

S3 to Milvus

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Contents

| | |
|--|----------|
| ReadyFlow overview: S3 to Milvus [Technical Preview]..... | 4 |
| Prerequisites..... | 4 |
| Required parameters..... | 7 |

ReadyFlow overview: S3 to Milvus [Technical Preview]

You can use the S3 to Milvus [Technical Preview] ReadyFlow to consume PDF documents from S3, vectorize them using a HuggingFace model and write the results to Milvus.

This ReadyFlow consumes PDF documents from a source S3 location, partitions the PDFs, chunks the data, vectorizes the data using a HuggingFace embedding model, and stores the results in Milvus vector DB. The default HuggingFace model is 'all-MiniLM-L12-v2'. A Milvus access token is required to run this flow. Define a KPI on the failure_WriteToMilvus connection to monitor failed write operations.



Note: This ReadyFlow is considered Technical Preview and is not designed for production use.

The flow uses Python processors and must be run in NiFi 2.x.

To ensure correct functionality, make sure your Milvus collection has been created with the expected schema and the same dimension as the 'all-MiniLM-L12-v2' model (384). The images within PDFs will be ignored.



Note:

This ReadyFlow leverages Cloudera on cloud's centralized access control for cloud storage access. Make sure to either set up Ranger policies or an IDBroker mapping allowing your workload user access to the source S3 location.

| S3 to Milvus [Technical Preview] ReadyFlow details | |
|--|-------------------------------------|
| Source | Cloudera on cloud managed Amazon S3 |
| Source Format | PDF |
| Destination | Milvus |
| Destination Format | Vector DB |

Prerequisites

Learn how to collect the information you need to deploy the S3 to Milvus [Technical Preview] ReadyFlow, and meet other prerequisites.

For your data ingest source

- You have the source S3 bucket and path.

- You have performed one of the following to configure access to the source S3 bucket:
 - You have configured access to the S3 bucket with a RAZ enabled environment.

It is a best practice to enable RAZ to control access to your object store buckets. This allows you to use your Cloudera on cloud credentials to access S3 buckets, increases auditability, and makes object store data ingest workflows portable across cloud providers.

1. Ensure that Fine-grained access control is enabled for your Cloudera Data Flow environment.
2. From the Ranger UI, navigate to the S3 repository.
3. Create a policy to govern access to the S3 bucket and path used in your ingest workflow.



Tip:

The Path field must begin with a forward slash (/).

4. Add the machine user that you have created for your ingest workflow to the policy you just created.

For more information, see *Creating Ranger policy to use in RAZ-enabled AWS environment*.

- You have configured access to the S3 bucket using ID Broker mapping.

If your environment is not RAZ-enabled, you can configure access to the S3 bucket using ID Broker mapping.

1. Access IDBroker mappings.
 - a. To access IDBroker mappings in your environment, click **Actions Manage Access**.
 - b. Choose the IDBroker Mappings tab where you can provide mappings for users or groups and click **Edit**.
2. Add your Cloudera Workload User and the corresponding AWS role that provides write access to your folder in your S3 bucket to the **Current Mappings** section by clicking the blue + sign.



Note: You can get the AWS IAM role ARN from the Roles Summary page in AWS and can copy it into the IDBroker role field. The selected AWS IAM role must have a trust policy allowing IDBroker to assume this role.

3. Click **Save and Sync**.

For Cloudera Data Flow

- You have enabled Cloudera Data Flow for an environment.

For information on how to enable Cloudera Data Flow for an environment, see [Enabling Cloudera Data Flow for an Environment](#).

- You have created a Machine User to use as the Cloudera Workload User.
- You have given the Cloudera Workload User the EnvironmentUser role.

1. From the Management Console, go to the environment for which Cloudera Data Flow is enabled.
2. From the Actions drop down, click **Manage Access**.
3. Identify the user you want to use as a Workload User.




Note:


The Cloudera Workload User can be a machine user or your own user name. It is best practice to create a dedicated Machine user for this.

4. Give that user EnvironmentUser role.
- You have synchronized your user to the Cloudera on cloud environment that you enabled for Cloudera Data Flow.

For information on how to synchronize your user to FreeIPA, see [Performing User Sync](#).

- You have granted your Cloudera user the DFCatalogAdmin and DFFlowAdmin roles to enable your user to add the ReadyFlow to the Catalog and deploy the flow definition.
 1. Give a user permission to add the ReadyFlow to the Catalog.
 - a. From the Management Console, click User Management.
 - b. Enter the name of the user or group you wish to authorize in the Search field.
 - c. Select the user or group from the list that displays.
 - d. Click Roles Update Roles .
 - e. From Update Roles, select DFCatalogAdmin and click Update.



Note: If the ReadyFlow is already in the Catalog, then you can give your user just the DFCatalogViewer role.
 2. Give your user or group permission to deploy flow definitions.
 - a. From the Management Console, click Environments to display the Environment List page.
 - b. Select the environment to which you want your user or group to deploy flow definitions.
 - c. Click Actions Manage Access to display the Environment Access page.
 - d. Enter the name of your user or group you wish to authorize in the Search field.
 - e. Select your user or group and click Update Roles.
 - f. Select DFFlowAdmin from the list of roles.
 - g. Click Update Roles.
 3. Give your user or group access to the Project where the ReadyFlow will be deployed.
 - a. Go to Data Flow Projects .
 - b. Select the project where you want to manage access rights and click  More Manage Access .
 4. Start typing the name of the user or group you want to add and select them from the list.
 5. Select the Resource Roles you want to grant.
 6. Click Update Roles.
 7. Click Synchronize Users.

For your data ingest target

- Your Milvus version is 2.4.4.
- You have the Milvus access token.
- You have the name of the destination Milvus collection.
- You have the URI of the destination Milvus instance.
- Your Milvus collection schema has the following field names and field types:
 - id (*INT64*) You must enable Auto ID on this field.
 - text_embedding (*FLOAT_VECTOR*)
 - source (*VARCHAR*)
 - section (*VARCHAR*)
 - text (*VARCHAR*)
- The 'text_embedding' field in your destination Milvus collection is configured with the same dimensions as the default HuggingFace 'all-MiniLM-L12-v2' model (384).
- The source, section and text VARCHAR fields have been configured with Max Length values large enough to accommodate their respective values in your PDFs.

Related Concepts

[Required parameters](#)

Required parameters

When deploying the S3 to Milvus [Technical Preview] ReadyFlow, you have to provide the following parameters. Use the information you collected in *Prerequisites*.

Table 1: S3 to Milvus [Technical Preview] ReadyFlow configuration parameters

| Parameter name | Description |
|-----------------------------|---|
| CDP Workload User | Specify the Cloudera machine user or workload username that you want to use to authenticate to the object stores. Ensure this user has the appropriate access rights to the object store locations in Ranger or IDBroker. |
| CDP Workload User Password | Specify the password of the Cloudera machine user or workload user you are using to authenticate against the object stores. |
| CDPEnvironment | The Cloudera Environment configuration resources. |
| HuggingFace Embedding Model | Specify the HuggingFace model name to use for embedding the data. The default model is 'all-MiniLM-L12-v2'. |
| Milvus Access Token | Specify the access token for the destination Milvus instance. |
| Milvus Collection Name | Specify the name of the destination Milvus collection. |
| Milvus Instance URI | Specify the URI of the destination Milvus instance. |
| Source S3 Bucket | Specify the name of the source S3 bucket you want to read from. |
| Source S3 Path | Specify the path within the source bucket where you want to read files from. |

Related Concepts

[Prerequisites](#)

Related Information

[Deploying a ReadyFlow](#)