

Azure SQL MI PowerBI

March 2019

Contents

Introduction.....	1
Understanding Integration Runtime in Azure Data Factory	1
SQL Managed Instance – Power BI.....	2
Exercise 0: Provisioning a self-service runtime environment for Managed Instance data movement.....	2
Exercise 1: Use the Copy Data Tool to Create and Run Data Pipeline	11
Overview	11
Exercise 2: Provisioning an Azure-SSIS Integration Runtime in Azure Data Factory	21
Overview	21
Exercise 3: Deploy and Run SSIS Packages from Azure Data Factory SSIS IR	29
Overview	29
Connect to SSISDB.....	29
Exercise 4: Power BI	35
Overview	35
Conclusion	41

Introduction

In this lab, you will learn key concepts in data integration centered on orchestrating and operationalizing data movement and data transformation activities, as well as cloud-based SSIS package execution via Azure Data Factory's Integration Runtime feature. You will establish connections with both on-premises SQL Server Databases, as well as Managed Instances in the cloud, to allow the creation of data pipelines that run from your sources, all the way to your destination. Then, you will lift-and-shift native SSIS packages onto the cloud to allow for more seamless control and monitoring during executions. Finally, you'll complete the journey of your data by establishing a connection to a live Power BI Desktop report, where you will be able to visualize directly the various components and insights contained in your data.

Understanding Integration Runtime in Azure Data Factory

Integration Runtime (IR) *is the **compute infrastructure** used by Azure Data Factory to provide the following data integration capabilities across different network environments:*

- **Data Movement:** Moving data between data stores in public and private networks.
- **Activity Dispatch:** Monitoring transformation activities running on a variety of compute services.
- **SSIS Package Execution:** Natively execute SQL Server Integration Services (SSIS) packages in a managed Azure compute environment.

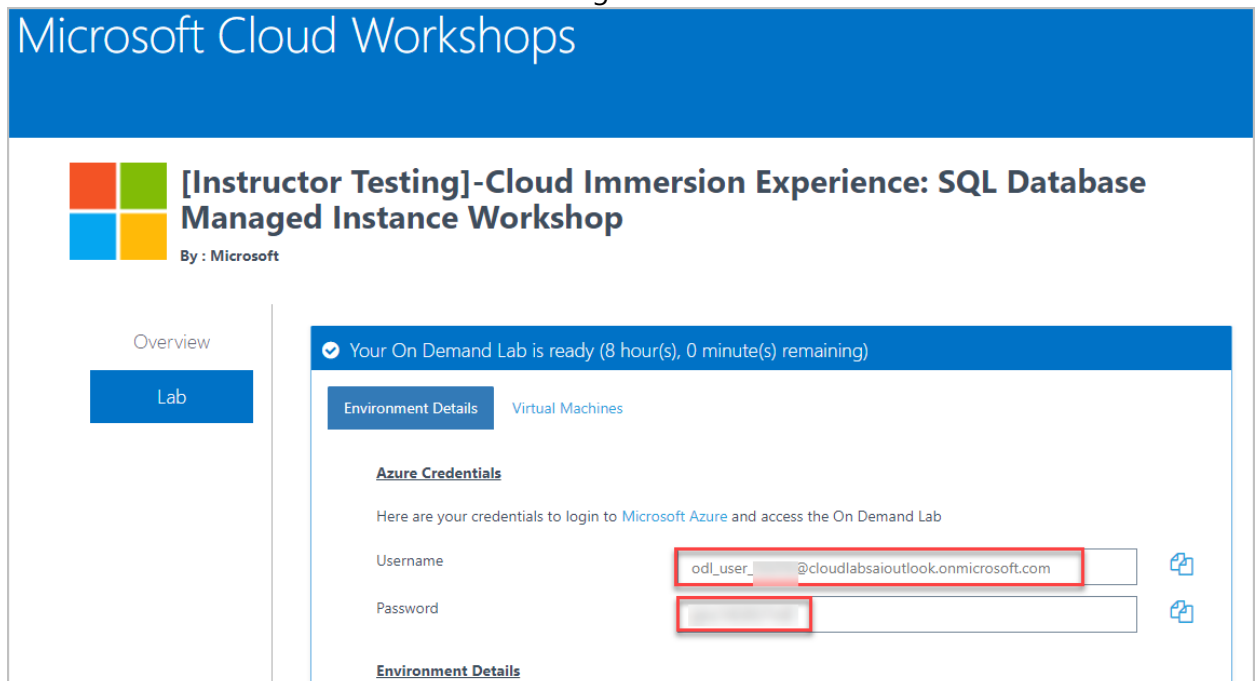
Azure Data Factory offers three types of Integration Runtimes that serve specific data integration capabilities; Azure, Self-hosted, and **Azure-SSIS**. The last type supports the previously mentioned **SSIS Package Execution**, which is what we'll be using in this section of the lab.

SQL Managed Instance – Power BI

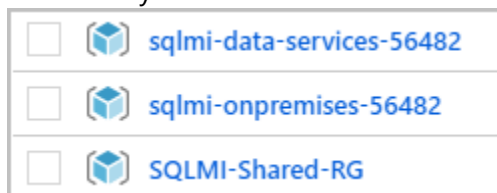
Exercise 0: Provisioning a self-service runtime environment for Managed Instance data movement.

Create a Self-Hosted Integration Runtime for Managed Instance:

1. Launch a browser and navigate to <https://portal.azure.com>. Once prompted, login with the Azure Credentials from the Lab Details Page.

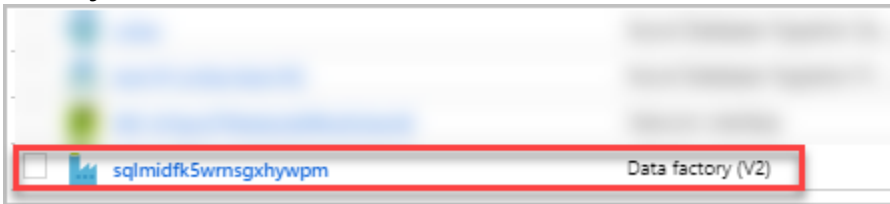


2. In the Stay signed in? pop-up window, click No
3. In the Welcome to Microsoft Azure pop-up window, click Maybe Later
Note: If you receive a pop-up for Azure Advisor, click the X in the top right corner of the pop-up to close it.
4. You will be directed to the dashboard.
5. From the left side of the Page, select **Resource Groups**
6. Note that you will have access to three Resource groups:

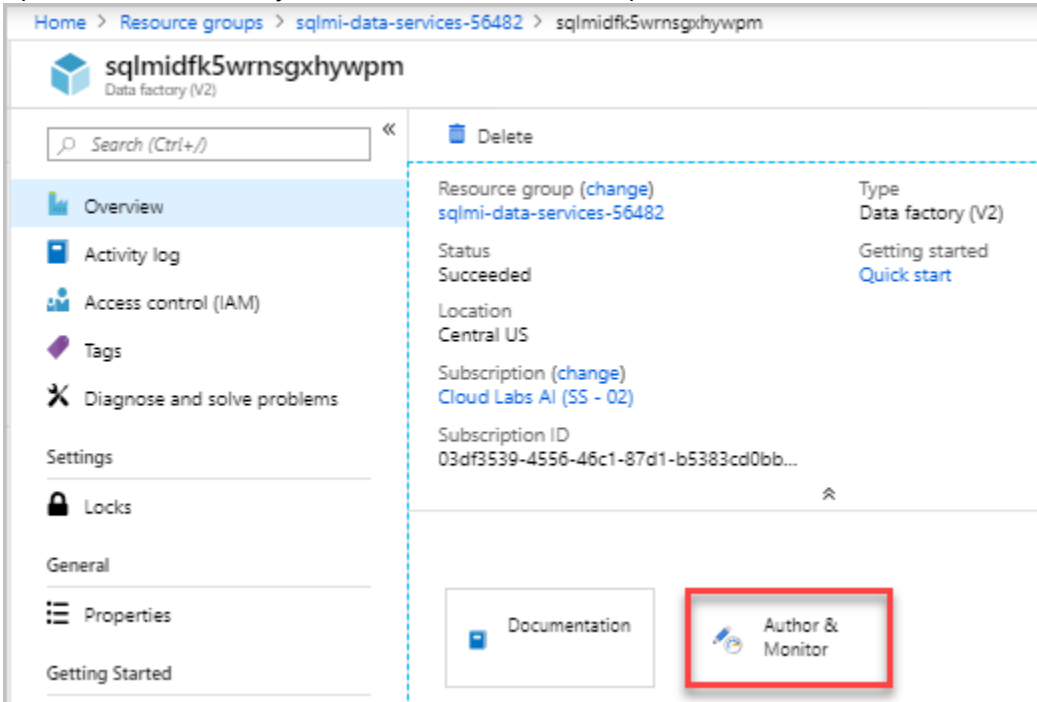


7. Select resource group starting with **sqlmi-data-services-**

8. From the overview blade of the Resource group, **select** the resource with type **Data Factory (V2)** from the resources:



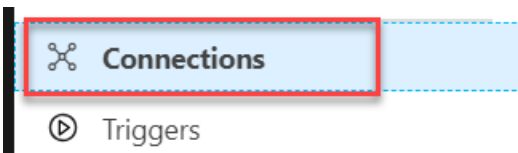
9. From the overview blade of the Data Factory, navigate to the Author & Monitor tile to open the Data Factory user Interface (UI) on a separate tab.



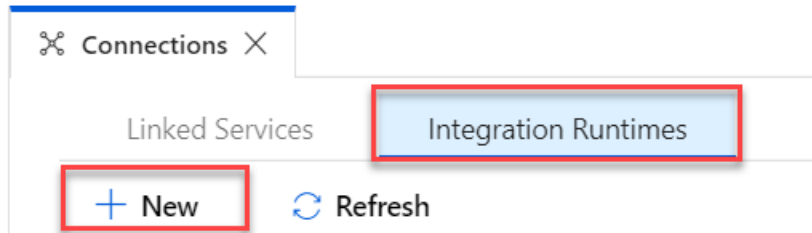
10. Click on Author(Pencil Icon)



11.
12. Click on Connections



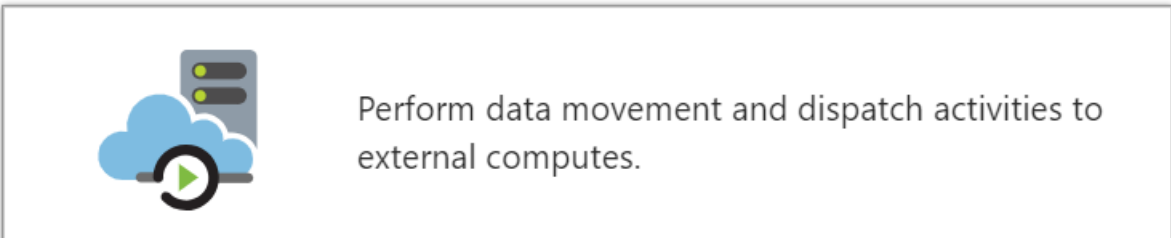
13.
14. Select Integration Runtimes and Click on +New



15.

16.

17. Select Perform data movement and dispatch activities to external computers



18.

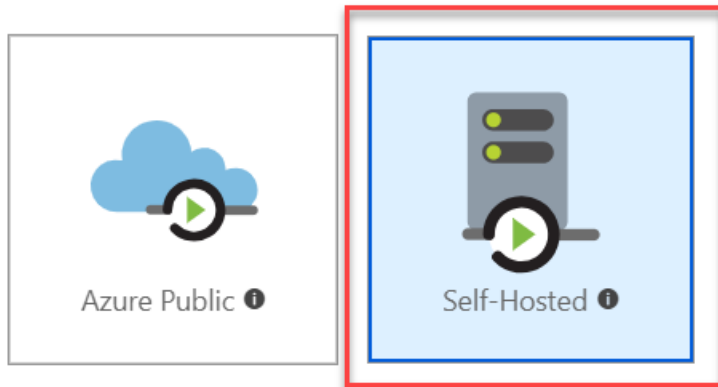
19.

20. Select Self-Hosted and Click Next.

Integration Runtime Setup

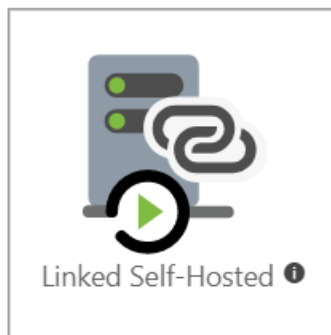


Choose the network environment of the data source/destination or external compute to which the integration runtime will connect to for data movement or dispatch activities:



External Resources:

You can use an existing self-hosted integration runtime that exists in another Data Factory. This way you can reuse your existing infrastructure where self-hosted integration runtime is setup.



- 21.
22. Provide SQLMI-RunTime as name and click next

Integration Runtime Setup



Private network support is realized by installing integration runtime to machines in the same on-premises network/VNET as the resource the integration runtime is connecting to. Follow below steps to register and install integration runtime on your self-hosted machines.

Name *

SQLMI-RunTime



Description

Enter description here...

Type

Self-Hosted

23.

24. Copy Keys and save in a safe place.

Name	Authentication Key
Key1	IR@ffbd5e5-c441-4b65-b95b-4e6c4958f913@sqlmidfuq36ajj7kmt2@cu@
Key2	IR@ffbd5e5-c441-4b65-b95b-4e6c4958f913@sqlmidfuq36ajj7kmt2@cu@

25.

26. Now, we'll install the runtime binaries on the SQL Server VM.

27. Login to SQL Server Virtual Machine using Remote Desktop and Launch a browser window.

28. Download the manual setup file form <https://www.microsoft.com/en-us/download/details.aspx?id=39717>

Choose the download you want

<input type="checkbox"/> File Name	Size
<input checked="" type="checkbox"/> IntegrationRuntime_3.14.6997.1 (64-bit).msi	243.2 MB
<input type="checkbox"/> Release Notes.doc	124 KB

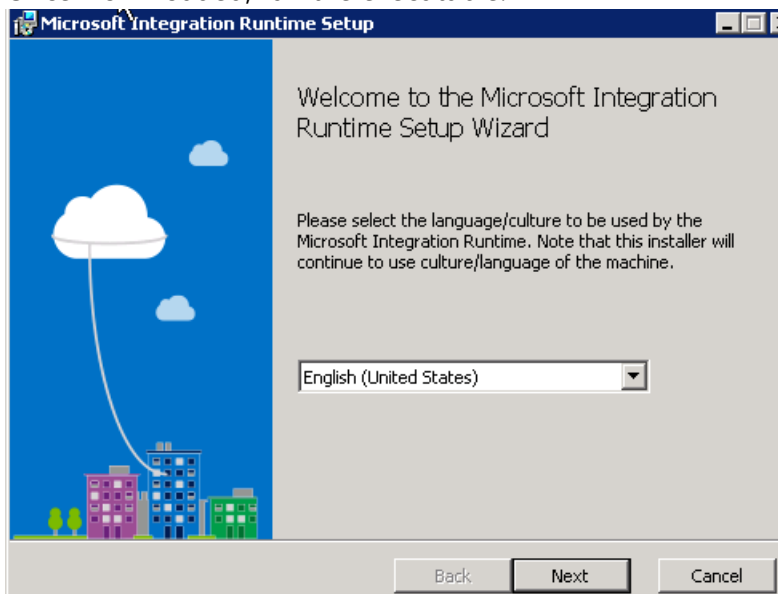
Download Summary:
KBMBGB

1. IntegrationRuntime_3.14.6997.1 (64-bit).msi

Total Size: 243.2 MB

Next

29. Once Downloaded, run the executable.

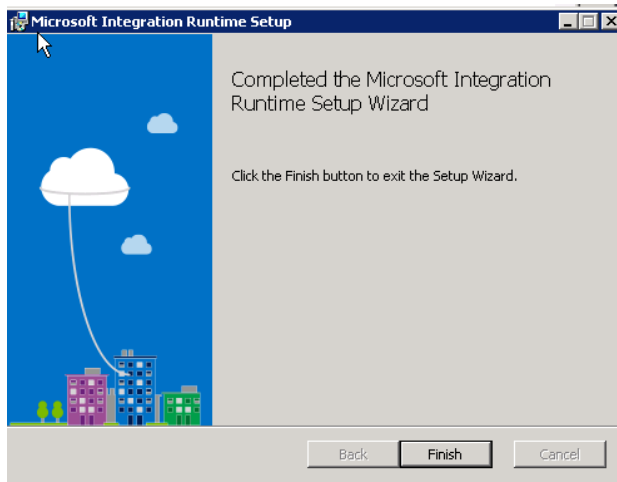


30. Click **Next**

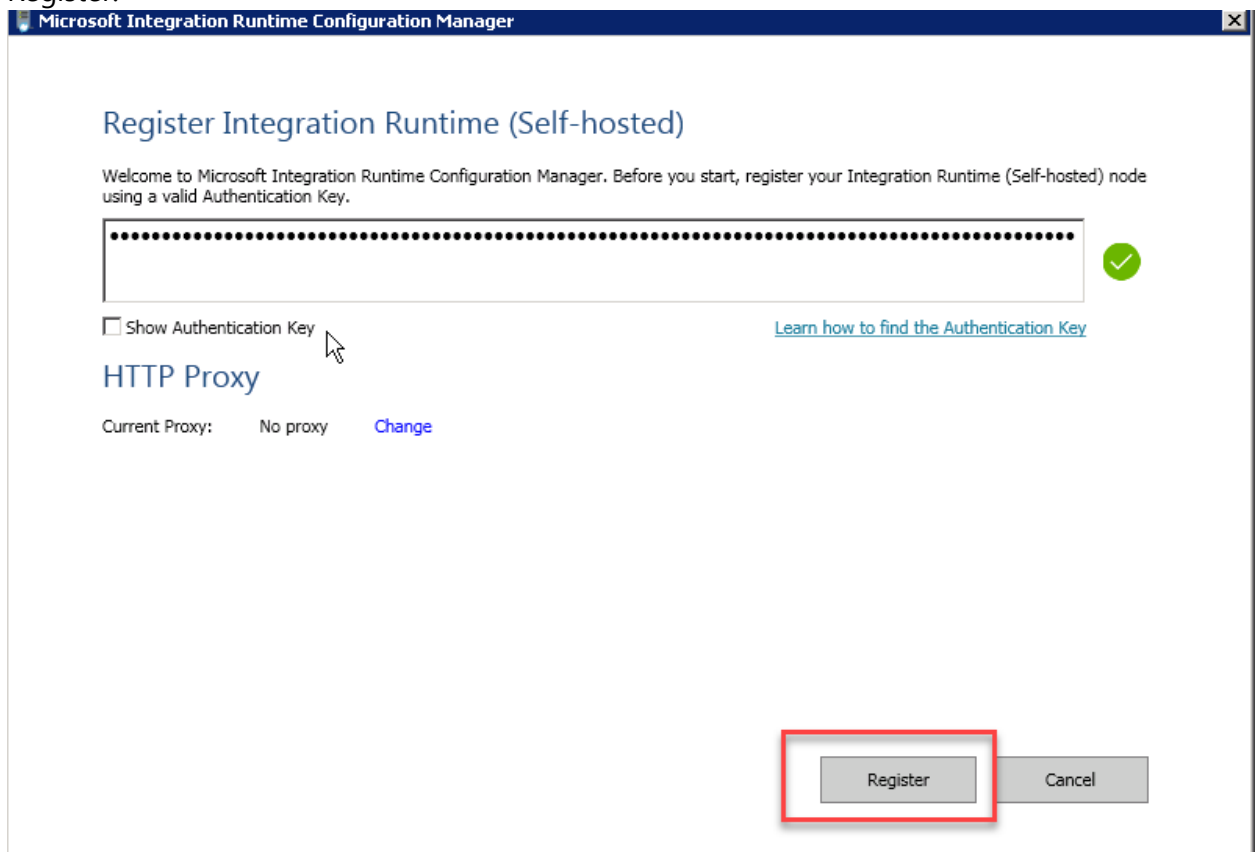
31. Accept the terms and conditions and **proceed**.

32. Accept Default Location and Proceed further for installation

33. Click **Finish** once completed.



34. Upon Finishing, it'll launch the Configuration Wizard. Enter the key you copied and click Register.



35. Review the settings and click Finish

Microsoft Integration Runtime Configuration Manager

New Integration Runtime (Self-hosted) Node

Integration Runtime (Self-hosted) node name: ⓘ

IMGEVM-13-03-19 ✓

Below is the list of Integration Runtime (Self-hosted) Nodes:








<input type="checkbox"/> SQLMI-RunTime IMGEVM-13-03-19 : Current New Node
--

☐ Enable remote access from intranet ⓘ

Finish Cancel

36. Click Close once configuration is completed.

37. Now, In Azure Data Factory you should see this Integration Runtime as Running.

Connections						
Linked Services		Integration Runtimes				
+ New Refresh						
Name	Actions	Type	Sub-type	Status	Region	
AutoResolveIntegrationRuntime	  	Azure	Public	✓ Running	Auto Resolve	
SQLMI-RunTime	   	Self-Hosted	---	✓ Running	---	

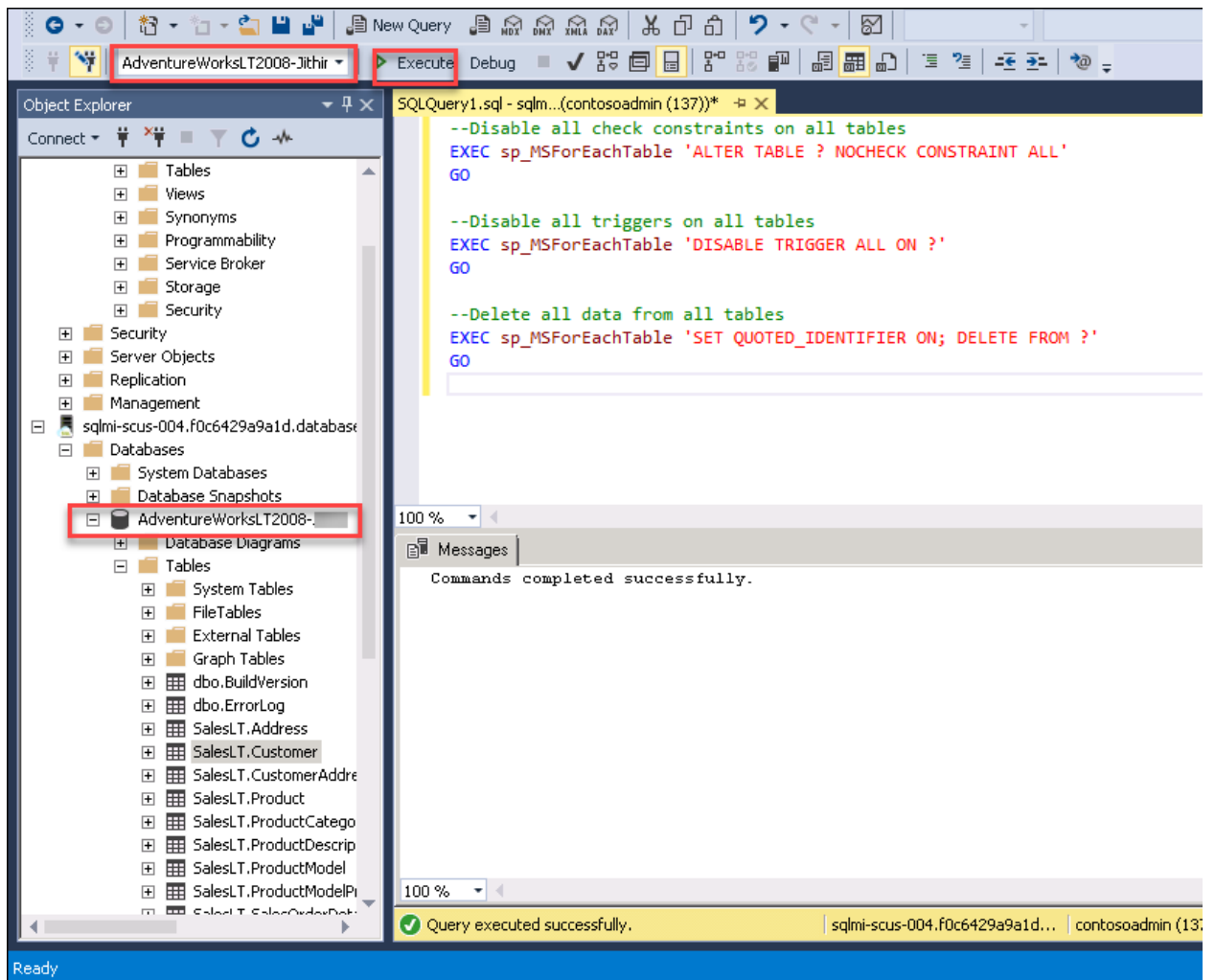
38. Self-Hosted Integration run time setup for SQL managed Instance is now completed.

Task: Delete data from Migrated Database

39. In this task, we'll remove the records from the DB we migrated in last exercise using Database Migration Service. We're deleting the records only, so that we can try copying it using Azure Data factory without re-creating schema.

40. Connect to SQL Server Managed Instance using SQL Management Studio

41. Click on New Query and select the database you migrated earlier



42. Run the following query and Click Execute.

```
--Disable all check constraints on all tables
EXEC sp_MSForEachTable 'ALTER TABLE ? NOCHECK CONSTRAINT ALL'
GO

--Disable all triggers on all tables
EXEC sp_MSForEachTable 'DISABLE TRIGGER ALL ON ?'
GO

--Delete all data from all tables
EXEC sp_MSForEachTable 'SET QUOTED_IDENTIFIER ON; DELETE FROM ?'
GO
```

43. Records are delete, you can now proceed to copy data with Azure Data Factory

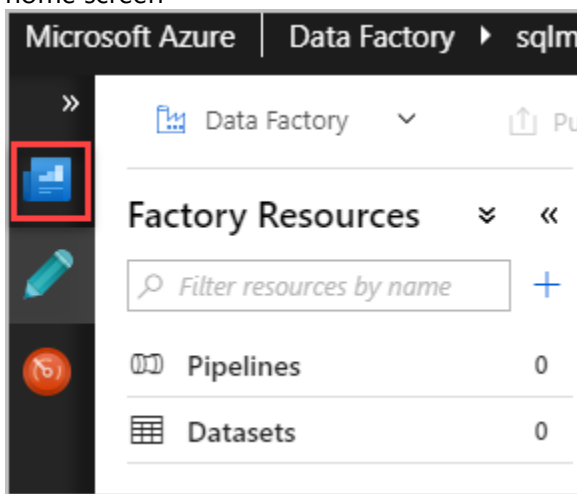
Exercise 1: Use the Copy Data Tool to Create and Run Data Pipeline

Overview

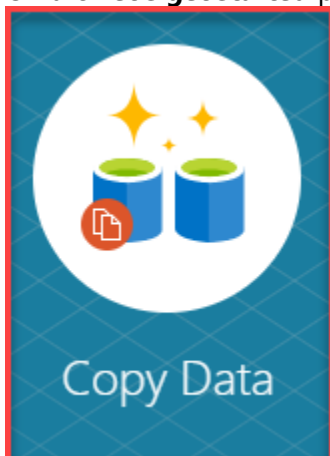
In this exercise, we'll use copy data tool to copy data from on-prem SQL Server to SQL MI.

Task 1:

1. On the left-hand column of the screen, click the blue **Data Factory** icon to return to the home screen



2. On the **Let's get started** page, select the **Copy Data** tile to launch the **Copy Data tool**



- On the **Properties** page, under **Task name**, enter **CopyFromAzureSQLDBtoMI**, then select **Next**

Copy Data

1 Properties

2 Source

3 Destination

4 Settings

5 Summary

6 Deployment

Properties

Enter name and description for the copy data task.

Task name *
CopyFromAzureSQLDBtoDataWarehouse

Task description

Task cadence or Task schedule
☒ Run once now ☐ Run regularly on schedule

Previous Next


4. On the **Source data store** page, click **+ Create new connection**

Source data store

Specify the source data store for the copy task. You can use an existing data store connection or specify a new data store.

All Azure Database File Generic protocol NoSQL Services and apps

All Filter by name **+ Create new connection**



No connection to display.

Try changing your filters if you don't see what you're looking for.


Previous Next

5. Search **SQL Server** and select **SQL Server** from the gallery, and then select **Continue**

New Linked Service ×

SQL Server

All Azure Database File Generic protocol NoSQL Services and apps



SQL Server

6. On the New Linked Service page, enter the following information:
- Name:** Enter **CopySourceService**
 - Description:** Leave blank
 - Connection via Integration Runtime:** Select **AutoResolveIntegrationRuntime**

- d. **Connection String or Azure Key Vault:** Select **Connection String**
- e. **Server name:** Provide SQL Server VM DNS Name
- f. **Database Name:** Provide **the database name of the database**
- g. **Authentication Type:** Select **SQL Authentication**
- h. **User name:** labuser
- i. **Password:** demopassword1!

←
New Linked Service (SQL Server)
×

Description

Connect via integration runtime *

AutoResolveIntegrationRuntime
 ▼

Connection String

Azure Key Vault

Server name *

Database name *

Authentication type

SQL Authentication
 ▼

User name *

Cancel

Test connection

Finish

- j. **Click on Test connection**

Test connection

Finish

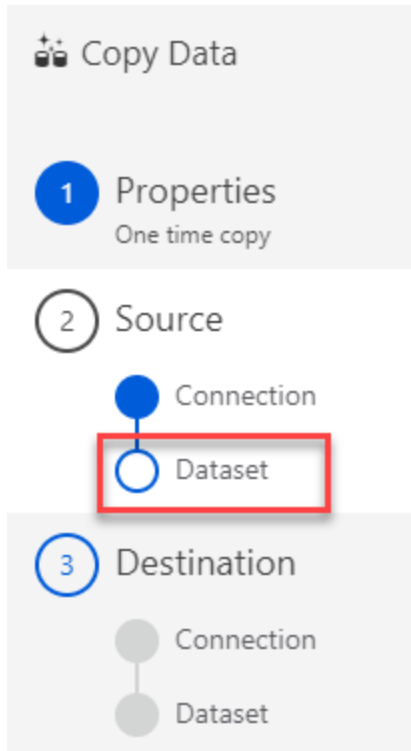
- k. Once connection is successful, Click on **Finish**

✓ Connection successful

Test connection

Finish

7. Select the newly created linked service as source, then click **on Dataset**



8. On the **Select tables from which to copy the data or use a custom query** page, select the Tables `[[SalesLT].[Address]`, `[[SalesLT].[Customer]`, `[[SalesLT].[CustomerAddress]` as example then click **next**

Select tables from which to copy the data or use a custom query.

You can select multiple tables, or you can provide single custom query.

EXISTING TABLES **USE QUERY**

Filter by table name ☐ Show views

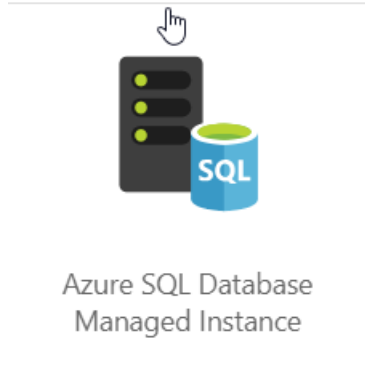
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<code>[[SalesLT].[Address]</code>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<code>[[SalesLT].[Customer]</code>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<code>[[SalesLT].[CustomerAddress]</code>
<input type="checkbox"/>	<input type="checkbox"/>	<code>[[SalesLT].[Product]</code>

Showing 12 out of 12 tables, 0 out of 3 views (3 selected)

Preview **Schema**

COLUMN NAME	TYPE
-------------	------

9. On the **Destination data store** page, click + **Create new connection** to add a connection
10. Select **Azure SQL Database Managed Instance** from the gallery, and then select **Continue**



11. On the **New Linked Service** page, enter the following information:
 - a. **Name:** Enter **CopyDestinationService**
 - b. **Description:** Leave blank
 - c. **Connection via Integration Runtime:** Select **SQLMI-Runtime (Your previously created runtime)**
 - d. **Connection String or Azure Key Vault:** Select **Connection String**
 - e. **Server name:** Provide SQL MI Server Name
 - f. **Database Name:** Enter the database you created earlier for this.
 - g. **Authentication Type:** Select **SQL Authentication**
 - h. **User name:** Enter **contosoadmin**
 - i. **Password:** Enter **IAE5fAijit0w^rDM**
 - j. Click **Finish**

← New Linked Service (Azure SQL Database Mana... ×

Name *
CopyDestinationService

Description

Connect via integration runtime *
SQLMI-RunTime

[Edit Integration Runtime](#)

Connection String Azure Key Vault

Server name *
sqlmi-scus-001.a07ab820155f.database.windows.net

Database name *
AdventureWorksLT2008R2Amit

Authentication type
SQL Authentication

User name *
contosoadmin

Password Azure Key Vault

Password *

Additional connection properties
+ New

Annotations
+ New

Parameters

✓ Connection successful

Cancel Test connection Finish

12. Select the newly created linked service as sink, then click **Next**

13. On the **Table mapping** page, Select the corresponding table and select **Next**

Table mapping

For each table you have selected to copy in the source data store, select a corresponding table in the destination data store or specify the stored procedure to run at the destination.

Source	Destination
<input checked="" type="checkbox"/> [dbo].[BuildVersion]	→ [dbo].[BuildVersion] ↻ ▼
<input checked="" type="checkbox"/> [dbo].[ErrorLog]	→ [dbo].[ErrorLog] ↻ ▼
<input checked="" type="checkbox"/> [SalesLT].[Address]	→ [SalesLT].[Address] ↻ ▼

☐ Skip column mapping for all tables

[Previous](#) [Next](#)

14. On the **Column mapping** page, select **Next**

Column mapping

Choose how source and destination columns are mapped

Table mappings (12)

- ☒ Source [dbo].[BuildVersion]
Destination [dbo].[BuildVersion]
- ☒ Source [dbo].[ErrorLog]
Destination [dbo].[ErrorLog]
- ☒ Source [SalesLT].[Address]
Destination [SalesLT].[Address]
- ☒ Source [SalesLT].[Customer]
Destination [SalesLT].[Customer]

Column mappings

- ☒ [dbo].[BuildVersion] [dbo].[BuildVersion]
- ☒ Database Version (String) → Database Version (String)*
- ☒ VersionDate (DateTime) → VersionDate (DateTime)*

SQL Server sink properties

Pre-copy script 1

Write batch timeout

[Previous](#) [Next](#)

15. On the **Settings** page, Change fault tolerance to Skip Incompatible rows, Uncheck "Enable Staging" and click Next

Fault tolerance settings

Fault tolerance Skip incompatible rows ⓘ

Performance settings

Enable staging ☐ ⓘ

Advanced settings


Data integration unit Auto ⓘ
☐ Edit

Degree of copy parallelism Auto ⓘ
☐ Edit

16. On the **Summary** page, review the settings, and then select **Next**

Summary

You are running pipeline to copy data from SQL Server to SQL Server.



Properties [Edit](#)

Task name	CopyFromSQLDBtoMI
Task description	

Source [Edit](#)

Connection name	SqlServer1
Dataset name	SourceDataset_0h6
Table name	[SalesLT].[SalesOrderDetail]

Destination [Edit](#)

Connection name	CopyDestinationService
Dataset name	DestinationDataset_0h6
Table name	[SalesLT].[SalesOrderDetail]

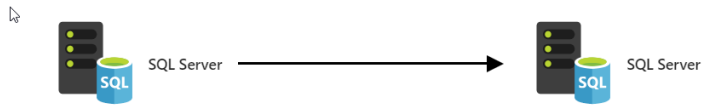
Copy settings [Edit](#)

Timeout	7.00:00:00
Retry	0
Retry interval	30
Secure output	false
Secure input	false

[Previous](#) [Next](#)

17. On the **Deployment** page, select **Monitor** to monitor the pipeline (task)

NOTE: Notice that the Monitor tab on the left is automatically selected. The Actions column includes links to view activity run details and to rerun the pipeline






Deployment complete

- ▶ Creating Datasets ✓
- ▶ Creating Pipelines ✓
- ▶ Running Pipelines ✓

Datasets and pipelines have been created. You can now monitor and edit the copy pipelines or click finish to close the copy wizard.

[Edit Pipeline](#) [Monitor](#)

18. In Monitor tab, you should see that data copy activity should start running.

Dashboards Pipeline Runs Trigger Runs Integration Runtimes Alerts & Metrics									
Run Cancel options Refresh									
Last 24 Hours 03/19/2019 7:27 PM - 03/20/2019 7:27 PM Time Zone (UTC+05:30) Chennai, Kolkata, M... View All Rerun History Filter									
All Succeeded In Progress Failed Cancelled									
<input type="checkbox"/>	Pipeline Name ▼	Actions	Run Start ↕	Duration	Triggered By	Status	Parameters	Annotations ▼	Error
<input type="checkbox"/>	CopyPipeline_onk	 	03/20/2019, 7:27:16 PM	00:00:08	Manual trigger	✓ Succeeded			

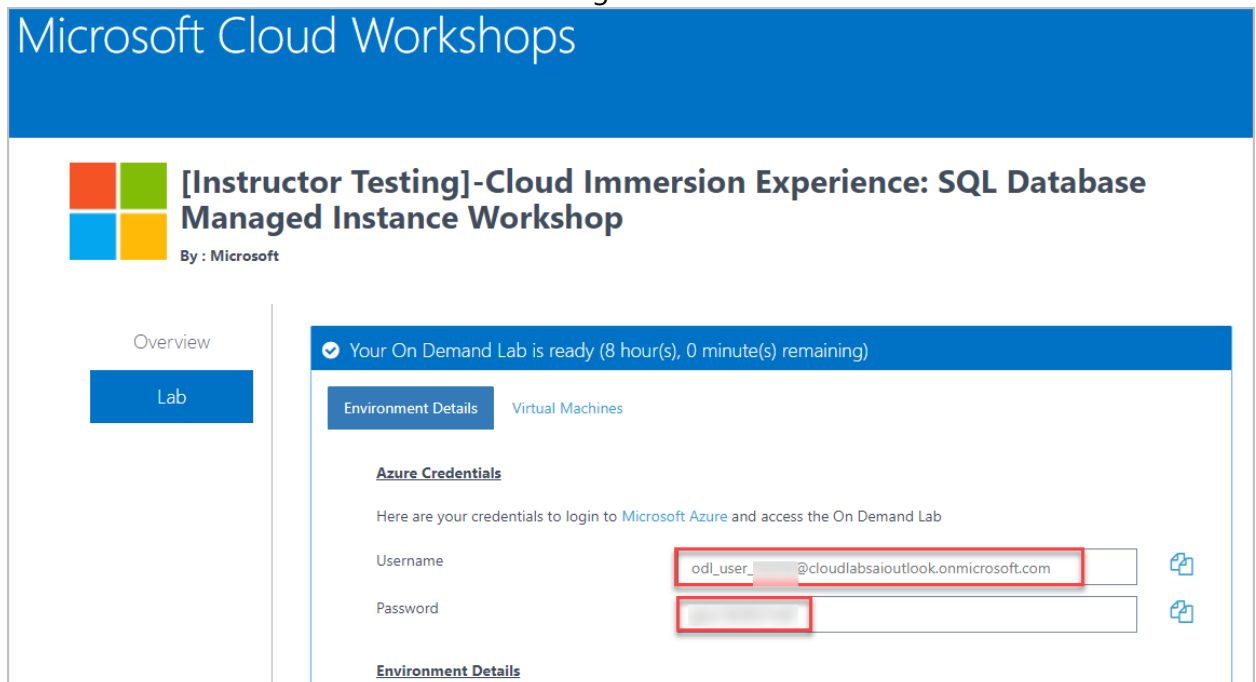
Exercise 2: Provisioning an Azure-SSIS Integration Runtime in Azure Data Factory

Overview

This section will provide you with the ability to use the Azure Portal to create the foundation needed for the Integration Runtime's infrastructure to effectively host and manage the executions of SSIS packages residing virtually anywhere in the world.

Task 1: Configure Integration Runtime Setup

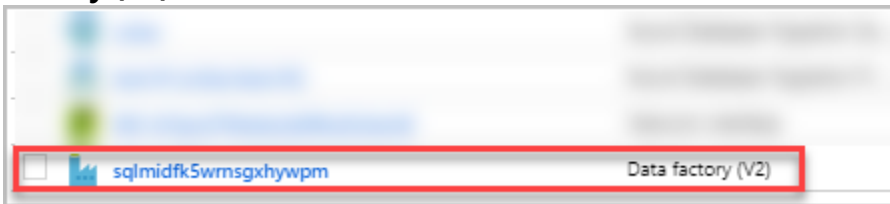
1. Launch a browser and navigate to <https://portal.azure.com>. Once prompted, login with the Azure Credentials from the Lab Details Page.



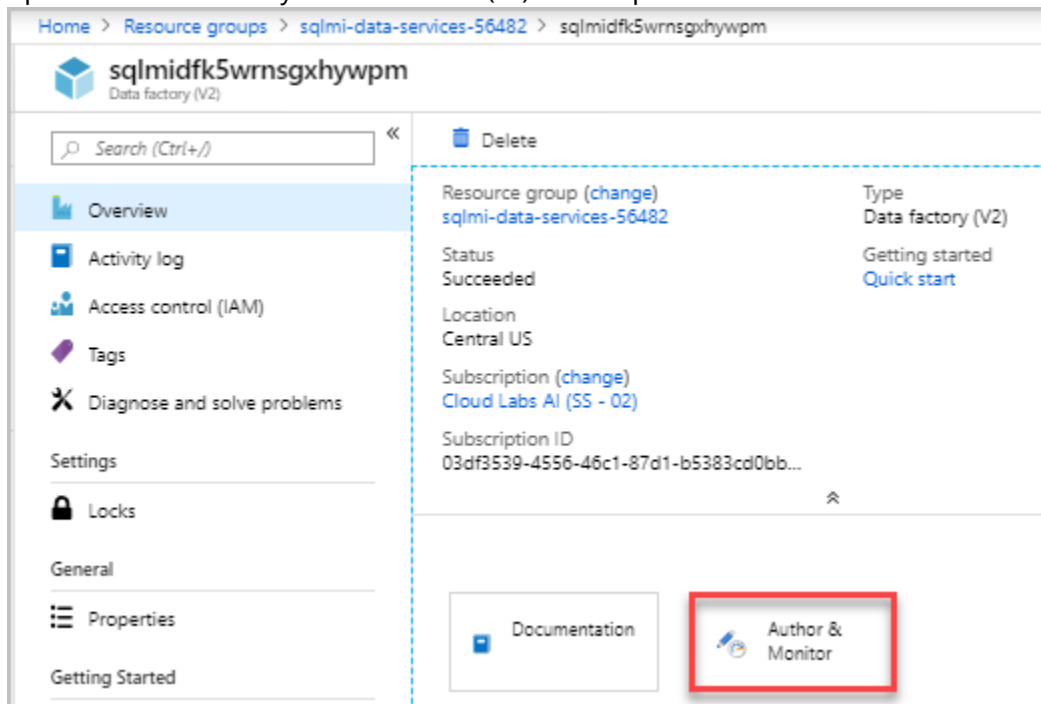
2. In the Stay signed in? pop-up window, click No
3. In the Welcome to Microsoft Azure pop-up window, click Maybe Later
Note: If you receive a pop-up for Azure Advisor, click the X in the top right corner of the pop-up to close it.
4. You will be directed to the dashboard.
5. From the left side of the Page, select **Resource Groups**
6. Note that you will have access to three Resource groups:



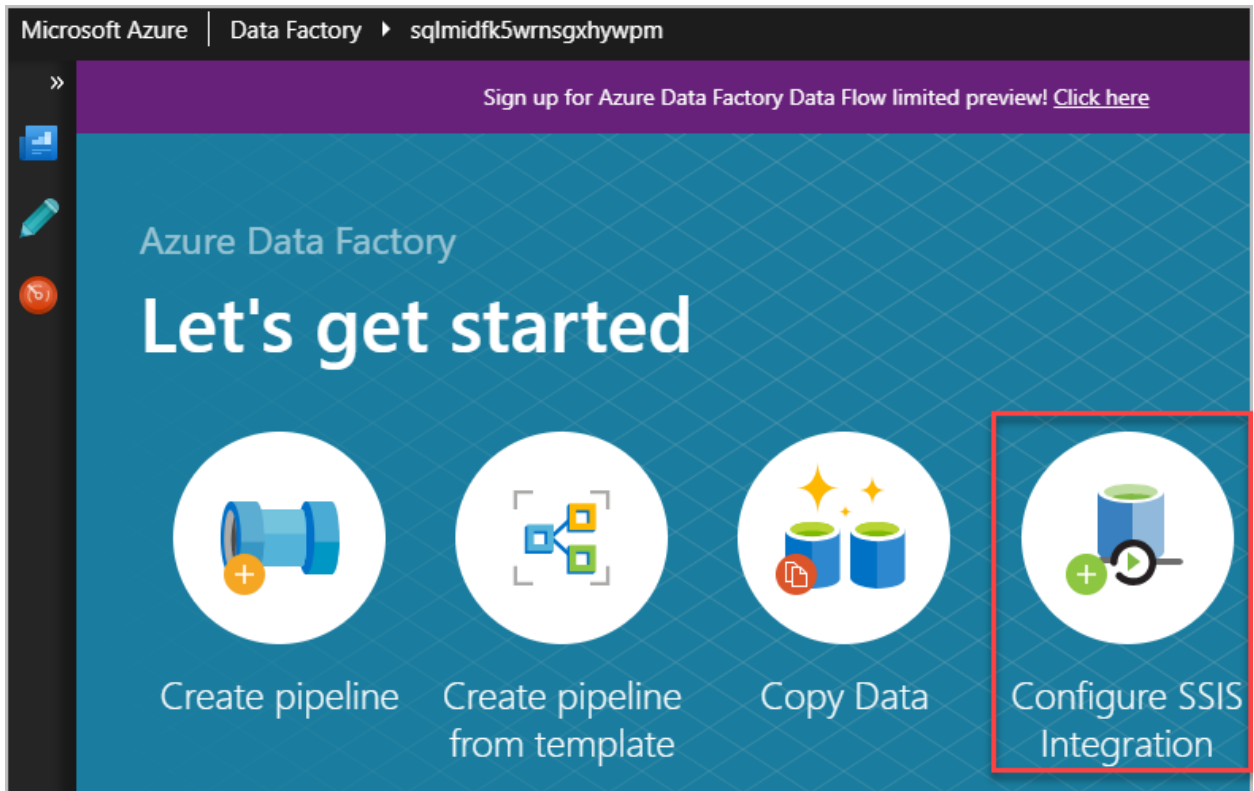
7. Select resource group starting with **sqlmi-data-services-**
8. From the overview blade of the Resource group, **select** the resource with type **Data Factory (V2)** from the resources:



9. From the overview blade of the Data Factory, navigate to the Author & Monitor tile to open the Data Factory user Interface (UI) on a separate tab.



10. On the **Let's get started** page, click the **Configure SSIS Integration Runtime** tile



11. On the **General Settings** form of Integration Runtime Setup page, enter the following information:
- Name:** integrationRuntime1
 - Description:** Leave blank
 - Location:** Select **location of the resource group** from the dropdown

NOTE: The location does not need to be that of your data factory's, but it should be the same as your Azure SQL Database/Managed Instance server's where your **SSISDB** is to be hosted, allowing easy access without incurring excessive traffic.

- Node Size:** Select **Standard_E8_v3** from the dropdown *This node's high memory-to-CPU ratio results in superior performance when working with **large database servers** - which this lab will. Another case where selecting a large node size would be beneficial is when you anticipate running **compute/memory-intensive SSIS packages**
- Node Number:** Select **1** by using the slider. *The number of nodes you select determines the cluster size of your IR, which impacts performance when running parallel SSIS packages. **Select a large cluster if you plan on running many packages in parallel***
- Edition/License:** Select **Enterprise** from the dropdown, as it will allow the use of advanced/premium features on your integration runtime, showcasing various features during this lab
- Save Money:** Click **No**

Integration Runtime Setup

General Settings

Name *

integrationRuntime1

Description

Type

Azure-SSIS

Location *

Central US

Node Size *

Standard_E8_v3 (8 Core(s), 65536 MB)

Node Number *

1

Edition/License *

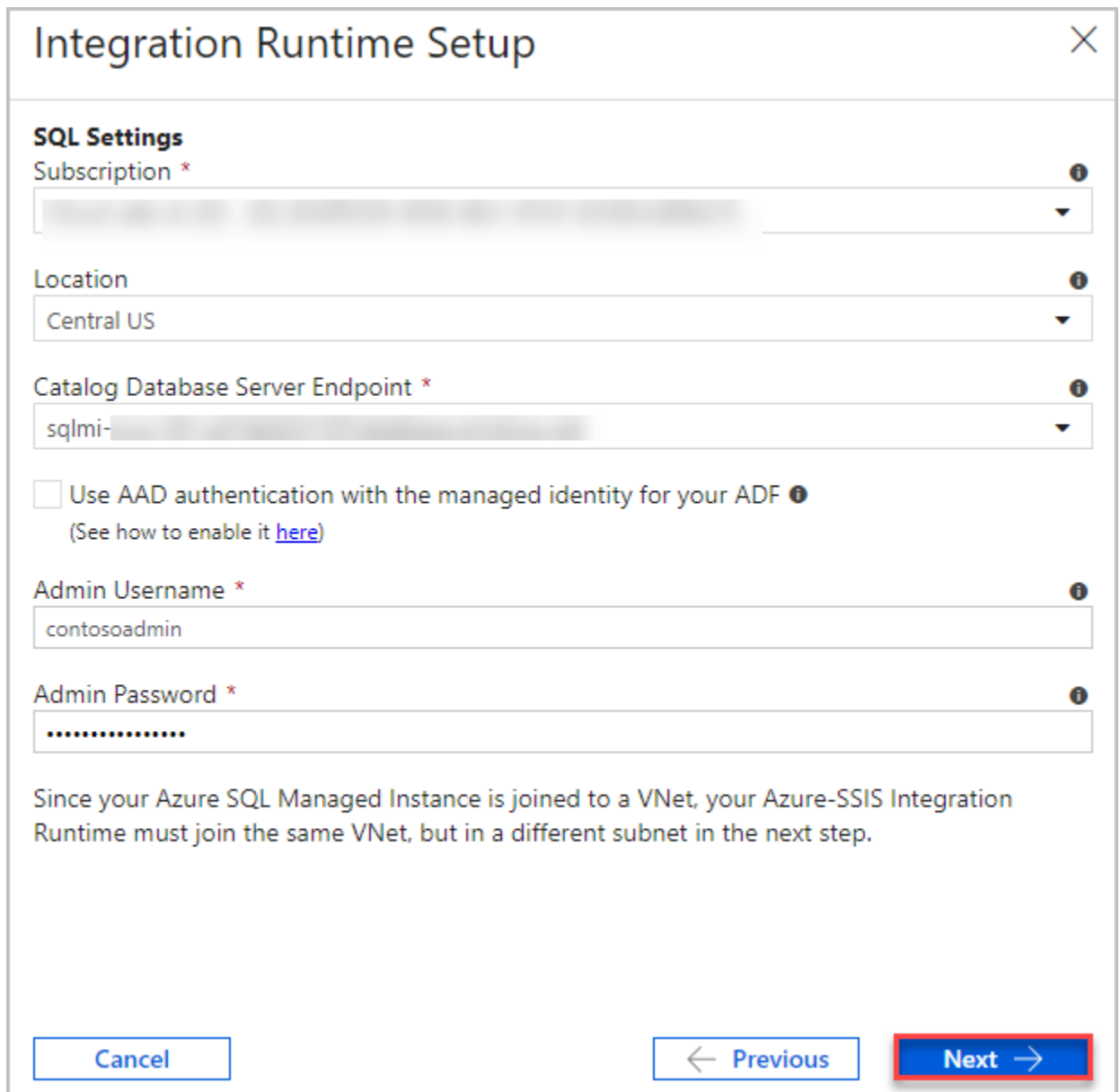
Enterprise

Save Money

Save with a license you already own. Already have a SQL Server license?

12. Click **Next** to bring up the **SQL Settings** portion of Integration Runtime Setup page, and provide the following information:
13. **Subscription:** Select your default subscription
14. **Location:** Select your resource group location from the dropdown, as it is recommended that you select the same location of your integration runtime
15. **Catalog Database Server Endpoint:** Select the available Database Server Endpoint from the Dropdown.
16. **Do not** check **Use AAD authentication with your ADF MSI**
17. Admin Username: **contosoadmin**

18. Admin Password: **IAE5fAijit0w^rDM**



The image shows a 'Integration Runtime Setup' dialog box with a close button (X) in the top right corner. It contains several configuration fields: 'Subscription' (a dropdown menu), 'Location' (a dropdown menu showing 'Central US'), 'Catalog Database Server Endpoint' (a dropdown menu showing 'sqlmi-'), and a checkbox for 'Use AAD authentication with the managed identity for your ADF' (which is unchecked). Below the checkbox is a link '(See how to enable it [here](#))'. There are also fields for 'Admin Username' (containing 'contosoadmin') and 'Admin Password' (masked with dots). At the bottom, there are three buttons: 'Cancel', 'Previous' (with a left arrow), and 'Next' (with a right arrow and a red border). A note at the bottom of the dialog states: 'Since your Azure SQL Managed Instance is joined to a VNet, your Azure-SSIS Integration Runtime must join the same VNet, but in a different subnet in the next step.'

Integration Runtime Setup

SQL Settings

Subscription *

Location

Central US

Catalog Database Server Endpoint *

sqlmi-

☐ Use AAD authentication with the managed identity for your ADF ⓘ
(See how to enable it [here](#))

Admin Username *

contosoadmin

Admin Password *

.....

Since your Azure SQL Managed Instance is joined to a VNet, your Azure-SSIS Integration Runtime must join the same VNet, but in a different subnet in the next step.

Cancel Previous Next →

19. **Maximum Parallel Executions Per Node:** select **1** from the dropdown box

NOTE: the maximum number of packages to execute concurrently per node in your integration runtime cluster. Only supported package numbers are displayed. Select a low number, if you want to use more than one cores to run a single large/heavy-weight package that is compute/memory -intensive. Select a high number, if you want to run one or more small/light-weight packages in a single core.

20. **Custom Setup Container SAS URI:** Leave blank

21. **Select a VNet...:** Leave checked

22. **Subnet:** Choose vm-subnet

23. Select the subscription from the dropdown.

Integration Runtime Setup

Advanced Settings

Maximum Parallel Executions Per Node *

1

Custom Setup Container SAS URI

☒ Select a VNet for your Azure-SSIS Integration Runtime to join and allow ADF to create certain network resources
(See more info [here](#))

Subscription *

Cloud Labs AI (SS - 03) (4e09b5ee-747c-4bc6-b0d6-37550536c1a6)

Location *

East US

Type *

Azure Resource Manager Virtual Network


VNet Name *

SQLMI-VNET-Shared

Subnet Name *

vm-subnet

24. Click **VNet Validation** and if successful, click **Next**

 Validation successful!

Cancel

VNet Validation

Note: Azure Data Factory SSIS Integration Runtime create a DB named SSISDB in the Managed Instance. It might fail during your lab exercise since SQL Managed Instance is shared among participants and SSISDB may already exist. In that case, you may want to review the steps.

25. Click **Finish** to start the creation of your integration runtime

Integration Runtime Setup

Summary

Your Azure-SSIS Integration Runtime (IR) is created with the following settings:

Azure Data Factory Settings

- **Subscription:** 03df3539-4556-46c1-87d1-b5383cd0bb27
- **Resource Group:** sqlmi-data-services-56482
- **Name:** sqlmidfk5wrnsgxhywpm
- **Location:** centralus

General Settings

- **Name:** integrationRuntime1
- **Location:** Central US
- **Node Size:** Standard_E8_v3
- **Node Number:** 1
- **Edition:** Enterprise
- **Azure Hybrid Benefit:** LicenseIncluded

SQL Settings

- **Catalog Database Server Endpoint:** sqlmi-scus-001.a07ab820155f.database.windows.net
- **Catalog Database Server Location:** centralus

Advanced Settings

- **Maximum Parallel Executions Per Node:** 1
- **VNet Name:** SQLMI-VNET-Shared
- **Subnet Name:** sqlmi-dms-subnet

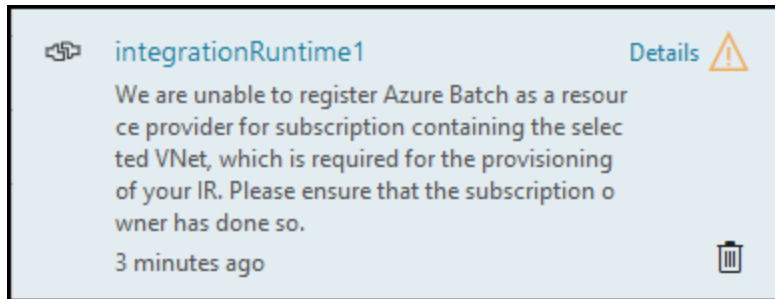
If you want to change any of the above settings, click **Previous** to do so.

Cancel

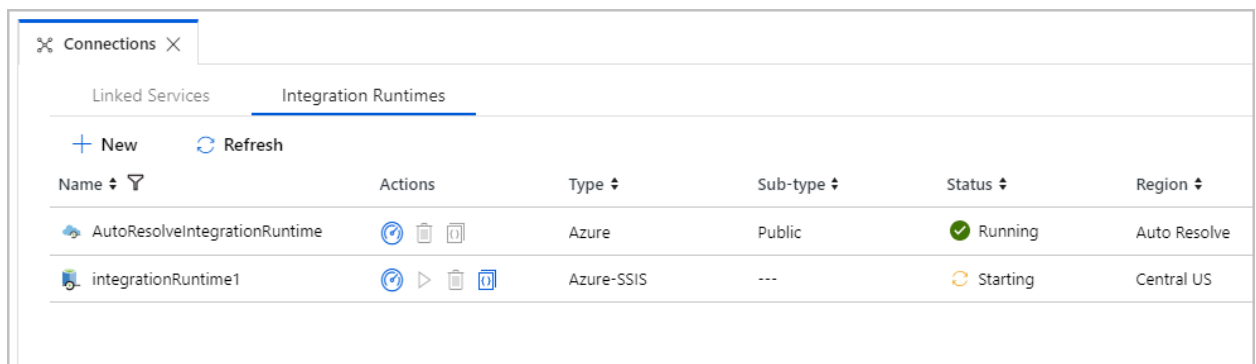
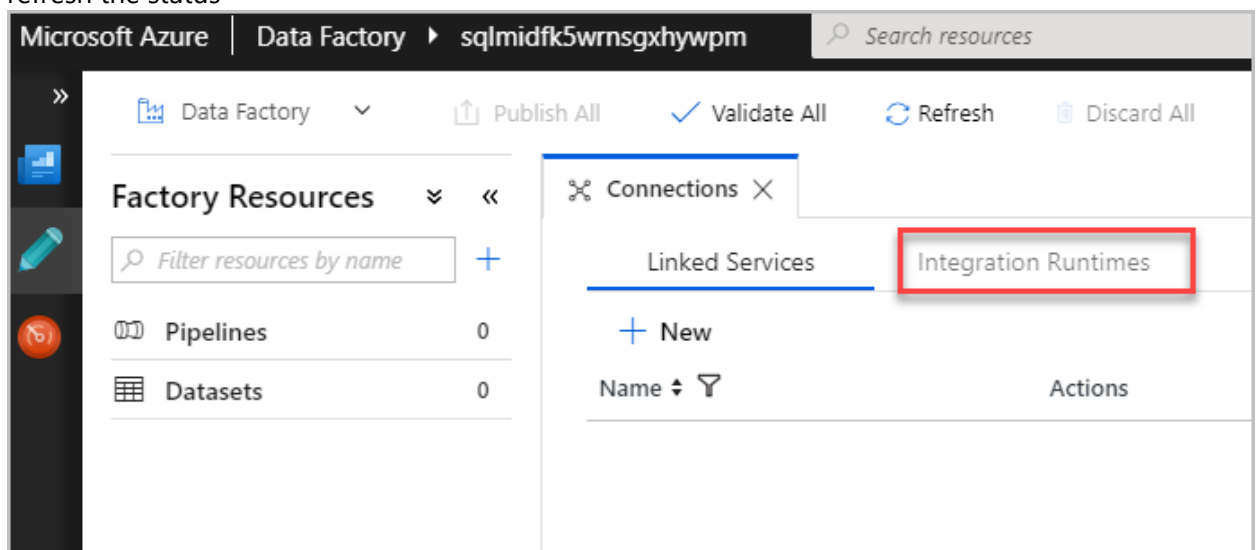
← Previous

Finish

Note: You might get the following error. Please ignore and continue.



26. On the **Connections** tab, switch to **Integration Runtimes** if needed. Select **Refresh** to refresh the status



NOTE: This process takes approximately **20 to 30 minutes** to complete due to the Azure Feature Pack for SSIS and the Access Redistributable installations. This is taking place while the Data Factory service connects to your Azure SQL Database server to prepare the **SSIS Catalog** (SSISDB database).

NOTE: Use the links in the **Actions** column to stop/start, edit, or delete the integration runtime. Use the last link to view JSON code for the integration runtime. The edit and delete buttons are enabled only when the IR is stopped.

27. Please continue with the lab while the integration runtime installs

28. Once the process completes the status of the integrationRuntime1 changes to Running.









Connections

Linked Services

Integration Runtimes

+ New

Refresh

Name	Actions	Type	Sub-type	Status	Region
AutoResolveIntegrationRuntime	  	Azure	Public	 Running	Auto Resolve
integrationRuntime1	  	Azure-SSIS	---	 Running	Central US

Exercise 3: Deploy and Run SSIS Packages from Azure Data Factory SSIS IR

Overview

In this exercise, you'll deploy and run SSIS package from Azure Data Factory SSIS IR

Task 1:

Verify the Integration Runtime you created earlier in the lab has completed.

1. On the monitor page, click the **Integration Runtimes** tab near the top of the page
2. Verify that **IntegrationRunTime1** a Status of **Running**, If its status is **Starting** then wait for the Runtime to complete before continuing.

NOTE: Click the refresh button to update the status

NOTE: This process takes approximately **20 to 30 minutes**

Connect to SSISDB

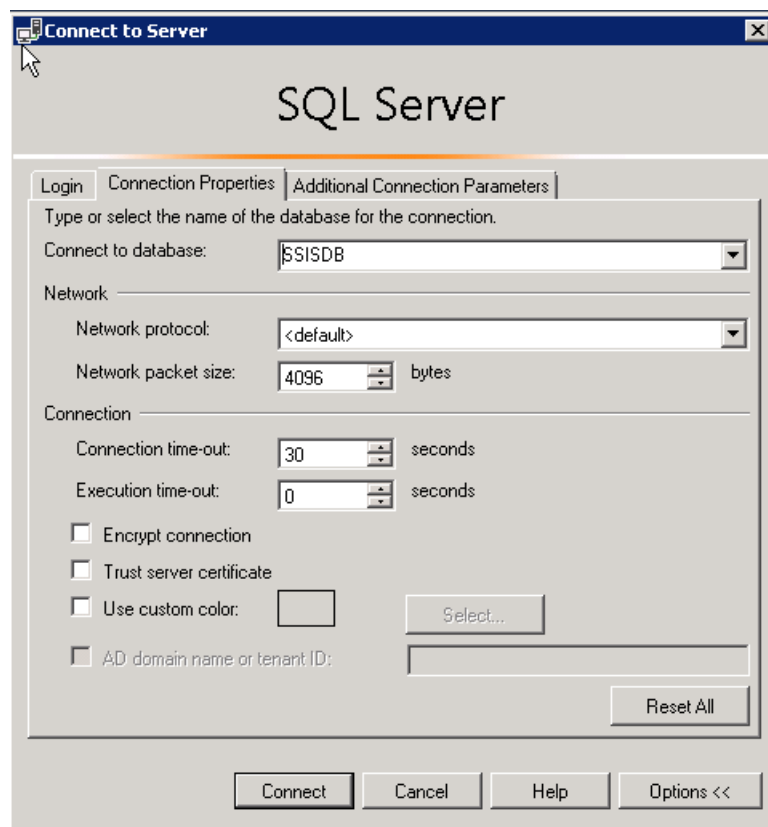
To deploy and then run the package on Azure SQL Database, you'll need to first **connect** to the SSIS Catalog database (SSISDB). To do so, complete the following steps:

1. Login to the SQL Server Virtual Machine via Remote desktop.
2. Double click **SSMS** icon on desktop to launch **SQL Server Management Studio**

3. In the **Connect to Server** dialog box, enter the following information:
4. **Server name:** Hostname of your SQL Managed Instance
5. **Authentication:** Select **SQL Server Authentication**
 1. **User name:** Enter **contosoadmin**
 2. **Password:** Enter **IAE5fAijit0w^rDM**
6. Click the **Options** button
7. Click on the **Connection Properties** tab
8. Click on the dropdown for selecting a **database**

NOTE: If a dialogue box appears and asks to connect first, click **Yes**.

9. Click **SSISDB** and make sure it's highlighted



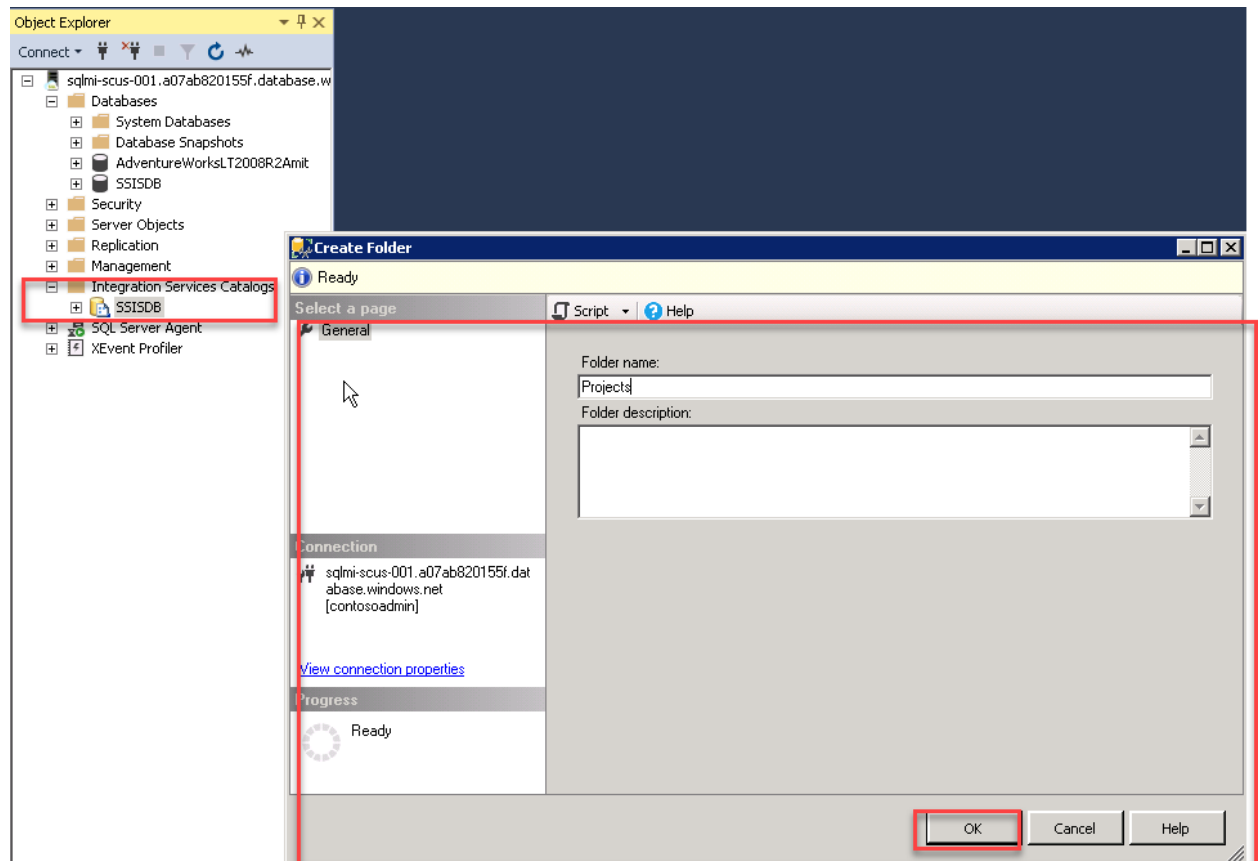
10. Click **Ok**
11. In the **Object Window** on your left, navigate to **Integration Services Catalogs** and click the **Expand Object** icon (plus sign "+"), then expand the **SSISDB** object as well

Deploying a Project/Package

14. Under Object Explorer, Browse through Integration Service Catalogue

Right click on **SSISDB**, select **Create Folder**

15. Name the folder **Myproject**, click **ok**



16. Expand My Project Click on the **Projects** node

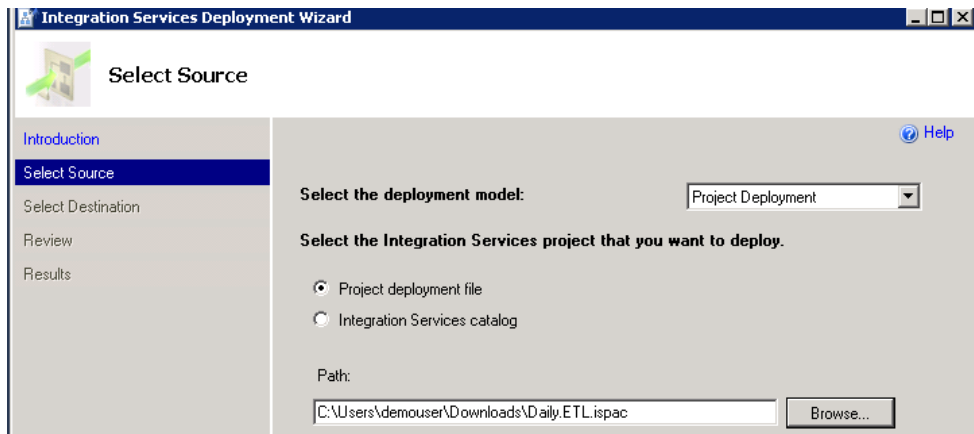
17. Right-click on the **Projects** node and select **Deploy project** to launch the **Services Deployment Wizard**

NOTE: You can deploy a project from the current catalog **or** from the file system.

18. On the **Introduction** page of the wizard, review the introduction, then click **Next** to open the **Select Source** page

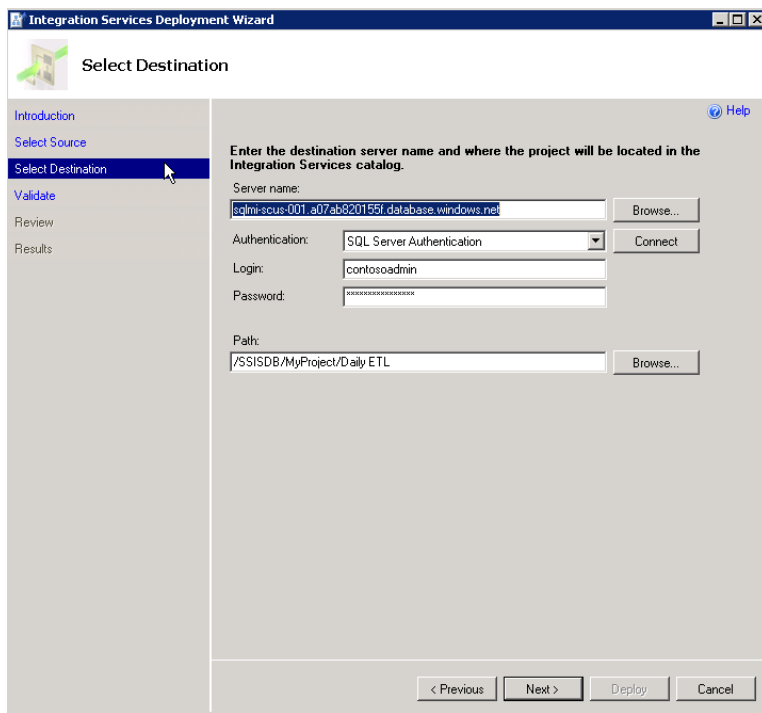
19. Download Daily.ETC.ispac from <https://github.com/Microsoft/sql-server-samples/releases/download/wide-world-importers-v1.0/Daily.ETL.ispac>

20. On the **Select Source** page, select **Project deployment file** and browse through file explorer to select latest download Daily.ETC.ispac file.

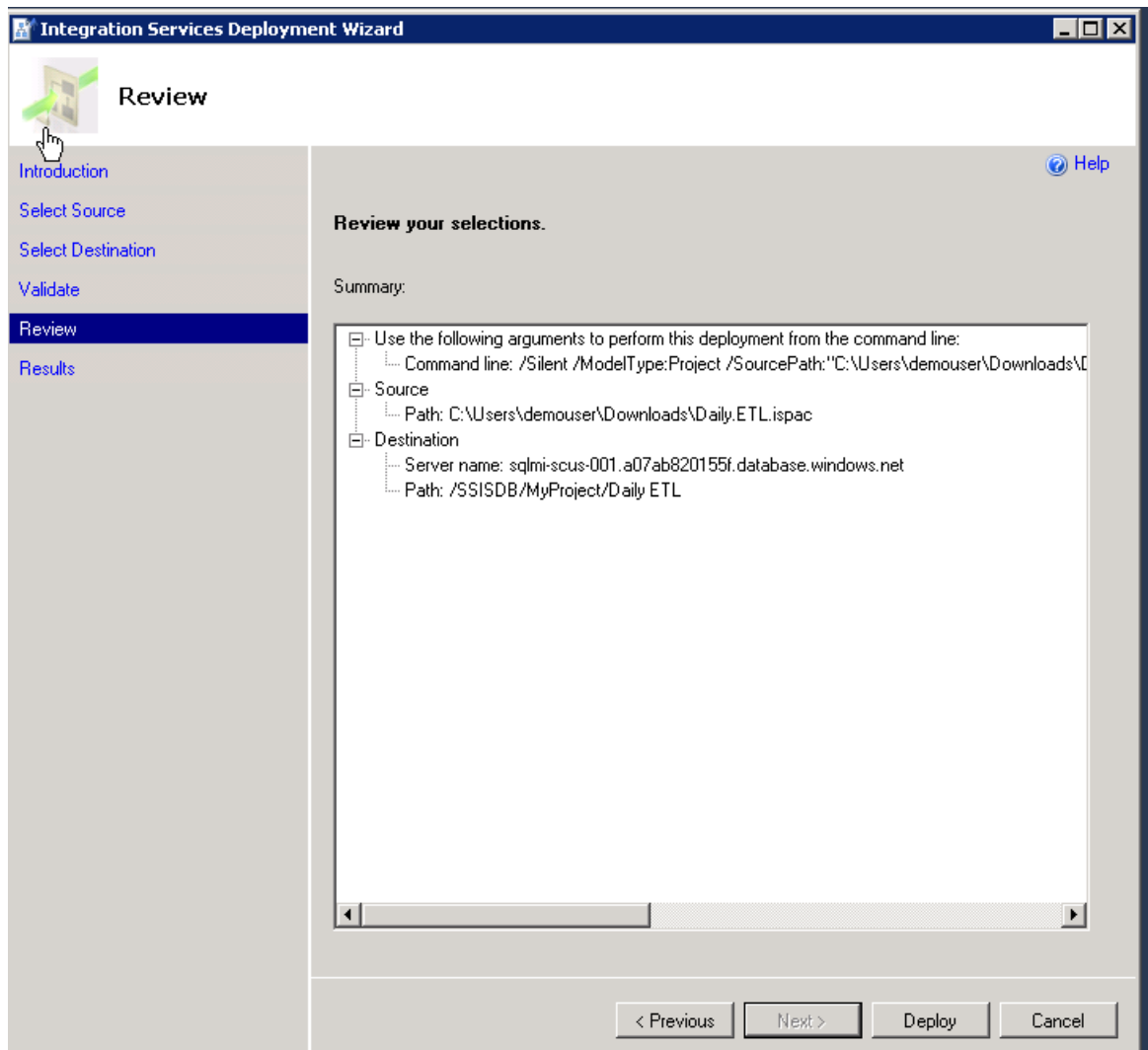


NOTE: To deploy a project that is already deployed to an SSIS catalog database, select **Integration Services** catalog, and then enter the server name and the path to the project in the catalog.

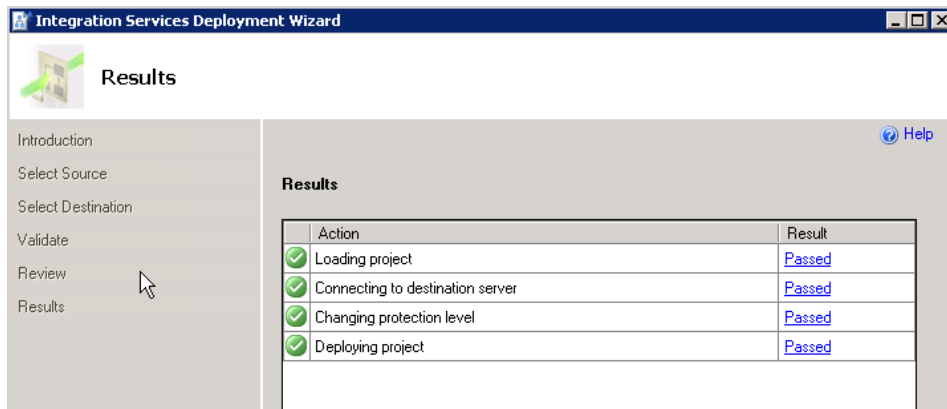
21. On the **Select Destination** page, select
22. Server Name – **Keep Default (SQL MI Hostname)**
23. Authentication: **SQL**
24. **User name:** Enter **contosoadmin**
25. **Password:** Enter **IAE5fAijit0w^rDM**
26. Click **Connect**
27. Click **Next** after you **Connect**



28. On **Validate** page, click Next
29. On the **Review** page, review the settings you selected
30. Click **Deploy** to start the deployment process

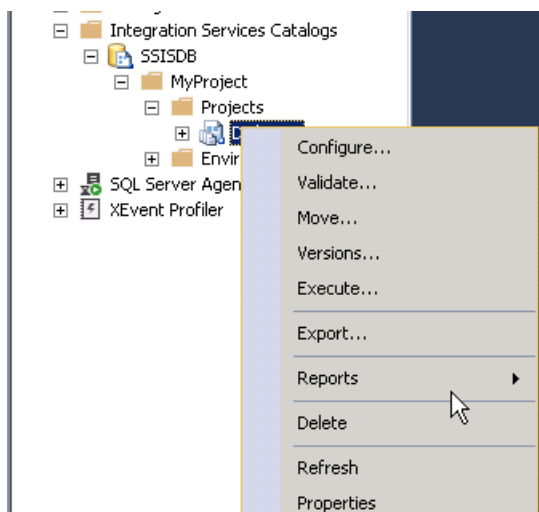


31. Once complete, the **Results** page will display successes and/or failures of any actions. Once complete, click **Close** to exit the wizard

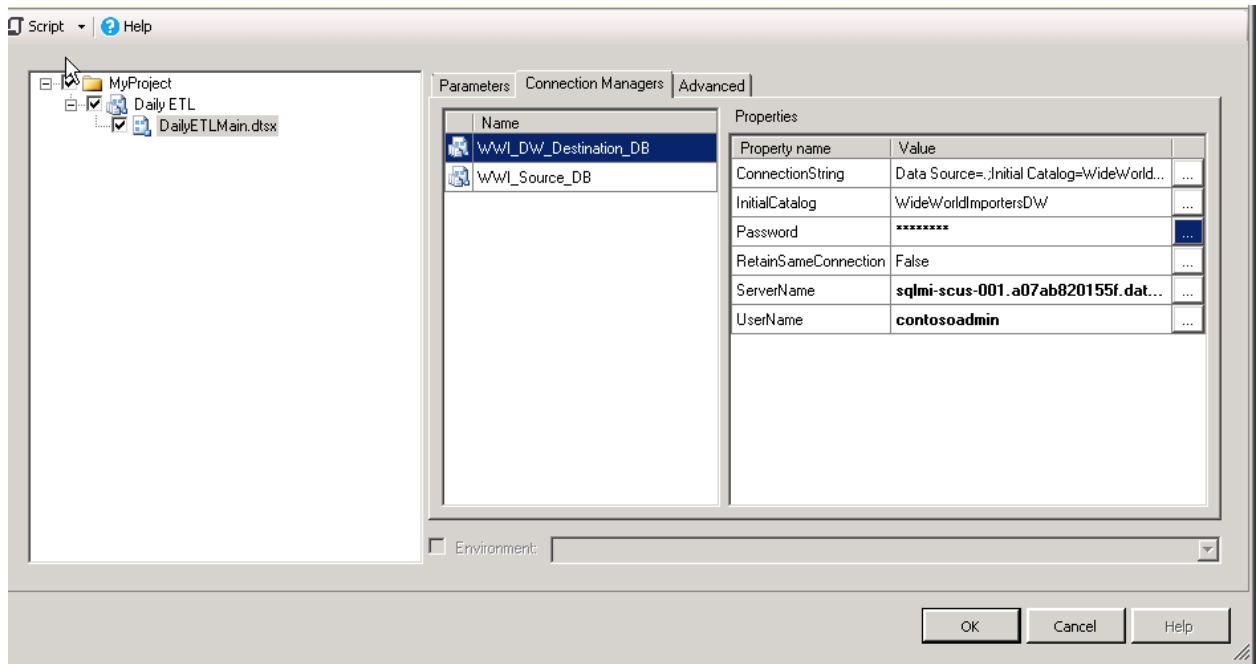


Running a Package

32. Refresh the **Projects** folder in SSMS
33. Select **Daily ETL**
34. Right-click and select **Execute**



35. After the **Execute Package** dialog box opens, click the **Connection Manager** tab
36. Here you'll need to change Source and Destination configuration. Be sure to use SQL Authentication, not Windows Authentication.
37. Enter SQL Server Managed Instance Hostname and Credentials for destination.



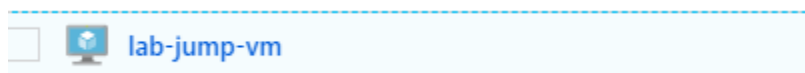
38. Click **OK** to run the package
39. Click **yes** to open **Execution Report** to review

Exercise 4: Power BI

Overview

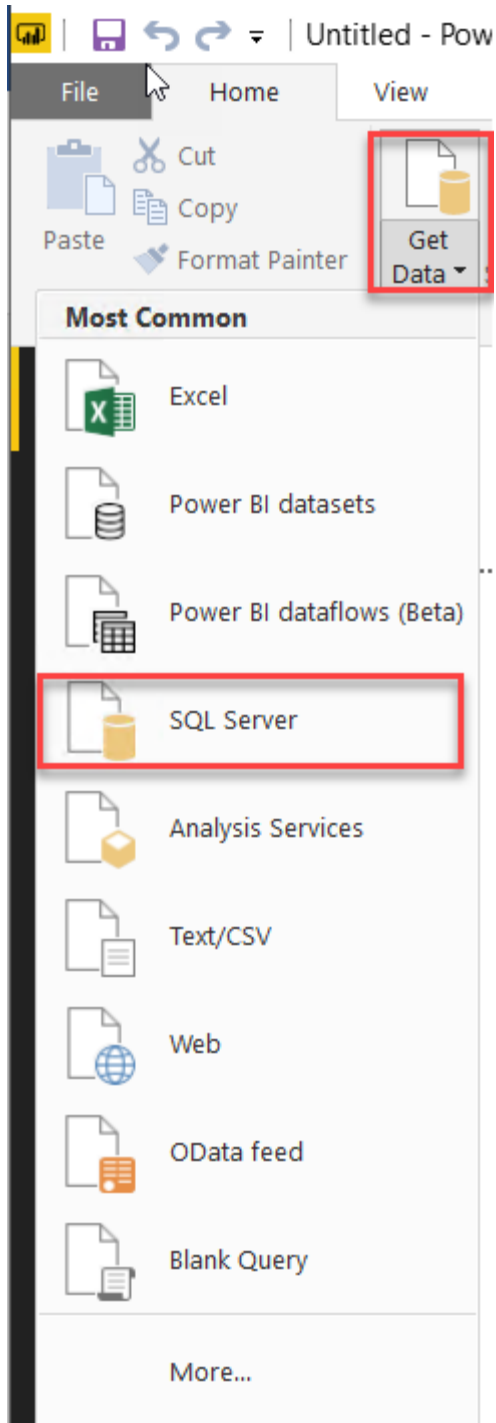
Task 1:

1. Connect to lab-jump-vm using RDP, You can copy the VM DNS Name using Lab details page/email or through azure portal.



2. Double click **Power BI Desktop** icon on desktop to launch **Power BI Desktop**
3. Note: If you have PowerBI desktop installed in your local machine, you can also use that optionally to complete this exercise
4. Upon opening the window, a **Welcome to Power BI Desktop** pop-up will appear. Click on Sign in at the bottom.







Note: This mimics the connection requirements for our datawarehouse to be able to communicate with Power BI the same way a SQL Server database would.

8. Click **Database**, then **SQL Server database**
9. Enter the Hostname of your SQL MI Instance under server
10. Make sure **Import** is selected under **Data Connectivity mode**
11. Click **OK**

SQL Server database

Server 
is-001.a07ab820155f.database.windows.net

Database (optional)

Data Connectivity mode 
☒ Import
☐ DirectQuery

> Advanced options

OK Cancel

12. On the left-hand side of the window, click the **Database** tab
1. **User name:** Enter **contosoadmin**
 2. **Password:** Enter **IAE5fAijit0w^rDM**

SQL Server database

Windows
Database
Microsoft account

sqlmi-scus-001.a07ab820155f.database.windows.net

User name
contosoadmin

Password
●●●●●●●●●●

Back Connect Cancel

13. Under Databases, You can select AdventureWorksDB
14. Select the SalesOrderDetails table and move Click Load.

Navigator

Display Options ▾
📄

- ▶ sqlmi-scus-001.a07ab820155f.database.win...
- ▶ AdventureWorksLT2008R2Amit [18]
 - ☐ SalesLT.vGetAllCategories
 - ☐ SalesLT.vProductAndDescription
 - ☐ SalesLT.vProductModelCatalogDescri...
 - ☐ BuildVersion
 - ☐ ErrorLog
 - ☐ SalesLT.Address
 - ☐ SalesLT.Customer
 - ☐ SalesLT.CustomerAddress
 - ☐ SalesLT.Product
 - ☐ SalesLT.ProductCategory
 - ☐ SalesLT.ProductDescription
 - ☐ SalesLT.ProductModel
 - ☐ SalesLT.ProductModelProductDescrip...
 - ☒ SalesLT.SalesOrderDetail
 - ☐ SalesLT.SalesOrderHeader
 - ☐ fx ufnGetAllCategories
 - ☐ fx ufnGetCustomerInformation
 - ☐ fx ufnGetSalesOrderStatusText

SalesLT.SalesOrderDetail

SalesOrderID	SalesOrderDetailID	OrderQty	ProductID	UnitPrice
71774	110562	1	836	356.89
71774	110563	1	822	356.89
71776	110567	1	907	63.5
71780	110616	4	905	218.45
71780	110617	2	983	461.69
71780	110618	6	988	112.99
71780	110619	2	748	818.7
71780	110620	1	990	323.99
71780	110621	1	926	149.87
71780	110622	1	743	809.7
71780	110623	4	782	1376.99
71780	110624	2	918	158.4
71780	110625	4	780	1391.99
71780	110626	1	937	48.59
71780	110627	6	867	41.99
71780	110628	1	985	112.99
71780	110629	2	989	323.99
71780	110630	3	991	323.99
71780	110631	1	992	323.99
71780	110632	2	993	323.99
71780	110633	2	984	112.99
71780	110634	3	986	112.99
71780	110635	3	987	112.99

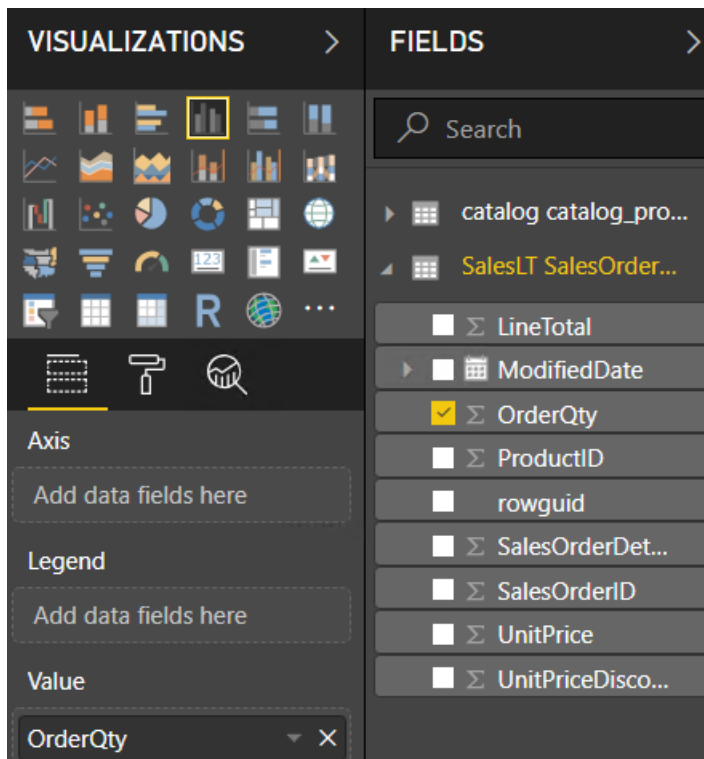
Select Related Tables

Load

Edit

Cancel

15. Data is now loaded, You can use PowerBI to design the reports and dashboards.



Stop the Azure-SSIS Integration Runtime

1. Login to Azure Portal with your Lab Credentials.
2. Navigate to your Azure Data Factory: **DataFactory**
3. Click the **Author & Monitor** tile to open the Data Factory user interface (UI) on a separate tab
4. On the left hand side navigation bar, click the pen icon (Author)
5. On the Factory Resources page, near the bottom, click the **Connections** button
6. When the Connections tab is displayed, click the **Integration Runtimes** tab
7. Click the Pause/Stop button in the Actions section of the **MyFirstIntegrationRuntime** to stop the service
8. When asked "Are you sure you want to Stop integration runtime", click **Stop**

Conclusion

In this lab you've learned how to create and configure Integration Runtimes in Azure Data Factory to facilitate cloud-based execution, modification, and monitoring of natively hosted SSIS packages. Then, you've learned how to create a simple yet robust data pipeline to create a reliable data copying strategy. Finally, you learned how the entire process comes together for the end-user by connecting the output data to Power BI Desktop, where you can create and visualize various reports and dashboards to gain insight into your data.