

Cloudera DataFlow

**Date published: 2021-04-06**

**Date modified: 2024-06-03**

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## Best practices for building custom components

Learn about general guidelines concerning the creation of custom NiFi archives (NARs).

The goal is to build your code once against a baseline version of Apache NiFi and it can be deployed to any flow you need using any version of CDF powered by any NiFi deployment equal to or greater than the version it was built against, bar major version changes.

Apache NiFi extensions are packaged in NARs. A NAR allows several components and their dependencies to be packaged together into a single package. NiFi provides Maven archetypes for creating custom processor and controller service bundle project structures. For detailed information, see the [Maven Projects for Extensions](#) Apache NiFi wiki page.

- If directly specifying the `nifi-nar-maven-plugin`, ensure you use the most recent version when compiling your custom code.
- If inheriting the `nifi-nar-maven-plugin`, Cloudera recommends that the parent version of `nifi-nar-bundles` has the same major and minor version as the selected NiFi runtime version. For example, If the CFM Version is 1.18.0.2.3.7.1 (NiFi Major Version: 1, NiFi Minor Version: 18) the recommended compilation version is 1.18.0 (The first two version numbers must be equal to, or less than the CFM version).

The screenshot shows the NiFi Configuration page. Under 'NiFi Runtime Version', the current version is 'Latest Version (1.18.0.2.3.8.0-11)'. A modal dialog titled 'Change NiFi Runtime Version' is open, displaying a dropdown menu with 'Version 1.18.0.2.3.7.1-1' selected. Below the dropdown, it states: 'Using the latest version is recommended unless there is a specific need for a different version.' The dialog has 'Cancel' and 'Apply' buttons.

```
<parent>
  <groupId>org.apache.nifi</groupId>
  <artifactId>nifi-nar-bundles</artifactId>
  <version>1.18.0.2.3.7.1-1</version>
</parent>
```

- Ensure your NAR pom only depends on another NAR pom for a controller service API NAR. Generally, do not extend from implementation NARs like `nifi-standard-nar`.
- Ensure your components jar pom marks API dependencies as provided in order to obtain them at runtime through the appropriate NAR dependency.

## Preparing cloud storage to deploy custom processors

To use a custom NiFi processor or controller service in one of your CDF flow deployments, add the NiFi Archive (NAR) containing the custom processor or controller service to a cloud storage location for later use during a flow deployment.

### Procedure

1. Create your cloud storage location.
2. Upload your NAR files to the cloud storage location.
3. Configure access to your cloud provider storage in one of two ways:
  - 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.

    - a. Access IDBroker mappings.
      1. To access IDBroker mappings in your environment, click **Actions Manage Access**.
      2. Choose the IDBroker Mappings tab where you can provide mappings for users or groups and click **Edit**.
    - b. Add your CDP 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.

- c. Click **Save and Sync**.
- 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 CDP credentials to access S3 buckets, increases auditability, and makes object store data ingest workflows portable across cloud providers.

- a. Ensure that Fine-grained access control is enabled for your DataFlow environment.
- b. From the Ranger UI, navigate to the S3 repository.
- c. 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 (/).

- d. 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*.

4. Note the workload user name and password, and cloud storage location to use in the Deployment Wizard.



**Tip:** If you want to provide a machine user as CDP Workload Username during flow deployment, make sure to note the full workload user name including the `srv_` prefix.

### What to do next

Once you have added the NAR files to a cloud storage location, you are ready to launch the Deployment Wizard and deploy a flow.