

# Cube Development I

Adding cubes to the Analysis Services database

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# Overview

- Cube Wizard
- Cube Designer
- Aggregations
- Perspectives
- Translations

# Cube Wizard

The image displays four overlapping screenshots of the 'Cube Wizard' application, illustrating the steps to create a cube. Red boxes highlight specific selections in each step:

- Step 1: Select Creation Method**
  - How would you like to create the cube?
  - ☒ Use existing tables
  - ☐ Create an empty cube
  - ☐ Generate tables in the data source
  - Template: (None)
  - Description: Create a cube based on one or more tables in a data source.
- Step 2: Select Measure Group Tables**
  - Data source view: Adventure Works DW2008R2
  - Measure group tables:
    - ☐ Date
    - ☐ Product
    - ☐ Category
    - ☐ Subcategory
    - ☒ ResellerSales
    - ☐ Territory
    - ☐ Employee

- Step 3: Select Measures**
- Select measures that you want to include in the cube
- Measure:
  - ☒ Reseller Sales
  - ☐ Reseller Key
  - ☐ Promotion Key
  - ☐ Currency Key
  - ☐ Revision Number
  - ☒ Order Quantity
  - ☒ Unit Price
  - ☒ Extended Amount
  - ☒ Unit Price Discount Pct
  - ☒ Discount Amount
  - ☒ Product Standard Cost
  - ☒ Total Product Cost
  - ☒ Sales Amount
  - ☐ Tax Amt
  - ☐ Freight
  - ☐ Reseller Sales Count
- Step 4: Select Existing Dimensions**
- Select existing dimensions to include in the cube.
- Dimension:
  - ☒ Date
  - ☒ Employee
  - ☒ Product
  - ☒ Territory

Measure group table = fact table

# Cube Designer

ssas-basic-cube - Microsoft Visual Studio (Administrator)

File Edit View Project Build Debug Format Database Data Source View Cube Tools Window Help

Development

Sales.cube [Design]

Cube Structure Dimension Usage Calculations KPIs Actions Partitions Aggregations Perspectives Translations Browser

Measures

- Sales
  - Reseller Sales
    - Reseller Order Quantity
    - Reseller Cost
    - Reseller Sales Amount

Dimensions

- Sales
  - Employee
  - Ship Date
  - Territory
  - Due Date
  - Order Date
  - Product

Subcategory

- ProductSubcategoryKey
- ProductSubcategoryAlternateKey
- EnglishProductSubcategoryName
- SpanishProductSubcategoryName
- FrenchProductSubcategoryName
- ProductCategoryKey

Product

- ProductKey
- ProductAlternateKey
- ProductSubcategoryKey
- EnglishProductName
- Color
- Size
- SpanishProductName

Category

- ProductCategoryKey
- ProductCategoryAlternateKey
- EnglishProductCategoryName
- SpanishProductCategoryName
- FrenchProductCategoryName

Date

- DateKey
- FullDateAlternateKey
- DayNumberOfWeek
- EnglishDayNameOfWeek
- SpanishDayNameOfWeek
- FrenchDayNameOfWeek
- DayNumberOfMonth
- DayNumberOfYear
- WeekNumberOfYear
- EnglishMonthName

ResellerSales

- SalesOrderNumber
- SalesOrderLineNumber
- ProductKey
- OrderDateKey
- ShipDateKey
- ResellerKey
- EmployeeKey
- PromotionKey
- CurrencyKey

Employee

- EmployeeKey
- ParentEmployeeKey
- EmployeeNationalIDAlternateKey
- ParentEmployeeNationalIDAlternateKey
- SalesTerritoryKey
- FirstName
- LastName
- MiddleName
- NameStyle
- Title

Solution Explorer

- ssas-basic-cube
  - Data Sources
    - Adventure Works DW2008R2.ds
  - Data Source Views
    - Adventure Works DW2008R2.dsv
  - Cubes
    - Sales.cube
  - Dimensions
    - Date.dim
    - Employee.dim
    - Product.dim
    - Territory.dim
  - Mining Structures
  - Roles
  - Assemblies
  - Miscellaneous

Properties

Reseller Order Quantity Measure

AggregateFunction	Sum
DataType	Inherited
DisplayFolder	
MeasureExpression	
Visible	True
Basic	
Description	
FormatString	##
ID	Order Quantity
Name	Reseller Order Quantity
Source	ResellerSales.Order

Item(s) Saved

# Measure Properties

- Update name
- Specify format string
- Hide if necessary
- Assign to a folder optionally
- Select aggregate function

Properties

SalesAmount Measure

Advanced

AggregateFunction	Sum
DataType	Inherited
DisplayFolder	
MeasureExpression	
Visible	True

Basic

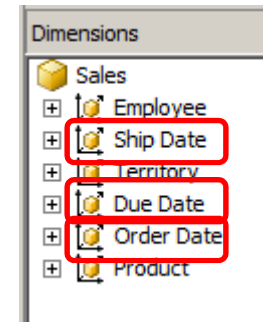
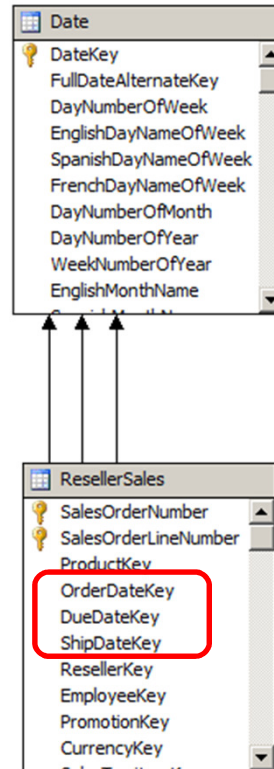
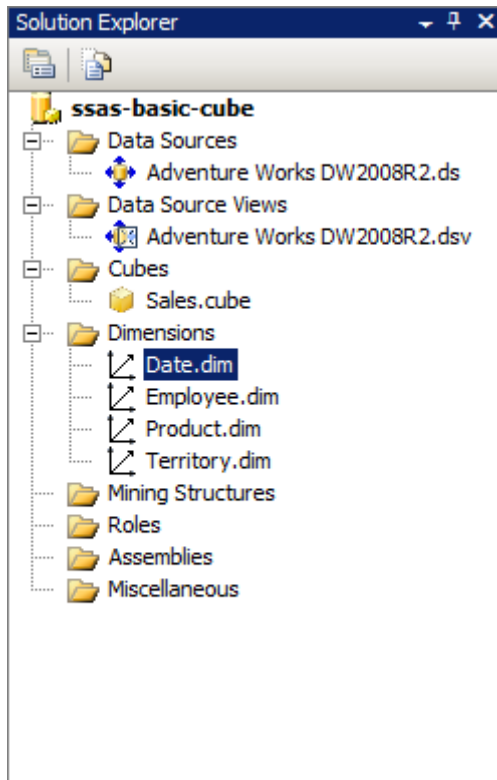
Description	
FormatString	Currency
ID	SalesAmount
Name	SalesAmount
Source	ResellerSales.SalesAmount (Cu)

# Aggregate Functions

Aggregate Function	Parent Member Is...
Sum	Sum of children (default)
Count	Number of non-empty rows in children
Min / Max	Minimum/maximum value across children
Distinct Count	Count of unique values of the member
None	Null
ByAccount	Dependent on account type
AverageOfChildren	Sum of dimensions at next lowest level of date divided by number of periods on level
FirstChild / LastChild	Value of first child (last child) in date dimension, otherwise sum of children
FirstNonEmpty / LastNonEmpty	Value of first child (last child) in date dimension with value, otherwise sum of children



# Role-Playing Dimension

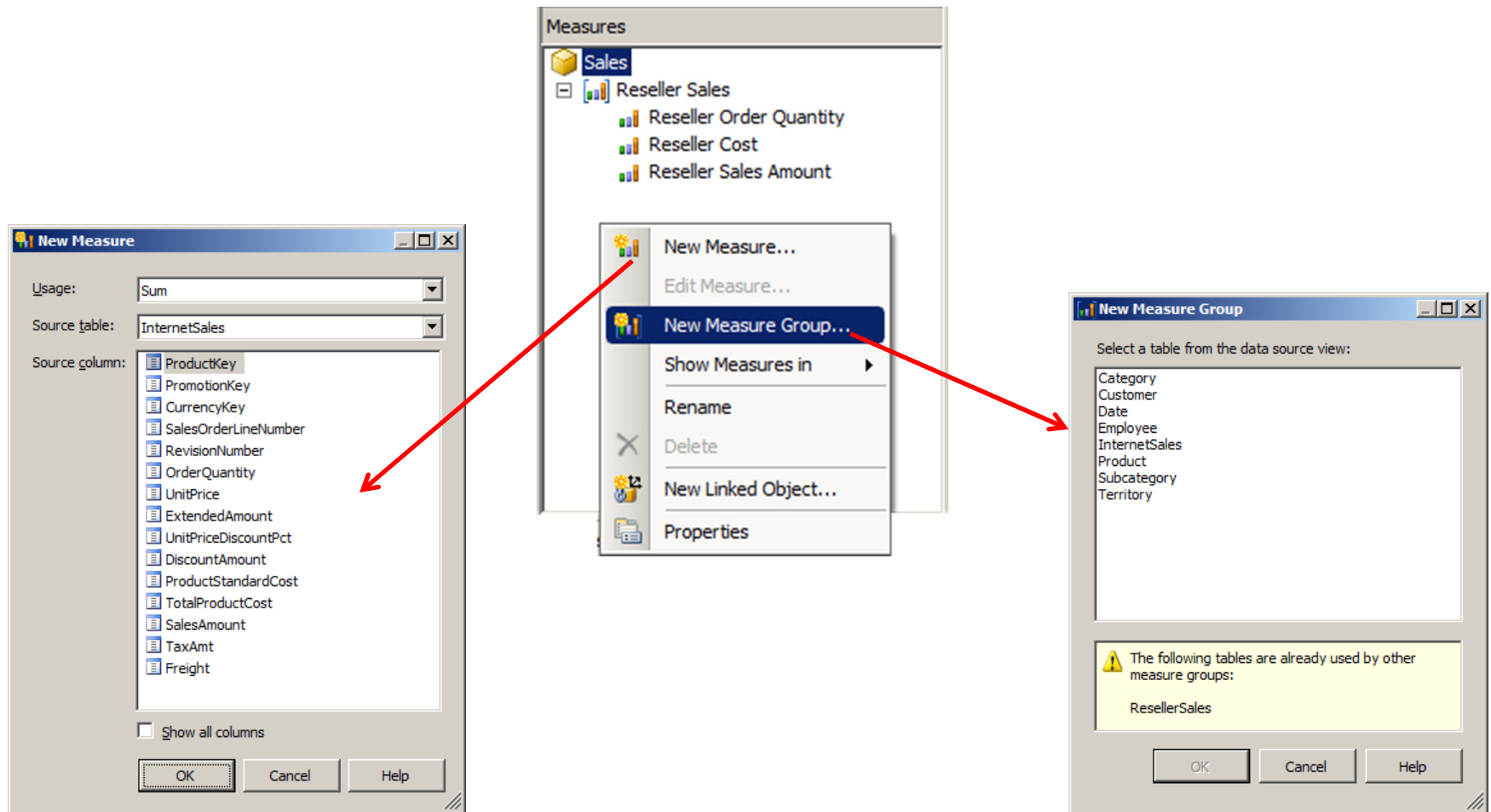


= Role-playing dimensions

One database dimension

+ Multiple relationships

# Additional Measures





# Dimension Usage

Category	Reseller Sales Amount	Internet Sales Amount
Accessories	\$571,297.93	\$29,358,677.22
Bikes	\$66,302,381.56	\$29,358,677.22
Clothing	\$1,777,840.84	\$29,358,677.22
Components	\$11,799,076.66	\$29,358,677.22
Unassigned Product		\$29,358,677.22
Grand Total	\$80,450,596.98	\$29,358,677.22

Repeating values indicate missing relationship in dimension usage

Measure Groups		
Dimensions	Reseller Sales	Internet Sales
Employee	Employee	
Date (Ship Date)	Date	Date
Territory	Region	Region
Date (Due Date)	Date	Date
Date (Order Date)	Date	Date
Product	Product	
Customer		Customer

# Dimension Usage

**Define Relationship**

Select relationship type: Regular

The dimension table is joined directly to the fact table.

Granularity attribute: Product

Dimension table: Product

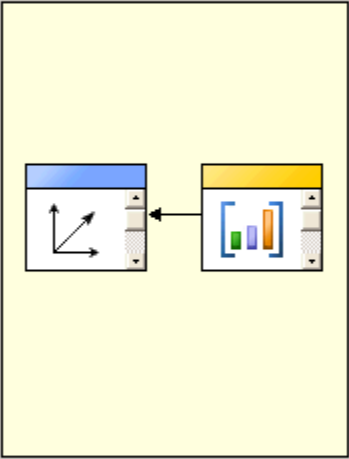
Measure group table: FactInternetSales

Relationship:

Dimension Columns	Measure Group Columns
ProductKey	ProductKey

Advanced...

OK Cancel Help



# Dimension Usage

Measure Groups		
Dimensions	Reseller Sales	Internet Sales
Employee	Employee	
Date (Ship Date)	Date	Date
Territory	Region	Region
Date (Due Date)	Date	Date
Date (Order Date)	Date	Date
Product	Product	Product
Customer		Customer

Category	Reseller Sales Amount	Internet Sales Amount
Accessories	\$571,297.93	\$700,759.96
Bikes	\$66,302,381.56	\$28,318,144.65
Clothing	\$1,777,840.84	\$339,772.61
Components	\$11,799,076.66	
Grand Total	\$80,450,596.98	\$29,358,677.22

# Summary

- **Cube Wizard**
  - Measure groups, measures, dimensions
- **Cube Designer**
  - Measure properties
  - Role-playing dimension
  - Additional measures and measure groups
  - Dimension usage

# References

- **Defining a Cube**
  - [http://msdn.microsoft.com/en-us/library/ms170228\(v=SQL.105\).aspx](http://msdn.microsoft.com/en-us/library/ms170228(v=SQL.105).aspx)
- **Designing Cubes**
  - <http://msdn.microsoft.com/en-us/library/ms175641.aspx>