

BAM 12c External Dimension Data Object Left Outer Join Feature

Overview

1. You use an External FACT Data Object to fetch data from an external table (not within BAM) to create tactical views (External FACT Data Object acts as a remote FACT table, you cannot join it with BAM Data Objects).
2. You use an External DIM Data Object as a remote dimension table (not within BAM) so it can participate in a join within a BAM Logical Data Object. Under the cover, BAM copies the remote content into a BAM Simple Data Object. You can create active queries or tactical queries based on the Logical Data Object.
3. You can now use LEFT OUTER JOIN in Logical Data Object - in the case of BAM Star Schema; this would imply that matching FACT records without corresponding DIMENSION counterparts will be returned as part of the results. You specify JOIN type at the Dimension DO (default is INNER JOIN).

Features

1. For each External Dimension Data Object, under the cover a new Dimension Simple Data Object will be created, the SDO will be marked as 'Slow Changing Dimension' by default. When you "populate" External Dimension Data Object, the data goes to the generated SDO.
2. Add join type in Logical Data Object join, the join type can be "INNER JOIN" (default) or "LEFT OUTER JOIN"

User Guide - External dimension Data Object feature

Sample Table creation

Create 2 tables in an Oracle DB and insert some data, in this document, unless explicitly defined, it is the DB which BeamDataSource pointed to:

```
CREATE TABLE departments
(
  depID NUMBER(38,0),
  depName VARCHAR2(20),
  delFlag NUMBER(1,0)
);
CREATE TABLE employees
(
  empID NUMBER(38,0),
  empName VARCHAR2(20),
  depID NUMBER(38,0),
  delFlag NUMBER(1,0)
```

);

```
INSERT INTO departments VALUES(1,'Finacle',0);  
INSERT INTO departments VALUES(2,'Marketing',0);  
INSERT INTO departments VALUES(3,'HR',1);  
INSERT INTO departments VALUES(4,'IT',0);
```

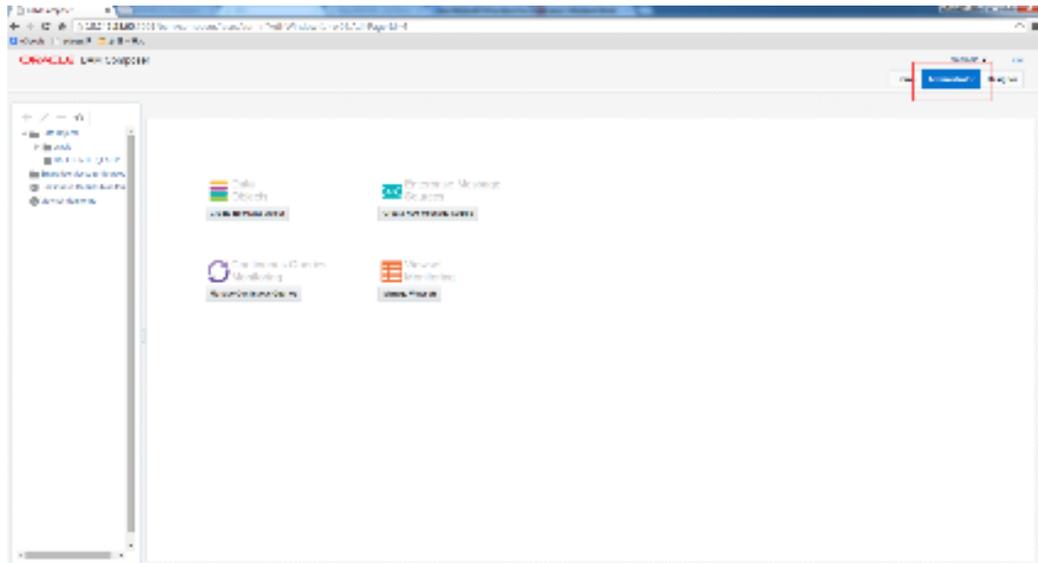
```
INSERT INTO employees VALUES(001,'wbq',1,0);  
INSERT INTO employees VALUES(002,'czh',2,0);  
INSERT INTO employees VALUES(003,'chh',1,0);  
INSERT INTO employees VALUES(004,'wal',2,0);  
INSERT INTO employees VALUES(005,'ddd',3,0);
```

```
INSERT INTO employees VALUES(006,'ddd',5,0);  
INSERT INTO employees VALUES(007,'ddd',6,0);
```

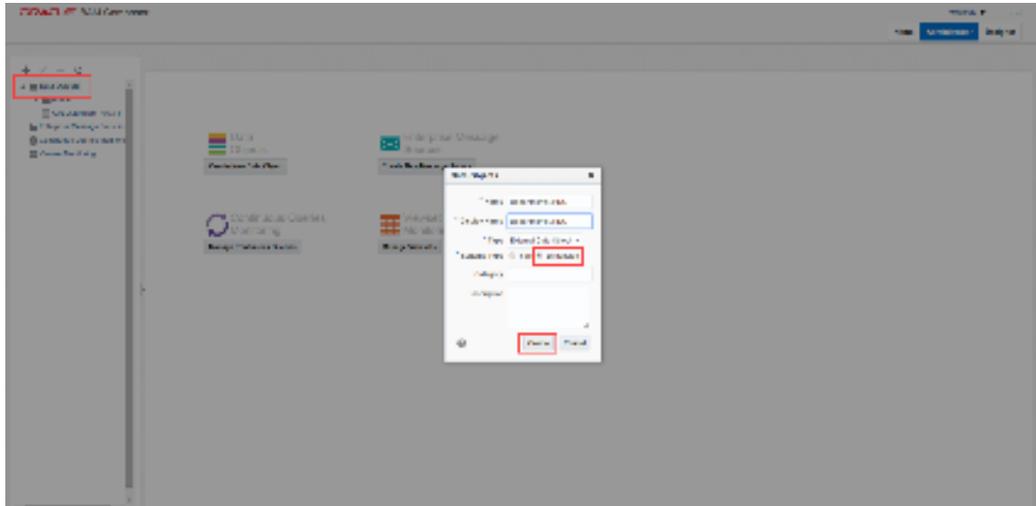
COMMIT;

Create two External Dimension Data Objects based on this two tables

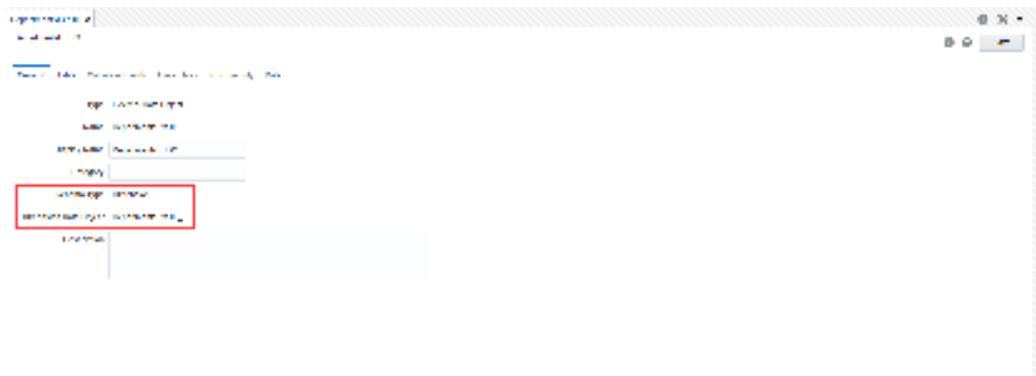
- Login BamComposer, click Administrator tab



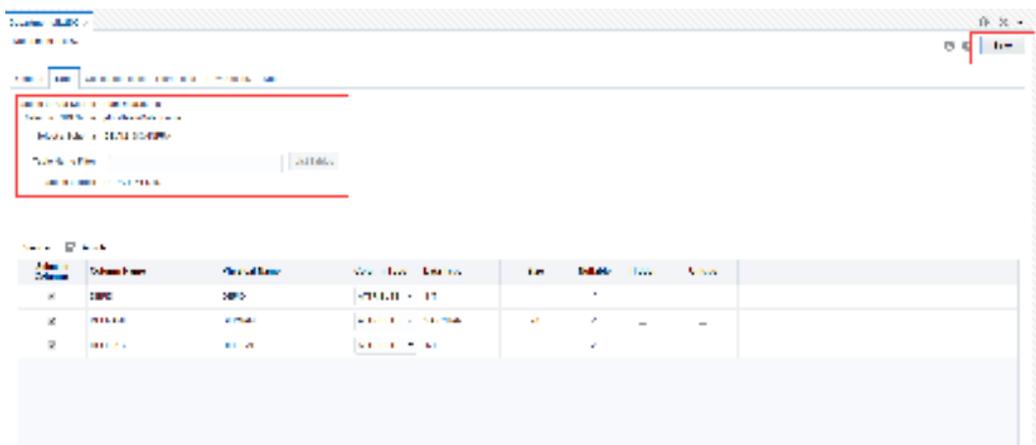
- Left click “Data Objects” node on the left navigator tree, input values in the popup dialog, for dimension external Data Object, select “Dimension” as schema type, click create button:



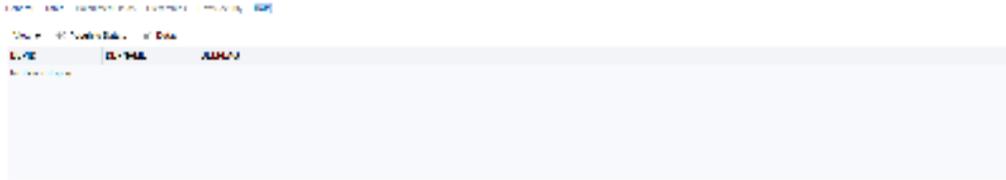
- Confirm the base information of this Data Object at “General” tab, the schema type is “Dimension” and once this Data Object is saved, system will automatically create a simple dimension Data Object with a name which is the name of DO plus suffix.



- Click “Table” tab, input necessary information, use Departments table, click save



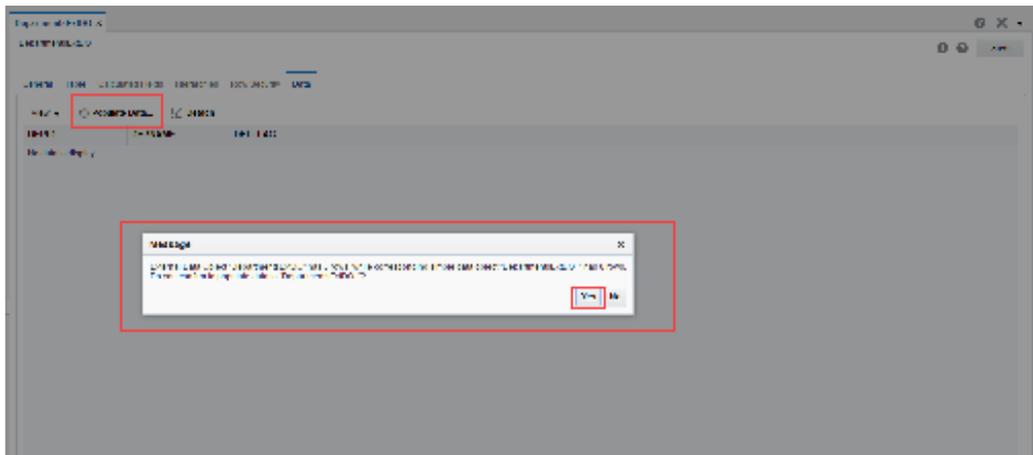
- The “Calculated Fields”, “Hierarchies”, “Row Security” tab is not available for external dimension Data Object, click “Data” tab to see data, you will find there is no data. The data tab shows the data from the underlying Simple Data Object.

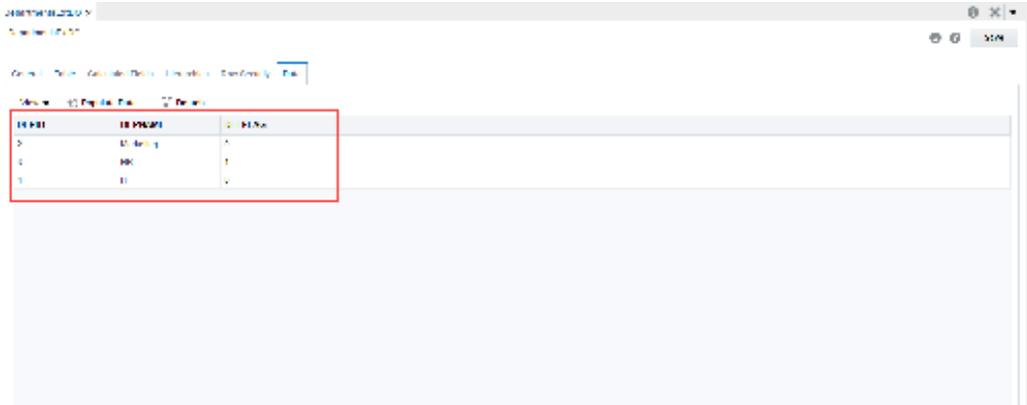


- When an External Dimension Data Object is created, system will create a Simple Data Object, the name is the External Dimension Data Object name with “_” as suffix. To check the simple Data Object, expand the “Data Objects” node of the left navigator tree, then expand the Data Source node (e.g. BeamDataSource) and then the table node (e.g. Departments), you will see “DepartmentsExtDO_” Data Object, this is the Simple Data Object that system creates, it has no content yet. Opening this Data Object by click the node, then click “Data” tab to see the content.

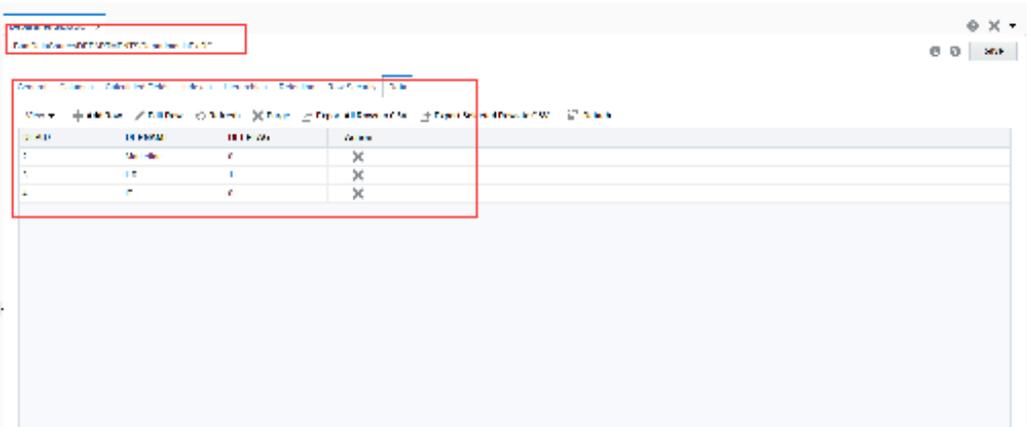


- Now return back to the External Dimension Data Object, open “Data” tab, click “Populate Data...” button, you will see a message. If you want to populate data from department table to this Data Object, click “Yes” button, then data will be populated into the Data Object (e.g. Simple Data Object).





- Now checked the generated Simple Data Object, the data also in the its “Data” tab.

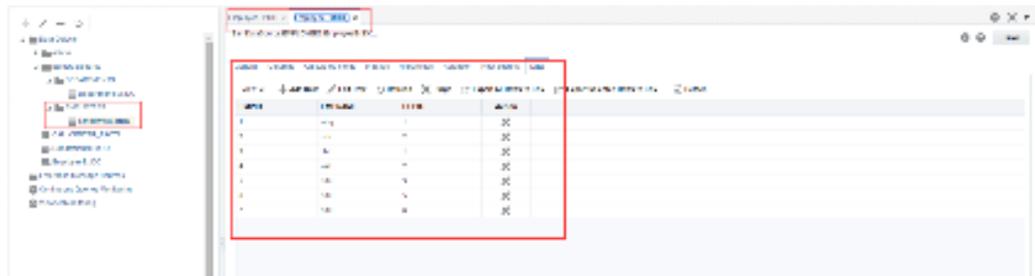


- Note: there is a MBean parameter named as “ExternalDIMDODataLoadingSize”, it controls how many data rows you can populate from external table, if the row count is more than this value, system only populates the “ExternalDIMDODataLoadingSize” rows. For example, the table has 5000 rows, “ExternalDIMDODataLoadingSize” set to 3000, you can only populate 3000 rows into Data Object even the external source table have 5000 rows. You can configure the value in EM, the default value is 10000.(From EM configuration)

ID	Name	Description	Source Table
21	EMLOYEE DIMENSION	This dimension is used to filter data by employee name and last name.	EM.EMP
22	EMLOYEE SURNAME	This dimension is used to filter data by employee last name.	EM.EMP
23	EMLOYEE FIRST NAME	This dimension is used to filter data by employee first name.	EM.EMP
24	EMLOYEE TITLE	This dimension is used to filter data by employee title.	EM.EMP
25	EMLOYEE DEPARTMENT	This dimension is used to filter data by employee department.	EM.EMP
26	EMLOYEE LOCATION	This dimension is used to filter data by employee location.	EM.EMP
27	EMLOYEE SALARY	This dimension is used to filter data by employee salary.	EM.EMP
28	EMLOYEE EMPLOYEE ID	This dimension is used to filter data by employee employee ID.	EM.EMP
29	EMLOYEE EMPLOYEE SURNAME	This dimension is used to filter data by employee employee last name.	EM.EMP
30	EMLOYEE EMPLOYEE FIRST NAME	This dimension is used to filter data by employee employee first name.	EM.EMP
31	EMLOYEE EMPLOYEE TITLE	This dimension is used to filter data by employee employee title.	EM.EMP
32	EMLOYEE EMPLOYEE DEPARTMENT	This dimension is used to filter data by employee employee department.	EM.EMP
33	EMLOYEE EMPLOYEE LOCATION	This dimension is used to filter data by employee employee location.	EM.EMP
34	EMLOYEE EMPLOYEE SALARY	This dimension is used to filter data by employee employee salary.	EM.EMP

- Following the same steps, create another External Dimension Data Object uses employees

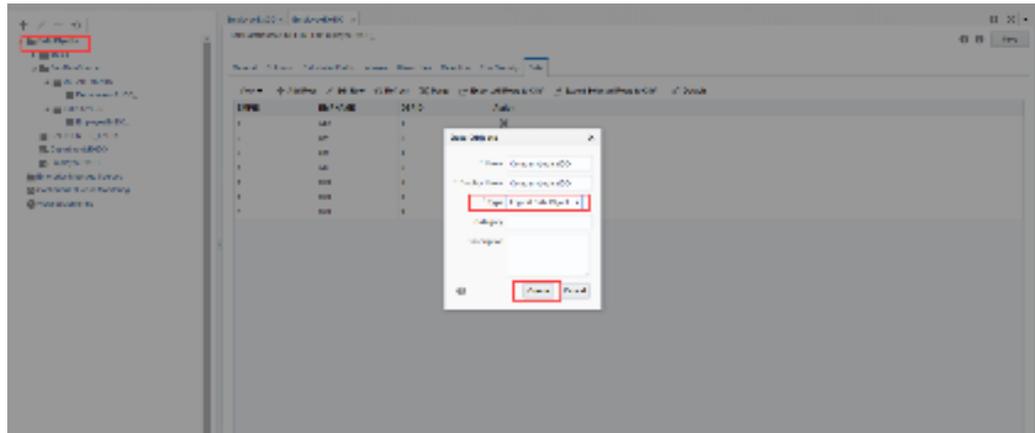
table, name as “EmployeeExtDO”, then check the system generated simple Data Object, then populated data. With this you can use the generated System Data Object to join with other Data Objects or use in query, view, dashboards.



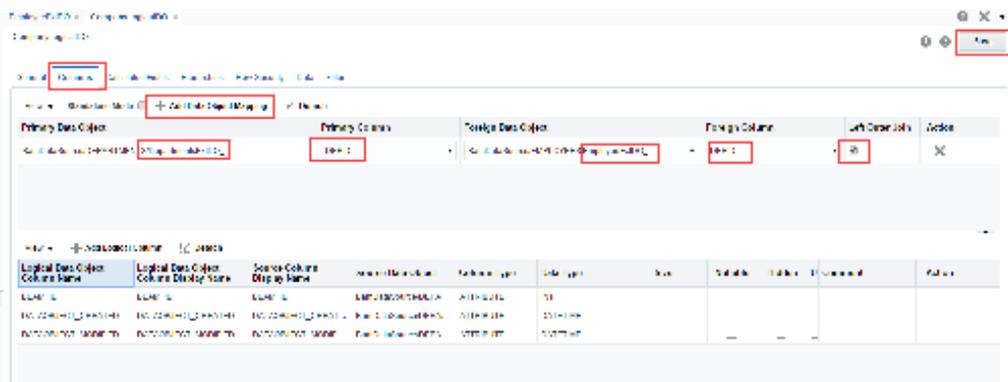
User Guide: Left Outer Join Feature

Create a logical Data Object named as “CompanyLogicalDO”.

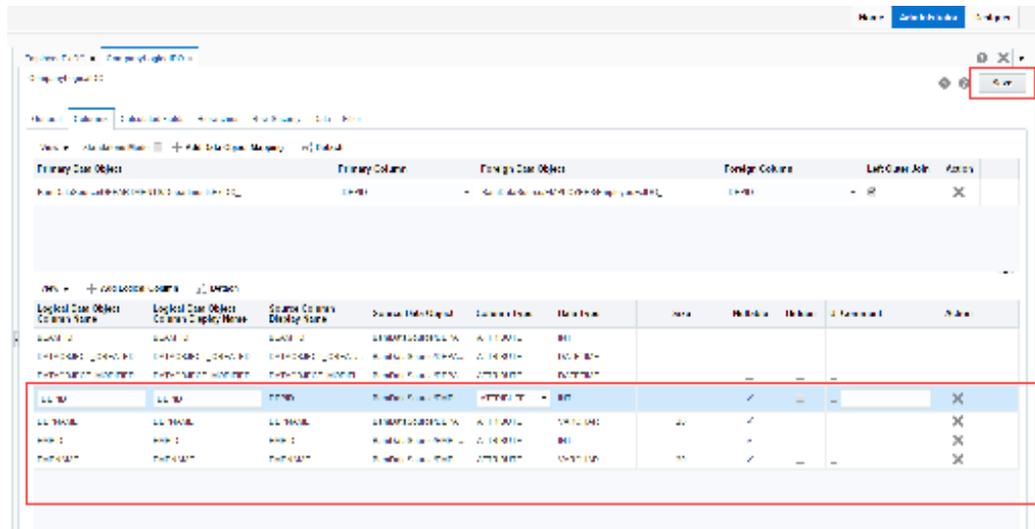
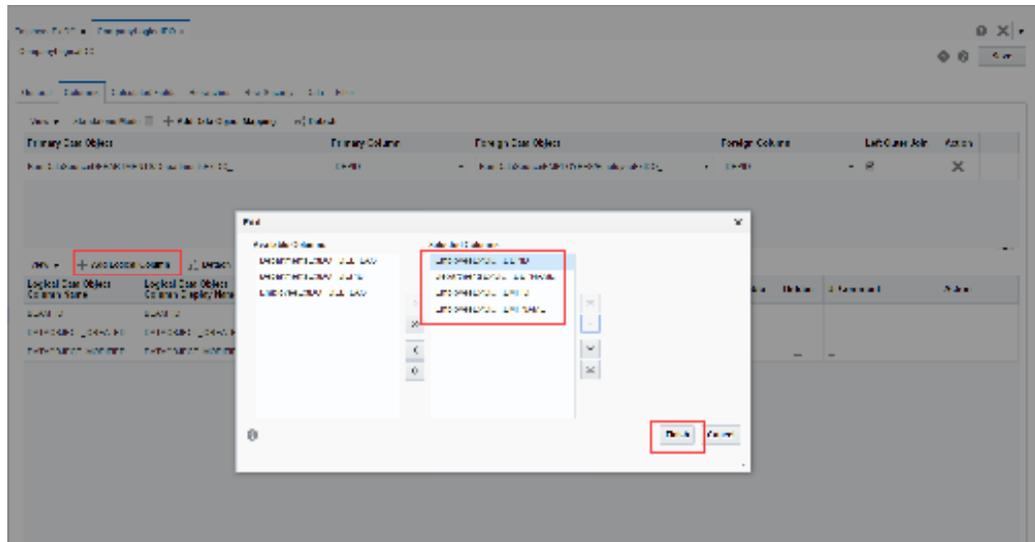
- Left click “Data Objects” node on the left navigator tree, input values in the popup dialog, click “Create”.



- Click open “Columns” tab, click “Add Data Object Mapping”, select “Primary Data Object” to “DepartmentsExtDO_”, “Primary Column” to “DEPID”, “Foreign Data Object” to “EmployeeExtDO_”, “Foreign Column” to “DEPID”, to enable left outer join feature, check “Left Outer Join” checkbox, then click “Save” button to save it.



- Click “Add Logical Column”, select “DEPID”, “EMPID”, “EMPNAME”, “DEPNAME”, as logical columns,” then save.



- Open "Data" tab to see the data rows, under left outer join, when departments have no employees, system still shows them in data rows without employee data.

