Creating the Data Cube

Prerequisites: following software needs to be installed on your system:

- SQL Server 2008R2 (although other versions likely work as well)
 - A simplified version of the AdventureWorksDW2008R2 database has to be attached
- SQL Server Analysis Services
- Business Intelligence Development Studio (BIDS) (Microsoft Visual Studio-based integrated database development environment for SQL Server)

The machines in the ULB computer rooms have all necessary databases installed. Most of the following scenario is explained step-by-step in the following website:

http://msdn.microsoft.com/en-us/sql10r2byfbi-trainingcourse_sql10r2byfbi05-hol-01_topic2#_Toc278876078 and in the following video:

http://technet.microsoft.com/en-us/sqlserver/ff522829.aspx

In what follows you are guided through the process of creating a data cube.

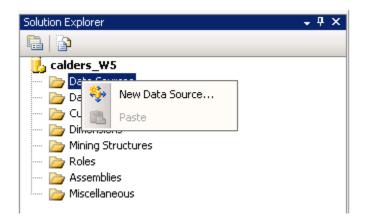
Create a new project:



Select BI projects/Analysis Services Project, and select a name for the project:

New Project				? ×		
Project types:	Templates:	.NET Framework 3.5	• •	5-5- 5-5- 5-5-		
Business Intelligence Projects Other Project Types	Visual Studio installed templates Analysis Services Project Theoretics Connections P Report Server Project Wizard Report Server Project My Templates Search Online Templates	Import Analysis Services Database Integration Services Project Report Model Project				
Create a new Analysis Services project						
Name:						
Location: C:\Users\tcalders\l	Documents\Visual Studio 2008\projects	•	Browse			
Solution Name: calders_W5	Cr	eate directory for solution				
		OK	Cance	1		

In the Solution Explorer on the right, create a new data source by right clicking on "Data Sources" (if solution explorer is not visible: in the menu, select View, then Solution Explorer):



In the computer lab: select CS-MSSQL server, and "Use Windows Authentication"; on your own computer: server is most likely "local" (make sure that the database server is running). Navigate to the 2014_SimpleNW_DW database and test the connection.

	Jerver name:	
	CS-MSSQL	▼ Refresh
Connection	Log on to the server	
	Use Windows Authentication	
	Use SQL Server Authentication	
All	User name:	
	Password:	
	Save my password	
	Connect to a database	
	Solect or enter a database name: 2014_SimpleNW_DW	
	Attach a database file:	
		Browse,
	Logical name:	

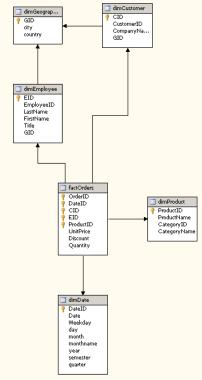
For impersonation mode use "service account" (next window; no screenshot).

Create a new data source view (Solution explorer; right click "data source views"). Select the newly created data source (no screenshot shown) and in the **next** window, select all tables to be included:

I Data Source View Wizard Select Tables and Vie Select objects from the review.	ws	be included in the data source	
Available objects:	pe > <	Included objects: Name dimCustomer (dbo) dimDate (dbo) dimEmployee (dbo) dimGeography (dbo) dimProduct (dbo)	Type Table Table Table Table Table Table
Filter:	7	Add Related T	ables
	< Back	Next > Finish >>	Cancel

In the **next** window (no screenshot) chose a name and finish.

If everything went well, you should normally see the following relational schema when exploring the data source view:



Now create a new cube in the Solution explorer (right-click cube). Select "use existing tables", as the dimensional schema already exists. The other options are there if you want to build up the relational schema using SSAS.

📔 Cube Wizard	_ 🗆 ×
Select Creation Method Cubes can be created by using existing tables, creating an empty cube, or generating tables in the data source.	
How would you like to create the cube?	
Use existing tables	
C Create an empty cube	
O Generate tables in the data source	
Template:	
(None)	-
Description:	
Create a cube based on one or more tables in a data source.	
< Back Next > Finish >>	Cancel

Select in the next window the measurement groups (tables containing the measures = fact tables)

📔 Cube Wizard	
Select Measure Group Tables Select a data source view or diagram and then select the tables that w used for measure groups.	ill be
Data source view:	
2014 Simple NW DW	▼
Measure group tables:	Suggest
 dimCustomer dimDate dimEmployee dimGeography dimProduct factOrders 	
< Back Next > Finish >>	Cancel

Select in the next window the measures you want; select all (no screenshot included).

Then select the dimensions. The wizard makes an educated guess based on the relational schema and the foreign key dependencies.

Rename the dimensions by removing the "dim". The table names that make up the dimension obviously should/cannot be renamed.

📔 Cube Wizard	_ 🗆 🗙
Select New Dimensions Select new dimensions to be created, based on available tables.	
 Dimension Date Orduce Ordu	
< Back Next > Finish >>	Cancel

After you have created the cube, already try to build and deploy it a first time in order to make sure you have all the right permissions and all connections have been set correctly. To do this, right-click on the cube, select "Process cube", and chose "run". If there are problems with connecting to the database, chance the impersonation properties of your data source. Select the **service account** to be used.

ocess Cube - 2014 Simp	le NW DW		_ 🗆 ×	[Design]		
				Browser		
ject list:						ders_W5 Data Sources
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2014 Simple NW DW	Cube	Process Full			ė~ ≽	Data Source Views
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			🖃 📔 Proce	ssing Cube '2014 Simple		
			🗄 🊺 Pi	ocessing Measure Group	'Fact Orders' complet	ed.
			© _▶ S	art time: 16/10/2014 10:	:27:51; End time: 16/1	10/2014 10:27:51; Duration: 0:00:00
		Remove				
			-			
ch Settings Summary			-			
Processing order:						
Parallel						
Transaction mode:						
(Default)						
Dimension errors:						
(Default)			- '			
Dimension key error log pa	ith :		Status:			
(Default)			Process succe	eded.		
Process affected objects:						
Do not process			-		Stop Re	process View Details
, 						
		Char	ng: 			Close
		\sim		anni Project	Status:	
		Run	Close			
			lii			
			0 0			Deployment Completed Success
1						

This step often causes problems because of authentication problems and permissions on the source database not correctly been set.

Congratulations! You have built your first cube. Browse the cube by right-click on the cube object in the Solution explorer and selecting "browse cube".

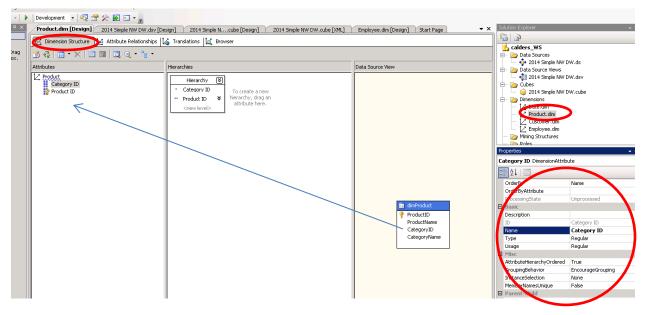
In case you are having problems with this step, the following problems can be causing it:

• The SSAS server properties have not properly been set. Go to "project", "[your project name] properties" and set the server correctly:

calders_W5 Property Pages		? ×
Configuration: Active(Development)	Platform: N/A	Configuration Manager
Configuration Properties Build Debugging Deployment	 Options Processing Option Transactional Deployment Deployment Mode Target Server Database Database The Analysis Services database to 	Default False Deploy Changes Only 164.15.81.95 YOURDBNAME
	[OK Cancel Apply

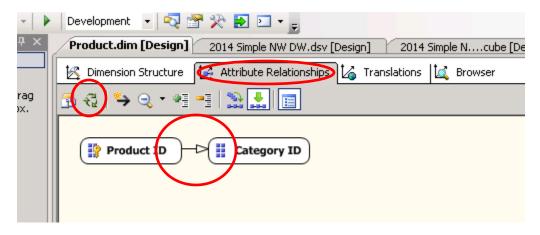
- You do not have the right permissions on the database; solve this by changing the permissions of your database (SQL Server Management studio)
- The impersonation mode is wrong; for your data source preferably use the service account impersonation mode as the permissions for the service account have been properly set.

Clearly in the cube definition important information about the hierarchies is missing. Use the dimension browser to properly organize the levels in the hierarchy.

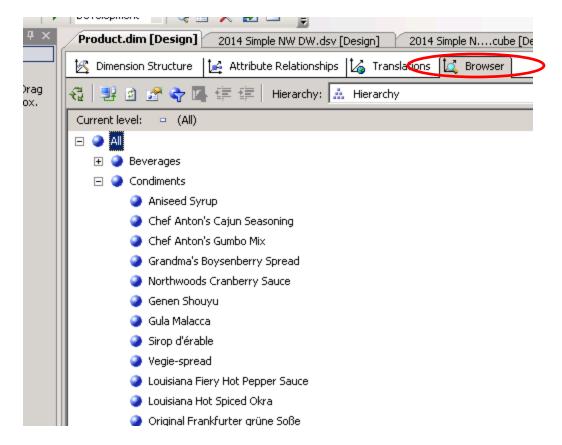


Create levels by dragging and dropping attributes.

Set properties of the levels; for instance: keys of the level (if composite key), name column for a level.



Set the attribute relationships (functional dependencies), and deploy.



Browse the dimension.

Now do the same for the other dimensions, deploy the cube again and browse the cube with the proper hierarchies etc. this time.