

ADLS to ADLS Avro

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ReadyFlow overview: ADLS to ADLS Avro

You can use the ADLS to ADLS Avro ReadyFlow to move data between source and destination ADLS locations while converting the files into Avro format.

This ReadyFlow consumes JSON, CSV or Avro files from a source Azure Data Lake Service (ADLS) location, converts the files into Avro and writes them to the destination ADLS location. You can specify the source format, the source and target location as well as the schema to use for reading the source data. The ReadyFlow polls the source container for new files (it performs a listing periodically).

ADLS to ADLS Avro ReadyFlow details	
Source	ADLS
Source Format	JSON, CSV, Avro
Destination	ADLS
Destination Format	Avro

Moving data with an ADLS to ADLS Avro flow

You can use an ADLS to ADLS Avro data flow when you want to move data from a location in ADLS to another ADLS location, and at the same time convert the data to Avro format. You need to specify the source format, the source and target location as well as the schema to use for handling the data. Your flow can consume JSON, CSV or Avro files from the source ADLS location. It converts the files into Avro format and writes them to the destination ADLS location. You define and store the data processing schema in the Schema Registry on a Streams Messaging Data Hub cluster. The data flow parses the schema by looking up the schema name in the Schema Registry.

Prerequisites

Learn how to collect the information you need to deploy the ADLS to ADLS Avro ReadyFlow, and meet other prerequisites.

For your data source and target

- You have the two ADLS directories and their paths as source and destination for the data movement.

- You have performed one of the following to configure access to the ADLS folders:
 - You have configured access to the ADLS folders with a RAZ enabled environment.

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

1. Ensure that Fine-grained access control is enabled for your DataFlow environment.
2. From the Ranger UI, navigate to the ADLS repository.
3. Create a policy to govern access to the ADLS container and path used in your ingest workflow. For example: adls-to-adls-avro-ingest



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

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

For more information, see *Ranger policies for RAZ-enabled Azure environment*.

- You have configured access to ADLS folders using ID Broker mapping.

If your environment is not RAZ-enabled, you can configure access to ADLS folders 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 CDP Workload User and the corresponding Azure role that provides write access to your folder in ADLS to the Current Mappings section by clicking the blue + sign.



Note: You can get the Azure Managed Identity Resource ID from the Azure Portal by navigating to **Managed Identities Your Managed Identity Properties Resource ID**. The selected Azure MSI role must have a trust policy allowing IDBroker to assume this role.

3. Click **Save and Sync**.

- You have created a Streams Messaging cluster in CDP Public Cloud to host your Schema Registry.

For information on how to create a Streams Messaging cluster, see [Setting up your Streams Messaging Cluster](#).

- You have created a schema for your data and have uploaded it to the Schema Registry in the Streams Messaging cluster.

For information on how to create a new schema, see [Creating a new schema](#). For example:

```
{
  "type": "record",
  "name": "SensorReading",
  "namespace": "com.cloudera.example",
  "doc": "This is a sample sensor reading",
  "fields": [
    {
      "name": "sensor_id",
      "doc": "Sensor identification number.",
      "type": "int"
    },
    {
      "name": "sensor_ts",
      "doc": "Timestamp of the collected readings.",
      "type": "long"
    },
    {
      "name": "sensor_0",
      "doc": "Reading #0.",
      "type": "int"
    }
  ]
}
```

```

    },
    {
      "name": "sensor_1",
      "doc": "Reading #1.",
      "type": "int"
    },
    {
      "name": "sensor_2",
      "doc": "Reading #2.",
      "type": "int"
    },
    {
      "name": "sensor_3",
      "doc": "Reading #3.",
      "type": "int"
    }
  ]
}

```

- You have the Schema Registry Host Name.
 1. From the Management Console, go to Data Hub Clusters and select the Streams Messaging cluster you are using.
 2. Navigate to the **Hardware** tab to locate the Master Node FQDN. Schema Registry is always running on the Master node, so copy the Master node FQDN.
- You have assigned the CDP Workload User read-access to the schema.
 1. Navigate to Management Console > Environments, and select the environment where you have created your cluster.
 2. Select Ranger. You are redirected to the Ranger **Service Manager** page.
 3. Select your Streams Messaging cluster under the **Schema Registry** folder.
 4. Click Add New Policy.
 5. On the **Create Policy** page, give the policy a name, specify the schema details, add the user, and assign the Read permission.

For DataFlow

- You have enabled DataFlow for an environment.
For information on how to enable DataFlow for an environment, see [Enabling DataFlow for an Environment](#).
- You have created a Machine User to use as the CDP Workload User.
- You have given the CDP Workload User the EnvironmentUser role.
 1. From the Management Console, go to the environment for which DataFlow 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 CDP 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 CDP Public Cloud environment that you enabled for DataFlow.

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

- You have granted your CDP 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 DataFlow 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.

Related Concepts

[List of required configuration parameters for the ADLS to ADLS Avro ReadyFlow](#)

List of required configuration parameters for the ADLS to ADLS Avro ReadyFlow

When deploying the ADLS to ADLS Avro ReadyFlow, you have to provide the following parameters. Use the information you collected in *Prerequisites*.

Table 1: ADLS to ADLS Avro ReadyFlow configuration parameters

ADLS to ADLS Avro ReadyFlow configuration parameters	
Parameter Name	Description
CDP Workload User	Specify the CDP machine user or workload username that you want to use to authenticate to the object stores and to the Schema Registry. Ensure this user has the appropriate access rights to the object store locations and to the Schema Registry in Ranger or IDBroker.
CDP Workload User Password	Specify the password of the CDP machine user or workload user you are using to authenticate against the object stores (via IDBroker) and the Schema Registry.
CSV Delimiter	If your source data is CSV, specify the delimiter here.

ADLS to ADLS Avro ReadyFlow configuration parameters	
Parameter Name	Description
Data Input Format	Specify the format of your input data. <ul style="list-style-type: none"> • CSV • JSON • AVRO
Destination ADLS File System	Specify the file system name you want to write to. The full path will be constructed from: abfs://#{Destination ADLS File System}@#{Destination ADLS Storage Account}.dfs.core.windows.net/#{Destination ADLS Path}
Destination ADLS Path	Specify the path within the ADLS data container where you want to write to without any leading characters. The full path will be constructed from: abfs://#{Destination ADLS File System}@#{Destination ADLS Storage Account}.dfs.core.windows.net/#{Destination ADLS Path}
Destination ADLS Storage Account	Specify the storage account name you want to write to. The full path will be constructed from: abfs://#{Destination ADLS File System}@#{Destination ADLS Storage Account}.dfs.core.windows.net/#{Destination ADLS Path}
Schema Name	Specify the schema name to be looked up in the Schema Registry used to parse the source files.
Schema Registry Hostname	Specify the hostname of the Schema Registry you want to connect to. This must be the direct hostname of the Schema Registry itself, not the Knox Endpoint.
Source ADLS File System	Specify the file system name you want to read from. The full path will be constructed from: abfs://#{Source ADLS File System}@#{Source ADLS Storage Account}.dfs.core.windows.net/#{Source ADLS Path}
Source ADLS Path	Specify the path within the ADLS data container where you want to read from without any leading characters. The full path will be constructed from: abfs://#{Source ADLS File System}@#{Source ADLS Storage Account}.dfs.core.windows.net/#{Source ADLS Path}
Source ADLS Storage Account	Specify the storage account name you want to read from. The full path will be constructed from: abfs://#{Source ADLS File System}@#{Source ADLS Storage Account}.dfs.core.windows.net/#{Source ADLS Path}

Related Concepts[Prerequisites](#)**Related Information**[Deploying a ReadyFlow](#)