

Backing up and restoring Cloudera Data Engineering jobs

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Backing up Cloudera Data Engineering jobs on local storage

You can back up Cloudera Data Engineering (CDE) jobs and their associated resources and/or repositories. Backups are saved as ZIP files that can be used to restore jobs and their associated resources and/or repositories. Backups and restores is also supported for remote storage (also known as object store).



Note: Currently, the user who runs the `cde backup restore` command has permissions, by default, to run the Jobs. This may cause CDE jobs to fail if the workload user differs from the user who runs the Jobs on Source CDE Service where the backup was performed. This failure is due to the Workload User having different privileges as the user who is expected to run the job. Additionally, backup and restore functionality does not include Airflow metadata related to connections and variable definitions. Those must be manually recreated in the new service.

For CDE CLI

Before you begin

- Download and configure the CDE CLI.

Steps for backing up on local storage

1. Run the `cde backup create` command to create a backup of the jobs in the virtual cluster your CDE CLI is configured to interact with. By default, all job configurations in the cluster are backed up, but the resources are not. You can use command flags to change this behavior as follows:

--include-job-resources

Backs up all resources associated with the selected jobs. These resources cannot be filtered out by the `--resource-filter` parameter.

--include-jobs

Backs up all jobs in the virtual cluster. This is the default behavior.

--include-resources

Backs up all resources and repositories (internally these are also resources only) in the virtual cluster, including those not associated with jobs.

--job-filter <filter_string>

Selects jobs to back up using the `fieldname[operator]argument` syntax. This command flag can be repeated. The name of the job and resource API field is 'fieldname' and 'operator' is one of the following: 'eq', 'noteq', 'lte', 'lt', 'gte', 'gt', 'in', 'notin', 'like', 'rlike'. Multiple filters are ANDed.

For example: The following command will backup locally all jobs whose name is not test, and which is created later than or equal to 2020-01-01, and all their related resources:

```
cde backup create --job-filter "name[noteq]test" --job-filter "created[gte]2020-01-01"
```

--resource-filter <filter_string>

Selects resources to back up using the `fieldname[operator]argument` syntax. This command flag can be repeated. The name of the job and resource API field is 'fieldname' and 'operator' is one of the

following: 'eq', 'noteq', 'lte', 'lt', 'gte', 'gt', 'in', 'notin', 'like', 'rlike'. Multiple filters are ANDed. For example:

```
cde backup create --resource-filter "name[eq]test" --resource-filter "created[gte]2020-01-01"
```

--local-path <filename>

Specifies the local file path and name to store the backup. By default, the backup filename is archive-<timestamp>.zip.

For example, to backup all jobs containing the string etl and include all resources associated with those jobs:

```
cde backup create --job-filter "name[like]%etl%" --include-job-resources
```

2. Validate the backup using the cde backup list-archive command. For example:

```
cde backup list-archive --local-path archive-2021-11-10T01:24:06.zip
```

Confirm that all jobs and resources that you expected to be backed up are included.

Result

The output of cde backup list-archive is similar to the following:

```
{
  "backup_set": [
    {
      "id": "v1/backupset/v1/f332bb06-7612-4345-8f3b-da4f27f315b3/",
      "cdeVersion": "1.18.0-b59",
      "clusterID": "cluster-2bqdpfrs",
      "appID": "dex-app-82wlp6d",
      "app_name": "yjtest",
      "user": "csso_yjlu",
      "backupStarted": "2022-10-07T06:39:46.082837691Z"
    }
  ],
  "entries": [
    {
      "backup_set": "v1/backupset/v1/f332bb06-7612-4345-8f3b-da4f27f315b3/",
      "entityType": "Job",
      "name": "example-a",
      "adjustedName": "example-a",
      "archiveDirectoryPath": "v1/jobs/v1/d7826797-4985-455f-a9c8-2ab1cc624d9b/",
      "user": "csso_yjlu"
    },
    {
      "backup_set": "v1/backupset/v1/f332bb06-7612-4345-8f3b-da4f27f315b3/",
      "entityType": "Resource",
      "name": "example-data",
      "adjustedName": "example-data",
      "archiveDirectoryPath": "v1/resources/v1/41979747-5ad1-40c3-b301-cd57111411f9/",
      "user": "csso_yjlu"
    }
  ]
}
```

For CDE API



Note: Some of the command examples provided utilize [jq](#) to parse the JSON output and make it more readable.

Before you begin

Request an access token and save it as an environment variable to use in API calls. For instructions, see [Getting a Cloudera Data Engineering API access token](#).

Steps

1. Determine the API URL for the virtual cluster containing the job you want to back up:
 - a. Navigate to the Cloudera Data Engineering Overview page.
 - b. In the CDE Services column, select the service containing the virtual cluster with the jobs you want to back up.
 - c. In the Virtual Clusters column on the right, click the Cluster Details icon for the virtual cluster containing the jobs you want to back up.
 - d. Copy the URL under JOBS API URL, and set it as an environment variable. For example:

```
export CDE_JOBS_API="https://pmjkrn5.cde-czlmkz4y.na-01.xvp2-7p8o.c
loudera.site/dex/api/v1"
```

2. Back up jobs using a URL-encoded filter with the syntax `name[like]<query>`, modeled after the SQL like operator. For example, to back up jobs containing the string `etl`, set `jobfilter` to `name[like]%etl%` (URL-encoded as `name%5Blike%5D%25etl%25`):

```
curl -k \
-H "Authorization: Bearer ${CDE_TOKEN}" \
-X GET "${CDE_JOBS_API}/admin/export?exportjobs=true&jobfilter=name%5Bli
ke%5D%25etl%25&exportjobresources=true&exportresources=false" \
-H "accept: application/zip" \
--output cde-etl-jobs-backup.zip
```

To back up all jobs and associated resources, omit the `jobfilter` parameter:

```
curl -k \
-H "Authorization: Bearer ${CDE_TOKEN}" \
-X GET "${CDE_JOBS_API}/admin/export?exportjobs=true&exportjobresources=
true&exportresources=false" \
-H "accept: application/zip" \
--output cde-all-jobs-backup.zip
```

3. (Optional) You can validate a backup file by uploading it to the `/admin/list-archive` endpoint. For example, for a backup file named `cde-all-jobs-backup.zip`:


```
curl -k \
-H "Authorization: Bearer ${CDE_TOKEN}" \
-X POST "${CDE_JOBS_API}/admin/list-archive" \
-H "accept: application/json" \
-H "Content-Type: multipart/form-data" \
-F "file=@/path/to/cde-all-jobs-backup.zip;type=application/zip" \
| jq
```

For Web UI

Before you begin

Steps

1. In the Cloudera Data Platform (CDP) console, click the Data Engineering tile. The CDE Home page displays.
2. Click Jobs in the left navigation menu. The Jobs page displays.

3. From the drop-down in the upper left-hand corner, select the Virtual Cluster with the jobs that you want to back up.
4. Click  at the top right, and then click Backup Jobs.

Result

Depending on your browser settings, you are either prompted for a location to save the file, or the file is downloaded to your default download location. The file is a ZIP file named archive-*<timestamp>*.zip.

To restore a backup file, see [Restoring Cloudera Data Engineering jobs from backup](#).

Restoring Cloudera Data Engineering jobs from backup

You can restore Cloudera Data Engineering (CDE) jobs and associated resources from a backup ZIP file.



Note: The backup and restore functionality does not include Airflow metadata related to connections and variable definitions. Those must be manually recreated in the new service.

For CDE CLI

Before you begin

- You must have a valid backup file to restore from. For instructions on backing up CDE jobs, see [Backing up Cloudera Data Engineering jobs](#).
- Download and configure the CDE CLI.

Steps

1. Run the `cde backup restore` command to restore a backup file to the virtual cluster your CDE CLI is configured to interact with. Use the `--duplicate-handling` flag to select the policy for handling duplicate jobs. The possible values are as follows:

error

Return an error if there are duplicate job names, and abort the restore operation. This is the default behavior.

rename

If a job name in the backup conflicts with an existing job, keep the existing job and rename the restored job by appending a numerical identifier to the job name.

keep-original

If a job name in the backup conflicts with an existing job, keep the existing job and do not restore the backed up job.

For example:

```
cde backup restore --local-path archive-2021-11-10T01:24:06.zip --duplicate-handling rename
```

--remote-path

If you're using a remote storage, use this flag for relative remote storage path of the backup to be restored. This will restore the archive in the remote object store. The path should include a filename and be relative to dir `/dex/backup/`.

Example restore for remote storage:

```
./cde backup restore --remote-path test/archive.zip  
# the output is similar to list-archive
```

Result

Validate that the jobs and resources were restored by running `cde job list` and `cde resource list`.

For CDE API



Note: Some of the command examples provided utilize `jq` to parse the JSON output and make it more readable.

Before you begin

- You must have a valid backup file to restore from. For instructions on backing up CDE jobs, see [Backing up Cloudera Data Engineering jobs](#).
- Request an access token and save it as an environment variable to use in API calls. For instructions, see [Getting a Cloudera Data Engineering API access token](#).

Steps

- Determine the API URL for the virtual cluster that you want to restore the jobs and resources to:
 - In the Cloudera Data Platform (CDP) console, click the Data Engineering tile. The CDE Home page displays.
 - Click Administration on the left navigation menu. The Administration page displays.
 - In the Services column, select the service containing the virtual cluster where you want to restore the job. Then, in the Virtual Clusters column, click the Cluster Details icon.
 - Click JOBS API URL. The Jobs API URL is copied to the clipboard.
 - Paste the URL into a text editor to set the Jobs API URL as an environment variable. For example:

```
export CDE_JOBS_API="https://pmjkrn5.cde-czlmkz4y.na-01.xvp2-7p8o.cloudera.site/dex/api/v1"
```

- Restore jobs from the backup file by uploading the backup file to the `/admin/import` endpoint. You can choose how to handle duplicate job names using the `duplicatehandling=<policy>` parameter. Options are:

error

Return an error if there are duplicate job names, and abort the restore operation.

rename

If a job name in the backup conflicts with an existing job, keep the existing job and rename the restored job by appending a numerical identifier to the job name.

keep-original

If a job name in the backup conflicts with an existing job, keep the existing job and do not restore the backed up job.

For example, to restore a backup named `cde-etl-jobs-backup.zip` using the rename duplicate handling policy:


```
curl -k \
-H "Authorization: Bearer ${CDE_TOKEN}" \
-X POST "${CDE_JOBS_API}/admin/import" \
-H "accept: application/json" \
-H "Content-Type: multipart/form-data" \
-F "file=@/path/to/cde-etl-jobs-backup.zip;type=application/zip" \
-F duplicatehandling=rename \
| jq
```

For Web UI

Before you begin

- You must have a valid backup file to restore from. For instructions on backing up CDE jobs, see [Backing up Cloudera Data Engineering jobs](#).

Steps

1. In the Cloudera Data Platform (CDP) console, click the Data Engineering tile. The CDE Home page displays.
2. Click Jobs in the left navigation menu. The Jobs page displays.
3. From the drop-down in the upper left-hand corner, select the Virtual Cluster that you want to restore jobs to.
4. Click  at the top right, and then click Restore Jobs.
5. Click Choose a zip file.
6. Browse to the ZIP file containing the backup of jobs and resources you want to restore, and then click Open.
7. Click Select to restore the backup.

Result

The jobs and resources from the backup file are restored using the rename duplicate handling policy. If a job name in the backup conflicts with an existing job, the restore operation keeps the existing job and renames the restored job by appending a numerical identifier to the job name.