

What's New in SAS[®] OLAP Cube Studio 4.2

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ABSTRACT

With the release of SAS[®] 9.2, new functionality and enhancements have been added to SAS[®] OLAP Cube Studio 4.2.

New features include the ability to:

- update a cube (incremental update)
- view an input data set within SAS OLAP Cube Studio
- view a cube to validate the build process
- set cube security in SAS OLAP Cube Studio including a UI for member level security
- automatically generate suggested time hierarchies based on a single date column

The enhancements to SAS OLAP Cube Studio give users a better experience when administering and building a cube. Changes have been made to allow a user to easily:

- maintain and build aggregations, and the ability to conveniently tune their cube and see performance results from an ARM log—all in a single interface
- select tables associated to a specific library when building a cube
- view their OLAP cube structure, including properties such as physical path location
- and many more

This paper will highlight and demonstrate the new functionality and the benefits that the user will have with SAS OLAP Cube Studio 4.2.

NEW FEATURES

Based on user feedback, there have been several new features that are added to SAS OLAP Cube Studio 4.2. In the following sections, key features are described. Other features that are not covered in detail include:

- the ability to schedule a OLAP Cube job
- disabling and enabling a cube
- renaming a cube
- copying and moving a cube to alternative folders
- a find option that allows a user to easily move from the inventory object view to the folder view in which the cube resides
- the use of user-defined formats for measures
- automatic reconnection to the metadata server when connection is lost
- the ability to build a cube within the new metadata folder structure

INCREMENTAL UPDATE

Incremental update (or cube update) is the ability to add new data, add new members, or change member properties to an existing cube without the need to rebuild the whole cube. There are two update processes to choose from: in-place (Figure 1) or managed.

- **In-place:** Allows a cube to remain online for 24/7 while updates are being made.
- **Managed:** Allows a cube availability to be controlled after new data is added. The cube must be disabled/renamed/enabled before that cube is made available to the end-users.

For more details, please refer to "Avoid Growing Pains: New Cube Update Features You Should Know About" (Weinberger, Tierney. Paper 330-2008).

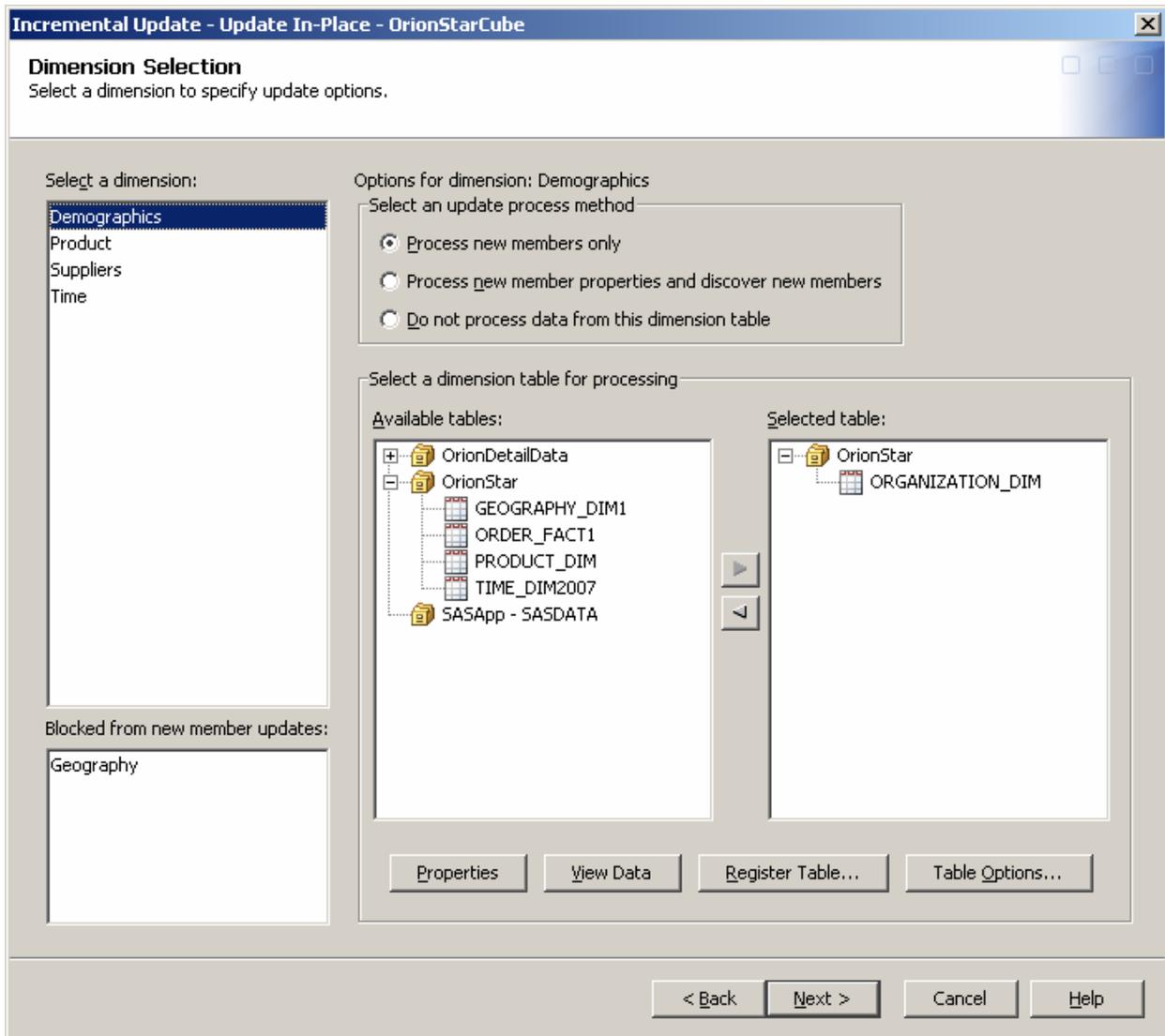


Figure 1: Dimension Selection Window of an In-Place Incremental Update Process

Additionally, a user can disable/enable a cube, coalesce aggregations, rename a cube, and have the option to allow incremental update or not on a per hierarchy basis. These are all features that users will need when updating and maintaining that updateable cube.

VIEWING DATA AND CUBES

From viewing input data to cube data, users have the ability to visualize and validate the structure of their data with these new options. While viewing input data, users can perform basic functions such as refresh data, searching for values, sorting, filtering, and column subsetting to help them understand the data they are working with (Figure 2).

View Data: ORDER_SUMMARY (951,669 rows) (Browse)

Gg to row Go

Search for In Columns antity; Sales; Unit_Cost; Total_Cost; Pct_of_Retail

#	Year_ID	Quarter	Month_Num	Weekday_EU	Weekday_Num	Continent	Country	State	Region	City
1	1998	1998Q1	Jan	4	5	Africa	Iv			Wirral
2	1998	1998Q1	Jan	2	3	Africa	Mo			Casablanca
3	1998	1998Q1	Jan	5	6	Africa	So			
4	1998	1998Q1	Jan	3	4	Africa	So			Arcadia
5	1998	1998Q1	Jan	6	7	Africa	So			Johannes...
6	1998	1998Q1	Jan	7	1	Africa	So			Johannes...
7	1998	1998Q1	Jan	6	7	Africa	So			Johannes...
8	1998	1998Q1	Jan	3	4	Africa	So			Johannes...
9	1998	1998Q1	Jan	7	1	Africa	So			Kenilworth
10	1998	1998Q1	Jan	6	7	Africa	So			Sandton
11	1998	1998Q1	Jan	4	5	Africa	So			Sunninghill
12	1998	1998Q1	Jan	4	5	Africa	So			Sunninghill
13	1998	1998Q1	Jan	2	3	Africa	So			Weltevre...
14	1998	1998Q1	Jan	2	3	Africa	So			Weltevre...
15	1998	1998Q1	Jan	4	5	Asia	Tu			Ankara
16	1998	1998Q1	Jan	3	4	Asia	Tu			Gayrette...
17	1998	1998Q1	Jan	1	2	Asia	Tu			Istanbul
18	1998	1998Q1	Jan	2	3	Asia	Tu			Istanbul
19	1998	1998Q1	Jan	4	5	Asia	Tu			Istanbul
20	1998	1998Q1	Jan	5	6	Asia	Tu			Istanbul
21	1998	1998Q1	Jan	6	7	Asia	Tu			Istanbul
22	1998	1998Q1	Jan	4	5	Asia	Tu			Istanbul/...
23	1998	1998Q1	Jan	6	7	Asia	Tu			Istanbul/...
24	1998	1998Q1	Jan	1	2	Asia	Tu			Kozyatag...
25	1998	1998Q1	Jan	7	1	Asia	Tu			Kozyatag...
26	1998	1998Q1	Jan	1	2	Asia	Tu			Maltepe
27	1998	1998Q1	Jan	6	7	Asia	Tu			Maltepe
28	1998	1998Q1	Jan	6	7	Asia	Tu			Maltepe
29	1998	1998Q1	Jan	5	6	Asia	Tu			Nisantasi...
30	1998	1998Q1	Jan	7	1	Asia	Tu			Sisi-Istan...
31	1998	1998Q1	Jan	4	5	Australia/Pacific	Au		Australian C...	Braddon
32	1998	1998Q1	Jan	2	3	Australia/Pacific	Au		Australian C...	Braddon
33	1998	1998Q1	Jan	2	3	Australia/Pacific	Au		Australian C...	Braddon
34	1998	1998Q1	Jan	2	3	Australia/Pacific	Au		Australian C...	Braddon
35	1998	1998Q1	Jan	2	3	Australia/Pacific	Au		Australian C...	Canberra
36	1998	1998Q1	Jan	5	6	Australia/Pacific	Au		Australian C...	Canberra
37	1998	1998Q1	Jan	2	3	Australia/Pacific	Au		Australian C...	Canberra
38	1998	1998Q1	Jan	2	3	Australia/Pacific	Au		Australian C...	Canberra
39	1998	1998Q1	Jan	5	6	Australia/Pacific	Au		Australian C...	Canberra
40	1998	1998Q1	Jan	1	2	Australia/Pacific	Au		Australian C...	Canberra
41	1998	1998Q1	Jan	2	3	Australia/Pacific	Au		Australian C...	Canberra...
42	1998	1998Q1	Jan	2	3	Australia/Pacific	Au		Australian C...	Canberra...
43	1998	1998Q1	Jan	6	7	Australia/Pacific	Au		Australian C...	Canberra...

Figure 2: View Data with Search Options Visible

To validate the cube build process, the option "View Cube" is available in a very simple viewer (Figure 3). Users have the capability to select members and assign them to rows or columns, replacing or adding them to the current view. In addition to viewing the cube data, the MDX query is also displayed and can be copied allowing users to paste it in other applications such as SAS® Enterprise Guide® or into a word processing document.

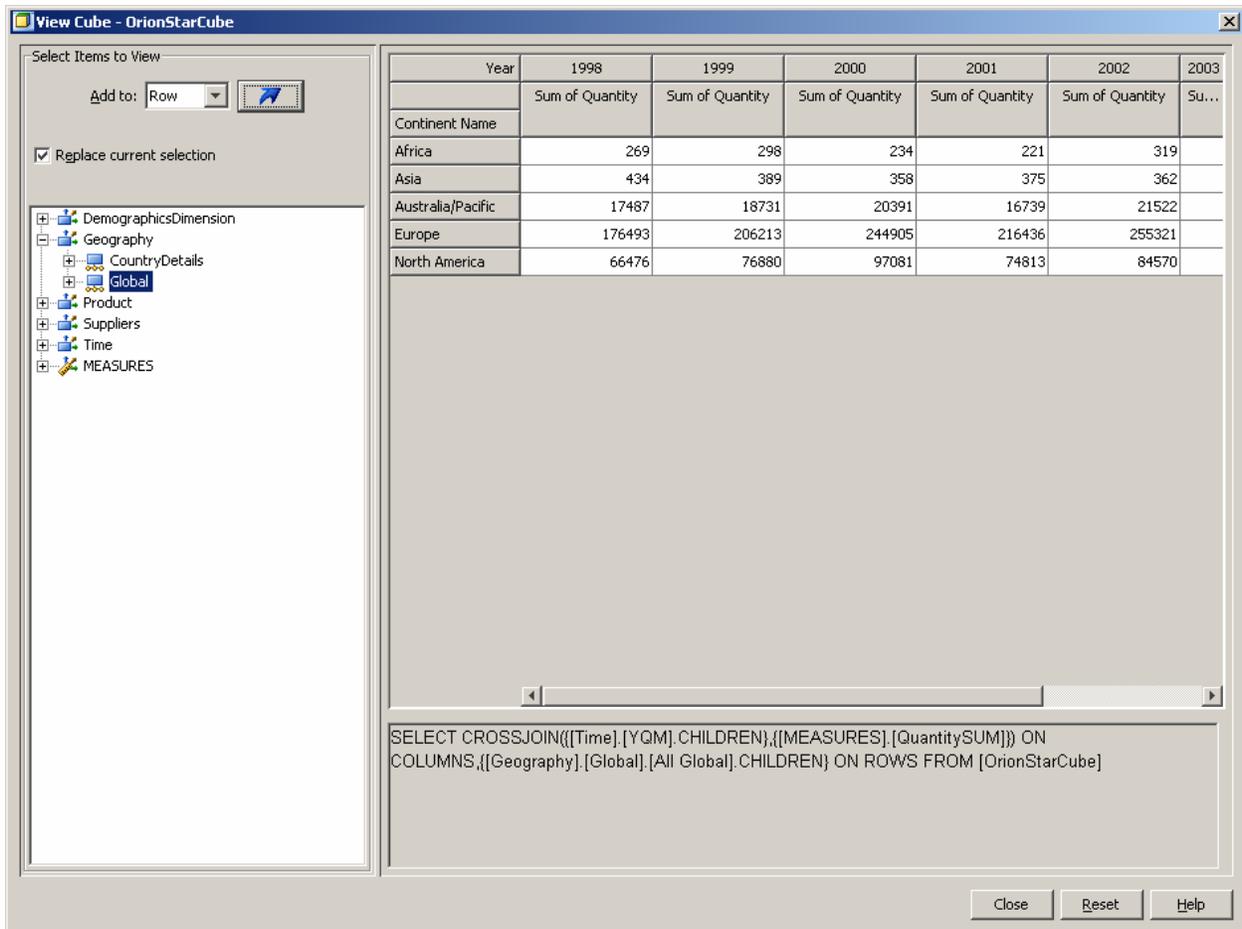


Figure 3: Visual Validation of the Cube Using the View Cube Option

SECURITY

In SAS® 9.1.3, member-level security was available only in SAS® Management Console. The administrator would have to manually type the MDX expression that was required to grant and deny access to relevant members, and there was no validation of the expression; this made usability very difficult. SAS 9.2 sees the introduction to an easy-to-use interface for applying member-level security that is available in both SAS Management Console and SAS OLAP Cube Studio (Figure 4).

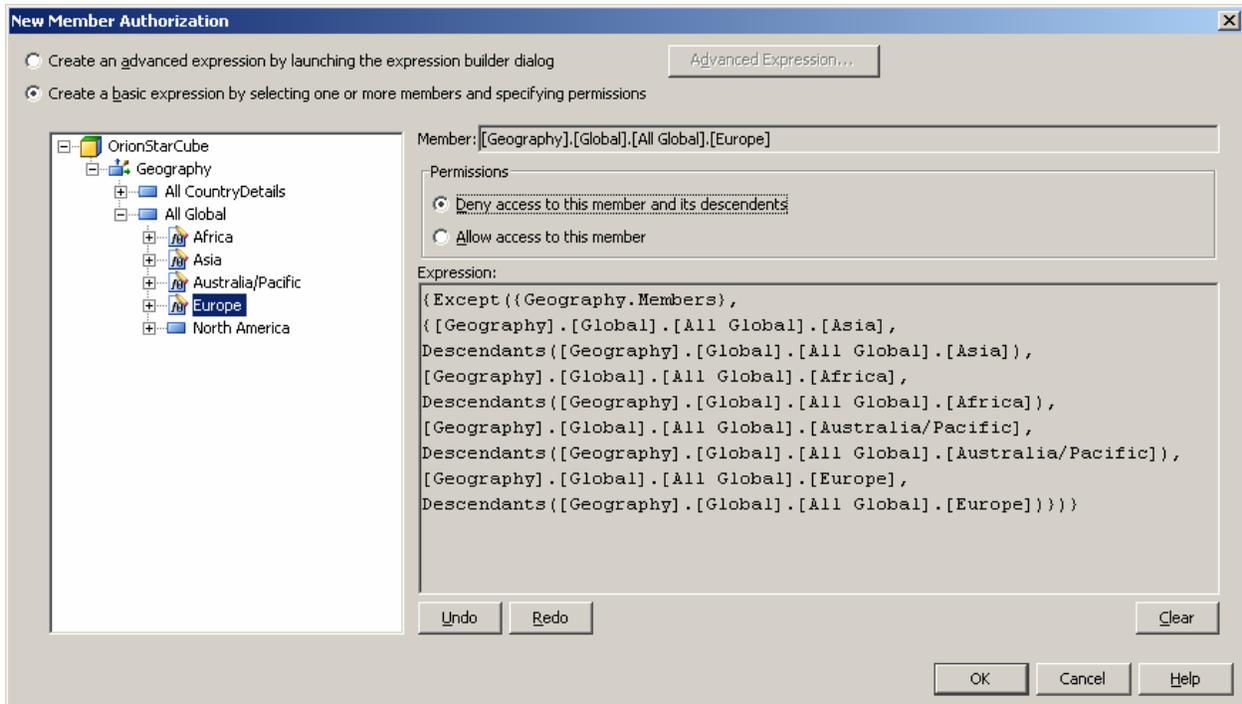


Figure 4: Applying Deny Access to Multiple Members (The User Interface May Still change before Software Is Produced)

The user interface still allows users to create their own MDX expression, if so desired, but the experience is now more guided with an advanced expression builder and the ability to validate the expression that was created. Within the advanced expression builder, you can use macro-like variables that represent information entered in user profiles defined in SAS Management Console such as user ID, group identity, and person's name (Figure 5).

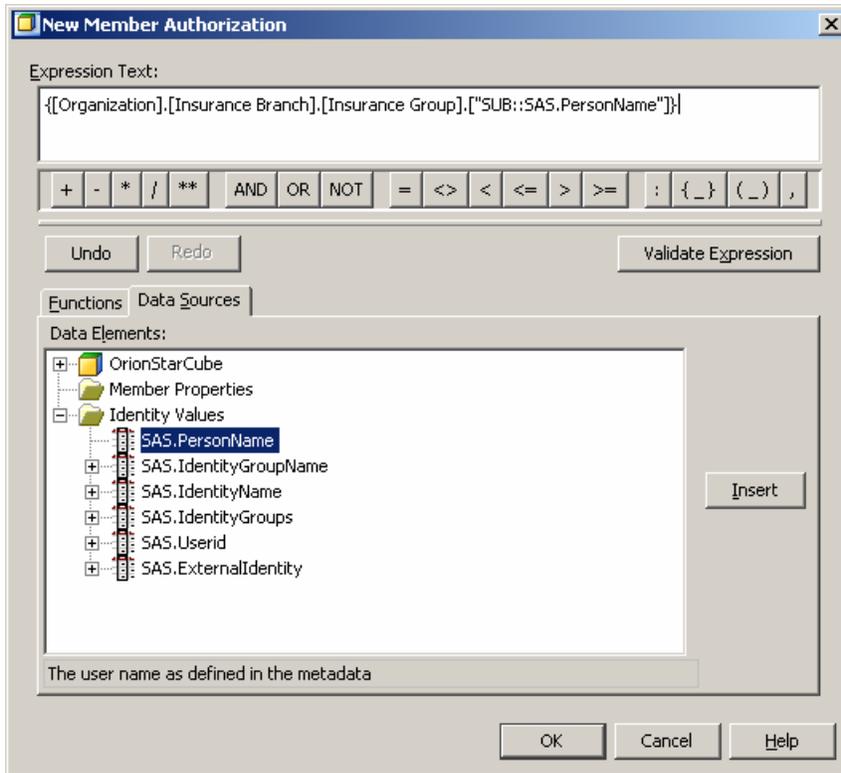


Figure 5: Example of Using PersonName Identity Value in a Member-Level Security Expression

GENERATING SUGGESTED TIME HIERARCHIES AND REUSING A SINGLE COLUMN FOR MULTIPLE LEVELS

Time hierarchies can have relatively predictable structures. Due to that fact, a user-friendly interface was implemented to allow users to select from suggested time hierarchies that are based on a single date-formatted column (Figure 6). Once selections have been made, the appropriate levels and hierarchies are appended or added (respectively) to the proposed cube structure.

It is also important to note that the users do not need separate columns for year, quarter, month, week, etc., as they did in previous releases.

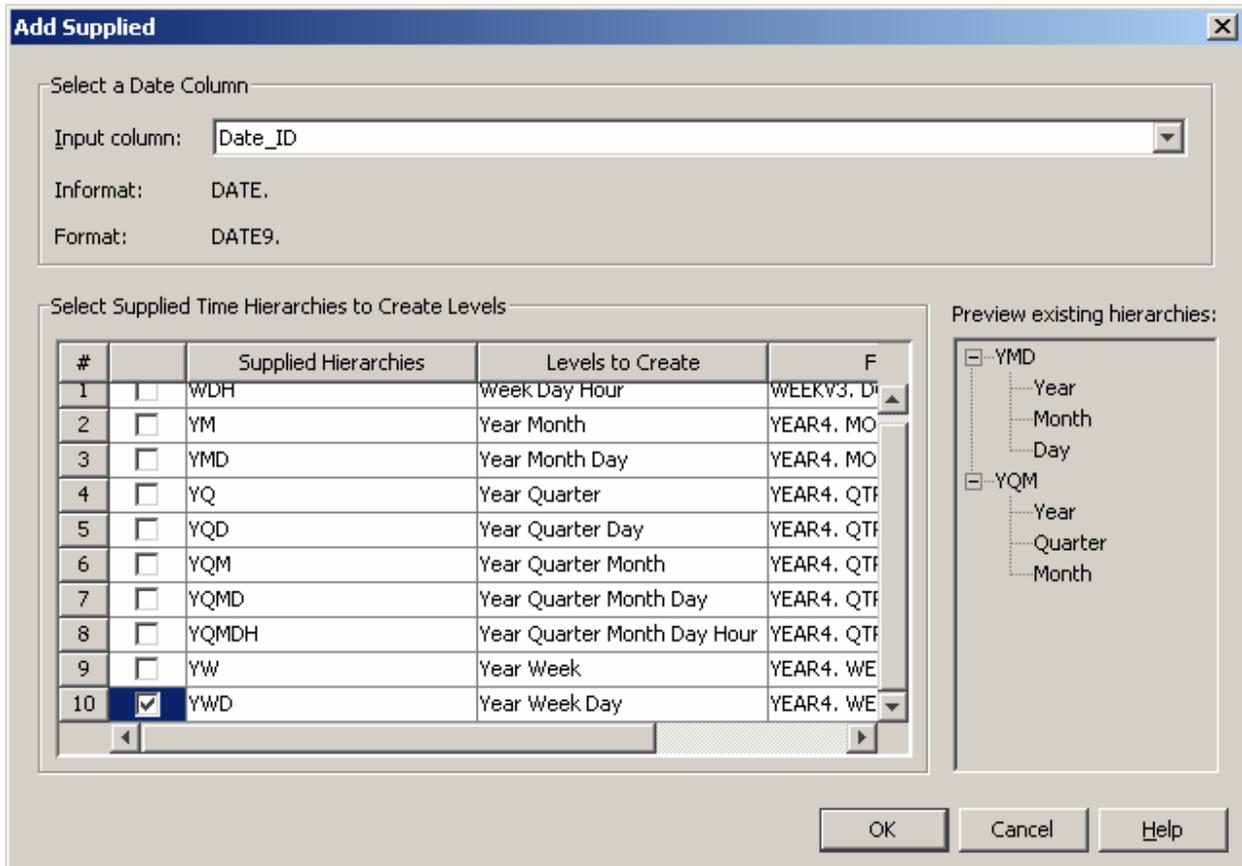


Figure 6: Suggestion List of Standard Time Hierarchies Based on a Selected Date-Formatted Column

USER INTERFACE ENHANCEMENTS

Several user interfaces have been enhanced to give SAS OLAP Cube Studio users an enriched experience when designing, maintaining, and/or administrating cubes. Some of those features include:

- automatic population of time hierarchy-level types
- diagrammatic display of hierarchies within Cube Designer wizard
- a history of the last paths used by users
- analysis of changes when an input source has been re-registered, and metadata links are reconnected where possible
- advanced expression builder for guidance when creating calculated members
- automatic refresh of metadata after calculated member creation via the user interface
- ability to refresh a cube in OLAP Cube Studio instead of having to use SAS Management Console
- common framework for exporting and importing a cube (and other metadata)

Based on customer feedback, the changes that made the most impact were a single aggregation-tuning interface, a better view of tables when selecting sources to build cubes and displaying important cube properties. These are discussed in the following sections in more detail.

AGGREGATIONS

Aggregations are tables that contain a subset of summarized data which is based on specific levels. Aggregations are essential for optimal query performance. Originally in SAS OLAP Cube Studio, users could manually create aggregations outside of the build process. In SAS 9.1.3, a plug-in was provided that gave the users the ability to analyze an ARM (Application Response Measurement) log that would suggest which aggregations were required based on user interaction.

In SAS OLAP Cube Studio, these two interfaces (Manual and ARM Log) have been combined and enhanced (Figure 7). The aggregation user interface has been enhanced to allow resizing of columns, the ability to sort columns, display of total time and average time, and to view details of each aggregation. The new interface also provides the ability to maintain aggregations of a cube by allowing users to add, modify, and delete aggregations, and the ability to either run automatically or export code which can be scheduled to run at the discretion of the user.

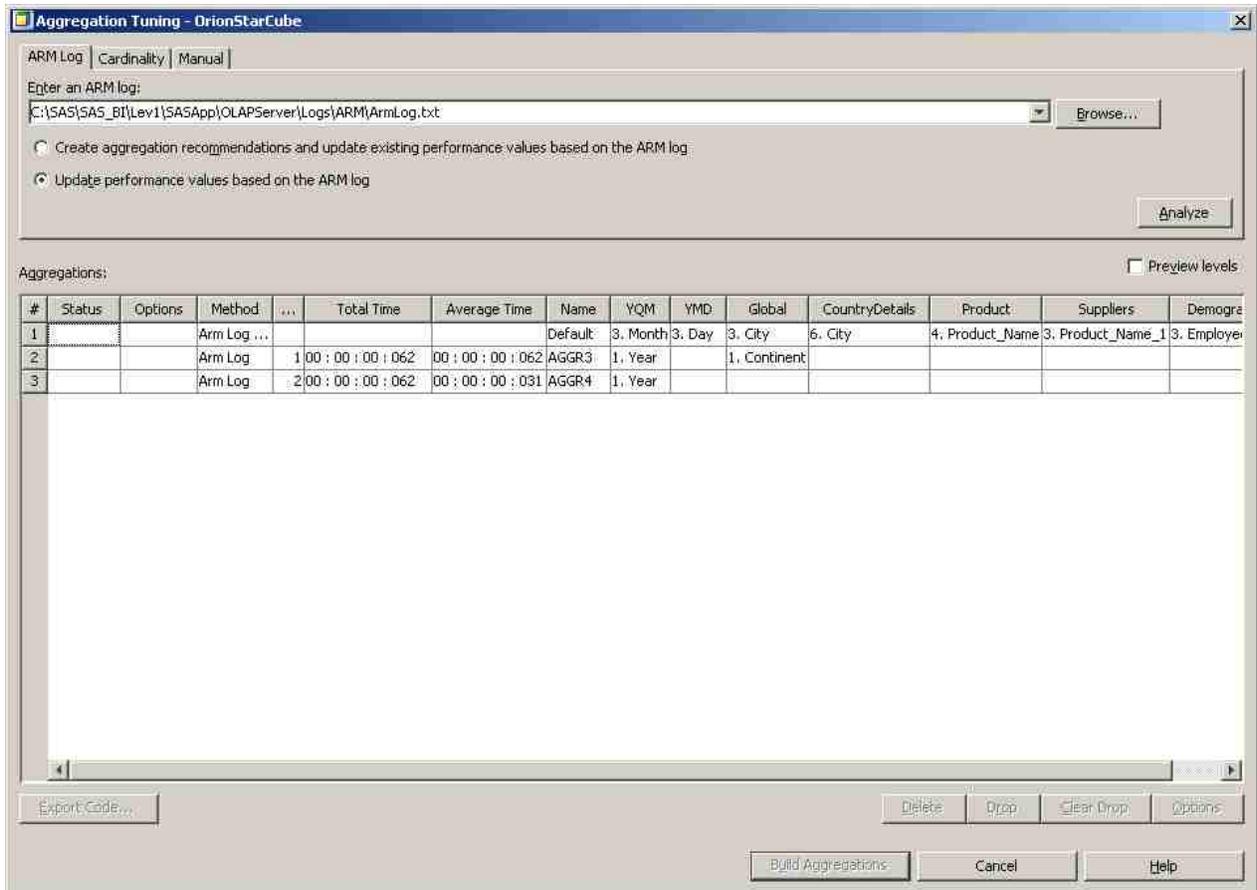


Figure 7: Aggregation Tuning User Interface showing ARM Log Analysis

An option is available from the **Cardinality** tab which automatically analyzes the level of cardinality of a cube and recommends 100 aggregations of the highest cardinality for a user to select for building (Figure 8).

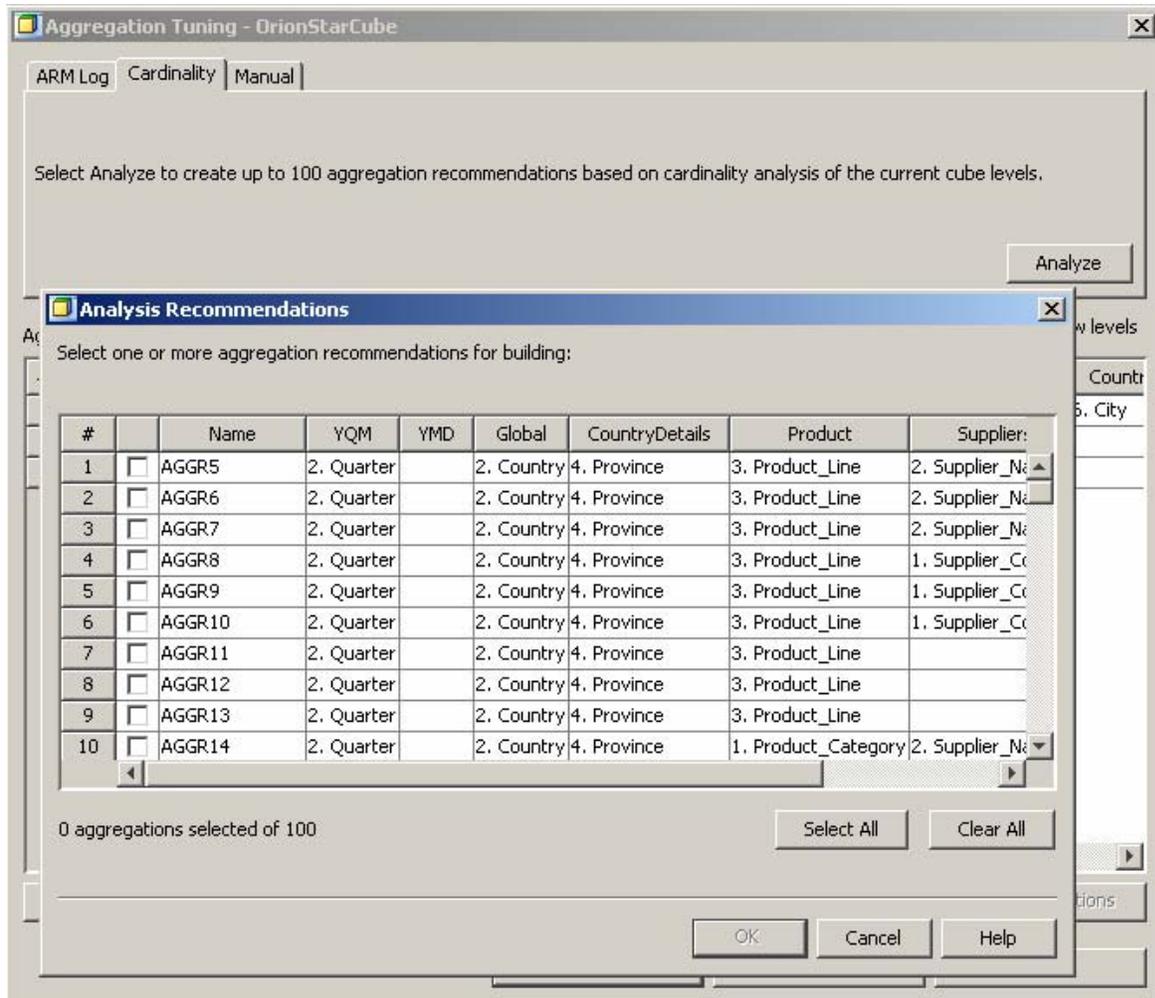


Figure 8: Suggested Aggregations Determined by Cardinality Analysis

TABLE SELECTION

In the previous release of SAS OLAP Cube Studio, it was difficult to find the correct table that a user would like to select as the input table or drill-through table. The available table selection appeared as one list.

In the below dialog showing input table selection, tables are now grouped based on the library the table/s are registered to (Figure 9).

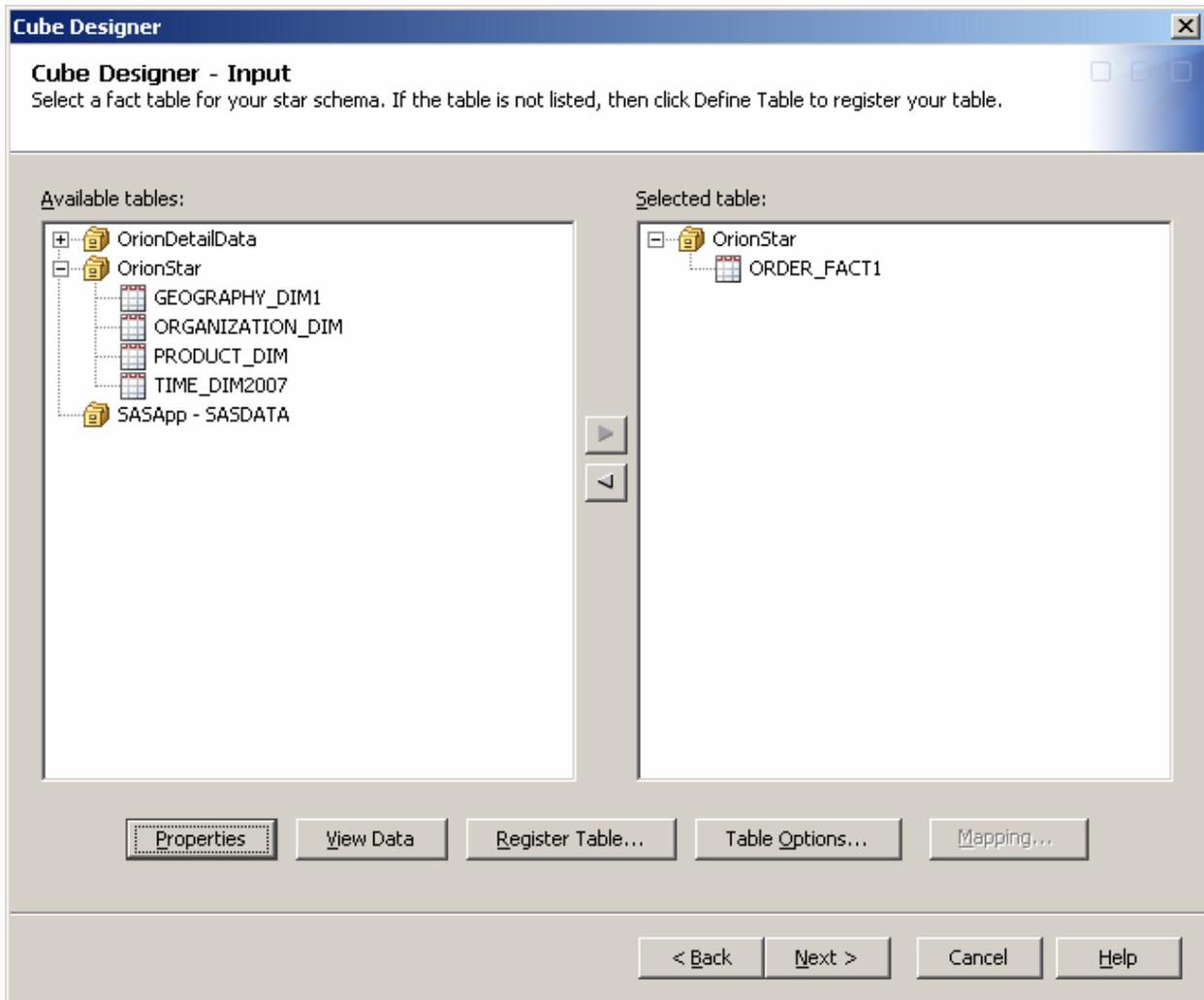


Figure 9: Input Table Selection Window Showing Tables Grouped by the Library They Have Been Registered to

CUBE PROPERTIES

Cube properties provide users with a variety of information about the selected cube, such as:

- folder location in metadata
- path to cube physical files and work path
- input tables and their associated libraries and application server
- cube structure and relevant options for each component that structure (Figure 10)
- incremental update changes/additions
- authorization allowing users with the right permissions to view and modify security permissions for that cube

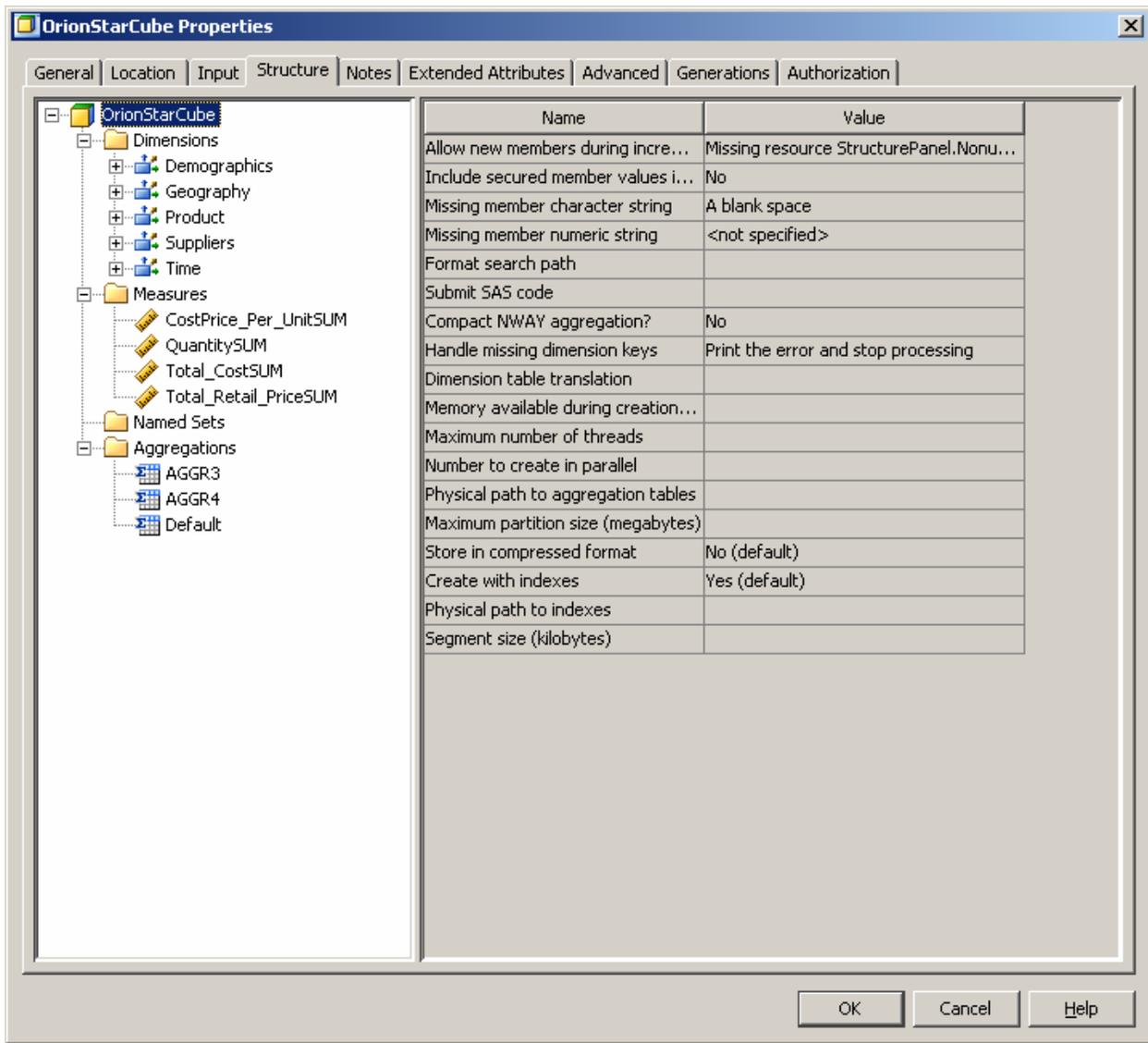


Figure 10: Cube Properties Showing the Structure of the Cube and Relevant Options Associated with the Cube Component.

CONCLUSION

In the upcoming release of SAS OLAP Cube Studio 4.2, many of the new features and enhancements that have been illustrated in this paper have been requested by users. Users will find that the additions and changes will greatly improve their experience of designing, creating, maintaining, and administering their cubes.

ACKNOWLEDGMENTS

Thank you to all the people involved in producing SAS OLAP Cube Studio 4.2

RECOMMENDED READING

- *SAS® OLAP Server: User's Guide*
- **Paper 330-2008** Avoid Growing Pains: New Cube Update Features You Should Know About (Weinberger, Tierney)
- Chapter 6: "Administering SAS OLAP Servers"; *SAS® 9.1.3 Intelligence Platform Application Administration Guide*

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