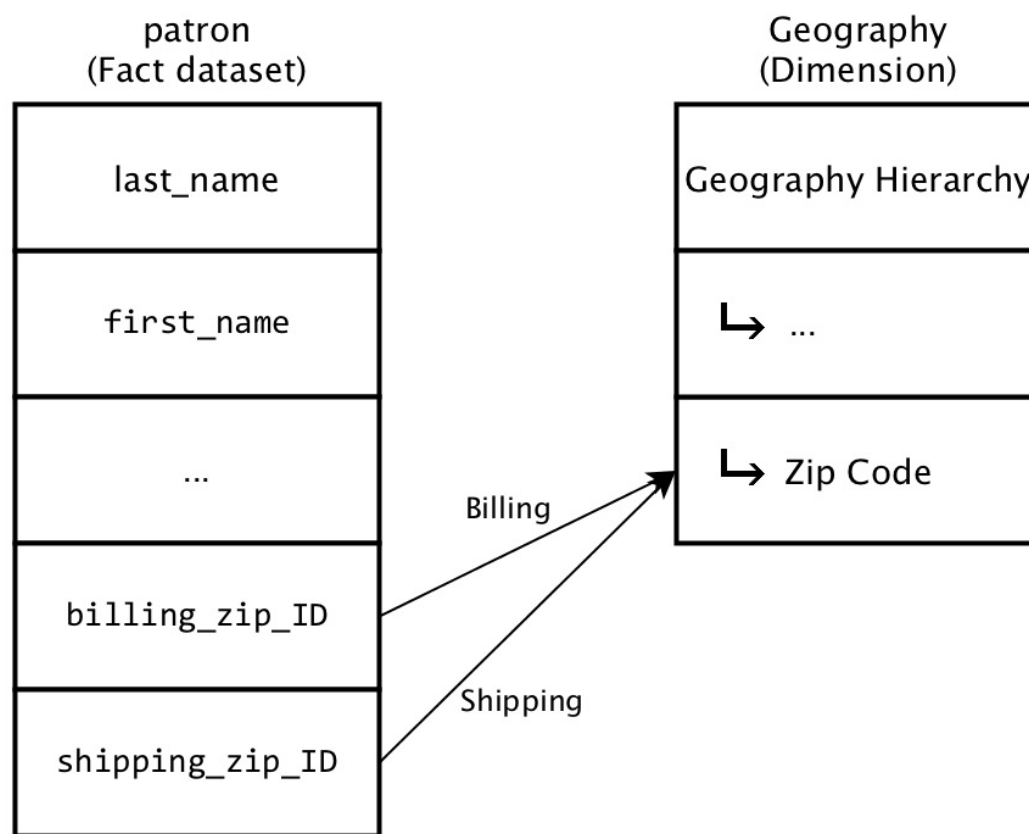
Dimension: Geography

Among other attributes, this hierarchy includes zip codes.

On the main cube designer canvas, you create two role-playing relationships from the buyer_ID and seller_ID keys to the Person level of the Person hierarchy.



You double-click the Person dimension to open the canvas for working with that dimension. You add the Geography hierarchy to this canvas. Then, you create two role-playing relationships from the billing_zip_ID and shipping_zip_ID keys to the Zip Code level of the Geography hierarchy in the Geography dimension.



You then have four copies of the Zip Code attribute:

- ▲ Buyer Billing Zip Code
- ▲ Buyer Shipping Zip Code
- ▲ Seller Billing Zip Code
- ▲ Seller Shipping Zip Code

