

How Do I Update the Target Schema?

Scenario

You are in charge of managing a data warehouse that has been in production for a few months. The data warehouse was originally created using two source schemas, Human Resources (HR) and Order Entry (OE) and was loaded into the Warehouse (WH) target schema. Recently you were made aware of two changes to tables in the HR and OE schemas. The WH schema must be updated to reflect these changes.

- Change #1: The first change was made to the HR schema as show in [Figure 8-1](#). The length of the *REGION_NAME* column in the *REGIONS* table was extended to 100 characters.

Figure 8-1 Changed *REGIONS* Table

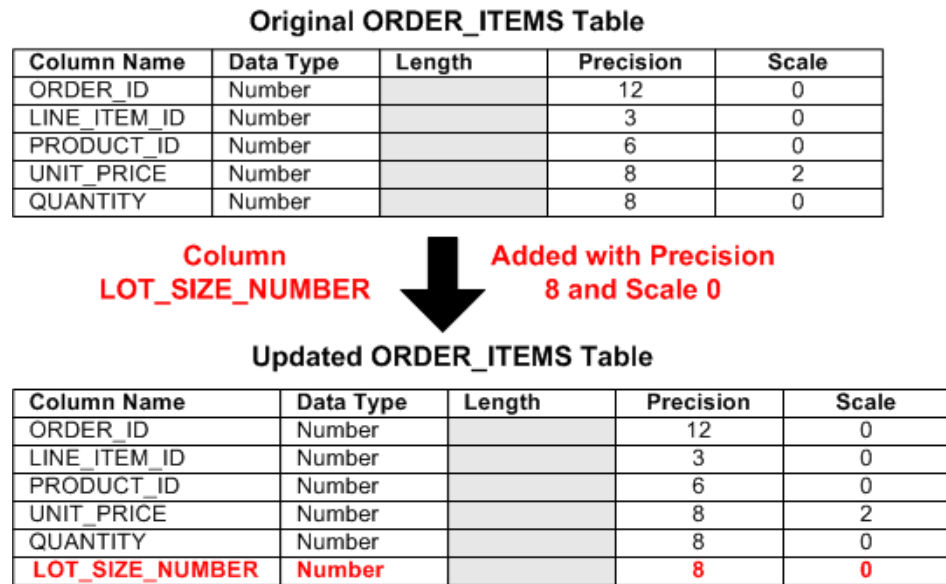
Original <i>REGIONS</i> Table				
Column Name	Data Type	Length	Precision	Scale
REGION_ID	Number		0	0
REGION_NAME	Varchar2	25		

Length of
REGION_NAME
↓
Changed from
25 to 100

Updated <i>REGIONS</i> Table				
Column Name	Data Type	Length	Precision	Scale
REGION_ID	Number		0	0
REGION_NAME	Varchar2	100		

- Change #2: The second change was made to the OE schema as shown in [Figure 8-2](#). A column called *LOT_SIZE_NUMBER* was added to the *ORDER_ITEMS* table with a precision of 8 and scale of 0.

Figure 8-2 Changed ORDER_ITEMS Table



Solution

In order to update the WH schema, you need to first determine the impact of these changes and then create and execute a plan for updating the target schema. The following steps provide an outline for what you need to do:

- Step 1: Identify Changed Source Objects
- Step 2: Determine the Impact of the Changes
- Step 3: Re-import Changed Objects
- Step 4: Update Objects in the Data Flow
- Step 5: Re-design your Target Schema
- Step 6: Re-Deploy Scripts
- Step 7: Test the New ETL Logic
- Step 8: Update Your Discoverer EUL
- Step 9: Execute the ETL Logic

Case Study

Step 1: Identify Changed Source Objects

The first step in rolling out changes to your data warehouse is to identify changes in source objects. In order to do this, you must have a procedure or system in place that can notify you when changes are made to source objects.

In our scenario, you were made aware by the group managing the HR and OE schemas that some objects had been changed. There were two changes, the first was made to the HR schema. The *REGION_NAME* column was extended from 25 to 100 characters to accommodate longer data. The second change was made to the OE schema. The *LOT_SIZE_NUMBER* column was added and needs to be integrated into the WH schema.

Step 2: Determine the Impact of the Changes

After you have identified the changes, you need to determine their impact on your target schema. For Change #1, made to the HR schema, you need to update any dependent objects. This entails re-importing the *REGIONS* table and then updating any objects that use the *REGION_NAME* column. To identify dependent objects, you can use the Impact Analysis Diagram as shown in Figure 8–3. You also need to update any mappings that use this table.

For Change #2, made to the OE schema, in addition to re-importing the table and updating mappings, you need to find a way to integrate the new column into the WH schema. Since the column was added to keep track of the number of parts or items in one unit of sales, add a measure called *NUMBER_OF_IND_UNITS* to the *SALES* cube in the WH schema and have this measure for each order. Then you need to connect this new column to the *SALES* cube.

Step 3: Re-import Changed Objects

Since two source objects have changed, you must start by re-importing their metadata definitions into your design repository. Select both the *REGIONS* table in the HR schema and the *ORDER_ITEMS* table in the OE schema from the navigation tree and use the Metadata Import Wizard to re-import their definitions.

Warehouse Builder automatically detects that this is an update and proceeds by only updating changed definitions. The Import Results window that displays at the end of the import process displays the details of the synchronization. Click **OK** to continue the import and commit your changes to the repository. If you do not want to continue with the import, click **Undo**.

Step 4: Update Objects in the Data Flow

If the change in the source object altered only existing objects and attributes, such as Change #1 in the HR schema, use Impact Analysis diagrams to identify objects that need to be reconciled.

In our scenario, we need to reconcile the column length in all objects that depend on the *REGIONS* table to ensure that the data continues to load properly.

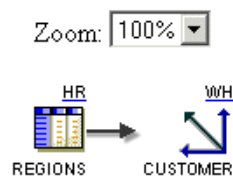
To update objects in the data flow:

1. Select the *REGIONS* table in the HR schema from the navigation tree. Select **View** and then **Impact Analysis**.

The Design Browser opens as shown in Figure 8–3 and the Impact Analysis diagram reveals that the *CUSTOMER* dimension in the WH schema is the only object impacted by the *REGIONS* table.

Figure 8–3 Impact Analysis Diagram for *REGION_NAME*

Impact Analysis Diagram - REGIONS



This step requires that you have already set up the Warehouse Builder Design Repository Browser. For more information on setting this up, see the *Oracle Warehouse Builder Installation Guide*.

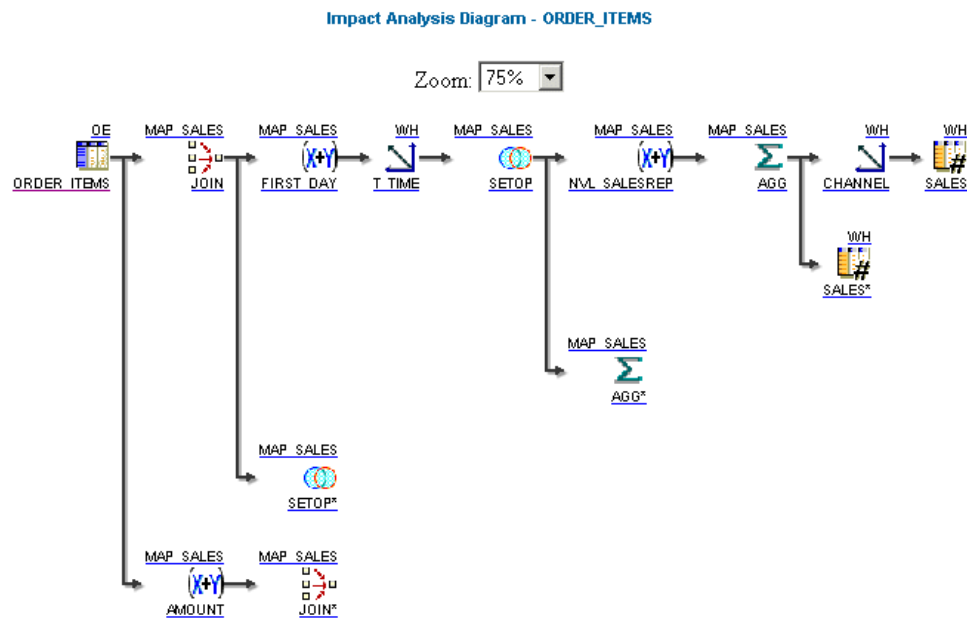
2. Open the *CUSTOMER* dimension in the Dimension editor and update the Region Name level attribute to 100 character length.
3. Open the *MAP_CUSTOMER* mapping that connects the source to the target and run **Inbound Reconcile** for both the *REGIONS* table operator and the *CUSTOMER* dimension operator.

The mapping operators must be reconciled to the mapping objects they represent in order to generate code based on the updated objects.

You have now completed updating the metadata associated with Change #1.

For Change #2, since it introduced a new column, you do not need to update the data flow the same way you did for Change #1. Make sure you run **Inbound Reconcile** on all the mappings that use a *ORDER_ITEMS* table operator. From the Impact Analysis Diagram for the *ORDER_ITEMS* table shown in Figure 8-4, we can see that this is only the mapping *MAP_SALES*.

Figure 8-4 Impact Analysis Diagram for *ORDER_ITEMS*



Step 5: Re-design your Target Schema

Since Change #2 introduced the new *LOT_SIZE_NUMBER* column to the *ORDER_ITEMS* table, you need to re-design your *WH* target schema to incorporate this new data into your cube. You can do this by adding a new measure called *NUMBER_OF_IND_UNITS* to your *SALES* cube.

To re-design the target schema:

1. Add the measure *NUMBER_OF_IND_UNITS* with the *NUMBER* data type, precision of 8, and scale of 0 to the *SALES* cube.

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2. View the lineage diagram for the *SALES* cube to determine which mappings are contain the *SALES* cube. Perform a reconcile inbound on all *SALES* cube mapping operators.
 3. Open the mapping *MAP_SALES* and ensure that the table *ORDER_ITEMS* is reconciled inbound.
 4. Connect the *LOT_SIZE_NUMBER* column in the *ORDER_ITEMS* table to the *JOIN*, and then to the *SETOP*, and then add it to the *AGG* operators. Ensure that you are doing a sum operation in the *AGG* operator.
 5. Finally, connect the *LOT_SIZE_NUMBER* output attribute of the *AGG* operator to the *NUMBER_OF_IND_UNITS* input attribute of the *SALES* cube.

Step 6: Re-Deploy Scripts

After the mappings have been debugged, use the Deployment Manager to re-generate and re-deploy scripts. Use the Deployment Manager to discover the default deployment action. Warehouse Builder automatically detects the type of deployment to run.

Step 7: Test the New ETL Logic

After you have reconciled all objects and ensured that the WH target schema has been updated to reflect all changes, test the ETL logic that is be generated from the mappings. Use the Mapping Debugger to complete this task. If you find any errors, resolve them and re-deploy the scripts.

Step 8: Update Your Discoverer EUL

If you are using Discoverer as your reporting tool, proceed by updating your EUL.

To update your Discoverer EUL:

1. Ensure that your *SALES* collection has been refreshed to include the new measure *NUMBER_OF_IND_UNITS*.
2. From the Project menu, select **Metadata Export** and then **Bridge** to open the Transfer Wizard.
3. Select to transfer to Oracle Discoverer and complete the wizard steps.
This generates an .EEX file.
4. Import the .EEX file into Discoverer and merge the metadata to complete the EUL update.

Step 9: Execute the ETL Logic

After the mappings have been deployed, execute and load data to the target.

