

Data Validation Plug-in for Analytic Workspace Manager provides tests to quickly find conditions in dimension table data that might cause errors when maintaining an OLAP dimension or cause problems when querying a cube using business intelligence tools. The data validation plug-in also includes methods that can quickly fix many different types of data errors in dimension tables.

Data Validation Plug-in for Analytic Workspace Manager is intended for quick tests and fixes during proof of concept and development phases of an OLAP cube. It is not intended as a replacement for a full-featured data quality tool. It does not find and fix every possible data error. Use it to quickly find and fix certain errors so that the process of designing OLAP cubes can continue.

This document has the following topics.

- [Describing Data Validation Plug-in for Analytic Workspace Manager](#)
- [Using Data Validation Plug-in for Analytic Workspace Manager](#)
- [Viewing Data and Correcting Errors](#)
- [Documentation Accessibility](#)

Describing Data Validation Plug-in for Analytic Workspace Manager

This section has the following topics.

- [Product Support](#)
- [Supported Versions of Oracle Database](#)
- [What Is an Analytic Workspace Manager Plug-in?](#)
- [What Does the Data Validation Plug-in Do?](#)
- [Schema Requirements for Using the Data Validation Plug-in](#)
- [Installing the Data Validation Plug-in](#)
- [Running the Data Validation Plug-in](#)
- [Tables Created by the Data Validation Plug-in](#)

Product Support

Data Validation Plug-in for Analytic Workspace Manager is a product of Oracle OLAP Cube Labs. Products of Oracle OLAP Cube Labs are delivered through Oracle Technical Network (OTN) without cost.

Note: Oracle OLAP Cube Lab products are not supported by Oracle Support. Please post questions, bug reports, and enhancement requests on the OLAP Forum on OTN at <http://forums.oracle.com/forums/forum.jspa?forumID=16>. The Analytic Workspace Manager team actively monitors this forum. Be sure to start your posting with "Data Validation Plug-in for AWM".

Supported Versions of Oracle Database

Data Validation Plug-in for Analytic Workspace Manager supports Oracle Database 11g, Release 1 (11.1), version 11.1.0.7 and later, and Oracle Database 11g, Release 2 (11.2).

What Is an Analytic Workspace Manager Plug-in?

Analytic Workspace Manager allows third parties to add new features by providing plug-ins. A plug-in is a program that is launched from Analytic Workspace Manager. Plug-ins share the database session with the instance of Analytic Workspace Manager. You can use Analytic Workspace Manager plug-ins to add to or otherwise alter cubes and dimensions, to define calculations, or for other purposes. Because a plug-in shares a database connection and can modify your model, or even your data, be sure to use plug-ins only from trusted sources. Analytic Workspace Manager plug-ins cannot obtain the password used to start the Oracle Database session.

What Does the Data Validation Plug-in Do?

Data Validation Plug-in for Analytic Workspace Manager tests data in dimension tables for conditions that can cause problems when building an OLAP dimension or when querying an OLAP cube using a business intelligence tool. The data validation plug-in provides high-level summary reports that help identify problems and detailed reports that identify the dimension members that might cause a problem. The data validation plug-in also provides methods that quickly fix common problems so that the process of designing and testing OLAP dimensions and cubes can continue.

Schema Requirements for Using the Data Validation Plug-in

To use this Analytic Workspace Manager plug-in, your database schema must meet the following requirements:

- It must have at least one dimension table.
- The dimension table must include data.
- The user that runs the data validation plug-in must have CREATE TABLE and CREATE SEQUENCE privileges in the schema because the plug-in creates three tables.

Data Validation Plug-in for Analytic Workspace Manager supports both star and snowflake schema implementations of dimension tables. However, it only supports level-based dimension hierarchies; it does not support value-based hierarchies, in which hierarchical relationships are defined by a parent dimension attribute and a child dimension attribute.

Installing the Data Validation Plug-in

To install the data validation plug-in, download the file `datavplugin.jar` and copy it to the directory that is specified for plug-ins by Analytic Workspace Manager. You enable the use of plug-ins and specify the directory for plug-ins in the Configuration dialog box on the Tools menu of Analytic Workspace Manager. If you have enabled plug-ins, then the next time you start Analytic Workspace Manager it recognizes the new plug-in.

You can download the plug-in from the Cube Labs section of the OTN website at <http://www.oracle.com/technetwork/database/options/olap/index.html>.

Running the Data Validation Plug-in

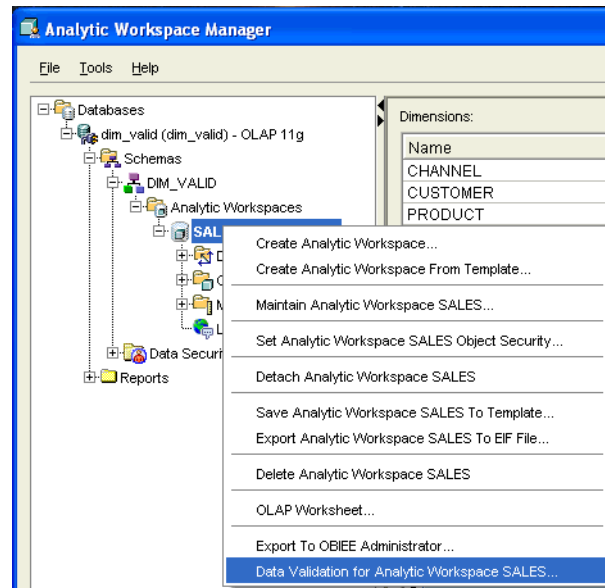
To run Data Validation Plug-in for Analytic Workspace Manager, right-click an analytic workspace or the Cubes folder in the Analytic Workspace Manager navigation tree. On the shortcut menu, select **Data Validation For Analytic Workspace** *analytic_workspace_name*.

If this is the first time you have used the data validation plug-in for the analytic workspace, then a message appears that asks if you want to load the metadata of the analytic workspace. If you click **Yes**, then the plug-in loads the metadata and creates a model for the analytic workspace. If you click **No**, then a **Data Validation For Schema** *schema_name* dialog box appears. You can then create a model as described in "[Creating a Model](#)" on page 4.

The figures in this document show the plug-in validating the data of the SALES analytic workspace in the DIM_VALID schema. You can download scripts that install the schema and create the analytic workspace from the OTN website at <http://www.oracle.com/technetwork/database/options/olap/olap-downloads-098860.html>.

[Figure 1](#) shows the menu that appears when a user right-clicks the SALES analytic workspace in the DIM_VALID schema. On the menu, the data validation plug-in is highlighted.

Figure 1 *Selecting Data Validation Plug-in for Analytic Workspace Manager on the Short-cut Menu*



Tables Created by the Data Validation Plug-in

Data Validation plug-in for Analytic Workspace Manager creates the following three tables to store metadata about the dimension tables and the results of tests:

- OLAP_DIM_DATA_VALIDATION
- OLAP_DIM_VALIDATE_LAST_RUN
- OLAP_CUBE_DATA_VALIDATION

Using Data Validation Plug-in for Analytic Workspace Manager

To use the data validation plug-in, log into Analytic Workspace Manager and start the plug-in. In a data validation plug-in session, you typically do the following actions.

1. Create a model, as described in ["Creating a Model"](#) on page 4.
2. Run data validation tests, as described in ["Running Data Validation Tests"](#) on page 7. These tests issue SQL statements that examine data in the dimension tables and store the results in tables.
3. View summary reports that identify problems that might exist in dimension tables. Each of the reports is the result of a different test. Messages in the reports help you interpret the results of the tests. See ["Describing the Reports"](#) on page 10.
4. View data that might cause an error and correct existing errors in the dimension tables. See ["Viewing Data and Correcting Errors"](#) on page 16.

Creating a Model

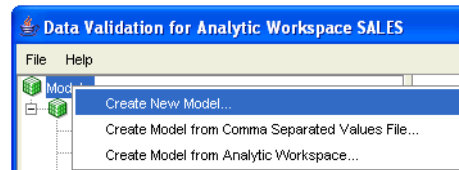
A Data Validation Plug-in for Analytic Workspace model is a collection of metadata that describes the dimension tables. A model maps dimension tables to an OLAP dimension and to one or more hierarchies.

Data Validation Plug-in for Analytic Workspace Manager has three methods for creating a model. These methods are described in the following topics.

- [Creating a Model from an Analytic Workspace](#)
- [Creating a Model from a CSV File](#)
- [Creating a Model By Hand](#)

To create a model, you right-click the Model folder in the navigation tree and select an item on the shortcut menu that appears. [Figure 2](#) shows that shortcut menu.

Figure 2 The Shortcut Menu of the Models Folder



[Figure 3](#) shows the Model Detail section of the Data Validation for Analytic Workspace SALES dialog box. The model is for the SALES analytic workspace in the DIM_VALID schema.

Figure 3 A Sample Model

Model Detail for SALES

Actions...

Dimension	Hierarchy	Level	Depth	Owner	Table Name	Key Column	Description Column	Pe
CHANNEL	CLASSES	ALL_CHANNELS	1	DIM_VALID	CHANNEL_DIM	ALL_CHANNELS_ID	ALL_CHANNELS_NAME	
CHANNEL	CLASSES	CLASS	2	DIM_VALID	CHANNEL_DIM	CLASS_ID	CLASS_NAME	
CHANNEL	CLASSES	CHANNEL	3	DIM_VALID	CHANNEL_DIM	CHANNEL_ID	CHANNEL_NAME	
CUSTOMER	REGIONS	ALL_CUSTOMERS	1	DIM_VALID	CUSTOMER_DIM	ALL_CUSTOMERS_ID	ALL_CUSTOMERS_NAME	
CUSTOMER	REGIONS	REGION	2	DIM_VALID	CUSTOMER_DIM	REGION_ID	REGION_NAME	
CUSTOMER	REGIONS	COUNTRY	3	DIM_VALID	CUSTOMER_DIM	COUNTRY_ID	COUNTRY_NAME	
CUSTOMER	REGIONS	STATE	4	DIM_VALID	CUSTOMER_DIM	STATE_PROVINCE_ID	STATE_PROVINCE_NAME	
CUSTOMER	REGIONS	CITY	5	DIM_VALID	CUSTOMER_DIM	CITY_ID	CITY_NAME	
CUSTOMER	REGIONS	CUSTOMER	6	DIM_VALID	CUSTOMER_DIM	CUSTOMER_ID	CUSTOMER_NAME	
PRODUCT	DEPARTMENTS	ALL_PRODUCTS	1	DIM_VALID	PRODUCT_DIM	ALL_PRODUCTS_ID	ALL_PRODUCTS_NAME	
PRODUCT	DEPARTMENTS	DEPARTMENT	2	DIM_VALID	PRODUCT_DIM	DEPARTMENT_ID	DEPARTMENT_NAME	
PRODUCT	DEPARTMENTS	CATEGORY	3	DIM_VALID	PRODUCT_DIM	CATEGORY_ID	CATEGORY_NAME	
PRODUCT	DEPARTMENTS	TYPE	4	DIM_VALID	PRODUCT_DIM	TYPE_ID	TYPE_NAME	
PRODUCT	DEPARTMENTS	SUBTYPE	5	DIM_VALID	PRODUCT_DIM	SUBTYPE_ID	SUBTYPE_NAME	
PRODUCT	DEPARTMENTS	ITEM	6	DIM_VALID	PRODUCT_DIM	ITEM_ID	ITEM_NAME	
TIME	CALENDAR	CALENDAR_YEAR	1	DIM_VALID	TIME_DIM	CALENDAR_YEAR_ID	CALENDAR_YEAR_NAME	
TIME	CALENDAR	CALENDAR_QUARTER	2	DIM_VALID	TIME_DIM	CALENDAR_QUARTER_ID	CALENDAR_QUARTER_NAME	
TIME	CALENDAR	MONTH	3	DIM_VALID	TIME_DIM	MONTH_ID	MONTH_NAME	
TIME	CALENDAR	DAY	4	DIM_VALID	TIME_DIM	DAY_ID	DAY_ID	

Creating a Model from an Analytic Workspace

To create a model from an analytic workspace, do the following.

1. Right-click the Models folder in the navigation tree.
2. On the shortcut menu, select **Create Model from Analytic Workspace**.

The data validation plug-in imports all level-based hierarchies into the model.

Creating a Model from a CSV File

To create a model from a comma separated value (CSV) file, do the following.

1. Right-click the Models folder in the navigation tree.
2. On the shortcut menu, select **Create Model from Comma Separated Values File**.

The CSV file must include the following fields:

Field	Description
Model name	A unique model name within the data validation plug-in metadata and the schema.
Dimension name	A unique dimension name within the model.
Hierarchy name	A unique hierarchy name within the dimension.
Level name	A unique level name within a hierarchy.
Depth	The order of levels within a hierarchy. The top-most level should have a depth of 1, the next level 2, and so on.
Schema name	The owner of the dimension table.
Table name	The name of the dimension table.
Member column	The column that contains dimension members (keys) within the level.
Description column	The column that contains descriptions for dimension members within the level.
Parent column (optional)	If you use snowflake-style dimension tables, then this is the name of the column that contains the parent members of dimension members within the level.

Creating a Model By Hand

To create a model by entering it by hand within the data validation plug-in, do the following.

1. Right-click the Models folder in the navigation tree.
2. On the shortcut menu, select **Create New Model**.
3. In the Create Model dialog box, enter a name for the model.
4. Select the new model in the navigation tree.
5. Click the **Actions** button and select **Create New Levels for Model**. [Figure 4](#) shows the Actions menu.
6. In the Add New Levels dialog box, fill in the fields with the required information. [Figure 5](#) shows that dialog box with the information for the FISCAL_YEAR level of the FISCAL hierarchy of the TIME dimension.

Figure 4 Creating New Levels for a Model

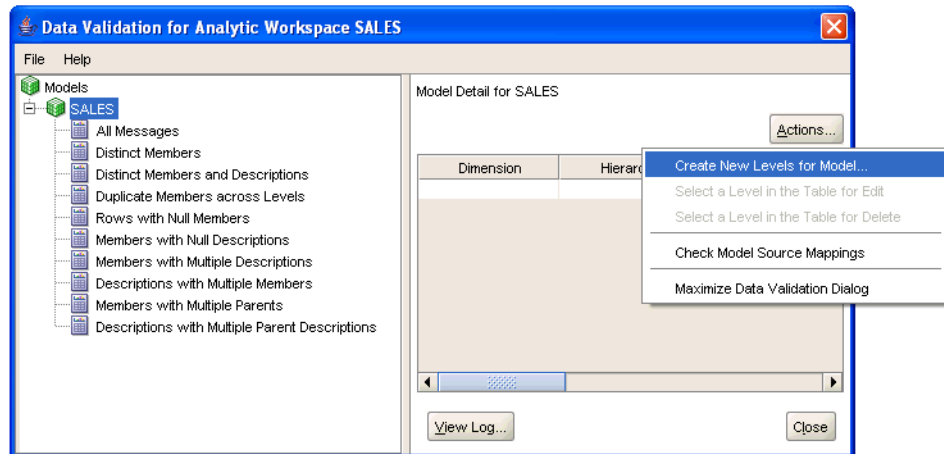


Figure 5 Adding a New Level to a Model

The 'Add New Levels' dialog box is shown with the following field values: Dimension Name: TIME, Hierarchy Name: FISCAL, Level Name: FISCAL_YEAR, Depth: 1, Dimension Table Owner: DIM_VALID, Dimension Table Name: TIME, Level Key Column Name: FISCAL_YEAR_ID, Description Column Name: FISCAL_YEAR_DESC, and Snowflake Join Column Name: (empty). The 'Apply' and 'Close' buttons are located at the bottom right of the dialog.

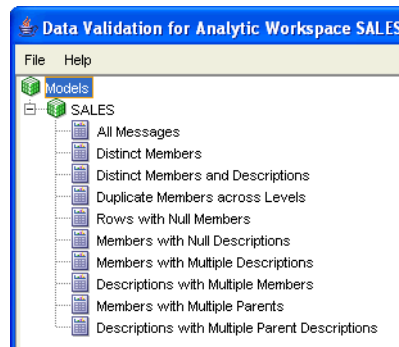
Running Data Validation Tests

Each data validation test produces a report. The All Messages report contains the summary information for all of the tests. This topic describes how to run a test.

For descriptions of the tests and the reports that they generate, and some recommendations on how to fix problems, see ["Describing the Reports"](#) on page 10. For information on how to see the data of a dimension, and more information on how to fix problems, see ["Viewing Data and Correcting Errors"](#) on page 16.

To run a test and view the report, select an item in the navigation tree in the Data Validation for Analytic Workspace dialog box. [Figure 6](#) shows the navigation tree portion of the Data Validation for Analytic Workspace SALES dialog box.

Figure 6 The Navigation Tree of the Data Validation Plug-in



The following topics describe how to run data validation tests to generate summary reports.

- [Running All Reports for All Dimensions](#)
- [Running All Reports for a Specific Dimension](#)
- [Running a Specific Report for All Dimensions](#)
- [Running a Specific Report for a Specific Dimension](#)

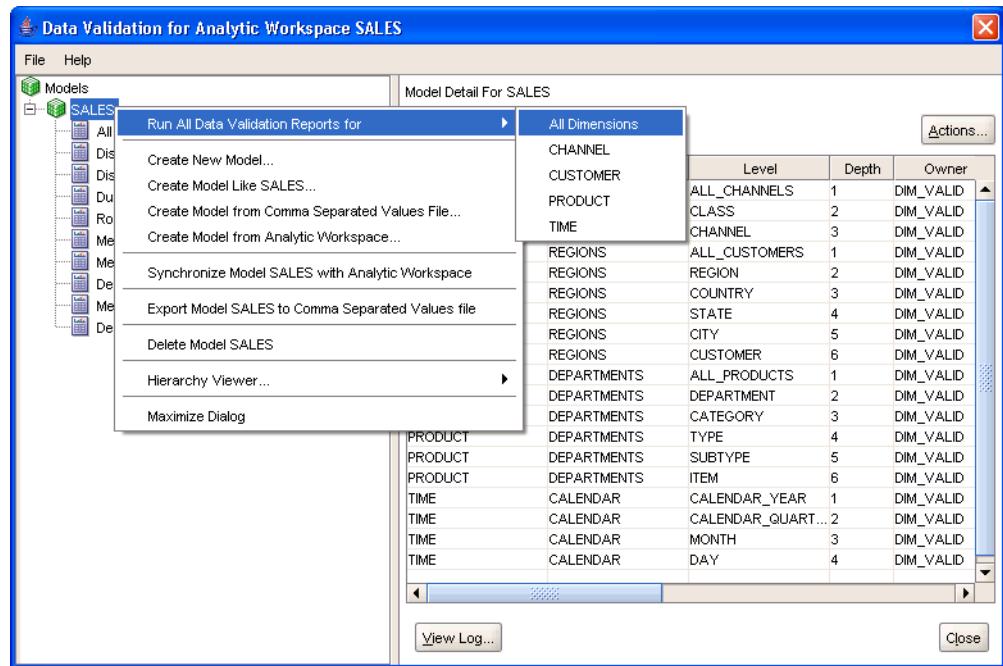
Running All Reports for All Dimensions

Before running all reports for all dimensions, see the note for the "[Duplicate Members across Levels Report](#)" on page 12. To run all reports for all dimensions, do the following.

1. Right-click the model or All Messages Report in the navigation tree.
2. Select **Run All Data Validation Reports for**.
3. Select **All Dimensions**.

[Figure 7](#) shows the Data Validation for Analytic Workspace SALES dialog box with the SALES model, **Run All Data Validation Reports for**, and **All Dimensions** selected.

Figure 7 Running All Data Validation Reports



Running All Reports for a Specific Dimension

To run all reports for all dimensions, do the following.

1. Right-click the model or All Messages Report in the navigation tree.
2. Point to **Run All Data Validation Reports for**.
3. Select a dimension.

Running a Specific Report for All Dimensions

To run data validation for a specific report for all dimensions, do the following.

1. Right-click the report in the navigation tree.
2. Point to **Run All Data Validation Reports for**.
3. Select **All Dimensions**.

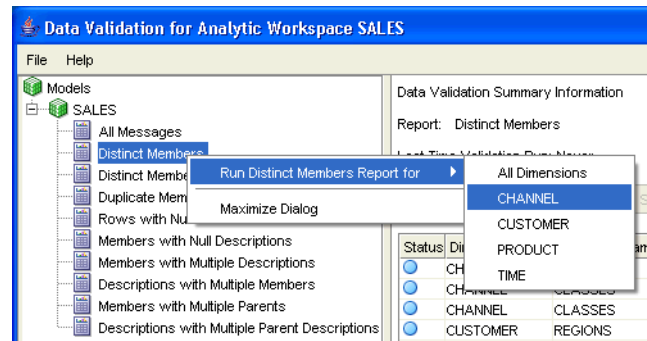
Running a Specific Report for a Specific Dimension

To run data validation for a specific report for a specific dimension, do the following.

1. Right-click the report in the navigation tree.
2. Point to **Run *report_name* Report for**.
3. Select the dimension.

Figure 8 shows a portion of the Data Validation for Analytic Workspace SALES dialog box with the Distinct Member Report, **Run Distinct Member Report for**, and the **CHANNEL** dimension selected.

Figure 8 Running the Distinct Members Report for the CHANNEL Dimension



Describing the Reports

This topic describes the reports and the warning and error messages that a report might contain. If a report has no messages, then the test or tests encountered no error or warning conditions. Most of the descriptions of the warnings contain suggestions on how to correct the problem.

A warning message indicates that the OLAP dimension may be maintained and that data is consistent within the cube, but that some of the data might cause unexpected results when reporting data. For example, a warning message might indicate that a dimension member has more than one value for a descriptive label.

An error message indicates that the plug-in has found data that might cause problems when maintaining the OLAP dimension or that might produce unexpected results within the cube. For example, having dimension members with different parent values in different rows of the dimension table is reported as an error because data could aggregate in ways that could be unexpected by the user.

You should resolve error messages before maintaining the OLAP dimension. You should consider warning messages in the context of the tools with which users query the OLAP cube. For example, certain applications might be able to query a ragged (uneven) hierarchy and other applications might not.

For any row in a specific report, you can view the SQL statement that the data validation plug-in generates to get the data for that row. To see the SQL statement, select a row and click **Show SQL**.

The following topics describe the reports.

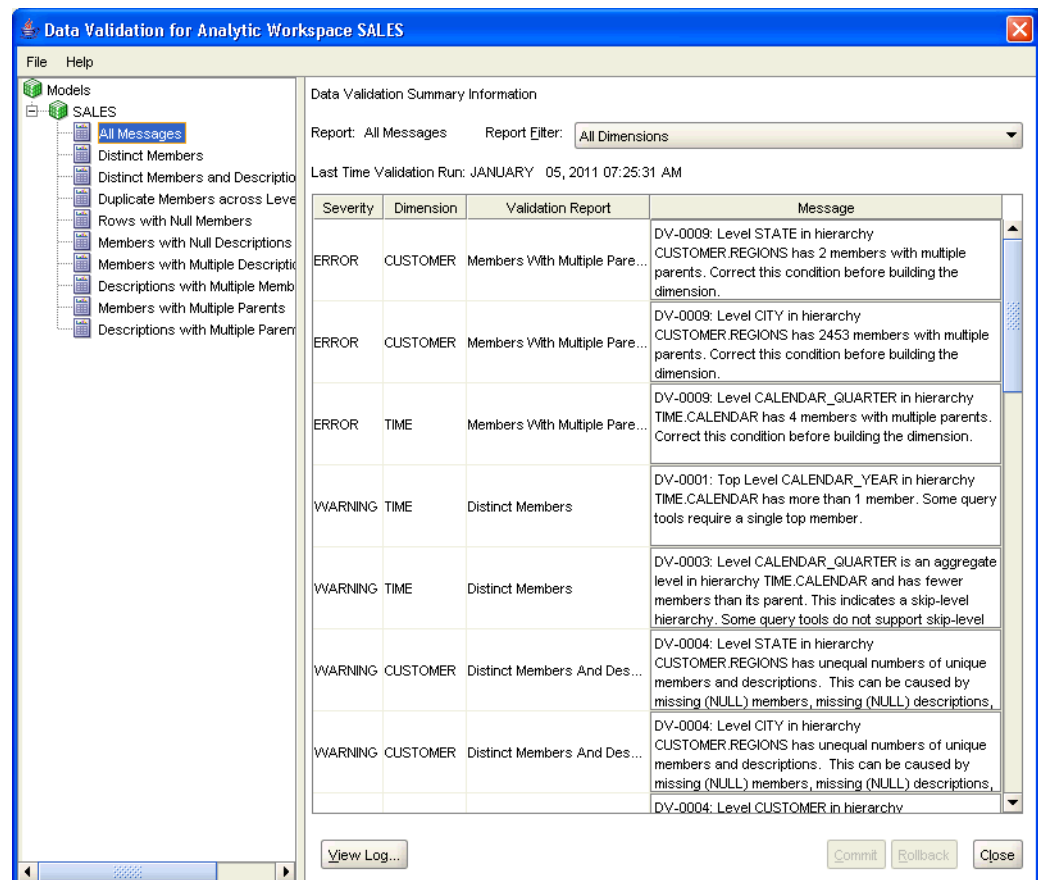
- [All Messages Report](#)
- [Distinct Members Report](#)
- [Distinct Members and Descriptions Report](#)
- [Duplicate Members across Levels Report](#)
- [Rows with Null Members Report](#)
- [Members with Null Descriptions Report](#)
- [Members with Multiple Descriptions Report](#)
- [Descriptions with Multiple Members Report](#)
- [Members with Multiple Parents Report](#)
- [Descriptions with Multiple Parent Descriptions Report](#)

All Messages Report

This report contains a summary of the errors and warnings the plug-in generates after running all of the data validation tests. Each row of the All Messages Report table identifies the validation report that has the error or warning. To continue the investigating the error or warning, select the appropriate report in the Models navigation tree.

Figure 9 shows the summary information for the All Messages Report.

Figure 9 The All Messages Report



Distinct Members Report

This report shows the number of distinct members within a level. Aside from providing information about member counts, you can use the Distinct Members report to identify ragged hierarchies and hierarchies that have multiple top members.

The Distinct Members report can contain the following warnings.

DV-0001 Warning This warning indicates that a hierarchy has more than one top member. For example, a calendar year hierarchy might have multiple top members, such as 2007, 2008, 2009, and 2010.

Having more than one top member might cause problems in SQL-based and MDX-based applications that allow a dimension to be excluded from a query. For example, consider a cube dimensioned by time, product and customer. If a user creates

a report with product and customer, but not time, values, then the application does not have a single top-level member that represents the total of the time dimension.

Some applications might attempt to summarize data from existing top members. Doing so might return data that is inconsistent with the calculation rules of the cube, for example summing a rank or a per cent change measure. Other applications might default to one of the top members.

You can resolve this condition by adding a single top member to the hierarchy. For example, you could add an ALL TIMES level to the hierarchy of the time dimension with a single member such as All Times.

DV-0002 Warning This warning indicates that a detail (leaf) level in a hierarchy has fewer members than the parent level. When this occurs, the hierarchy might be ragged, although other problems might also exist. See the "[DV-00006 Warning](#)" on page 13 for more information on ragged hierarchies.

DV-0003 Warning This warning indicates that an aggregate level in a hierarchy has fewer members than the parent level. When this occurs, the hierarchy might be skip-level, although other problems might also exist. See "[DV-0007 Warning](#)" on page 14 for more information on skip-level hierarchies.

Distinct Members and Descriptions Report

This report shows the number of distinct members and distinct descriptions at each level. You can use this report to find levels that have unequal numbers of members and descriptions.

The Distinct Members and Descriptions report can contain the following warnings.

DV-0004 Warning This warning indicates that there are unequal numbers of unique members and descriptions within a level. This condition might be the result of null members (a description exists but a member does not), null descriptions, members that have multiple descriptions (the descriptions for a member are different in different rows of the table), or descriptions that are used with more than one member.

To ensure that BI tools provide accurate and predictable results, every member should have only one description. This is particularly important if a tool uses SQL filters and GROUP BY clauses on description columns.

To further investigate this warning, view other reports that test for null members, null descriptions, members with multiple descriptions, and descriptions used with multiple members.

Duplicate Members across Levels Report

This report shows whether a member exists in more than one level within a hierarchy.

Note: While most reports run very quickly even on large dimensions, the Duplicate Members across Levels report might take a considerable amount of time to run on large dimensions because it compares members in every level with members of every other level. A large table with many levels takes considerably longer to test as compared to a small table with few levels. If your dimension table is very large, then considering running individual reports as needed rather than running all reports.

To prevent this report from running when you run the All Members Report, you can disable this report by right-clicking Duplicate Members across Levels Report in the navigation tree and selecting **Disable Duplicate Members across Levels Report**.

The Duplicate Members across Levels report can contain the following warning.

DV-0005 Warning This warning indicates that a dimension member exists at more than one level within a hierarchy. For example, the member 'New York' might exist at both the city and state levels of a geography dimension.

This condition is common in geographic hierarchies and in dimension tables that use surrogate keys, for example, items 1 - *n*, brands 1 - *n*, categories 1 - *n*, and so on. When this condition exists, either use the Generate Surrogate Keys option for the dimension (you can specify this option on the Implementation Details tab of a dimension in Analytic Workspace Manager) or make members unique across levels in the dimension tables. For example, you could change the city member 'New York' to 'New York, New York'.

Rows with Null Members Report

This shows null values in member columns. Null members might indicate ragged or skip-level hierarchies, or both.

The Rows with Null Members report can contain the following warnings.

DV-00006 Warning This warning indicates that null values exist in the dimension member column of a detail level. This indicates that the hierarchy is a "ragged" hierarchy. Some MDX-based tools (such as Excel) and SQL-based tools do not work correctly with ragged hierarchies. Also, a cube-organized materialized view cannot have a ragged hierarchy.

[Table 1](#) shows the result of a query of a ragged hierarchy. The table contains rows that have null values in the Store column.

Table 1 A Table with Ragged Rows

Store	State	Country
1	California	United States
2	California	United States
3	New York	United States
4	New York	United States
(null)	British Columbia	Canada
(null)	Ontario	Canada

If your query tools cannot support a ragged hierarchy, correct the problem by replacing null values. Some ways to do this are the following.

- Fill in nulls with the parent member and use the surrogate key option on the dimension.
- Fill in nulls with the parent member and make the parent member unique by concatenating the member with a string as shown in [Table 2](#). This approach attempts to preserve the ability to join the detail-level data in the dimension table with keys in the fact table by using the unchanged member values at the lowest level.

[Table 2](#) shows a result of correcting the ragged rows of the hierarchy.

Table 2 A Table without Ragged Rows

Store	State	Country
1	California	United States
2	California	United States
3	New York	United States
4	New York	United States
British Columbia	Province - British Columbia	Canada
Ontario	Province - Ontario	Canada

DV-0007 Warning This warning indicates that null values exist in the dimension member column of an aggregate level. This indicates that the hierarchy is a "skip-level" hierarchy. MDX-based tools and some SQL-based tools do not work correctly with skip-level hierarchies.

If your query tools cannot support a skip-level hierarchy, correct the problem by replacing null values. Some ways to do this are the following.

- Fill in nulls with the parent member and use the surrogate key option on the dimension.
- Fill in nulls with the parent member and make the parent member unique by concatenating the member with a string.

For example, some zip codes in the state of Alaska aggregate directly to Alaska at the state level (that is, they do not aggregate to a city). The city level rows for those zip codes might be null. You could replace the nulls with a value such as 'Alaska (City Level)'.

[Table 3](#) shows the result of a query of a skip-level hierarchy. Some rows in the City column have null values.

Table 3 A Table with Skip-Level Rows

Zip	City	State	Country
96587	(null)	Alaska	United States
96588	(null)	Alaska	United States
99504	Anchorage	Alaska	United States
99507	Anchorage	Alaska	United States

Table 4 shows the results of the same query after the null values of the skip-level hierarchy have been replaced by 'Alaska (City Level)'.

Table 4 A Corrected Table without Skip-Level Rows

Zip	City	State	Country
96587	Alaska (City Level)	Alaska	United States
96588	Alaska (City Level)	Alaska	United States
99504	Anchorage	Alaska	United States
99507	Anchorage	Alaska	United States

You could also replace null values by creating new dimension members from child members. For example, you could add 'Zip 96587 (City)', 'Zip 96588 (City)', and so on, all reporting to 'Alaska' as the state level. Whereas this method results in dimensions without errors or warnings, it creates more new dimension members as compared to creating members using parents. This might result in a less efficient cube.

Members with Null Descriptions Report

This report shows dimension members that have null descriptions. This report can contain the following warning.

DV-0008 Warning This warning indicates that there are rows in the dimension table in which the description of a dimension member is null.

To correct this problem, provide a unique description for each member.

Members with Multiple Descriptions Report

This report shows members that have multiple descriptions, which means that a member has different description values in different rows of the dimension table. When a member has multiple descriptions in the dimension table, most query tools use the last value loaded in the cube. This might produce inconsistent results from one dimension load to the next.

This report can contain the following warning.

DV-0010 Warning This warning indicates that there are dimension members that have multiple descriptions.

To correct this problem, make sure that every member has only one description value.

Note:

- This test does not strip leading or trailing spaces. For example, 'Bedford' and 'Bedford ' are not considered to be the same values.
 - This test is case sensitive. For example, 'BEDFORD' and 'Bedford' are not considered to be the same values.
-
-

Descriptions with Multiple Members Report

This report shows instances in which more than one dimension member within a single level in a hierarchy has the same description. This report can contain the following warning.

DV-0012 Warning This warning indicates that more than one dimension member has the same description. For example, the members 'ACTON_MA' and 'ACTON_CA' could both have 'Acton' as the description. This condition can cause unexpected results when querying the cube, particularly when SQL queries include a filter or GROUP BY on the description column.

To correct this problem, make sure that every member has a unique description.

Members with Multiple Parents Report

This report shows instances in which a single member has more than one parent member. This report can contain the following warning.

DV-0009 Warning This warning indicates that a dimension member has more than one parent member within a hierarchy. For example, the member 'DISTRITO_FEDERAL' has parents 'MEXICO' and 'BRAZIL'. You should correct this problem before maintaining the OLAP dimension.

Descriptions with Multiple Parent Descriptions Report

This report shows instances in which a single member description has more than one parent member description. This report can contain the following warning.

DV-0011 Warning This error indicates that a dimension member description has more than one parent member description within a hierarchy. For example, the description 'Distrito Federal' has parent descriptions 'Mexico' and 'Brazil'. This condition can cause unexpected results when querying the cube with SQL.

Viewing Data and Correcting Errors

For most of the rows in the summary reports, you can click the **Drill to Details** button to view the dimension data relevant to the report and to have access to methods that correct problems in the dimension tables.

The drill-to-details reports and the data correction methods are described in the following topics.

- [Describing the Drill-to-Details Reports](#)
- [Using the Data Correction Methods](#)
- [Describing the Data Correction Methods](#)

Describing the Drill-to-Details Reports

The content of the drill-to-details report varies with the parent report. Some drill-to-details reports are simply informative, for example the details for a row in the Distinct Members report shows the dimension members at the selected level. Other drill-to-details reports display problematic data and provide methods that you can use to fix some of the problems.

You can view the SQL statement that generates the detailed data by clicking the **Show Drill to Detail SQL** button on the Details for *report* at Level *level_name* in *hierarchy* dialog box.

[Figure 10](#) shows a section of the Data Validation for Analytic Workspace SALES dialog box. The figure shows the table of summary information for the Distinct Members report and the **Show SQL**, **Run Validation for Report**, and **Drill to Details** buttons.

Figure 10 Drill to Details Button

Data Validation Summary Information

Report: Distinct Members

Last Time Validation Run: JANUARY 05, 2011 07:25:16 AM

Status	Dimension Name	Hierarchy Name	Level Name	Depth	Distinct Members
✓	CHANNEL	CLASSES	ALL_CHANNELS	1	1
✓	CHANNEL	CLASSES	CLASS	2	2
✓	CHANNEL	CLASSES	CHANNEL	3	11
✓	CUSTOMER	REGIONS	ALL_CUSTOMERS	1	1
✓	CUSTOMER	REGIONS	REGION	2	6
✓	CUSTOMER	REGIONS	COUNTRY	3	64
✓	CUSTOMER	REGIONS	STATE	4	166
✓	CUSTOMER	REGIONS	CITY	5	29730
✓	CUSTOMER	REGIONS	CUSTOMER	6	119781
✓	PRODUCT	DEPARTMENTS	ALL_PRODUCTS	1	1
✓	PRODUCT	DEPARTMENTS	DEPARTMENT	2	3
✓	PRODUCT	DEPARTMENTS	CATEGORY	3	8
✓	PRODUCT	DEPARTMENTS	TYPE	4	32
✓	PRODUCT	DEPARTMENTS	SUBTYPE	5	146
✓	PRODUCT	DEPARTMENTS	ITEM	6	2712
⚠	TIME	CALENDAR	CALENDAR_YEAR	1	5

Figure 11 shows the dialog box that appears when you click the **Drill to Details** button for the CHANNELS level.

Figure 11 Showing the Details for a Distinct Members Report

Details for Members at Level CHANNEL (3) in CHANNEL.CLASSES

Source Dimension Table: DIM_VALID.CHANNEL_DIM

Find:

Member (CHANNEL_ID)	Description (CHANNEL_NAME)
18	Catalog
20	Lisbon Retail
22	Internet
23	London Retail
24	Shanghai Retail
25	Los Angeles Retail
26	Paris Retail
27	Boston Retail
28	Tokyo Retail
29	Indirect Warehouse
30	Budapest Retail

Using the Data Correction Methods

By using the data correction methods, you can quickly change the data in dimension tables during the proof of concept or early design stage of the OLAP cube design process. Correction methods provided by the data validation plug-in are not a substitute for a high-quality extraction, load, and transform process in the data warehouse or for data quality tools.

Caution: Before using the data correction methods, create both backup and test copies of dimension tables. Make changes only to test copies of the dimension tables.

Note: Be aware that if you change dimension members at the lowest (leaf) levels of a dimension table, then you might also have to change keys in the fact table.

Although the data correction methods vary for each report, the general procedure for using the methods is the same for all reports.

1. From the summary report, select a row in the table and click **Drill to Detail**.
2. In the Details for *report* at Level *level_name* in *hierarchy* dialog box, select the **Update Dimension Table** option.
3. Choose a data correction method and supply the required or optional information.
4. Click the **Apply** button.
5. Run data validation reports again for the affected dimension.

Note: Because changing data in a dimension table often affects multiple reports, you should run all reports for a dimension after changing data.

6. (Optional) To make the data changes permanent, click the **Commit** button on the Data Validation for Analytic Workspace *analytic_workspace_name* dialog box.

Note: Applying the changes to a dimension table using the data validation plug-in does not commit those changes. To make them permanent, click **Commit**.

The Details for *report* at Level *level_name* in *hierarchy* dialog box displays the SQL statements that the plug-in executes for the selected correction method. You can execute this SQL as is by clicking the **Apply** button, or you can copy it and paste into a tool such as SQL*Plus or SQL Developer and modify the SQL as desired before executing it.

In some cases the data correction method tests whether a column is wide enough to accommodate the updated values and generates an ALTER TABLE statement to increase the column width if necessary.

Describing the Data Correction Methods

This topic describes the **drill-to-details** reports and the data correction methods that each report contains.

Details for Rows with Null Members

This report displays rows in which the member column is null. The data correction methods available in the Details for Null Members dialog box are the following.

Set Null Members to Parent Member	<p>Updates the member column with the member value of the parent column. Updates all rows where the member is null.</p> <p>Notes:</p> <ul style="list-style-type: none"> ■ This method is not available when the data type of the member column is inconsistent with the data type of the parent column. ■ Setting the member to the parent causes members to exist in multiple levels, requiring the use of the Generate Surrogate Key option on the dimension or making the member unique with a prefix or suffix (for example, CITY).
Set Null Members to Description	<p>Updates the member column with the value of the description column. Updates all rows where the member is null.</p> <p>Note: This method is not available when the data type of the member column is inconsistent with the data type of the parent column.</p>

[Figure 12](#) shows the dialog box that appears when you select the row for the STATE level of the REGIONS hierarchy of the CUSTOMER dimension on the Rows with Null Members report and click the **Drill to Details** button. The values in the STATE_PROVINCE_ID column are null.

Figure 12 Details for the Rows with Null Members Report

Details for Null Member Rows at Level STATE (4) in CUSTOMER.REGIONS

Source Dimension Table: DIM_VALID.CUSTOMER_DIM

Find:

STATE_PROVINCE_ID	STATE_PROVINCE_NAME	COUNTRY_ID	COUNTRY_NAME	REGION_ID	REGION_NAME	ALL_CUSTO...	ALL_CUSTO...
(null)	AUSTRIA (S/P)	AUSTRIA	Austria	EUROPE	Europe	99999999	All Customers
(null)	FINLAND (S/P)	FINLAND	Finland	EUROPE	Europe	99999999	All Customers
(null)	FRANCE (S/P)	FRANCE	France	EUROPE	Europe	99999999	All Customers
(null)	GERMANY (S/P)	GERMANY	Germany	EUROPE	Europe	99999999	All Customers
(null)	GREECE (S/P)	GREECE	Greece	EUROPE	Europe	99999999	All Customers
(null)		HUNGARY	Hungary	EUROPE	Europe	99999999	All Customers
(null)	ITALY (S/P)	ITALY	Italy	EUROPE	Europe	99999999	All Customers
(null)	NETHERLANDS (S/P)	NETHERLANDS	Netherlands	EUROPE	Europe	99999999	All Customers
(null)	POLAND (S/P)	POLAND	Poland	EUROPE	Europe	99999999	All Customers
(null)	PORTUGAL (S/P)	PORTUGAL	Portugal	EUROPE	Europe	99999999	All Customers

☐ Update Dimension Table

Data Correction Method:

☒ Set Null Members to Parent Member

☐ Set Null Members to Description

```
UPDATE DIM_VALID.CUSTOMER_DIM
SET STATE_PROVINCE_ID = 'STATE_' || COUNTRY_ID
WHERE STATE_PROVINCE_ID IS NULL
```

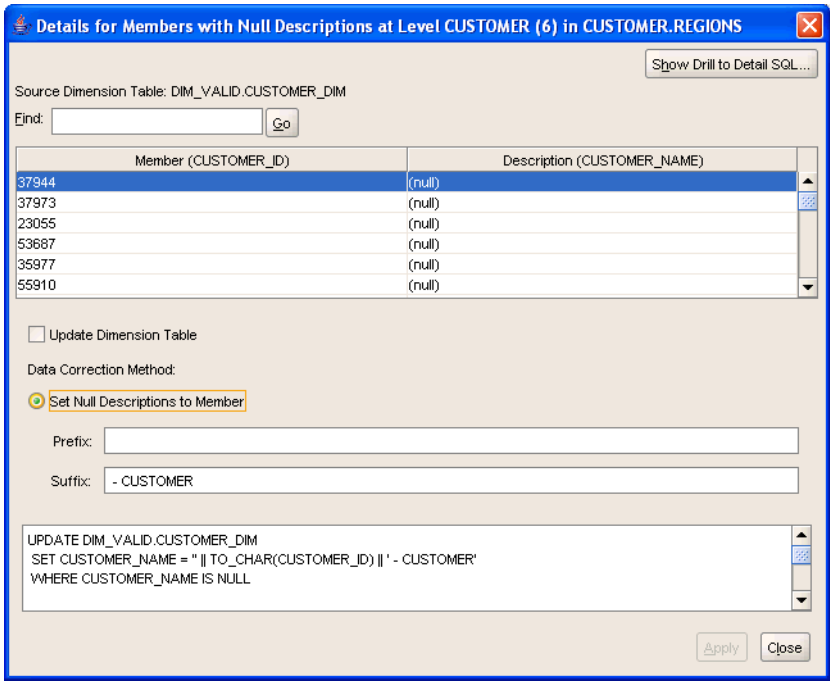
Details for Members with Null Descriptions

This report displays all members for which the description column is null. The data correction method available in the Details for Members with Null Descriptions dialog box is the following.

Set Null Descriptions to Member	<p>Updates the description column to the value of the member column, plus an optional prefix. Updates all rows where the description is null.</p> <p>Note: This method is not available when the data type of the member column is inconsistent with the data type of the parent column.</p>
---------------------------------	--

Figure 13 shows the dialog box that appears when you select the row for the CUSTOMER level of the REGIONS hierarchy of the CUSTOMER dimension on the Members with Null Descriptions report and click the **Drill to Details** button. The values in the Description (CUSTOMER_NAME) column are null.

Figure 13 Details for Members with Null Descriptions Report



Details for Members with Multiple Descriptions

This report displays members that have multiple descriptions in different rows of the dimension table. The data correction methods available in the Members with Multiple Descriptions dialog box are the following.

Set Description to Most Common Description	<p>Updates the description column to the value of the description column that occurs most often (that is, in the most rows). For members that have an equal number of rows with the same description, this method applies the first description value to all of those rows. Updates all rows where the member has more than one description.</p>
Set Description to Selected Description	<p>Updates the description column to the value of the selected description. Updates all rows where the member has a different description.</p>

Figure 14 shows the dialog box that appears when you select the row for the STATE level of the REGIONS hierarchy of the CUSTOMER dimension on the Members with Multiple Descriptions report and click the **Drill to Details** button. The dimension members CALIFORNIA and GUANGXI_ZHUANG both have two different descriptions.

Figure 14 Details for Members with Multiple Descriptions Report

Details for Members with Multiple Descriptions at Level STATE (4) in CUSTOMER.REGIONS

Show Drill to Detail SQL...

Source Dimension Table: DIM_VALID.CUSTOMER_DIM

Find: Go

Member (STATE_PROVINCE_ID)	Description (STATE_PROVINCE...	Occurrences	Percent Occurrences
CALIFORNIA	CA	53	0.42
CALIFORNIA	California	12515	99.58
GUANGXI_ZHUANG	Guangxi Zhaung	1	0.46
GUANGXI_ZHUANG	Guangxi Zhuang	216	99.54

☐ Update Dimension Table

Data Correction Method:

☒ Set Description to Most Common Description

☐ Set Description to Selected Description (SET STATE_PROVINCE_NAME = 'CA' WHERE STATE_PROVINCE_ID = 'CALIFORNIA')

MERGE INTO DIM_VALID.CUSTOMER_DIM a USING
(SELECT DISTINCT STATE_PROVINCE_ID,
first_value(STATE_PROVINCE_NAME)
OVER(PARTITION BY STATE_PROVINCE_ID) AS STATE_PROVINCE_NAME

ApplyClose

Details for Descriptions with Multiple Members

This report displays all descriptions that have more than one member in different rows of the dimension table. The data correction methods available in the Details for Descriptions with Multiple Members dialog box are the following.

Concatenate Description with Member	Updates the description column with a concatenation of the description and the member. Updates rows for all members that have multiple descriptions. Note: This method is not available when the data type of the description column is incompatible with the resulting value.
Concatenate Description with Parent Description	Updates the description column with a concatenation of the description and the parent description. Updates rows for all members that have multiple descriptions. Note: This method is not available when the data type of the description column is incompatible with the resulting value.
Set Member to Most Common Member	Updates the member column to the member that exists in the most number of rows for each description. For descriptions that have an equal number of rows with the same member, this method applies the first member value to all of those rows. Updates all rows where a description has more than one member.

Figure 15 shows the dialog box that appears when you select the row for the CITY level of the REGIONS hierarchy of the CUSTOMER dimension on the Descriptions

with Multiple Members report and click the **Drill to Details** button. In the figure, the three descriptions visible are each associated with two different members.

Figure 15 Details for the Descriptions with Multiple Members Report.

Details for Descriptions with Multiple Members At Level CITY (5) in CUSTOMER.REGIONS

Source Dimension Table: DIM_VALID.CUSTOMER_DIM

Find: Go

Description (CITY_NAME)	Member (CITY_ID)	Parent Description (STATE_PROVINCE_NAME)	Occurrences	Percent Occurrences
Bamba	BAMBA	Kinshasa	1	50
Bamba	BAMBA_CG	Brazzaville	1	50
Bamba Kilenda	BAMBA_KILENDA	Kinshasa	1	50
Bamba Kilenda	BAMBA_KILENDA_CG	Brazzaville	1	50
Bibanga	BIBANGA	Kinshasa	2	66.67
Bibanga	BIBANGA_CG	Brazzaville	1	33.33

☐ Update Dimension Table

Data Correction Method:

☒ Concatenate Description with Member

☐ Concatenate Description with Parent Description

☐ Set Member to Most Common Member

Separator: -

UPDATE DIM_VALID.CUSTOMER_DIM
SET CITY_NAME = CITY_NAME || '-' || CITY_ID
WHERE CITY_NAME
IN (SELECT CITY_NAME FROM

ApplyClose

Details for Members with Multiple Parents

This reports displays all members that have more than one parent member. The data correction methods available in the Details for Members with Multiple Parents dialog box are the following.

Update Parent Member with Most Common Parent	<p>Updates the parent member and parent description columns to the parent member and description that exists in the most number of rows for each member. For members that have an equal number of rows with the same different parent, this method applies the first parent value to the rows for that member. Updates all rows where the member has multiple parents.</p> <p>Note: This method is not available when the data type of the member column is incompatible with the resulting value.</p>
Update Parent Member with Selected Parent	<p>Updates the parent member and parent description columns to the values of the parent member and parent description in the selected row. Updates all rows that have the same member value.</p>
Concatenate Member and Parent	<p>Updates to the member column with a concatenation of the Member and Parent Member values. Updates all rows where a member has multiple parents.</p> <p>Note: This method is not available when the data type of the member column is incompatible with the resulting value.</p>

Tip: When you make members unique by concatenating the member and parent member values (for example, city New York and state New York concatenated as New York, New York at the city level), you should first apply the method to upper levels of a hierarchy and then work down the hierarchy. Rerun the validation report after each change to the dimension table.

Figure 16 shows the dialog box that appears when you select the row for the STATE level of the REGIONS hierarchy of the CUSTOMER dimension on the Members with Multiple Parents report and click the **Drill to Details** button. In the figure, the two dimension members visible are each associated with two different parents.

Figure 16 Details for Members with Multiple Parents Report

Details for Members with Multiple Parents at Level STATE (4) in CUSTOMER.REGIONS

Show Drill to Detail SQL...

Source Dimension Table: DIM_VALID.CUSTOMER_DIM

Find: Go

Member (STATE_PROVINCE_ID)	Parent (COUNTRY_ID)	Description (STATE_PROVINCE_NAME)	Parent Description (COUNTRY_NAME)	Occurrences	Percent...
DISTRITO_FEDERAL	MEXICO	Distrto Federal	Mexico	2969	91.3
DISTRITO_FEDERAL	BRAZIL	Distrto Federal	Brazil	283	8.7
PUNJAB	PAKISTAN	Punjab	Pakistan	972	88.69
PUNJAB	INDIA	Punjab	India	124	11.31

☐ Update Dimension Table

Data Correction Method:

☒ Update Parent Member with Most Common Parent

☐ Update Parent Member with Selected Parent (SET COUNTRY_ID = 'MEXICO' WHERE STATE_PROVINCE_ID = 'DISTRITO_FEDERAL')

☐ Concatenate Member and Parent

Separator:

MERGE INTO DIM_VALID.CUSTOMER_DIM a USING
(SELECT DISTINCT STATE_PROVINCE_ID,
first_value(COUNTRY_ID)
OVER (PARTITION BY STATE_PROVINCE_ID) AS COUNTRY_ID,

Apply Close

Details for Descriptions with Multiple Parent Descriptions

The Details for Descriptions with Multiple Parent Descriptions reports displays all descriptions that have more than one parent description.

The data correction methods available in the Details for Descriptions with Multiple Parent Descriptions dialog box are the following.

Update Parent Description with Most Common Parent Description	Updates the parent description column to the parent description that exists in the most number of rows for each member. For members that have an equal number of rows with the same different parent description, this method applies the first parent description value to the rows for that member. Updates all rows where the description has multiple parent descriptions.
Update Parent Description with Selected Parent Description	Updates the parent description column to the value of the parent description in the selected row. Updates all rows that have the selected parent description value.

Concatenate Description with Parent Description	Updates the description column with a concatenation of the member description and the parent description values. Updates all rows where descriptions have multiple parent descriptions.
---	---

Tip: Correct all cases where members have multiple parents before correcting descriptions that have multiple parent descriptions. Corrections to members with multiple parents updates both the parent member and parent description columns which often resolves problems of descriptions with multiple parent descriptions.

Figure 17 shows the dialog box that appears when you select the row for the SUBTYPE level of the DEPARTMENTS hierarchy of the PRODUCT dimension on the Descriptions with Multiple Parent Descriptions report and click the **Drill to Details** button. In the figure, the member description has two different parent descriptions.

Figure 17 Details for Members with Multiple Parents Report

Source Dimension Table: DIM_VALID.PRODUCT_DIM
Find: Go

Description (SUBTYPE_NAME)	Parent Description (TYPE_NAME)	Member (SUBTYPE_ID)	Parent (TYPE_ID)	Occurrences	Percent Occurrences
Misc. Computer Accessories ...	Misc. Computer Accessories	-890	-589	28	96.55
Misc. Computer Accessories ...	Miscellaneous Computer Access...	-890	-589	1	3.45

☐ Update Dimension Table

Data Correction Method:

☒ Update Parent Description with Most Common Parent Description

☐ Update Parent Description with Selected Parent Description (SET TYPE_NAME = 'Misc. Computer Accessories' WHERE SUBTYPE_NAME = 'Misc. Co...)

☐ Concatenate Description with Parent Description

Separator:

MERGE INTO DIM_VALID.PRODUCT_DIM a USING
(SELECT DISTINCT SUBTYPE_NAME,
Parent (TYPE_ID))

Apply Close

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