

<SQL Server Analysis Services Midterm Project>

< SQL Server 2016 Analysis Services Main Project>

<3/29/2023>

Prepared by

<Vijay Laxmi Tyagi>

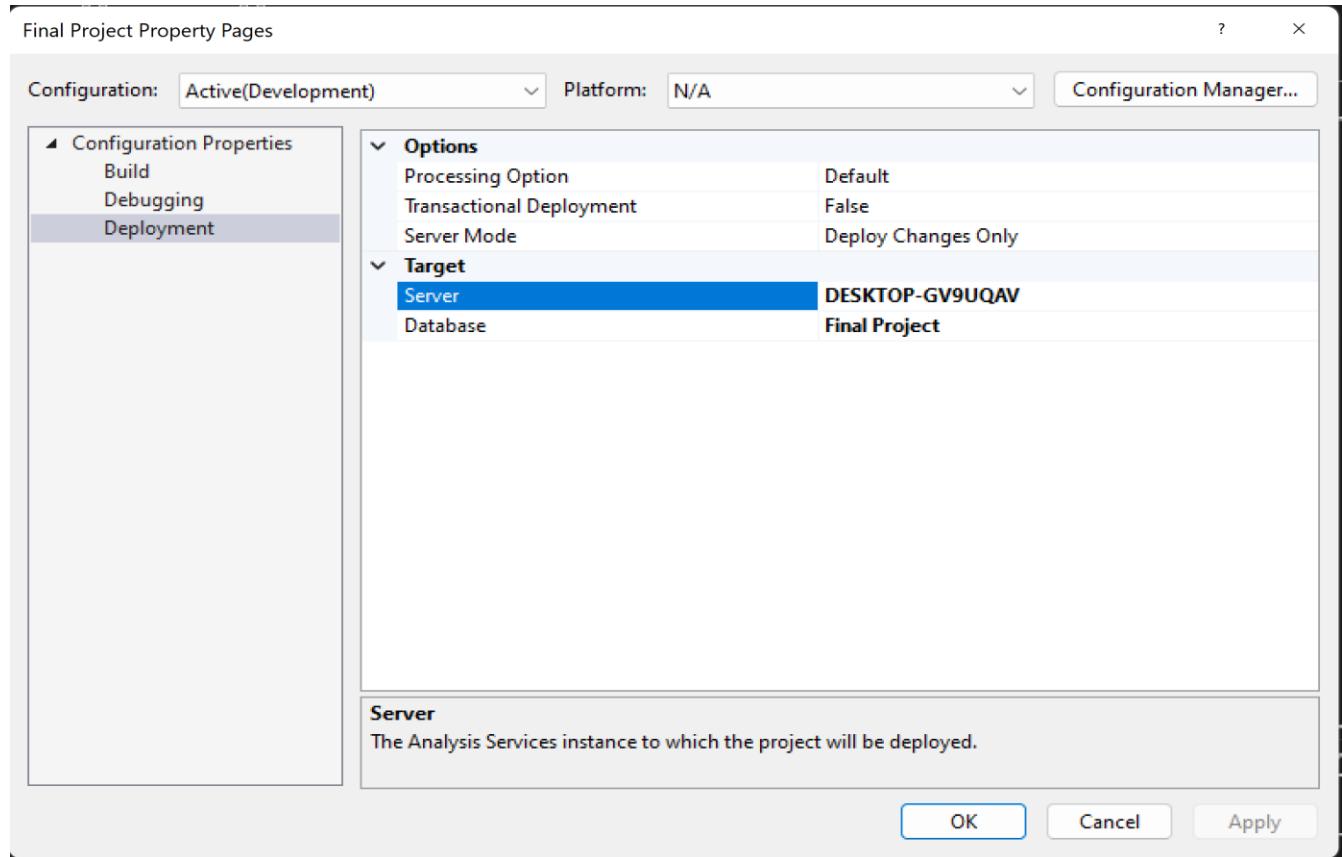
<A01317295>

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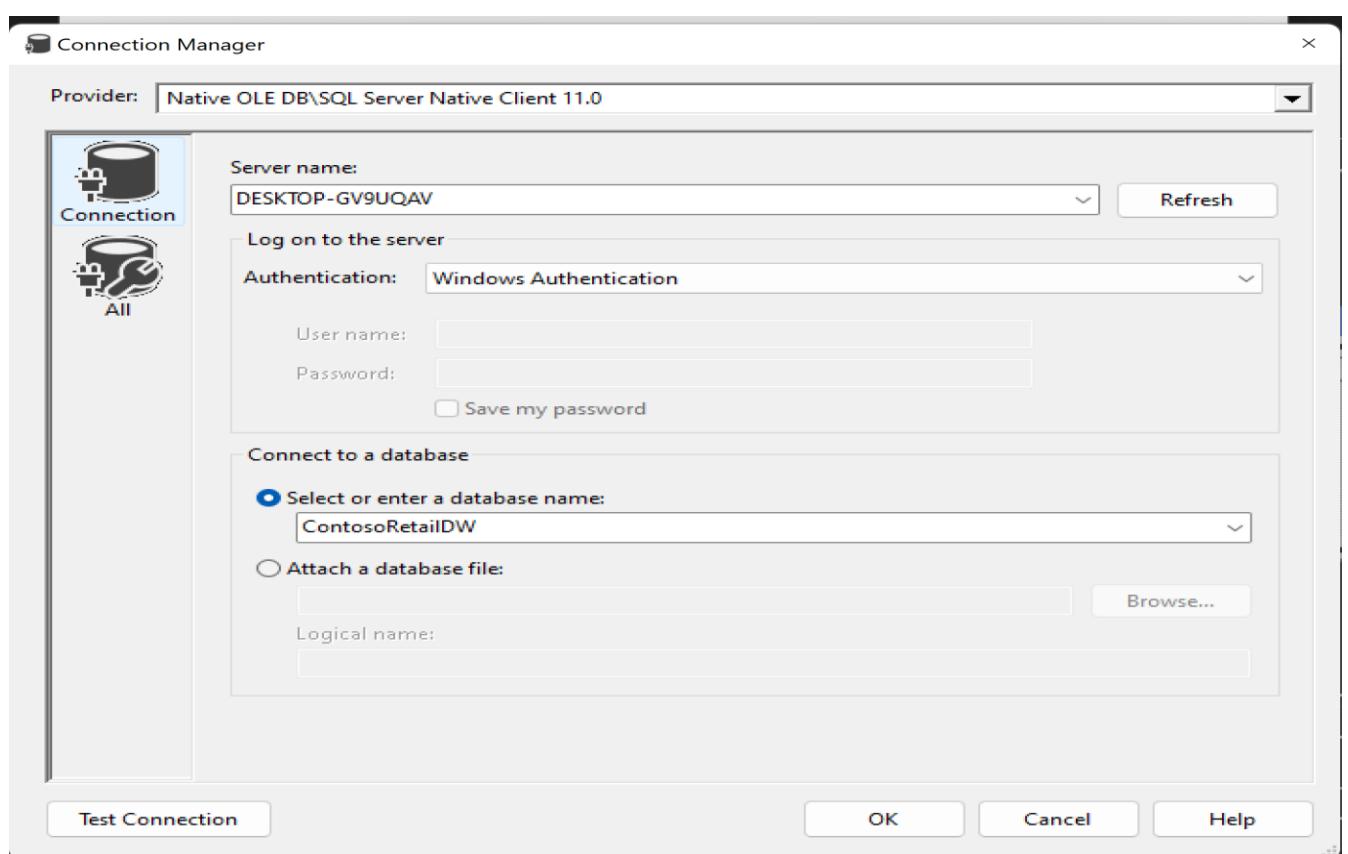
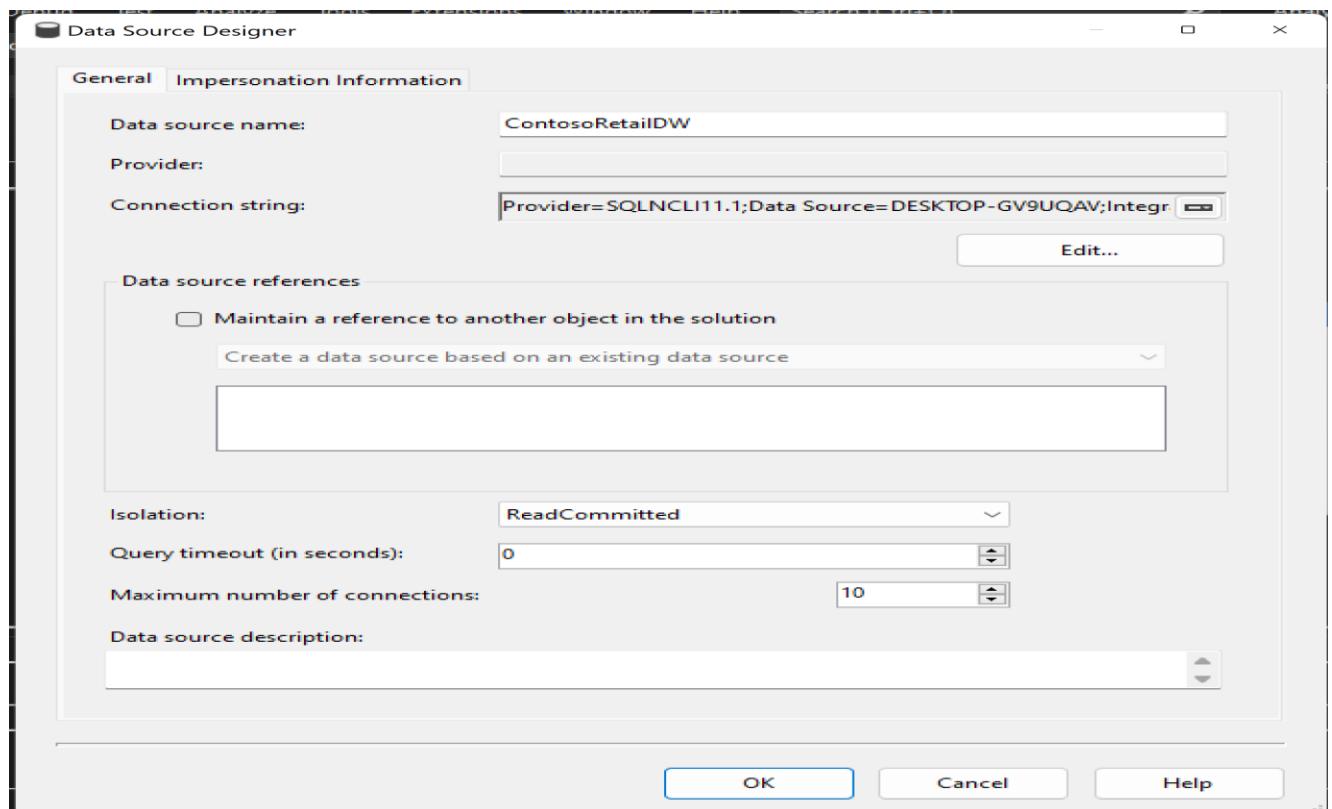
Customize all required Data sources and connections, document all and provide adequate explanation

First step is to change the server name in project's properties to your own server Name



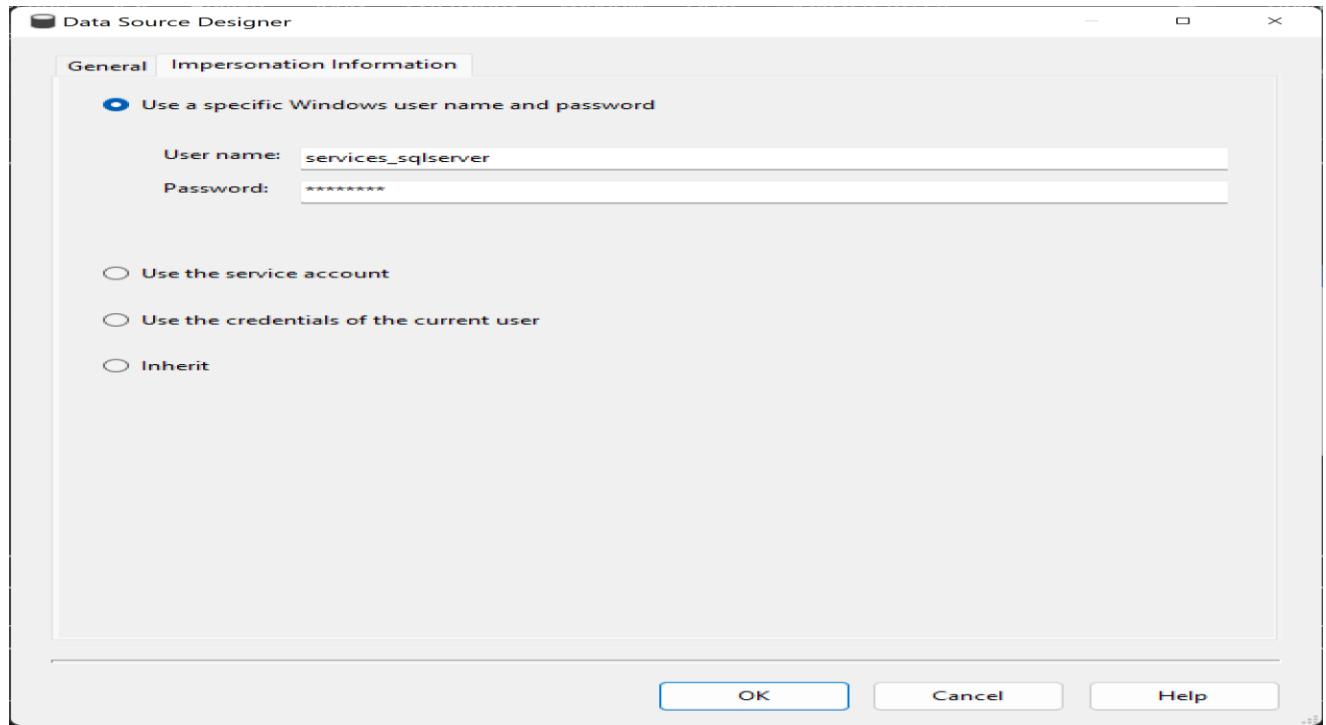
Edit data source designer and set connection string to Native OLE DB/sql server native client 11.0 and set server name and select database.

<SQL Server Analysis Services Main Project>



<SQL Server Analysis Services Main Project>

Click on impersonation information and set it as per your requirement



Data source view id globalcompany in one of the dimensions is wrong so fixed it by replacing it with correct one.

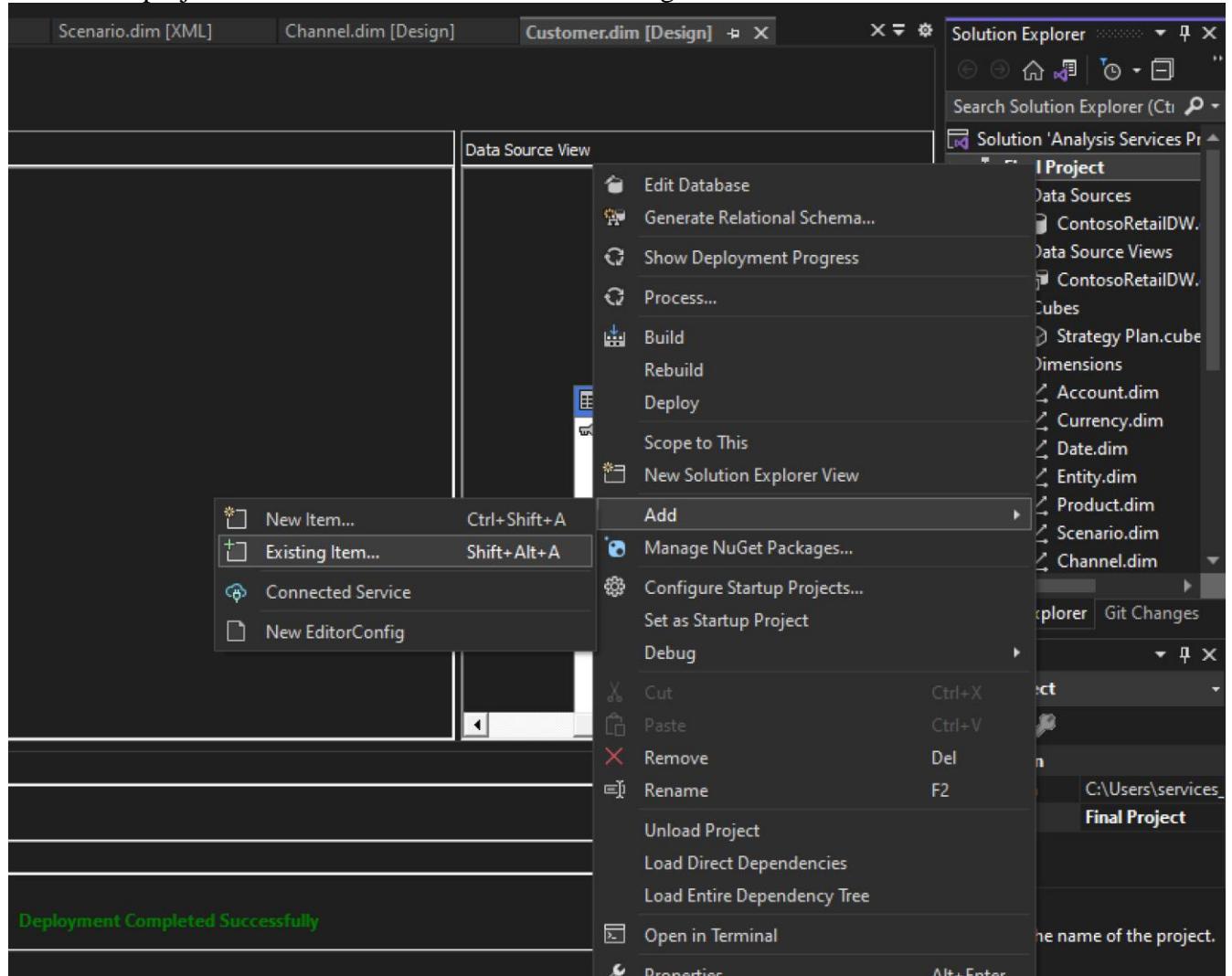
```
</Annotation>
</Annotations>
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<State>Processed</State>
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</Source>
<UnknownMember>Visible</UnknownMember>
<ErrorConfiguration>
  <KeyNotFound>ReportAndStop</KeyNotFound>
  <NullKeyNotAllowed>ReportAndStop</NullKeyNotAllowed>
</ErrorConfiguration>
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<Language>1033</Language>
```

Add following Dimensions from provided dim files (customize files so that proper data source is used)

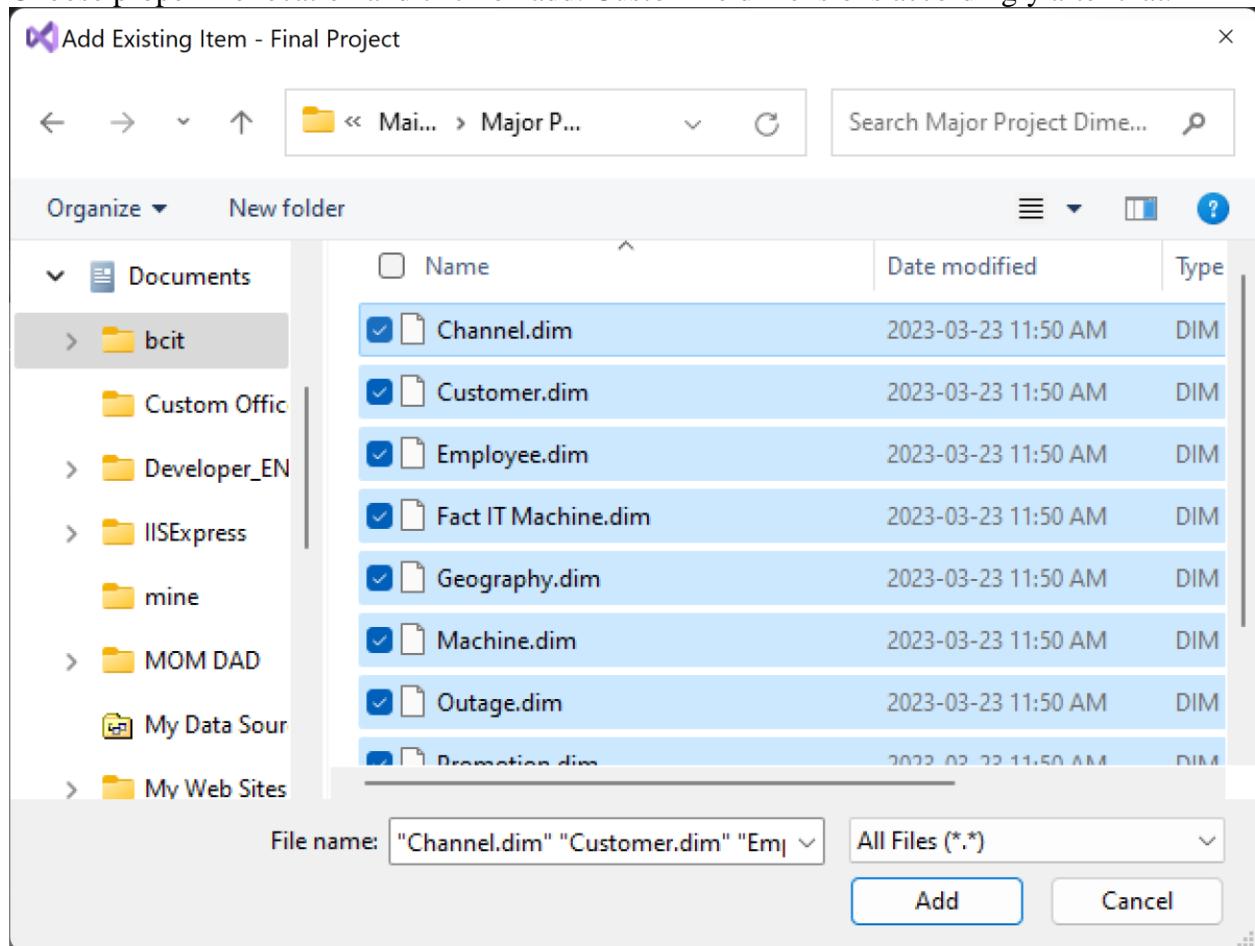
There are two ways to create dimensions in the project. One is to add dimensions provided to us and then customize those as per our requirement. Second way is to create dimension on our own.

Dimension From provided dim files:-

Right Click on the project name and then select add and existing items under that .

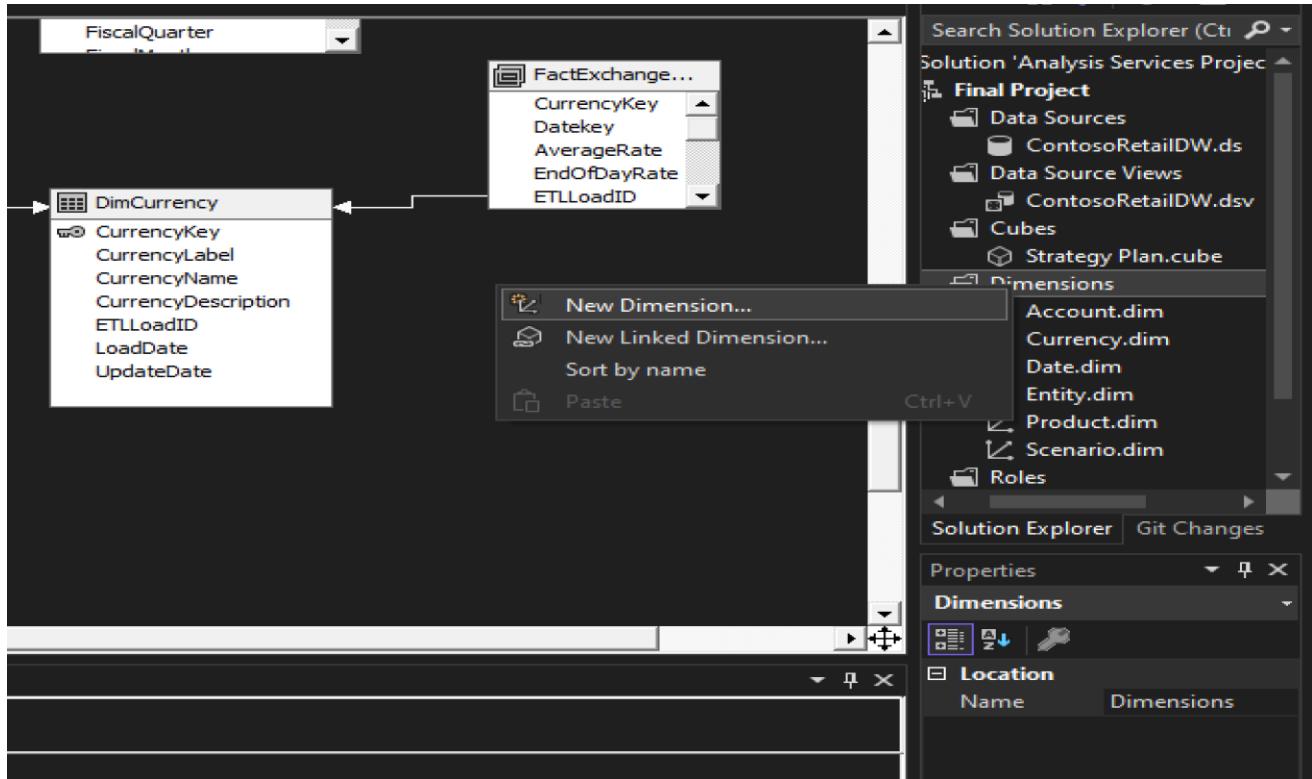


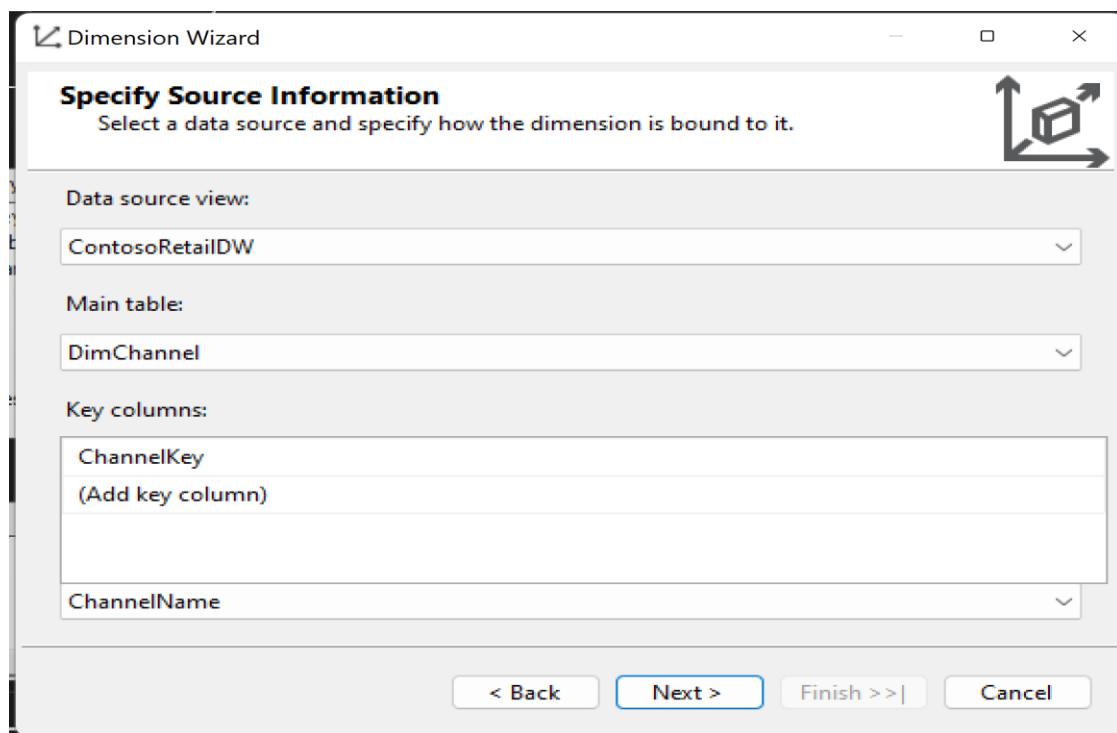
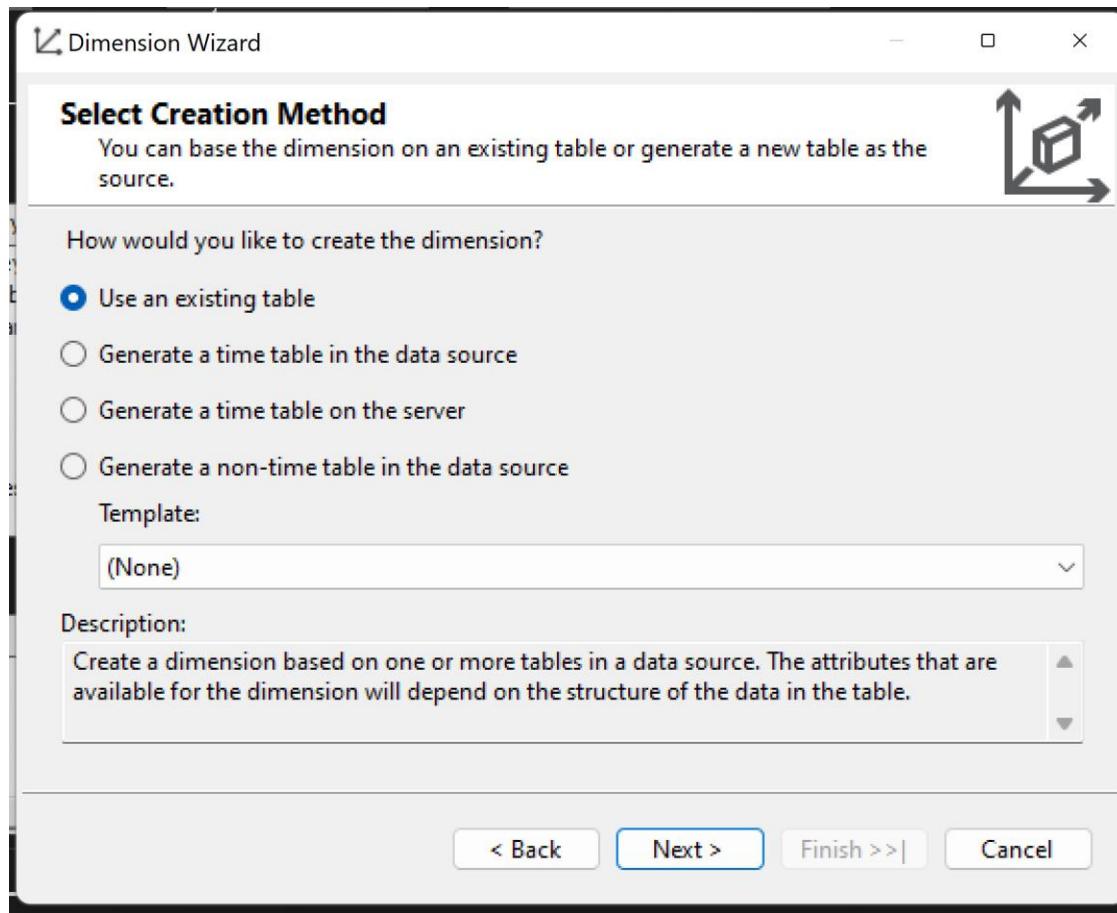
Choose proper file location and click on add. Customize dimensions accordingly after that.

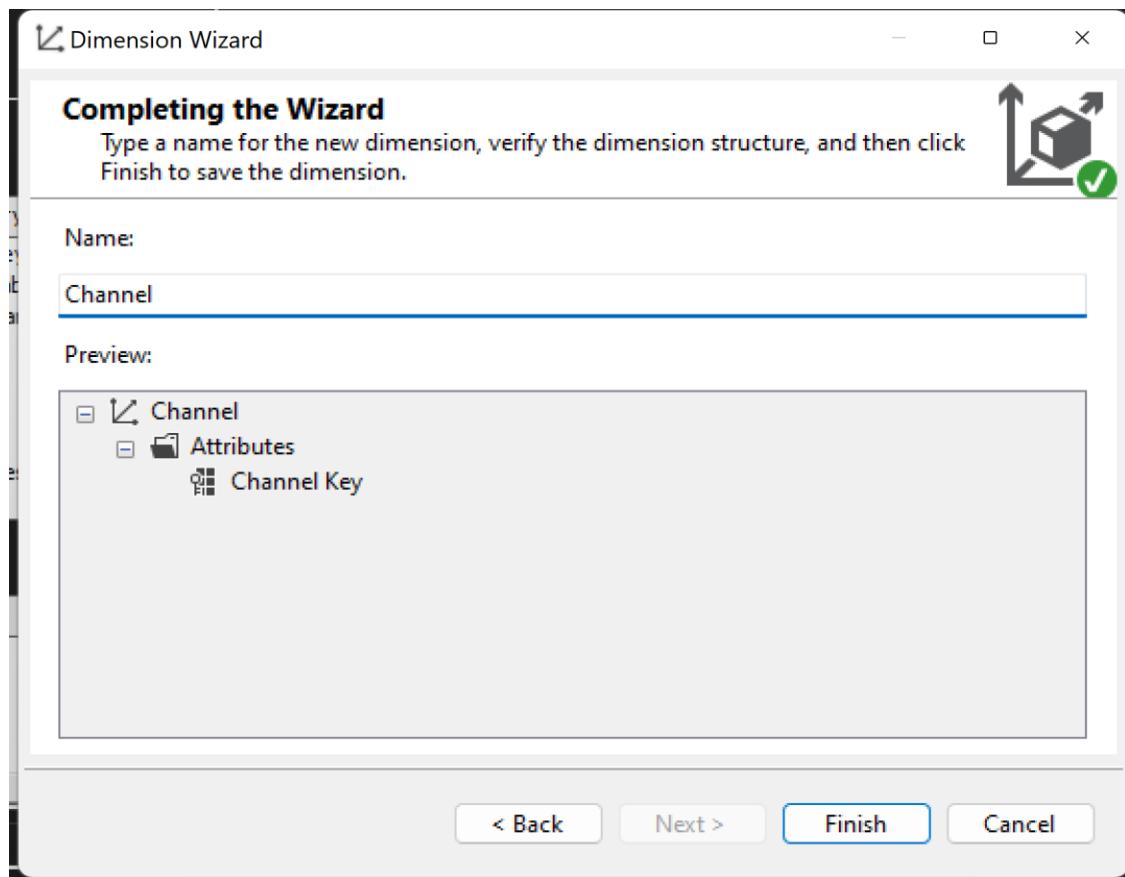


Create Dimensions individually

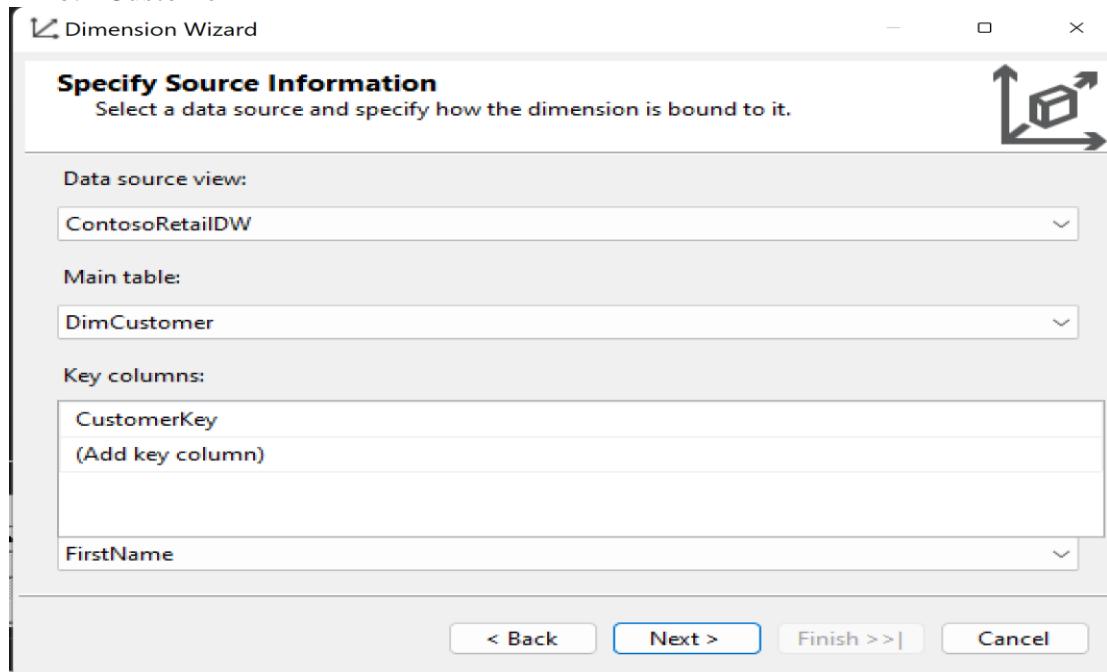
a. Channel

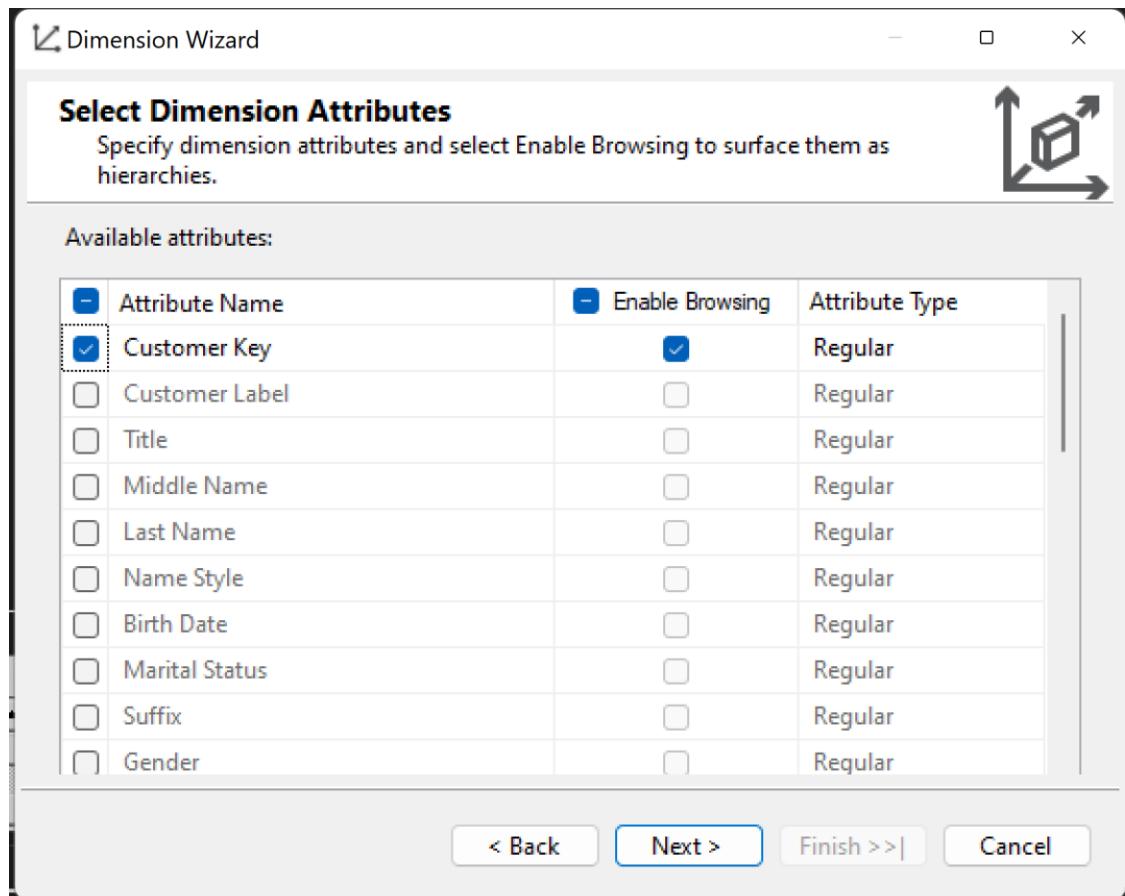


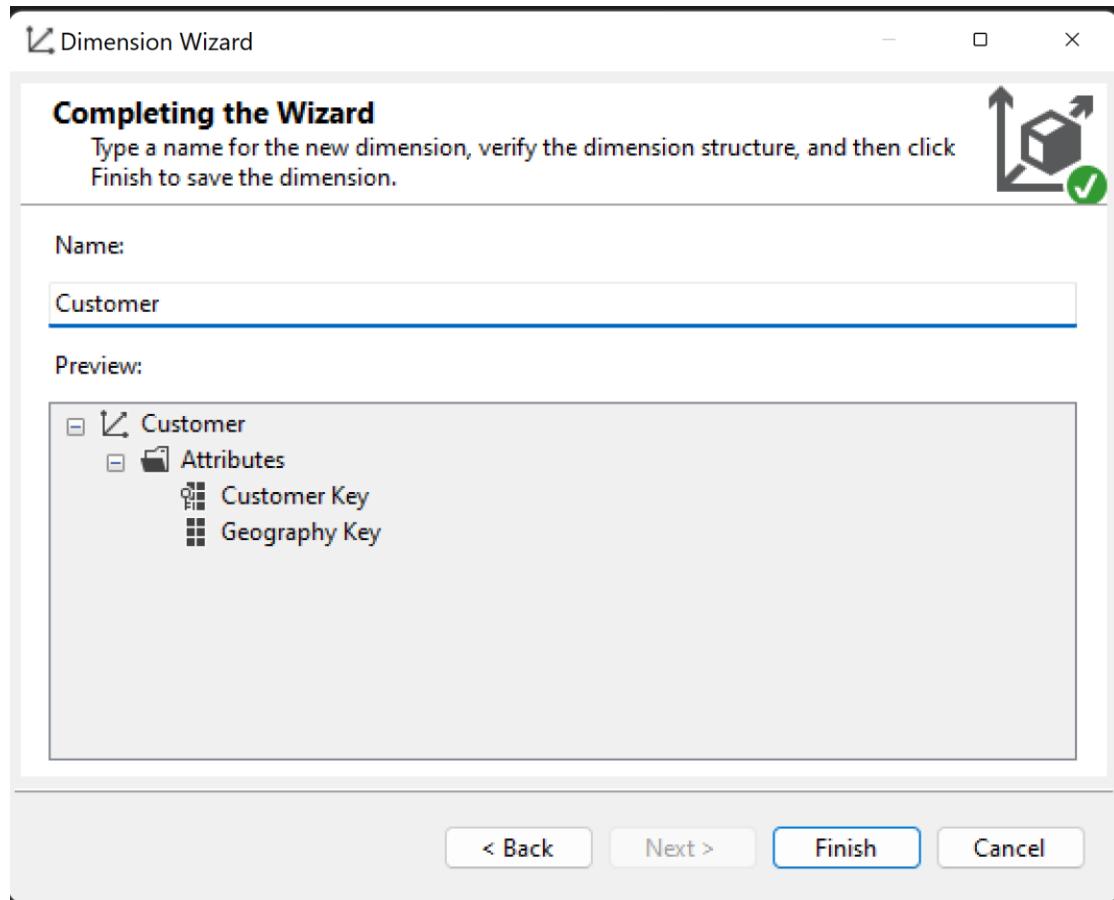




b. Customer

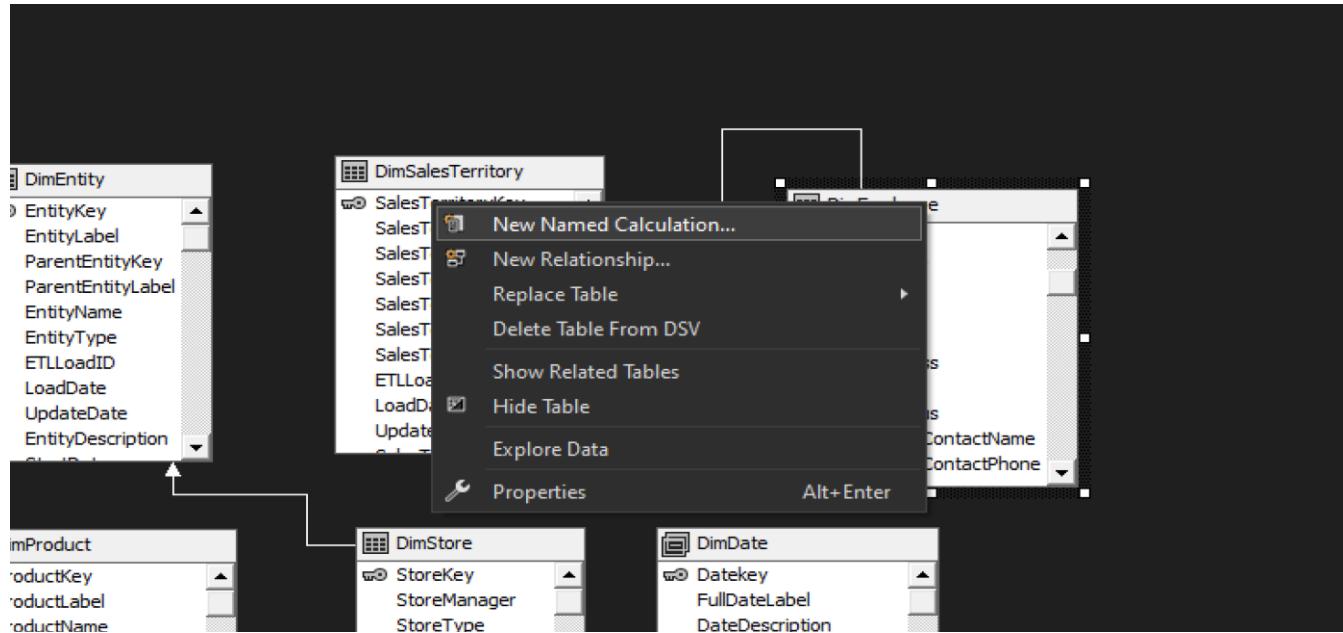


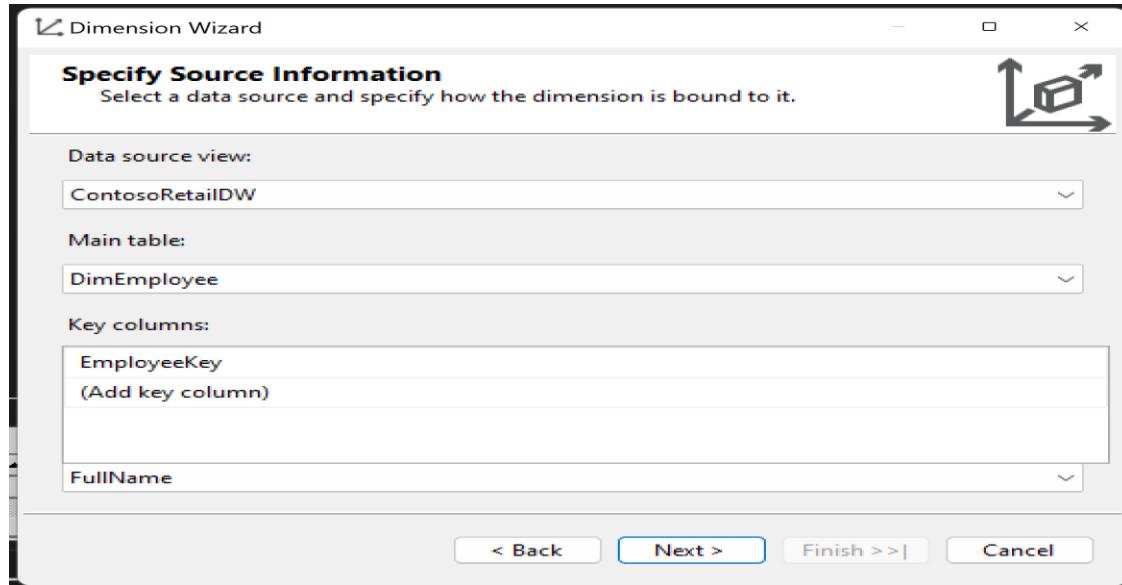
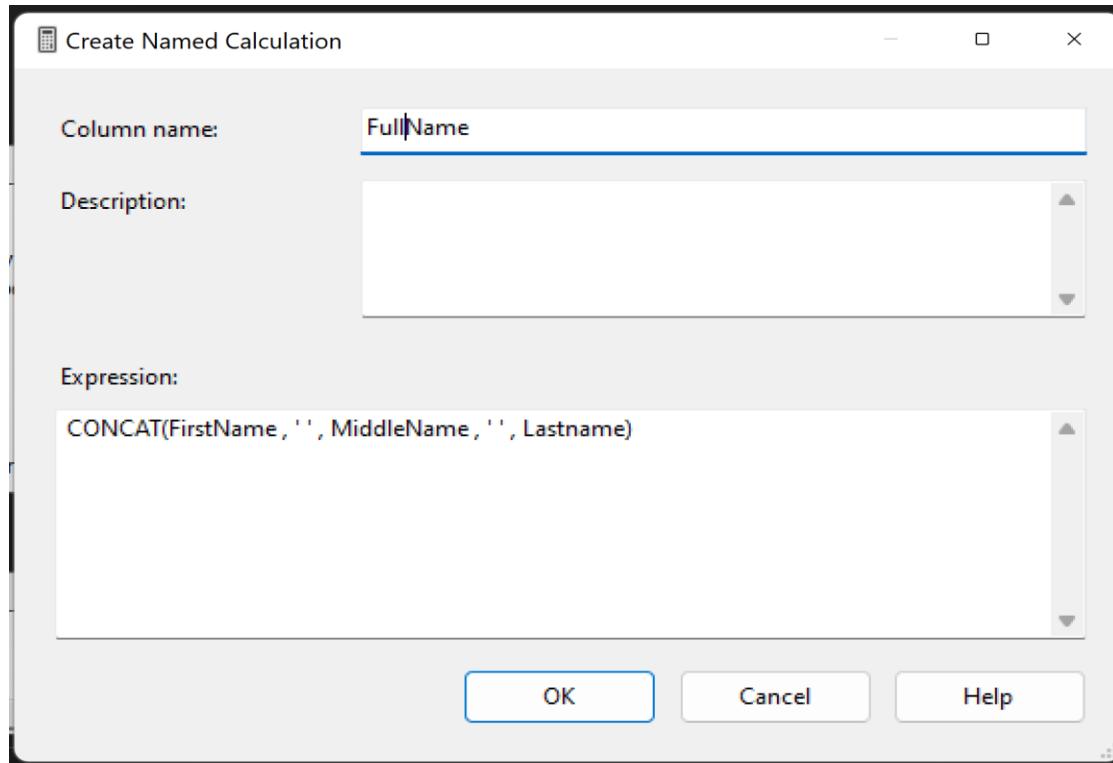




Employee

Add a new named calculated column in employee table Full name.





Dimension Wizard

Select Dimension Attributes

Specify dimension attributes and select Enable Browsing to surface them as hierarchies.

Available attributes:

| Attribute Name | Enable Browsing | Attribute Type |
|---------------------|-------------------------------------|----------------|
| Employee Key | <input checked="" type="checkbox"/> | Regular |
| Parent Employee Key | <input checked="" type="checkbox"/> | Regular |
| First Name | <input type="checkbox"/> | Regular |
| Last Name | <input type="checkbox"/> | Regular |
| Middle Name | <input type="checkbox"/> | Regular |
| Title | <input type="checkbox"/> | Regular |
| Hire Date | <input type="checkbox"/> | Regular |
| Birth Date | <input type="checkbox"/> | Regular |
| Email Address | <input type="checkbox"/> | Regular |
| Phone | <input type="checkbox"/> | Regular |

< Back Next > | Finish >> | Cancel

Dimension Wizard

Completing the Wizard

Type a name for the new dimension, verify the dimension structure, and then click Finish to save the dimension.

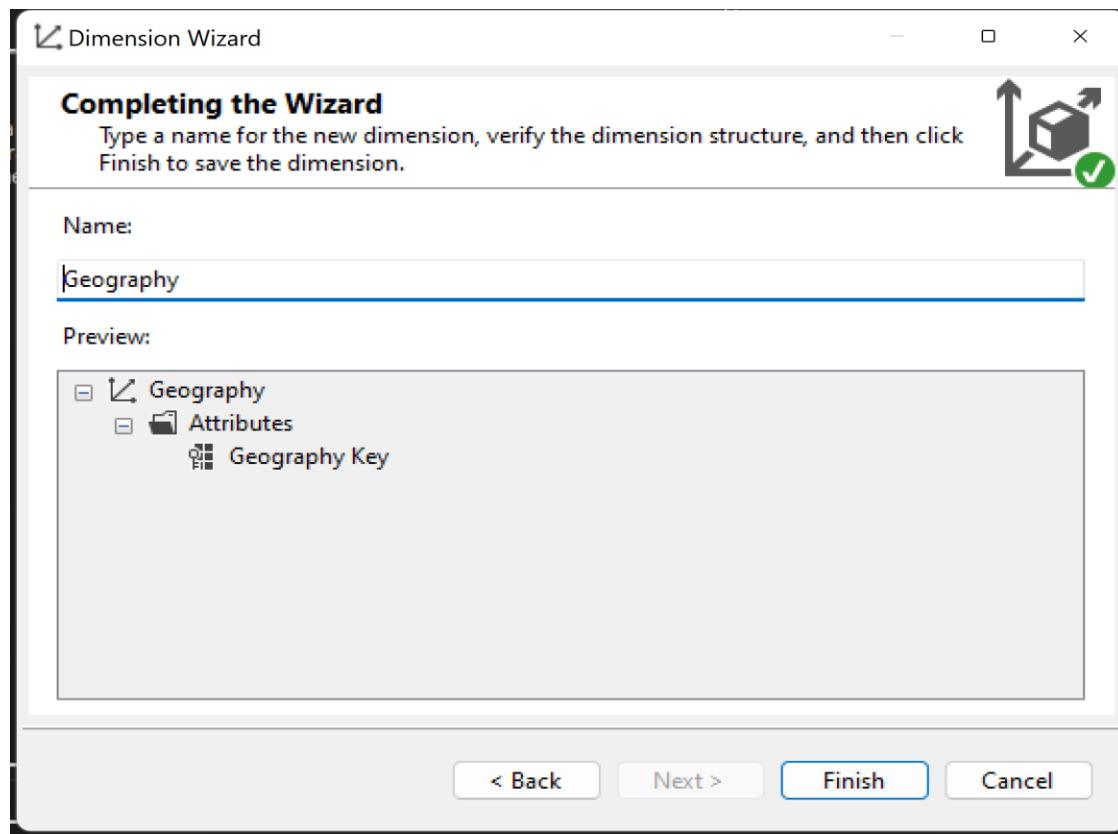
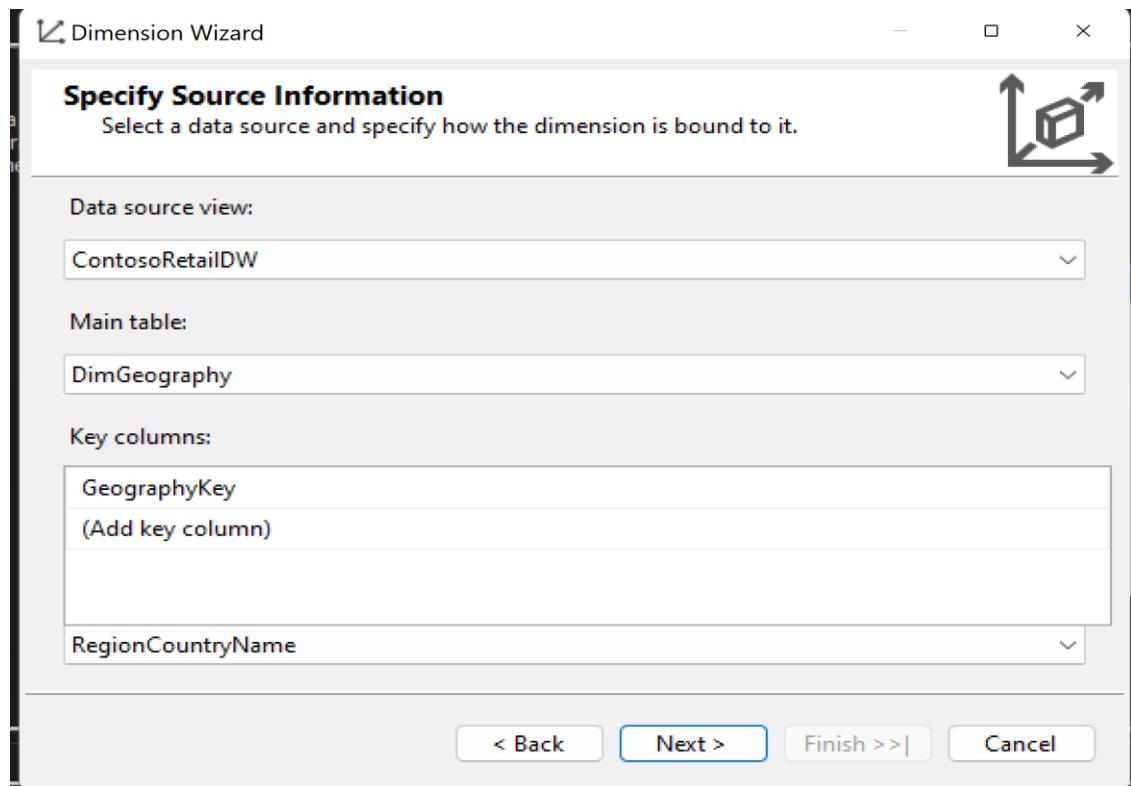
Name:

Preview:

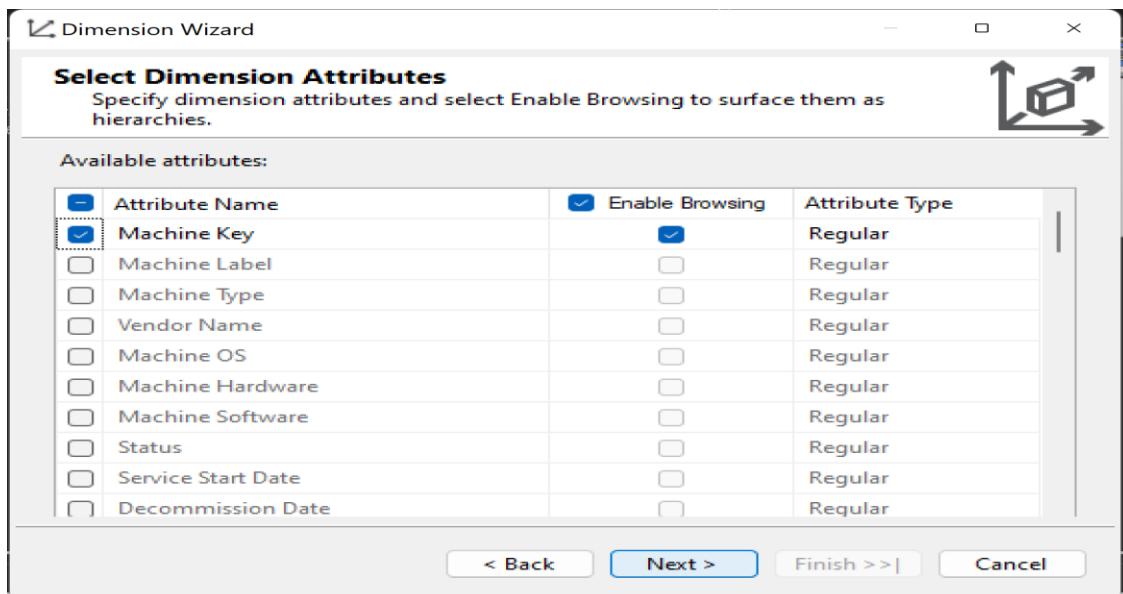
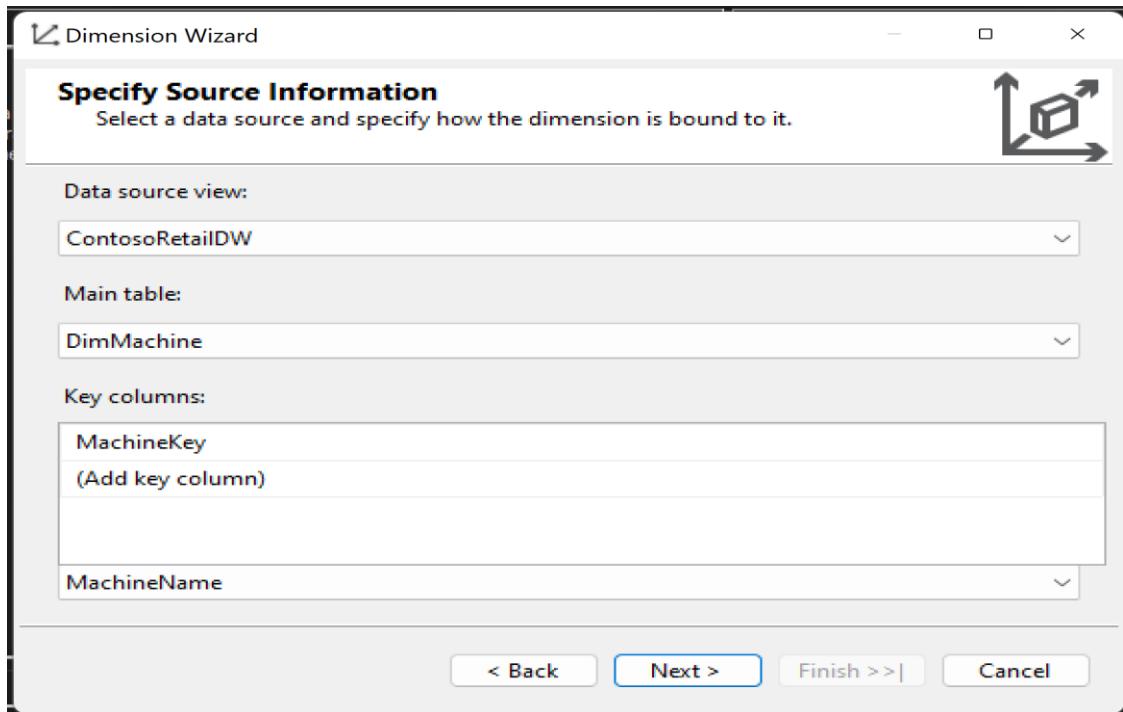
- Employee
 - Attributes
 - Employee Key
 - Parent Employee Key

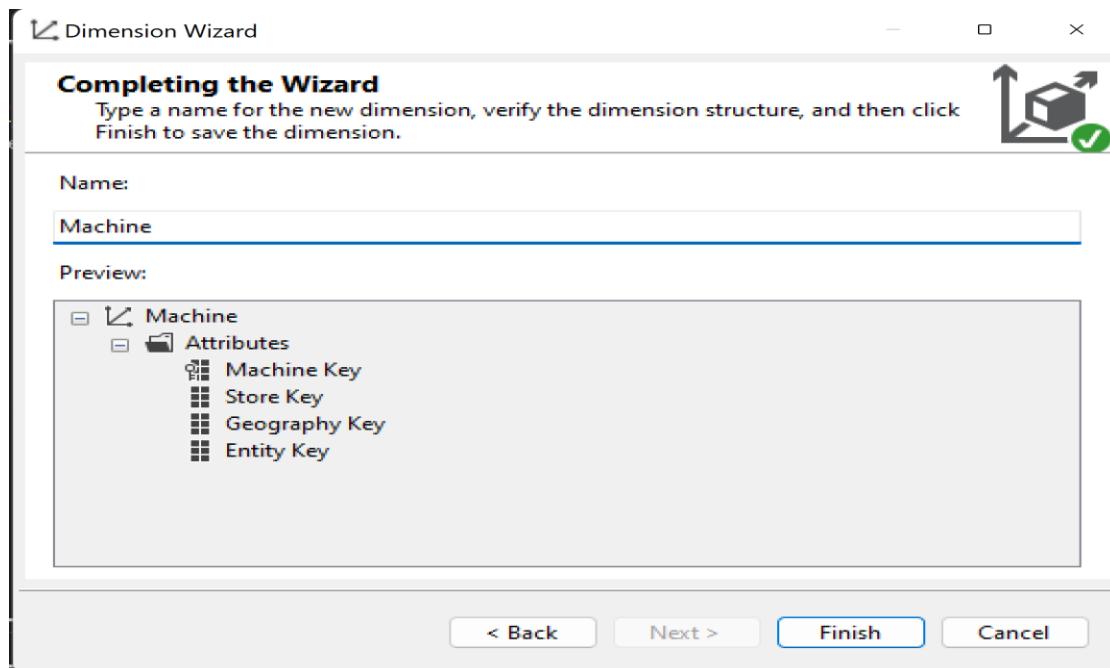
< Back Next > | Finish | Cancel

Geography

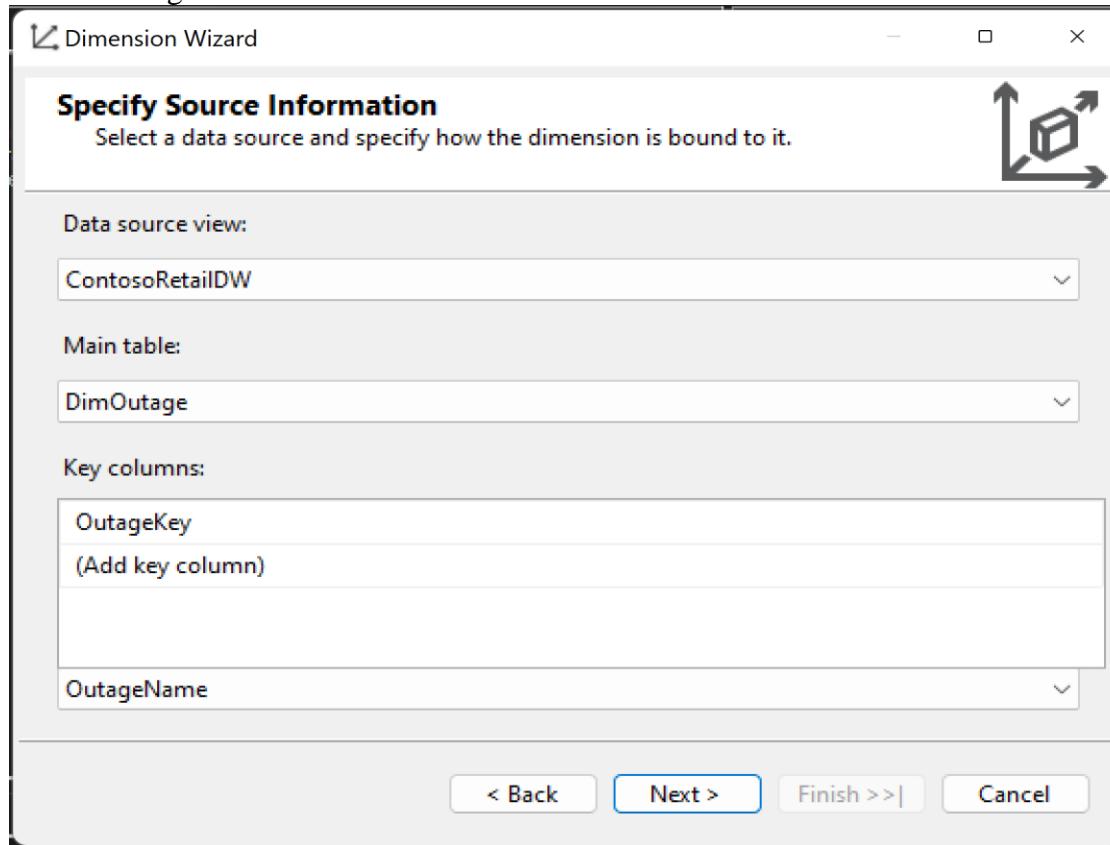


c. Machine





d. Outage



Dimension Wizard

Select Dimension Attributes

Specify dimension attributes and select Enable Browsing to surface them as hierarchies.



Available attributes:

| Attribute Name | Enable Browsing | Attribute Type |
|--|-------------------------------------|----------------|
| <input checked="" type="checkbox"/> Outage Key | <input checked="" type="checkbox"/> | Regular |
| <input type="checkbox"/> Outage Label | <input type="checkbox"/> | Regular |
| <input type="checkbox"/> Outage Type | <input type="checkbox"/> | Regular |
| <input type="checkbox"/> Outage Sub Type | <input type="checkbox"/> | Regular |
| <input type="checkbox"/> ETL Load ID | <input type="checkbox"/> | Regular |
| <input type="checkbox"/> Load Date | <input type="checkbox"/> | Regular |
| <input type="checkbox"/> Update Date | <input type="checkbox"/> | Regular |
| <input type="checkbox"/> Outage Description | <input type="checkbox"/> | Regular |
| <input type="checkbox"/> Outage Type Description | <input type="checkbox"/> | Regular |

< Back Next >| Finish >> Cancel

Dimension Wizard

Completing the Wizard

Type a name for the new dimension, verify the dimension structure, and then click Finish to save the dimension.



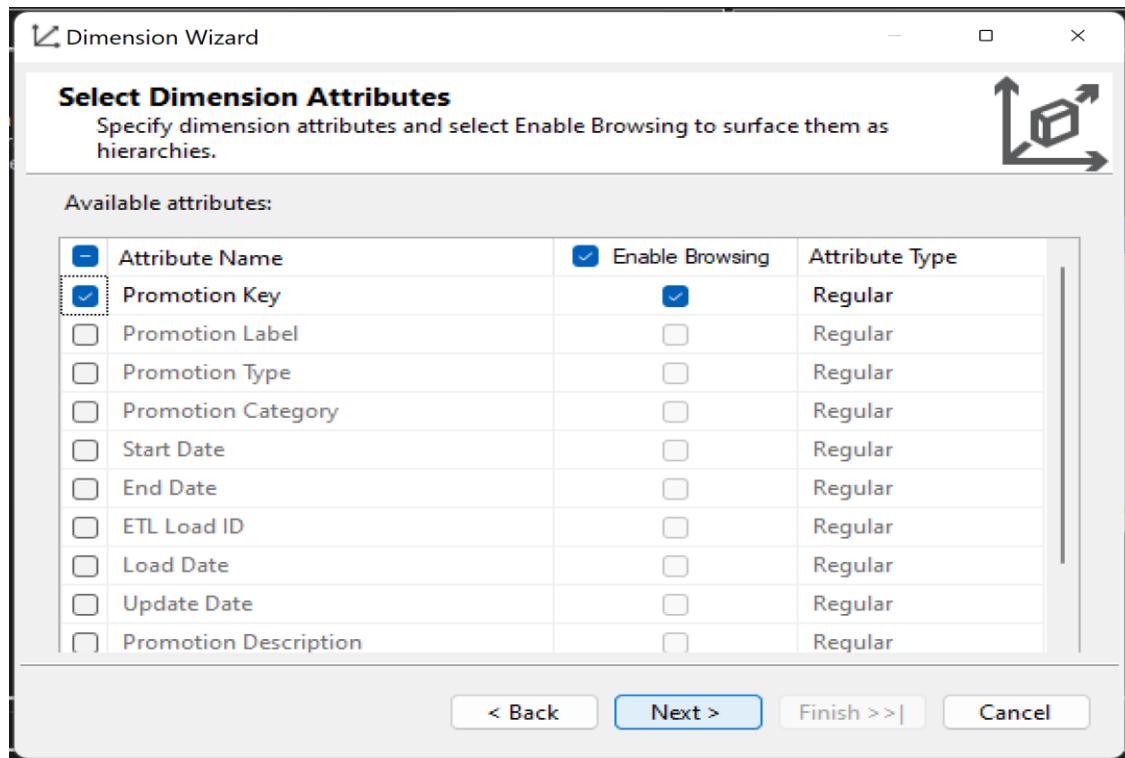
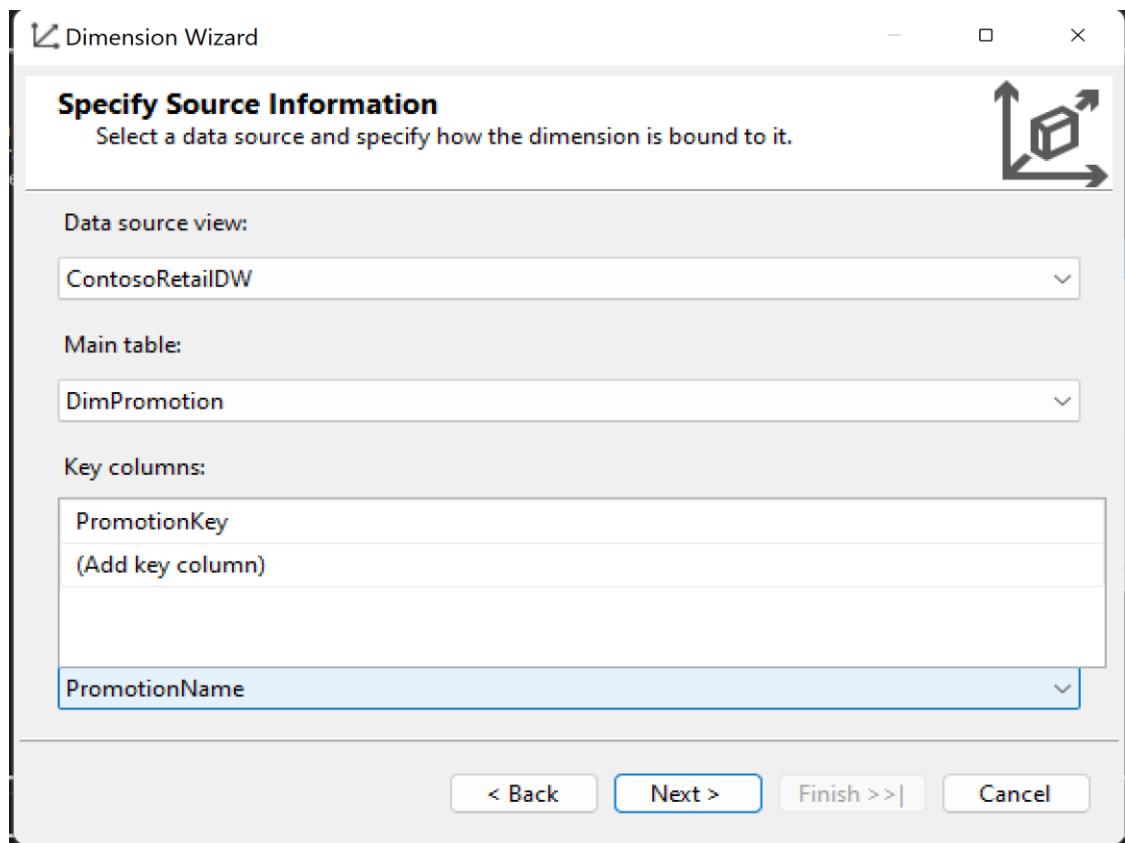
Name:
Outage

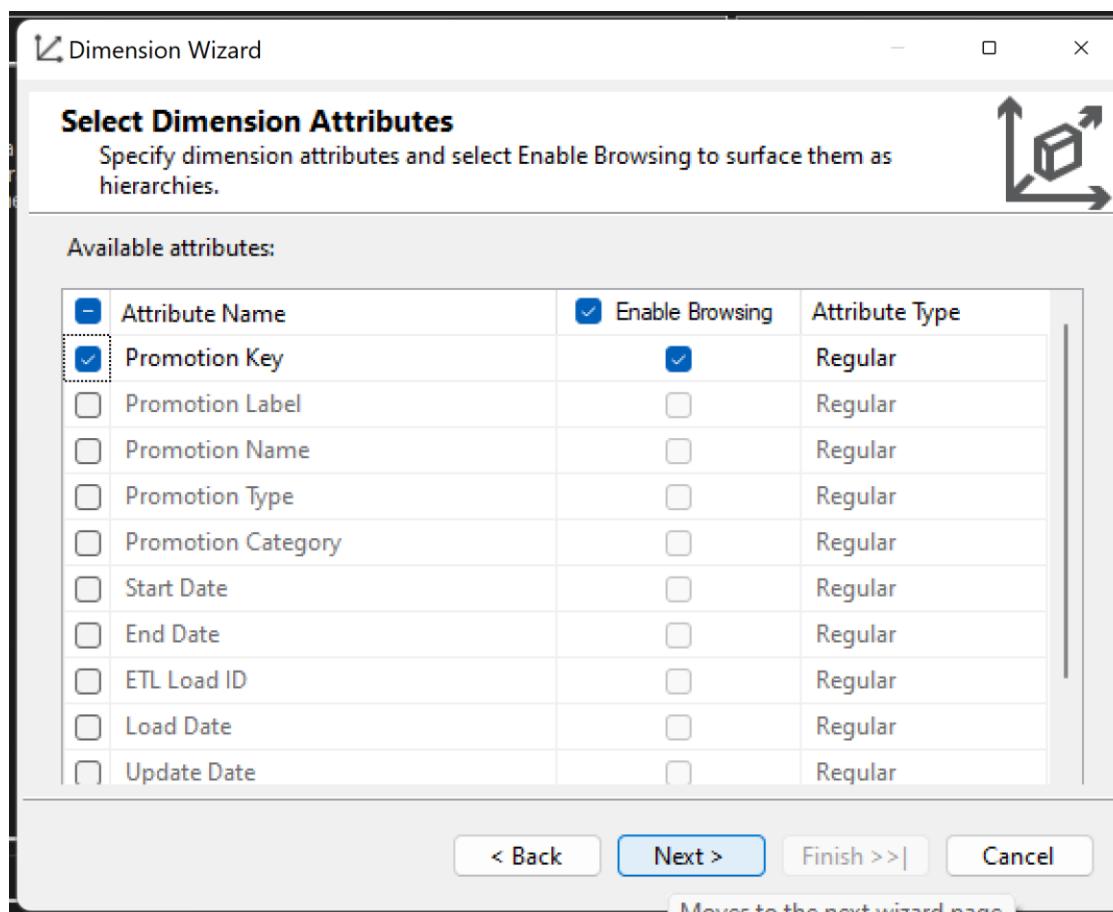
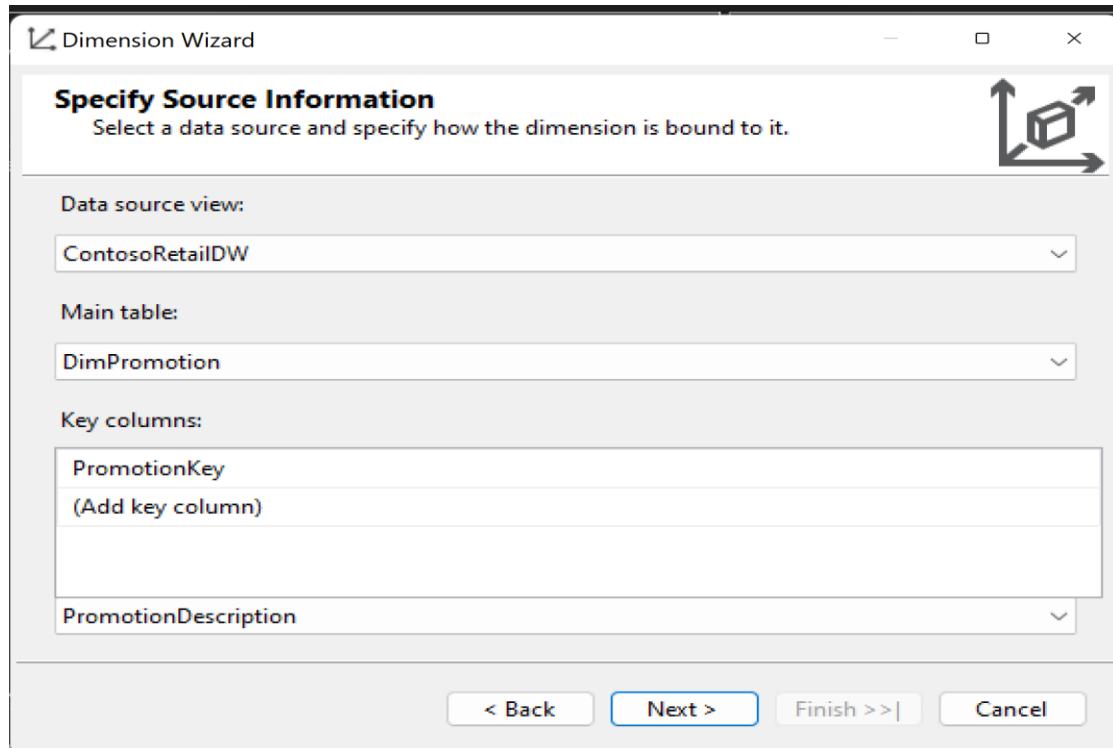
Preview:

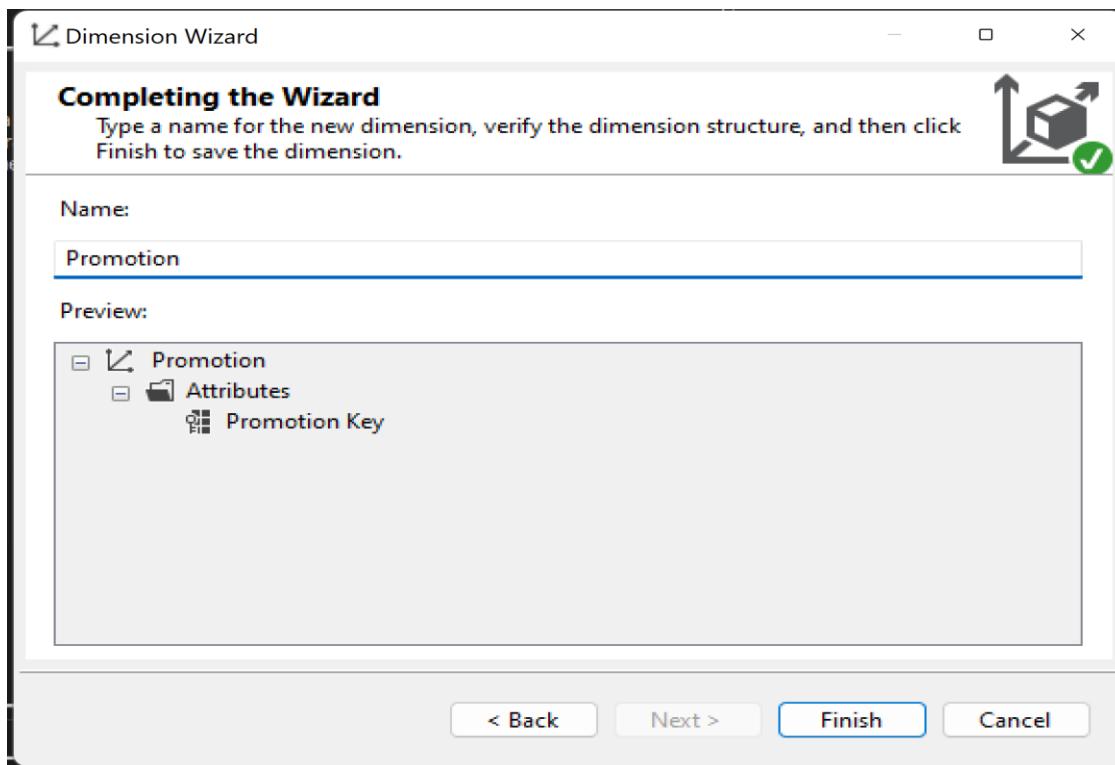
- Outage
 - Attributes
 - Outage Key

< Back Next > Finish >> Cancel

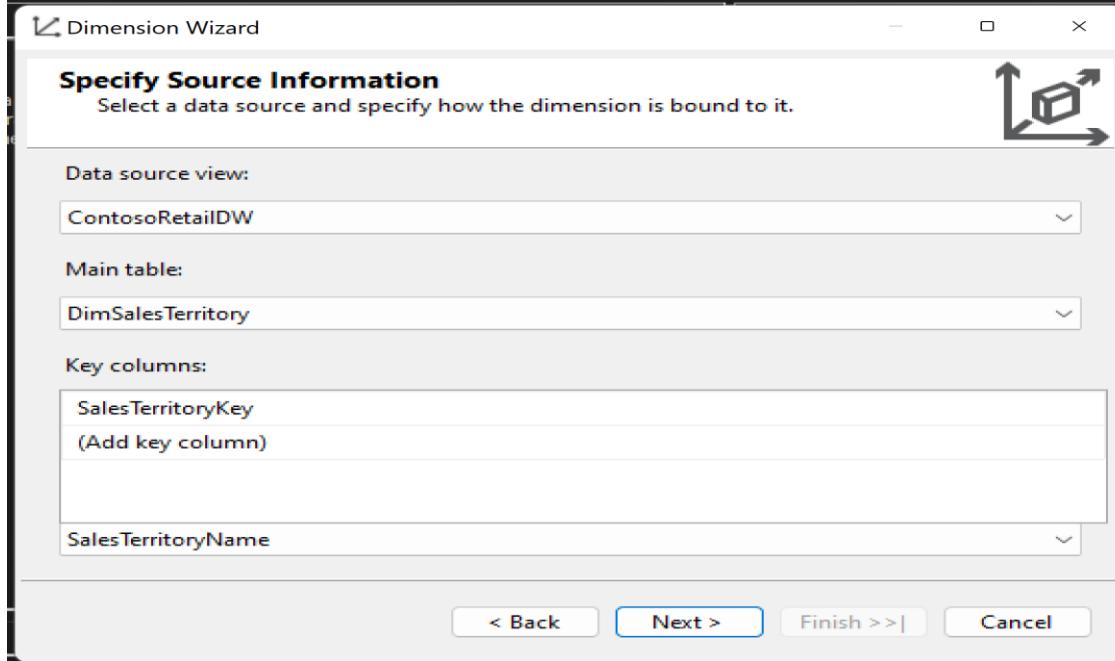
e. Promotion







f. Sales Territory



Dimension Wizard

Select Dimension Attributes

Specify dimension attributes and select Enable Browsing to surface them as hierarchies.



Available attributes:

| Attribute Name | Enable Browsing | Attribute Type |
|-------------------------|-------------------------------------|----------------|
| Sales Territory Key | <input checked="" type="checkbox"/> | Regular |
| Sales Territory Label | <input type="checkbox"/> | Regular |
| Sales Territory Region | <input type="checkbox"/> | Regular |
| Sales Territory Country | <input type="checkbox"/> | Regular |
| Sales Territory Group | <input type="checkbox"/> | Regular |
| Sales Territory Level | <input type="checkbox"/> | Regular |
| ETL Load ID | <input type="checkbox"/> | Regular |
| Load Date | <input type="checkbox"/> | Regular |
| Update Date | <input type="checkbox"/> | Regular |
| Start Date | <input type="checkbox"/> | Regular |

< Back Next >| Finish >>| Cancel

Moves to the next wizard page

Dimension Wizard

Completing the Wizard

Type a name for the new dimension, verify the dimension structure, and then click Finish to save the dimension.



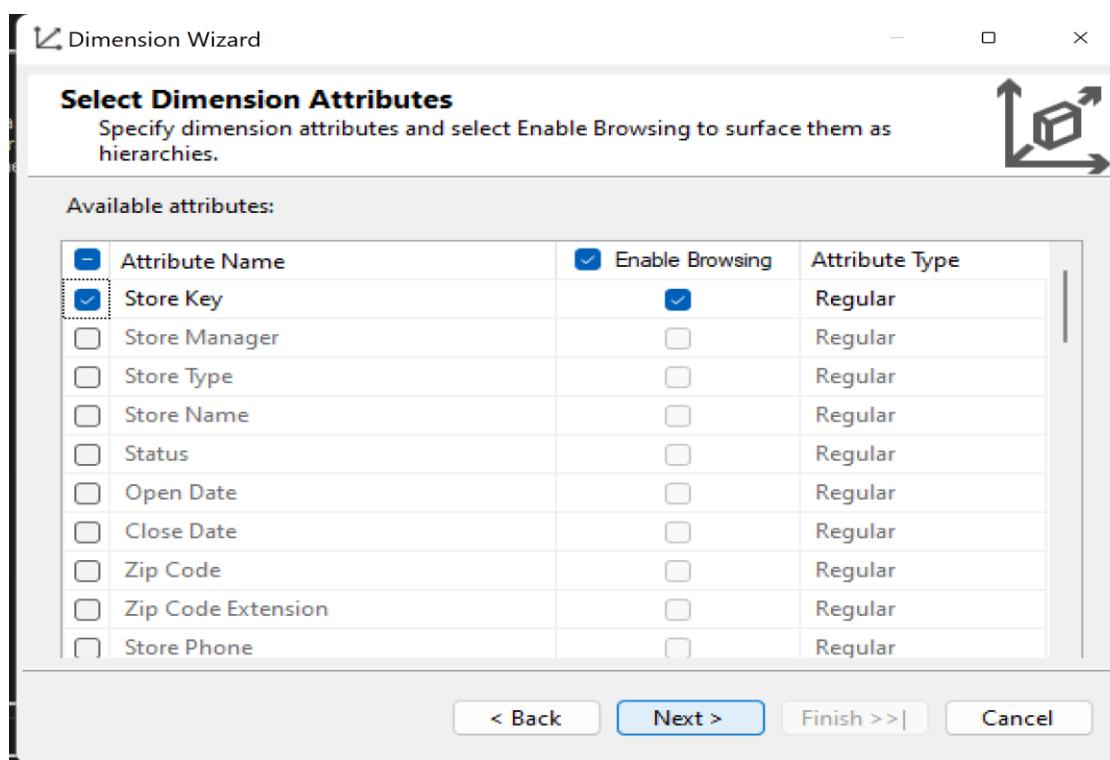
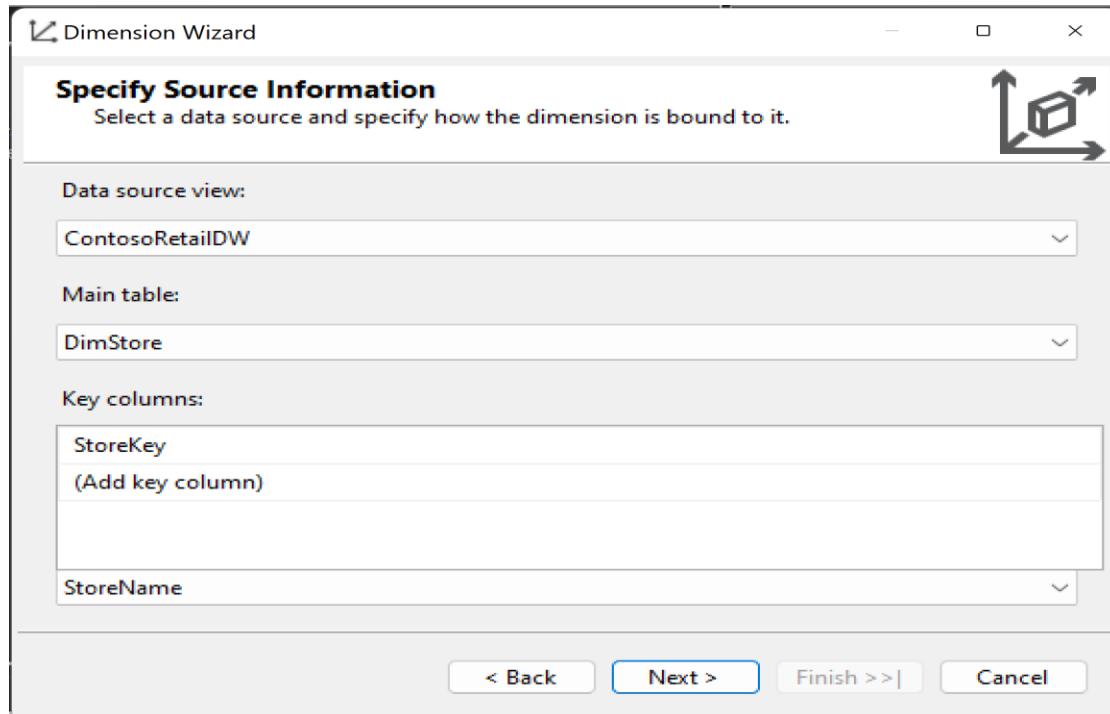
Name:

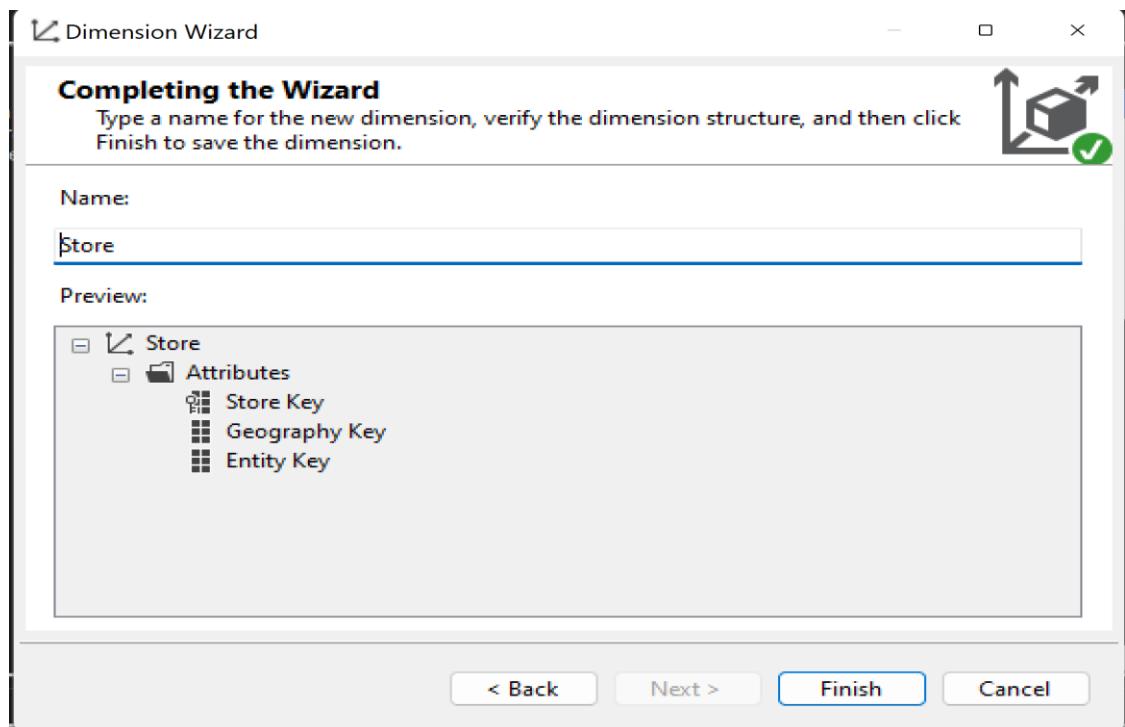
Preview:

- Sales Territory
 - Attributes
 - Sales Territory Key
 - Geography Key
 - Employee Key

< Back Next >| Finish >>| Cancel

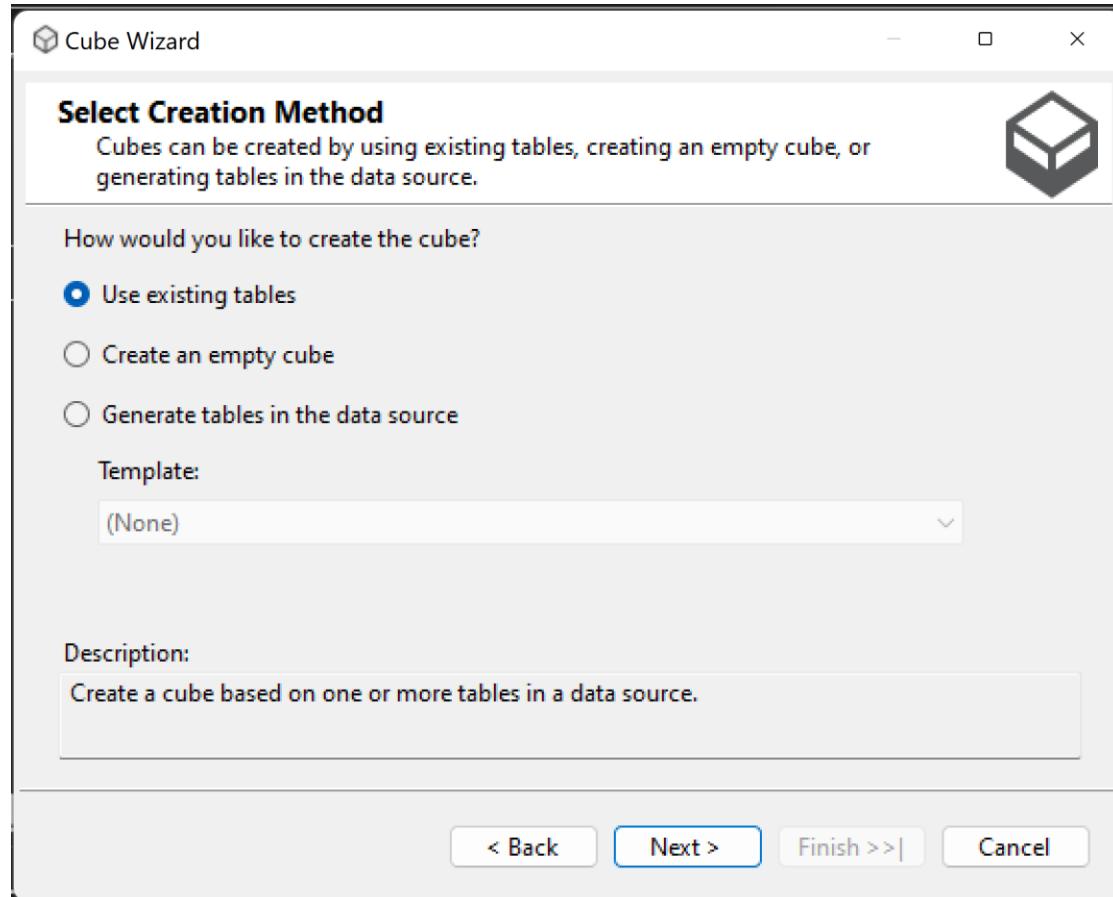
Store

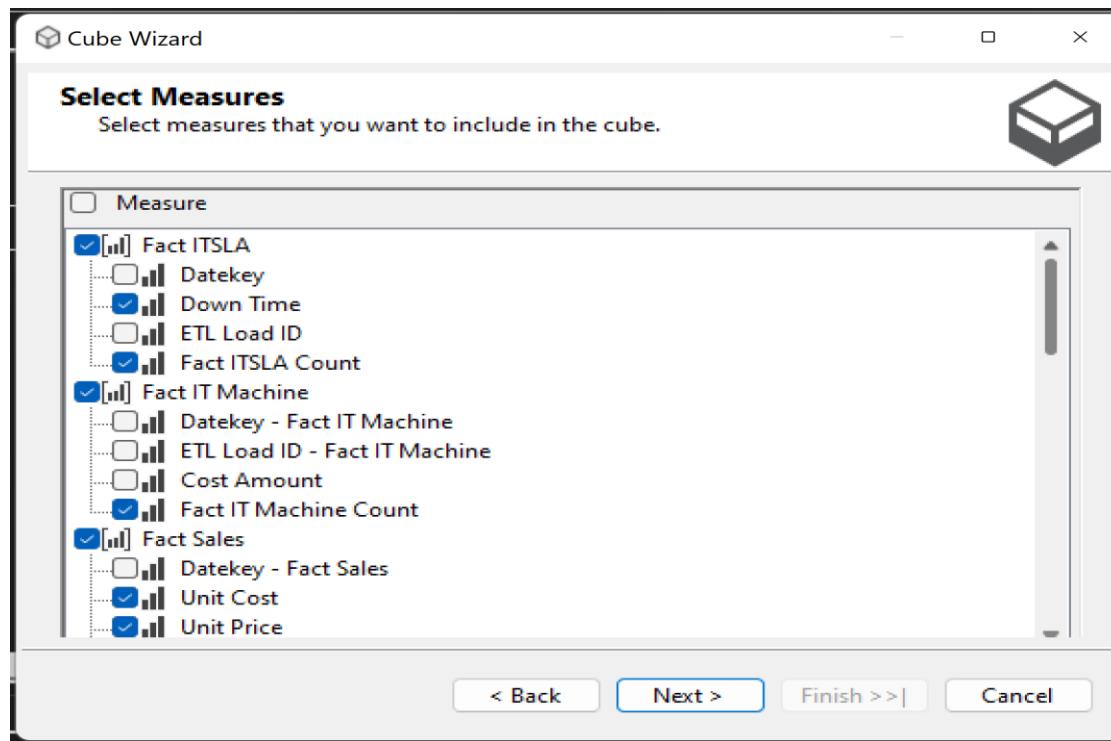
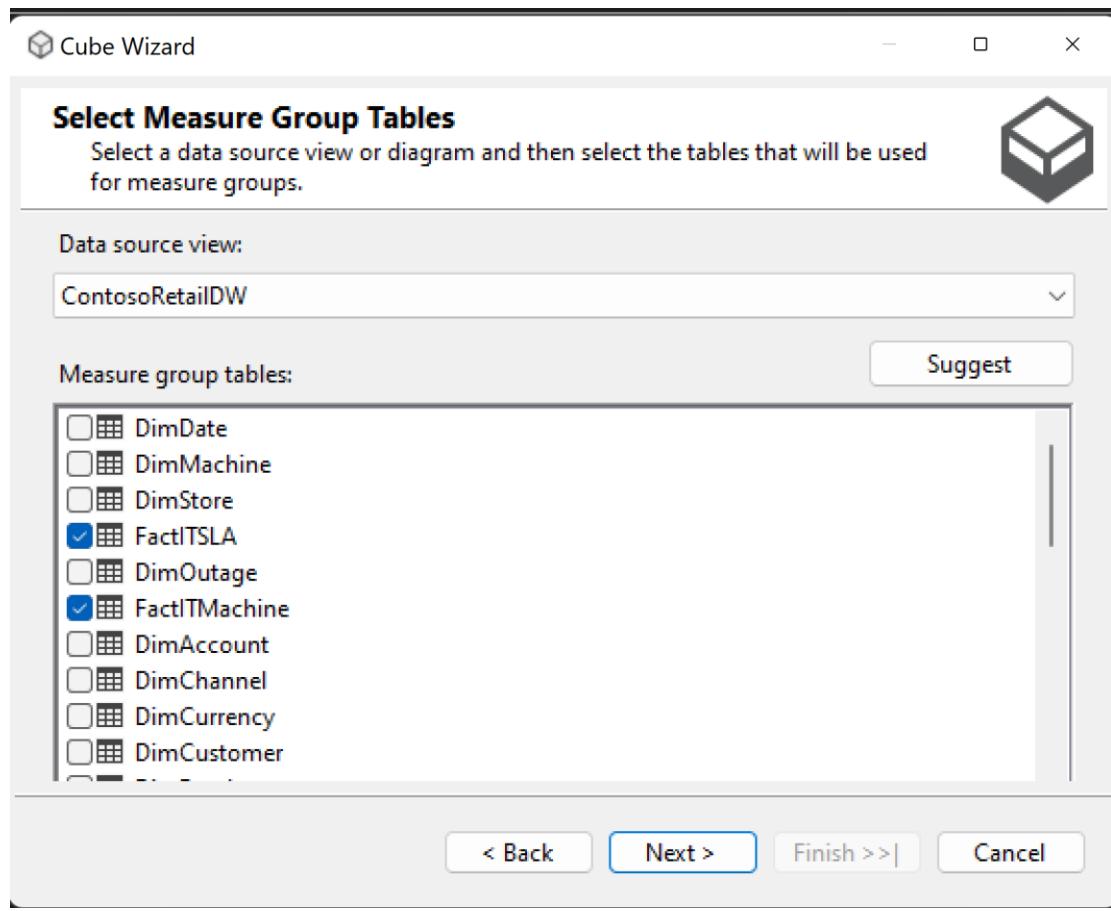


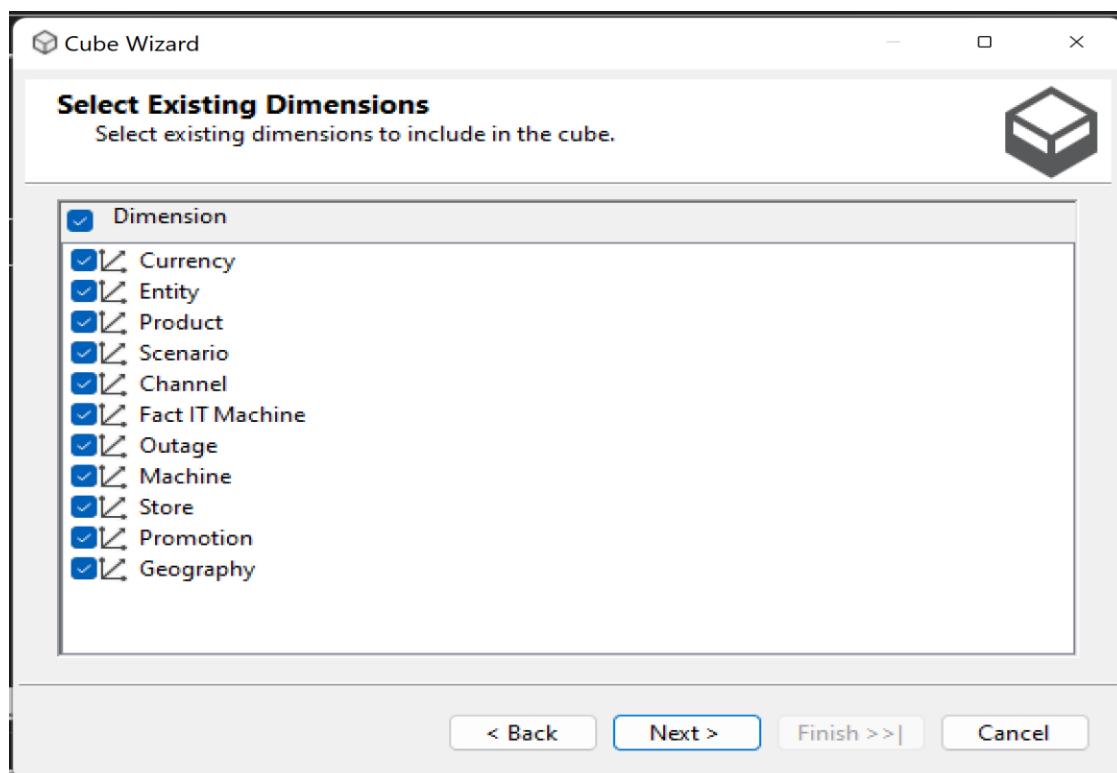
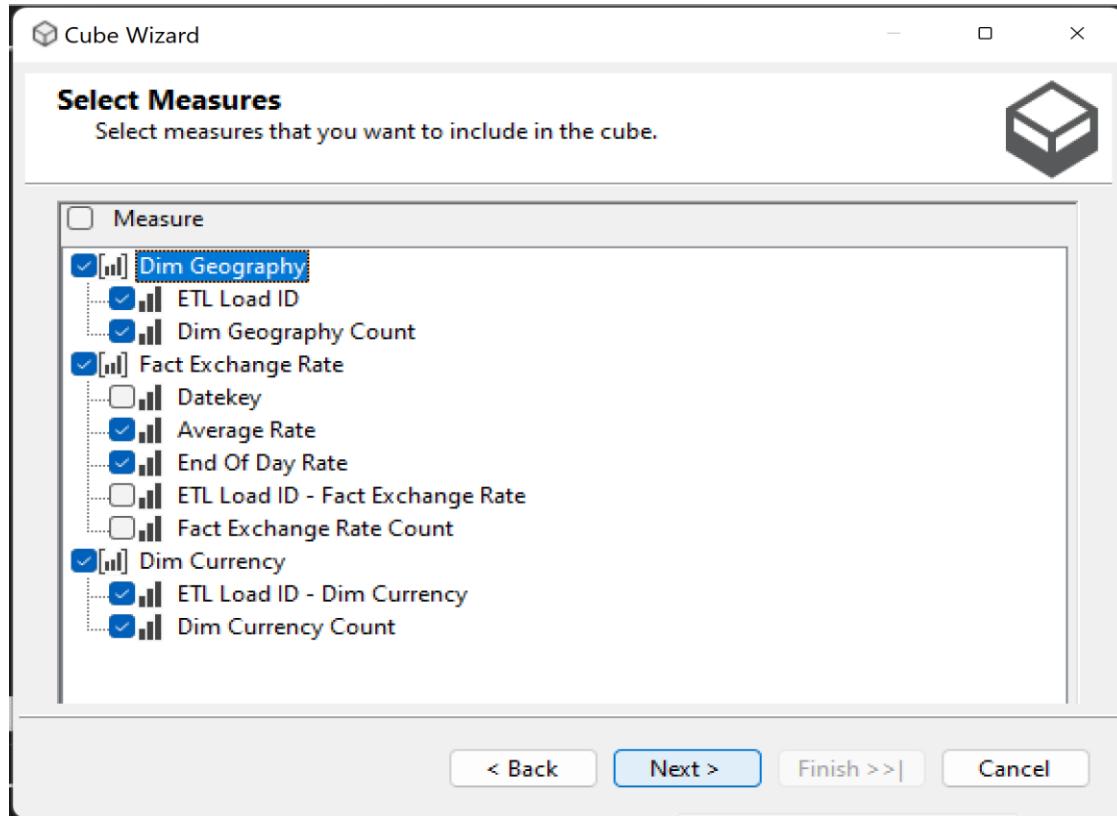


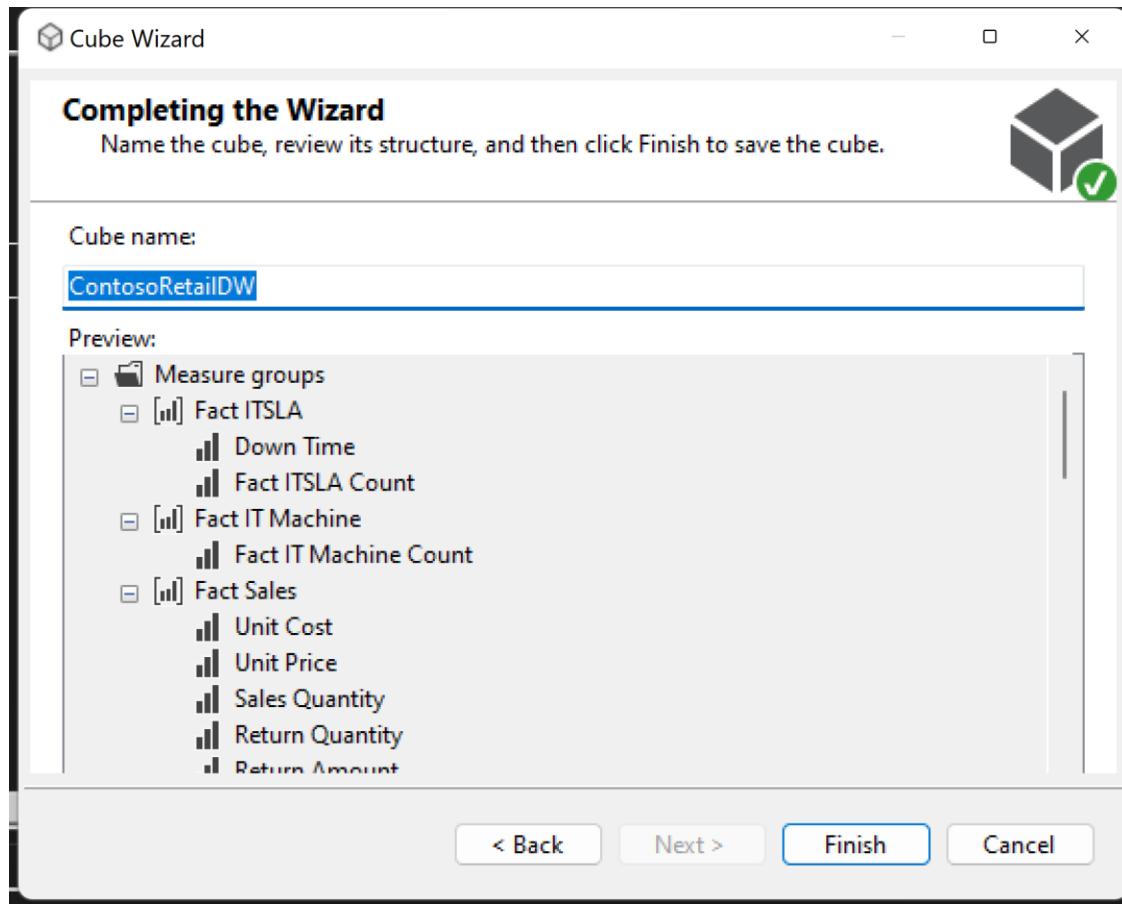
Create Operation cube with proper measure groups and measures

Interconnect shared Dimensions with Measures and Measure groups in the Operation cube









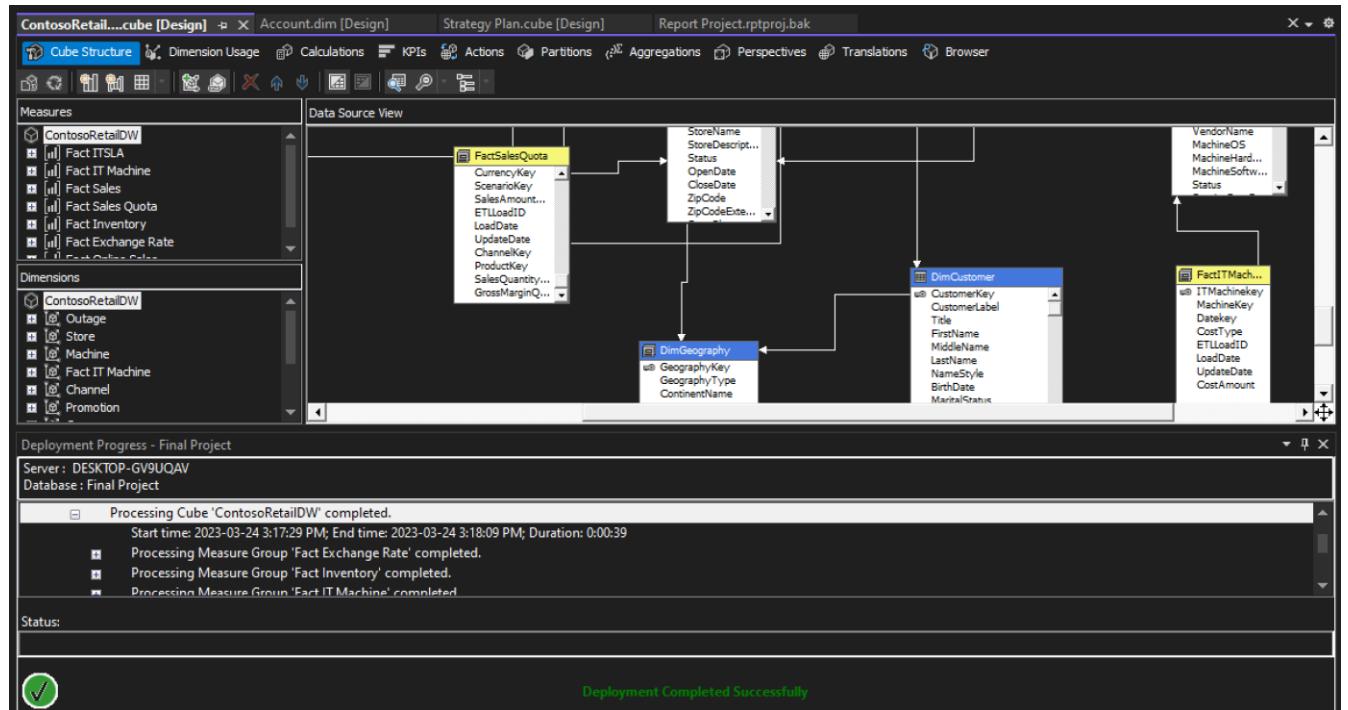
Cube Structure

Measure Groups

| Dimensions | Fact ITSLA | Fact IT Machine | Fact Sales | Fact Sales Quota | Fact Inventory |
|-----------------------|-----------------|-----------------|---------------|------------------|----------------|
| Outage | Outage Name | | | | |
| Store | Store Name | | Store Name | Store Name | Store Name |
| Machine | Machine Name | Machine Name | | | |
| Fact IT Machine | Fact IT Machine | IT Machine Name | | | |
| Channel | | | Channel Name | | |
| Promotion | | | Promotion Key | | |
| Currency | | | Currency Name | Currency Name | Currency Name |
| Product | | | Product Name | Product Name | Product Name |
| Scenario | | | | Scenario Name | |
| Store (Machine - ...) | Machine | Machine | | | |

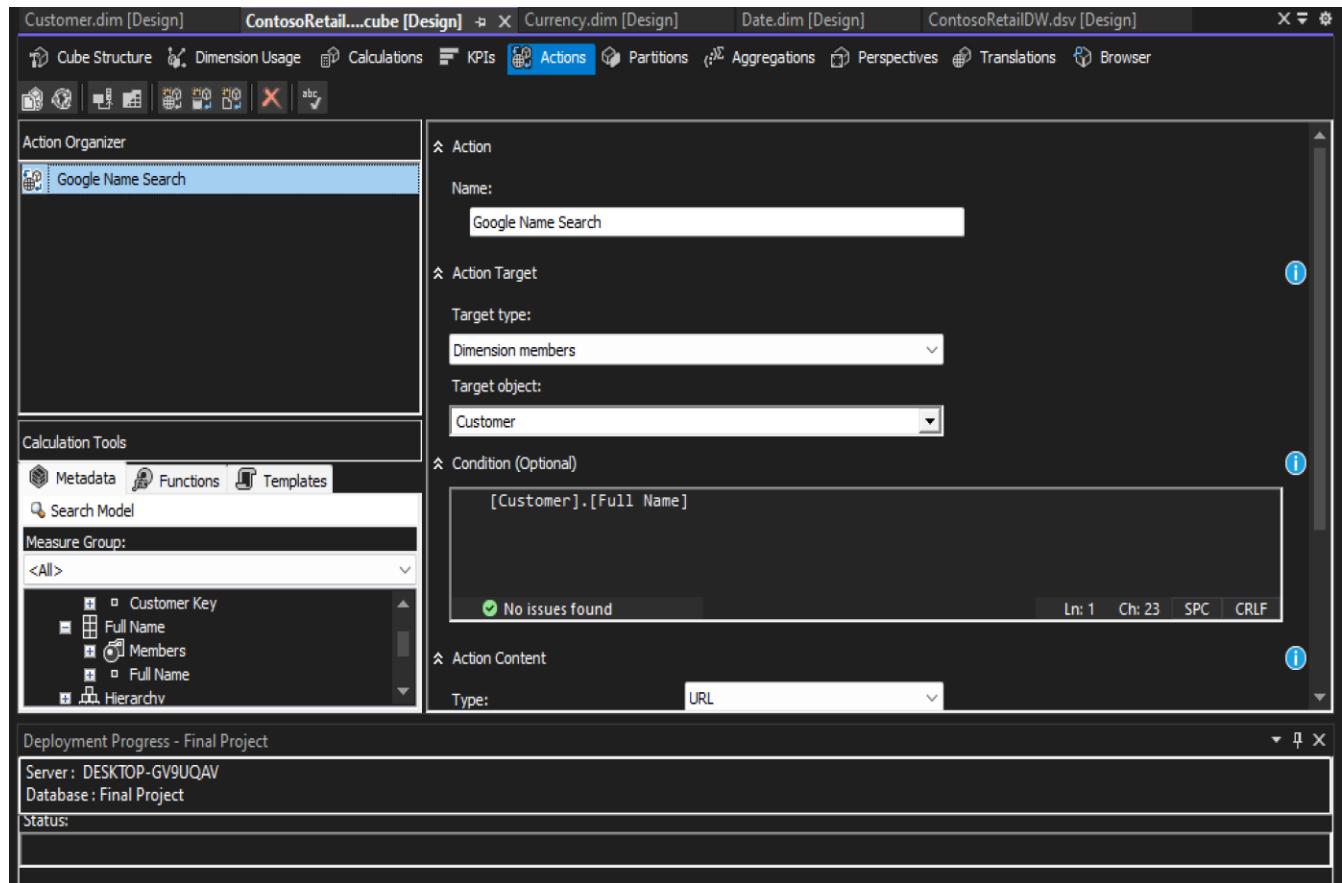
Once you have created cube then deploy your project.

<SQL Server Analysis Services Main Project>



Implement Cube Interactivity

Create URL Action that will search Google for customers name (First and Last)



<SQL Server Analysis Services Main Project>

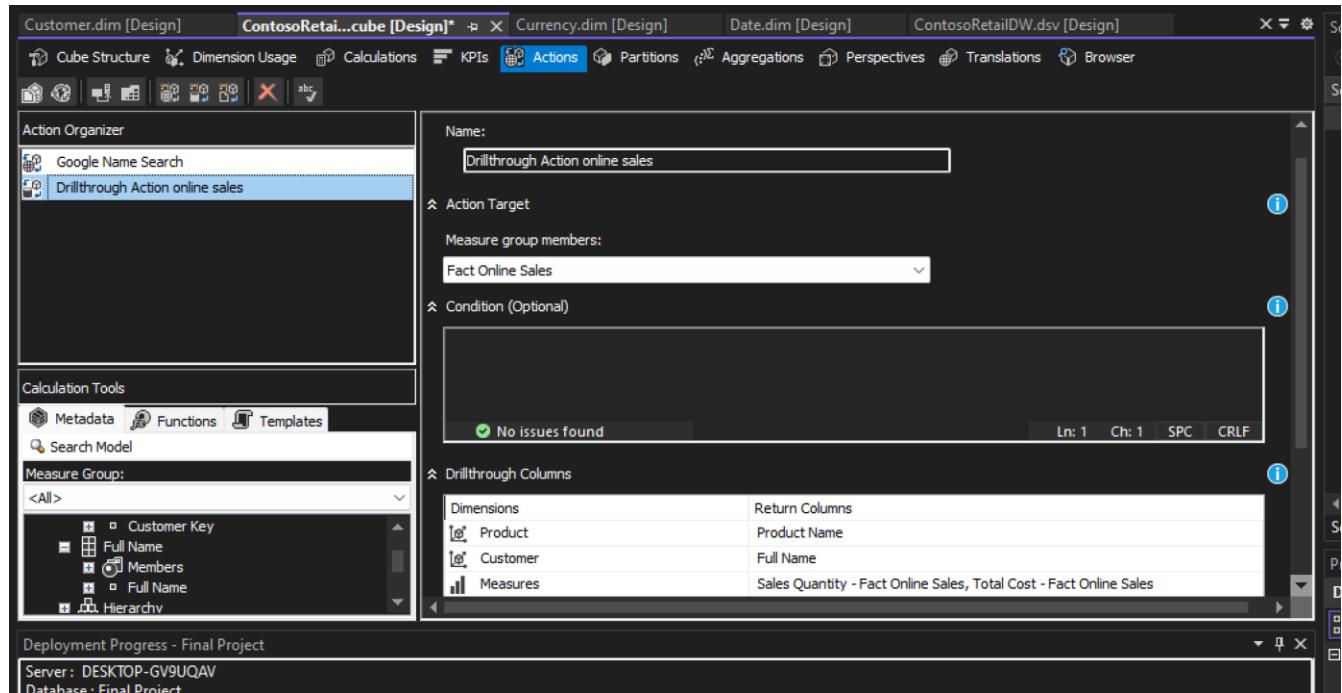
Screenshot showing a Microsoft Excel context menu for a PivotTable cell (Row 3, Column D) and a Google search results page for "Jon V Yang".

The Excel context menu includes options like Copy, Format Cells..., Refresh, Sort, Filter, Subtotal "Customer Label", Expand/Collapse, Drill Down/Drill Up, Group..., Ungroup..., Move, Remove "Hierarchy", Show/Hide Fields, Show Properties in Report, Show Properties in Tooltips, Additional Actions (selected), Field Settings..., PivotTable Options..., and Hide Field List.

The Google search results page shows the query "Jon V Yang" with the following details:

- About 165,000,000 results (0.24 seconds)
- Are you looking for: [Jong Yang](#) [Yin V Yang](#) [Jon young](#) [John Yang](#)
- Scholarly articles for [Jon V Yang](#)
- Long-term disease control and survival observed after ... - Wijetunga - Cited by 7
- Central Sirt1 regulates body weight and energy ... - Cyr - Cited by 47
- ... molecular configurations for surface-defect passivation ... - Wang - Cited by 611
- Videos:
 - [Ying Yang Twins ft. Lil Jon & The East Side Boyz - Salt Shaker ...](#)
YouTube · Looper Tunes
Dec 29, 2022
 - [Lil Jon & The East Side Boyz - Get Low \(feat. Ying Yang Twins ...](#)
YouTube · Radial by The Orchard
Apr 18, 2009

Enable Drillthrough Action to get detailed information for measure of your choice (explain details)



| Row Labels | Total Cost - Fact Online Sales |
|--|--------------------------------|
| Contoso 512MB MP3 Player E51 Silver | 28207.82 |
| Contoso 512MB MP3 Player E51 Blue | |
| Contoso 1G MP3 Player E100 White | |
| Contoso 2G MP3 Player E200 Silver | |
| Contoso 2G MP3 Player E200 Red | |
| Contoso 2G MP3 Player E200 Black | |
| Contoso 2G MP3 Player E200 Blue | |
| Contoso 4G MP3 Player E400 Silver | |
| Contoso 4G MP3 Player E400 Black | |
| Contoso 4G MP3 Player E400 Green | |
| Contoso 4G MP3 Player E400 Orange | |
| Contoso 4GB Flash MP3 Player E401 Blue | |
| Contoso 4GB Flash MP3 Player E401 Black | |
| Contoso 4GB Flash MP3 Player E401 Silver | |
| Contoso 4GB Flash MP3 Player E401 White | |
| Contoso 8GB Super-Slim MP3/Video Player M800 White | |
| Contoso 8GB Super-Slim MP3/Video Player M800 Red | |
| Contoso 8GB Super-Slim MP3/Video Player M800 Green | |
| Contoso 8GB Super-Slim MP3/Video Player M800 Pink | |
| Contoso 8GB MP3 Player new model M820 Black | |
| Contoso 8GB MP3 Player new model M820 Blue | |
| Contoso 8GB MP3 Player new model M820 Yellow | |
| Contoso 8GB MP3 Player new model M820 White | |

<SQL Server Analysis Services Main Project>

| A1 | B | C | D | E | F |
|---|-------------------------------------|--------------------------|--|--|---|
| Data returned for 'Drillthrough Action online sales' ([Measures].[Total Cost - Fact Online Sales],[Product].[Product].[Product Name],&[1]). | | | | | |
| 3 | [\$Product].[Product Name] | [\$Customer].[Full Name] | [Fact Online Sales].[Sales Quantity - Fact Online Sales] | [Fact Online Sales].[Total Cost - Fact Online Sales] | |
| 4 | Contoso 512MB MP3 Player E51 Silver | Deanna D Ramos | 1 | 6.62 | |
| 5 | Contoso 512MB MP3 Player E51 Silver | Emily R Miller | 1 | 6.62 | |
| 6 | Contoso 512MB MP3 Player E51 Silver | Nicole Brown | 1 | 6.62 | |
| 7 | Contoso 512MB MP3 Player E51 Silver | Carla L Raman | 1 | 6.62 | |
| 8 | Contoso 512MB MP3 Player E51 Silver | Chloe E Butler | 1 | 6.62 | |
| 9 | Contoso 512MB MP3 Player E51 Silver | Robert A Harris | 1 | 6.62 | |
| 10 | Contoso 512MB MP3 Player E51 Silver | Justin J Ross | 1 | 6.62 | |
| 11 | Contoso 512MB MP3 Player E51 Silver | Bryan Townsend | 1 | 6.62 | |
| 12 | Contoso 512MB MP3 Player E51 Silver | Jillian J Arthur | 1 | 6.62 | |
| 13 | Contoso 512MB MP3 Player E51 Silver | Samuel D Green | 1 | 6.62 | |
| 14 | Contoso 512MB MP3 Player E51 Silver | Aidan G Gonzales | 1 | 6.62 | |
| 15 | Contoso 512MB MP3 Player E51 Silver | Garrett J Bell | 1 | 6.62 | |
| 16 | Contoso 512MB MP3 Player E51 Silver | Grant R Rai | 1 | 6.62 | |
| 17 | Contoso 512MB MP3 Player E51 Silver | Derek Raje | 1 | 6.62 | |
| 18 | Contoso 512MB MP3 Player E51 Silver | Jaclyn A Shen | 1 | 6.62 | |
| 19 | Contoso 512MB MP3 Player E51 Silver | Walter Dominguez | 1 | 6.62 | |
| 20 | Contoso 512MB MP3 Player E51 Silver | Francis Sanz | 1 | 6.62 | |
| 21 | Contoso 512MB MP3 Player E51 Silver | Gavin M Perry | 1 | 6.62 | |
| 22 | Contoso 512MB MP3 Player E51 Silver | Alexandra Collins | 1 | 6.62 | |
| 23 | Contoso 512MB MP3 Player E51 Silver | Donna Xie | 1 | 6.62 | |
| 24 | Contoso 512MB MP3 Player E51 Silver | Austin M Diaz | 1 | 6.62 | |

Add Reporting Action to open Customer Report (based on attached SSRS Project)

The screenshot shows the SSAS Management Studio interface during the deployment of a cube. The top navigation bar includes tabs for 'Reporting Curr...y.dim [Design]', 'Customer.dim [Design]', 'ContosoRetail...cube [Design]*', 'Currency.dim [Design]', and 'Date.dim [Design]'. The 'Actions' tab is selected.

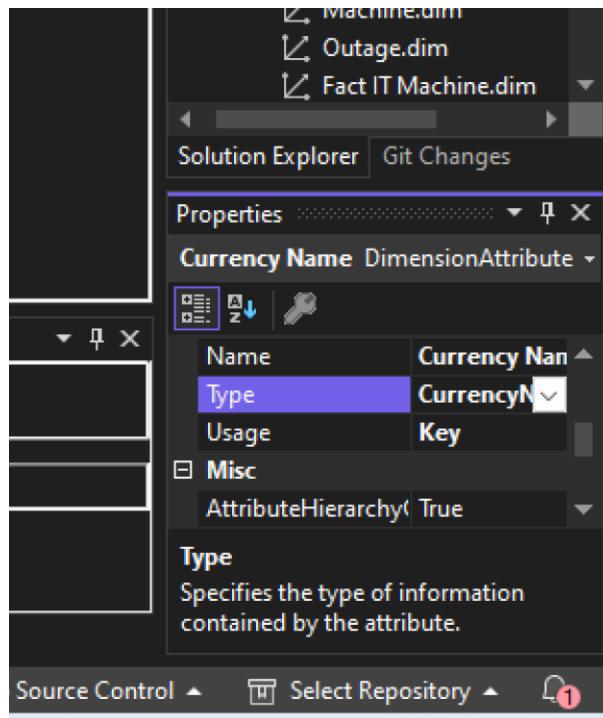
In the center, the 'Report Action' configuration pane is open, showing the 'Action Target' settings. Under 'Target type:', 'Cells' is selected, and under 'Target object:', 'All cells' is selected. Below this, the 'Condition (Optional)' section is shown with a note: 'No issues found'.

On the left side, there are several toolbars and panes:

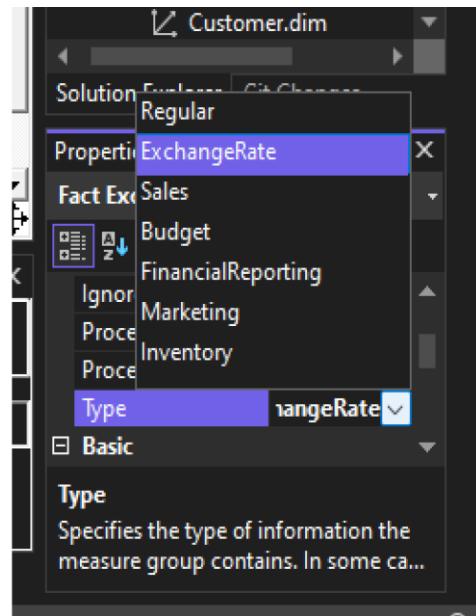
- Action Organizer:** Shows actions like 'Google Name Search' and 'Drillthrough Action online sales'.
- Calculation Tools:** Includes 'Metadata', 'Functions', and 'Templates'.
- Search Model:** Shows a tree view of measure groups, including 'Customer Key', 'Full Name', 'Members', 'Hierarchy', and 'Hierarchv'.
- Deployment Progress - Final Project:** Displays deployment status with 'Server: DESKTOP-GV9UQAV' and 'Database: Final Project'.
- Status:** Shows a green checkmark icon and the message 'Deployment Completed Successfully'.

Implement Currency Conversion using BI Wizard

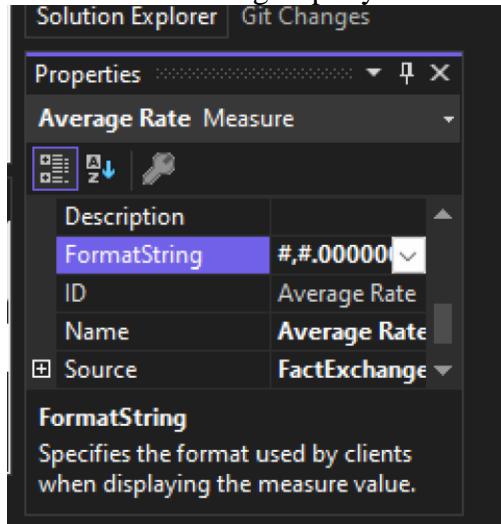
Change currency attribute type as Currency Name in properties



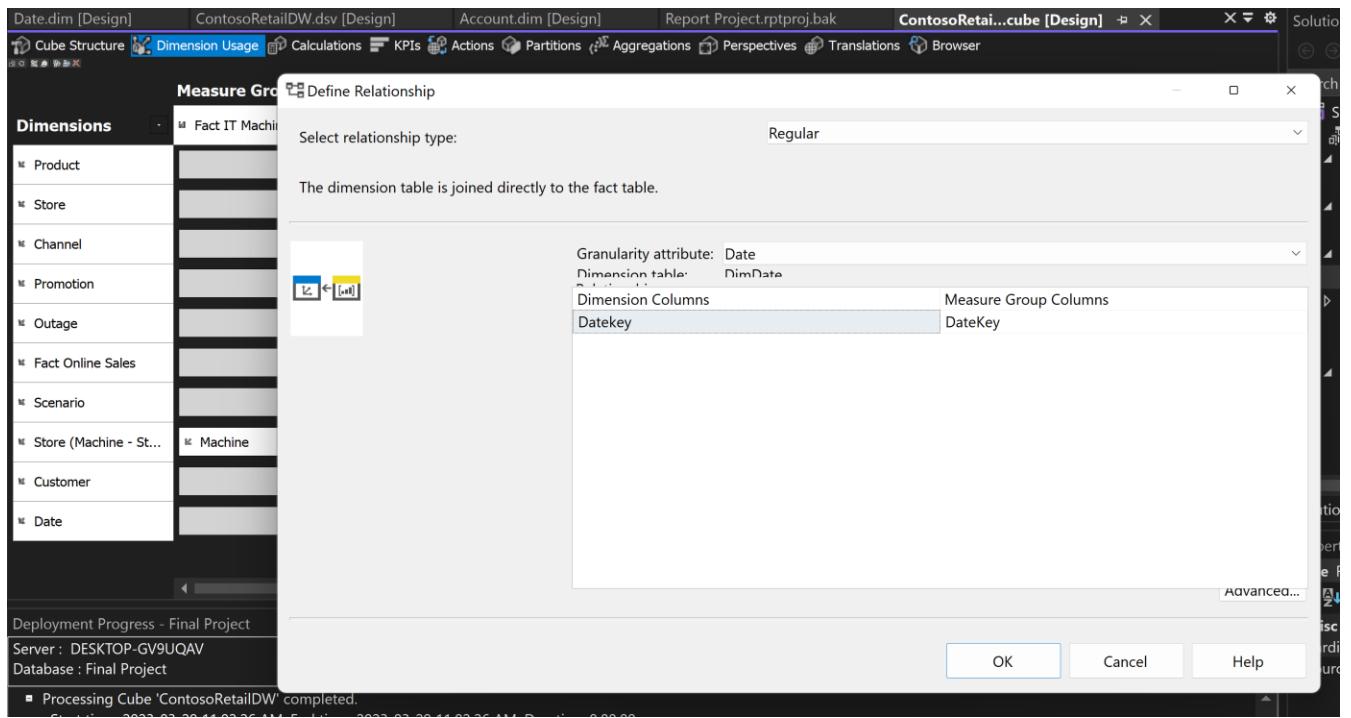
Type of factExchangeRate should be changed to Exchange rate



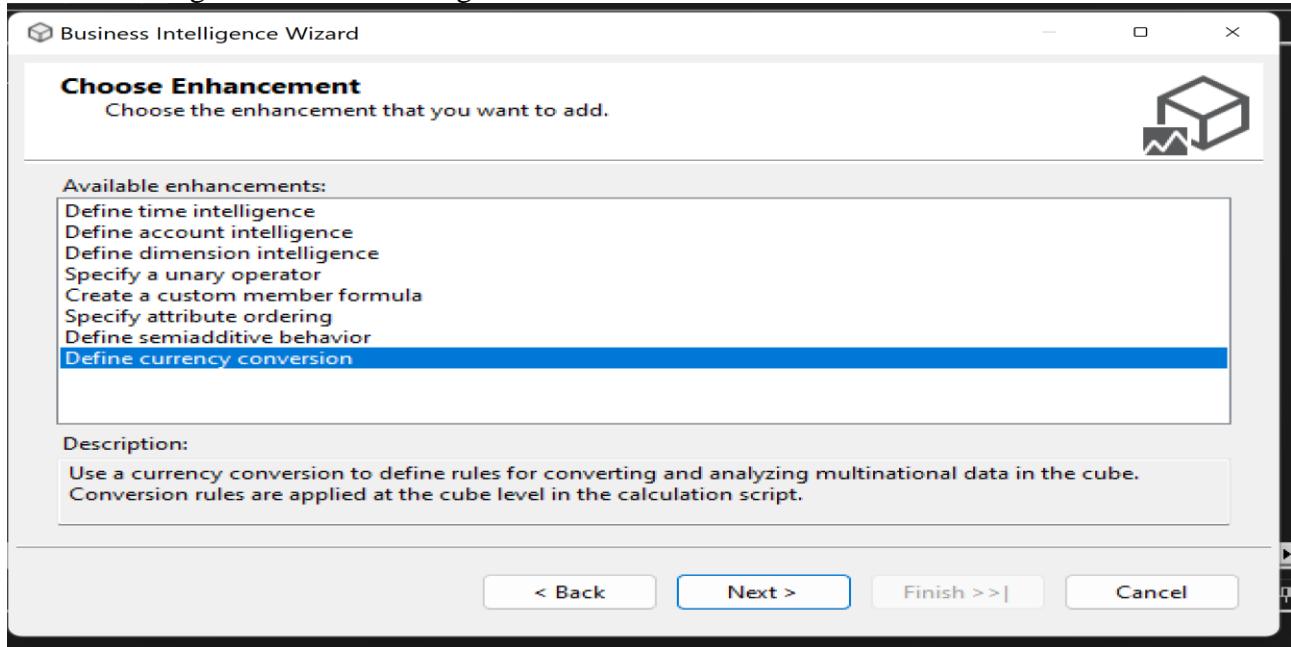
Set the format string as per your need



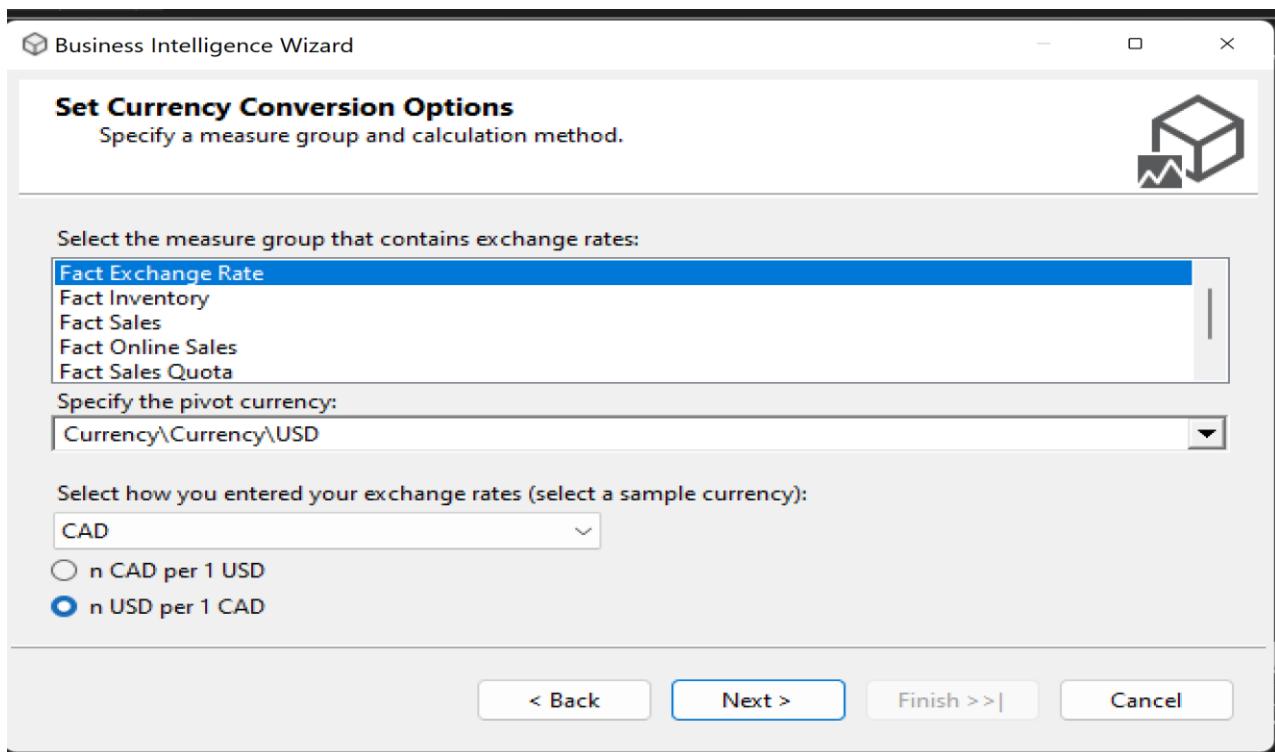
Added a new dimension date and set its relationship with FactExchangeRate

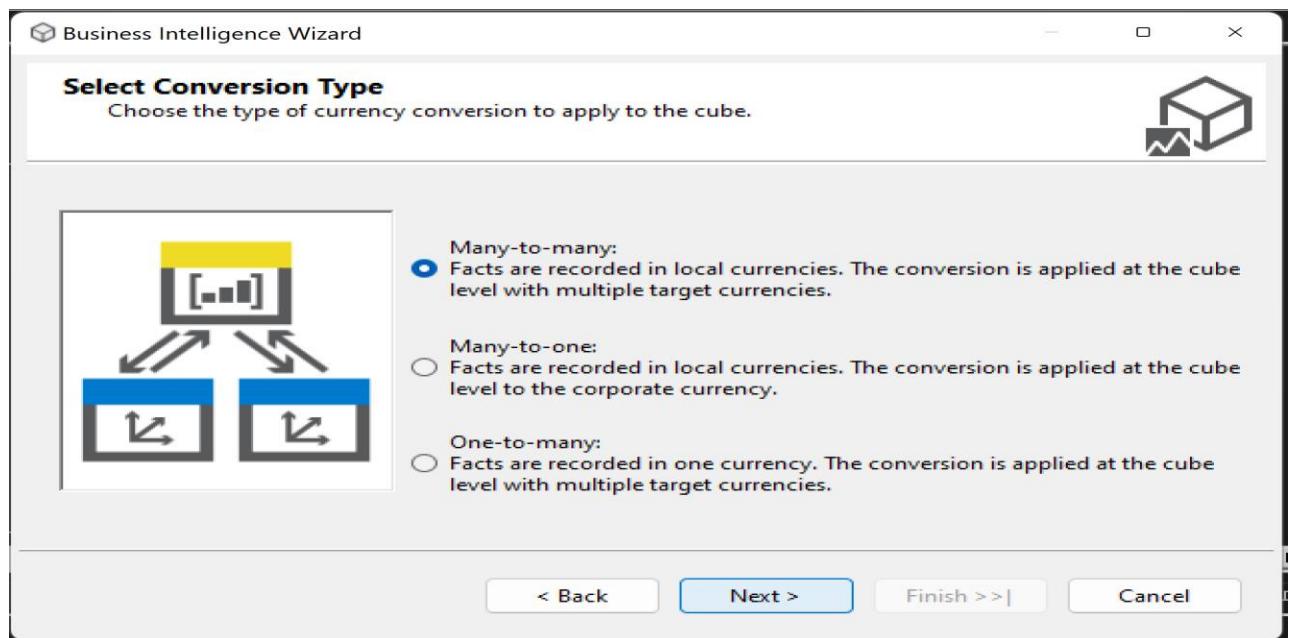
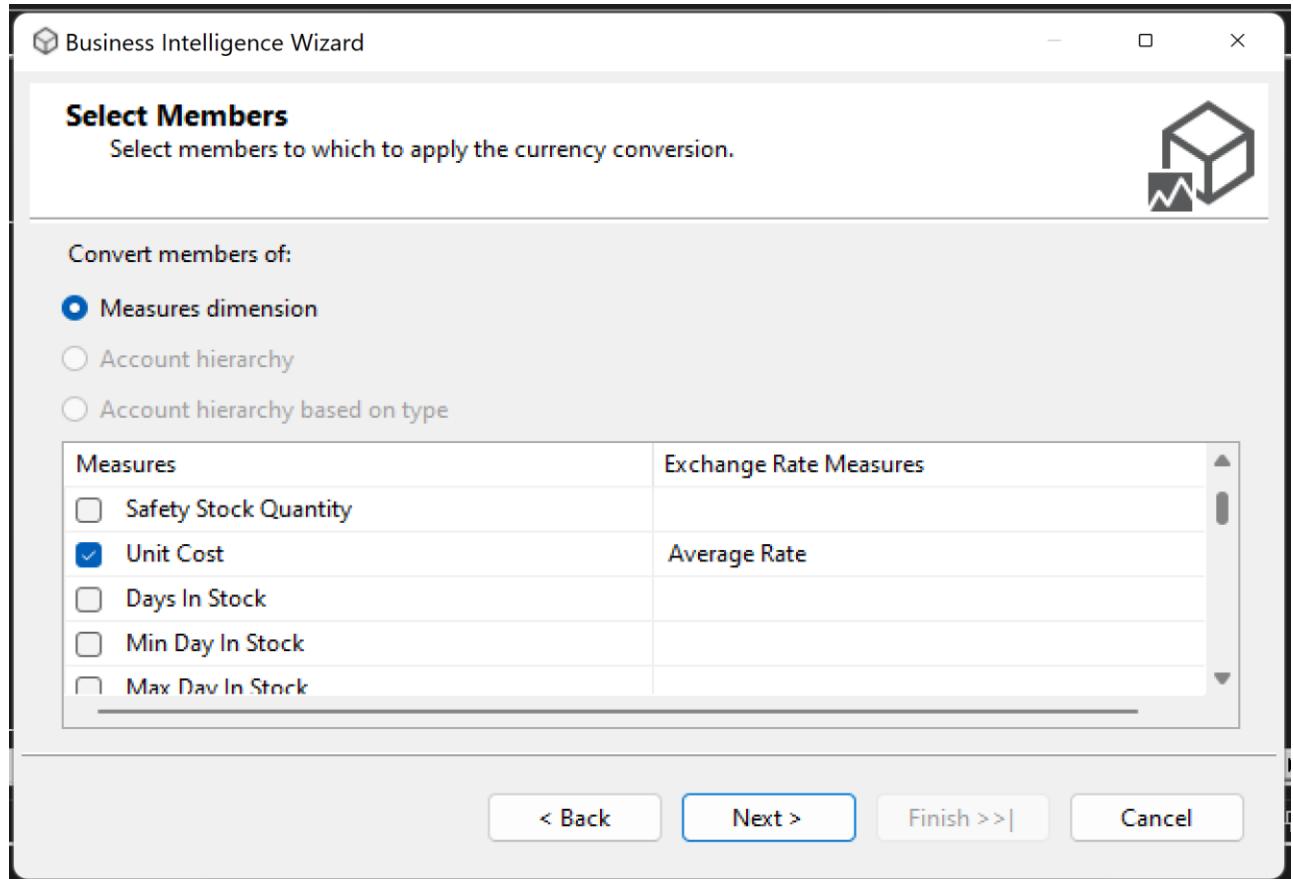


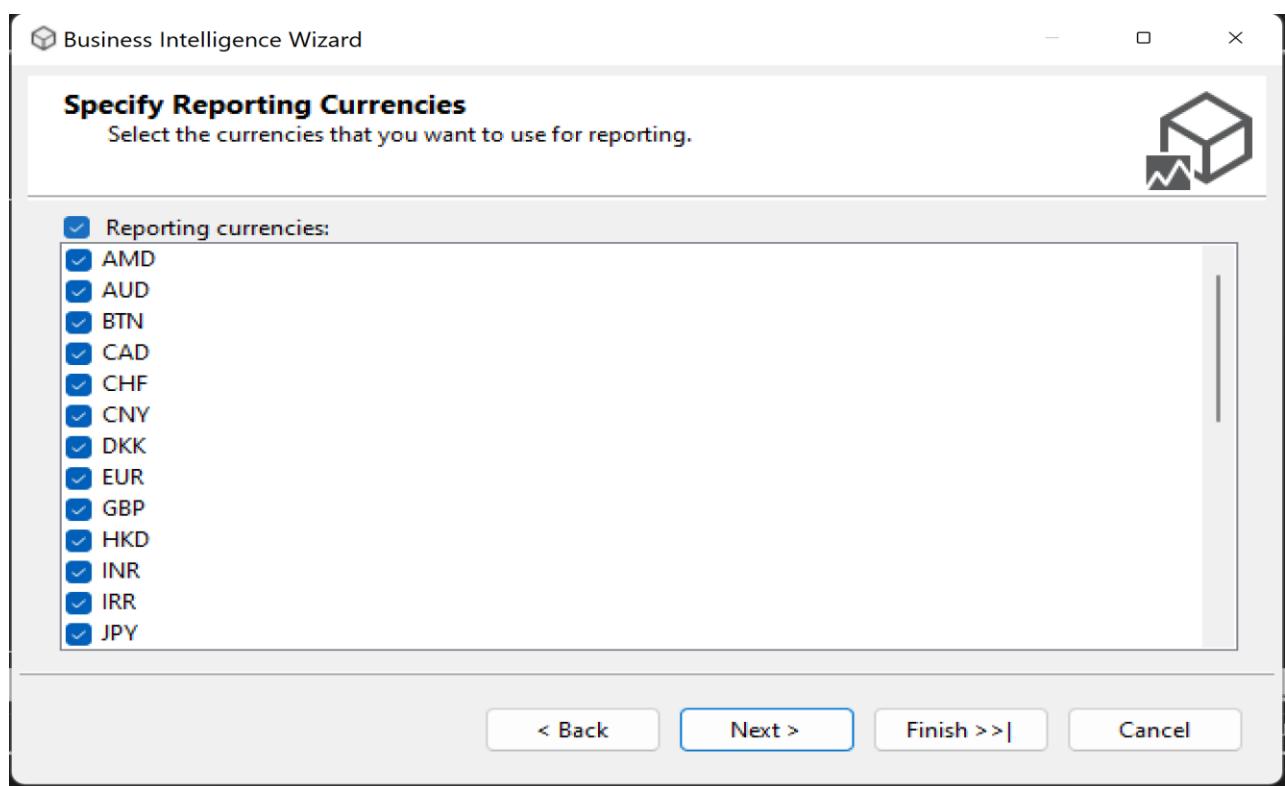
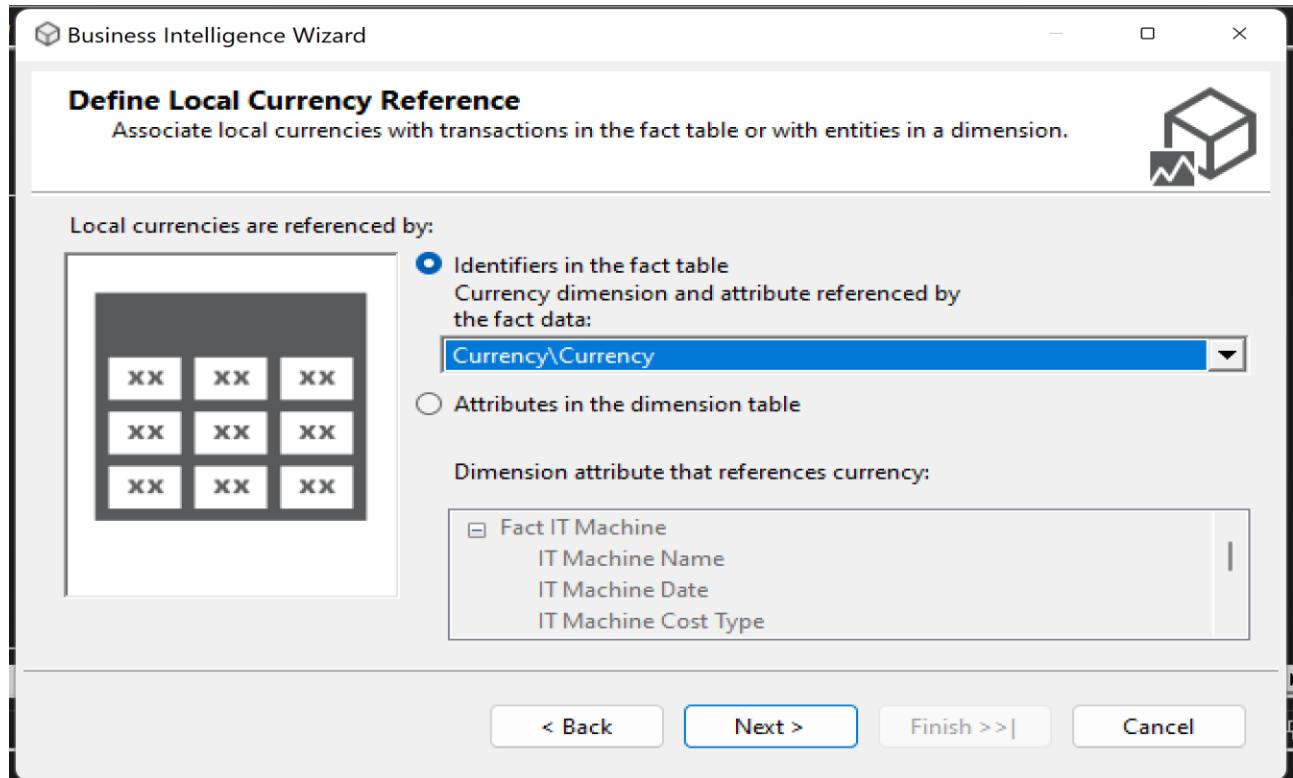
Apply business intelligence on factExchangeRate

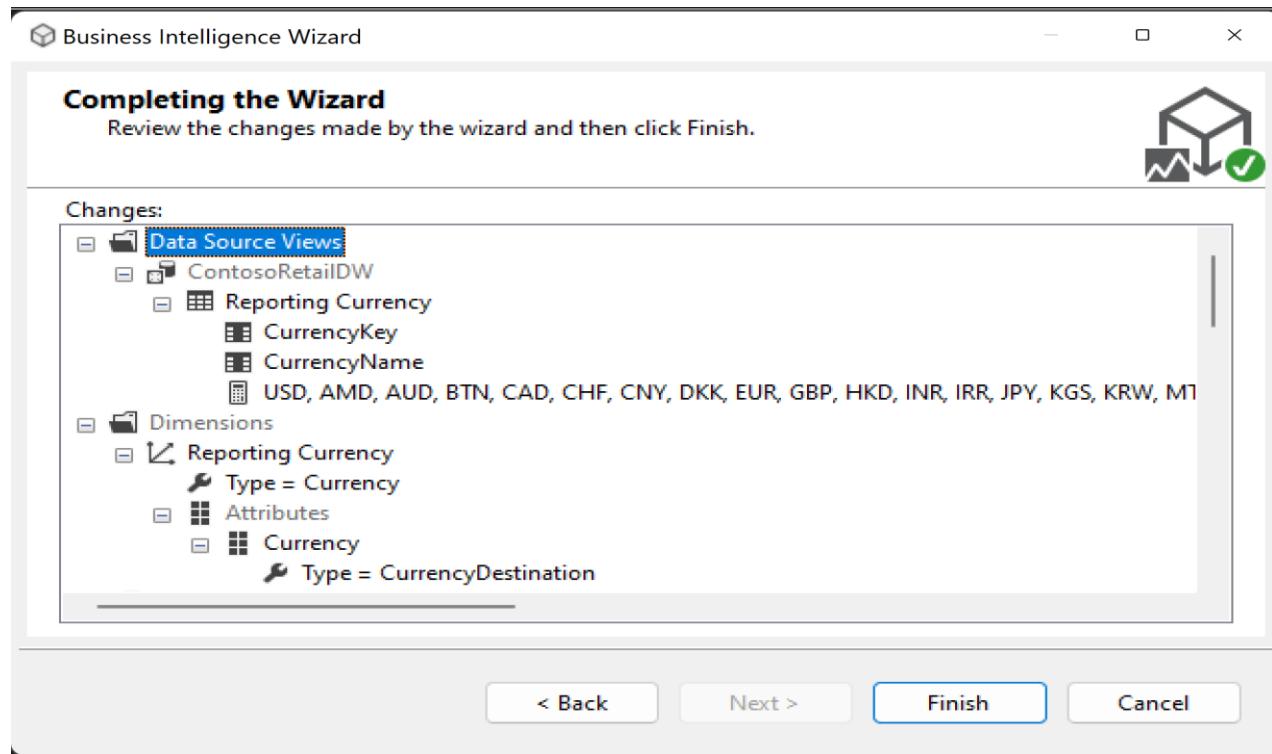


Set currency conversion options as per your requirement







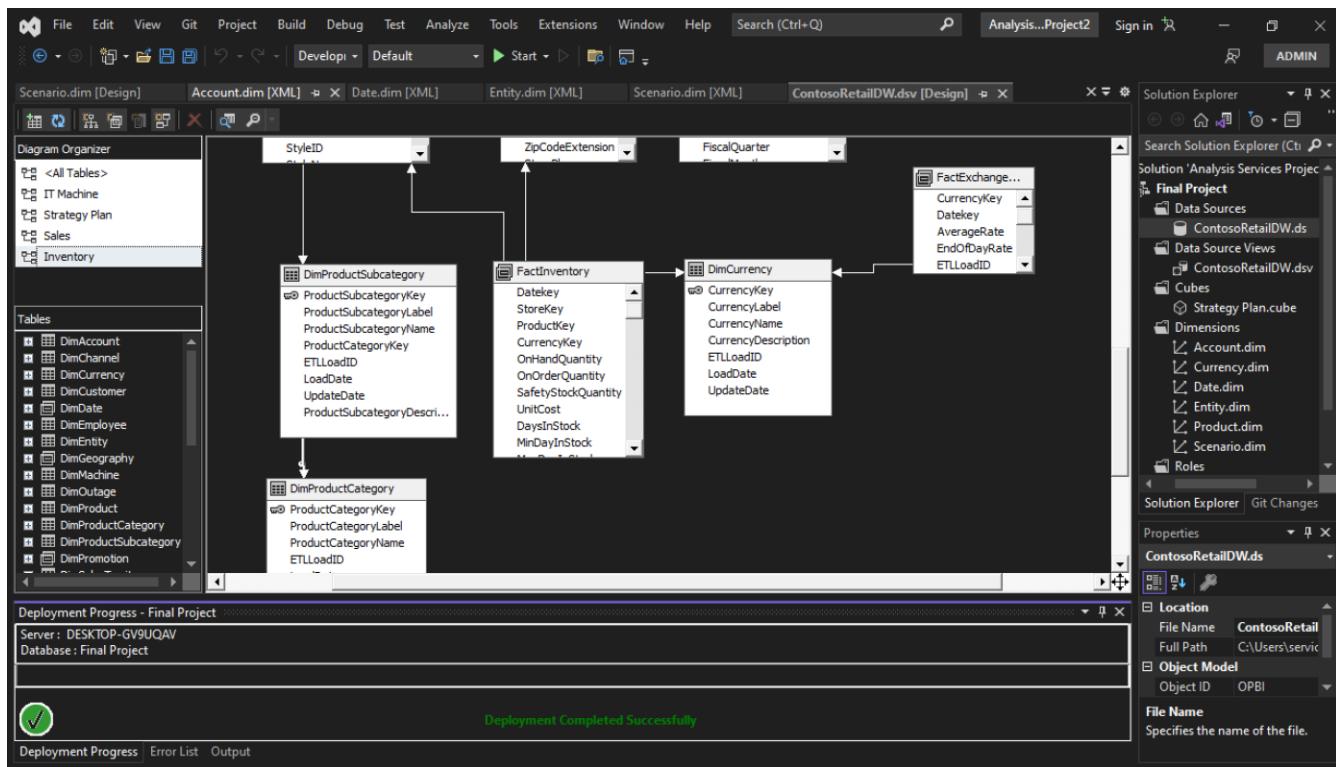
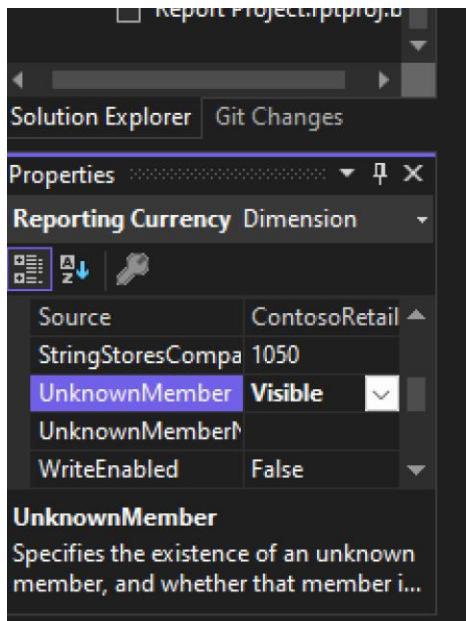


Now Check the Cube Structure and you will see Reporting Currency Dimension

This screenshot shows the 'Cube Structure' tab in SQL Server Data Tools. The ribbon tabs include 'Cube Structure', 'Dimension Usage', 'Calculations', 'KPIs', and 'Actions'. The left pane displays the 'Measures' and 'Dimensions' sections. The 'Measures' section lists various fact tables: Fact IT Machine, Fact Exchange Rate, Fact Inventory, Fact Sales, Fact ITSLA, Fact Online Sales, and Fact Sales Quota. The 'Dimensions' section lists dimensions: Machine, Currency, Product, Store, Channel, Promotion, Outage, Fact Online Sales, Scenario, Machine - Store, Customer, Date, and Reporting Currency. The right pane is currently empty. At the bottom, it shows 'Deployment Progress - Final Project' and 'Server : DESKTOP-GV9UQAV'.

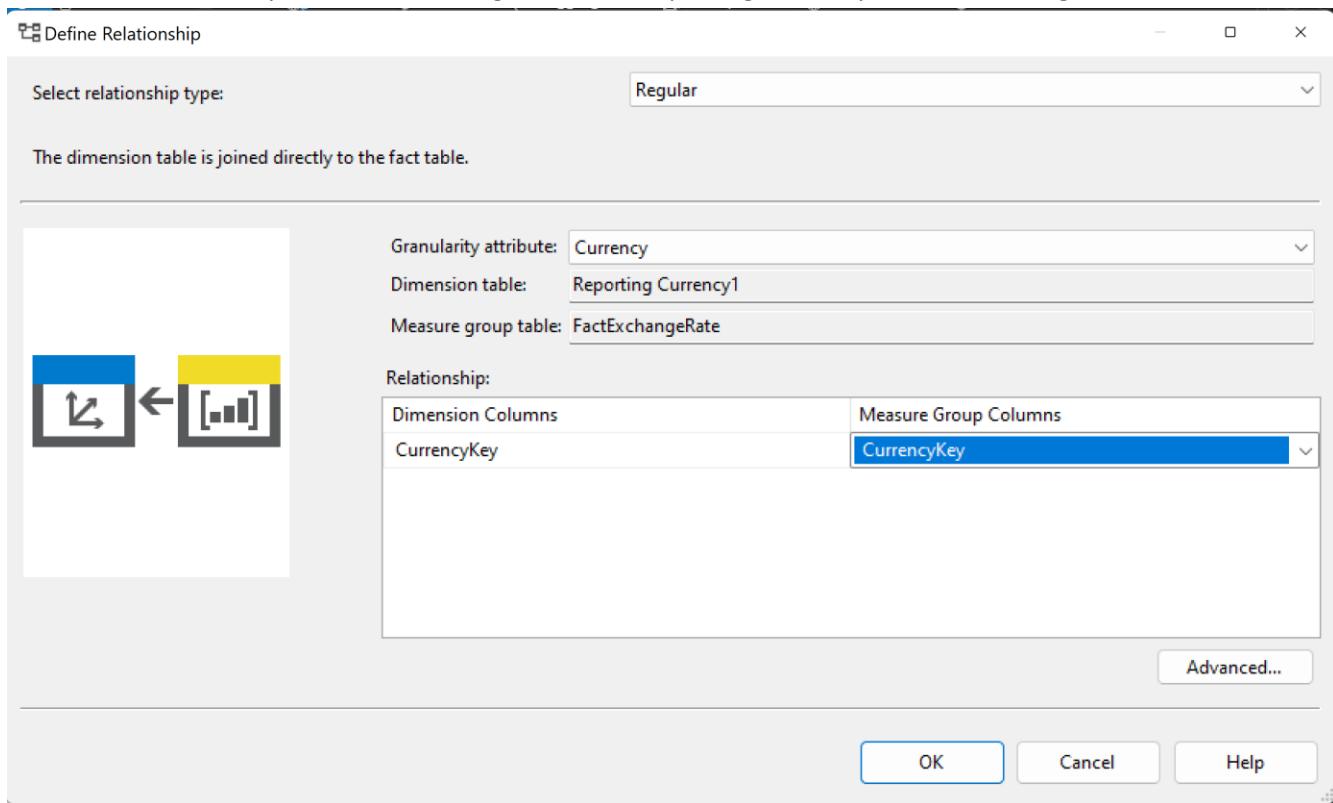
<SQL Server Analysis Services Main Project>

Open Reporting Currency Dimension and click on its properties set unknown member to visible



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Now add a relationship in dimension usage between Reporting Currency and factExchangeRate

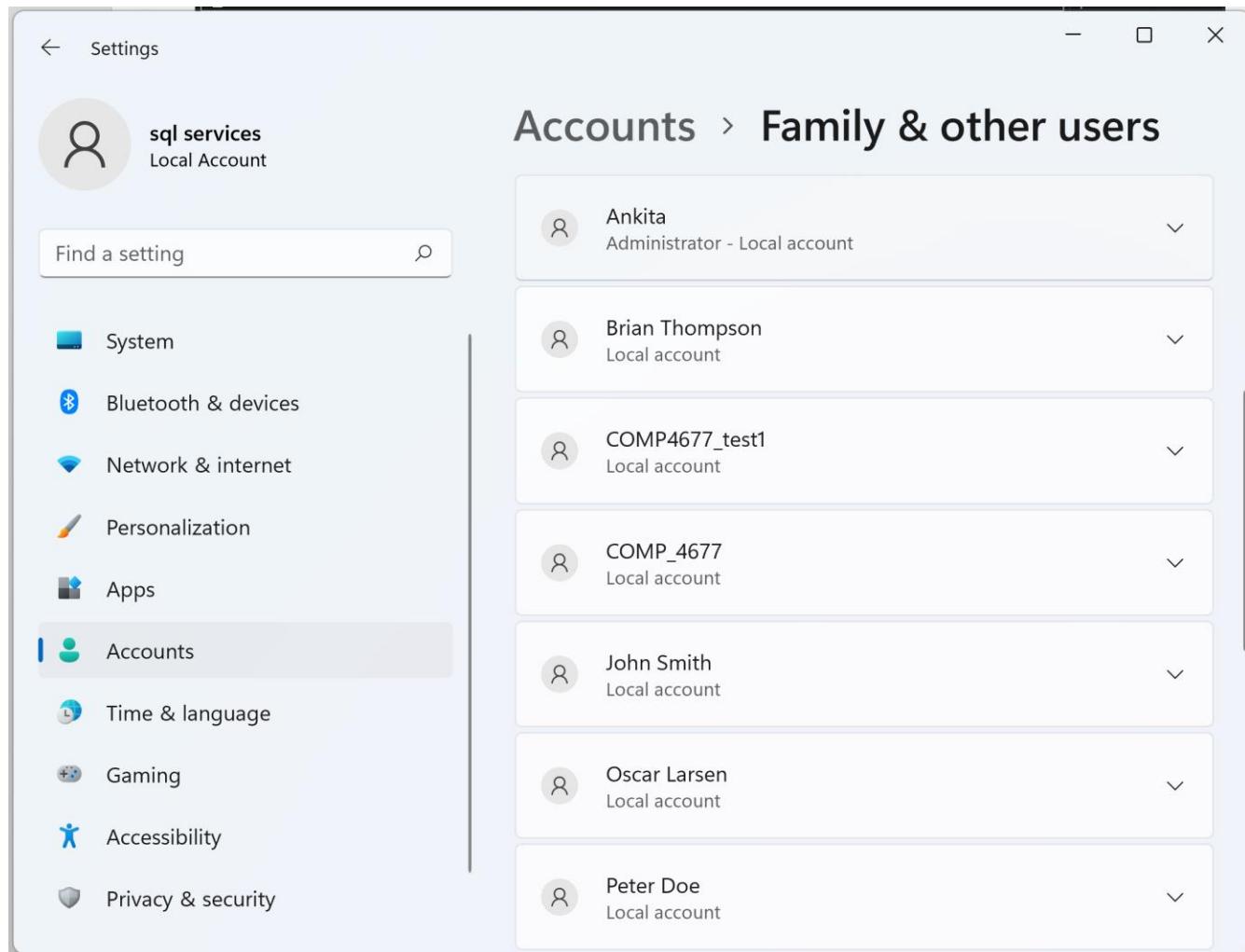


Create local login accounts:

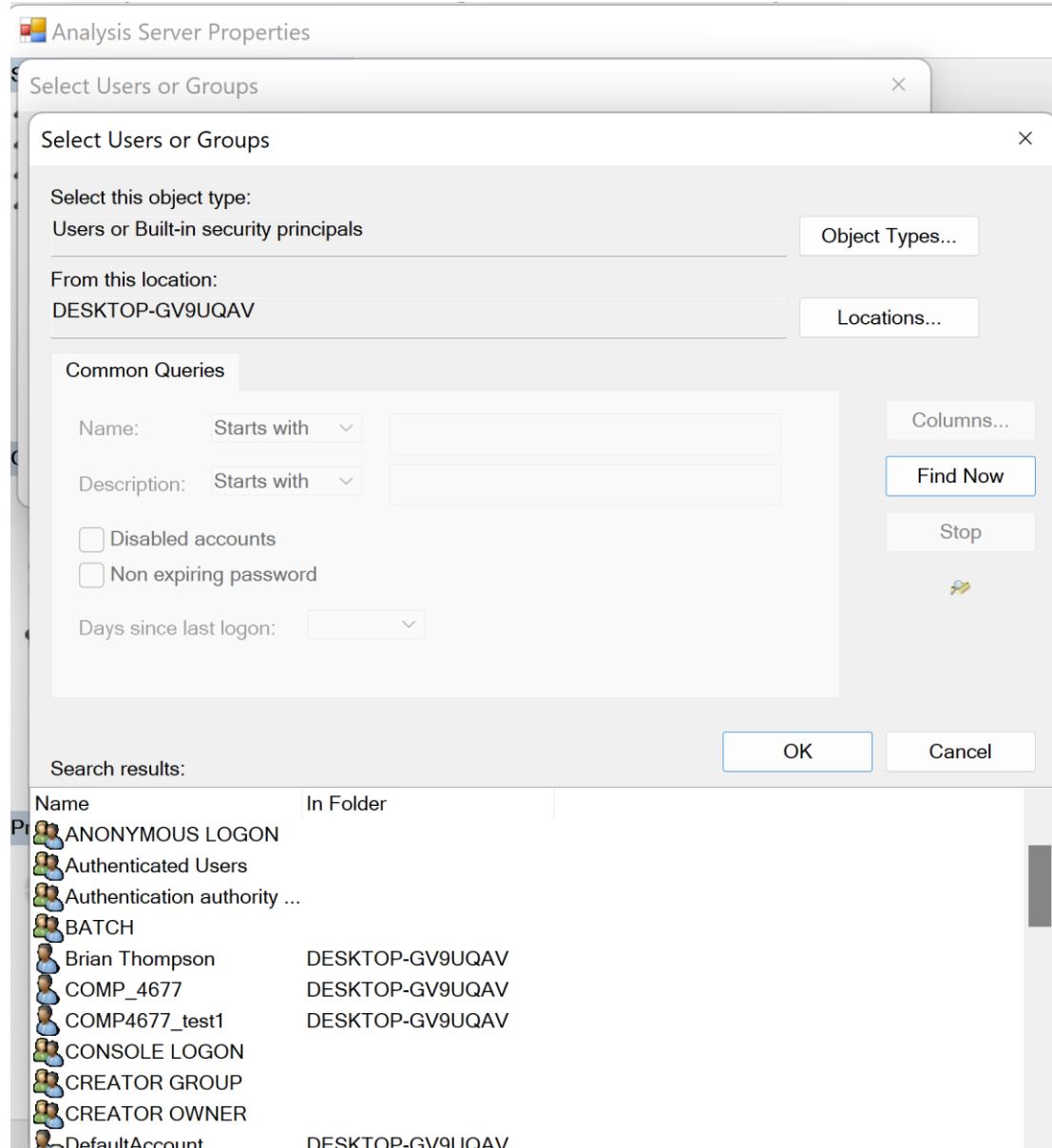
- g. John Smith
- h. Peter Doe
- i. Oscar Larsen
- j. Brian Thompson

Create a local user account

1. Select Start > Settings > Accounts and then select Family & other users. (In some versions of Windows you'll see Other users.)
2. Next to Add other user, select Add account.
3. Select I don't have this person's sign-in information, and on the next page, select Add a user without a Microsoft account.
4. Enter a user name, password, or password hint—or choose security questions—and then select Next.



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2. Create following local security groups and add users to each of them:

- a. Sales - John Smith and Peter Doe
- b. Support - Oscar Larsen
- c. Admin - Brian Thompson

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The screenshot shows the Windows Computer Management console. The left navigation pane is collapsed, showing 'Computer Management (Local)' under 'System Tools'. The main pane displays a list of local groups with columns for 'Name' and 'Description'. A context menu is open over the 'Groups' entry, with the 'New Group...' option highlighted. Other options in the menu include 'Refresh', 'Export List...', 'View' (with 'List View' and 'Details View' sub-options), 'Arrange Icons', 'Line up Icons', and 'Help'.

| Name | Description |
|--------------------------|--|
| Access Control Assistant | Members of this group can remot... |
| Administrators | Administrators have complete and ... |
| Backup Operators | Backup Operators can override sec... |
| Cryptographic Operato... | Members are authorized to perfor... |
| Device Owners | Members of this group can change ... |
| Distributed COM Users | Members are allowed to launch, act... |
| Event Log Readers | Members of this group can read ev... |
| Guests | Guests have the same access as me... |
| Hyper-V Administrators | Members of this group have compl... |
| IIS_IUSRS | Built-in group used by Internet Infor... |
| Network Configuration... | Members in this group can have so... |
| Performance Log Users | Members of this group may schedu... |
| Performance Monitor U... | Members of this group can access ... |
| Power Users | Power Users are included for backw... |
| Remote Desktop Users | Members in this group are granted ... |
| Remote Management ... | Members of this group can access ... |
| Replica | replication in a domain |
| System | this group are manage... |
| Users | vented from making a... |
| HelpLk | |
| SQLSer | he group have the req... |
| SQLSer | he group have the req... |
| SQLSer | he group have the req... |
| WSS_A | |
| WSS_W | |

Creates a new local group.

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The screenshot shows the Windows Computer Management interface. The left navigation pane is expanded to show 'Computer Management (Local)' under 'System Tools'. The 'Local Users and Groups' node is selected, and its contents are displayed in the main pane as a table:

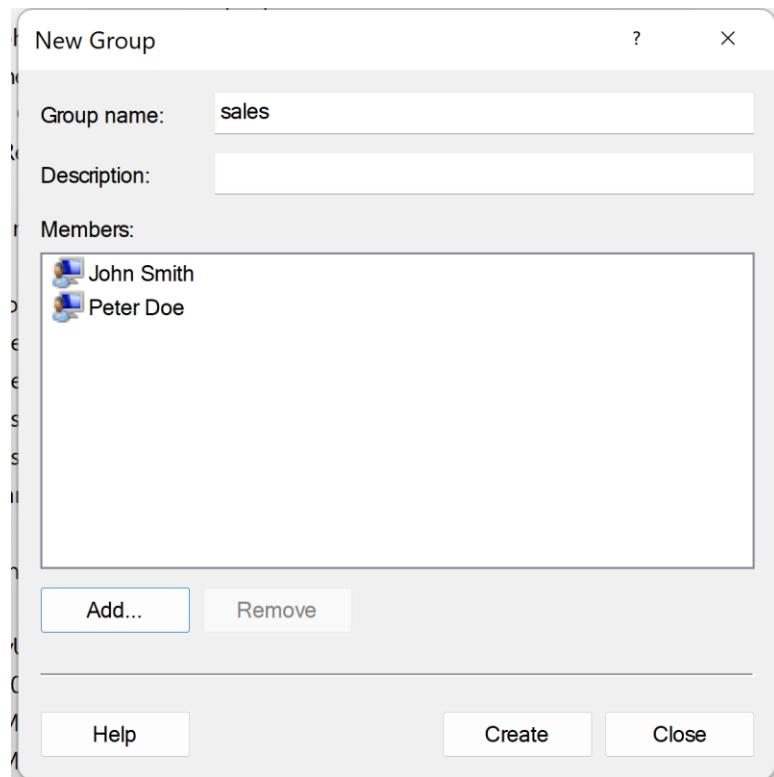
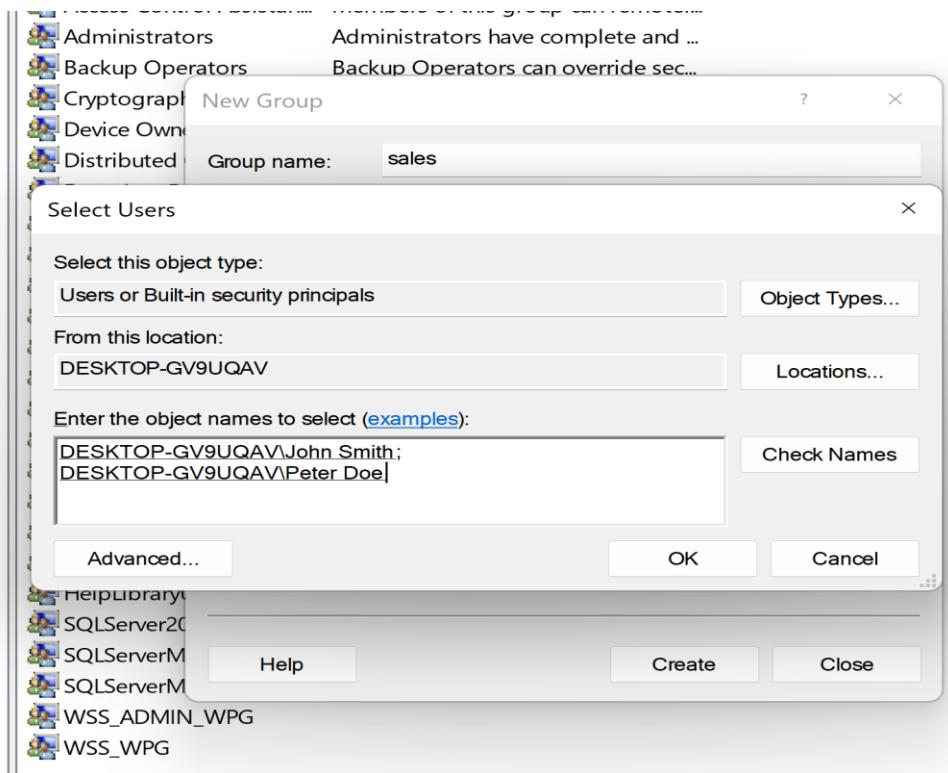
| Name | Description |
|----------------------------|--------------------------------------|
| Access Control Assistan... | Members of this group can remotel... |
| Administrators | Administrators have complete and ... |
| Backup Operators | Backup Operators can override sec... |

A modal dialog box titled 'Select Users' is overlaid on the interface. It contains the following fields:

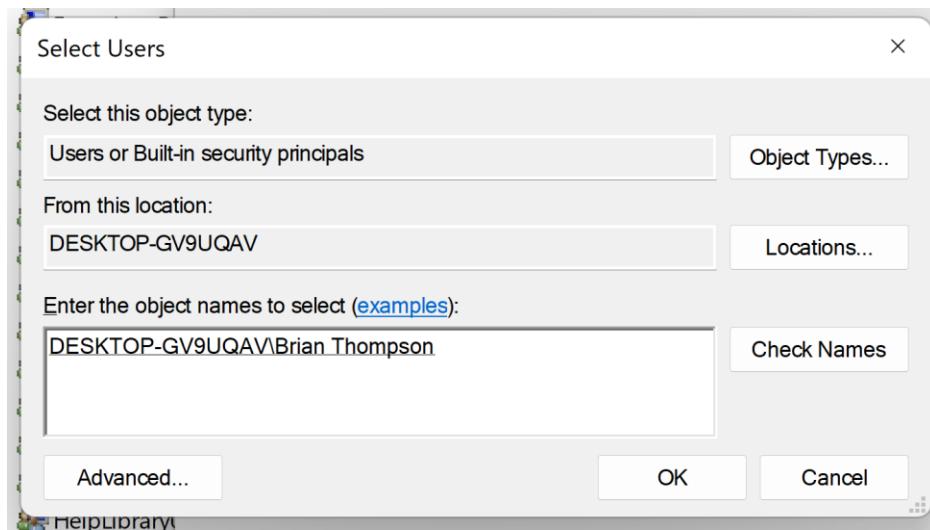
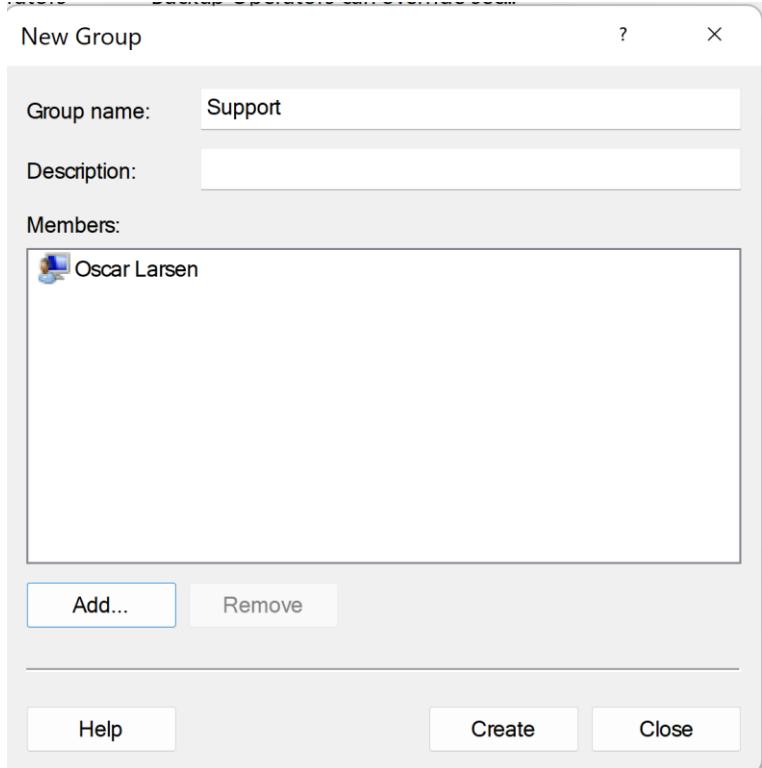
- 'Select this object type:' dropdown set to 'Users or Built-in security principals'.
- 'From this location:' dropdown set to 'DESKTOP-GV9UQAV'.
- 'Common Queries' section with filters for 'Name' (starts with), 'Description' (starts with), and checkboxes for 'Disabled accounts' and 'Non expiring password'.
- 'Days since last logon:' dropdown.
- 'Find Now' button.
- 'Stop' button.
- 'Search results:' table showing users found in the specified location:

| Name | In Folder |
|------------------------------|----------------|
| DefaultAccount | DESKTOP-GV9... |
| DIALUP | |
| Everyone | |
| Guest | DESKTOP-GV9... |
| INTERACTIVE | |
| IUSR | |
| John Smith | DESKTOP-GV9... |
| Local account | |
| Local account and member ... | |
| LOCAL SERVICE | |
- 'OK' and 'Cancel' buttons at the bottom right of the search results table.

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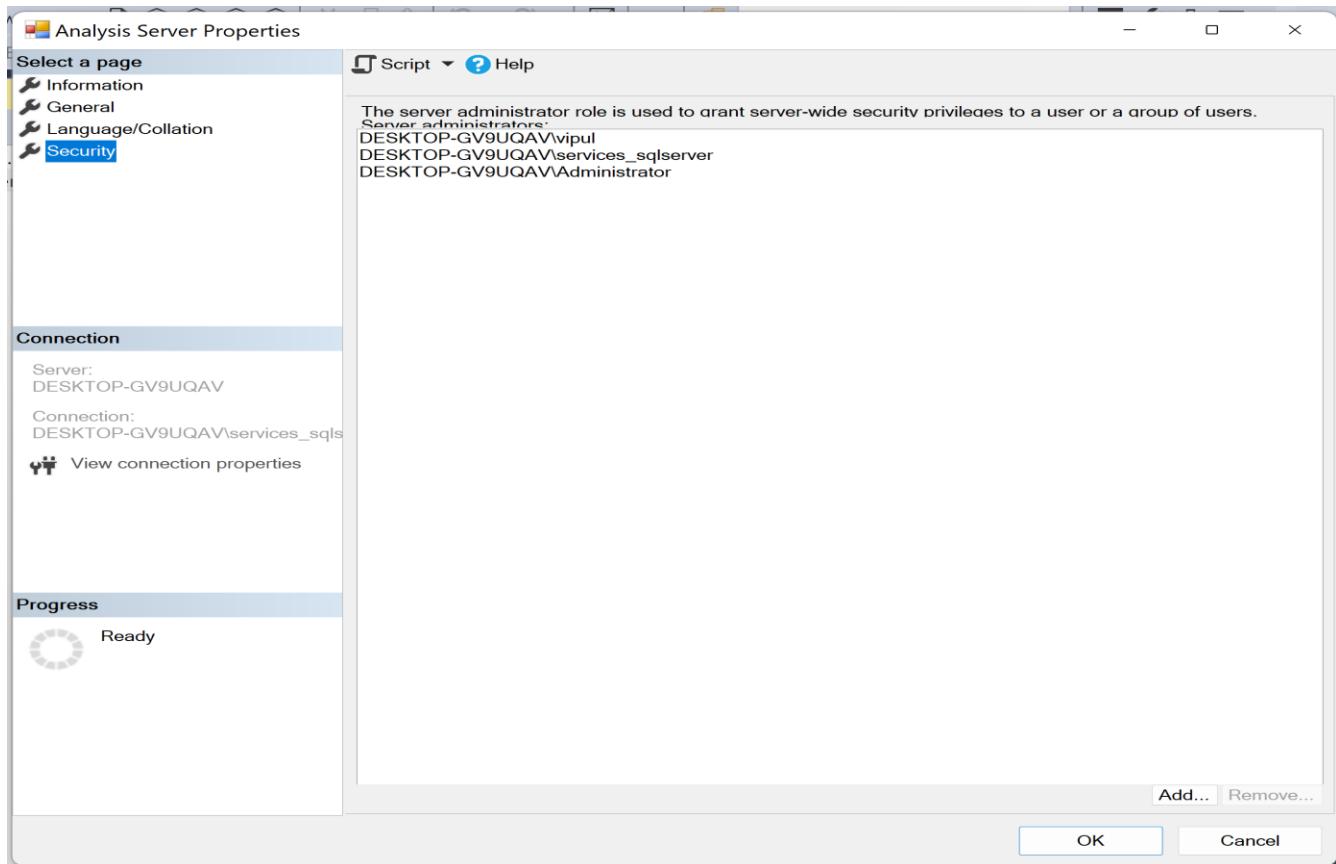
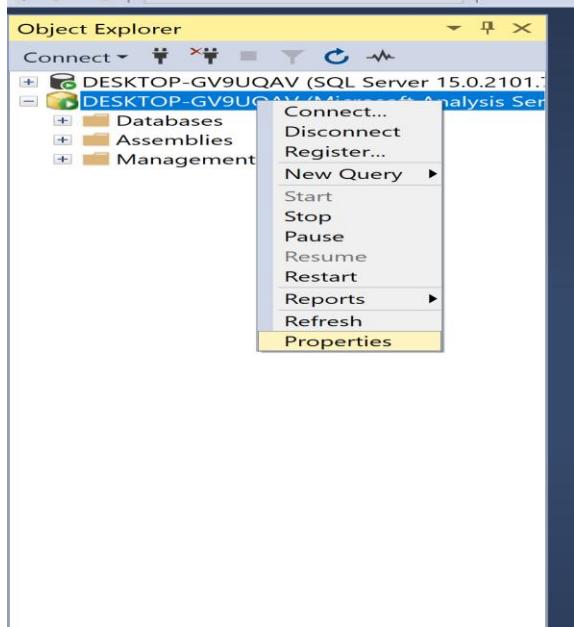


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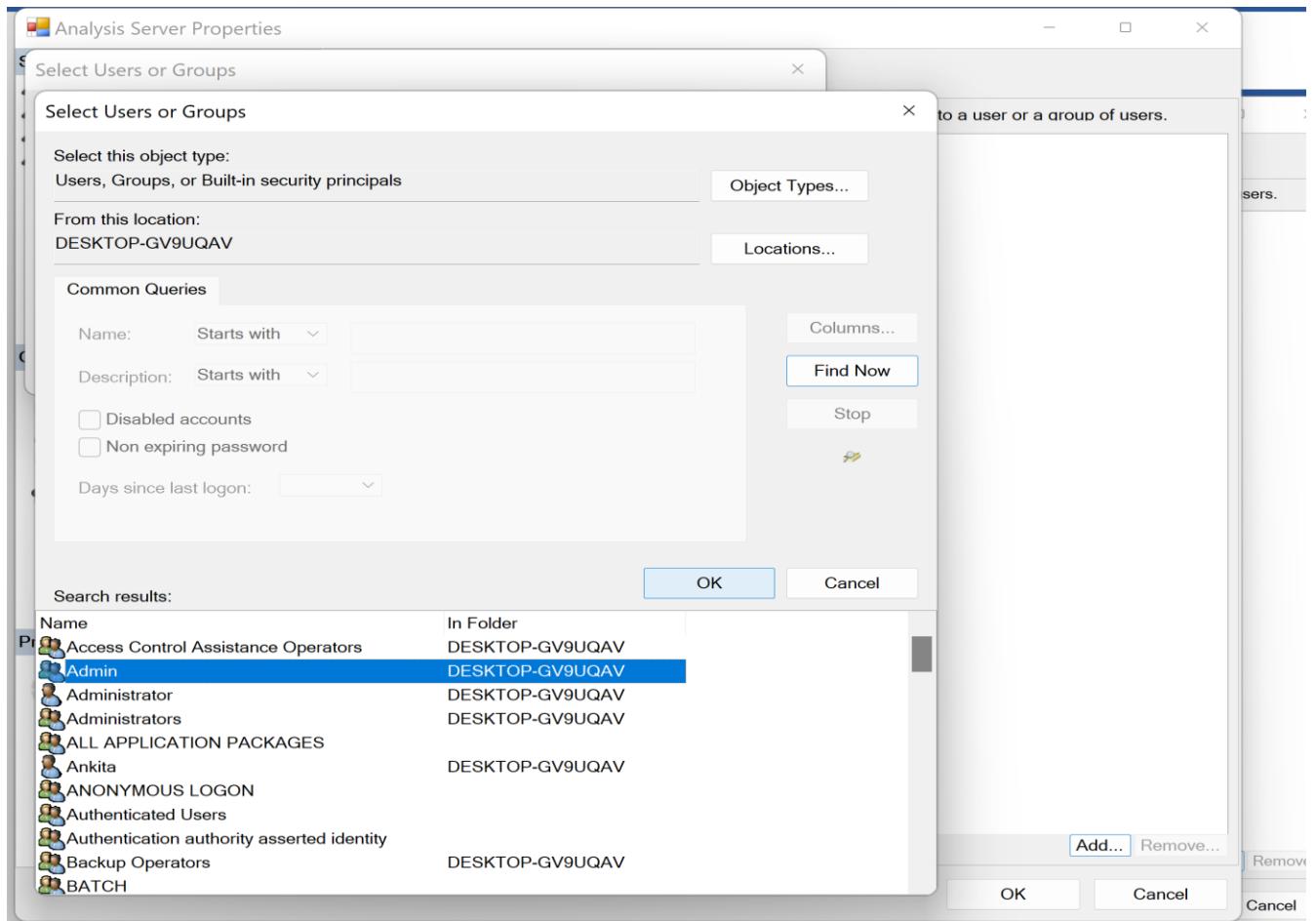


Secure your Analysis Server database

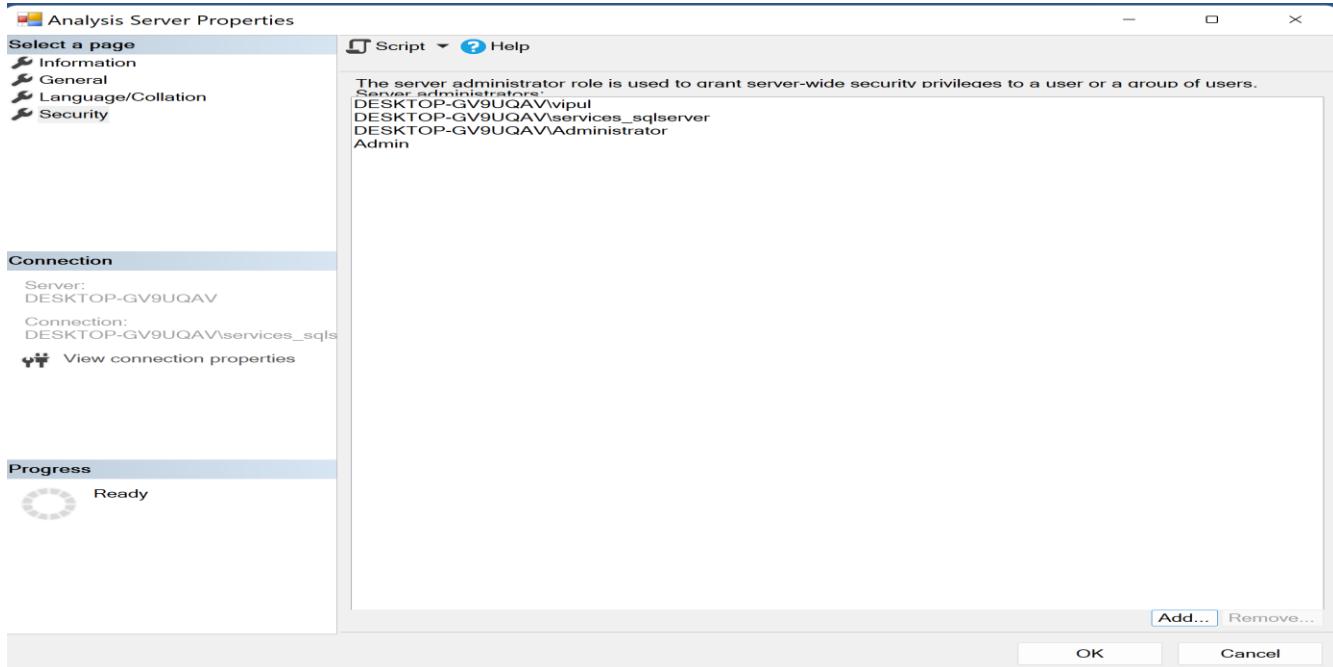
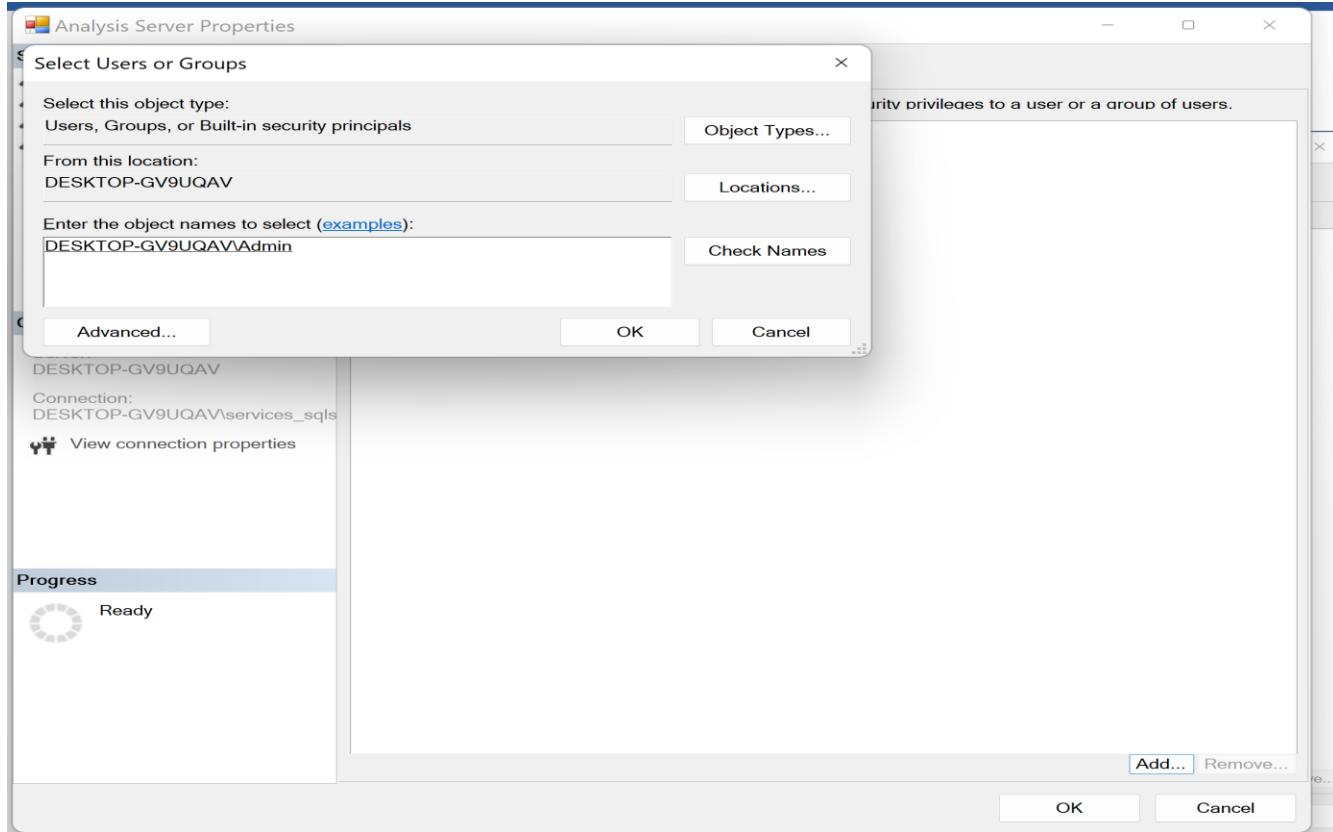
Add members of Admin group to SSAS database Administrators



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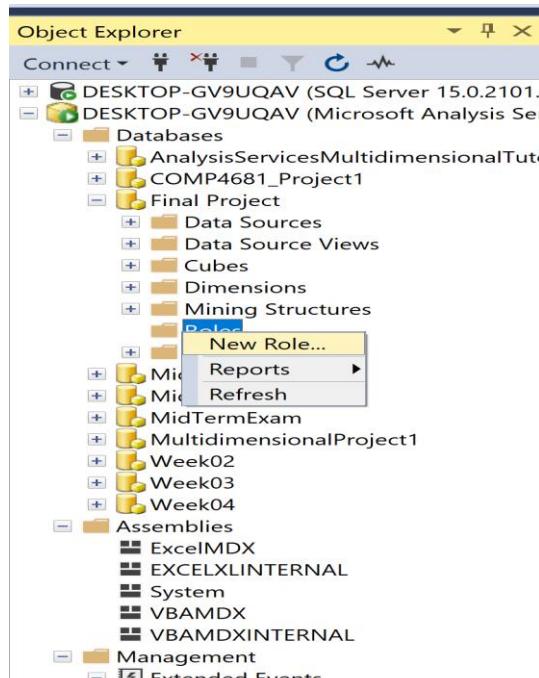
<SQL Server Analysis Services Main Project>



Create a Support Role

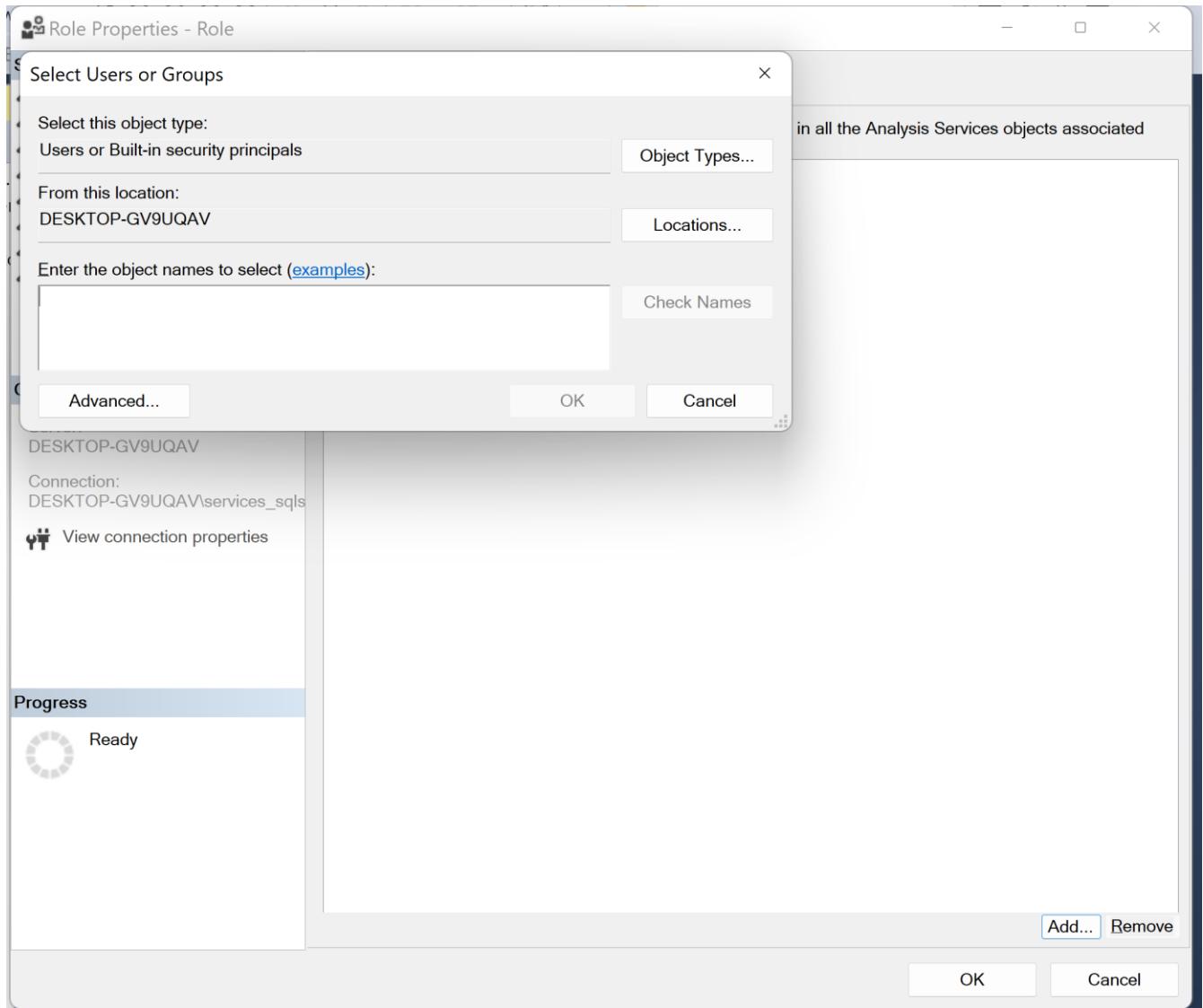
- i. Grant Read Only access

<SQL Server Analysis Services Main Project>

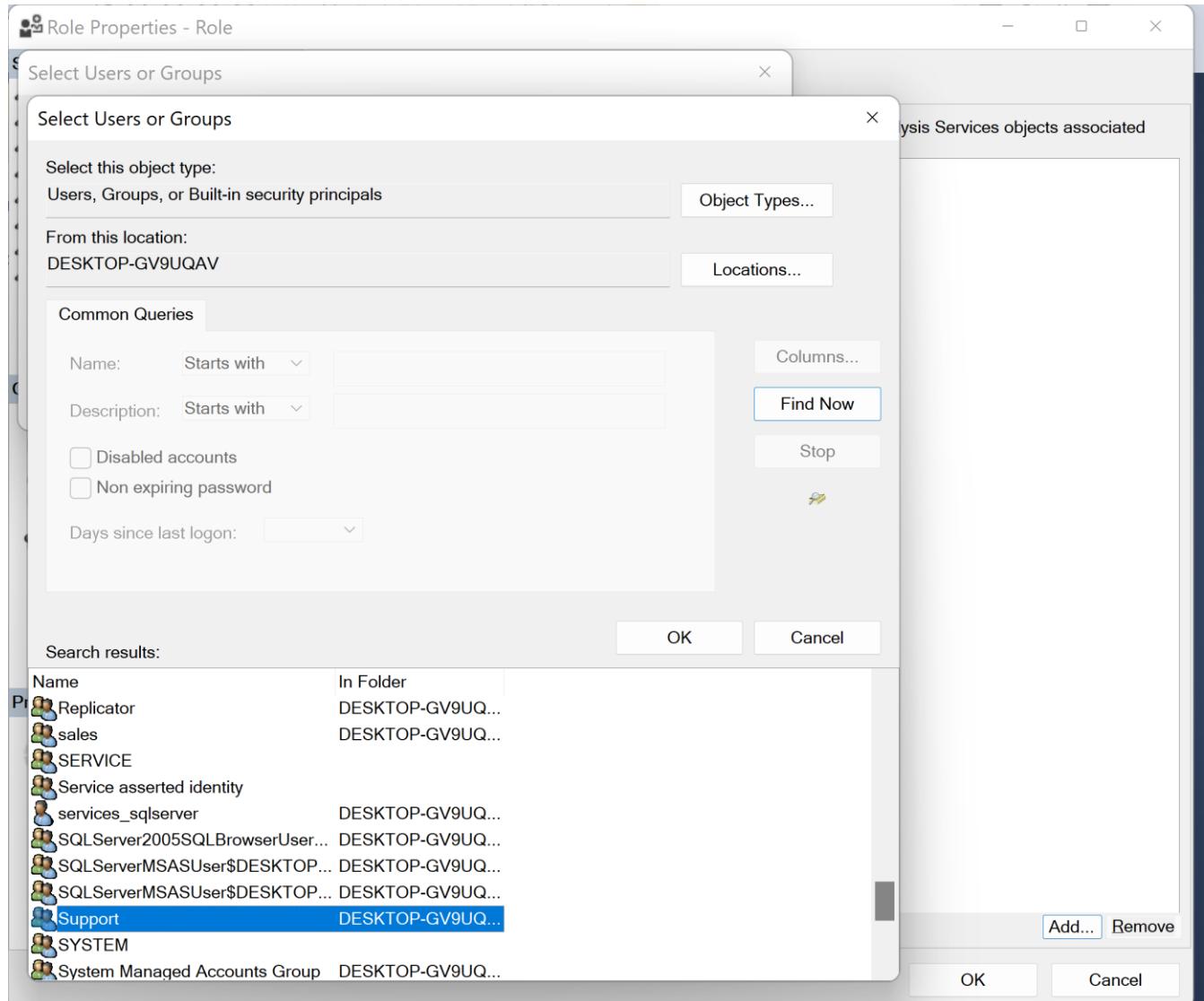


The screenshot shows the SQL Server Object Explorer interface. The left pane displays a tree view of database objects under 'DESKTOP-GV9UQAV (Microsoft Analysis Server)'. The 'Final Project' database is expanded, showing its contents: Data Sources, Data Source Views, Cubes, Dimensions, Mining Structures, Roles, Assemblies, and Management. Under 'Management', Extended Events and Sessions are listed. A context menu is open over the 'Roles' folder, with 'New Role...' selected. Below it, 'Reports' is highlighted. The right pane shows the 'Create Role' dialog box. The 'Select a page' section has 'General' selected. The main area contains instructions: 'The database role defines a category of users and groups that have the same permissions on the database.' It shows two tabs: 'Role' and 'Role'. Under 'Set the database', 'Full control /' is checked, and 'Read definition' is also present. At the bottom, there are 'OK' and 'Cancel' buttons.

Add Support group to this role



<SQL Server Analysis Services Main Project>



<SQL Server Analysis Services Main Project>

