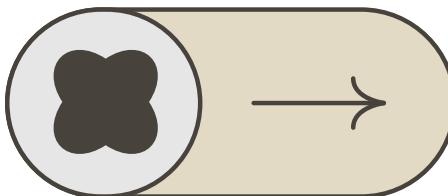


# Load Data from Snowflake to ADLS Gen2 using Blob Staging

Ganesh R

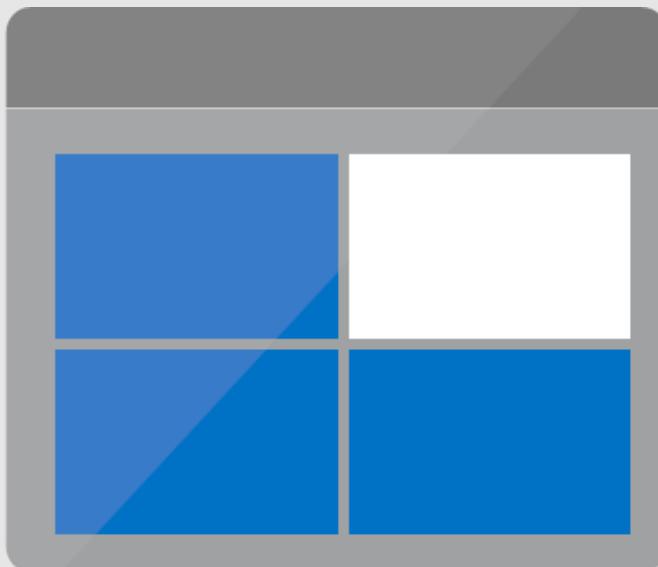
Azure Data Engineer



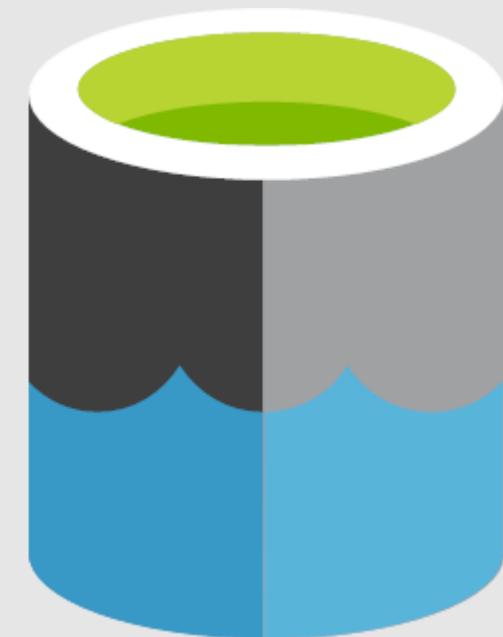
Snowflake



Blob Storage



ADLS Gen2





## START YOUR 30-DAY FREE TRIAL

- Gain immediate access to the Data Cloud
- Enable your most critical data workloads
- Scale instantly, elastically, and near-infinitely across public clouds
- Snowflake is HIPAA, PCI DSS, SOC 1 and SOC 2 Type 2 compliant, and FedRAMP Authorized



Start your 30-day free Snowflake trial which includes \$400 worth of free usage



### Check your inbox!

An email to activate your account has been sent to [sakthivelmaddy97@gmail.com](mailto:sakthivelmaddy97@gmail.com). It may take a few minutes to arrive.

Meanwhile, here are a few resources to check out:



[Get started with Snowflake documentation](#)



[Sign up for a free, instructor-led \*\*Virtual Hands-On Lab\*\*](#)



[Explore industry-specific user cases and walkthroughs in our \*\*Solutions Center\*\*](#)

**WHAT IS snowflake®?**

**8 MINUTE DEMO**



Privacy • Terms

2025-01-25 11:02pm + ▾

Databases Worksheets ⟳ ACCOUNTADMIN • No warehouse selected Share ▶ ▾

Search objects DEMO.SALES Settings 🔍

DEMO +

- INFORMATION\_SCHEMA
- PUBLIC
- SALES
  - Tables
    - CUST
- SNOWFLAKE
- SNOWFLAKE\_SAMPLE\_DATA

create table cust(cid int, cname varchar(50), clocation varchar(50))  
insert into cust values(1, 'Sakthi', 'Bangalore'),  
(2, 'Senthil', 'Chennai'),  
(3, 'Balu', 'Hyderabad'),  
(4, 'Raj', 'Madurai');  
select \* from cust

Results Chart 🔍 ☰ ⤵ ⤶ ⤷ ⤸

	CID	CNAME	CLOCATION
1	1	Sakthi	Bangalore
2	2	Senthil	Chennai
3	3	Balu	Hyderabad
4	4	Raj	Madurai

Query Details ...  
Query duration 134ms  
Rows 4  
Query ID 01b9f3c4-0001-3c4f-0...  
Show more

CID #  
1 4

SK

## abssakthi | Shared access signature

Storage account

Search



### Security + networking

[Networking](#)[Front Door and CDN](#)[Access keys](#)

### Shared access signature

[Encryption](#)[Microsoft Defender for Cloud](#)

### Data management

### Settings

[Configuration](#)[Data Lake Gen2 upgrade](#)[Resource sharing \(CORS\)](#)[Advisor recommendations](#)[Endpoints](#)[Locks](#)

### Monitoring

### Monitoring (classic)

### Automation

### Help

A shared access signature (SAS) is a URI that grants restricted access rights to Azure Storage resources. You can provide a shared access signature to clients who should not be trusted with your storage account key but whom you wish to delegate access to certain storage account resources. By distributing a shared access signature URI to these clients, you grant them access to a resource for a specified period of time.

An account-level SAS can delegate access to multiple storage services (i.e. blob, file, queue, table). Note that stored access policies are currently not supported for an account-level SAS.

[Learn more about creating an account SAS](#)

#### Allowed services

Blob    File    Queue    Table

#### Allowed resource types

Service    Container    Object

#### Allowed permissions

Read    Write    Delete    List    Add    Create    Update    Process    Immutable storage    Permanent delete

#### Blob versioning permissions

Enables deletion of versions

#### Allowed blob index permissions

Read/Write    Filter

#### Start and expiry date/time

Start

11:33:59 pm

End

7:33:59 am

(UTC+05:30) Chennai, Kolkata, Mumbai, New Delhi

#### Allowed IP addresses

For example, 168.1.5.65 or 168.1.5.65-168.1.5.70

#### Allowed protocols

HTTPS only    HTTPS and HTTP

# abssakthi | Shared access signature

Storage account

Search  Give feedback

Allowed protocols  HTTPS only  HTTPS and HTTP

Preferred routing tier  Basic (default)  Microsoft network routing  Internet routing

*Some routing options are disabled because the endpoints are not published.*

Signing key

**Generate SAS and connection string**

Connection string  
BlobEndpoint=https://abssakthi.blob.core.windows.net/QueueEndpoint=https://abssakthi.queue.core.windows.net/FileEndpoint=https://abssakthi.file.core.windows.net/TableEndpoint=https://abssakthi...

SAS token

sv=2022-11-02&ss=bfqt&srt=sco&sp=rwdlacupiytfx&se=2025-01-26T02:03:59Z&st=2025-01-25T18:03:59Z&spr=https&sig=v17Js0RTimc4M3FlbEps0ZYSwq7Hd8XVKEp%2FyoBiaus%3D

Blob service SAS URL  
<https://abssakthi.blob.core.windows.net/?sv=2022-11-02&ss=bfqt&srt=sco&sp=rwdlacupiytfx&se=2025-01-26T02:03:59Z&st=2025-01-25T18:03:59Z&spr=https&sig=v17Js0RTimc4M3FlbEps0ZYSwq7H...>

File service SAS URL  
<https://abssakthi.file.core.windows.net/?sv=2022-11-02&ss=bfqt&srt=sco&sp=rwdlacupiytfx&se=2025-01-26T02:03:59Z&st=2025-01-25T18:03:59Z&spr=https&sig=v17Js0RTimc4M3FlbEps0ZYSwq7H...>

Queue service SAS URL  
<https://abssakthi.queue.core.windows.net/?sv=2022-11-02&ss=bfqt&srt=sco&sp=rwdlacupiytfx&se=2025-01-26T02:03:59Z&st=2025-01-25T18:03:59Z&spr=https&sig=v17Js0RTimc4M3FlbEps0ZYSwq7H...>

Table service SAS URL  
<https://abssakthi.table.core.windows.net/?sv=2022-11-02&ss=bfqt&srt=sco&sp=rwdlacupiytfx&se=2025-01-26T02:03:59Z&st=2025-01-25T18:03:59Z&spr=https&sig=v17Js0RTimc4M3FlbEps0ZYSwq7H...>

akvsakthi | Secrets Key vault

Search Generate/Import Refresh Restore Backup View sample code Manage deleted secrets

The secret 'snowflake' has been successfully created.

Name	Type	Status	Expiration date
snowflake		✓ Enabled	
abs-SAS-url		✓ Enabled	
adls-key		✓ Enabled	

Overview Activity log Access control (IAM) Tags Diagnose and solve problems Access policies Events Objects Keys Secrets Certificates Settings Access configuration Networking Microsoft Defender for Cloud Properties Locks Monitoring Automation Help

Give feedback

Data Factory

Validate all

Publish all 1

Linked services

General

Factory settings

Connections

Linked services

Integration runtimes

Microsoft Purview

Source control

Git configuration

ARM template

Author

Triggers

Global parameters

Data flow libraries

Security

Credentials

Customer managed key

Outbound rules

Managed private endpoints

Workflow orchestration manager

Apache Airflow

Linked services defines the connection information to a data store or compute. Learn more

+ New

Filter by name Annotations : Any

Showing 1 - 4 of 4 items

Name ↑	Type ↑
ls_abs	Azure Blob Storage
ls_adls	Azure Data Lake Storage
ls_akv	Azure Key Vault
ls_asdb	Azure SQL Database

### Edit linked service

Azure Blob Storage [Learn more](#)

**Name \***  
ls\_abs

**Description**

**Connect via integration runtime \*** ⓘ  
 AutoResolveIntegrationRuntime

**Authentication type**  
SAS URI  Azure Key Vault

**AKV linked service \*** ⓘ  
ls\_akv

**Secret name \***  
abs-SAS-url

**Secret version** ⓘ  
Latest version

**Test connection** ⓘ  
 To linked service  To file path

**Annotations**

+ New

Save Cancel

Connection successful

Test connection

# akvsakthi | Secrets

Key vault

Search Generate/Import Refresh Restore Backup View sample code Manage deleted secrets

The secret 'snowflake-pwd' has been successfully created.

Name	Type	Status	Expiration date
snowflake-pwd		✓ Enabled	
snowflake		✓ Enabled	
abs-SAS-url		✓ Enabled	
adls-key		✓ Enabled	

Overview Activity log Access control (IAM) Tags Diagnose and solve problems Access policies Events Objects Keys Secrets Certificates Settings Access configuration Networking Microsoft Defender for Cloud Properties Locks Monitoring Automation Help

Give feedback

Data Factory

Validate all

Publish all 2

Linked services

General

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ARM template

Author

Triggers

Global parameters

Data flow libraries

Security

Credentials

Customer managed key

Outbound rules

Managed private endpoints

Workflow orchestration manager

Apache Airflow

Linked service defines the connection information to a data store or compute. Learn more

+ New

Filter by name Annotations : Any

Showing 1 - 4 of 4 items

Name ↑	Type ↑
● ls_abs	Azure Blob Storage
ls_adls	Azure Data Lake St
● ls_akv	Azure Key Vault
ls_asdb	Azure SQL Databas

### New linked service

Snowflake [Learn more](#)

Name \* ls\_snowflake

Description

Connect via integration runtime \* ⓘ

AutoResolveIntegrationRuntime

Account name \* ⓘ exydola-vx06763

Database \* ⓘ Demo

Warehouse \* ⓘ COMPUTE\_WH

Authentication type \* ⓘ Basic

User name \* ⓘ SAKTHIVEL

Password Azure Key Vault

AKV linked service \* ⓘ ls\_akv

Secret name \* ⓘ snowflake-pwd

Connection successful

Create Back Test connection Cancel

» Data Factory    Validate all    Publish all (3)

Preview experience  Off

**Linked services**

Linked service defines the connection information to a data store or compute. [Learn more](#)

+ New

Filter by name Annotations : Any

Showing 1 - 5 of 5 items

Name ↑↓	Type ↑↓	Related ↑↓	Annotations ↑↓
● ls_abs	Azure Blob Storage	0	
● ls_adls	Azure Data Lake Storage Gen2	0	
● ● ls_akv	Azure Key Vault	2	
● ls_asdb	Azure SQL Database	0	
● ● ls_snowflake	Snowflake	0	

General

Factory settings

Connections

Linked services

Integration runtimes

Microsoft Purview

Source control

Git configuration

ARM template

Author

Triggers

Global parameters

Data flow libraries

Security

Credentials

Customer managed key

Outbound rules

Managed private endpoints

Workflow orchestration manager

Apache Airflow

» Data Factory Validate all Publish all 6

Preview experience Off ...

**Factory Resources** Filter resources by name +

- Pipelines 0
- Change Data Capture (preview) 0
- Datasets 3
  - ds\_abs
  - ds\_adls
  - ds\_Snowflake
- Data flows 0
- Power Query 0

**ds\_Snowflake**

Snowflake ds\_Snowflake

**Connection Schema Parameters**

Linked service \* ls\_snowflake Test connection Edit New Learn more

✓ Connection successful

Table SALES.CUST Refresh Preview data

Enter manually

Factory Resources <> Activities

ds\_adls ds\_abs ds\_Snowflake pl\_data\_sf\_to\_adl ...

Preview experience Off Publish all 7 Validate all

Copy data activity

Direct copying data from Snowflake is only supported when copying into Azure Blob Storage with DelimitedText, Parquet or JSON format, for other scenarios, please enable staging.

Copy data activity

Sink dataset \* ds\_adls

Open New Learn more

Copy behavior Select...

Max concurrent connections

Block size (MB)

Metadata + New

Quote all text

File extension .txt

Max rows per file

Close

Pipeline validation output

Copy data activity

Direct copying data from Snowflake is only supported when copying into Azure Blob Storage with DelimitedText, Parquet or JSON format, for other scenarios, please enable staging.

» Data Factory Validate all Publish all 7

Preview experience Off

### Factory Resources

- Home
- New Pipelines
- 4 pl\_data\_sf\_to\_adls
- Change Data Capture (preview)
- 0
- New Datasets
- 3
  - ds\_abs
  - ds\_adls
  - ds\_Snowflake
- 0 Data flows
- 0 Power Query

### 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
- Machine Learning
- Power Query

ds\_adls    ds\_abs    ds\_Snowflake    pl\_data\_sf\_to\_adls

Validate   Validate copy runtime   Debug   Add trigger

**Copy data**

Copy data activity

General   Source   Sink   Mapping   **Settings**   User properties

Maximum data integration unit Auto  Use custom value

Degree of copy parallelism Auto

Fault tolerance

Enable logging

Enable staging

Staging settings

Staging account linked service \* ls\_abs Test connection Edit New Connection successful

Linked service properties

Name	Value	Type
ip_BlobAccName	abssakthi	string

Storage path storage Browse

Enable compression

Micro

Details Refresh

Learn more on copy performance details from here.

Activity run id: 113ce419-5c77-4521-a577-de27bc4309c3

Snowflake Azure Blob Storage Azure Data Lake Storage Gen2 Region: East US

Succeeded Succeeded

Data read: 110 bytes  
Rows read: 4

Data written: 117 bytes  
Files written: 1  
Rows written: 4  
Peak connections: 1

Copy duration 00:01:15  
Throughput: 10 bytes/s

Snowflake → Azure Blob Storage

Start time	1/26/2025, 12:09:27 AM
Used DIUs	4
Used parallel copies	1
> Duration	00:00:18

Azure Blob Storage → Azure Data Lake Storage Gen2

Start time	1/26/2025, 12:09:46 AM
Used DIUs	4
Used parallel copies	1
> Duration	00:00:57

Data consistency verification Unsupported

---

How satisfied or dissatisfied are you with the performance of this copy activity?

» Data Factory Validate all Publish all (7)

Preview experience Off

### Factory Resources

- Pipelines (4)
  - pl\_data\_sf\_to\_adls
- Change Data Capture (preview) (0)
- Datasets (3)
  - ds\_abs
  - ds\_adls
  - ds\_Snowflake
- Data flows (0)
- Power Query (0)

### Activities

- Copy data
- Move and transform
  - Copy data
- Synapse
- Azure Data Explorer
- Azure Function
- Batch Service
- Databricks
- Data Lake Analytics
- General
- HDInsight
- Iteration & conditionals
- Machine Learning
- Power Query

Validate Debug Add trigger

Copy data activity

Parameters Variables Settings Output

Pipeline run ID: af6898fd-18a1-4908-a1a0-196d59a9d04a

Pipeline status Succeeded

All status

Showing 1 - 1 of 1 items

Activity name	Activity st...	Activit...	Run start	Duration	Integration runtime
Copy data activity	Succeeded	Copy data	1/26/2025, 12:09:26 AM	1m 27s	AutoResolveIntegrationRuntime (East US)

**output** Container

Search  X << Upload Add Directory Refresh | Rename Delete Change tier Acquire lease Break lease Give feedback

**Overview**

**Authentication method:** Access key ([Switch to Microsoft Entra user account](#))  
**Location:** output

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

Name	Modified	Access tier	Archive status	Blob type	Size	Lease state	...
<input type="checkbox"/>  data_0_0.csv	26/1/2025, 12:10:43 ...	Hot (Inferred)		Block blob	117 B	Available	...

» Data Factory Validate all Publish all 7

Preview experience Off

**Factory Resources** Filter resources by name +

- Pipelines** 1
  - pl\_data\_adls\_to\_sf
- Change Data Capture (preview)** 0
- Datasets** 3
  - ds\_abs
  - ds\_adls
  - ds\_Snowflake
- Data flows** 0
- Power Query** 0

**Activities** Validate Cancel options Add trigger

Search activities

- > Move and transform
- > Synapse
- > Azure Data Explorer
- > Azure Function
- > Batch Service
- > Databricks
- > Data Lake Analytics
- > General
- > HDInsight
- > Iteration & conditionals
- > Machine Learning
- > Power Query

**Copy data** ✓

Copy data activity

**Output**

Pipeline run ID: 1fc21566-16ae-4ec7-8990-dbef8c036604 ... ↻  ⓘ

Pipeline status  ⓘ In progress

All status ▼

Showing 1 - 1 of 1 items

Activity name	Activity st...	Activit...	Run start	Duration	Integration runtime	
Copy data ac...	<span>↻</span> <span> ⓘ</span> <span>...</span>	<span>✓ Succeeded</span>	Copy data	1/26/2025, 12:26:08 AM	47s	AutoResolveIntegrationRuntime (East US)

Micro

Details Refresh

Learn more on copy performance details from here.

Activity run id: 9cb05d2f-bfa1-4a34-ad9c-d1efbe270d39

Azure Data Lake Storage Gen2 Region: East US → Succeeded → Azure Blob Storage → Succeeded → Snowflake

Data read: 120 bytes  
Files read: 1  
Rows read: 4  
Peak connections: 1

Data written: 120 bytes  
Rows written: 4  
Rows skipped: 0

Copy duration 00:00:29  
Throughput: 10 bytes/s

✓ Azure Data Lake Storage Gen2 → Azure Blob Storage

Start time	1/26/2025, 12:26:10 AM
Used DIUs	4
Used parallel copies	1
> Duration	00:00:10

✓ Azure Blob Storage → Snowflake

Start time	1/26/2025, 12:26:21 AM
Used DIUs	4
Used parallel copies	1
> Duration	00:00:18

Data consistency verification Unsupported

---

How satisfied or dissatisfied are you with the performance of this copy activity?

★ ★ ★ ★ ★

2025-01-25 11:02pm + ▾

Databases Worksheets ⟳ ACCOUNTADMIN • COMPUTE\_WH (X-Small) Share ▶ ▾

+ Search objects C

DEMO DEMOSALES Settings

DEMO

- INFORMATION\_SCHEMA
- PUBLIC
- SALES
  - Tables
    - CUST
- SNOWFLAKE
- SNOWFLAKE\_SAMPLE\_DATA

Code Versions Q

```
1 create table cust(cid int, cname varchar(50), clocation varchar(50))
2 insert into cust values(1, 'Sakthi', 'Bangalore'),
3 (2, 'Senthil', 'Chennai'),
4 (3, 'Balu', 'Hyderabad'),
5 (4, 'Raj', 'Madurai');
6 select * from cust
```

Results Chart

	CID	CNAME	CLOCATION
1		Sakthi	Bangalore
2		Senthil	Chennai
3		Balu	Hyderabad
4		Raj	Madurai
5		Dany	Bangalore
6		Karthi	Chennai
7		Ameer	Hyderabad
8		Bahubali	Madurai

Query Details ...

Query duration 137ms

Rows 8

Query ID 01b9f412-0001-3c52-0...

Show more ▼

CID #

1 8

CNAME A

100% filled

SK □ □ □ ?

» Data Factory    Validate all    Publish all (7)

Preview experience: Off

Factory Resources

Activities

ds\_adls   ds\_abs   ds\_Snowflake   pl\_data\_sf\_to\_ab: ...

Pipelines: 1

pl\_data\_sf\_to\_abs

Change Data Capture (preview): 0

Datasets: 3

- ds\_abs
- ds\_adls
- ds\_Snowflake

Data flows: 0

Power Query: 0

Copy data activity

Validate   Validate copy runtime   Debug   ...

Copy data

Copy data activity

General   Source   Sink   Mapping   Settings   User properties

You will be charged # of used DIUs \* copy duration \* \$0.25/DIU-hour. Local currency and separate discounting may apply per subscription type. [Learn more](#)

Maximum data integration unit: Auto  
 Use custom value

Degree of copy parallelism: Auto

Fault tolerance:

Enable logging:

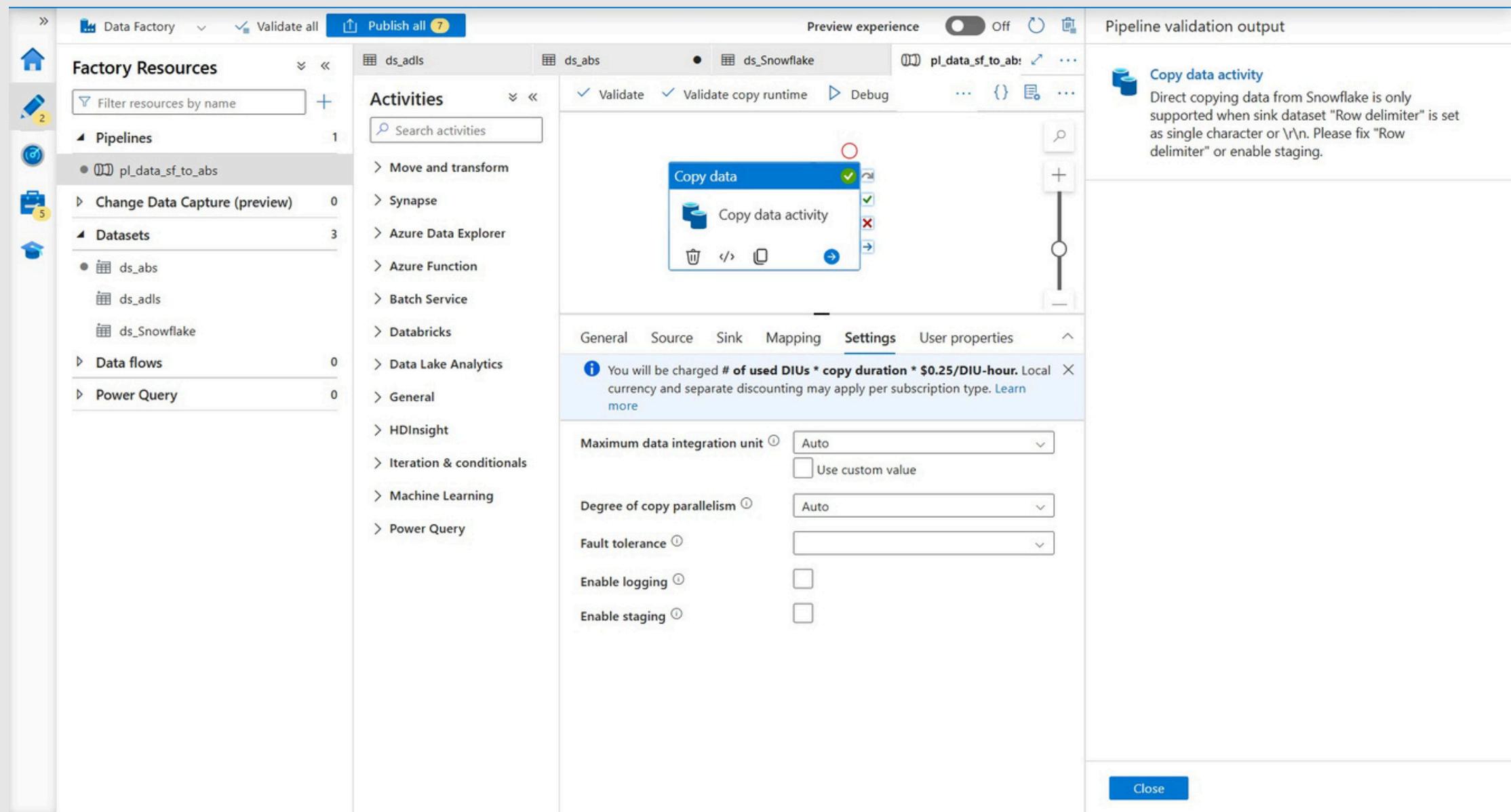
Enable staging:

Pipeline validation output

Copy data activity

Direct copying data from Snowflake is only supported when sink dataset "Row delimiter" is set as single character or '\r\n. Please fix "Row delimiter" or enable staging.

Close



» Data Factory Publish all Preview experience

Factory Resources

- Pipelines 1
  - pl\_data\_sf\_to\_abs
- Change Data Capture (preview) 0
- Datasets 3
  - ds\_abs
  - ds\_adls
  - ds\_Snowflake
- Data flows 0
- Power Query 0

ds\_abs DelimitedText

Connection Schema Parameters

Ip\_BlobAccName abssakthi string

File path \* storage / Directory / File name

Compression type No compression

Column delimiter Comma (,)

Row delimiter Line feed (\n)

Encoding Default(UTF-8)

Quote character Double quote ("")

Escape character Backslash (\)

First row as header

Null value

Data Factory    Validate all    Publish all (7)

Preview experience    Off

### Factory Resources

- Pipelines (1)
  - pl\_data\_sf\_to\_abs
- Change Data Capture (preview) (0)
- Datasets (3)
  - ds\_abs
  - ds\_adls
  - ds\_Snowflake
- Data flows (0)
- Power Query (0)

### Activities

- Move and transform
- Synapse
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- Databricks
- Data Lake Analytics
- General
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- Iteration & conditionals
- Machine Learning
- Power Query

Copy data

Copy data activity

Parameters   Variables   Settings   Output

Pipeline run ID: 091200e3-480e-4af0-9705-c4123fc30133   Pipeline status: Succeeded

Activity name	Activity st...	Activit...	Run start	Duration	Integration runtime
Copy data activity	Succeeded	Copy data	1/26/2025, 12:35:09 AM	21s	AutoResolveIntegrationRuntime (East US)

Micro

Details Refresh

Learn more on copy performance details from here.

Activity run id: e2223ef2-3b94-4b52-b7c2-f83f0cd7b2b0

Snowflake  Azure Blob Storage

Succeeded

**Data read:** 197 bytes  
**Rows read:** 8

**Data written:** 197 bytes  
**Rows written:** 8

**Copy duration** 00:00:16  
**Throughput:** 18 bytes/s

**Snowflake → Azure Blob Storage**

Start time	1/26/2025, 12:35:13 AM
Used DIUs	4
Used parallel copies	1
Duration	00:00:16
Details	
Queue	00:00:03
Transfer	00:00:11

**Data consistency verification** Unsupported

How satisfied or dissatisfied are you with the performance of this copy activity?

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Cloud for Data Engineering**



# Ganesh R

Azure Data Engineer



<https://www.linkedin.com/in/r Ganesh0203/>