



# How To Learn Data Abstraction Best Practices View Generation

## An Open Source Asset for use with TIBCO® Data Virtualization

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<b>Project Name</b>	AS Assets Data Abstraction Best Practices
<b>Document Location</b>	This document is only valid on the day it was printed. The source of the document will be found in the ASAssets_DataAbstractionBestPractices folder ( <a href="https://github.com/TIBCOSoftware">https://github.com/TIBCOSoftware</a> )
<b>Purpose</b>	Self-paced instructional



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2020.200	03/12/2020	Mike Tinius	Release 2020Q200 – no changes.
2020.400	12/17/2020	Mike Tinius	Updated “Learn” documentation. Fixes in View Generation and Privilege Scripts modules.

## Related Documents

Name	Version
How To Use Utilities.pdf	2020Q402
How To Use Data Abstraction Best Practices View Generation.pdf	2020Q400
How To Test Data Abstraction Best Practices View Generation.pdf	2020Q400
How To Learn Data Abstraction Best Practices View Generation.pdf	2020Q400
How To Use Data Abstraction Best Practices Manage Annotations.pdf	2020Q200
How To Use Data Abstraction Best Practices Privilege Scripts.pdf	2020Q400

How To Use Data Abstraction Best Practices Dynamic File Framework.pdf

2020Q200

**Supported Versions**

Name	Version
TIBCO® Data Virtualization	8.x or later
AS Assets Utilities open source	2022Q301 or later

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## 1 Practice Goals

We will use the Data Abstraction Best Practices to create a project structure and generate views.

## 2 Overview

The Data Abstraction Best Practices provide a template for creating a project according to the layered approach. The Best Practices generation scripts are used to generate the different layers of the Data Abstraction Best Practices. For additional information, please refer to the document **“How To Use AS Data Abstraction Best Practices.pdf”**.

### 3 Pre-Requisites

Instructor creates /shared/labs and students receive a lab number...e.g. lab01, lab02 etc.  
Instructor installs ASAssets Data Abstraction Best Practices for the class

#### I Install and Deploy the Data Abstraction Best Practices Framework

- Refer to the “**Installation**” section in the “**Data Abstraction Best Practices Installation and Release Notes.pdf**” for complete instructions on installing the Data Abstraction Best Practices scripts and Utilities.
- Assumption: A copy of the Best Practices Spreadsheets are available to the students and also where the TDV server is installed
- Example folder location:
  - c:/DV/BestPractices/**BestPractices/BestPractices\_v80**
- For this lab, references to C:/DV will be used but use the actual location provided by the instructor or yourself if you installed TDV on your personal computer, DEV or Sandbox server. If the server is on UNIX, you will be required to copy the spreadsheet from your local computer up to the TDV server in order for TDV to be able to read the data. Any changes to the spreadsheets will precipitate this copy.



## 4 Lab Procedures

### 2 Create a new project “/labs/lab##” from the Best Practices template.

#### CREATE PROJECT [AUTOMATED]

Follow the steps below to create a new project.

#### DIRECTIONS:

1. **Generate and Configure project** – Configure a new project
  - a. Expand the folder  
**/shared/ASAssets/BestPractices\_vXX/\_ProjectMaintenance**
    - i. Open **generateProject**(projectPath, generateTestFolder)
  - b. Click Execute  and enter the following parameters
    - i. projectPath= **/shared/labs/lab##**
      1. replace ## with your lab id...e.g. lab00
    - ii. scriptsPath= **/shared/labs/lab##\_scripts**
      1. replace ## with your lab id...e.g. lab00
    - iii. generateTestFolder=**<you choose>**
      1. 1=yes, generate – this options is for the school of thought who want to keep all of their test views and scripts in a separate, mirror structure to the BestPractices structure.
      2. 0=no, do not generate – this option is for the school of thought who don't want a separate mirror structure but prefer to create test sub-folders within the main BestPractices structure.
    - iv. overwrite=**0**
      1. 1=yes, overwrite the existing project if it exists.
      2. 0=no, do no overwrite the existing project if it exists.
  - c. A message appears such as:
    - i. Project [/shared/labs/lab##] successfully configured. Click the refresh button in Studio.
  - d. Click refresh  when the procedure finishes to refresh Studio.

#### BACKGROUND INFO ONLY: (no instructions)

1. **Note:** – the procedure “generateProject” automatically performs the following:



- a. Copies the template folder “DataAbstraction\_GENERIC\_Template” to the path you specify.
- b. Modifies the “basePath” variable in /shared/labs/lab###/\_scripts/Constants/defaultValues.
- c. Rebinds several procedures to point to /shared/labs/lab### resources instead of the default template folder “DataAbstraction\_GENERIC\_Template”.
- d. Update /Documentation trigger parameter paths
- e. Verify paths have been updated
- f. Generate the Test folder if the user requested it

### 3 Setup a sample data source.

#### DIRECTIONS:

1. Open /shared/DataAbstractionSample81/Physical
2. Copy the folder “Metadata”
3. Paste into /shared/labs/lab###/Physical overwriting the existing “Metadata” folder

### 4 Create an XML to Relational Transformation

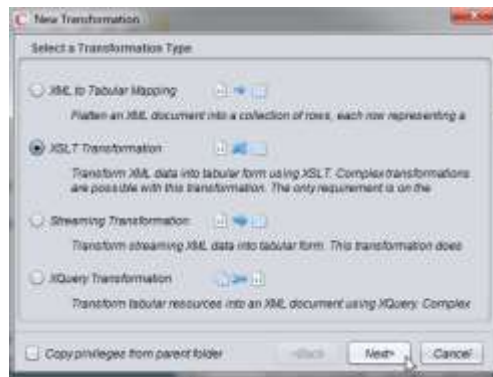
#### OBJECTIVE:

In this section of the lab, you will create a XML to relational transformation which the Formatting view for the “XML” group will be based off of. This is done to demonstrate how Formatting views can be generated from procedures including XSLT, Parameterized Queries, and Custom SQL Script Procedures with a cursor and Packaged Queries with a cursor output.

#### DIRECTIONS:

1. **Modify** the “Root Path” for the **ds\_XML data source**
  - a. /shared/DataAbstractionSample81/Physical/Metadata/XML/ds\_XML
  - b. Browse to where the Data Abstraction Best Practices code has been unzipped and point to the “examples” folder:
    - i. \BestPractices\_YYYYQnnn\_Customer\BestPractices\_SourceCode\BestPractices\examples
  - c. Save the changes
  - d. Reintrospect the ds\_XML data source
  - e. Right-click on “productCatalog.xml” and “Show Contents” to prove that you can read the data.
2. **Create a folder** called “**ds\_XML**” under /Physical/Formatting/Transformations

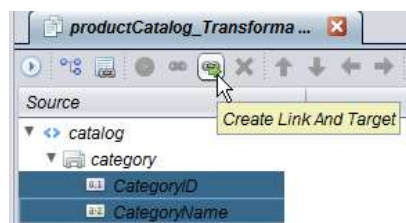
3. Right-click on “ds\_XML” and create a “New Transformation” as an XSLT procedure



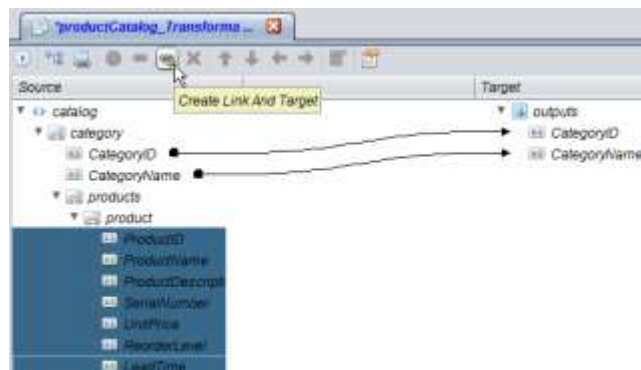
4. Right-click on “ds\_XML”
  - a. Create a new “XSLT Transformation” called **productCatalog\_Transformation**
    - i. Enter the name in Transformation Name
    - ii. Browse to the Physical XML data source and select it:  
/shared/labs/lab###/Physical/Metadata/XML/ds\_XML/productCatalog.xml
    - iii. Click Finish



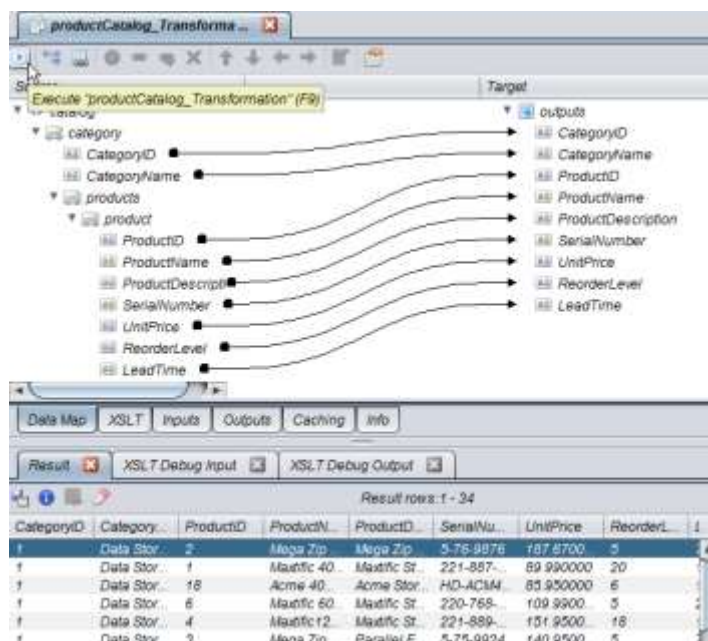
5. Select CategoryID and CategoryName and click the “Create Link And Target” button



6. Highlight the remaining fields and click the “Create Link And Target” button



## 7. Save and execute



## 5 Generate Configuration Starting Folders

### CONFIGURE STARTING FOLDERS [AUTOMATED]

Follow the steps below to generate the ConfigureStartingFolders.

### OBJECTIVE:

The ConfigureStartingFolders script can either be generated or created from hand. This part of the lab focuses on generating the procedure using the "generateConfigureStartingFolders()".

**Note:** These folders are the key to the generation scripts. The entries tell the generation scripts which source folders and target folders to use for the generation. There is an "INSERT" template for each level of the Best Practices containing a source and target folder. Typically, the target folder for one level becomes the source folder for the next level up. Modify the folders according to

the sources that you have and your folder structure. The `ConfigureStartingFolders` can be generated automatically or edited by hand.

This procedure is used to generate the `ConfigureStartingFolders()` procedure based on data sources and transformations found in both the `/Physical/Metadata` and `/Physical/Formatting/Transformations` folders.

## DIRECTIONS:

### 1. Create “ConfigureStartingFolders” procedure

- i. Expand the folder:  
**/shared/ASAssets/BestPractices\_vXX/\_ProjectMaintenance**

1. Open **generateConfigureStartingFolders**(scriptsPath)

- ii. Click Execute  and enter the following parameters

1. scriptsPath= **/shared/labs/lab###/\_scripts**

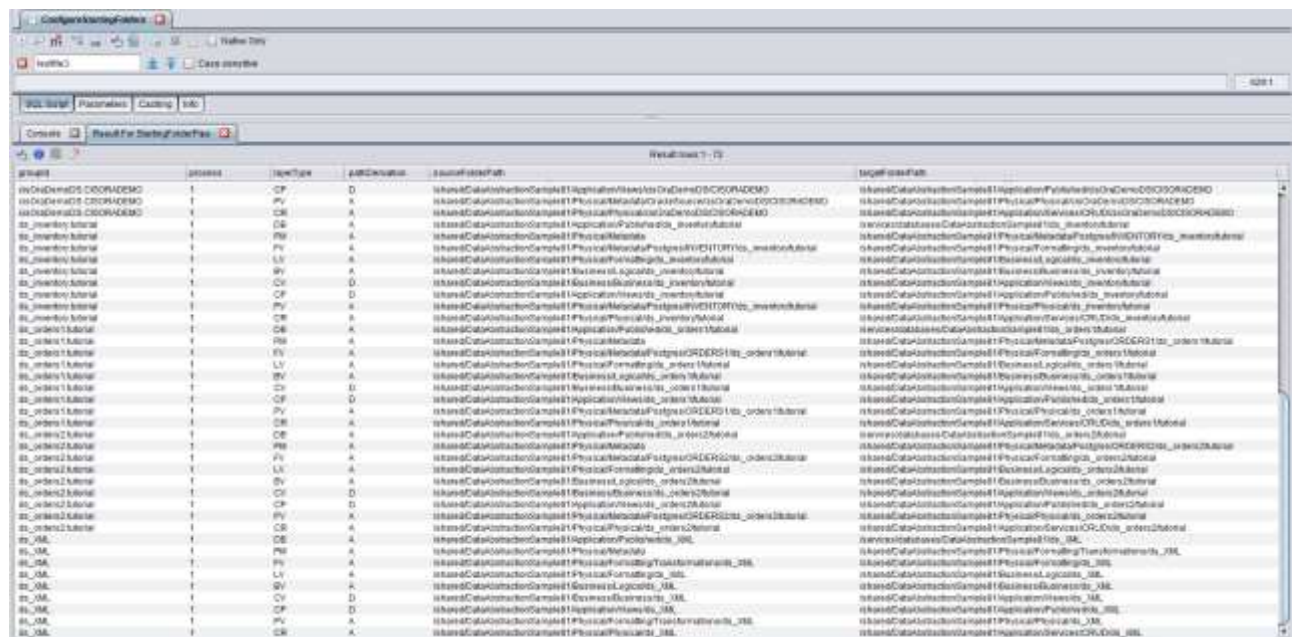
2. replace ## with your lab id...e.g. lab00

- iii. Click refresh  when the procedure finishes to refresh Studio.

### 2. Expand the folder /shared/labs/lab###/\_scripts/Configure

- a. Open `ConfigureStartingFolders`

- b. Click Execute  to see the results as shown below



groupid	process	type	type	path	target path
lab00_data_source_001	lab00_data_source_001	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_001	/shared/labs/lab00/_scripts/lab00_data_source_001
lab00_data_source_002	lab00_data_source_002	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_002	/shared/labs/lab00/_scripts/lab00_data_source_002
lab00_data_source_003	lab00_data_source_003	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_003	/shared/labs/lab00/_scripts/lab00_data_source_003
lab00_data_source_004	lab00_data_source_004	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_004	/shared/labs/lab00/_scripts/lab00_data_source_004
lab00_data_source_005	lab00_data_source_005	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_005	/shared/labs/lab00/_scripts/lab00_data_source_005
lab00_data_source_006	lab00_data_source_006	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_006	/shared/labs/lab00/_scripts/lab00_data_source_006
lab00_data_source_007	lab00_data_source_007	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_007	/shared/labs/lab00/_scripts/lab00_data_source_007
lab00_data_source_008	lab00_data_source_008	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_008	/shared/labs/lab00/_scripts/lab00_data_source_008
lab00_data_source_009	lab00_data_source_009	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_009	/shared/labs/lab00/_scripts/lab00_data_source_009
lab00_data_source_010	lab00_data_source_010	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_010	/shared/labs/lab00/_scripts/lab00_data_source_010
lab00_data_source_011	lab00_data_source_011	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_011	/shared/labs/lab00/_scripts/lab00_data_source_011
lab00_data_source_012	lab00_data_source_012	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_012	/shared/labs/lab00/_scripts/lab00_data_source_012
lab00_data_source_013	lab00_data_source_013	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_013	/shared/labs/lab00/_scripts/lab00_data_source_013
lab00_data_source_014	lab00_data_source_014	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_014	/shared/labs/lab00/_scripts/lab00_data_source_014
lab00_data_source_015	lab00_data_source_015	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_015	/shared/labs/lab00/_scripts/lab00_data_source_015
lab00_data_source_016	lab00_data_source_016	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_016	/shared/labs/lab00/_scripts/lab00_data_source_016
lab00_data_source_017	lab00_data_source_017	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_017	/shared/labs/lab00/_scripts/lab00_data_source_017
lab00_data_source_018	lab00_data_source_018	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_018	/shared/labs/lab00/_scripts/lab00_data_source_018
lab00_data_source_019	lab00_data_source_019	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_019	/shared/labs/lab00/_scripts/lab00_data_source_019
lab00_data_source_020	lab00_data_source_020	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_020	/shared/labs/lab00/_scripts/lab00_data_source_020
lab00_data_source_021	lab00_data_source_021	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_021	/shared/labs/lab00/_scripts/lab00_data_source_021
lab00_data_source_022	lab00_data_source_022	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_022	/shared/labs/lab00/_scripts/lab00_data_source_022
lab00_data_source_023	lab00_data_source_023	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_023	/shared/labs/lab00/_scripts/lab00_data_source_023
lab00_data_source_024	lab00_data_source_024	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_024	/shared/labs/lab00/_scripts/lab00_data_source_024
lab00_data_source_025	lab00_data_source_025	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_025	/shared/labs/lab00/_scripts/lab00_data_source_025
lab00_data_source_026	lab00_data_source_026	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_026	/shared/labs/lab00/_scripts/lab00_data_source_026
lab00_data_source_027	lab00_data_source_027	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_027	/shared/labs/lab00/_scripts/lab00_data_source_027
lab00_data_source_028	lab00_data_source_028	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_028	/shared/labs/lab00/_scripts/lab00_data_source_028
lab00_data_source_029	lab00_data_source_029	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_029	/shared/labs/lab00/_scripts/lab00_data_source_029
lab00_data_source_030	lab00_data_source_030	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_030	/shared/labs/lab00/_scripts/lab00_data_source_030
lab00_data_source_031	lab00_data_source_031	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_031	/shared/labs/lab00/_scripts/lab00_data_source_031
lab00_data_source_032	lab00_data_source_032	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_032	/shared/labs/lab00/_scripts/lab00_data_source_032
lab00_data_source_033	lab00_data_source_033	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_033	/shared/labs/lab00/_scripts/lab00_data_source_033
lab00_data_source_034	lab00_data_source_034	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_034	/shared/labs/lab00/_scripts/lab00_data_source_034
lab00_data_source_035	lab00_data_source_035	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_035	/shared/labs/lab00/_scripts/lab00_data_source_035
lab00_data_source_036	lab00_data_source_036	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_036	/shared/labs/lab00/_scripts/lab00_data_source_036
lab00_data_source_037	lab00_data_source_037	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_037	/shared/labs/lab00/_scripts/lab00_data_source_037
lab00_data_source_038	lab00_data_source_038	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_038	/shared/labs/lab00/_scripts/lab00_data_source_038
lab00_data_source_039	lab00_data_source_039	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_039	/shared/labs/lab00/_scripts/lab00_data_source_039
lab00_data_source_040	lab00_data_source_040	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_040	/shared/labs/lab00/_scripts/lab00_data_source_040
lab00_data_source_041	lab00_data_source_041	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_041	/shared/labs/lab00/_scripts/lab00_data_source_041
lab00_data_source_042	lab00_data_source_042	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_042	/shared/labs/lab00/_scripts/lab00_data_source_042
lab00_data_source_043	lab00_data_source_043	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_043	/shared/labs/lab00/_scripts/lab00_data_source_043
lab00_data_source_044	lab00_data_source_044	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_044	/shared/labs/lab00/_scripts/lab00_data_source_044
lab00_data_source_045	lab00_data_source_045	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_045	/shared/labs/lab00/_scripts/lab00_data_source_045
lab00_data_source_046	lab00_data_source_046	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_046	/shared/labs/lab00/_scripts/lab00_data_source_046
lab00_data_source_047	lab00_data_source_047	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_047	/shared/labs/lab00/_scripts/lab00_data_source_047
lab00_data_source_048	lab00_data_source_048	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_048	/shared/labs/lab00/_scripts/lab00_data_source_048
lab00_data_source_049	lab00_data_source_049	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_049	/shared/labs/lab00/_scripts/lab00_data_source_049
lab00_data_source_050	lab00_data_source_050	CP	D	/shared/labs/lab00/_scripts/lab00_data_source_050	/shared/labs/lab00/_scripts/lab00_data_source_050

- a. Close the results tab

**BACKGROUND INFO ONLY:** (no instructions)

## 1. Review Variable Declarations

- a. Notice how the variable declaration section resolves the base paths to the “defaultValues” constants. This makes the project directory easier to move and rename in the future since paths are derived from the “basePath” variable in “defaultValues”. Variables shown below

```
-----
-- VARIABLE DECLARATIONS
-----

-- Default base folder locations defined in /Constants/defaultValues
-- (It makes maintenance easier if the base project folder is moved)

DECLARE physicalMetadataPath VARCHAR(1024) DEFAULT
/shared/labs/lab###/constants/defaultValues. physicalMetadataPath;

DECLARE physicalFormattingPath VARCHAR(1024) DEFAULT
/shared/labs/lab###/constants/defaultValues. physicalFormattingPath;

DECLARE businessLogicalPath      VARCHAR(1024) DEFAULT
/shared/labs/lab###/constants/defaultValues. businessLogicalPath;

DECLARE applicationViewsPath     VARCHAR(1024) DEFAULT
/shared/labs/lab###/constants/defaultValues. applicationViewsPath;
```

2. Review Group Identifier section for **ds\_orders1.tutorial**

- a. The group identifier provides the user with the ability to place multiple insert statements into a grouping. Later, this will become a useful parameter filter when generating the views. It will allow the user to specify which group or groups to generate views for.

```
set groupId = 'ds_orders1.tutorial';
```

## 3. Review the structure. Review how the Source and Target variables reference the path variables.

- a. This example shows how to specify the Physical Metadata CIS data source path for Postgres. Specify the full path all the way down to the data source or schema folder. This is the folder just above the tables.
- b. For an Oracle path, the physical metadata would be concatenated to the end and reference the Oracle schema.

```
set groupId = 'ds_orders1.tutorial';

SET PM_FOLDER=physicalMetadataPath||'/Postgres/ORDERS1/ds_orders1/tutorial';
SET PV_FOLDER=physicalViewsPath||'/ds_orders1/tutorial';
SET FV_FOLDER=physicalFormattingPath||'/ds_orders1/tutorial';
SET LV_FOLDER=businessLogicalPath||'/ds_orders1/tutorial';
SET BV_FOLDER=businessBusinessPath||'/ds_orders1/tutorial';
```

```

SET CV_FOLDER=applicationViewsPath||'/ds_orders1/tutorial';
SET CP_FOLDER=applicationPublishedPath||'/ds_orders1/tutorial';
SET DB_FOLDER=compositeDatabasePath||'/ds_orders1/tutorial';
SET CR_FOLDER=PV_FOLDER;
SET CT_FOLDER=crudPath||'/ds_orders1/tutorial';

```

4. Review how the insert statements have the target folder for one level is the source folder for the next level up. Consider the levels visually:

- DB=Database published (Published Database)
- CR=Create,Read,Update,Delete (CRUD Views)
- CP = Application/Published (Client Published)
- CV = Application/Views (Client Views)
- BV=Business Views (Business – Business Views)
- LV = Logical Views (Business – Logical Views)
- FV = Physical/Formatting (Formatting Views)
- PV=Physical Layer (Physical Views)
- PM=Physical Metadata (Physical Metadata Tables)

-- Generate Composite Database views from the client published views

```
INSERT INTO StartingFolderPipe VALUES (groupId,1,'DB','A',CP_FOLDER,DB_FOLDER);
```

-- Generate Physical\_Metadata source path specified

```
INSERT INTO StartingFolderPipe VALUES
(groupId,1,'PM','A',physicalMetadataPath,PM_FOLDER);
```

-- Generate Formatting\_Views from the Physical\_Metadata source path specified

```
INSERT INTO StartingFolderPipe VALUES (groupId,1,'FV','A',PM_FOLDER,FV_FOLDER);
```

-- Generate Logical\_Views from the Formatting\_Views source path specified

```
INSERT INTO StartingFolderPipe VALUES (groupId,1,'LV','A',FV_FOLDER,LV_FOLDER);
```

-- Generate Business\_Views from the Logical\_Views source path specified

```
INSERT INTO StartingFolderPipe VALUES (groupId,1,'BV','A',LV_FOLDER,BV_FOLDER);
```

-- Generate Client\_Views from the Business\_Views source path specified

-- Path introspection is recursive starting at a base folder.

-- When you want to generate views from multiple folders in a hierarchy, provide the least common denominator folder as the base path and set the path derivation mode='D' for derived which will traverse all sub-folders during generation.

-- When using 'D', Consider using base paths for source and target so directories are emulated exactly.

```
INSERT INTO StartingFolderPipe VALUES (groupId,1,'CV','D',BV_FOLDER,CV_FOLDER);
```

-- Generate Client\_Published from the Client\_Views source path specified

-- Path introspection is recursive starting at a base folder.

-- When you want to generate views from multiple folders in a hierarchy, provide the least common denominator folder as the base path and set the path derivation mode='D' for derived which will traverse all sub-folders during generation.

-- When using 'D', Consider using base paths for source and target so directories are emulated exactly.

```
INSERT INTO StartingFolderPipe VALUES (groupId,1,'CP','D',CV_FOLDER,CP_FOLDER);
```

-- Generate CRUD operations from the CRUD source folder by designating it as the target folder.

-- By generating from the Physical\_Views it will insure that no new or derived columns are propagated.

-- It is not permitted to perform a CRUD operation against a view with any derived columns present.

--DEPRECATED: Generate Physical\_Views from the Physical\_Metadata source path specified

```
INSERT INTO StartingFolderPipe VALUES (groupId,1,'PV','A',PM_FOLDER,PV_FOLDER);
```

```
SET CR_FOLDER=PV_FOLDER;
```

```
INSERT INTO StartingFolderPipe VALUES (groupId,1,'CR','A',CR_FOLDER,crudPath);
```

5. There are no changes to be made. Close the procedure.

## 6 Setup Debug and General Note for all Generate Procedures

**OBJECTIVE:** Debug the view generation.

**General note** about the generation scripts:

- The instructions below show how to setup the general debug parameters for the view generation. This helps if something goes wrong and you need to see where it failed.
- For normal operation turn off the debug so that the scripts run faster.

**General note** about the generation scripts:

- The parameter “generateViewsWrapper” is defaulted to print results to the console window when null or 1. If you want to see the output as a cursor, change the value to 0. However, please note the following:
- The cursor output window will stop displaying when it hits the cursor limit which is configured in  
Administration→Configuration→Studio→Data→Fetch Rows Size and  
Cursor Fetch Limit
- Modify the Cursor Fetch Limit to an arbitrary number such as 500. Any modification affects all Composite users.

### DIRECTIONS:

- Modify **ConfigureParams** to setup debug output for all view generation procedures
  - Open /shared/labs/lab###/\_scripts/Configure/ConfigureParams
  - Scroll down until you see the following:



```
<debug>N</debug>
```

```
<debug2>N</debug2>
```

```
<debug3>N</debug3>
```

- c. Set Debug Level 1=Y → <debug>Y</debug>
- d. Set Debug Level 2=Y → <debug2>N</debug2>
- e. Set Debug Level 3=N → <debug3>N</debug3>
- f. Save and Close


## 7 Generate Physical Layer Formatting Views

**OBJECTIVE:** Generate the views for the Formatting layer.

**General Note** about what generateFormattingViews does:

- a. This step changes the physical names to the logical or canonical names by reading from the files found in the following folder:  
C:\BestPractices\Common\_Model\_v3\_file[1-4].csv
- b. It then compares the physical container and column name that it introspected from the physical metadata folder with values in these files to determine a logical name.

### DIRECTIONS:

1. Make sure that Step 5 was finished to completion
2. Expand the folder to /shared/labs/lab###/\_scripts/Generate
3. Generate the Formatting Views
  - a. Open **generateFormattingViews()** procedure
  - b. Click Execute 
    - i. **generateViewsWrapper=0**
    - ii. **overwrite=2**
    - iii. **copyAnnotation=1**
    - iv. **copyPrivilegeMode=1**
    - v. **exactMatch=1**
    - vi. **derivedFilterPath= "customers, orders"**
      1. Use double quotes around the pair to signify that they both belong to the ds\_orders1.tutorial groupId.
      2. If you have a pair of group ids such as groupIds=ds\_orders1.tutorial, ds\_orders2.tutorial, then you could create a paired derivedFilterPath=



“customers,orders”, “orders,orderdetails”. The “customers,orders” is paired with ds\_orders1.tutorial and “orders,orderdetails” is paired with ds\_orders2.tutorial.

3. Notice that the filter in this case is all lower case. It is exactly the same as what the physical metadata name is. This allows you to filter on the source by only generating views that potentially changed and not the entire group of views defined by the group id.
- vii. excludeDsPathsList=NULL is checked
- viii. sourceResource=NULL is checked
- ix. generateToFolder=NULL is checked
- x. groupId= ds\_orders1.tutorial**
  1. If left null, then all rows marked with “FV” in ConfigureStartingFolders will be used to target generating formatting views from the physical metadata.
  2. One or more group ids may be provided in a comma separated list.
- xi. Scroll down to the DECLARE generateCast option and review:
  1. DECLARE generateCast      SMALLINT DEFAULT 2;
  2. Used when generateMode='G' or 'R'. This parameter allows the user to control whether to generate the cast statement around the generated column or not. It uses the column type from the source view. The default of 2 is set so that no CAST statements are placed around columns that contain indexes. The use of the CAST statement can prevent the CIS optimizer from utilizing the indexes affectively for some databases. The best practice is to not generate the CAST in the formatting layer for columns. However, if the user is really trying to CAST the column to a different type for display purposes, they might decide that option 3 is better which will automatically generate a display column for the column determined to have an index while not putting any CAST statements around the index column.
  3.      0=Do not generate CAST statement. Pass through column as is. Default behavior.
  4.      1=Generate the CAST statement around the column
  5.      2-Generate the CAST statement around the non-index columns only (No CAST on index columns)

6. 3-Generate the CAST statement around the non-index columns only and generate a "display" CAST column for each index column. (No CAST on index columns)
7. 4-Generate the CAST statement around the non-index columns and non-primary key index columns only (No CAST on primary key index columns)
8. 5-Generate the CAST statement around the non-index columns and non-primary key index columns only and generate a "display" CAST column for each primary key index column. (No CAST on primary key index columns)

xii. Click OK

c. Refresh Studio 

**BACKGROUND INFO ONLY:** (no instructions)

### PARAMETER OPTIONS:

#### generateViewsWrapper

- 0 – print the output to the cursor. The cursor is bound by Composite Studio "Fetch Row Size" and "Cursor Fetch Limit". The cursor stops producing output when it hits those limits. The limits are configured in Composite Studio Administration ☐ Configuration ☐ Studio ☐ Data ☐ Fetch Rows Size and Cursor Fetch Limit. Modify the Cursor Fetch Limit to an arbitrary number such as 500
- 1 (default) – do not print the cursor output to the cursor but redirect to the console window. The aforementioned limits do not apply.

**overwrite** – allows user to decide whether they want to overwrite an existing view or not.

- 0="FAIL\_IF\_EXISTS" – do not overwrite the resource. If the resource exists, raise an exception.
- 1="SKIP\_IF\_EXISTS" – skip the resource if it exists and continue processing
- 2 (default)="OVERWRITE\_IF\_EXISTS" – do overwrite the resource if it exists.

**copyAnnotation** – allows user to decide whether they want to copy annotations or not from both resource and columns.

- 0 (default)=false – do not copy the annotation from the target resource
- 1=true – do copy the annotation from the target resource

**copyPrivilegeMode** – flag indicating the mode in which to copy privileges. Privileges are only copied from the parent when creating new resources including folders.

- null (default) – do not set any privileges at all
- 0 – set mode to "OVERWRITE\_APPEND" - merges and does not update privileges for users or groups not mentioned.
- 1 – set the mode to "SET\_EXACTLY" - makes privileges look exactly like those provided in the call.

**exactMatch** – specifies how the source resource will be matched against the resource being interrogated.







- 0=fuzzy match - sourcePath + derivedFilterPath must simply be contained within resourcePath
- 1 (default)=exact match - sourcePath + derivedFilterPath must match exactly in resourcePath

#### **DIRECTIONS (cont.):**

4. Review the folder: /shared/labs/lab###/Physical/Formatting
  - a. ds\_orders1
    - i. Customers
    - ii. Orders
5. Compare the Spreadsheet with the “Customers” generated view
  - a. Open Common\_Model\_v3\_file4\_sample\_lab.xlsx (D: or C:/BestPractices/BestPractices\_vXX)
  - b. Search for your lab number (lab##).
  - c. Compare the /Formatting/ds\_orders1/tutorial/Customers view with the lines 3-17 (ds\_orders1.tutorial.customers) in the spreadsheet.
  - d. Notice the use of Logical Type and Logical Transformation. Now look at the Customers view for the transformations from the spreadsheet.
  - e. Notice line 17 and how there is no Physical Name. This is how to create a new or derived column. In this case both the Logical Type and Logical Transformation are required.
  - f. Notice on line 15 that a “?” is used in place of the physical column name. The generation scripts will replace the column name with the actual name. This is done so that it makes it easier to copy and paste logical transformations from one line to the next. The example is: CASE ? WHEN " THEN NULL ELSE ? END
  - g. Note: It is sometimes easier to prototype a complex logical transformation in CIS first and then paste the results into this column.


Many times, once you have established a pattern of transformations, it is easy to copy and paste from spreadsheet line to spreadsheet line.


## 6. Generate the Formatting Views

- a. Open **generateFormattingViews()**
  - i. In this portion of the lab, you will experiment with different combinations of more ore more group ids in a comma separated list.
- b. Try groupId= ds\_orders1.tutorial
  - i. Click Execute 
  - ii. generateViewsWrapper=1
    1. No cursor output. Only output to console window.
  - iii. derivedFilterPath=
    1. Click the “Null” checkbox to the right of the entry box
  - iv. Refresh Studio  ...What got generated?
- c. Try groupId= ds\_inventory.tutorial, ds\_XML
  - i. Click Execute 
  - ii. generateViewsWrapper=0
    1. Output results to “Console” window and no results show in the “Results” window.
  - iii. derivedFilterPath=
  - iv. Refresh Studio  ...What got generated?
- d. Try groupId= testfile, Common\_Model\_v2
  - i. Click Execute 
  - ii. generateViewsWrapper=0
  - iii. derivedFilterPath=
  - iv. Refresh Studio  ...What got generated?

## 8 Generate Business Layer Logical Views



### DIRECTIONS:

1. Generate the Business Layer Logical Views
  - a. Open **generateLogicalViews()**
  - b. Click Execute 

- i. **generateViewsWrapper=0**
  - ii. **derivedFilterPath=**
  - iii. **groupId= ds\_orders1.tutorial**
- c. Refresh Studio 
- d. Review the folder: /shared/labs/lab###/Business/Logical
- e. Note: The same concept of “groupId” can be used when generating logical views.



## 9 Generate Business Layer Business Views

### DIRECTIONS:

1. Generate the Business Layer Business Views
  - a. Open **generateBusinessViews()**
  - b. Click Execute 
    - i. **generateViewsWrapper=0**
    - ii. **derivedFilterPath=**
    - iii. **groupId= ds\_orders1.tutorial**
  - c. Refresh Studio 
  - d. Review the folder: /shared/labs/lab###/Business/Business
  - e. Note: The same concept of “groupId” can be used when generating logical views.



## 10 Generate Application Layer Views

### DIRECTIONS:

1. Generate the Application Views (Client Views)
  - a. Open **generateClientViews()**
  - b. Click Execute 
    - i. **generateViewsWrapper=0**
    - ii. **derivedFilterPath=**
    - iii. **groupId= ds\_orders1.tutorial**
  - c. Refresh Studio 
  - d. Review the folder: /shared/labs/lab###/Application/Views (Client Views)
  - e. Note: The same concept of “groupId” can be used when generating client views.

## 11 Generate Application Layer Published Views

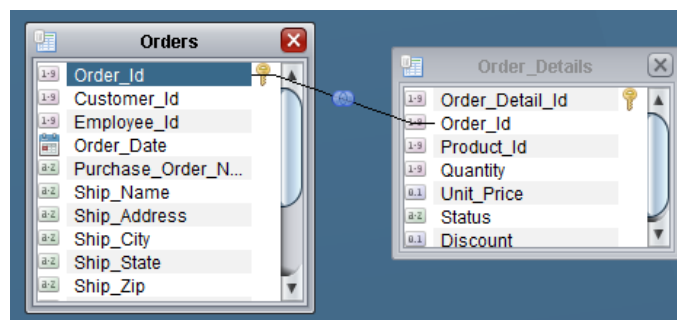
### DIRECTIONS:

1. Generate the Client Published
  - a. Open **generateClientPublished()**
  - b. Click Execute 
    - i. **generateViewsWrapper=0**
    - ii. **derivedFilterPath=**
    - iii. **groupId=ds\_orders1.tutorial**
  - c. Refresh Studio 
  - d. Review the folder: /shared/labs/lab###/Application/Published (Client Published)
  - e. Note: The same concept of “groupId” can be used when generating client views.

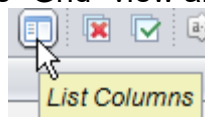
## 12 Generate Cast Views

### DIRECTIONS:

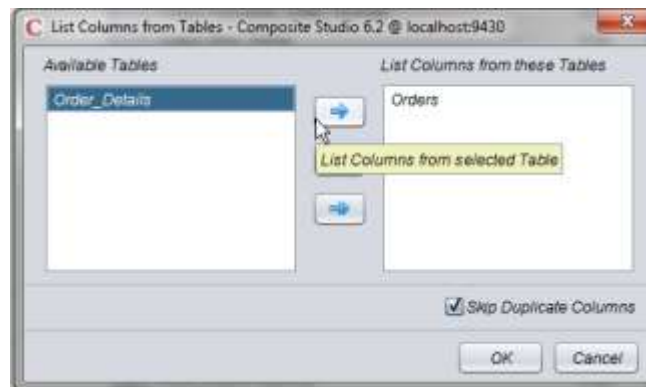
1. Create a new view in the /Business/Business folder called “**Orders\_Open**”
  - a. Drag **/Business/Logical/ds\_orders1/tutorial/Orders** into it
  - b. Drag **/Business/Logical/ds\_orders1/tutorial/Order\_Details**
  - c. Join them together on Order\_Id by
    - i. Drag Order\_Id from Orders to Order\_Id in Order\_Details



- d. Go to the “Grid” view and add the columns for both tables using the List



Column:



- i. Select the 2<sup>nd</sup> instance of the column Order\_Details.Order\_Id found towards the latter 1/3 of the screen as it is a duplicate and remove it



- e. Add a where clause from the Grid view by clicking in the Criteria
  - i. Order\_Details.Status = 'open'





Expanded Picture:

Column	Alias	Table	Output	Sort Type	Sort Order	Group By	Criteria	Or
Orders Order_Id		Orders	✓					
Orders Customer_Id		Orders	✓					
Orders Employee_Id		Orders	✓					
Orders Order_Date		Orders	✓					
Orders Purchase_Order_Number		Orders	✓					
Orders Ship_Name		Orders	✓					
Orders Ship_Address		Orders	✓					
Orders Ship_City		Orders	✓					
Orders Ship_State		Orders	✓					
Orders Ship_Zip		Orders	✓					
Orders Ship_Country		Orders	✓					
Orders Ship_Phone_Number		Orders	✓					
Orders Ship_Date		Orders	✓					
Orders Shipping_Method_Id		Orders	✓					
Orders Freight_Charge		Orders	✓					
Orders Data_Source		Orders	✓					
Order_Details Order_Detail_Id		Order_Deta...	✓					
Order_Details Product_Id		Order_Deta...	✓					
Order_Details.Quantity		Order_Deta...	✓					
Order_Details.Unit_Price		Order_Deta...	✓					
Order_Details.Status		Order_Deta...	✓				= 'open'	
Order_Details Discount		Order_Deta...	✓					

- f. Add Annotation:
  - i. Click on the “Info” tab and add the following annotation:  
This view queries open orders only.

- g. Execute the view to insure it works and returns only 'open' orders
- h. Leave the view open for the next step

## 2. Generate a Cast View

- a. Copy the resource path from the "Info" tab of the Open\_Orders view
- b. Open **generateCastViews()**
- c. Click Execute 
  - i. generateViewsWrapper=0
  - ii. overwrite=2
  - iii. copyAnnotation=1
  - iv. copyPrivilegeMode=1
  - v. exactMatch=1
  - vi. excludeDsPathsList=NULL is checked
  - vii. sourceResource=
    - /shared/labs/lab###/Business/Business/Orders\_Open
    - 1. replace ## with your lab id...e.g. lab00
  - viii. targetResource= /shared/labs/lab###/Application/Published
    - 1. replace ## with your lab id...e.g. lab00
- d. Click OK
- e. Refresh Studio 
- f. Review the /Application/Published folder to find "Orders\_Open"
  - i. Open it and observe the cast statements. The Published folder provides a contract with client applications. There should be no logic in these views. There are only cast statements which serve as an insulator of change between the application and views below the Published sub-layer. The reason this is important is that there are BI applications that will introspect Composite to bring in the Composite metadata and if the metadata changes, it will cause unexpected runtime behavior by the BI application.
  - ii. Review the Annotation on the "Info" tab.

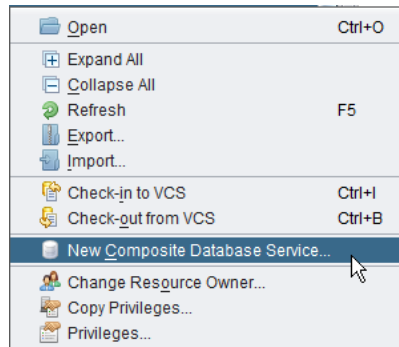
## 13 Generate Published Database Views

### DIRECTIONS:

1. Create a **lab###** database







a. Result:

i. Example lab00 database:



## 2. Generate the Published Database

a. Open **generatePublishedResource()**

b. Click Execute 

- i. generateViewsWrapper=0
- ii. overwrite=2
- iii. copyAnnotation=1
- iv. copyPrivilegeMode=1
- v. exactMatch=Null is checked
- vi. excludeDsPathsList=Null is checked
- vii. sourceResource= /shared/labs/lab###/Application/Published
- viii. generateToFolder= /services/databases/lab##
- ix. derivedFilterPath=
- x. groupId=

c. Refresh Studio 

d. Review the “Published Database” folder:

i. /Composite Data Services/Databases/lab##


e. Open “Orders\_Open”

- i. Review the Annotation on the “Info” tab. The annotation indirectly came from the Open\_Orders view that you created in step 11.
- ii. Execute the table to see the open orders.

f. Note: The same concept of “groupId” can be used when generating published resources.

## 14 Generate Data Abstraction Spreadsheet

### DIRECTIONS:

1. Generate the Data Source List CSV
  - a. Open [generateDatasourceListCSV](#)
  - b. Click Execute 
    - i. **csvFullPath**= c:/temp/lab##\_Common\_Model\_v2\_file.csv
      1. replace ## with your lab id...e.g. lab00
    - ii. **bufferSize**=100
    - iii. **generateHeader**=0
    - iv. **generateLogicalNames**=1
    - v. **generateMode**=R
    - vi. **resourceCaseRule**=
    - vii. **columnCaseRule**=
    - viii. **useAliasRule**=
    - ix. **resourcePrefix**=
    - x. **resourceSuffix**=
    - xi. **newColumnList**=
    - xii. **generateUnsupportedColumnType**=
    - xiii. **exactMatch**=
    - xiv. **derivedFilterPath**=
    - xv. **excludeDsPathsList**=
    - xvi. **targetResource**=
    - xvii. **layerType**=FV
    - xviii. **groupIds**= ds\_orders1.tutorial
  - c. Using Windows Explorer, look for the file in the /temp directory either on C: or D: drive
  - d. Open the file with Excel
    - i. Columns A-I were generated.
    - ii. **Round-Trip Synchronization**:  
 A user may now copy columns A-I starting at row 2 through the end and paste them back into the original Common\_Model\_v3\_file4\_sample\_lab.xlsx spreadsheet.

This will allow the user to keep CIS synchronized with the spreadsheet. There is an exercise on the roundtrip concept later in this lab guide.

## 15 Search for a resource

### DIRECTIONS:

1. Search for a resource anywhere in the starting folder that you provide.

a. Open /Display/**searchResourceTree()**

b. Click Execute 

i. resourcePath= /shared/labs/lab##

ii. resourceName= Orders\_Open

iii. ignoreCase=Y

c. Result:

ResourceName	ResourcePath	ResourceType	ResourceSubType
Orders_Open	/shared/labs/lab##/Application/Published	TABLE	SQL_TABLE
Orders_Open	/shared/labs/lab##/Business/Business	TABLE	SQL_TABLE

## 5 Perform Round Trip Lab

### 16 Test Round Trip

This is an “ADVANCED” topic that shows how to execute a round trip test between TDV the excel spreadsheet and TDV. The *objective* of this test is to show how to generate an initial spreadsheet with all of the tables and columns, modify it with logical names and then generate formatting layer views with the new logical names. What can be demonstrated with this feature is as follows:

1. Aliasing – change physical names to logical names
2. Casting – cast the physical type to a logical type
3. New columns – add new derived columns via a logical transformation (case statement)
4. Remove column – remove columns by removing them from the spreadsheet even though they exist in the physical metadata

The high-level steps are as follows:

1. generateFormattingViews [optional]
  - a. This step may have already been performed previously.
2. generateDataSourceListCSV
  - a. Option 1: generate from the physical metadata (PM) layer as the formatting layer does not offer any added value in terms of logical names.
  - b. Option 2: generate from formatting views (FV) layer in order to capture any current logical names.
3. Update *Common\_Model\_v3\_file4\_sample\_lab.xlsx* Spreadsheet
4. Load the Postgres cache
5. generateFormattingViews

This test will use the “lab00” folder previously created.

**NOTE:** This test is difficult to execute in a multi-user, single-TDV server training environment because there can only be 1 copy of the spreadsheet modified at a time. If the TDV server is a shared server then the spreadsheet must be copied up to the server. The risk is that multiple students would overwrite the single copy with their own copy and thus wipe-out another student’s changes. This test may not be appropriate for that situation. This is best suited for a single user environment to prove out the concept.

#### Begin Round Trip Lab

1. Assumption: The Common Model Postgres cache has been loaded.
  - /shared/ASAssets/BestPractices\_v81/DataSource/common\_model\_load\_cache
2. Generate Formatting Views (optional)
  - Skip this step if you simply want to get an output of the Physical Metadata views and columns.

- This step is only needed if the Formatting layer has not been generated and step 3-option 2 will be used by **generateDatasourceListCSV** because you want to capture any logical names that have been generated to this point.
- **generateFormattingViews**(0, 2, 1, 1, 1, employees, null, null, null, null, ds\_inventory.tutorial)

Parameter	Value	Null
generateViewsWrapper	0	<input type="checkbox"/>
overwrite	2	<input type="checkbox"/>
copyAnnotation	1	<input type="checkbox"/>
copyPrivilegeMode	1	<input type="checkbox"/>
exactMatch	1	<input type="checkbox"/>
derivedFilterPath	employees	<input type="checkbox"/>
excludeDsPathsList		<input type="checkbox"/>
sourceResource		<input type="checkbox"/>
generateToFolder		<input type="checkbox"/>
groupIds	ds_inventory.tutorial	<input type="checkbox"/>

### 3. Generate Data Source List CSV File

- Directions:
  - Use Option 1 for this lab.
- **Option 1 – generateDatasourceListCSV**(C:\BestPractices\roundtrip.csv, 1000, 0, 1, **G**, null, null, null, null, null, null, null, null, **employees**, null, null, **PM**, **ds\_inventory.tutorial**)
  - **This is the typical option to use when generating a spreadsheet for the first time.**
  - Generate from the Physical Metadata (PM) layer which has no logical names.
  - Note that we are only generating for “employees” to keep this demonstration as simple as possible. If the derivedFilterPath was left null then all tables and columns for the given datasource group id would be generated.

Parameter	Value	Null
csvFullPath	C:\MyFiles\BestPractices\BestPractices_v80\roundtrip.csv	<input type="checkbox"/>
bufferSize	100	<input type="checkbox"/>
generateHeader	0	<input type="checkbox"/>
generateLogicalNames	1	<input type="checkbox"/>
generateMode	0	<input type="checkbox"/>
resourceCaseRule	R	<input checked="" type="checkbox"/>
columnCaseRule	C	<input checked="" type="checkbox"/>
useAliasRule	U	<input checked="" type="checkbox"/>
resourcePrefix	employees	<input checked="" type="checkbox"/>
resourceSuffix	tutorial	<input checked="" type="checkbox"/>
newColumnsList		<input checked="" type="checkbox"/>
generateUnsupportedColumnType		<input checked="" type="checkbox"/>
exactMatch		<input checked="" type="checkbox"/>
derivedFilterPath	employees	<input type="checkbox"/>
excludeDsPathsList		<input checked="" type="checkbox"/>
sourceResource		<input checked="" type="checkbox"/>
layerType	FV	<input type="checkbox"/>
groupIds	ds_inventory.tutorial	<input type="checkbox"/>

- **Option 2 – generateDataSourceListCSV**(C:\BestPractices\roundtrip.csv, 1000, 0, 1, R, null, null, null, null, null, null, null, null, Employees, null, null, FV, ds\_inventory.tutorial)
  - Generate from the Formatting View (FV) layer in order to capture any logical names that have been generated to this point.

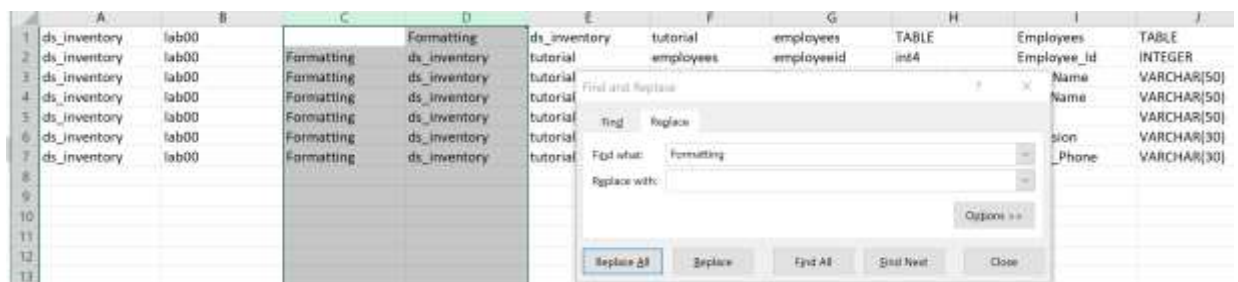
Parameter	Value	Null
csvFullPath	C:\MyFiles\BestPractices\BestPractices_v80\roundtrip.csv	<input type="checkbox"/>
bufferSize	100	<input type="checkbox"/>
generateHeader	0	<input type="checkbox"/>
generateLogicalNames	1	<input type="checkbox"/>
generateMode	R	<input type="checkbox"/>
resourceCaseRule	R	<input checked="" type="checkbox"/>
columnCaseRule	C	<input checked="" type="checkbox"/>
useAliasRule	U	<input checked="" type="checkbox"/>
resourcePrefix	employees	<input checked="" type="checkbox"/>
resourceSuffix	tutorial	<input checked="" type="checkbox"/>
newColumnsList		<input checked="" type="checkbox"/>
generateUnsupportedColumnType		<input checked="" type="checkbox"/>
exactMatch		<input checked="" type="checkbox"/>
derivedFilterPath	employees	<input type="checkbox"/>
excludeDsPathsList		<input checked="" type="checkbox"/>
sourceResource		<input checked="" type="checkbox"/>
layerType	FV	<input type="checkbox"/>
groupIds	ds_inventory.tutorial	<input type="checkbox"/>

- **Result:** error=0. File is created:
  - A Common Model Best Practices CSV file gets created in the file system such as *C:\DV\BestPractices\BestPractices\_v80\roundtrip.csv*
  - If TDV is running on UNIX then provide a UNIX path such as */opt/DV/BestPractices/BestPractices\_v80/roundtrip.csv*
    - Copy the file down to your computer for editing.

#### 4. Edit *roundtrip.csv*

	A	B	C	D	E	F	G	H	I	J
1	ds_inventory	lab00			ds_inventory	tutorial	employees	TABLE	Employees	TABLE
2	ds_inventory	lab00		ds_inventory	tutorial	employees	employeeid	int4	Employee_id	INTEGER
3	ds_inventory	lab00		ds_inventory	tutorial	employees	firstname	varchar(50)	First_Name	VARCHAR(50)
4	ds_inventory	lab00		ds_inventory	tutorial	employees	lastname	varchar(50)	Last_Name	VARCHAR(50)
5	ds_inventory	lab00		ds_inventory	tutorial	employees	title	varchar(50)	Title	VARCHAR(50)
6	ds_inventory	lab00		ds_inventory	tutorial	employees	extension	varchar(30)	Extension	VARCHAR(30)
7	ds_inventory	lab00		ds_inventory	tutorial	employees	workphone	varchar(30)	Work_Phone	VARCHAR(30)

- If **Option 1** was used to generate roundtrip.csv, do the following:
  - Select cell A1 and use the keystrokes: Ctrl-Shift-End (this will select Columns A-L)
  - Do a Ctrl-C (copy)
- If **Option 2** was used to generate roundtrip.csv, do the following:
  - Select columns C and D [Great Grand Parent] and [Grand Parent]
  - Control-F to search and replace
  - Find what: Formatting
  - Replace With:
    - Replace with nothing/empty



- Select cell A1 and use the keystrokes: Ctrl-Shift-End (this will select Columns A-L)
- Do a Ctrl-C (copy)

## 5. Edit **Common\_Model\_v3\_file4\_sample\_lab.xlsx**

- Locate the cells for “**ds\_inventory**”, “**lab00**”, “**employees**”.
  - There are 7 rows starting at row 494
  - Place your cursor in Column A of row 494 for the “**ds\_inventory**”, “**lab00**”, “**employees**” section
  - Do Ctrl-V (Paste)
  - Save the spreadsheet
  - Very Important: DO NOT insert new rows as the columns N-Y are required and perform a transform on columns A-L. The cells contain formulas.
  - Original Logical Names and Logical Types for “employees”

Employees	TABLE
Employee_Id	INTEGER
First_Name	VARCHAR(50)
Last_Name	VARCHAR(50)
Ttile	VARCHAR(50)
Extension	VARCHAR(30)
Work_Phone	VARCHAR(30)

## 6. Modify the spreadsheet (data dictionary) – Common\_Model\_v3\_file4\_sample\_lab.xlsx

- In the life-cycle of this spreadsheet, this is the time when a Governance team will modify the spreadsheet to add logical names for the physical names.
- This spreadsheet represents the physical to logical mapping data dictionary.
- To demonstrate this, edit the Logical Name for the following:
  - For “**employees**” table only
  - **Change Table name employees to Employees**
  - **Change employeeid to Employee\_Id**
  - **Change Firstname to First\_Name**
  - **Change LastName to Last\_Name**
  - Remove column
    - Remove the “**extension**” column by doing the following:
    - Rather than removing the row, which is the correct thing to do, we are simply going to change the “Project Folder Name” (lab00) to (labxx) for “**extension**” so that the generateFormattingViews will not be able to find that row and



DROP the column. This is a temporary solution only to demonstrate this capability.

- Add new derived column
  - We will replace “**workphone**” with a new derived column to demonstrate this feature.
  - Remove both the “Physical Name” and “Physical Type” for “workphone”.
  - In the “Logical Name” field change “workphone” to “Full\_Name”.
  - Change the “Logical Type” to VARCHAR(50)
  - Add the following text for “Logical Transformation”  
`firstname||' '||lastname`
- Save the spreadsheet
- 7. Upload spreadsheet to the TDV server
  - If TDV Server is not running locally, then copy the Spreadsheet to the BestPractices directory on the TDV server.
- 8. Load the Postgres cache
  - This data source is enabled and configured to communicate to the local Postgres cache
    - /shared/ASAssets/BestPractices\_v81/DataSource/CommonModelCache
  - Execute the procedure to load the cache from the spreadsheets:
    - /shared/ASAssets/BestPractices\_v81/DataSource/common\_model\_load\_cache
- 9. Generate the Formatting layer views
  - Modify **generateFormattingViews** in the /shared/lab/labxx/\_scripts/Generate folder
    - Change the “1” to a “0” after DEFAULT in the statement below. search for “generateWithSourceColumn” in the body of the procedure.
    - DECLARE generateWithSourceColumn SMALLINT DEFAULT 0;-- (used when generateMode='R')
  - Execute **generateFormattingViews**(0, 2, 1, 1, 1, null, null, null, null, null, ds\_inventory.tutorial)

Parameter	Value	Null
generateViewsWrapper	0	<input type="checkbox"/>
overwrite	2	<input type="checkbox"/>
copyAnnotation	1	<input type="checkbox"/>
copyPrivilegeMode	1	<input type="checkbox"/>
exactMatch	1	<input type="checkbox"/>
derivedFilterPath	employees	<input type="checkbox"/>
excludeDsPathsList		<input checked="" type="checkbox"/>
sourceResource		<input checked="" type="checkbox"/>
generateToFolder		<input checked="" type="checkbox"/>
groupIds	ds_inventory tutorial	<input type="checkbox"/>

○ Results:

datasourceName	projectFolder	greatGrandPa...	grandParentName	parentName	containerName	containerType	columnName	logicalColumn...	logicalColumn...	logicalStatus	containerPath	duration
ds_inventory	lab00		ds_inventory	tutorial	employees	TABLE	employees	Employee_Id	INTEGER	FOUND	sharedlab00...	0:00:00.139
ds_inventory	lab00		ds_inventory	tutorial	employees	INTEGER	employeeid	Employee_Id	INTEGER	FOUND	sharedlab00...	0:00:00.148
ds_inventory	lab00		ds_inventory	tutorial	employees	VARCHAR(50)	firstname	First_Name	VARCHAR(50)	FOUND	sharedlab00...	0:00:00.156
ds_inventory	lab00		ds_inventory	tutorial	employees	VARCHAR(50)	lastname	Last_Name	VARCHAR(50)	FOUND	sharedlab00...	0:00:00.167
ds_inventory	lab00		ds_inventory	tutorial	employees	VARCHAR(50)	title	Title	VARCHAR(50)	FOUND	sharedlab00...	0:00:00.179
ds_inventory	lab00		ds_inventory	tutorial	employees	VARCHAR(30)	extension	extension	VARCHAR(30)	DROPPED	sharedlab00...	0:00:00.18
ds_inventory	lab00		ds_inventory	tutorial	employees	VARCHAR(30)	workphone	workphone	VARCHAR(30)	DROPPED	sharedlab00...	0:00:00.183
ds_inventory	lab00		ds_inventory	tutorial	employees	VARCHAR(30)	CAST(firstname  ' '  lastname	Full_Name	VARCHAR(50)	FOUND	sharedlab00...	0:00:00.151
												0:00:00.222

○ Employees View and Data Results:

- Column names were aliased and cast with logical types
- Columns were dropped
- A new column Full\_Name was added

```

SELECT
  employees.employeeid Employee_Id,
  CAST(employees.firstname AS VARCHAR(50)) AS First_Name,
  CAST(employees.lastname AS VARCHAR(50)) AS Last_Name,
  CAST(employees.title AS VARCHAR(50)) AS Title,
  CAST(firstname||' '||lastname AS VARCHAR(50)) AS Full_Name
FROM
  /shared/labs/lab00/Physical/Metadata/Postgres/INVENTORY/ds_inventory/tutorial/employees employees

```

Employee_Id	First_Name	Last_Name	Title	Full_Name
1	Joseph	Smith	Engineer	Joseph Smith
2	AnnMarie	Catcher	Systems Support	AnnMarie Catcher
3	Michael	Murray	Engineering Manager	Michael Murray
4	Stephanie	Dodger	Director of Engineering	Stephanie Dodger
5	Jonathan	Miller	Systems Support	Jonathan Miller
6	Mitchell	Franklin	Purchasing	Mitchell Franklin
7	Cathy	Thomas	Sales Support	Cathy Thomas
8	James	Mathews	Sales Support	James Mathews

## 6 Generate Create/Read/Update/Delete (CRUD) resources



This is an “ADVANCED” topic and is not normally done with TDV. It is shown here as an extreme condition where TDV is used to perform CRUD operations on views.

### 17 Generate CRUD Views (Create, Read, Update, Delete)


#### 1. Skip this section if it is not applicable


#### DIRECTIONS:

#### 2. Generate the Physical Procedures

- a. Open **generatePhysicalViews()**
  - i. Even though this procedure is deprecated, it may still be used to generate views that do not have any new or derived columns. When performing CRUD operations, the views may not contain any new or derived columns. The closer to the physical source the better off the user will be when executing CRUD operations.
- b. Click Execute 
  - i. generateViewsWrapper=0
  - ii. derivedFilterPath=
  - iii. groupId= ds\_orders1.tutorial
- c. Refresh Studio 
- d. Review the folder:  
/shared/labs/lab###/Physical/Physical/ds\_orders1/tutorial

#### 3. Generate the CRUD Procedures

- a. Note: This operation is only necessary if you are performing Create, Update, or Delete operations on the generated views. Transactions are only supported for a single database source at this time.
- b. Open the /Application/Services/CRUD folder – there should not be anything there. If there is, then delete it.
- c. Open **generateCRUDOperations()**
- d. Click Execute 
  - i. generateViewsWrapper=0
  - ii. layerType=CR
  - iii. procedureName: leave null (it will generate the name and the groupId appended).

- iv. groupId= ds\_orders1.tutorial
- e. Refresh Studio 
- f. Review the folder:  
**/shared/labs/lab##/Application/Services/CRUD/ds\_orders/tutorial**
  - i. Review **/Definitions** – A “TypeDefinitionsGen\_ds\_orders1” procedure was created.
    - 1. It contains “DECLARE PUBLIC TYPE <table\_Type> ROW ()” definitions for each table. These public types are used across all of the CRUD procedures that were generated.
  - ii. Review **/Coordinate** – the coordinate functions provide a central access method for executing on the CRUD operation. It can be exposed as a web service.
  - iii. Review **/Create** – this provides the “Create” operation (insert).
  - iv. Review **/Read** – this provides the “Read” operation (select by pk).
  - v. Review **/Update** – this provides the “Update” operation (update).
  - vi. Review **/Delete** – this provides the “Delete” operation (delete).
  - vii. Review **/RetrievePK** – this provides a way to select data by primary key.
  - viii. Review **/isEmpty** – this provides a way to test whether a record is empty or not.
- g. Open **/CRUD/ds\_orders1/tutorialRead/get\_customers\_ById**
  - i. Execute and enter 3 for the CustomerID and nothing for the LogIdentifier
  - ii. Row # 3 is returned from the ds\_orders1.tutorial.customer table.

## 7 Summary

Congratulations.

In this lab, you have had an opportunity to execute all of the Data Abstraction Best Practices generation scripts. The key to these scripts is setting up a proper `ConfigureStartingFolders()` procedure. The best approach is to set up sub-folders inside `/Physical/Metadata` for each data source. Set up a section in `ConfigureStartingFolders()` for each of those sub-folders. If a data source such as an Oracle database has multiple schemas that are needed, it is recommended to set up a section for each schema. This gives you a finer-grained level of control over what you can control during the generation.