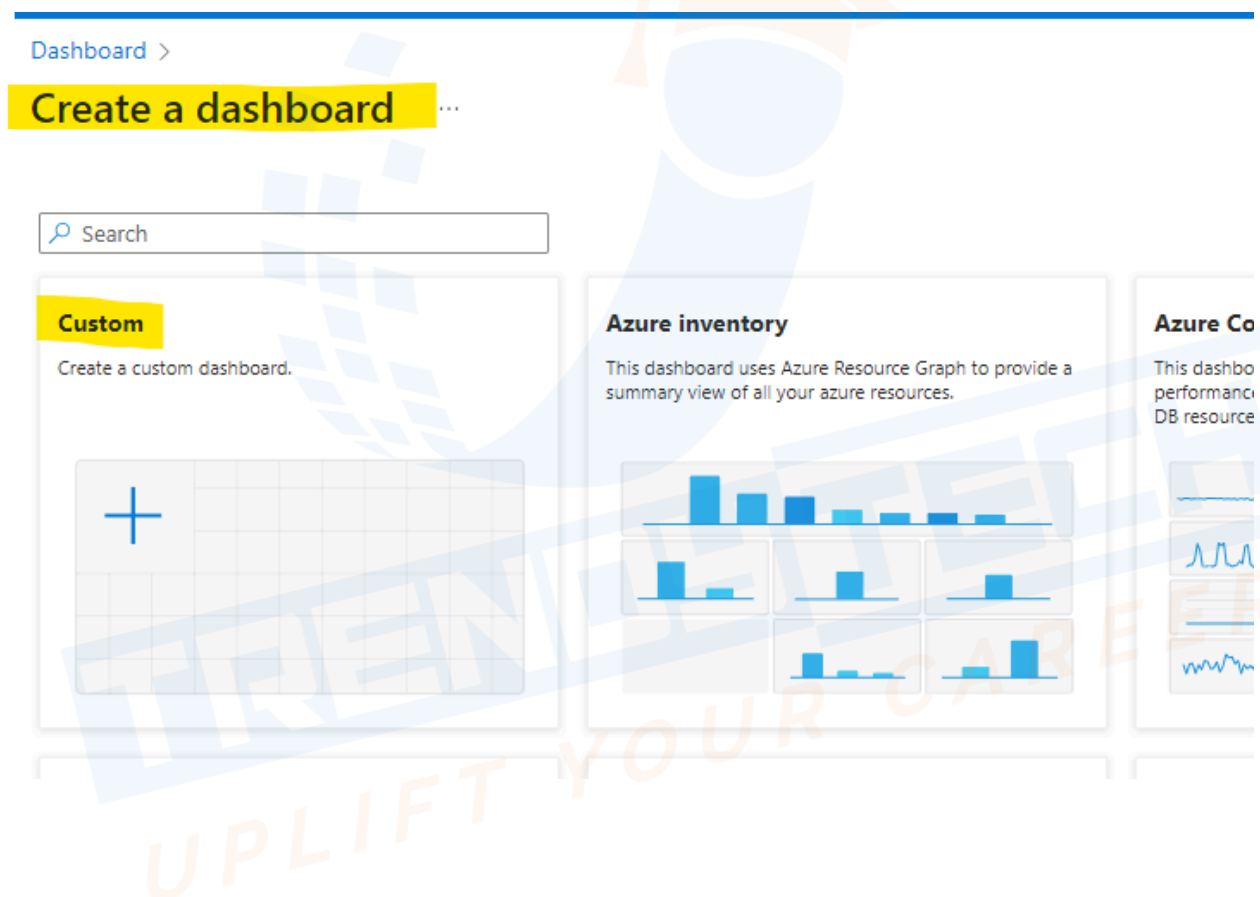


Use-case 1 : Ingesting the data from Source(RDBMS Table), transferring and loading the data to Sink(ADLS GEN2)

Pre-Steps -

Create a Dashboard and a Resource Group for the project to organize the resources related to the project at one place.

Click on Dashboard => Create => Custom =>



Note : Also you can create a resource group while creating the resource. Here we have created resource group while creating SQL Database as highlighted below

Creation of Source System - Azure SQL DB

- Create an Azure SQL Database and pin the resource to a dashboard for better organization of resources.

Home > SQL databases >

Create SQL Database ...

Microsoft

Subscription * ⓘ

Pay-As-You-Go

Resource group * ⓘ

(New) trendytech-rg

[Create new](#)

1 The
The
limit
2 Ser
on a
mon

Database details

Enter required settings for this database, including picking a logical server and configuring the compute and storage resources

Database name *

trendytech-db

Server * ⓘ

(new) customer360-server1 (Central India)

[Create new](#)

Compute + storage * ⓘ

General Purpose - Serverless

Standard-series (Gen5), 2 vCores, 32 GB storage, zone redundant disabled

[Configure database](#)

Home > SQL databases > Create SQL Database >

Create SQL Database Server ...

Microsoft

Server details

Enter required settings for this server, including providing a name and location. This server will be created in the same subscription and resource group as your database.

Server name *

customer360-server1

.database.windows.net

Location *

(Asia Pacific) Central India

Authentication



i Azure Active Directory (Azure AD) is now Microsoft Entra ID. [Learn more](#)



OK

[Home](#) > [SQL databases](#) > [Create SQL Database](#) >

Create SQL Database Server ...

Microsoft


 Azure Active Directory (Azure AD) is now Microsoft Entra ID. [Learn more](#) 

Select your preferred authentication methods for accessing this server. Create a server admin login and password to access your server with SQL authentication, select only Microsoft Entra authentication [Learn more](#)  using an existing Microsoft Entra user, group, or application as Microsoft Entra admin [Learn more](#) , or select both SQL and Microsoft Entra authentication.


Authentication method

- ☐ Use Microsoft Entra-only authentication
- ☐ Use both SQL and Microsoft Entra authentication
- ☒ Use SQL authentication


Server admin login *

Trendytech@15 

Password *

..... 

Confirm password *

..... 

OK

Note: Please note down your username and password for Future use.

[Home](#) > [SQL databases](#) >

Create SQL Database ...



Microsoft

[Configure database](#)

Backup storage redundancy

Choose how your PITR and LTR backups are replicated. Geo restore or ability to recover from regional outage is only available when geo-redundant storage is selected.

- Backup storage redundancy ⓘ
- ☐ Locally-redundant backup storage
- ☐ Zone-redundant backup storage
- ☒ Geo-redundant backup storage

 Selected value for backup storage redundancy is Geo-redundant backup storage. Database backups will be geo-replicated which might impact your data residency requirements. [Learn more](#) 

[Review + create](#)

[Next : Networking >](#)

- Once the SQL DB resource is deployed, set the server firewall rule under overview tab by adding your respective IP-address

Home >

trendytech-db (customer360-server1/trendytech-db) SQL database

Search

Copy Restore Export **Set server firewall** Delete Connect with... Feedback

Overview

- Activity log
- Tags
- Diagnose and solve problems
- Query editor (preview)

Settings

- Compute + storage
- Connection strings
- Maintenance

Essentials

Resource group (move) : trendytech-rg

Status : Online

Location : Central India

Subscription (move) : Pay-As-You-Go

Subscription ID : ef8b47c5-7bc0-46f9-856f-69466d151b69

Tags (edit) : Add tags

Server name : customer360-server1.database.windows.net

Connection strings : Show database connection strings

Pricing tier : General Purpose - Serverless: Gen5

Auto-pause delay : 1 hour

Earliest restore point : No restore point available

Getting started Monitoring Properties Features Notifications (0) Integrations Tutorials

Public network access

Public Endpoints allow access to this resource through the internet using a public IP address. An application or resource that is granted access with the following network rules still requires proper authorization to access this resource. [Learn more](#)

Public network access

☐ Disable

☒ **Selected networks**

Connections from the IP addresses configured in the Firewall rules section below will have access to this database. By default, no public IP addresses are allowed. [Learn more](#)

Please save public network access value before adding new virtual networks.

Firewall rules

Allow certain public internet IP addresses to access your resource. [Learn more](#)

+ Add your client IPv4 address (49.207.194.141) + Add a firewall rule

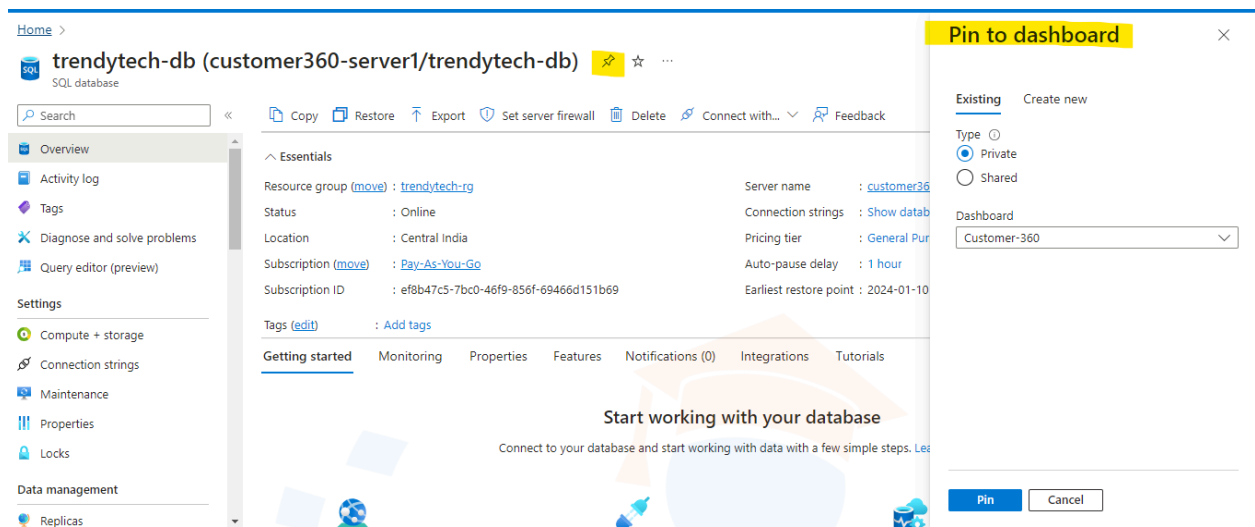
Rule name	Start IPv4 address	End IPv4 address
ClientIPAddress_2024-1-10_13-18-34	49.207.194.141	49.207.194.141

Exceptions

☒ Allow Azure services and resources to access this server

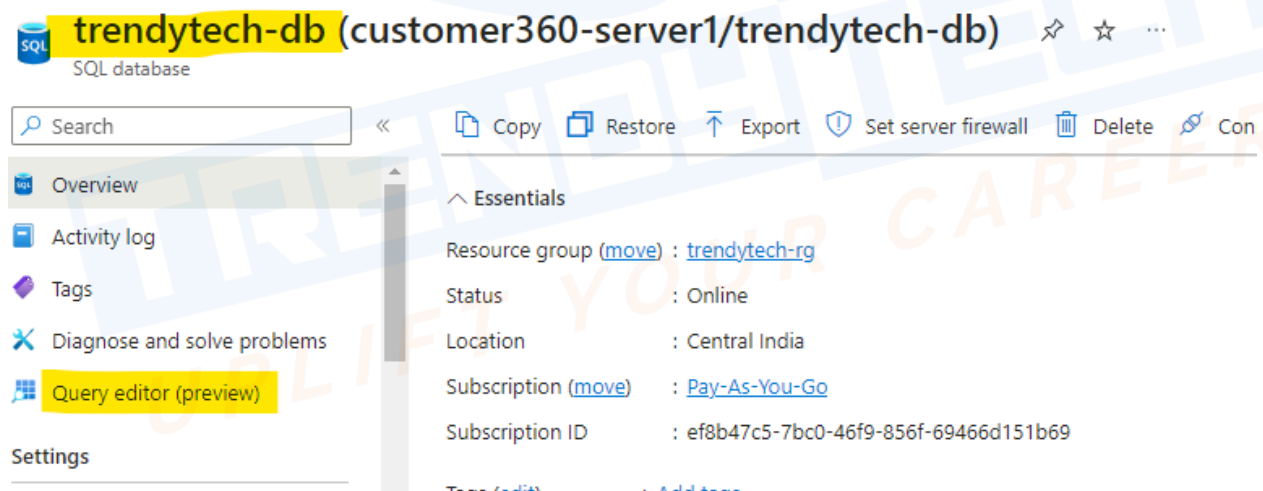
Note: You can pin this database to the dashboard that you have created

Click on the pin option as shown in the screenshot and pin it. Similarly you can pin all the other resources also.



- Login to the SQL terminal in your azure account (You could also access the SQL server from your local system by installing and remotely connecting to Azure Data Studio or SQL server management studio)

Note: Here Query editor is used refer attached screenshot you can use this option also.



Mention the username and password that you used for SQL authentication

Home > trendytech-db (customer360-server1/trendytech-db)

trendytech-db (customer360-server1/trendytech-db) | Query editor (preview) ☆ ...

SQL database

Search << Login + New Query ↑ Open query Feedback Getting started

- Overview
- Activity log
- Tags
- Diagnose and solve problems
- Query editor (preview)**

Settings

- Compute + storage
- Connection strings
- Maintenance
- Properties
- Locks

Data management

Query editor (preview) is a tool to run SQL queries against Azure SQL Database in the Azure portal. It is designed for lightweight querying and object exploration in your database. For more information and troubleshooting, [Learn more](#)

SQL

Welcome to SQL Database Query Editor

SQL server authentication

Login *

Trendytech@15

Password *

OK

Microsoft Entra authentication

Continue as aratishatti15@gmail.com

OR

- Create Table (Courses Table) - Insert the Data into the table

```
create table courses(course_id int NOT NULL, course_name varchar(30) NOT NULL, course_duration_months int NOT NULL, course_fee int NOT NULL, PRIMARY KEY (course_id)) ;
```

```
insert into courses values (1, 'bigdata', 6, 50000);
insert into courses values (2, 'webdevelopment', 3, 20000);
insert into courses values (3, 'datascience', 6, 40000);
insert into courses values (4, 'devops', 1, 10000);
```

Query 1 ✕

Run ☐ Cancel query Save query Export data as Show only Editor

```
1 -- create table courses(course_id int NOT NULL, course_name varchar(30) NOT NULL, course_dura
2
3 insert into courses values (1, 'bigdata', 6, 50000);
4 insert into courses values (2, 'webdevelopment', 3, 20000);
5 insert into courses values (3, 'datascience', 6, 40000);
6 insert into courses values (4, 'devops', 1, 10000);
```

Results Messages

Query succeeded: Affected rows: 4

Creation of Sink System - ADLS Gen2

- Create a Storage Account (Enable Hierarchical namespace to make it as data lake storage and not just the blob storage)

[Home](#) > [Storage accounts](#) >

Create a storage account

Basics Advanced Networking Data protection Encryption Tags Review

Instance details

Storage account name ⓘ *

Region ⓘ *

[Deploy to an edge zone](#)

Performance ⓘ *

☒ Standard: Recommended for most scenarios (general-purpose v2 account)

☐ Premium: Recommended for scenarios that require low latency.

Redundancy ⓘ *

[Review](#) [< Previous](#) [Next : Advanced >](#)

Basics **Advanced** Networking Data protection Encryption Tags Review

Permitted scope for copy operations
(preview) ⓘ

From any storage account

Hierarchical Namespace

Hierarchical namespace, complemented by Data Lake Storage Gen2 endpoint, enables file and directory semantics, accelerates big data analytics workloads, and enables access control lists (ACLs) [Learn more](#)

Enable hierarchical namespace



Access protocols

Note: Once a resource has been created, you have the option to add it to the dashboard for quick access. Refer attached screenshot.

The screenshot shows the Azure portal interface for a storage account named 'ttstorage101new'. The 'Pin to dashboard' dialog is open, allowing the user to pin the resource to their dashboard. The dialog includes options for 'Existing' and 'Create new', a 'Type' dropdown set to 'Private', and a 'Dashboard' dropdown set to 'Customer-360'. There are 'Pin' and 'Cancel' buttons at the bottom. The background shows the storage account's 'Essentials' and 'Properties' tabs, with the 'Data Lake Storage' section expanded, showing settings for 'Hierarchical namespace' (Enabled), 'Default access tier' (Hot), 'Blob anonymous access' (Enabled), and 'Blob soft delete' (Disabled).

Note : After creating resources go to Setting => Configuration => Enable (Allow Blob anonymous access) => click on “Save”

Home > ttstorage101new_1704874264258 | Overview > ttstorage101new

ttstorage101new | Configuration

Storage account

Search

Save Discard Refresh Give feedback

- Redundancy
- Data protection
- Blob inventory
- Static website
- Lifecycle management

Settings

- Configuration**
- Resource sharing (CORS)
- SFTP
- Advisor recommendations
- Endpoints
- Locks

Monitoring

The cost of your storage account depends on the usage and the options you choose below. [Learn more](#)

Account kind
StorageV2 (general purpose v2)

Performance ⓘ
☒ Standard ☐ Premium

ⓘ This setting cannot be changed after the storage account is created.

Secure transfer required ⓘ
☐ Disabled ☒ Enabled

Allow Blob anonymous access ⓘ
☐ Disabled ☒ Enabled

ⓘ Some blobs may become anonymously readable.

Allow storage account key access ⓘ
☐ Disabled ☒ Enabled

Allow recommended upper limit for shared access signature (SAS) expiry interval ⓘ
☒ Disabled ☐ Enabled

- Create a Container inside the Storage Account. First to go your resource

Click on Container option in Data Storage => new container => set Anonymous access level to “Container (anonymous access for container and blob)” as shown in below screenshot and create it.

Home > ttstorage101new

ttstorage101new | Containers

Storage account

Search

+ Container Change access level Restore containers Refresh Delete Give feedback

Search containers by prefix

Name	Last modified	Anonymous access level
<input type="checkbox"/> \$logs	1/10/2024, 1:41:38 PM	Private

New container ✕

Name *

Anonymous access level ⓘ
☐ Private (no anonymous access)

☒ **Container (anonymous read access for containers and blobs)**

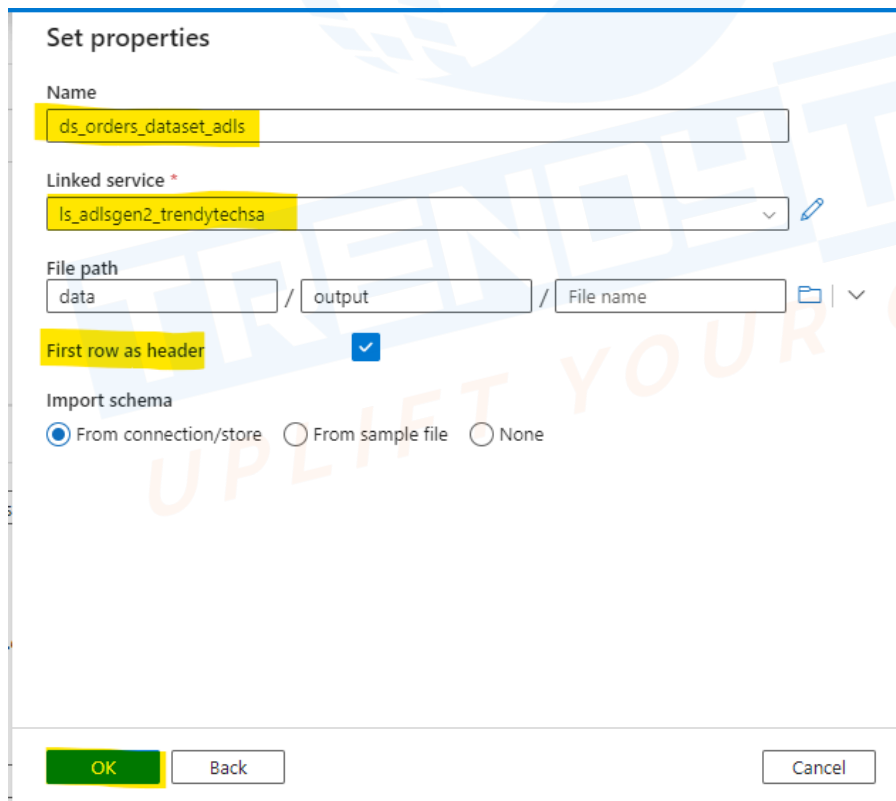
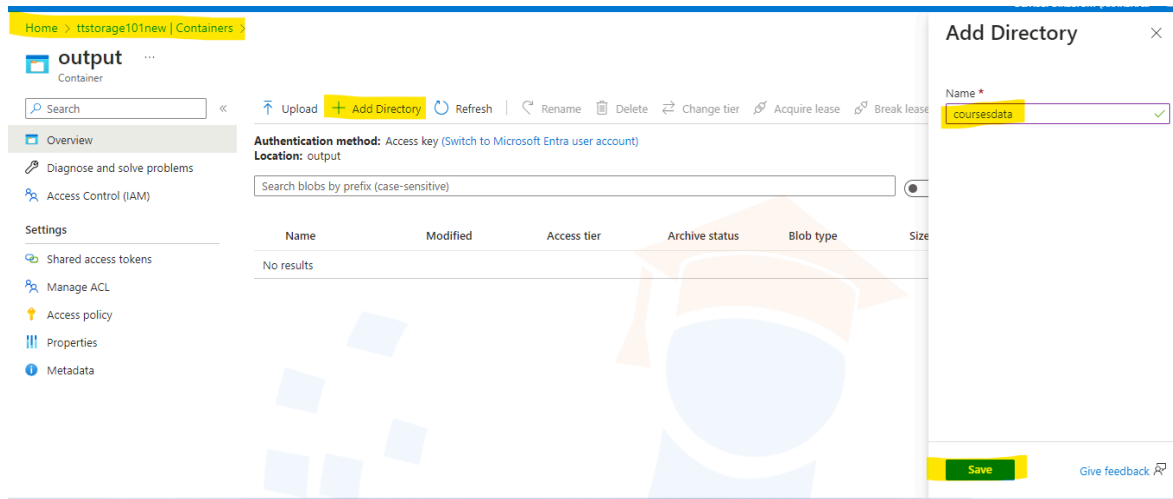
☐ Blob (anonymous read access for blobs only)

☐ Private (no anonymous access)

Create Give feedback

- Create a Directory under the Container.

Select the container (here “output”) => click on Add Directory option.



Creation of Data Integration Service - Azure Data Factory (To ingest data from source and load it to sink)

- Create Azure Data Factory resource.

Home > Data factories >

Create Data Factory

⚠ Changes on this step may reset later selections you have made. Review all options prior to deployment.

Basics Git configuration Networking Advanced Tags Review + create

One-click to create data factory with sample pipeline and datasets. [Try it](#)

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * ⓘ

Resource group * ⓘ [Create new](#)

Instance details

Name * ⓘ

[Previous](#) [Next](#) [Review + create](#)

- Open the Azure Data Factory Studio after the resource is deployed.

Click on Go to resource => launch

Home >

Microsoft.DataFactory-20240110140602 | Overview

Deployment

Search ⌕ Delete Cancel Redeploy Download Refresh

Overview Inputs Outputs Template

✓ Your deployment is complete

Deployment name : Microsoft.DataFactory-20240110140602 Start time : 1/10/2024, 2:08:42 PM
Subscription : Pay-As-You-Go Correlation ID : 07ca06ea-9860-4624-a0f3-1321b8872...
Resource group : trendytech-rg

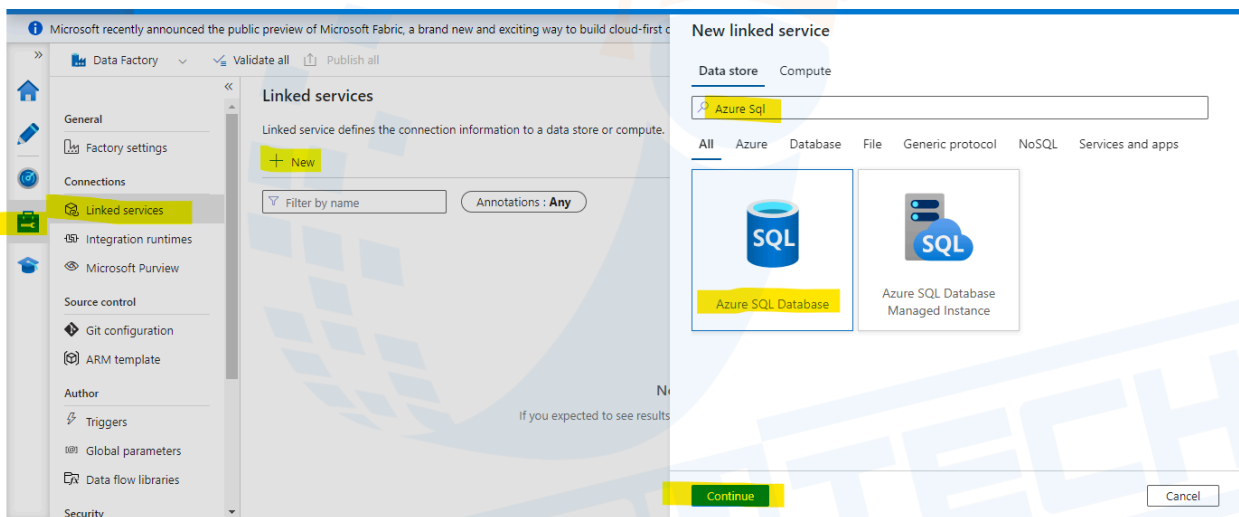
> Deployment details
✓ Next steps

[Go to resource](#)



- Firstly, connect to the source and sink using the Linked Service.
- Connect to the Source using the Linked Service Azure SQL Database. (Authentication to connect to SQL server and enable this service to be accessible by other services under firewall settings).

Check below screenshot for **creating linked service** for our source i.e Azure SQL Database

Go to Monitor => Linked Service => New => search Azure SQL and select Azure SQL Database => Continue




New linked service

 Azure SQL Database [Learn more](#) 

Name *

ls_sql_db


Description

Connect via integration runtime * 

AutoResolveIntegrationRuntime

Connection string

Azure Key Vault



Account selection method 

☒ From Azure subscription ☐ Enter manually

Azure subscription

Pay-As-You-Go (ef8b47c5-7bc0-46f9-856f-69466d151b69)

New linked service

 Azure SQL Database [Learn more](#) 

Azure subscription

Pay-As-You-Go (ef8b47c5-7bc0-46f9-856f-69466d151b69)

Server name *

customer360-server1

Database name *

trendytech-db

Authentication type *

SQL authentication

User name *

Trendytech@15

Password

Azure Key Vault

Password *

New linked service

Azure SQL Database [Learn more](#)

User name *
Trendytech@15

Password [Azure](#)
Password *

Always encrypted ⓘ

Additional connection
+ New

Annotations
+ New

> Parameters
> Advanced ⓘ

Error details

Error code [SqlFailedToConnect](#)

Details
Cannot connect to SQL Database. Please contact SQL server team for further support. Server: 'customer360-server1.database.windows.net', Database: 'trendytech-db', User: 'Trendytech@15'. Check the linked service configuration is correct, and make sure the SQL Database firewall allows the integration runtime to access. Cannot open server "15" requested by the login. The login failed, SqlErrorNumber=40532,Class=20,State=1,

Activity ID a68c8295-8e8b-4c4e-b0a6-125b65f07081

How helpful or unhelpful was this error message?
★ ★ ★ ★ ★

Connection failed [More](#)

Test connection [Cancel](#)

[Create](#) [Back](#)

If you get this error go to the server And allow in firewall rule Allow Azure services and resources to access this server

Home > trendytech-db (customer360-server1/trendytech-db) > customer360-server1

customer360-server1 | Networking

SQL server

Search

- Overview
- Activity log
- Access control (IAM)
- Tags
- Quick start
- Diagnose and solve problems

Settings

- Microsoft Entra ID
- SQL databases
- SQL elastic pools
- DTU quota
- Properties
- Locks

Firewall rules

Allow certain public internet IP addresses to access your resource. [Learn more](#)

+ Add your client IPv4 address (49.207.194.141) + Add a firewall rule

Rule name	Start IPv4 address	End IPv4 address	
ClientIPAddress_2024-1-10_13-18-34	49.207.194.141	49.207.194.141	
new_one	49.204.236.114	49.204.236.114	

Exceptions

☒ Allow Azure services and resources to access this server ⓘ

[Save](#) [Discard](#)

If you still get this error in username mention <username>@<servername> here Trendytech@15@customer360-server1. Refer below screenshot.

New linked service

Azure SQL Database [Learn more](#)

Pay-As-You-Go (ef8b47c5-7bc0-46f9-856f-69466d151b69)

Server name *
customer360-server1

Database name *
trendytech-db

Authentication type *
SQL authentication

User name *
Trendytech@15@customer360-server1

Password *
.....

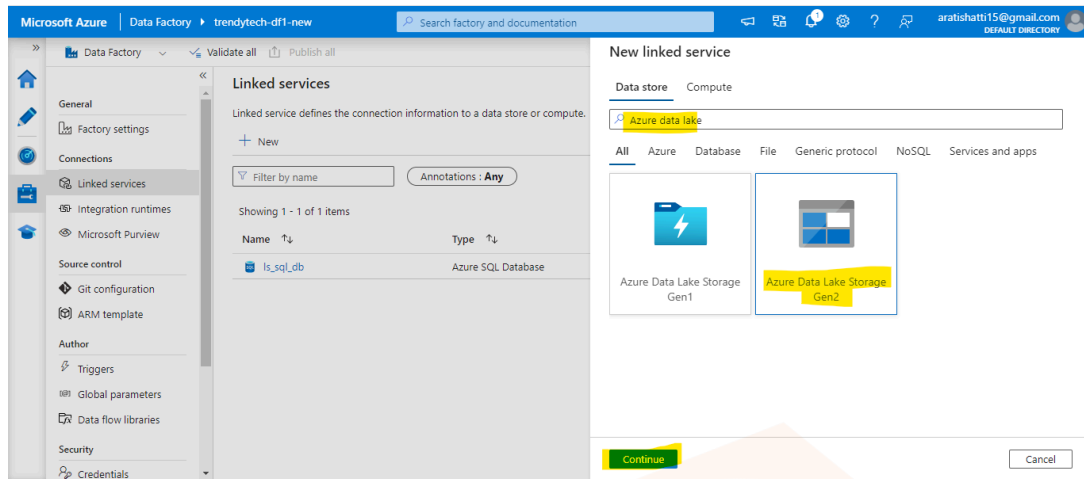
Always encrypted ☐

Create **Back** **Test connection** **Cancel**

Connection successful

- Connect to the Sink using the Linked Service ADLS Gen2.

Check below screenshot for creating linked service for our sink i.e ADLS gen storage



New linked service

Azure Data Lake Storage Gen2 [Learn more](#)

Name *

ls_ttstorage101

Description

Connect via integration runtime * ⓘ

AutoResolveIntegrationRuntime

Authentication type

Account key

Account selection method ⓘ

☒ From Azure subscription ☐ Enter manually

Azure subscription ⓘ

Pay-As-You-Go (ef8b47c5-7bc0-46f9-856f-69466d151b69)

New linked service

 Azure Data Lake Storage Gen2 [Learn more](#) 

Account key

Account selection method ^①

☒ From Azure subscription ☐ Enter manually

Azure subscription ^①

Pay-As-You-Go (ef8b47c5-7bc0-46f9-856f-69466d151b69) 

Storage account name *

ttstorage101new 



Test connection ^①

☒ To linked service ☐ To file path

Annotations

+ New

> Parameters

> Advanced ^①

Create

Back



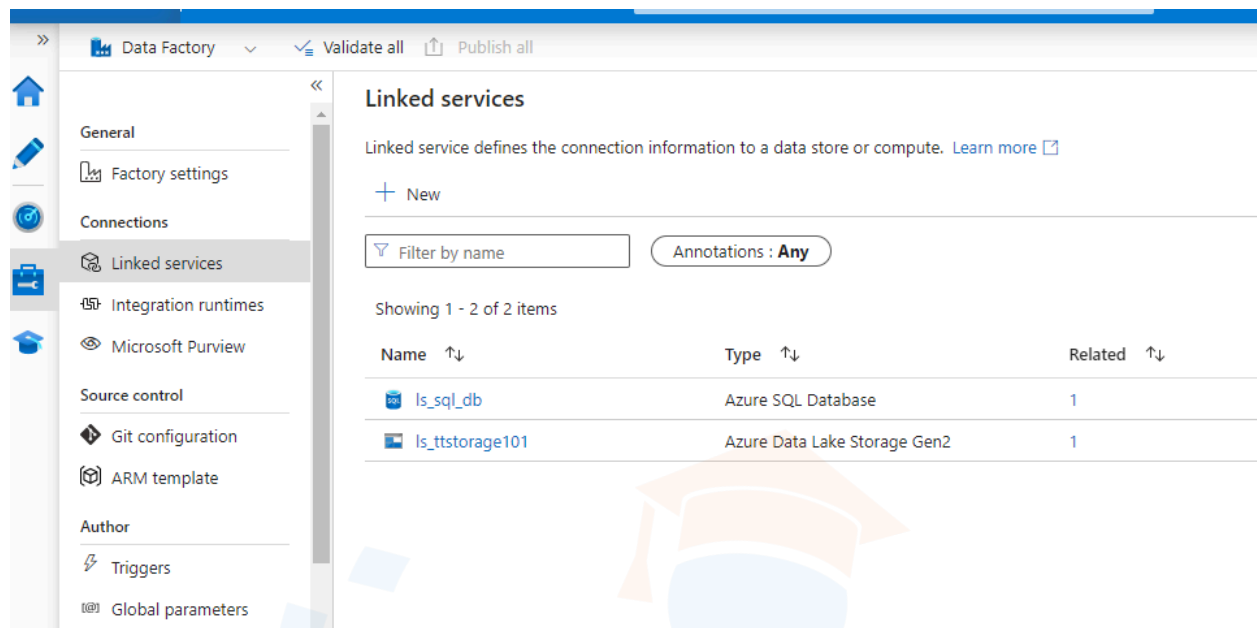
Connection successful



Test connection

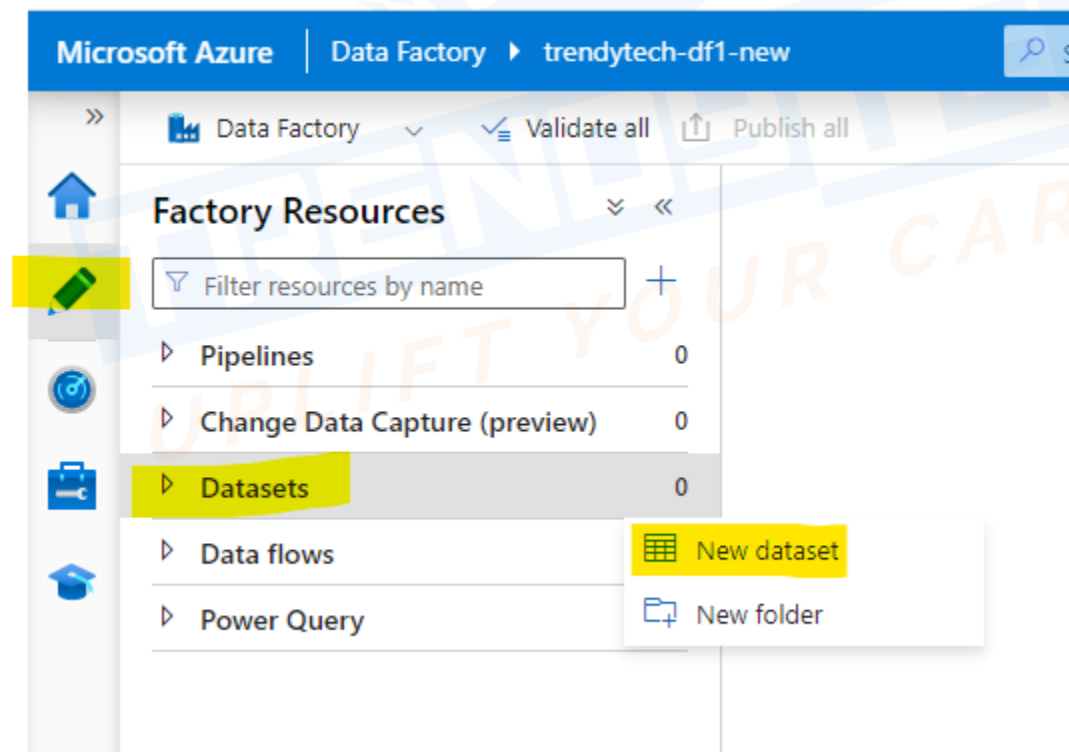
Cancel

Note: After creating new linked services in Azure Data Factory, be sure to publish these changes to make them active and available for use in your data workflows.

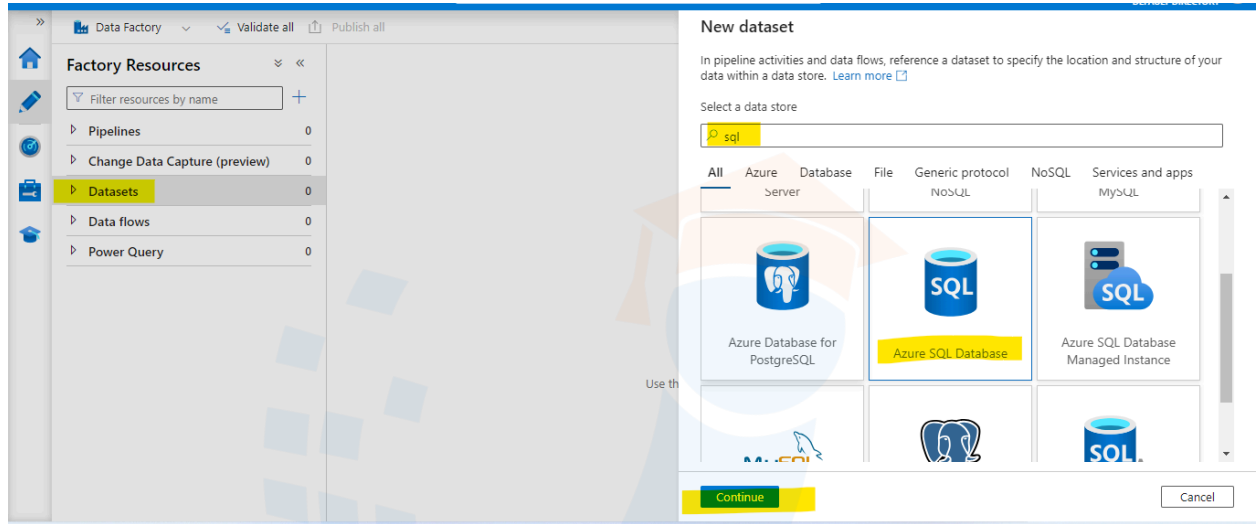


- Create and Publish Datasets on-top of Source and Sink indicating the format type of data to be stored underneath.

To create dataset click on Author => Datasets => New datasets



Dataset for source (courses table)



Set properties

Name

Linked service *

Table name

☐ Enter manually

Import schema
☒ From connection/store ☐ None

Dataset creation for sink please check below steps:

Microsoft Azure | Data Factory | trendytech-df1-new | Search factory and documentation | aratishatti15@gmail.com | DEFAULT DIRECTORY

Factory Resources


- Pipelines 0
- Change Data Capture (preview) 0
- Datasets 1**
 - ds_sql_db_courses
- Data flows 0
- Power Query 0

New dataset


In pipeline activities and data flows, reference a dataset to specify the location and structure of your data within a data store. [Learn more](#)

Select a data store


All | Azure | Database | File | Generic protocol | NoSQL | Services and apps




Azure Data Explorer (Kusto)




Azure Data Lake Storage Gen1




Azure Data Lake Storage Gen2



Azure Blob Storage











Microsoft SQL Server



Amazon Redshift

Select format

Choose the format type of your data

 Avro	 Binary	 DelimitedText
 Excel	 JSON	 ORC
		

Continue Back Cancel

Set properties

Name

Linked service *

File path
 / /

First row as header ☒

Import schema
☒ From connection/store ☐ From sample file ☐ None

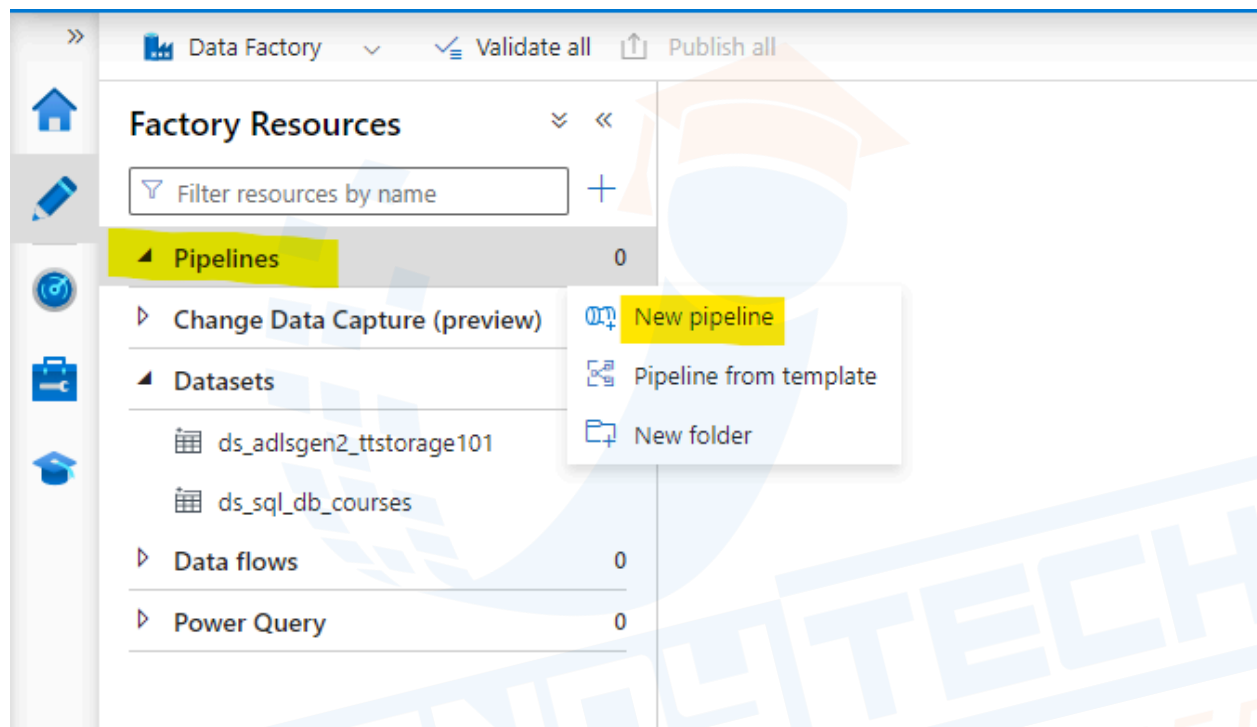
OK Back Cancel

Note: After creating new datasets in Azure Data Factory, be sure to publish these changes to make them active and available for use in your data workflows.

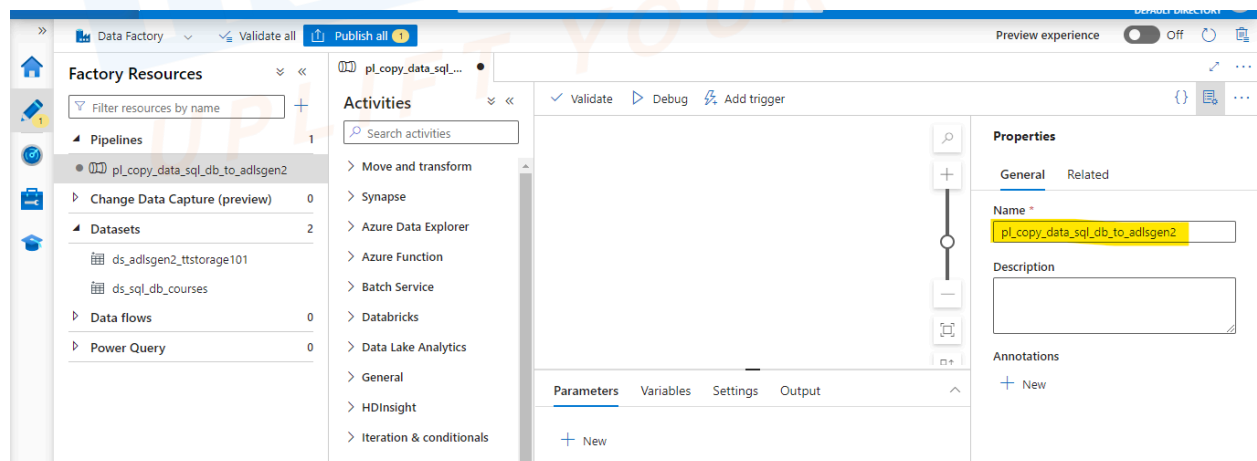
- Create a Pipeline and a Copy activity within the pipeline. Select the Source as Azure SQL DB and the Sink as ADLS Gen2 as created in the previous steps.

Now we will create the pipeline and we will keep the copy activity in it

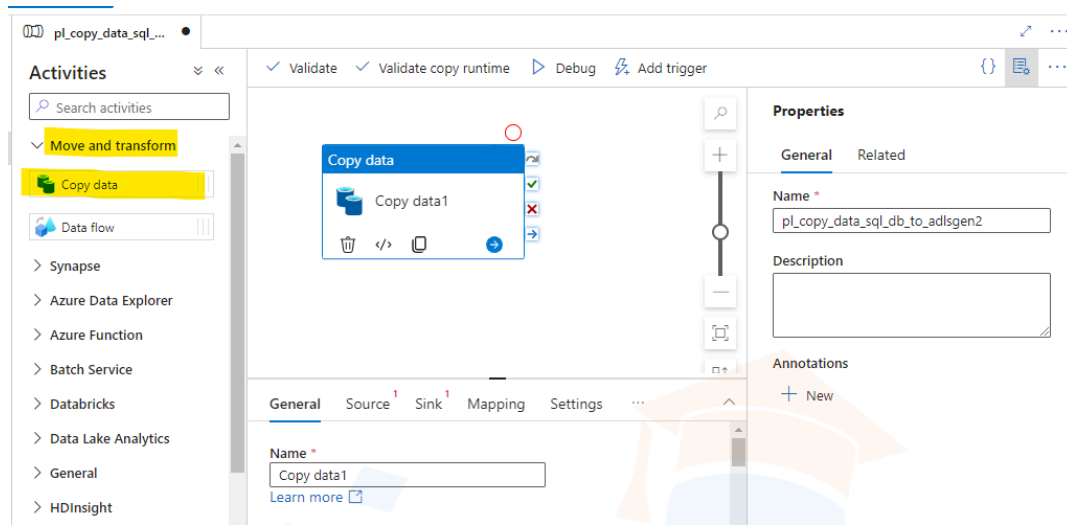
Click on three dots for pipelines option you will get below screen



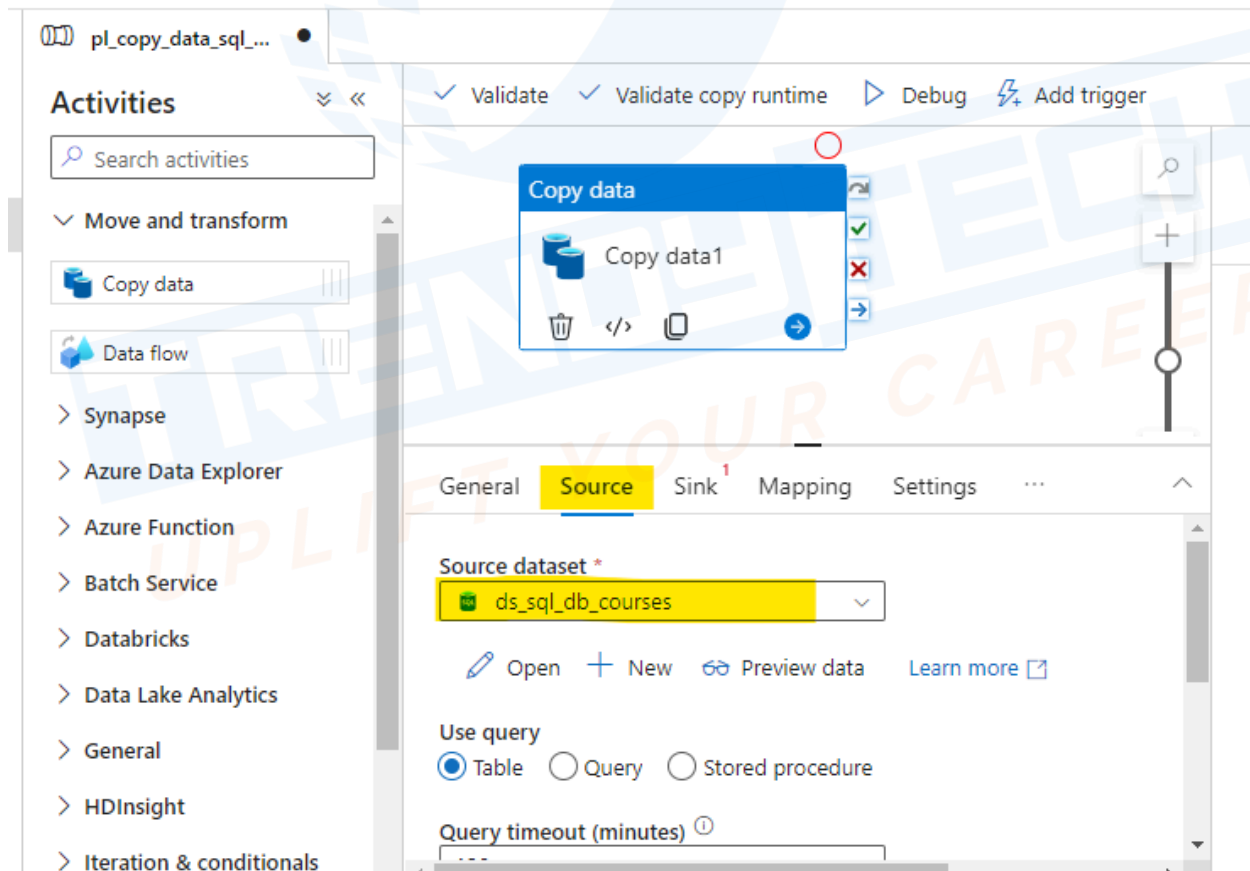
Give name as per your choice highlighted as below



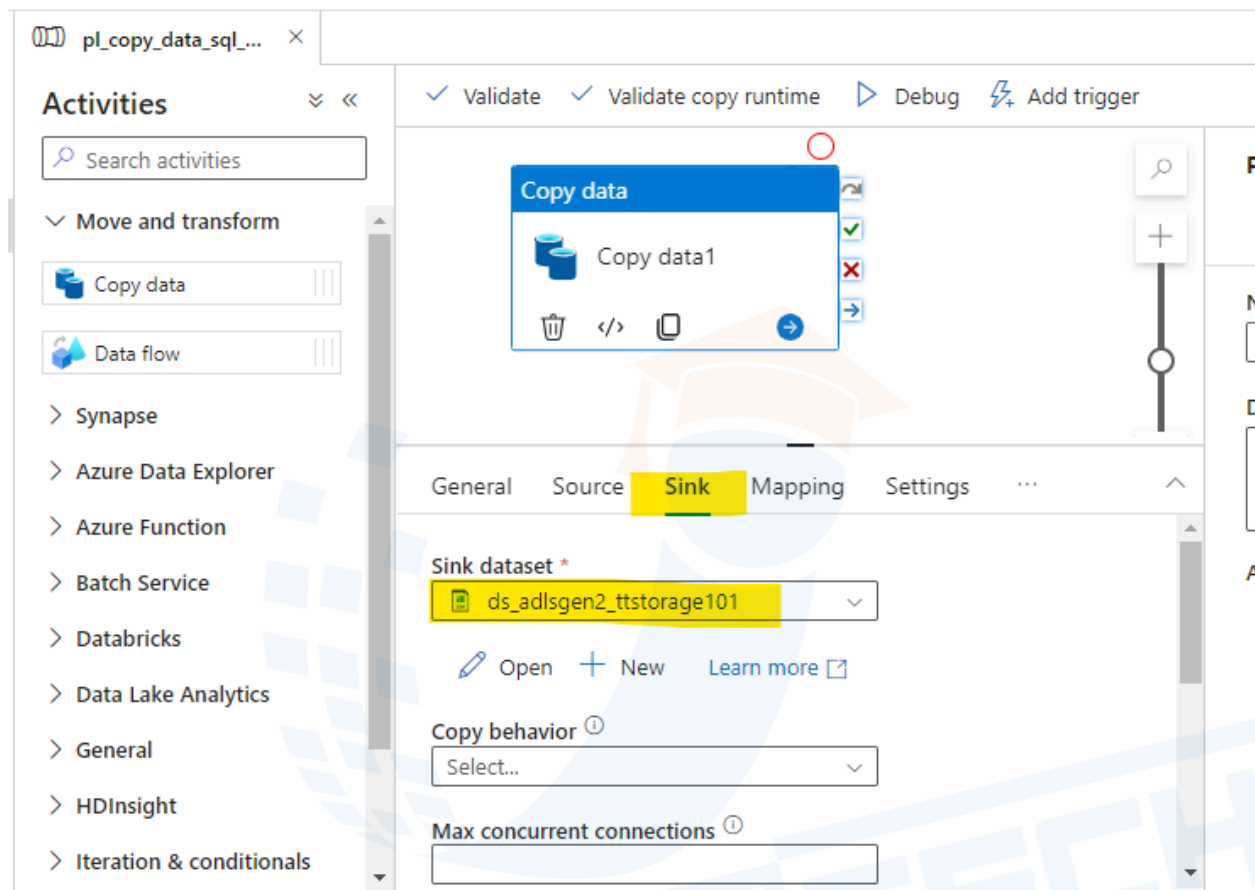
Now click on “Move and transform” and drag copy activity in the pipeline as shown below.



Now in source select dataset for course table in sql db here “ds_sql_db_courses”



Now in sink select dataset for sink here “ds_adlsgen2_ttstorage101”



- Debug the pipeline and validate it.

Note: After creating new pipelines in Azure Data Factory, be sure to publish these changes to make them active and available for use in your data workflows.

Activities

Search activities

Move and transform

- Copy data
- Data flow

Synapse

- Azure Data Explorer
- Azure Function
- Batch Service
- Databricks
- Data Lake Analytics
- General
- HDInsight
- Iteration & conditionals

Validate Debug Add trigger

Copy data

Copy data1

Parameters Variables Settings **Output**

Pipeline run ID: b4012710-1211-440b-be8b-c11b7b6b1761

Pipeline status: ✔ Succeeded [View debug run consumption](#)

All status ▼ [Monitor in Azure Metrics](#) [Export to CSV](#) ▼

Showing 1 - 1 of 1 items

Activity name	Activity status	Activity type
Copy data1	✔ Succeeded	Copy data

Also in your ADLS gen2 storage you will see the data copied after successfully running the pipeline. Refer below screenshot.

Home > ttstorage101new | Containers >

output Container

Search

Upload Add Directory Refresh Rename Delete Change tier Acquire lease Break lease Give feedback

Overview

Diagnose and solve problems

Access Control (IAM)

Settings

Shared access tokens

Manage ACL

Access policy

Properties

Metadata

Authentication method: Access key (Switch to Microsoft Entra user account)

Location: output / coursesdata

Search blobs by prefix (case-sensitive) Show deleted objects

Name	Modified	Access tier	Archive status	Blob type	Size	Lease state
[...]						...
dbc.courses.txt	1/10/2024, 4:40:29 PM	Hot (Inferred)		Block blob	151 B	Available

- Monitor the pipeline under the monitor tab.

Note : here after the Debug option it will be listed in the debug option in “pipeline runs”. If you click on the Trigger option it will be listed in the Trigger option.

Microsoft Azure | Data Factory | trendytech-df1-new

Search factory and documentation

Expand

Dashboards

Runs

Pipeline runs

Trigger runs

Change Data Capture (previ...

Runtimes & sessions

Integration runtimes

Data flow debug

Notifications

Alerts & metrics

Pipeline runs

Triggered | **Debug** | Rerun | Cancel options | Refresh | Edit columns | List | Gantt

Filter by run ID or name | Chennai, Kolkata, Mu... : Last 24 hours | Pipeline name : All | Status : All

Add filter

Showing 1 - 1 items

<input type="checkbox"/>	Pipeline name ↑↓	Run start ↑↓	Run end ↑↓	Duration	Status ↑↓	Triggered by
<input type="checkbox"/>	pl_copy_data_sql...	1/10/2024, 4:40:15 PM	1/10/2024, 4:40:35 PM	21s	✓ Succeeded	Manual trigger

Note: At the end please delete all the resources that you have created.

TRENDY TECH
UPLIFT YOUR CAREER!