Microsoft

DAT225x

Developing an Analysis Services Tabular Model

Lab 04 | Managing the Tabular Model

Estimated time to complete this lab is 60 minutes

Overview

In this lab, you will add partitions, and configure row-level security to enforce dynamic data permissions.

Note: The four labs in this course are accumulative. You cannot complete this lab if you did not successfully complete **Lab 03**.

It is possible to commence from the solution available in the **F:\Labs\Lab03\Solution** folder, providing that you execute **F:\Labs\Lab02\Assets\Script-01.sql** first.

Getting Started

In this exercise, you will start the VM provisioned in **Lab 01**. You will then connect to the VM to complete the exercises in this lab.

1. Sign in to the **Azure Portal** by using your subscription.

2. In the left pane, select **Virtual Machines**—do not select **Virtual Machines (Classic)**.
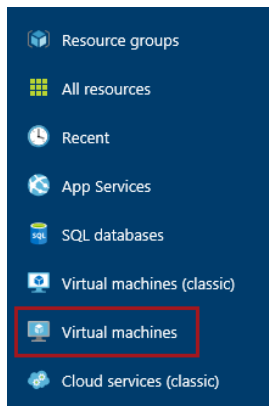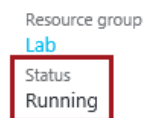

3. In the **Virtual Machines** blade, select the VM you provisioned in **Lab 01**.

4. In the VM blade, click **Start**.

5. Wait for the VM status to update to **Running**.

   *It usually takes 1-2 minutes for the VM to start.*

6.   To connect to the VM, click **Connect**.

Take care not to use the RDP file downloaded in the previous lab. It is likely that a different IP address has be assigned.


7.   When prompted to open the Remote Desktop File, click **Open**.

8.   If prompted to connect to the unknown publisher, click **Connect**.

9.   If prompted, in the **Windows Security** dialog window, click **Use Another Account**.
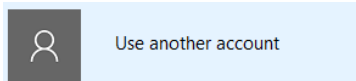
10.   Enter the credentials you created for your VM.

11.   Check the **Remember My Credentials** checkbox.
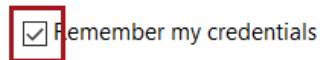
12.   Click **OK**.

13.   In the **Remote Desktop Connection** dialog window, check the
      Don't Ask Me Again for Connections to This Computer checkbox.
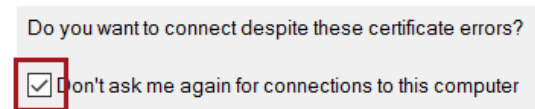
14.   Click **Yes**.

15.   Open SSDT.

16.   On the **File** menu, select **Recent Projects and Solutions** to re-open your project and the model designer.
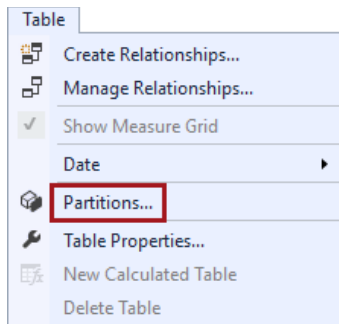
Exercise 1: Adding Partitions

In this exercise, you will add partitions to the **Sales** table to enable processing only the current year's sales.

Adding Partitions

In this task, you will add partitions to the **Sales** table to enable processing only the current year's sales.
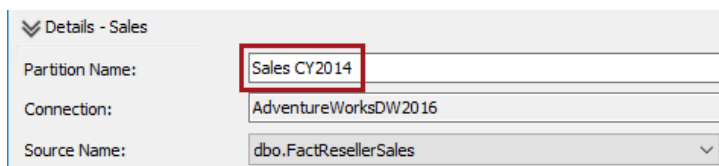
1. In Diagram View, select the **Sales** table.

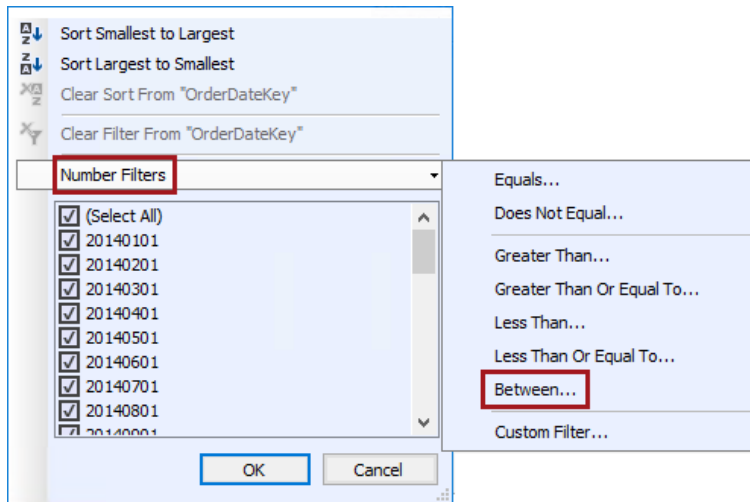2. On the **Table** menu, select **Partitions**.

3. In the **Partition Manager** window, notice that there is one partition named **Sales**.
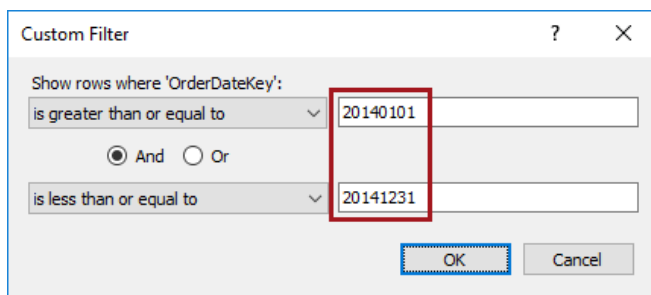

4. In the **Partition Name** box, modify the text to **Sales CY2014**.

5.   In the **OrderDateKey** column header, click the down-arrow, and then select
   **Number Filters | Between**.

6.   In the **Custom Filter** box, in the two boxes, enter the values **20140101** and **20141231**.


7.   Click **OK**.

      *Creating table partitions allows for the efficient removal of data from the model, and allows
      refreshing a subset of the table data. There is no need to refresh partitions, particularly
      historical ones, when the source data has not changed.*

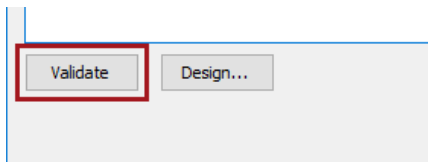8.   To add a new partition based on the existing one, click **Copy**.
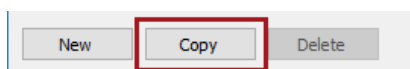
9.   In the **Partition Name** box, modify the text to **Sales CY2015**.

10. To switch to the query editor, click the **Query Editor** button (located halfway down the right side of the window.)
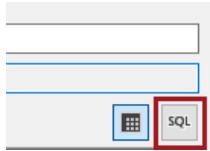
11. Modify the **OrderDateKey** values in the WHERE clause to **201_50101** and **201_51231**, respectively.

12. To validate the query, click **Validate**.

13. Verify that the SQL statement is valid.

14. Create two additional partitions based on the following.

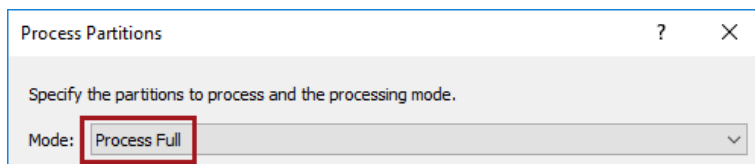| Partition Name	OrderDateKey From	OrderDateKey To
Sales CY2016	20160101	20161231
Sales CY2017	20170101	20171231

15. Click **OK**.

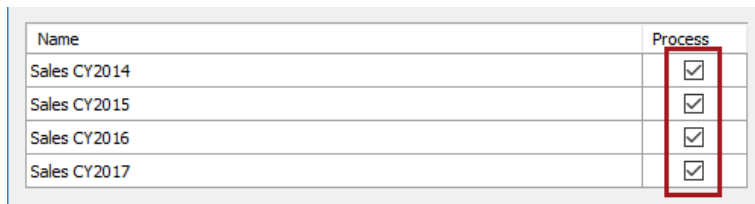16. To process the **Sales** table, in the model diagram, ensure that the **Sales** table is selected.

17. On the **Model** menu, and then select **Process | Process Partitions**.
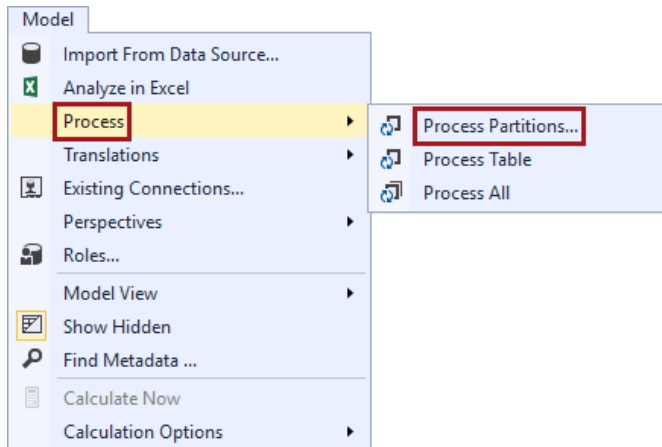
18. In the **Process Partitions** window, in the **Mode** dropdown list, select **Full**.

19. Check all four partitions.

20. Click **OK**.

21. Verify that the status of each work item looks like the following.

If you add up the rows for each partition they come to 60,855—the number contained in the table.

Lab Check
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How many rows were loaded into the **Sales CY2015** partition?_____

> **Commented [PM1]:** 21,670

22. Click **Close**.

Partitions can also be managed by administrators using SSMS Object Explorer. In addition to the ability to create partitions, delete partitions, define the partition queries and refresh partitions, it is also possible to merge partitions.

It is not uncommon that partitions are created, defined and managed by automated processes.

23. To save the project, on the **File** menu, select **Save All**.

Exercise 2: Adding Row-Level Security

In this exercise, you will add a role to limit retrieving data for the sales territory to which the salesperson is assigned.

Exploring the Salesperson Table Data

In this task, you will explore the **Salesperson** table data.

1. Go to the Data View for the **Salesperson** table.

2. If necessary, widen the **LoginID** column to view all the values in the column.

3. Notice that the salesperson **Pamela Ansman-Wolfe** (employee key 286) has your login ID (used to login to the lab VM). Also, notice that this salesperson belongs to the **SalesTerritoryKey** with the value **1**.

4. To navigate to the **SalesTerritory** table, right-click the **SalesTerritoryKey** column header, and then select **Navigate to Related Table**.

5. Notice that the region for **SalesTerritoryKey** value of **1** is **Northwest**.

    You will now define a role that will limit data access to the region of the salesperson, allowing them to see their own sales data and also the sales data for their colleagues from the same region.
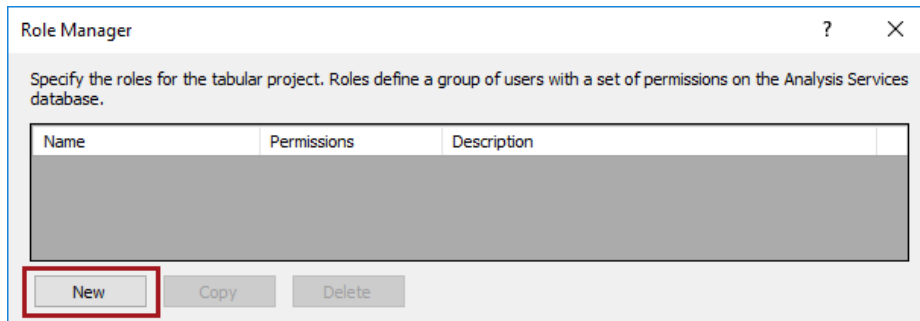
Adding a Role

In this task, you will add a role to limit retrieving data for the region to which the salesperson is assigned.
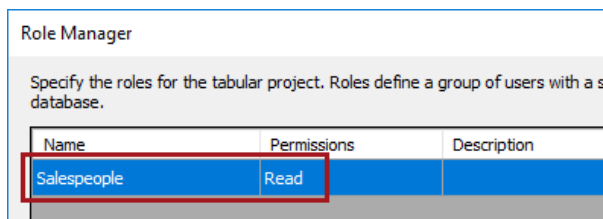
1. On the **Model** menu, select **Roles**.
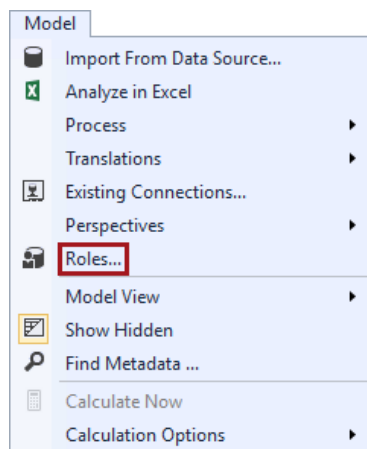
2. In the **Role Manager** window, to create a new role, click **New**.

3. In the **Name** box, replace the text with **Salespeople**.

4. In the **Permissions** dropdown list, select **Read**.

5. In the **Row Filters** tab, in the **Salesperson** table row, enter the following expression, and then press **Enter**.

DAX

```
=[SalesTerritoryKey] = LOOKUPVALUE(Salesperson[SalesTerritoryKey],
Salesperson[LoginID], USERNAME())
```

*This expression uses the LOOKUPVALUE function to retrieve the **SalesTerritoryKey** value for the current user. This way the role will allow salespeople to see data related to other salespeople within their own region. This is a dynamic filter.*
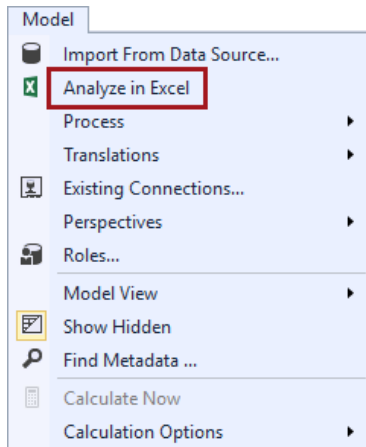
6. Notice the **Members** tab.

In a production environment, Windows groups or accounts would be added to the members of the role.

7. Click **OK**.

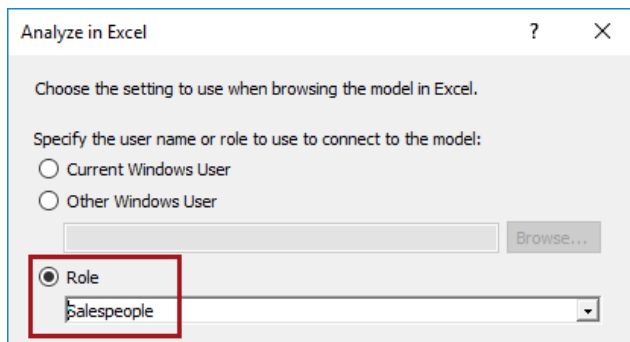8. To save the project, on the **File** menu, select **Save All**.

Testing Data Permissions

In this task, you will test the **Salespeople** role.

1. On the **Model** menu, select **Analyze in Excel**.

2. In the **Analyze in Excel** window, select the **Role** option, and then in the dropdown list, check **Salespeople**, and then click **OK**.

    This will allow you test as if you were connecting as Pamela Ansman-Wolfe.

3. Click **OK**.

4. In Excel, if prompted to activate Office, click **Cancel**.

5. In the PivotTable, from the **Region** table, add the **Regions** hierarchy to the rows.

6. From the **Sales** table, add the **Sales** measure.

7. Notice that the PivotTable now displays only **North America**.

8. Drill down to reveal the **Country** and **Region** levels.

	A	B
1	Row Labels ▼	Sales
2	⊟North America	$16,491,322.59
3	⊟United States	$16,491,322.59
4	Northwest	$16,491,322.59
5	Grand Total	$16,491,322.59

9. From the **Salesperson** table, add the **Salesperson** field to the rows.

	A	B
1	Row Labels ▼	Sales
2	⊟North America	$16,491,322.59
3	⊟United States	$16,491,322.59
4	Northwest	$16,491,322.59
5	David Campbell	$6,442,487.84
6	Pamela Ansman-Wolfe	$5,423,743.36
7	Tete Mensa-Annan	$4,625,091.38
8	Grand Total	$16,491,322.59

Pamela Ansman-Wolfe can see all Northwest sales data, including her colleagues' sales data.

10. Apply a filter to the PivotTable report by using the **Calendar** hierarchy for **CY2015**.

> **Lab Check**
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>
> What exact sales amount was achieved in the **Northwest** region for **CY2015**? _____

Commented [PM2]: $2,621,576.68

11. Close Excel, and do not save any changes.

You have now completed the lab.

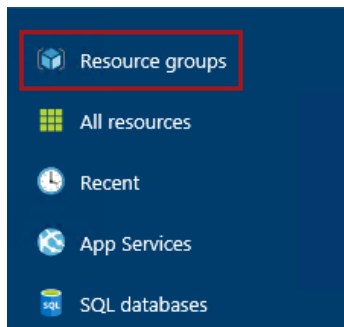*When you are ready, you should complete the **Finishing Up** exercise to delete the VM.*

Finishing Up

In this exercise, you will delete the **Lab** resource group, which will delete the VM.
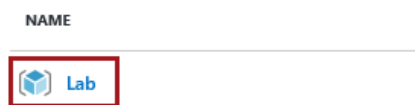
1. Close the remote desktop window.

2. In the **Azure Portal** Web browser page, open the left pane.

3. Select **Resource Groups**.

4. In the **Resource Groups** blade, select the **Lab** resource group.

5. In the **Lab** blade, click **Delete**.

6. When prompted to delete the resource group, in the **Type the Resource Group Name** box, enter **Lab**.

7. Click **Delete**.

8. Sign out of the **Azure Portal**.