

S3 to S3 Avro

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ReadyFlow: S3 to S3 Avro

You can use the S3 to S3 Avro ReadyFlow to move data between source and destination S3 locations while converting the files into Avro format.

This ReadyFlow consumes JSON, CSV or Avro files from a source S3 location, converts the files into Avro and writes them to the destination S3 location. You can specify the source format, the source and target location as well as the schema to use for reading the source data.

S3 to S3 Avro ReadyFlow details	
Source	Amazon S3
Source Format	JSON, CSV, Avro
Destination	Amazon S3
Destination Format	Avro

Moving data with an S3 to S3 Avro flow

You can use an S3 to S3 Avro data flow when you want to move data from a location in AWS S3 to another S3 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 S3 location. It converts the files into Avro format and writes them to the destination S3 location. You define and store the data processing schema in the Schema Registry on a Cloudera 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 S3 to S3 Avro ReadyFlow, and meet other prerequisites.

For your data source and target

- You have the two S3 buckets and their paths as source and destination for the data movement.

- You have performed one of the following to configure access to S3 buckets:
 - You have configured access to S3 buckets 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 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 DataFlow 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 S3 buckets using ID Broker mapping.

If your environment is not RAZ-enabled, you can configure access to S3 buckets 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**.
- You have created a Streams Messaging cluster in Cloudera 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 Cloudera 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 Cloudera DataFlow

- You have enabled Cloudera DataFlow for an environment.
For information on how to enable Cloudera DataFlow for an environment, see [Enabling Cloudera DataFlow 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 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 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 Public Cloud environment that you enabled for Cloudera DataFlow.

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 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 S3 to S3 Avro ReadyFlow](#)

List of required configuration parameters for the S3 to S3 Avro ReadyFlow

When deploying the S3 to S3 Avro ReadyFlow, you have to provide the following parameters. Use the information you collected in *Prerequisites*.

Table 1: S3 to S3 Avro ReadyFlow configuration parameters

Parameter Name	Description
CDP Workload User	Specify the Cloudera machine user or workload username that you want to use to authenticate Schema Registry. Ensure this user has the appropriate access rights in Ranger.
CDP Workload User Password	Specify the password of the Cloudera machine user or workload user you are using to authenticate against Schema Registry.

Parameter Name	Description
CDP Environment	<p>Cloudera DataFlow uses this parameter to auto-populate the Flow Deployment with Hadoop configuration files required to interact with S3.</p> <p>Cloudera DataFlow automatically adds all required configuration files to interact with Data Lake services. Unnecessary files that are added will not impact the deployment process.</p>
Data Input Format	<p>Specify the format of your input data.</p> <p>If your data input format is CSV, define a CSV delimiter for the data in the CSV Delimiter text box. If you use AVRO or JSON format, the delimiter is ignored.</p> <ul style="list-style-type: none"> • CSV • JSON • AVRO
Data Output Format	<p>Specify the format of your output data.</p> <p>As you are using AVRO format, the delimiter is ignored.</p>
CSV Delimiter	If your source data is CSV, specify the delimiter here.
S3 Bucket	<p>Specify the name of the S3 bucket that you want to read from.</p> <p>The full path is constructed from:</p> <p>s3a://#{S3 Bucket}/#{S3 Path}/\${S3 Bucket}</p>
S3 Path	<p>Specify the path within the bucket where you want to read from without any leading characters.</p> <p>The full path is constructed from:</p> <p>s3a://#{S3 Bucket}/#{S3 Path}/\${S3 Bucket}</p>
S3 Bucket	<p>Specify the name of the S3 bucket that you want to write to.</p> <p>The full path is constructed from:</p> <p>s3a://#{S3 Bucket}/#{S3 Path}/\${S3 Bucket}</p>
S3 Path	<p>Specify the path within the bucket where you want to write to without any leading characters.</p> <p>The full path is constructed from:</p> <p>s3a://#{S3 Bucket}/#{S3 Path}/\${S3 Bucket}</p>

Parameter Name	Description
S3 Bucket Region	<p>Specify the AWS region in which your bucket was created.</p> <p>Supported values are:</p> <ul style="list-style-type: none"> • us-gov-west-1 • us-gov-east-1 • us-east-1 • us-east-2 • us-west-1 • us-west-2 • eu-west-1 • eu-west-2 • eu-west-3 • eu-central-1 • eu-north-1 • eu-south-1 • ap-east-1 • ap-south-1 • ap-southeast-1 • ap-southeast-2 • ap-northeast-1 • ap-northeast-2 • ap-northeast-3 • sa-east-1 • cn-north-1 • cn-northwest-1 • ca-central-1 • me-south-1 • af-south-1 • us-iso-east-1 • us-isob-east-1 • us-iso-west-1
S3 Path	<p>Specify the path within the bucket where you want to write to without any leading characters.</p> <p>The full path will be constructed from:</p> <p>s3a://#{S3 Bucket}/#{S3 Path}/\${Kafka.topic}</p>
Schema Name	<p>Identify the schema that you want to use in your data flow.</p> <p>Cloudera DataFlow looks up this schema in the Schema Registry you define with the Schema Registry Hostname. See the Appendix for an example schema.</p>
Schema Registry Hostname	<p>Specify the hostname of the Schema Registry running on the master node in the Streams Messaging cluster that you want to connect to.</p> <p>This must be the direct hostname of the Schema Registry itself, not the Knox Endpoint.</p>

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