

Using OBIEE to Retrieve Essbase Data: The 7 Steps You Won't Find Written Down

Edward Roske
info@interrel.com
LookSmarter.BlogSpot.com
@ERoske

Disclaimer

- These slides represent the work and opinions of the presenter and do not constitute official positions of Oracle or any other organization.
- This material has not been peer reviewed and is presented here with the permission of the presenter.
- This material should not be reproduced without the written permission of interRel Consulting.



Essbase is a Source for OBIEE

The 7 Steps

- Install both Essbase and OBIEE on servers
- Install the Administration Tool on your client
- Access EAS via link
- Have the Essbase ID with at least read access
 - Ideally DB administrator or higher because there is a good chance you will have to update/change Essbase
- Have the OBIEE administrator ID and password
- CAREFUL if you are in a multi-user, multi-source deployment



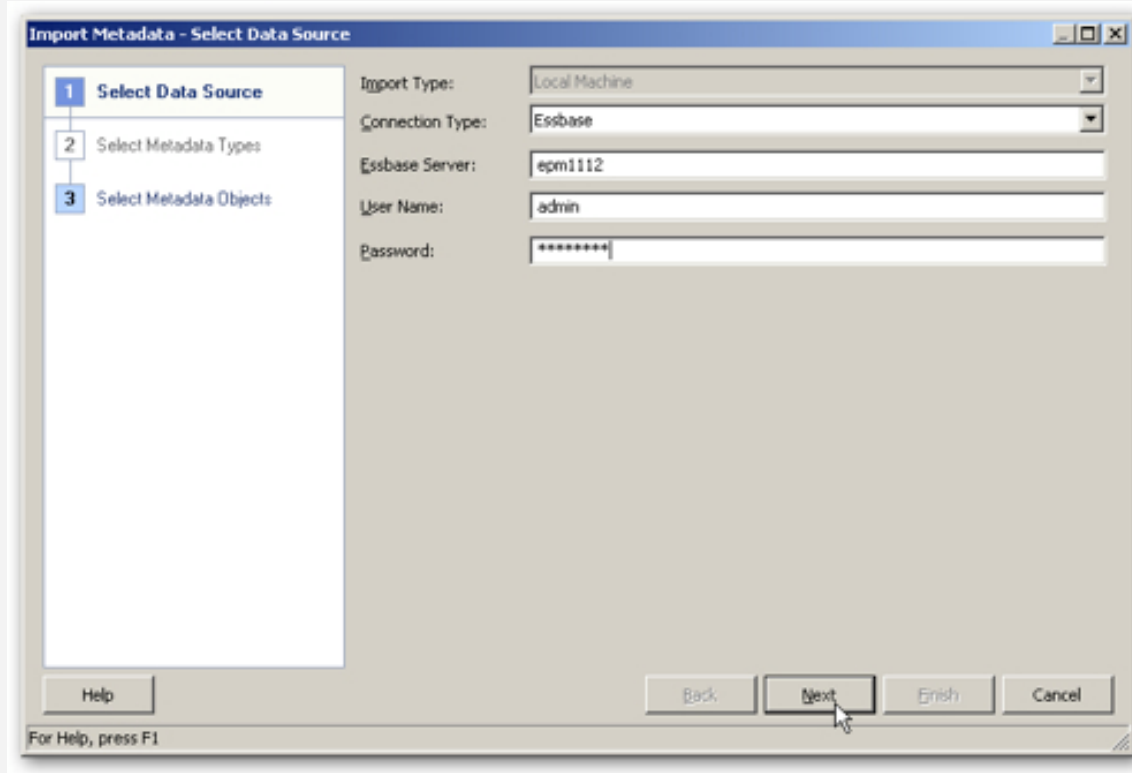
7 Steps to Retrieve Essbase data from OBIEE

1. Import the Essbase cube in to the RPD
2. Check or set dimension types
3. Create alias columns and UDA columns
4. Set the hierarchy types
5. Drag cube to BMM and map attribute dimensions
6. Drag cube to Presentation Layer
7. Restart OBIEE Services

You are ready to retrieve Essbase data!



- In OBIEE 11g BI Administration tool select **File > Import Metadata**
– connect to Essbase



Import Metadata - Select Metadata Objects

Select the metadata objects you want to import into the physical layer of the repository.

Find:

1 Select Data Source
2 Select Metadata Types
3 Select Metadata Objects

Data source view:

- epm1112
 - Demo
 - Sample
 - Basic
 - Xchgrate
 - Interntl
 - Sample_U
 - Samppart
 - Sampeast
 - DMDemo
 - ASOsamp
 - PlanApp
 - ASOsam2
 - ASOBasic
 - Sample
 - ASOIntl
 - ENTPLN
 - Plan1

Import UDAs
 Show complete structure

Repository View:

- Essbase
 - ASOBasic
 - Sample
 - Age
 - Measures
 - Payment Type
 - Products
 - Scenario
 - Square Footage
 - Store Manager
 - Stores
 - Time
 - Years
 - Sample - measure
 - Sample
 - Basic
 - Caffeinated
 - Intro Date
 - Market

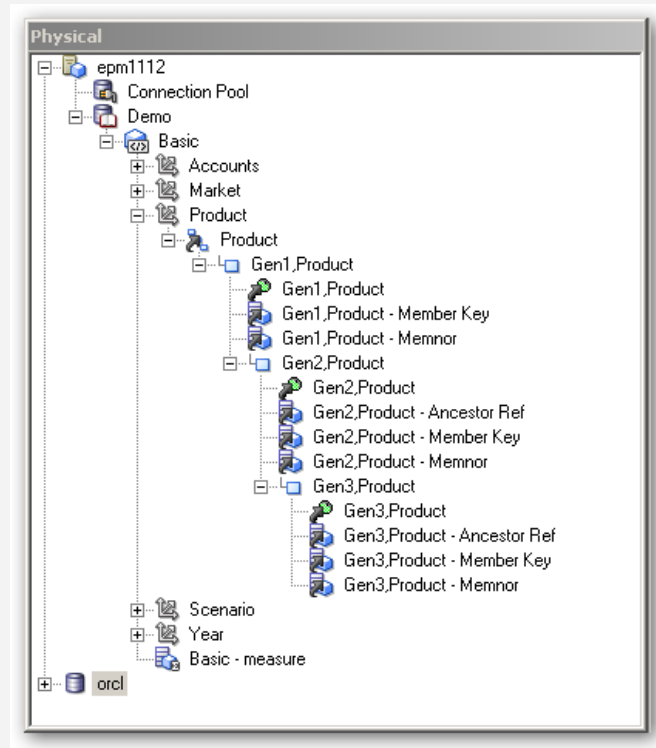
Show complete structure

Help Back Next Finish Cancel

For Help, press F1

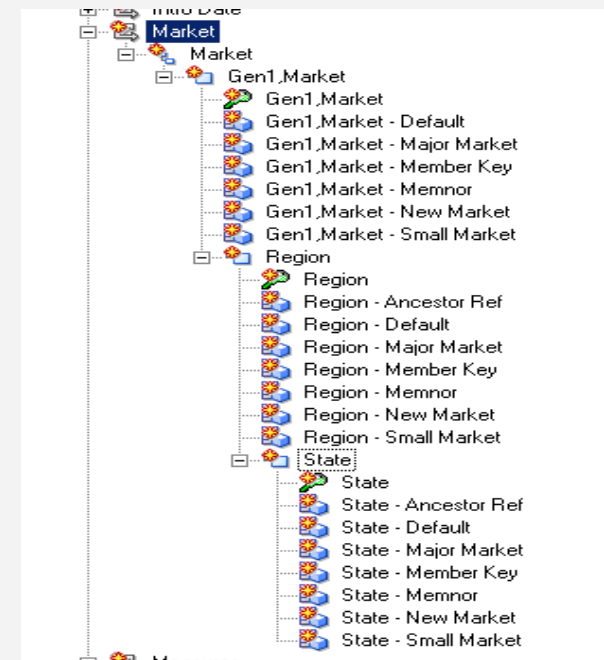


- Physical mapping in the administration tool



Understand the Essbase Source

Member Alias	Indicates an Alias column.
UDA	Indicates the column is a User Defined Attribute (UDA).
Outline Sort	Indicates the column is of memnor type, used for outline sorts in the logical layer. Imported at the lowest level of each dimension.
Attribute	Indicates the column is of attribute type, for attribute dimensions.
Other	The type is different than those listed, or unknown.
Ancestor Reference	References the ancestor of a dimension.
Member Key	Indicates the column is a member key.
Memnor	Stores the outline sort order from Essbase; is the default sort order in 11G
Leaf	Indicates that the column is the lowest member of the hierarchy.
Root	Indicates that the column is the root member of the hierarchy.
Parent Reference	References the parent of a dimension.



Understand the Essbase Source

- The column types Outline Sort, Ancestor Reference, Member Key, Leaf, Root, and Parent Reference are used internally by the system and should not be changed.

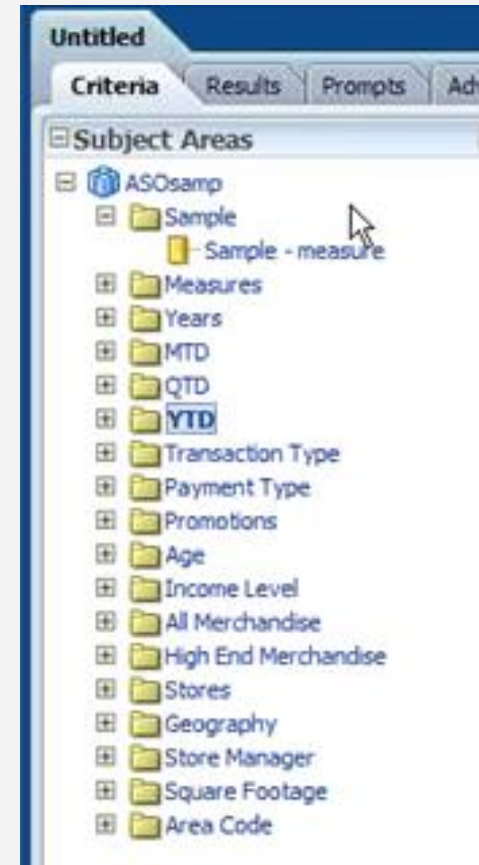


Dimension Types

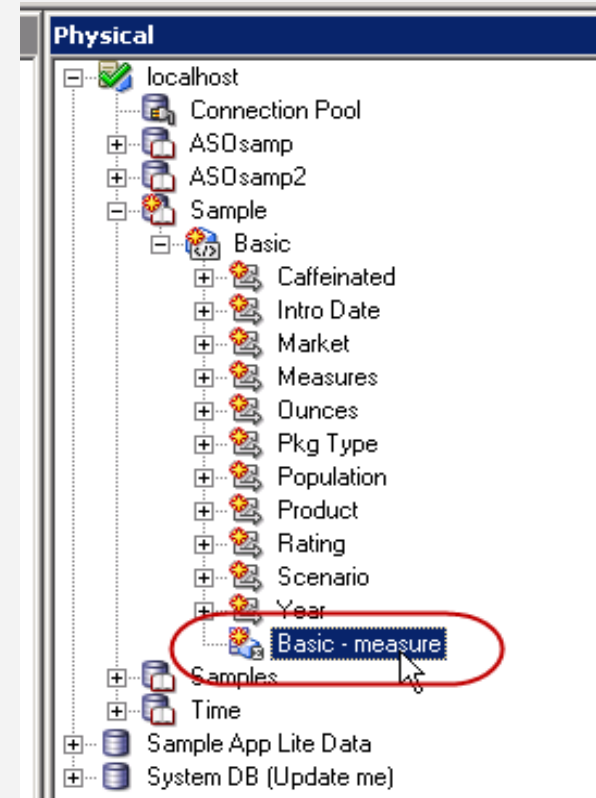
- Identifies whether this hierarchy belongs to a time dimension, measure dimension, or other type of dimension
 - Measures
 - Time (important for time ordinal functionality for end users)
 - Attribute



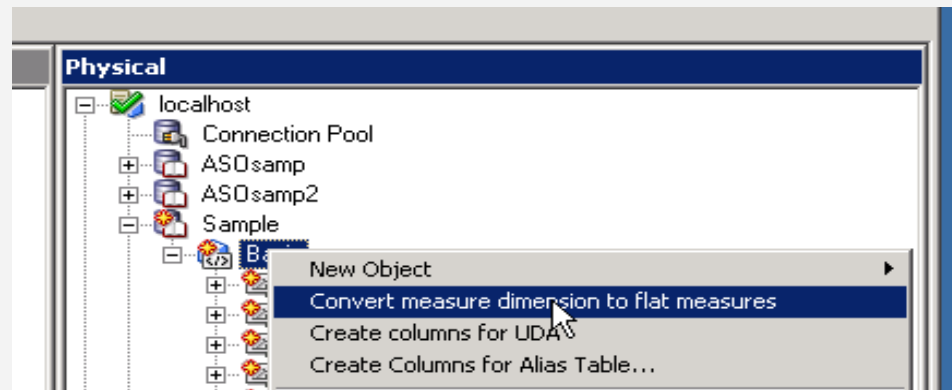
- By default creates the different time periods in their own folders
 - Could keep in same Time dimension via option in Admin model



- By default, measures are imported as measure hierarchies
- Cube contains a single measure column that represents all the measures
 - You will have to bring this measure into every query in order to see data
 - The same formatting is applied to the measure which can cause problems
- Allows us to have the Accounts dim as a hierarchy



- Click the cube object and select Convert measure dimension to flat measures



- Why? If you have a smaller, static “flat” list of accounts in Essbase (e.g. Unit, Price, Sales) – this will help in reporting, dashboards and performance

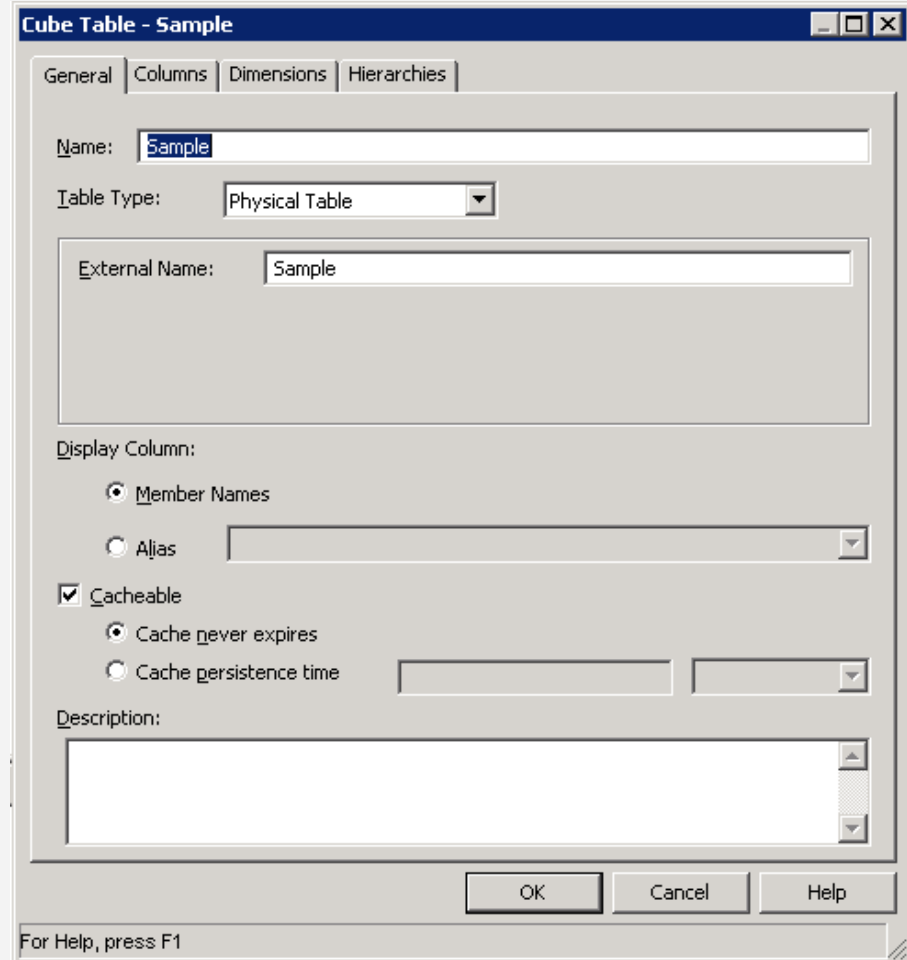


Skip Gen 1 Levels

- Skip Gen 1 levels in Essbase drag and drop actions
 - When selected, excludes Gen 1 levels when you drag and drop Essbase cubes or dimensions from the Physical layer to the Business Model and Mapping layer
 - Often, Gen 1 levels are not needed for analysis, so they can be excluded from the business model.



- To change the value to display for members:
- In the Physical layer of the Administration Tool, double-click an Essbase cube table.
- In the General tab of the Cube Table dialog, choose the appropriate value for Display Column. You can select Member Name, or you can select Alias and then choose an alias table name from the list.



Cube Table - Sample

General | Columns | Dimensions | Hierarchies

Name:

Table Type:

External Name:

Display Column:

Member Names

Alias

Cacheable

Cache never expires

Cache persistence time

Description:

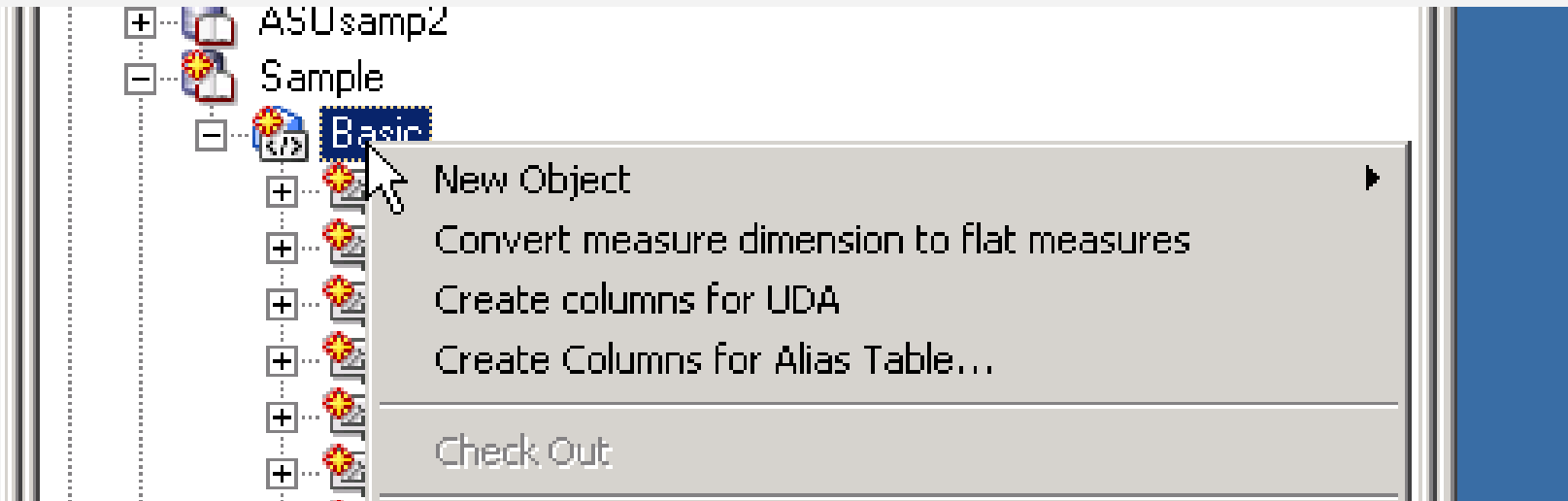
OK Cancel Help

For Help, press F1



Explicitly Define Columns for Each Alias

- In the Administration Tool, in the Physical layer, right-click the dimension or cube and select Create columns for UDA

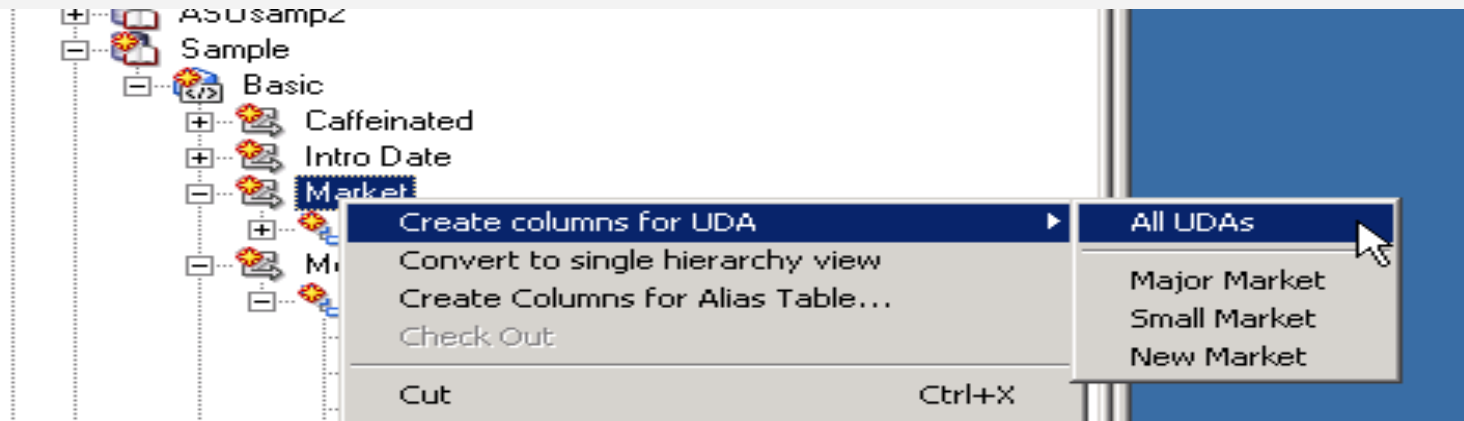


- *** Must be completed before defining a Hierarchy type of "Value"



UDA as a Physical Column

- To model all UDAs in a cube as separate physical columns, right-click the cube table and select Create columns for UDA.
- To model all UDAs in a dimension as separate physical columns, right-click the dimension object and select Create columns for UDA, then select All UDAs.



UDA as a Dimension Property

- You can choose whether to import UDAs in the Import Metadata Wizard. If you choose to import UDAs, then by default, each UDA is modeled as a dimension property in the Physical layer of the repository



- Fully balanced
 - A level-based hierarchy with no unbalanced or skip characteristics. Corresponds to a level-based hierarchy in the Business Model and Mapping layer.
- Unbalanced
 - Also called ragged. A hierarchy where the leaves (members with no children) do not necessarily have the same depth. Corresponds to a level-based hierarchy with the Ragged option selected in the Business Model and Mapping layer.
- Ragged balanced
 - Also called skip. A hierarchy where there are members that do not have a value for a particular ancestor level. Corresponds to a level-based hierarchy with the Skipped Levels option selected in the Business Model and Mapping layer.



- Network
 - This hierarchy type is not used.
- Value
 - Also called parent-child. A hierarchy of members that all have the same type. This contrasts with level-based hierarchies, where members of the same type occur only at a single level of the hierarchy. Corresponds to a parent-child hierarchy in the Business Model and Mapping layer.
 - This is what you use for dimensions where levels change often in the outline
 - Performance consideration
 - Limited dashboard controls (only the “member selection” / “browse” control)



Should You Use the Value Hierarchy Type?

To
“Value”

Generations change frequently

Member Browser control meets requirements for dashboard control

For large databases & hierarchies, just put one hierarchy on the dashboard/analysis

To Not
“Value”

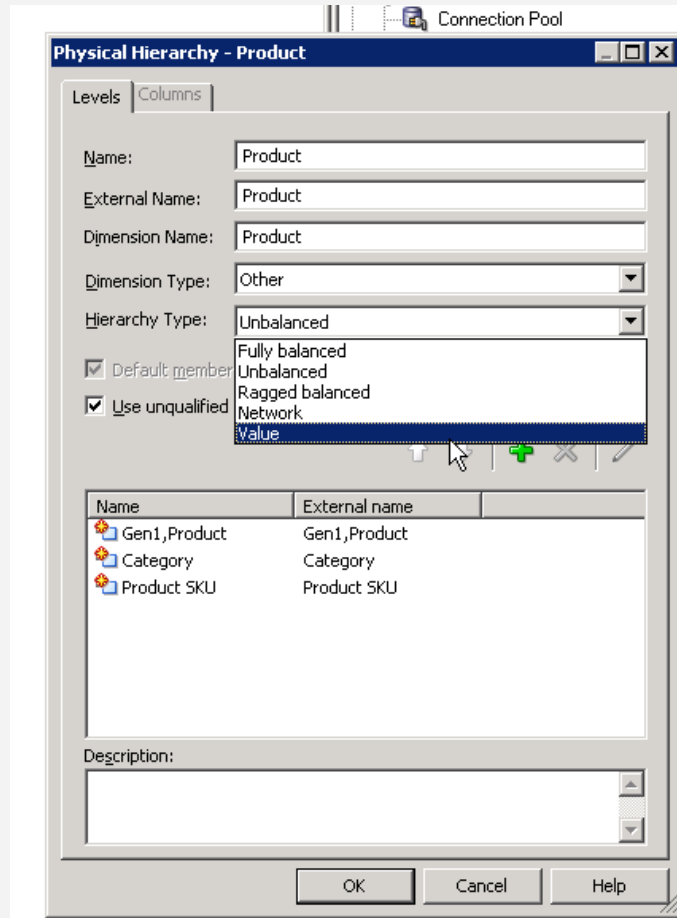
Generations do not frequently change

Need to use radio, check or other dashboard controls for member selection

Gain better performance

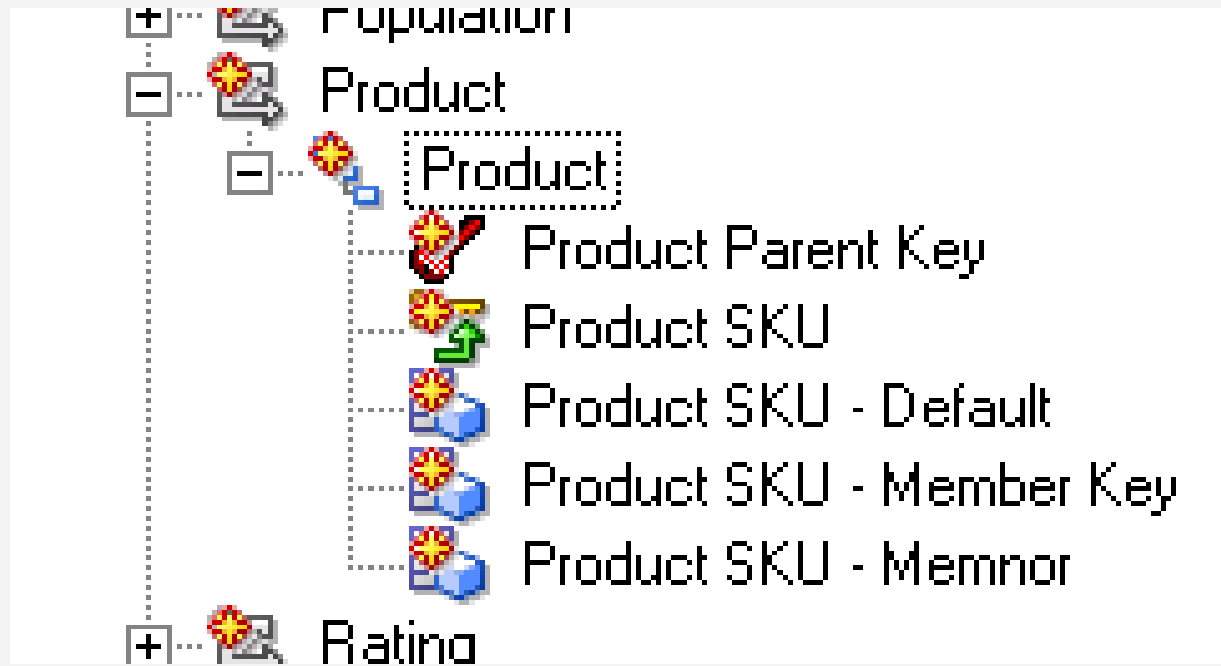


Set the Hierarchy Type

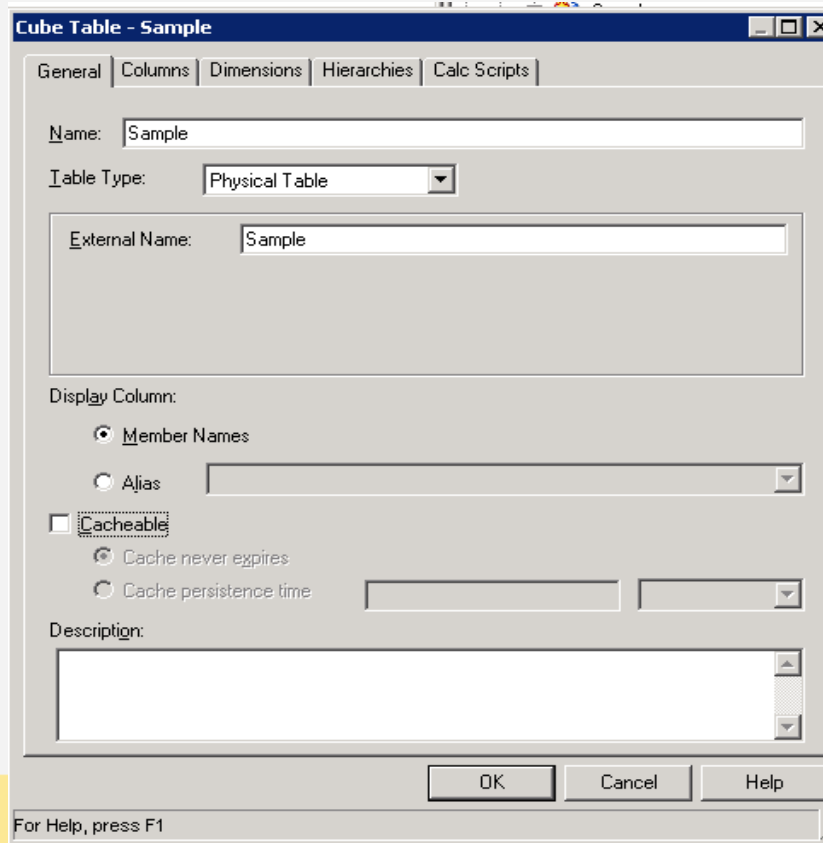


Value Hierarchy

- Notice that now only a single “column” exists for any value dimensions in the Physical layer



- You must turn off the “Cacheable” setting under the cube properties in the Physical layer



Cube Table - Sample

General | Columns | Dimensions | Hierarchies | Calc Scripts

Name: Sample

Table Type: Physical Table

External Name: Sample

Display Column:

Member Names

Alias

Cacheable

Cache never expires

Cache persistence time

Description:

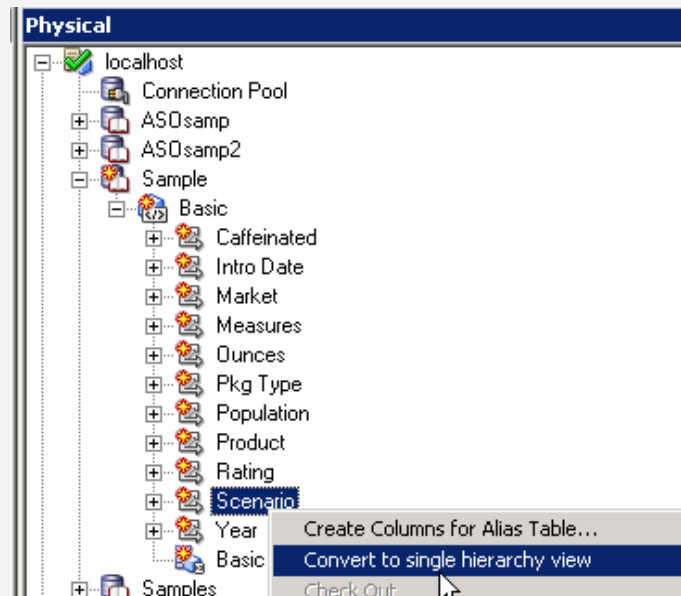
OK Cancel Help

For Help, press F1



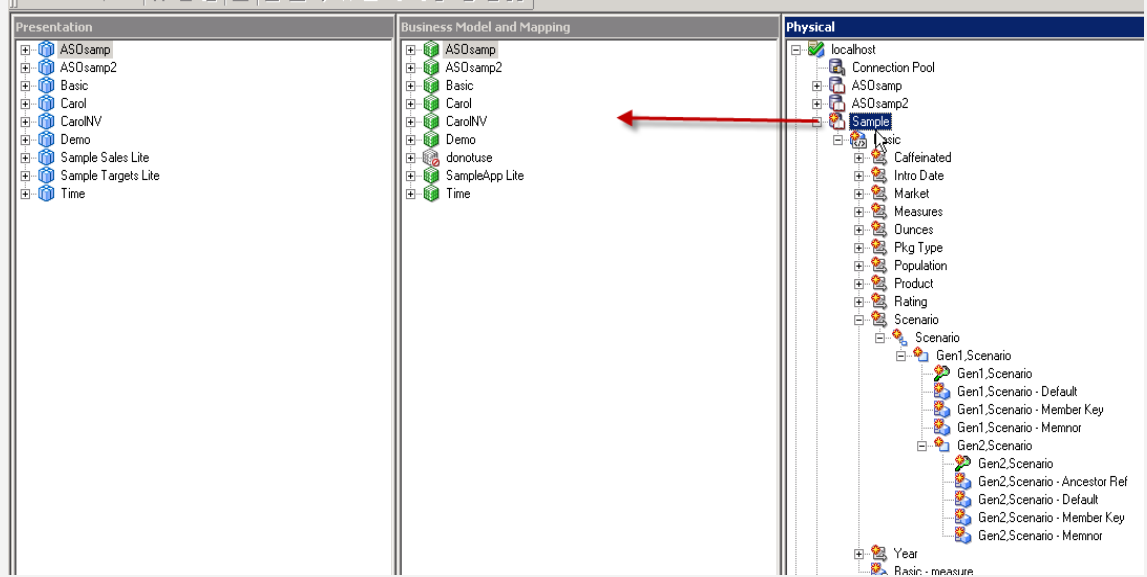
Convert Multiple Hierarchies to Single Hierarchy

- Select Convert to single hierarchy view
- To return to the multi-hierarchy view, right-click the dimension object again and select Convert to multi-hierarchy view



Essbase Source in Business Model Mapping Layer

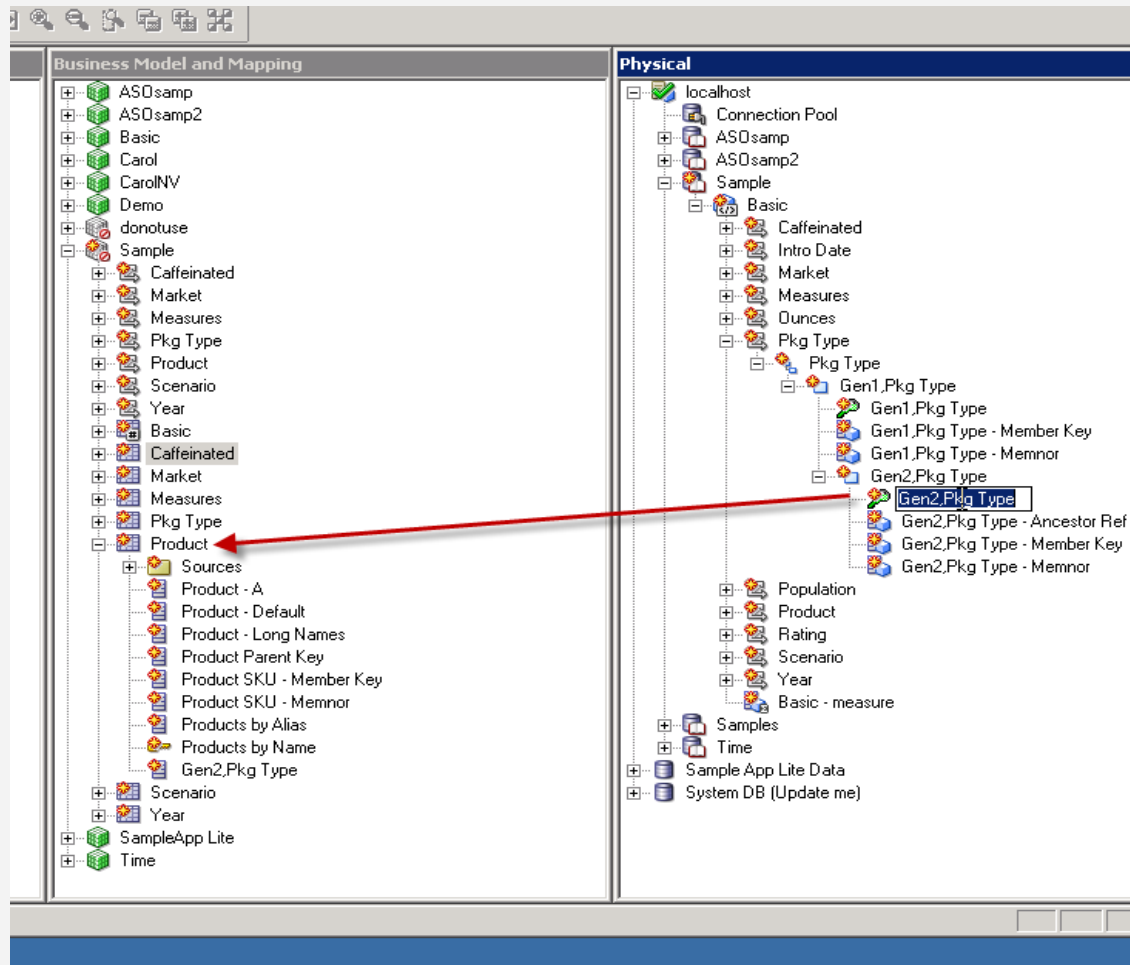
- Drag over cube
- No need to define joins for standard dimensions
- Must associate attribute dimensions with their base dimension



- Member attributes are not automatically associated to corresponding dimensions and levels during the import process
- To manually create the association, map the member attribute to the appropriate logical table
 - Drag and drop the columns from the attribute dimension in the Physical layer to the appropriate logical tables in the Business Model and Mapping layer
- No longer required in 11.1.1.7



Attribute Dimensions



The screenshot displays two side-by-side views of a SQL Server database structure:

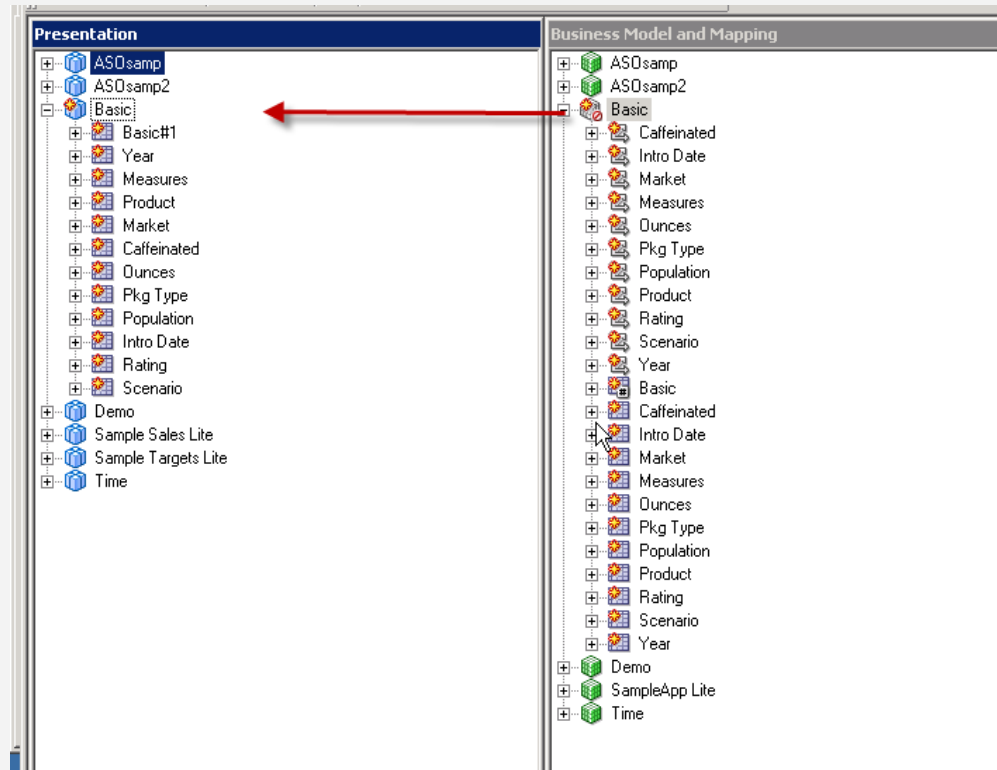
- Business Model and Mapping:** Shows a hierarchical tree of business entities. Under the 'Product' entity, there is a sub-entity 'Gen2,Pkg Type'.
- Physical:** Shows the corresponding physical database structure. It includes a 'Gen2,Pkg Type' table, which is highlighted with a red box. A red arrow points from this table back to the 'Gen2,Pkg Type' entity in the Business Model and Mapping view.

The Physical view also shows other tables such as 'Gen1,Pkg Type', 'Gen1,Pkg Type - Member Key', 'Gen1,Pkg Type - Memnor', and 'Gen2,Pkg Type - Ancestor Ref'.

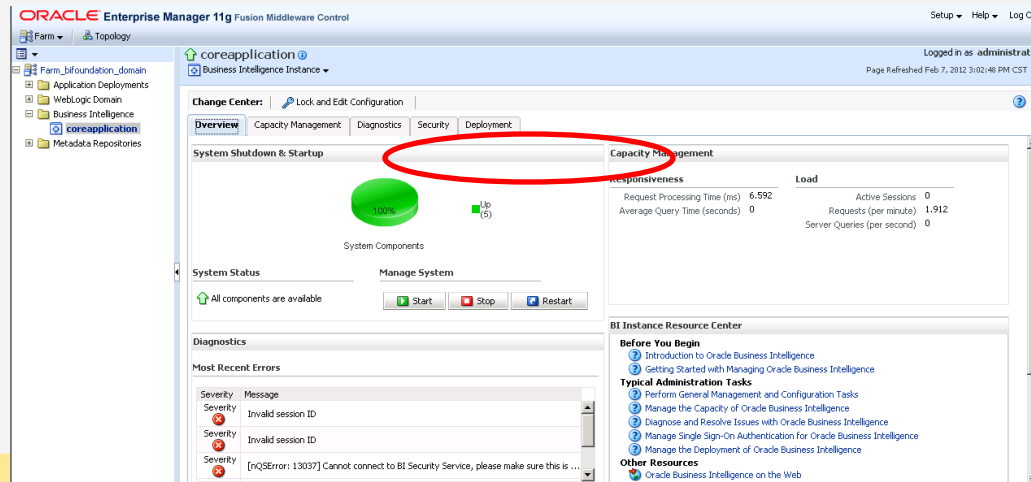


Essbase Source in the Presentation Layer

- Drag cube model to Presentation layer



- Log into Enterprise Manager
- From the Overview Page, Open the Business Intelligence folder.
- Select coreapplication
- Click the Start or Stop button



The screenshot displays the Oracle Enterprise Manager 11g Fusion Middleware Control interface. The left-hand navigation pane shows the hierarchy: Farm -> Topology -> coreapplication -> Business Intelligence Instance. The main content area is titled 'coreapplication @ Business Intelligence Instance' and includes tabs for Overview, Capacity Management, Diagnostics, Security, and Deployment. The 'Overview' tab is active, showing a 'System Shutdown & Startup' section with a large green 'Start' button and a smaller 'Stop' button, both of which are circled in red. Below this, there are 'System Status' and 'Manage System' sections with 'Start', 'Stop', and 'Restart' buttons. The 'Diagnostics' section shows a list of 'Most Recent Errors', including an error message: '[RQSErrer: 13037] Cannot connect to BI Security Service, please make sure this is ...'. The right-hand side of the interface shows 'Capacity Management' and 'BI Instance Resource Center' sections.



Retrieve Essbase Data

Is It Really Just 7 Steps?

If it were only that simple...

- In real life...
- Design the dashboard before you start but tell users to keep the design in their mind as “flexible”
- Determining the hierarchy types is not easy
- You likely will have to go back to Essbase and make updates
- While OBIEE supports ragged hierarchies, the less “ragged” the better
- Flattened measures will significantly improve performance (if it matches cube design)
- Many iterations will be required
- Rolling out adhoc to Excel Add-in or Smart View users might find resistance



- Workspace and OBIEE Dashboard integration
- Complicated install and configuration; multiple WLS homes
- Some bugs around value hierarchies, drilling
- Can't federate value based hierarchies (join relational and Essbase data using hierarchy tagged as Value)
- Push calculations back to Essbase
- Performance – Less than efficient BI Server SQL processing against MDX result set
 - Will always be slower than Smart View
 - Complex and fragmented OBIEE SQL when using hierarchical columns
 - Expensive OBIEE SQL on selection steps



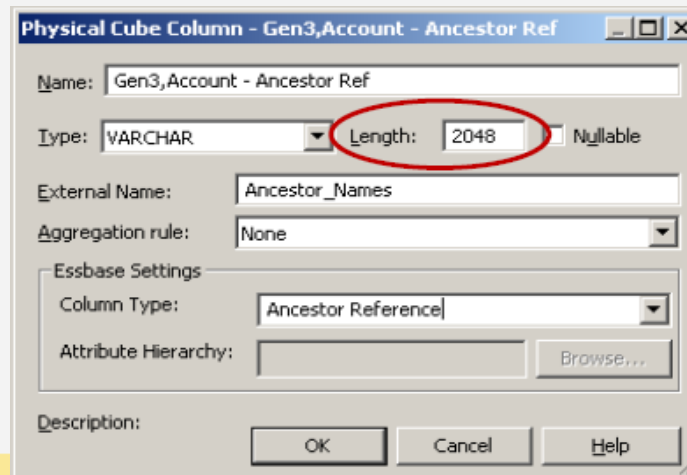
Good to Know Ahead of Time

- Design the dashboard before you start but tell users to keep the design in their mind as “flexible”
- Can’t select member in a control and then have the dashboard show the “children of” that member
- For really large ASO cubes, limit one hierarchy in the rows of a grid



Increase Length to Prevent Drilling Issues

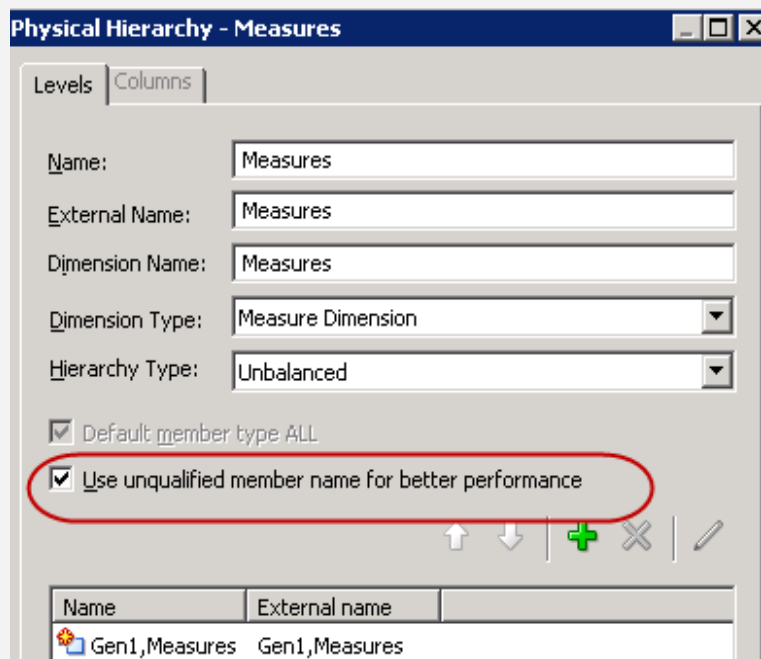
- When drilling down a deep hierarchy column, instead of the next level showing up, the value you drilled down on disappears (e.g. issue may show up around Gen8)
- OBIEE is losing track of the full hierarchy ancestor drill path
- Need to increase the length of the Ancestor Reference column in the physical cube dimension from 128 to 2048



The screenshot shows a dialog box titled "Physical Cube Column - Gen3,Account - Ancestor Ref". The "Name" field contains "Gen3,Account - Ancestor Ref". The "Type" is set to "VARCHAR" and the "Length" is set to "2048", which is circled in red. The "Nullable" checkbox is checked. The "External Name" is "Ancestor_Names" and the "Aggregation rule" is "None". Under "Essbase Settings", the "Column Type" is "Ancestor Reference" and the "Attribute Hierarchy" field is empty with a "Browse..." button. The "Description" field is empty. At the bottom are "OK", "Cancel", and "Help" buttons.



- For each hierarchy, right click on the hierarchy and select Properties.
- Check the box for “Use Unqualified member name for better performance”



Physical Hierarchy - Measures

Levels Columns

Name: Measures

External Name: Measures

Dimension Name: Measures

Dimension Type: Measure Dimension

Hierarchy Type: Unbalanced

Default member type ALL

Use unqualified member name for better performance

Name	External name
Gen1,Measures	Gen1,Measures



Faster Performance in Essbase

- Enable caching
- But.... Careful with changes to underlying Essbase outline structure



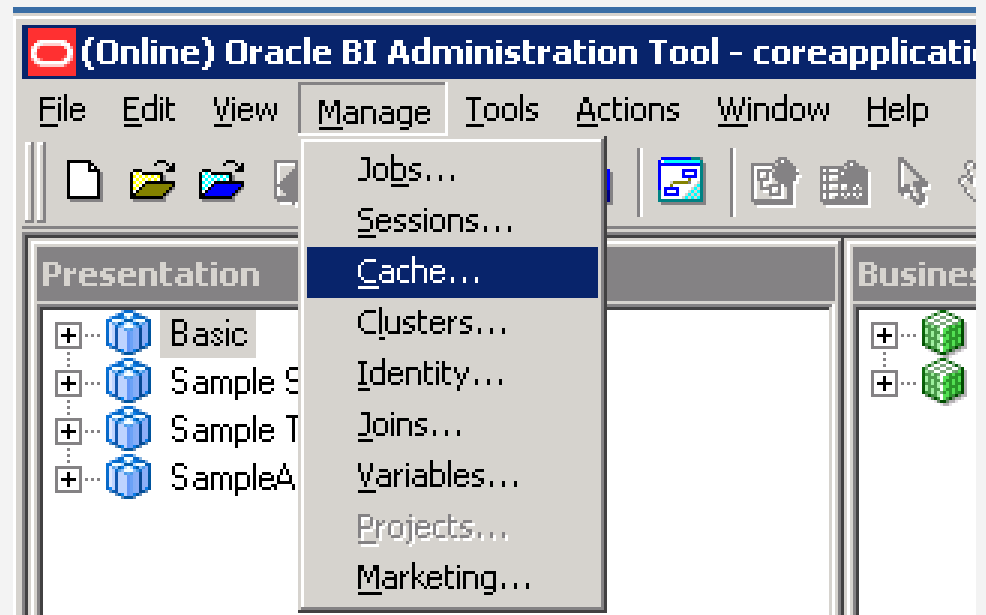
Oracle BI Server Query Cache

- This query cache is maintained locally on the BI Server and is used for subsequent query requests without accessing back-end data sources, improving query performance.
- As updates occur on the back-end databases, the query cache entries can become stale. The administrator must periodically remove entries from the query cache, using one of the following methods.



Accessing the Cache Manager

- Open the BI Administration tool.
- Open a repository file ONLINE.
- Select Cache from the Manage menu.



- Select a data source from the pane on the left to display the cache entries for the selected source.

Cache Manager

Action SQL Edit Help

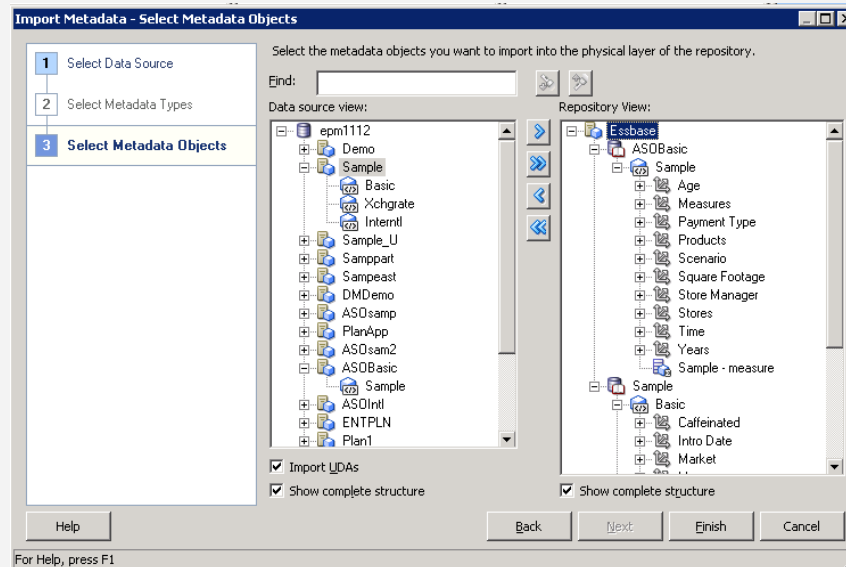
588 cache entries, 0 selected

Save...

last used	Creation elapsed time	Row count	Row size	Full size	Column count	Logical Request	Use count	Business Model	Repository	SC
012-01-11 13...	7.28	22	3296	72512	7	SET VARIABLE QUERY_SRC_CD='Report';SE...	1	Basic	Star	SE
012-01-11 13...	0.06	1	2208	2208	5	SET VARIABLE QUERY_SRC_CD='Report';SE...	1	Basic	Star	SE
012-01-11 13...	0.12	22	2176	47872	5	SET VARIABLE QUERY_SRC_CD='Report';SE...	1	Basic	Star	SE
012-01-11 13...	0.21	17	1088	18496	2	SELECT "Measures"."Measures by Name" FRD...	1	Basic	Star	SE
012-01-11 13...	0.14	22	5408	118976	10	SET VARIABLE QUERY_SRC_CD='Report';SE...	1	Basic	Star	SE
012-01-11 13...	0.23	22	1088	23936	2	SELECT "Product"."Products by Alias" FROM "	1	Basic	Star	SE
012-01-11 14...	0.12	3	3296	9888	7	SET VARIABLE QUERY_SRC_CD='Report';SE...	1	Basic	Star	SE
012-01-11 15...	0.10	36	5408	194688	10	SET VARIABLE QUERY_SRC_CD='Report';SE...	1	Basic	Star	SE
012-01-11 15...	0.29	36	5408	194688	10	SET VARIABLE QUERY_SRC_CD='Report';SE...	1	Basic	Star	SE
012-01-11 15...	7.89	4416	5408	23881728	10	SET VARIABLE QUERY_SRC_CD='Report';SA...	1	Basic	Star	SE
012-01-12 07...	0.18	4	7552	30208	13	SET VARIABLE QUERY_SRC_CD='Report';SE...	1	Basic	Star	SE
012-01-12 07...	0.12	4	7616	30464	16	SET VARIABLE QUERY_SRC_CD='Report';SE...	1	Basic	Star	SE
012-01-12 07...	0.21	16	9664	154624	16	SET VARIABLE QUERY_SRC_CD='Report';SE...	1	Basic	Star	SE
012-01-12 07...	0.31	4	4576	18304	16	SET VARIABLE QUERY_SRC_CD='Report';SE...	1	Basic	Star	SE
012-01-12 07...	0.73	16	6592	105472	16	SET VARIABLE QUERY_SRC_CD='Report';SE...	1	Basic	Star	SE
012-01-12 07...	0.48	4	5568	22272	16	SET VARIABLE QUERY_SRC_CD='Report';SE...	1	Basic	Star	SE
012-01-12 07...	0.81	16	5568	89088	16	SET VARIABLE QUERY_SRC_CD='Report';SE...	1	Basic	Star	SE
012-01-12 07...	0.10	4	4576	18304	16	SET VARIABLE QUERY_SRC_CD='Report';SE...	1	Basic	Star	SE
012-01-12 07...	0.09	4	5408	21632	10	SET VARIABLE QUERY_SRC_CD='Report';SE...	1	Basic	Star	SE
012-01-12 07...	0.17	5	5536	27680	15	SET VARIABLE QUERY_SRC_CD='Report';SE...	1	Basic	Star	SE



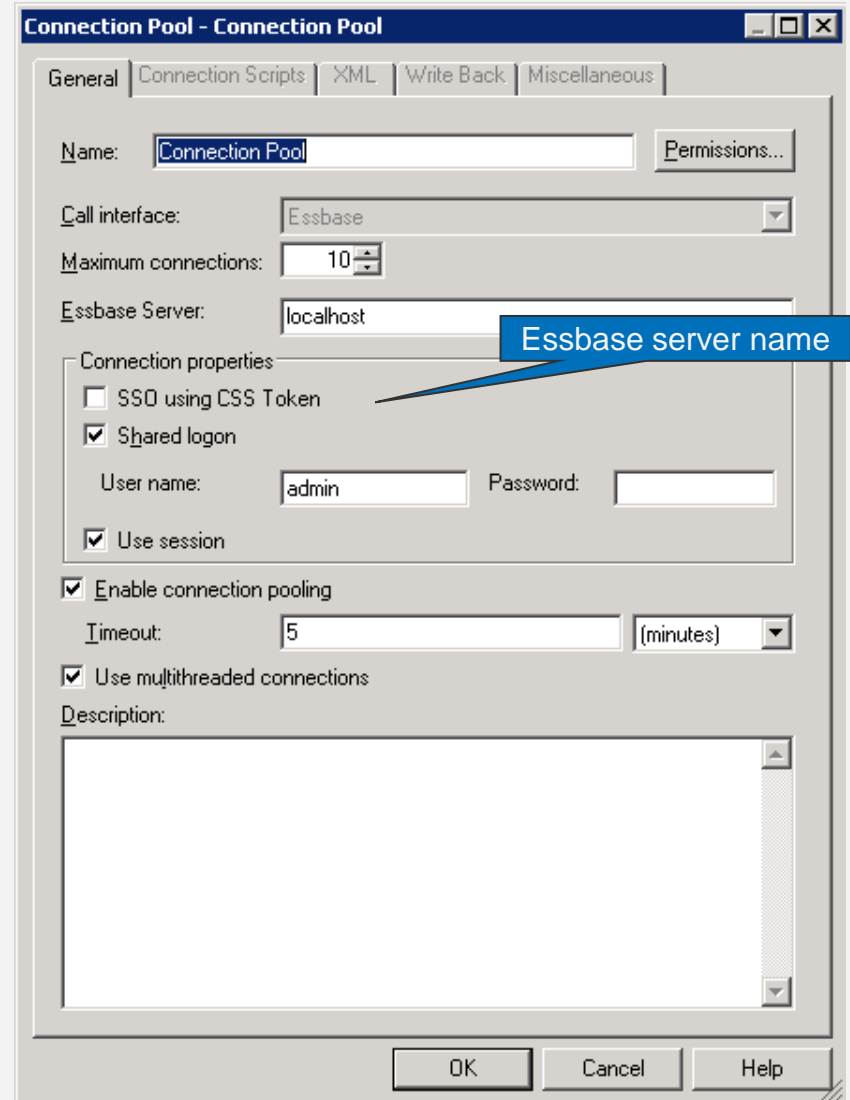
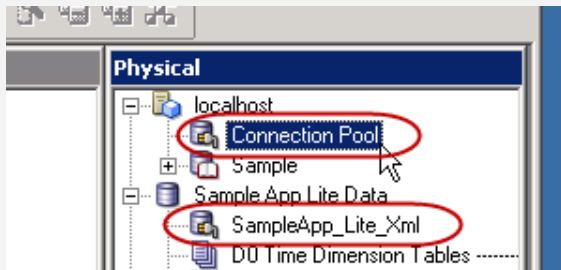
- There is no “refresh” option; You have rerun the import wizard
- Using OBIEE 11.1.1.5, existing changes to the outline are preserved, except Hierarchy Type settings where all level-based hierarchy types are reset back to Unbalanced



- No refresh required assuming Cacheable is turned off
 - New members in same generations are added, deleted or changed
- Refreshed required
 - Add UDAs, added alias tables, or new generations to your outline
 - and you re-import the outline. Any changes you've made to flatten the measure hierarchy, for example, are preserved OK. You may also have to update business model mapping layer and presentation layer to refresh.



- Defines how the Oracle BI Server connects to a data source
- Specifies the ODBC or native data source name
- Allows multiple users to share a pool of data source connections
 - Create multiple connection pools to improve performance for groups of users



Using OBIEE to Retrieve Essbase Data: The 7 Steps You Won't Find Written Down

Edward Roske
info@interrel.com
LookSmarter.BlogSpot.com
@ERoske