Cloudera Flow Management 4.12.0

Cloudera Flow Management Installation

Date published: 2019-06-26
Date modified: 2026-03-31

https://docs.cloudera.com/

Legal Notice

© Cloudera Inc. 2026. All rights reserved.

The documentation is and contains Cloudera proprietary information protected by copyright and other intellectual property rights. No license under copyright or any other intellectual property right is granted herein.

Unless otherwise noted, scripts and sample code are licensed under the Apache License, Version 2.0.

Copyright information for Cloudera software may be found within the documentation accompanying each component in a particular release.

Cloudera software includes software from various open source or other third party projects, and may be released under the Apache Software License 2.0 (“ASLv2”), the Affero General Public License version 3 (AGPLv3), or other license terms. Other software included may be released under the terms of alternative open source licenses. Please review the license and notice files accompanying the software for additional licensing information.

Please visit the Cloudera software product page for more information on Cloudera software. For more information on Cloudera support services, please visit either the Support or Sales page. Feel free to contact us directly to discuss your specific needs.

Cloudera reserves the right to change any products at any time, and without notice. Cloudera assumes no responsibility nor liability arising from the use of products, except as expressly agreed to in writing by Cloudera.

Cloudera, Cloudera Altus, HUE, Impala, Cloudera Impala, and other Cloudera marks are registered or unregistered trademarks in the United States and other countries. All other trademarks are the property of their respective owners.

Disclaimer: EXCEPT AS EXPRESSLY PROVIDED IN A WRITTEN AGREEMENT WITH CLOUDERA, CLOUDERA DOES NOT MAKE NOR GIVE ANY REPRESENTATION, WARRANTY, NOR COVENANT OF ANY KIND, WHETHER EXPRESS OR IMPLIED, IN CONNECTION WITH CLOUDERA TECHNOLOGY OR RELATED SUPPORT PROVIDED IN CONNECTION THEREWITH. CLOUDERA DOES NOT WARRANT THAT CLOUDERA PRODUCTS NOR SOFTWARE WILL OPERATE UNINTERRUPTED NOR THAT IT WILL BE FREE FROM DEFECTS NOR ERRORS, THAT IT WILL PROTECT YOUR DATA FROM LOSS, CORRUPTION NOR UNAVAILABILITY, NOR THAT IT WILL MEET ALL OF CUSTOMER’S BUSINESS REQUIREMENTS. WITHOUT LIMITING THE FOREGOING, AND TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, CLOUDERA EXPRESSLY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY, QUALITY, NON-INFRINGEMENT, TITLE, AND FITNESS FOR A PARTICULAR PURPOSE AND ANY REPRESENTATION, WARRANTY, OR COVENANT BASED ON COURSE OF DEALING OR USAGE IN TRADE.

Contents

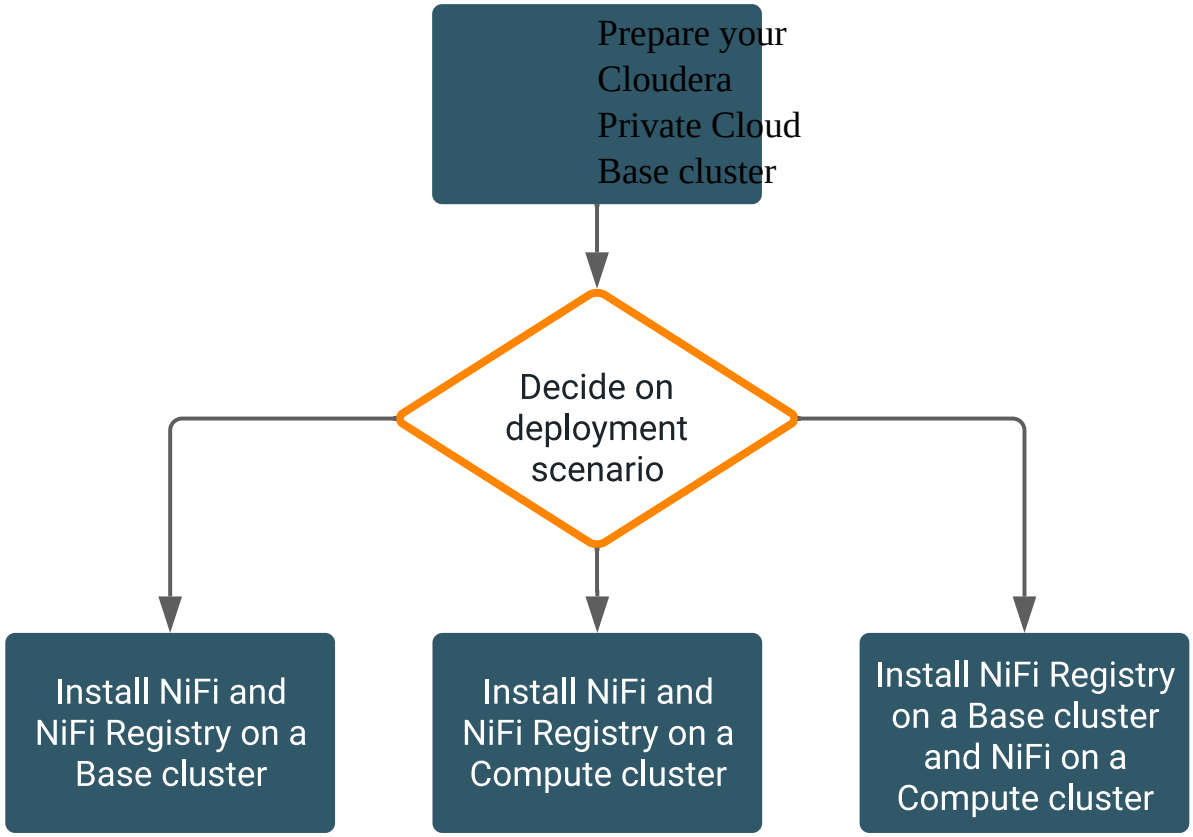
Cloudera Flow Management installation workflow

Before you start installing Cloudera Flow Management on a Cloudera Base on premises cluster, it is helpful to understand the steps involved. There are three main installation scenarios depending on the type of cluster or clusters on which you install the different components.

The Cloudera Flow Management installation workflow consists of preparing your Cloudera Base on premises cluster and then installing NiFi and NiFi Registry on a Base or on a Compute cluster, or on a mixed cluster layout. See the following diagram for the procedure steps, and review the description of each deployment scenario following the diagram.

Important: Running multiple NiFi instances on the same node is not recommended by Cloudera.

Tip: The following workflow diagram is clickable. Click each step to go directly to the relevant documentation.



rect 237, 21, 402, 121 Link to documentation for preparing your CDP Private Cloud Base
rect 21, 338, 186, 440 Link to documentation for installing NiFi and NiFi Registry on a Base cluster
rect 237, 338, 402, 440 Link to documentation for installing NiFi and NiFi Registry on a Compute cluster
rect 453, 338, 619, 440 Link to documentation for installing NiFi on a Compute cluster and NiFi Registry on a Base cluster

Scenario 1: NiFi and NiFi Registry on a Base cluster

Installing NiFi and NiFi Registry on your Base cluster is a simplified deployment during which you create only one cluster. You can do this if you are setting up in trial deployments or in simple production scenarios.

A Base cluster is a large cluster that contains SDX services like Ranger and Atlas, as well as compute and storage services like NiFi, Impala, and Hive. It is sometimes called a Regular cluster in Cloudera Manager, and it is also known as an SDX cluster, a Shared cluster, or a Data Lake cluster.

You can install NiFi Registry on the Base cluster. If you are using multiple NiFi services, you would likely want to share the NiFi Registry instance across all of these NiFi services.

Important: Cloudera recommends that you always install NiFi Registry on the Base cluster.

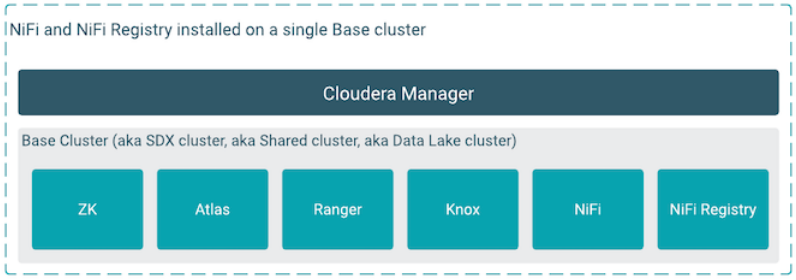
In simplified deployment scenarios, you can also install NiFi on the Base cluster to achieve a single-cluster setup. With this scenario, you may have many services on the Base cluster relying on the same Zookeeper quorum, which may not suit your use case depending on the expected workload.

Important:

Starting with Cloudera Flow Management 2.1.5, you can install multiple instances of the NiFi service on the same cluster, provided that all instances run the same Cloudera Flow Management version. These instances share the same ZooKeeper quorum, so you need to consider the expected workload when planning capacity.

For information on the installation steps, see Installing NiFi and NiFi Registry on your Base cluster.

When you install both NiFi and NiFi Registry on your Base cluster, your cluster layout will look similar to the following:



Scenario 2: NiFi and NiFi Registry on a Compute cluster

Although it is not a recommended setup, it is possible to install both NiFi and NiFi Registry on a Compute cluster.

A Compute cluster consists of compute nodes only. The Compute cluster is then connected to a Base cluster with SDX services like Ranger and Atlas using a Shared Data Context.

Important: Cloudera recommends that you always install NiFi Registry on the Base cluster.

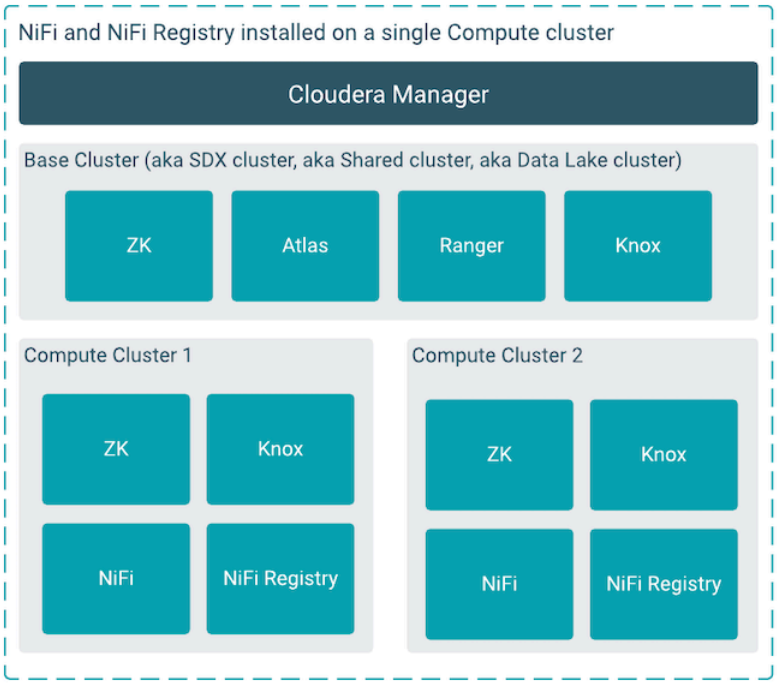
Installing NiFi on a Compute cluster is recommended when you want to:

- deploy multiple NiFi clusters for larger scale production deployments
- isolate your dataflows
- have different authorization models per dataflow

and in other similar deployment scenarios.

For information on the installation steps, see Installing NiFi and NiFi Registry on a Compute cluster.

When you install both NiFi and NiFi Registry on a Compute cluster, your cluster layout will look similar to the following:



Scenario 3: NiFi on a Compute cluster and NiFi Registry on a Base cluster

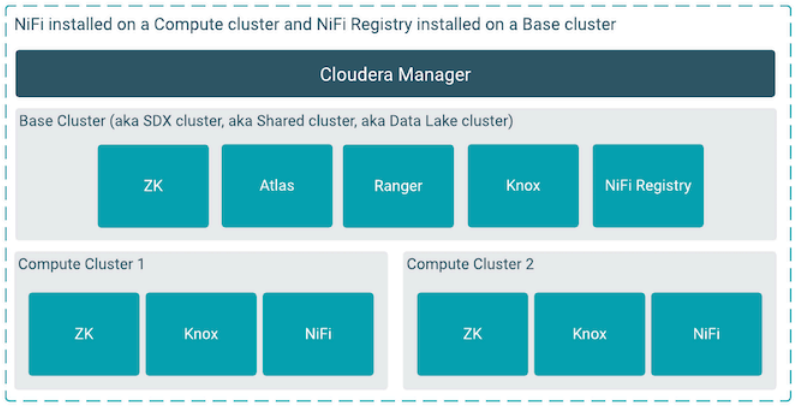
For production deployments, it is recommended to install NiFi on one or more Compute clusters, and to install NiFi Registry on the Base cluster. This provides a dedicated Zookeeper quorum for each NiFi cluster. Use this setup when you want to share dataflows across multiple NiFi Compute clusters in your Cloudera environment.

Note: Cloudera recommends that you use this layout for production deployments.

Important: When you have multiple NiFi instances managed by the same Cloudera Manager instance, it is required to upgrade all NiFi clusters at the same time as it is currently not possible to have multiple versions of CSDs at the same time in Cloudera Manager.

For information on the installation steps, see Installing NiFi on a Compute cluster and NiFi Registry on a Base cluster.

When you install NiFi on one or more Compute clusters and NiFi Registry on the Base cluster, your cluster layout will look similar to the following:



Preparing your Cloudera Base on premises cluster

Before you begin installing NiFi and NiFi Registry, you need to prepare your Cloudera Base on premises cluster.

Installing and configuring Python

Install and configure Python 3 on each machine where NiFi will run. The minimum supported version is Python 3.11, but Cloudera recommends using Python 3.12.

Installing Python on RHEL8

Python 3.11

Python 3.11 can be installed directly using the dnf package installer.

1. Update the system packages.

```
sudo dnf update -y
```

2. Install Python 3.11.

```
sudo dnf install python3.11
```

Python 3.12

Cloudera recommends using the Python 3.12 interpreter for the installation. Since Python 3.12 is not directly available through the default dnf package installer on RHEL8, you will have to download and build it from source.

1. Go to the official Python downloads page and download the desired Python 3.12 version.

```
curl -O https://www.python.org/ftp/python/[***VERSION***]/Pyt
hon-[***VERSION***].tgz
```

For example: curl -O https://www.python.org/ftp/python/3.12.8/Python-3.12.8.tgz

2. Extract the archive.

```
tar -xvzf Python-[***VERSION***].tgz
cd Python-[***version***]
```

3. Configure the build.

```
./configure --enable-optimizations
```

4. Build and install Python.

```
make -j$(nproc) # Compiles using all available CPU cores
sudo make altinstall
```

5. Verify that Python is installed correctly.

```
python3.12 --version
```

Configuring Python

After installing Python, you need to explicitly configure the version NiFi will use.

1. Set the Python command in Cloudera Manager.
   a. Open Cloudera Manager.
   b. Navigate to the NiFi service configuration.
   c. Locate the nifi.python.command property.
   d. Set the value to either python3.11 or python3.12, depending on the version installed.
2. Save the changes and restart the NiFi service to apply the configuration.

What to do next

After completing the Python installation, proceed to install and configure JDK 21 on each machine where NiFi and NiFi Registry will run.

Installing and configuring JDK

Install and configure Java Development Kit (JDK) 21 on each machine where NiFi and NiFi Registry will run. You can choose any JDK distribution, but Cloudera recommends Azul's zulu21-jdk.

Installing JDK on RHEL8

1. Setup the Azul RPM repository.

```
sudo dnf install -y https://cdn.azul.com/zulu/bin/zulu-repo-1.0.0-1.noar
ch.rpm
```

2. Install zulu21-jdk.

```
sudo dnf install zulu21-jdk
```

Configuring JDK for NiFi and NiFi Registry

After installing JDK, follow these steps to configure it for NiFi and NiFi Registry.

1. Configure JDK for NiFi.
   a. Open Cloudera Manager.
   b. Navigate to the NiFi service.
   c. Locate the nifi.jdk.home configuration property.
   d. Set its value to the absolute path of the folder where the JDK is installed.

      For example: /usr/lib/jvm/zulu21-jdk

2. Configure JDK for NiFi Registry.
   a. Open Cloudera Manager.
   b. Navigate to the NiFi Registry service.
   c. Locate the nifi.registry.jdk.home configuration property.
   d. Set its value to the absolute path of the folder where the JDK is installed.
3. Save your changes and restart the services to apply the configuration.

What to do next

Once you have installed the JDK, ensure that you have the required database installed and set up for NiFi Registry.

Related Information

System requirements
Installing and configuring a database for NiFi Registry
Open JDK Download
Oracle JDK Download

Installing and configuring a database for NiFi Registry

Install and configure an external MySQL or PostgreSQL database for NiFi Registry if you plan to use it. By default, NiFi Registry is preconfigured to use an embedded H2 database.

H2 is an embedded database that is preconfigured in the default nifi.registry.properties file. The contents of the H2 database are stored in a file on your local file system. The H2 database location is specified as part of the JDBC URL property:

- NiFi Registry JDBC Url (nifi.registry.db.url) – jdbc:h2:./database/nifi-registry-primary

If you plan to use the H2 embedded database, you can skip the steps for installing and configuring an external database. Alternately, you may install a MySQL or PostgreSQL external database. To do this, review the following steps for either MySQL or PostgreSQL.

For a list of supported MySQL or PostgreSQL databases, see Supported NiFi Registry databases.

Installing MySQL

Learn how to install a MySQL external database for NiFi Registry.

About this task

If you have already installed a PostgreSQL database, you may skip these steps. Both databases are not required.

For a list of supported MySQL databases, see Supported NiFi Registry databases.

Before you begin

You have installed the JDK. For details, see *Installing the JDK*.

Procedure

1. Log in to the node on which you want to install NiFi Registry.
2. Install MySQL and the MySQL community server, and start the MySQL service:

```
yum localinstall https://dev.mysql.com/get/mysql[***MYSQL_VERSION***]-com
munity-release-el[***RHEL_VERSION***]-[***PACKAGE_VERSION***].noarch.rpm
yum install mysql-community-server
```

```
systemctl start mysqld.service
```

You can replace the placeholders with the appropriate values for your specific use case:

- [***MYSQL_VERSION***]: Replace this with the desired MySQL version.
- [***RHEL_VERSION***]: Replace this with the Red Hat Enterprise Linux (RHEL) version you are using.
- [***PACKAGE_VERSION***]: Replace this with the specific package version.

For example, if you want to install the MySQL 8.0 Community Edition repository configuration package on a RHEL 8 system, you would use:

```
yum localinstall https://dev.mysql.com/get/mysql80-community-release-el8
-8.noarch.rpm
```

3. Obtain the randomly generated MySQL root password:

```
grep 'A temporary password is generated for root@localhost' \
/var/log/mysqld.log |tail -1
```

4. Reset the MySQL root password.

   Enter the following command:

```
/usr/bin/mysql_secure_installation
```

   You are then prompted for the password you obtained in the previous step. MySQL then asks you to change the password.

What to do next

Once you have completed the MySQL installation, configure it for use with NiFi Registry.

Related Information

Installing and configuring JDK

Configuring NiFi Registry Metadata Stores in MySQL

Configuring NiFi Registry Metadata Stores in MySQL

Learn how to configure a MySQL database for use with NiFi Registry.

About this task

MySQL provides the option to use an externally located database that supports high availability.

Before you begin

You have installed a MySQL database. For details, see *Installing MySQL*.

Procedure

1. Download the MySQL JDBC driver and place it somewhere accessible to NiFi Registry:

```
/path/to/drivers/mysql-connector-java-8.0.16.jar
```

2. Create a database inside MySQL (enter mysql shell using mysql -u root -p):

```
CREATE DATABASE nifi_registry;
```

3. Create a database user and grant privileges (for remote users, use nifireg'@'<IP-ADDRESS> or nifireg'@'% for any remote host):

```
GRANT ALL PRIVILEGES ON nifi_registry.* TO 'nifireg'@'localhost' IDENTIF
IED BY 'changeme';
```

4. After NiFi Registry service is installed, configure the database properties in Cloudera Manager:
   - NiFi Registry JDBC Url (nifi.registry.db.url) – jdbc:mysql://<MYSQL-HOSTNAME>/nifi_registry
   - NiFi Registry JDBC Driver (nifi.registry.db.driver.class) – com.mysql.cj.jdbc.Driver
   - NiFi Registry H2 directory storage location (nifi.registry.db.driver.directory) – /path/to/drivers

     Note:

     The NiFi Registry H2 directory storage location field specifies the NiFi Registry database driver directory. The H2 database is used by default. Update this field when you are configuring it for an external database.
   - NiFi Registry Database Username (nifi.registry.db.username) – nifireg
   - NiFi Registry Database Password (nifi.registry.db.password) – changeme

What to do next

When you have completed the NiFi Registry database configuration, move on to installing Cloudera Manager and your Cloudera Private Cloud Base Cluster.

Related Information

Installing MySQL

Installing Cloudera Manager and a Cloudera Base on premises cluster

Installing PostgreSQL

Learn how to install a PostgreSQL external database for use with NiFi Registry.

About this task

If you have already installed a MySQL database, you may skip these steps. Both databases are not required.

For a list of supported PostgreSQL databases, see Supported NiFi Registry databases.

Before you begin

You have installed the JDK. For details, see *Installing the JDK*.

Procedure

1. Install Red Hat Package Manager (RPM) according to the requirements of your operating system:

```
yum install https://yum.postgresql.org/[***POSTGRESQL_VERSION***]/redhat/
rhel-[***RHEL_VERSION***]-x86_64/[***REPOSITORY_PACKAGE_NAME***]
```

   You can replace the placeholders with the appropriate values for your specific use case:
   - [***POSTGRESQL_VERSION***]: Replace this with the desired PostgreSQL version.
   - [***RHEL_VERSION***]: Replace this with the Red Hat Enterprise Linux (RHEL) version you are using.
   - [***REPOSITORY_PACKAGE_NAME***]: Replace this with the name of the repository configuration package for the specific PostgreSQL version and RHEL version you are targeting.

   For example, if you want edto add the PostgreSQL 12 repository to a RHEL 8 system, you would use:

```
yum install https://yum.postgresql.org/12/redhat/rhel-8-x86_64/pgdg-redh
at12-12-4.noarch.rpm
```

2. Install the PostgresSQL version of your choice:

```
yum install postgresql[***POSTGRESQL_VERSION***]-server postgres
ql[***POSTGRESQL_VERSION***]-contrib postgresql[***POSTGRESQL_VERSION***]
```

For example, if you wanted to add the PostgreSQL 12, you would use:

```
yum install postgresql12-server postgresql12-contrib postgresql12
```

3. Initialize the database.

For CentOS 7, use the following syntax:

```
[***POSTGRESQL_BIN_PATH***]/postgresql[***POSTGRESQL_VERSION***]-setup i
nitdb
```

For example, if you wanted to initalize PostgreSQL 12, you would use:

```
/usr/pgsql-12/bin/postgresql12-setup initdb
```

4. Start PostgresSQL.

```
systemctl enable postgresql-[***POSTGRESQL_VERSION***].service
systemctl start postgresql-[***POSTGRESQL_VERSION***].service
```

For example, if you are using CentOS 7, use the following syntax:

```
systemctl enable postgresql-12.service
systemctl start postgresql-12.service
```

5. Verify that you can log in:

```
sudo su postgres
psql
```

What to do next

Once you have installed PostgreSQL, configure the database for use with NiFi Registry.

Related Information

Installing and configuring JDK

Configuring NiFi Registry Metadata Stores in PostgreSQL

Configuring NiFi Registry Metadata Stores in PostgreSQL

Learn how to configure a PostgreSQL database for use with NiFi Registry.

About this task

Postgres provides the option to use an externally located database that supports high availability.

Before you begin

You have installed a PostgreSQL database. For details, see *Installing PostgreSQL*.

Procedure

1. Download the Postgres JDBC driver and place it somewhere accessible to NiFi Registry:

```
/path/to/drivers/postgresql-42.2.2.jar
```

2. Create a database inside Postgres:

```
createdb nifireg
```

3. Create a database user and grant privileges:

```
psql nifireg
CREATE USER nifireg WITH PASSWORD 'changeme';
GRANT ALL PRIVILEGES ON DATABASE nifireg to nifireg;
\q
```

4. After NiFi Registry service is installed, configure the database properties in Cloudera Manager:
   - NiFi Registry JDBC Url (nifi.registry.db.url) – jdbc:postgresql://<POSTGRES-HOSTNAME>/nifireg
   - NiFi Registry JDBC Driver (nifi.registry.db.driver.class) – org.postgresql.Driver
   - NiFi Registry H2 directory storage location (nifi.registry.db.driver.directory) – /path/to/drivers

     Note:

     The NiFi Registry H2 directory storage location field specifies the NiFi Registry database driver directory. The H2 database is used by default. Update this field when you are configuring it for an external database.
   - NiFi Registry Database Username (nifi.registry.db.username) – nifireg
   - NiFi Registry Database Password (nifi.registry.db.password) – changeme

What to do next

When you have completed the NiFi Registry database configuration, move on to installing Cloudera Manager and your Cloudera Base on premises Cluster.

Related Information

Installing PostgreSQL

Installing Cloudera Manager and a Cloudera Base on premises cluster

Installing Cloudera Manager and a Cloudera Base on premises cluster

Install and configure Cloudera Base on premises cluster with Cloudera Manager with the required Runtime services before installing NiFi and NiFi Registry.

About this task

You should follow the instructions in the *Cloudera Base on premises Installation Guide* for complete information about installing Cloudera Manager and a Cloudera Base on premises. At minimum, you should ensure that you perform the following steps.

Before you begin

- You have installed a JDK.
- If you want to use an external database, you have installed and configured it for NiFi Registry.

Procedure

1. Install Cloudera Base on premises.

   See the *Cloudera Base on premises Installation Guide* for more information.

2. Enable Auto-TLS and Kerberos.

   Cloudera recommends the following security configuration:

   - Enable Auto-TLS. Unsecured NiFi clusters are not supported.
   - Enable Kerberos. Kerberos is required if you are using Apache Ranger.
   - Use Apache Atlas for dataset level lineage graphs.
   - Use Apache Ranger to authorize NiFi and NiFi Registry users.

   For details on security recommendations and options, see *CFM Security*.

   Note:

   Wildcard certificates are not supported.

   - If NiFi or NiFi Registry is behind Knox, do not use wildcard certificates for Knox.
   - Do not generate wildcard certificates for the NiFi nodes. For example, if two nodes, node1.nifi.apache.org and node2.nifi.apache.org, are assigned the same certificate with a CN or SAN entry of *.nifi.apache.org, this certificate will not be supported.

   For more information on certificate requirements, see *TLS certificate requirements and recommendations*.

3. Install the following Runtime services, at minimum:

Dependency	Description
ZooKeeper	NiFi has a required dependency on ZooKeeper, and this service must be installed.
Atlas	Atlas is an optional dependency. It is used for data lineage across the components. If you plan to use Atlas, install it as part of the Base cluster prior the installation of NiFi and NiFi Registry
Ranger	Ranger is an optional dependency. Ranger is used to manage user access policies. If you plan to use Ranger, install it as part of the Base cluster prior the installation of NiFi and NiFi Registry.

4. If you want to install the Ranger service and store Ranger audit logs, you have two options.

   - Install the HDFS service for long term audit log archive and the Solr service for searching and indexing the audit logs from the last 30 days. This is the default.

     To do this, select HDFS and Solr as dependencies when installing Ranger.
   - Install only the Solr service, which stores audit logs for 30 days. To do this, select the Solar dependency when installing Ranger, and make the following configurations:

     - Select the Core Configuration service instead of HDFS as a dependency when installing Ranger.
     - Deselect Ranger Plugin DFS Audit Enabled option during Ranger service installation.

What to do next

When you have completed the Cloudera Base on premises cluster installation, add the Cloudera Flow Management parcel and CSD files.

Related Information

Cloudera Base on premises Installation Guide
Cloudera Flow Management Security
Installing and configuring JDK
Installing and configuring a database for NiFi Registry
TLS certificate requirements and recommendations
Installing the Cloudera Flow Management parcel from the repository

Installing the Cloudera Flow Management parcel from the repository

Install and activate the Cloudera Flow Management parcel with Cloudera Manager to make NiFi and NiFi Registry available for installation. To do this, update the parcel repository URL, then download, distribute, and activate the parcel.

Before you begin

- You have installed a JDK.
- You have installed and configured a database for use with NiFi Registry.
- You have installed a Cloudera Base on premises cluster.

Procedure

1. Navigate to the Parcels page.
2. From the navigation bar, select Hosts Parcels and click Parcel Repository & Network Settings.
3. On the Parcel Repository & Network Settings page, click + to add an additional row in the Remote Parcel Repository URLs list.
4. Add the URL of the Cloudera Flow Management parcel repository where the parcel file you wish to install is hosted.

   Note: When providing the URL, make sure that the actual parcel file name is not included in the string you add. Cloudera Manager will search for any parcel files located within the specified directory.

   RHEL/CentOS 7

   ```
   https://archive.cloudera.com/p/cfm2/4.12.0/redhat7/yum/tars/parcel/
   ```

   RHEL/CentOS 8

   ```
   https://archive.cloudera.com/p/cfm2/4.12.0/redhat8/yum/tars/parcel/
   ```

   RHEL 9

   ```
   https://archive.cloudera.com/p/cfm2/4.12.0/redhat9/yum/tars/parcel/
   ```

   SLES 12

   ```
   https://archive.cloudera.com/p/cfm2/4.12.0/sles12/yum/tars/parcel/
   ```

   SLES 15

   ```
   https://archive.cloudera.com/p/cfm2/4.12.0/sles15/yum/tars/parcel/
   ```

   Ubuntu 20

   ```
   https://archive.cloudera.com/p/cfm2/4.12.0/ubuntu20/apt/tars/parcel/
   ```

   See *Download locations* for the complete list of parcel links.
5. Click Save & Verify Configuration.

6. Click Close.

   The new Cloudera Flow Management parcel displays with the set of parcels available for download on the Parcels page.
7. From the Parcels page, download, distribute, and activate the Cloudera Flow Management parcel.

What to do next

When you have finished downloading, distributing and activating the Cloudera Flow Management parcel, add the CSD files for use by Cloudera Manager Server. For details, see *Download the Cloudera Flow Management Custom Service Descriptor files*.

Related Information

Installing and configuring JDK

Installing and configuring a database for NiFi Registry

Installing Cloudera Manager and a Cloudera Base on premises cluster

Download locations

Cloudera Flow Management installation workflow

Downloading Custom Service Descriptor files

Download and configure the Custom Service Descriptor (CSD) files for each Cloudera Flow Management service. Set the correct ownership and permissions, and then restart the Cloudera Manager server.

About this task

CSD files define how Cloudera Manager recognizes, configures, and manages new services such as NiFi and NiFi Registry. Each CSD file contains the service metadata and configuration details required for Cloudera Manager to deploy and manage that service. The CSD version must match your Cloudera Flow Management parcel version to ensure compatibility.

Before you begin

- Verify that you have installed the Cloudera Flow Management parcel from the repository.
- Confirm that you have the appropriate credentials to access Cloudera's archive site.
- Identify the correct CSD version for your Cloudera Flow Management version and operating system.

Procedure

1. Download the NiFi and NiFi Registry CSD files and place them in the default CSD directory: /opt/cloudera/csd

   Important:

   Ensure that the CSD version you download matches the Cloudera Flow Management version. Mismatched CSD and Cloudera Flow Management versions may cause issues when configuring and managing NiFi through Cloudera Manager.

   For example: Use the following wget commands to download the required CSD files for Cloudera Flow Management 4.11.0 on RHEL8.

   ```
   wget https://[***USERNAME***]:[***PASSWORD***]@archive.cloudera.com/p/cfm2
   /4.11.0.0/redhat8/yum/tars/parcel/NIFI-2.4.0.4.11.0.0-352.jar
   wget https://[***USERNAME***]:[***PASSWORD***]@archive.cloudera.com/p/cfm2
   /4.11.0.0/redhat6/yum/tars/parcel/NIFIREGISTRY-2.4.0.4.11.0.0-352.jar
   ```

   Note:

   CSD download links vary based on your operating system and Cloudera Flow Management versions. For the latest links, see the Download locations.

2. Set the correct CSD ownership and file permissions in the opt/cloudera/csd directory.

```
chown cloudera-scm:cloudera-scm ./*
chmod 644 ./*
```

3. Restart the Cloudera Manager Server to load the new CSD files.

```
sudo service cloudera-scm-server restart
```

4. Go to the Status tab in the Cloudera Manager UI and select Actions Restart to restart the Cloudera Management Service.

What to do next

After adding the CSD files, your Cloudera Base on premises installation is complete. You can now proceed with installing, securing, and configuring Cloudera Flow Management.

You can install NiFi and NiFi Registry on the Base cluster, on a Compute cluster, or in a hybrid setup. To determine the best option for your use case, see:

- Cloudera Flow Management installation workflow

For detailed installation steps, see:

- Installing NiFi and NiFi Registry on your Base cluster
- Installing NiFi and NiFi Registry on a Compute cluster
- Installing NiFi on a Compute cluster and NiFi Registry on a Base cluster

Choose the guide that matches your deployment scenario.

Installing NiFi and NiFi Registry on your Base cluster

Installing both services on a Base cluster provides a simplified configuration suitable for trial environments or smaller production scenarios.

Note:

Cloudera recommends installing NiFi Registry on your Base cluster to ensure stable and secure versioned flow management.

For a fresh installation, ensure that you have completed all the required steps to prepare your Base cluster as outlined in the Preparing your Cloudera Base on premises cluster instructions.

Adding the NiFi service

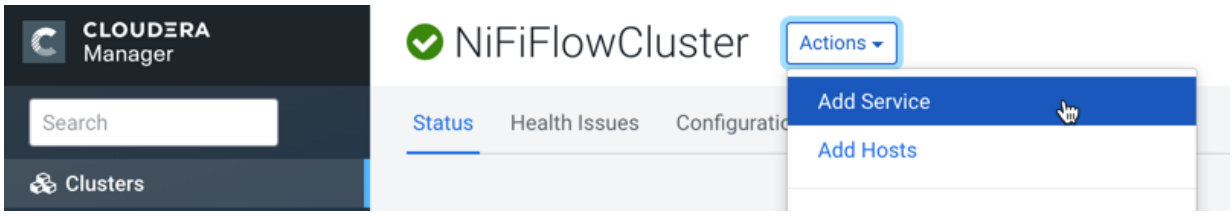
Add and configure the NiFi service on your Cloudera Base on premises cluster. This step sets up the NiFi data flow engine, enabling you to design and manage data flow pipelines.

Before you begin

You have installed a Cloudera Base on premises cluster.

Procedure

1. From Home > Status tab, select the drop-down to the right of your cluster, and select Add Service. Install one service at a time.



2. Specify that you want to add the NiFi service and click Continue to display the Add Service wizard.
3. Select NiFi dependencies and click Continue.
   - ZooKeeper is a required dependency.
   - Select Knox if you want a single entry point to securely access the services.
   - Cloudera recommends that you also select Ranger and Atlas dependencies.
4. Assign Roles to your NiFi service.

   Select the hosts onto which you want to install your new NiFi roles. Click Continue.

   Note: If you selected Knox as a dependency, then install Knox and NiFi on different nodes because Knox, by default, has a port conflict on 8443.

5. Review changes to your configuration. Click Continue. This will start the service installation.

   Provide a value for your Initial Admin Identity. You may choose to further customize your NiFi configuration here.

   Note:

   You must add any group name or identity set by these three parameters to Ranger, in order for your installation install to succeed.

   - Initial Admin Identity (nifi.initial.admin.identity)
   - NiFi proxy group (nifi.proxy.group)
   - Initial Admin Groups (nifi.initial.admin.groups)
6. Click Continue and Finish to complete the installation.
7. Open a browser and enter the URL to the NiFi UI.

   The URL format for the NiFi UI is based on whether or not you selected Knox as a dependency during the installation:

   - If you did not select Knox, the URL format is:

     ```
     https://[***HOSTNAME***]:8443/nifi
     ```

   - If you selected Knox, use the Knox URL as a single entry point to securely access all NiFi nodes and switch nodes if one fails. The format is:

     ```
     https://[***KNOX-GATEWAY-HOSTNAME***]:[***KNOX-GATEWAY-PORT***]/gateway/
     cdp-proxy/nifi-app/nifi/
     ```

Results

Verify the new service is added properly by checking the health status for the new service. If the Health Status is Good, then the service added properly.

What to do next

When you have finished adding the NiFi service, proceed with adding the NiFi Registry service.

Related Information

Preparing your Cloudera Base on premises cluster
Adding the NiFi Registry service

Adding the NiFi Registry service

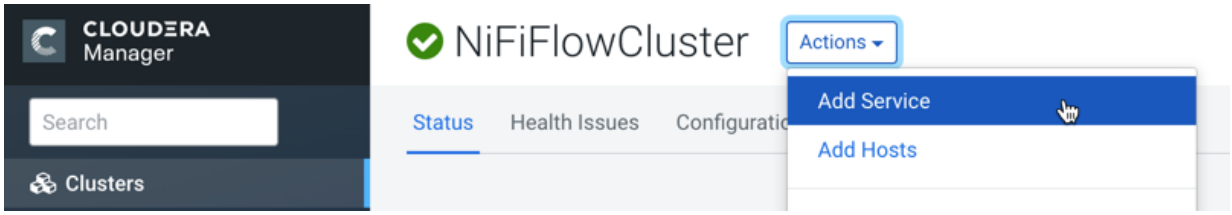
Add and configure the NiFi Registry service to manage versioned data flows and provide centralized storage for flow definitions.

Before you begin

You have added the NiFi service to a cluster.

Procedure

1. From Home > Status tab, select the drop-down to the right of your cluster, and select Add a Service. Install one service at a time.



2. Specify that you want to add the NiFi Registry service and click Continue to display the Add Service wizard.
3. Select NiFi Registry dependencies and click Continue.

   Cloudera recommends that you select NiFi and Ranger dependencies.

   Note:

   NiFi Registry does not require any dependencies. However, if you select No Optional Dependencies, some services are still selected as dependencies. You can deselect unwanted dependencies once you have finished the installation.
4. Assign Roles to your NiFi Registry service.

   Select the host onto which you want to install your new NiFi Registry role. Click Continue.
5. Review changes to your configuration. Click Continue to start the service installation.

   Provide a value for your Initial Admin Identity. You may choose to further customize your NiFi configuration here.

   Note:

   You must add any group name or identity set by these three parameters to Ranger, in order for your installation install to succeed.

   - Initial Admin Identity (nifi.registry.initial.admin.identity)
   - NiFi Registry proxy group (nifi.registry.proxy.group)
   - Initial Admin Groups (nifi.registry.initial.admin.groups)
6. Click Continue and Finish to complete the installation.

7. Open a browser and enter the URL to the NiFi Registry UI.

   The URL format for the NiFi Registry UI is based on whether or not you selected Knox as a dependency during the installation:

   - If you did not select Knox, the URL format is:

     ```
     https://[***HOSTNAME***]:18443/nifi-registry
     ```

   - If you selected Knox, use the Knox URL as a single entry point to securely access all NiFi Registry nodes and switch nodes if one fails. The format is:

     ```
     https://[***KNOX-GATEWAY-HOSTNAME***]:[***KNOX-GATEWAY-PORT***]/gateway/
     cdp-proxy/nifi-registry-app/nifi-registry/
     ```

Results

Verify the new service is added properly by checking the health status for the new service. If the Health Status is Good, then the service added properly.

What to do next

When you have finished adding the NiFi Registry service, proceed by connecting NiFi to NiFi Registry.

Related Information

Adding the NiFi service
Connecting NiFi to NiFi Registry

Connecting NiFi to NiFi Registry

Configure NiFi to connect to the NiFi Registry. This enables versioned flow management and synchronization between the two services.

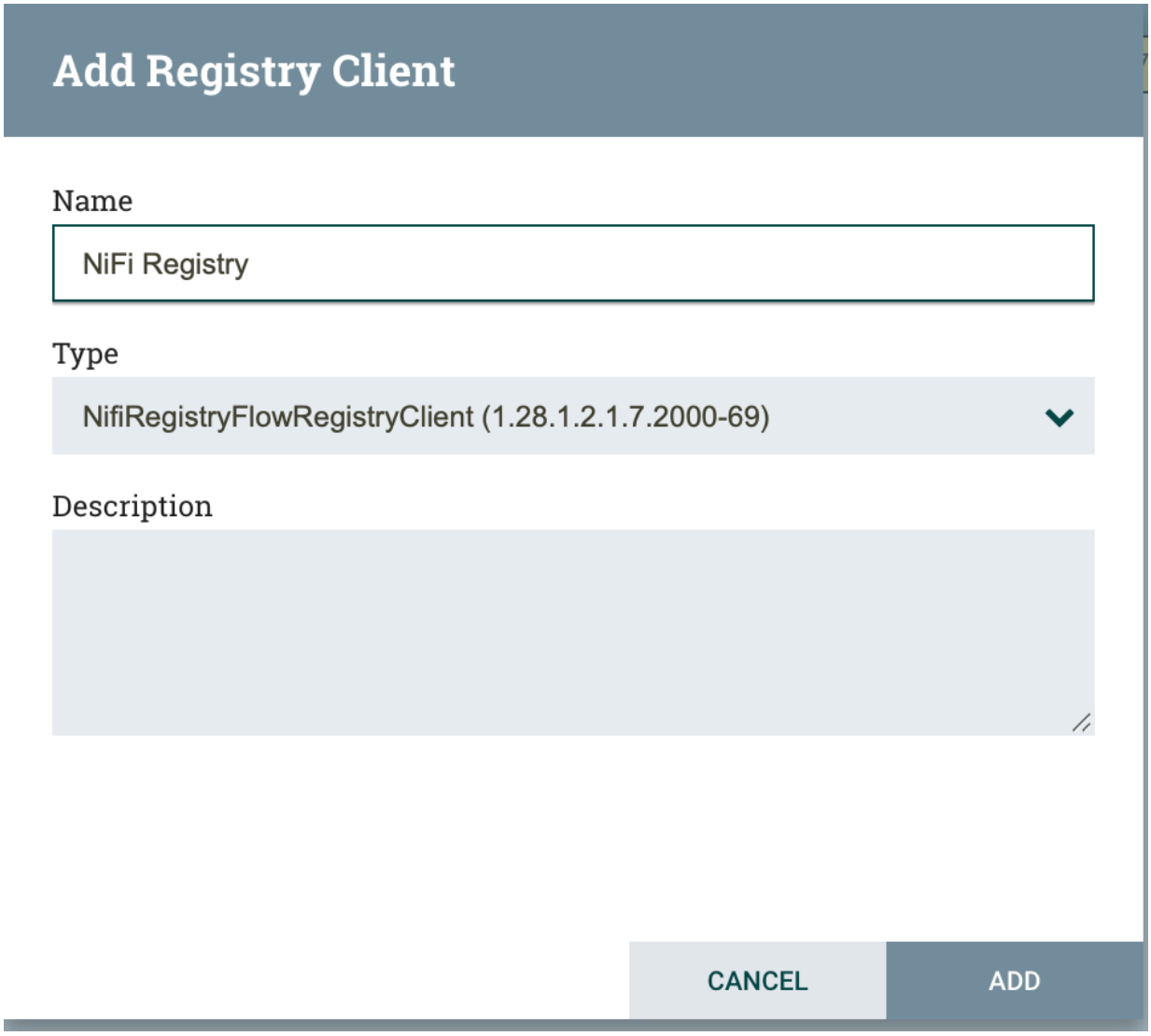
Before you begin

- You have added and configured NiFi and NiFi Registry.
- You have started both NiFi and NiFi Registry.

Procedure

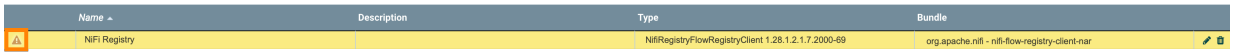
1. In the NiFi UI, open the Global Menu and select Controller Settings.
2. Navigate to the Registry Clients tab.

3. Click the Add icon (+) to launch the Add Registry Client dialog.
   The following modal window is displayed:



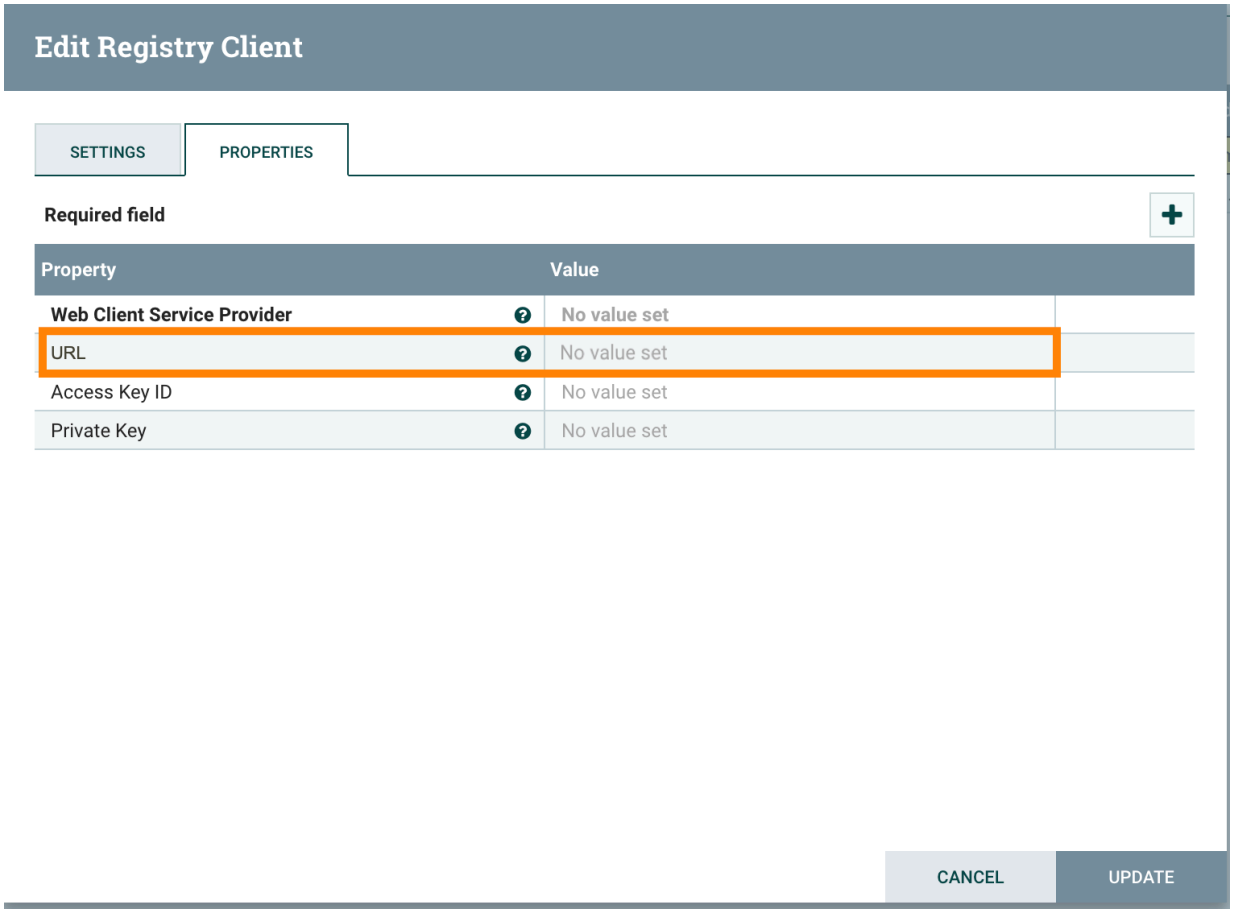
4. Enter NiFi Registry as the name of the service you just created.
5. Click ADD.

   The new entry appears marked with ⚠ indicating that the URL is missing. This is expected behavior.



6. To provide the Registry URL, click on the right side of the Registry Client row and enter the URL of your NiFi Registry instance, including the port.

Note: The URL should be the server on which the NiFi registry was deployed with its port. For example: https://nifiregistry.server.com:18443).



7. Click UPDATE.

The warning ( ) disappears, confirming that the connection is established. You can close the configuration.

What to do next

Once you have connected NiFi and NiFi Registry, add users or groups to Ranger policies, and if needed, deselect unwanted NiFi Registry dependencies.

Related Information

Adding the NiFi Registry service

Adding users or groups to Ranger policies

Adding users or groups to Ranger policies

Define access control for NiFi and NiFi Registry by adding users or user groups to Ranger policies.

About this task

Ranger polcieis determine what each user or group can modify, control, or observe in NiFi dataflows and in NiFi Registry resources. Each predefined Ranger access policy grants specific privileges to NiFi or NiFi Registry components. Assign users and groups based on their operational responsibilities and the level of access they require.

For details on available policies, see:

- *Predefined Ranger access policies for Apache NiFi*
- *Predefined Ranger access policies for Apache NiFi Registry*

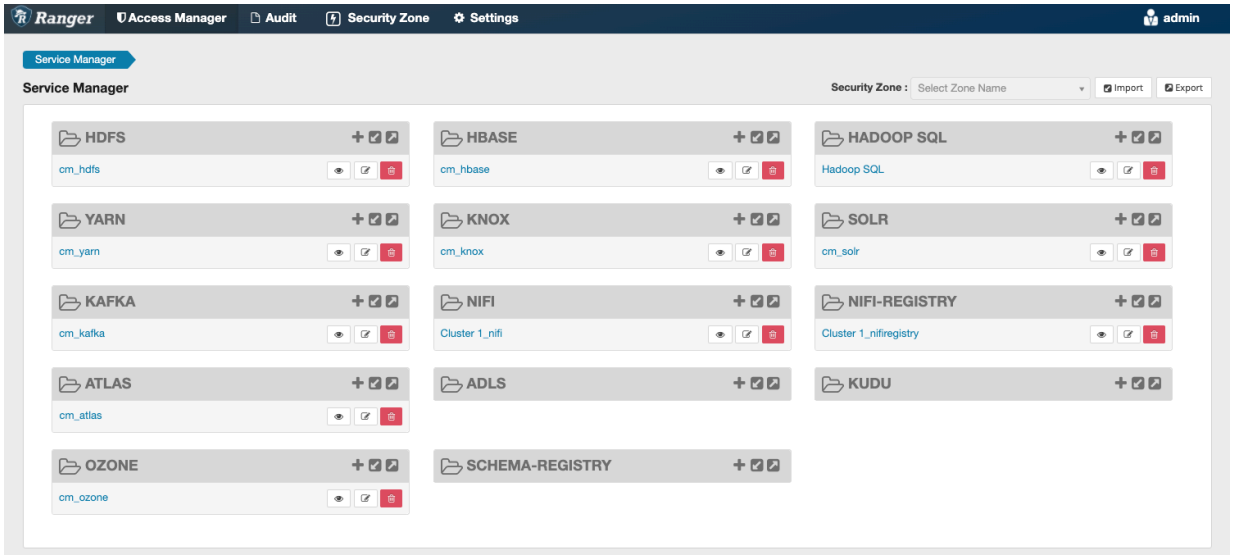
Before you begin

- Ensure that Ranger is installed on your Base Cloudera Base on premises cluster.
- rify that NiFi and NiFi Registry are installed and connected to Ranger.

Procedure

1. From the Base cluster, select Ranger from the list of services. Click Ranger Admin Web UI and log into Ranger.

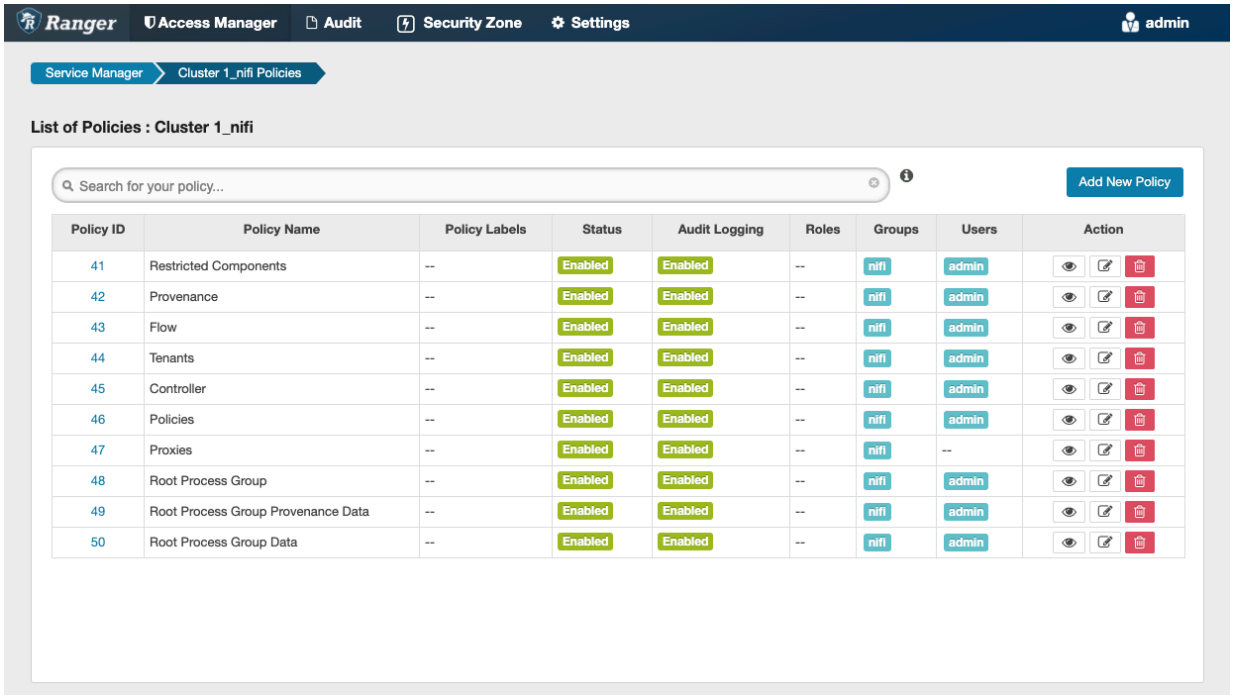
   The **Ranger Service Manager** page displays.



   Each cluster in the environment is listed under its respective service. For example, the NiFi clusters in the environment are listed under NiFi.

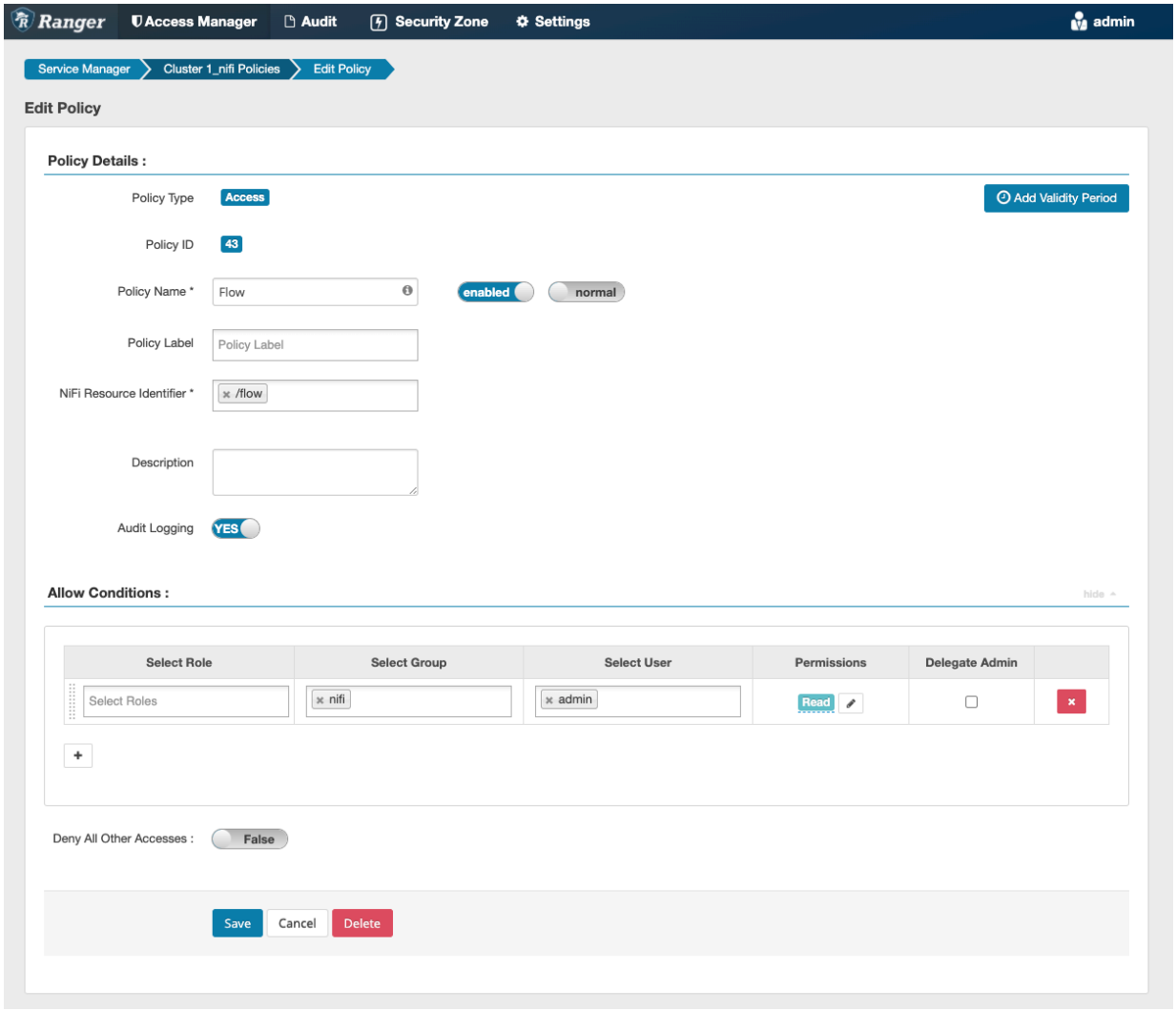
2. Select a cluster from either the NiFi or NiFi Registry section.

   The **List of Policies** page appears.



3. Click the ID for a policy.

   The **Edit Policy** page appears.



4. In the Allow Conditions section, add the user or the user group to the Select User field.
5. Click Save.

Results

The user now has the NiFi and NiFi Registry rights according to the policies you added the user or user group to. These rights are inherited down the hierarchy unless there is a more specific policy on a component.

What to do next

When you have completed the steps for adding users and groups to Ranger policies, review the steps to deselect unwanted NiFi Registry dependencies to determine whether it applies to your environment.

Related Information

Predefined Ranger Access Policies for Apache NiFi

Predefined Ranger Access Policies for Apache NiFi Registry

Connecting NiFi to NiFi Registry

Deselecting unwanted NiFi Registry dependencies

Deselecting unwanted NiFi Registry dependencies

Remove unnecessary dependencies that might have been been added to NiFi Registry during cluster installation to maintain a clean and optimized configuration.

About this task

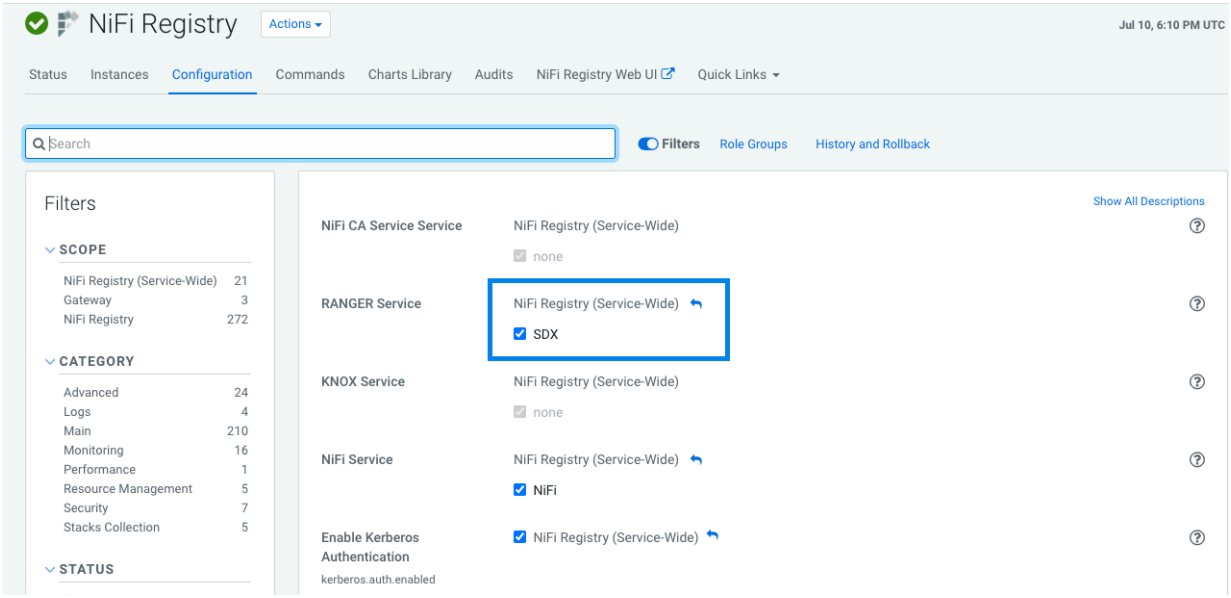
This is an optional task. During your cluster installation, some dependencies may have been added to NiFi Registry. If you do not want these dependencies, follow these steps to remove them.

Before you begin

- You have installed a Cloudera Base on premises cluster.
- You have added the NiFi Registry service.
- You have added users or user groups to Ranger policies.

Procedure

1. From Cloudera Manager, click the Clusters tab in the left-hand navigation.
2. Click NiFi Registry in the list of services to display the NiFi Registry service page.
3. Select the Configuration tab.
4. Deselect any unwanted dependencies.



5. Click Save Changes. Restart the NiFi Registry service.

Results

You have completed your cluster and Cloudera Flow Management installation.

Related Information

Adding users or groups to Ranger policies

Installing NiFi and NiFi Registry on a Compute cluster

Follow these steps to add and configure NiFi and NiFi Registry on a Cloudera Base on premises Compute cluster.

Important: This is not a recommended configuration. Cloudera recommends installing NiFi Registry on your Base cluster.

Creating a Shared Data Context

Create a Shared Data Context to allow the Compute cluster to access data, metadata, and security services from the Base cluster. This shared context is required before you can create Compute clusters.

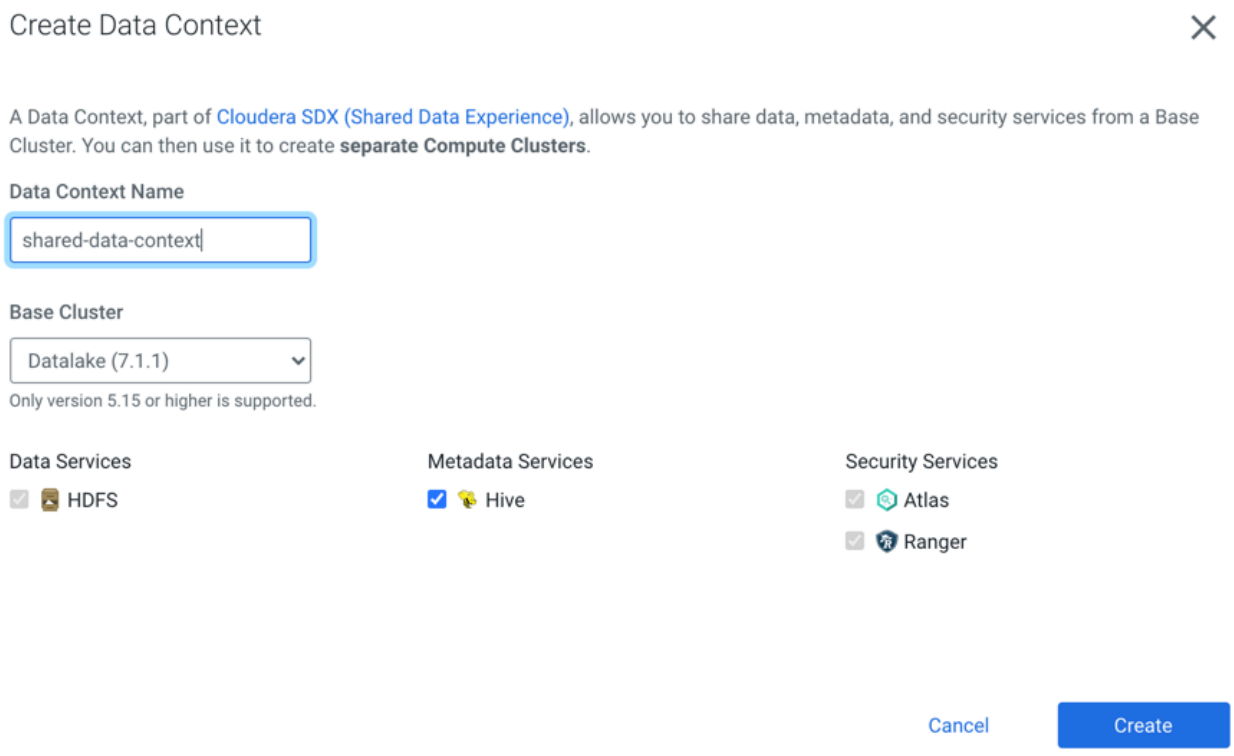
Before you begin

- You have reviewed *Cloudera Flow Management installation workflow* and have decided to install NiFi on a Compute cluster.
- You have prepared your Cloudera Base on premises Base cluster.
- Your Base cluster has data, metadata, and security services to share.

Procedure

1. From Cloudera Manager Home, click on your Base cluster name to go the Detail page.
2. In the Data Contexts section, click Create.
3. In the Create Data Context dialog, provide a Data Context Name, specify your Base cluster, and click Create.

Example



What to do next

When you have finished creating a Shared Data Context, proceed to adding the NiFi and NiFi Registry groups to Ranger in the Base cluster if needed, then to creating a Compute cluster.

Related Information

Cloudera Flow Management installation workflow

Preparing your Cloudera Base on premises cluster

Adding the NiFi and NiFi Registry groups to Ranger in the Base cluster

Add the NiFi and NiFi Registry groups to Ranger on the Base cluster if the Cloudera Flow Management parcel has not been activated there. This ensures proper permission management for services running on the Compute cluster.

About this task

Note:

If the Cloudera Flow Management parcel has been activated on the Base cluster, the nifi and nifiregistry groups in Ranger are automatically created and you may skip this task.

If your Compute cluster uses a Shared Data Context that shares the Ranger service, you must create the nifi and nifi registry groups in Ranger on the Base cluster. You must create these groups before you install the NiFi and NiFi Registry service so that the required NiFi and NiFi Registry Ranger access policies are created.

Before you begin

- You have created a Shared Data Context.

Procedure

1. Go to Ranger.
2. Select Settings > Users/Groups/Roles

   The **Users/Groups/Roles** page appears.
3. Select the Groups tab, then click Add New Group.

   The **Group Detail** page appears.
4. For Group Name, enter nifi. Click Save.
5. Click Add New Group.
6. For Group Name, enter nifiregistry. Click Save.

What to do next

When you have finished creating the Ranger groups, proceed to creating a Compute cluster.

Related Information

Creating a Shared Data Context
Creating a Compute cluster

Creating a Compute cluster

Create a Cloudera Base on premises Compute cluster that will host the NiFi and NiFi Registry services.

About this task

Follow the instructions in the *Cloudera Base on premises Installation Guide* for complete information about installing Cloudera Managerand a Cloudera Base on premises cluster. At minimum, you should ensure that you perform the following steps.

Before you begin

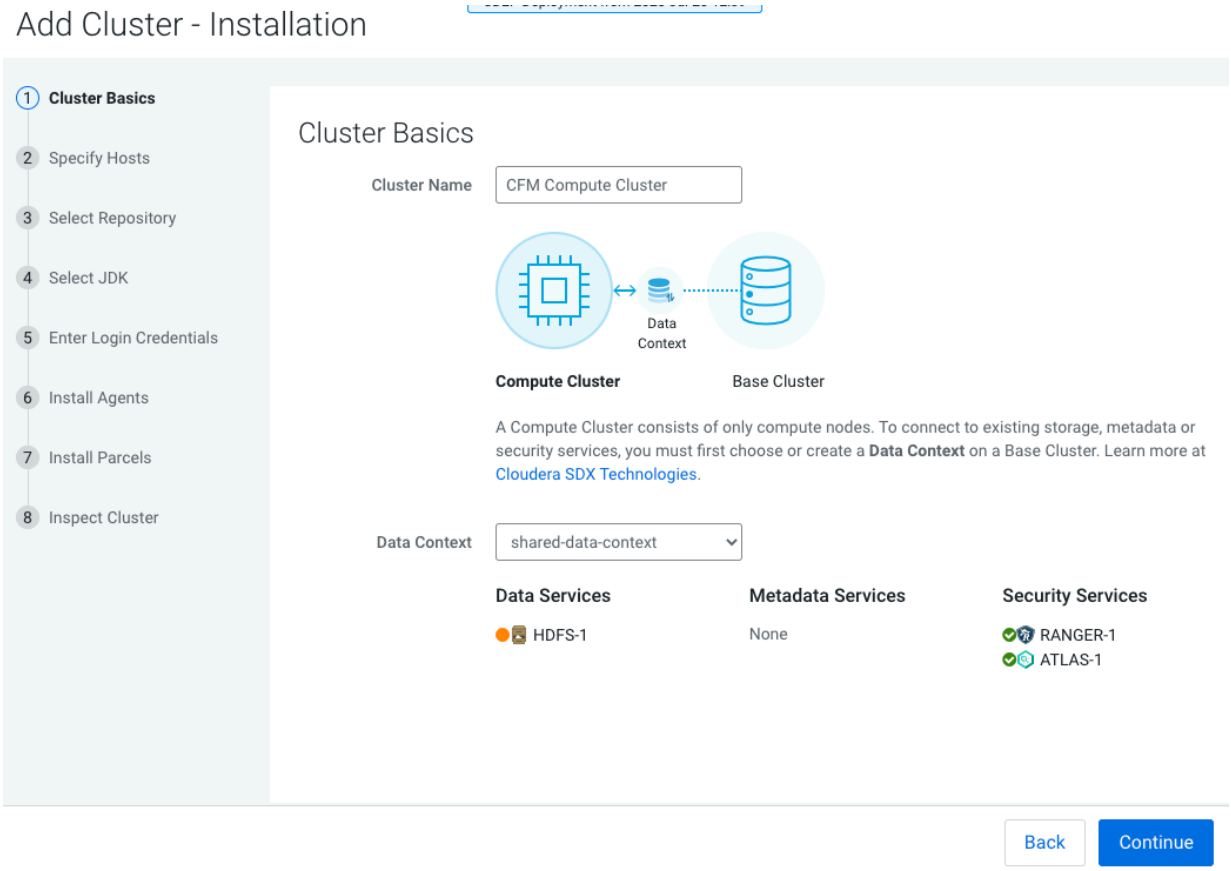
- You have prepared your Cloudera Base on premises Base cluster.

- You have created a Shared Data Context in your Base cluster.

Procedure

1. Launch the Add Cluster – Installation wizard.

   From your Base cluster detail page, select Add Compute Cluster from the Actions drop-down.
2. From the Cluster Basics step, add a cluster name, and select your Shared Data Context from the Data Context drop-down. Click Continue.



3. From the Specify Hosts step, select the hosts you want to belong to your Compute cluster. Click Continue.
4. From the Select Repository step, select the Cloudera Flow Management parcel. If the Cloudera Flow Management parcel has not been added yet, select Parcel Repositories & Network Settings and add the Parcel URL

   See *Install the Cloudera Flow Management parcel from the repository* for more information.

   Click Continue to download, distribute, and activate the Cloudera Flow Management parcels.
5. From the Inspect Cluster step, run the Inspect Network Performance and Inspect Hosts inspections. Click Continue to select services to install.

What to do next

When you have finished creating your Compute cluster, proceed by adding the NiFi and NiFi Registry services.

Related Information

Cloudera Base on premises Installation Guide
Preparing your Cloudera Base on premises cluster
Creating a Shared Data Context
Installing the Cloudera Flow Management parcel from the repository
Adding the NiFi and NiFi Registry services to a Compute cluster

Adding the NiFi and NiFi Registry services to a Compute cluster

Add and configure the NiFi and NiFi Registry services on the Compute cluster. This enables you to deploy and manage data flows using resources that are separate from the Base cluster.

Before you begin

- You have created a Shared Data Context and a Compute cluster.
- You have added the nifi and nifiregistry groups to Ranger in the Base cluster.
- You have created a Compute cluster with the Cloudera Flow Management parcel installed.

Procedure

1. After your Compute cluster is created, the Add Cluster - Configuration wizard displays.
2. From the Select Services step, select Custom Services. Select NiFi and NiFi Registry. Click Continue.
3. From the Assign Roles step, select the hosts onto which you want to install your new NiFi roles and the host onto which you want to install your NiFi Registry role.

   ZooKeeper is a required dependency of NiFi. Select the hosts onto which you want to install ZooKeeper. Click Continue.
4. From the Review Changes step, review changes to your configuration. For both NiFi and NiFi Registry, provide a value for your Initial Admin Identity. You may choose to further customize your NiFi and NiFi Registry configurations here.

   Note:

   You must add any group name or identity set by these parameters to Ranger, in order for your installation to succeed.

   For NiFi:

   - Initial Admin Identity (nifi.initial.admin.identity)
   - NiFi proxy group (nifi.proxy.group)
   - Initial Admin Groups (nifi.initial.admin.groups)

   For NiFi Registry:

   - Initial Admin Identity (nifi.registry.initial.admin.identity)
   - NiFi Registry proxy group (nifi.registry.proxy.group)
   - Initial Admin Groups (nifi.registry.initial.admin.groups)

   Click Continue.
5. From the Configure Kerberos step, install Kerberos client libraries on all Compute cluster hosts as needed.

   Click Continue to initiate the Kerberos enablement.
6. When you have completed these steps for both NiFi and NiFi Registry, click Continue. This starts the NiFi and NiFi Registry services installation.
7. Click Continue and Finish to complete the installation.

8. Open a browser and enter the URL to the NiFi and NiFi Registry UI.
   The URL format for the UIs is based on whether or not you selected Knox as a dependency during the installation:
   - If you did not select Knox, the URL format is:
     - NiFi:
       ```
       https://[***HOSTNAME***]:8443/nifi
       ```
     - NiFi Registry:
       ```
       https://[***HOSTNAME***]:18443/nifi-registry
       ```
   - If you selected Knox, use the Knox URL as a single entry point to securely access all NiFi and NiFi Registry nodes and switch nodes if one fails. The format is:
     - NiFi:
       ```
       https://[***KNOX-GATEWAY-HOSTNAME***]:[***KNOX-GATEWAY-PORT***]/gate
       way/cdp-proxy/nifi-app/nifi/
       ```
     - NiFi Registry:
       ```
       https://[***KNOX-GATEWAY-HOSTNAME***]:[***KNOX-GATEWAY-PORT***]/gate
       way/cdp-proxy/nifi-registry-app/nifi-registry/
       ```

Results

Verify the new services are added properly by checking the health status for the new services. If the Health Status is Good, then the services added properly.

What to do next

When you have finished adding the NiFi and NiFi Registry services, proceed by connecting NiFi to NiFi Registry.

Related Information

Creating a Compute cluster
Connecting NiFi to NiFi Registry

Connecting NiFi to NiFi Registry

Configure NiFi to connect to the NiFi Registry. This enables versioned flow management and synchronization between the two services.

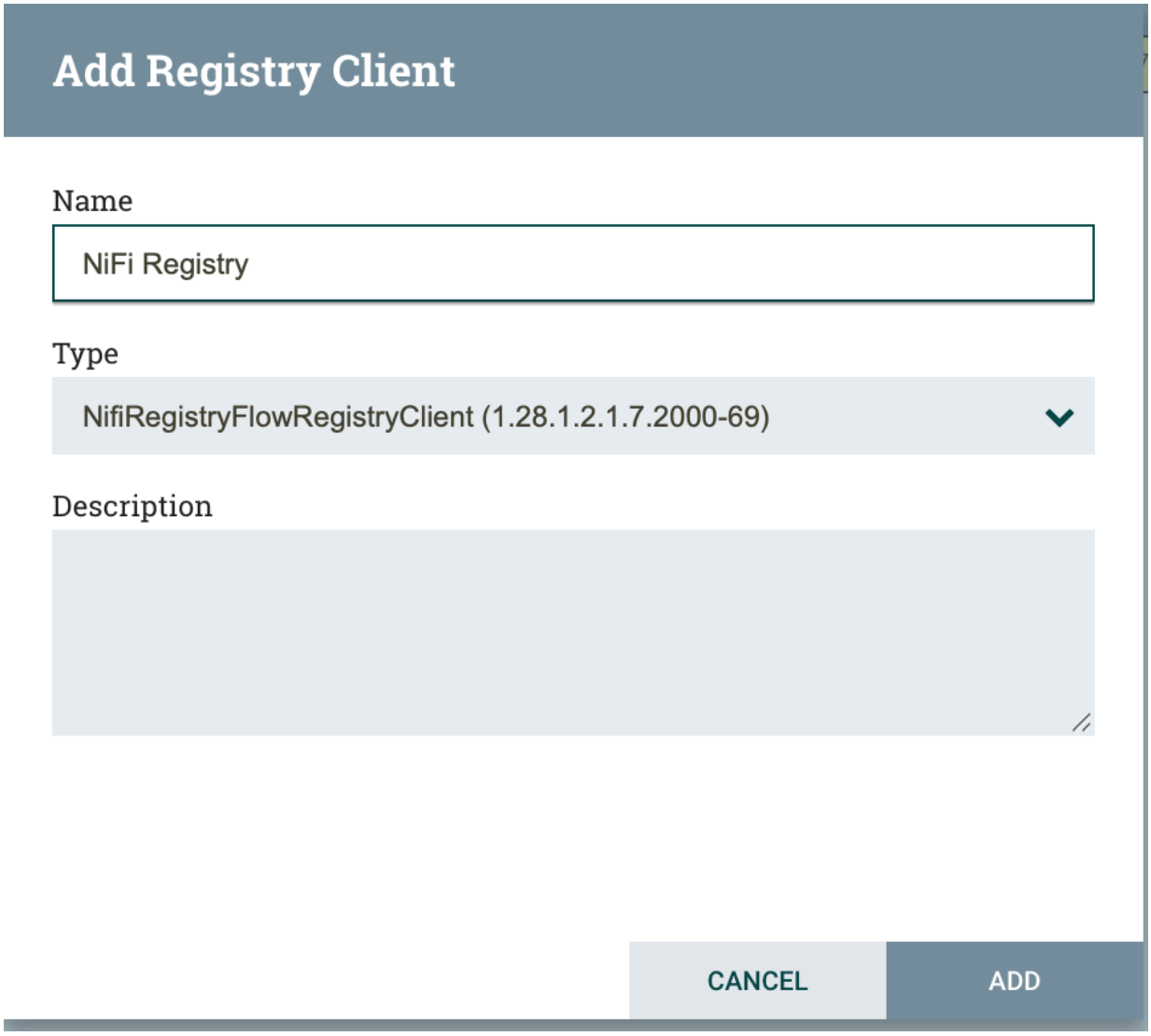
Before you begin

- You have added and configured NiFi and NiFi Registry.
- You have started both NiFi and NiFi Registry.

Procedure

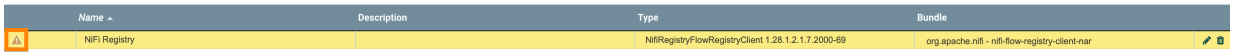
1. In the NiFi UI, open the Global Menu and select Controller Settings.
2. Navigate to the Registry Clients tab.

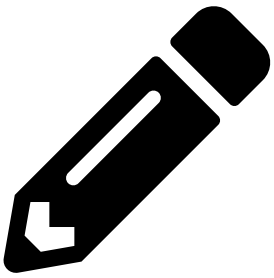
3. Click the Add icon (+) to launch the Add Registry Client dialog.
   The following modal window is displayed:



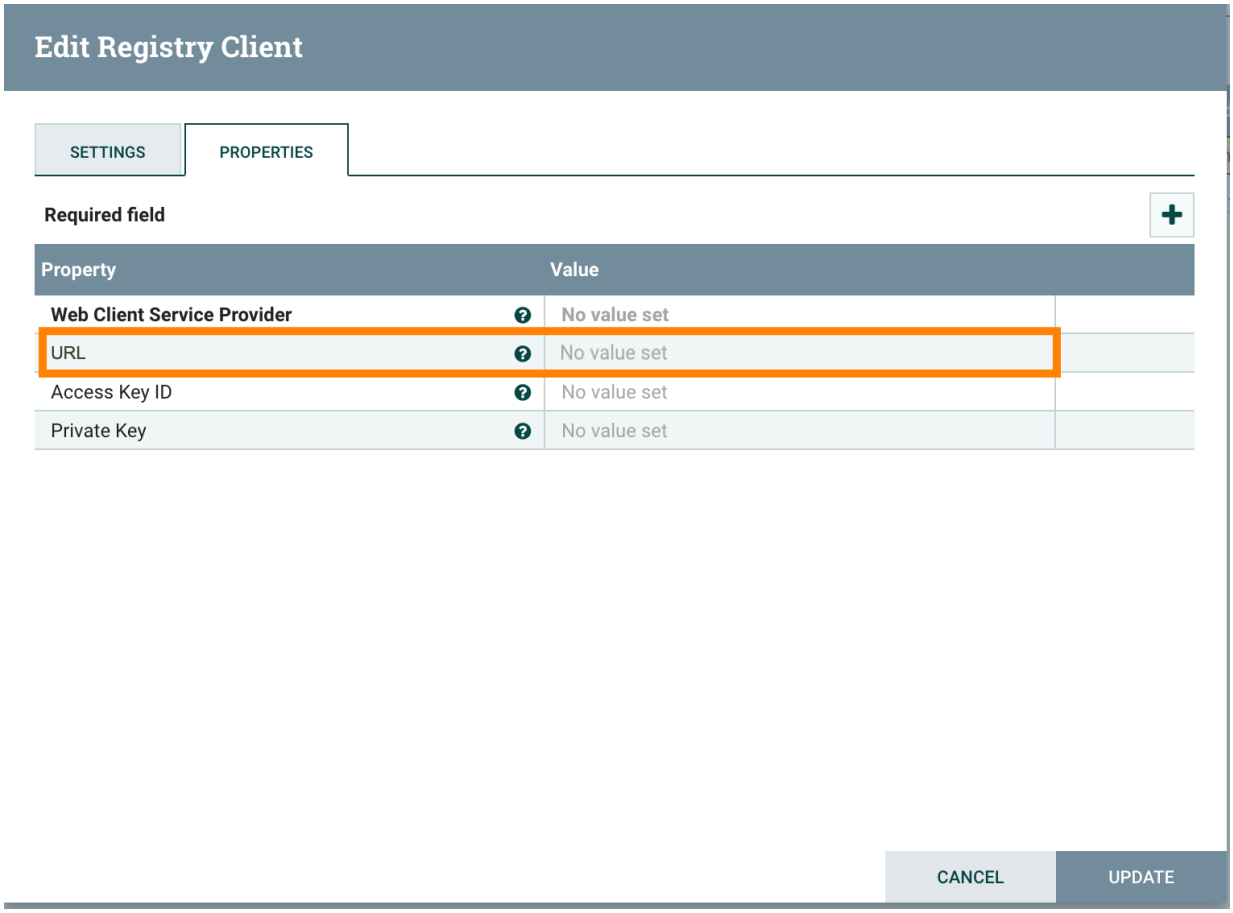
4. Enter NiFi Registry as the name of the service you just created.
5. Click ADD.

   The new entry appears marked with ⚠ indicating that the URL is missing. This is expected behavior.



6. To provide the Registry URL, click  on the right side of the Registry Client row and enter the URL of your NiFi Registry instance, including the port.

Note: The URL should be the server on which the NiFi registry was deployed with its port. For example: https://nifiregistry.server.com:18443).



7. Click UPDATE.

The warning ( ) disappears, confirming that the connection is established. You can close the configuration.

What to do next

Once you have connected NiFi and NiFi Registry, add users or groups to Ranger policies, and if needed, deselect unwanted NiFi Registry dependencies.

Adding users or groups to Ranger policies

Define access control for NiFi and NiFi Registry by adding users or user groups to Ranger policies.

About this task

Ranger polcieis determine what each user or group can modify, control, or observe in NiFi dataflows and in NiFi Registry resources. Each predefined Ranger access policy grants specific privileges to NiFi or NiFi Registry components. Assign users and groups based on their operational responsibilities and the level of access they require.

For details on available policies, see:

- *Predefined Ranger access policies for Apache NiFi*
- *Predefined Ranger access policies for Apache NiFi Registry*

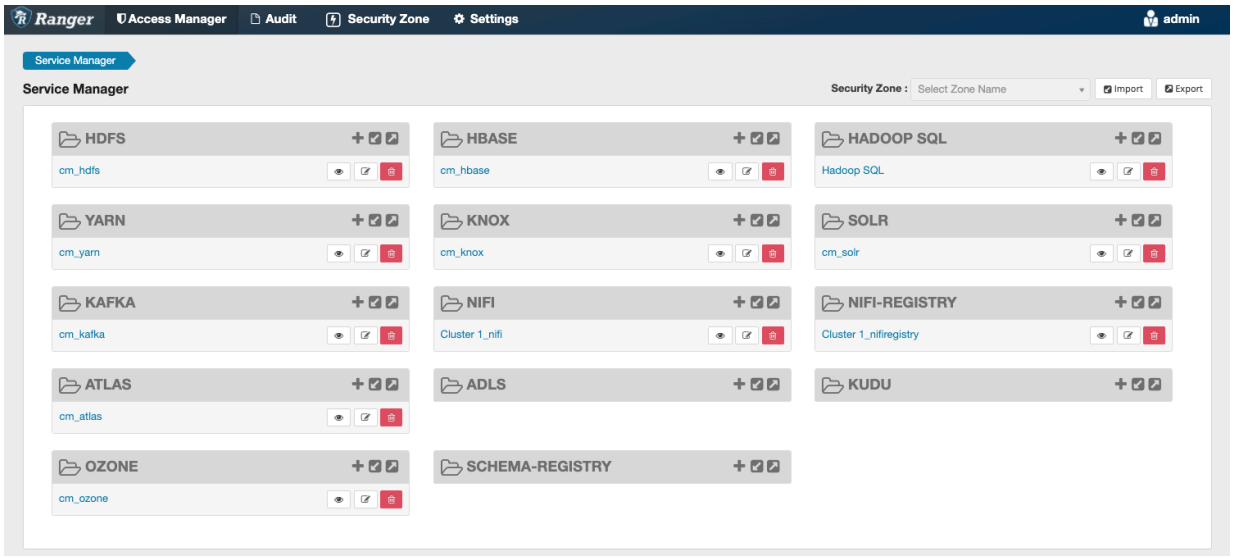
Before you begin

- Ensure that Ranger is installed on your Base Cloudera Base on premises cluster.
- rify that NiFi and NiFi Registry are installed and connected to Ranger.

Procedure

1. From the Base cluster, select Ranger from the list of services. Click Ranger Admin Web UI and log into Ranger.

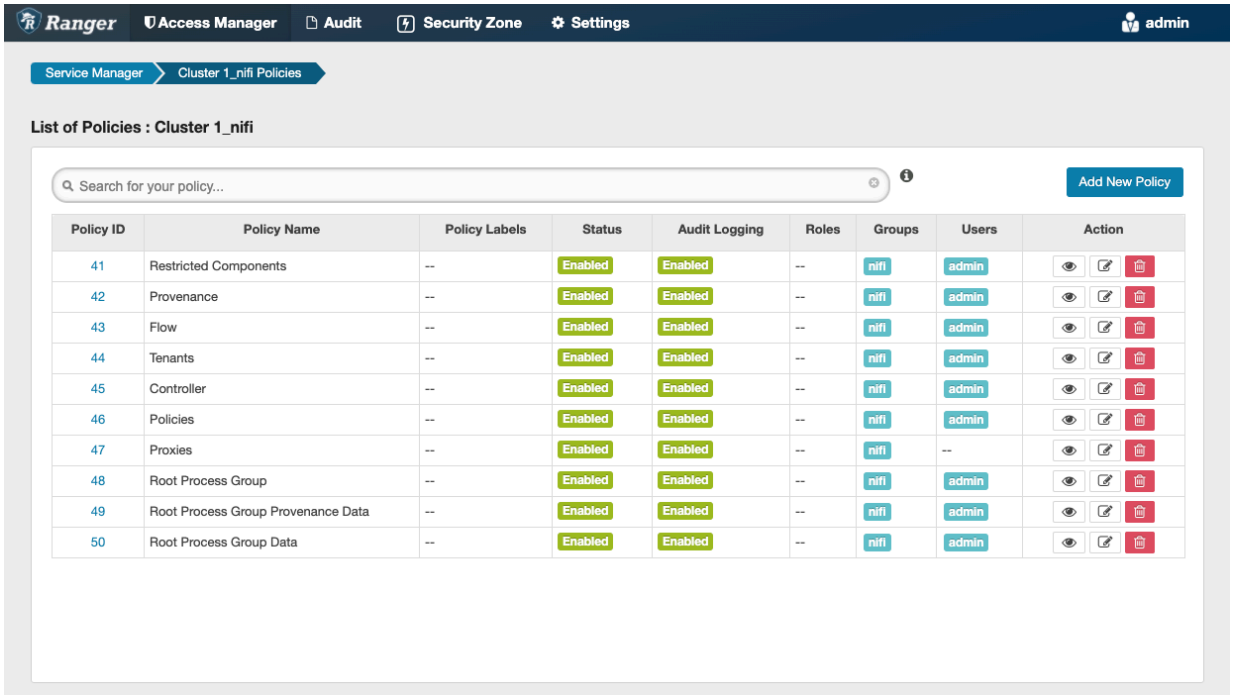
   The **Ranger Service Manager** page displays.



   Each cluster in the environment is listed under its respective service. For example, the NiFi clusters in the environment are listed under NiFi.

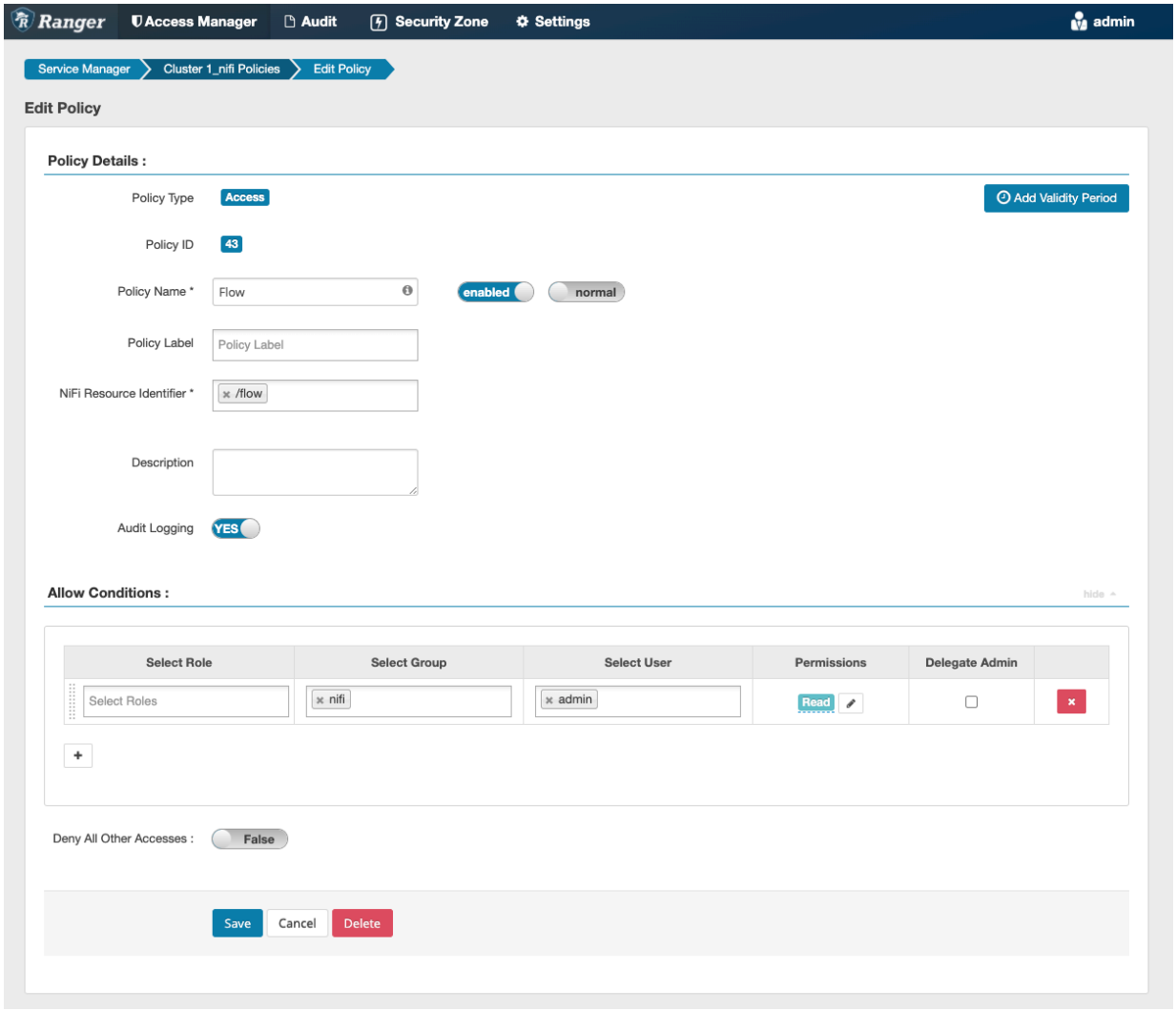
2. Select a cluster from either the NiFi or NiFi Registry section.

   The **List of Policies** page appears.



3. Click the ID for a policy.

   The **Edit Policy** page appears.



4. In the Allow Conditions section, add the user or the user group to the Select User field.
5. Click Save.

Results

The user now has the NiFi and NiFi Registry rights according to the policies you added the user or user group to. These rights are inherited down the hierarchy unless there is a more specific policy on a component.

What to do next

When you have completed the steps for adding users and groups to Ranger policies, review the steps to deselect unwanted NiFi Registry dependencies to determine whether it applies to your environment.

Deselecting unwanted NiFi Registry dependencies

Remove unnecessary dependencies that might have been been added to NiFi Registry during cluster installation to maintain a clean and optimized configuration.

About this task

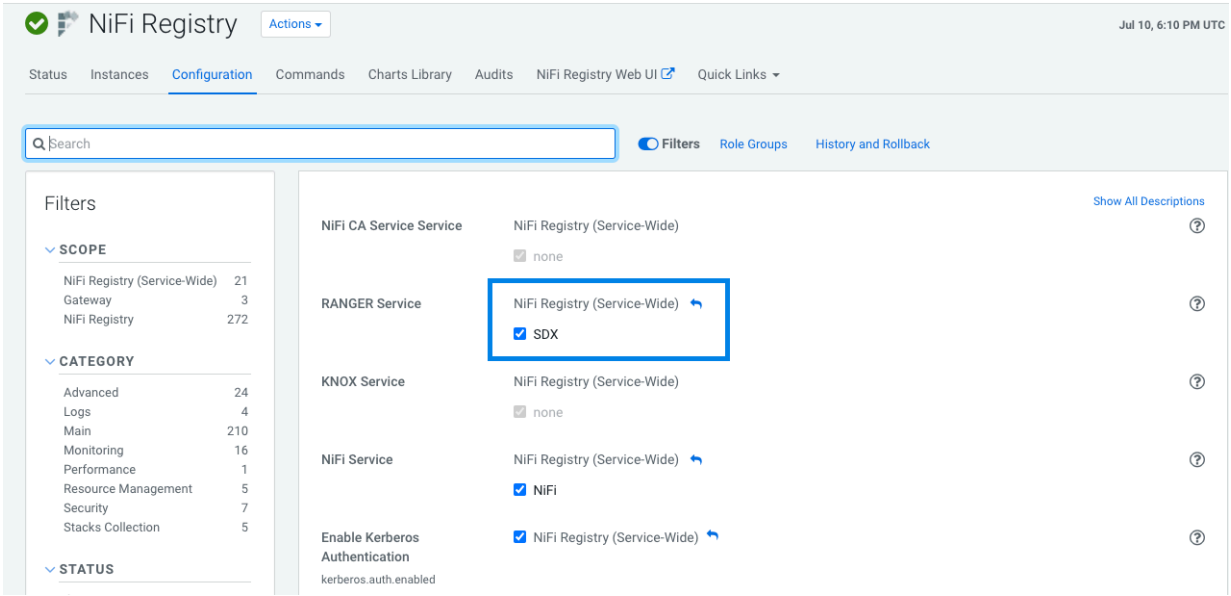
This is an optional task. During your cluster installation, some dependencies may have been added to NiFi Registry. If you do not want these dependencies, follow these steps to remove them.

Before you begin

- You have installed a Cloudera Base on premises cluster.
- You have added the NiFi Registry service.
- You have added users or user groups to Ranger policies.

Procedure

1. From Cloudera Manager, click the Clusters tab in the left-hand navigation.
2. Click NiFi Registry in the list of services to display the NiFi Registry service page.
3. Select the Configuration tab.
4. Deselect any unwanted dependencies.



5. Click Save Changes. Restart the NiFi Registry service.

Results

You have completed your cluster and Cloudera Flow Management installation.

Installing NiFi on a Compute cluster and NiFi Registry on a Base cluster

Follow these steps to add and configure NiFi on a Cloudera Base on premises Compute cluster and NiFi Registry on the Base cluster.

Note: Cloudera recommends using this layout for production deployments, as it provides better scalability, separation of resources, and centralized management of versioned dataflows.

Installing NiFi Registry on your Base cluster

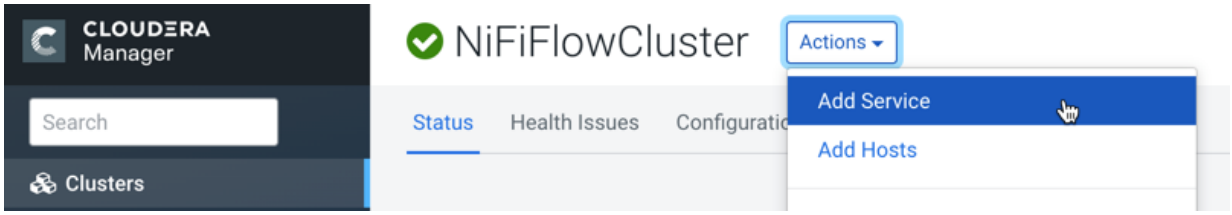
Add and configure the NiFi Registry service on your Base cluster to provide centralized version control for NiFi dataflows.

Before you begin

You have prepared your Cloudera Base on premises Base cluster.

Procedure

1. From Home > Status tab, select the drop-down to the right of your cluster, and select Add a Service. Install one service at a time.



2. Specify that you want to add the NiFi Registry service and click Continue to display the Add Service wizard.
3. Select NiFi Registry dependencies and click Continue.

   Cloudera recommends that you select NiFi and Ranger dependencies.

   Note:

   NiFi Registry does not require any dependencies. However, if you select No Optional Dependencies, some services are still selected as dependencies. You can deselect unwanted dependencies once you have finished the installation.
4. Assign Roles to your NiFi Registry service.

   Select the host onto which you want to install your new NiFi Registry role. Click Continue.
5. Review changes to your configuration. Click Continue to start the service installation.

   Provide a value for your Initial Admin Identity. You may choose to further customize your NiFi configuration here.

   Note:

   You must add any group name or identity set by these three parameters to Ranger, in order for your installation install to succeed.

   - Initial Admin Identity (nifi.registry.initial.admin.identity)
   - NiFi Registry proxy group (nifi.registry.proxy.group)
   - Initial Admin Groups (nifi.registry.initial.admin.groups)
6. Click Continue and Finish to complete the installation.

Results

Verify the new service is added properly by checking the health status for the new service. If the Health Status is Good, then the service added properly.

What to do next

When you have finished adding the NiFi Registry service, proceed by creating a Shared Data Context for your Compute cluster.

Related Information

Preparing your Cloudera Base on premises cluster
Creating a Shared Data Context

Creating a Shared Data Context

Create a Shared Data Context to all the Compute cluster to access data, metadata, and security services from the Base cluster. This shared context required before creating Compute clusters.

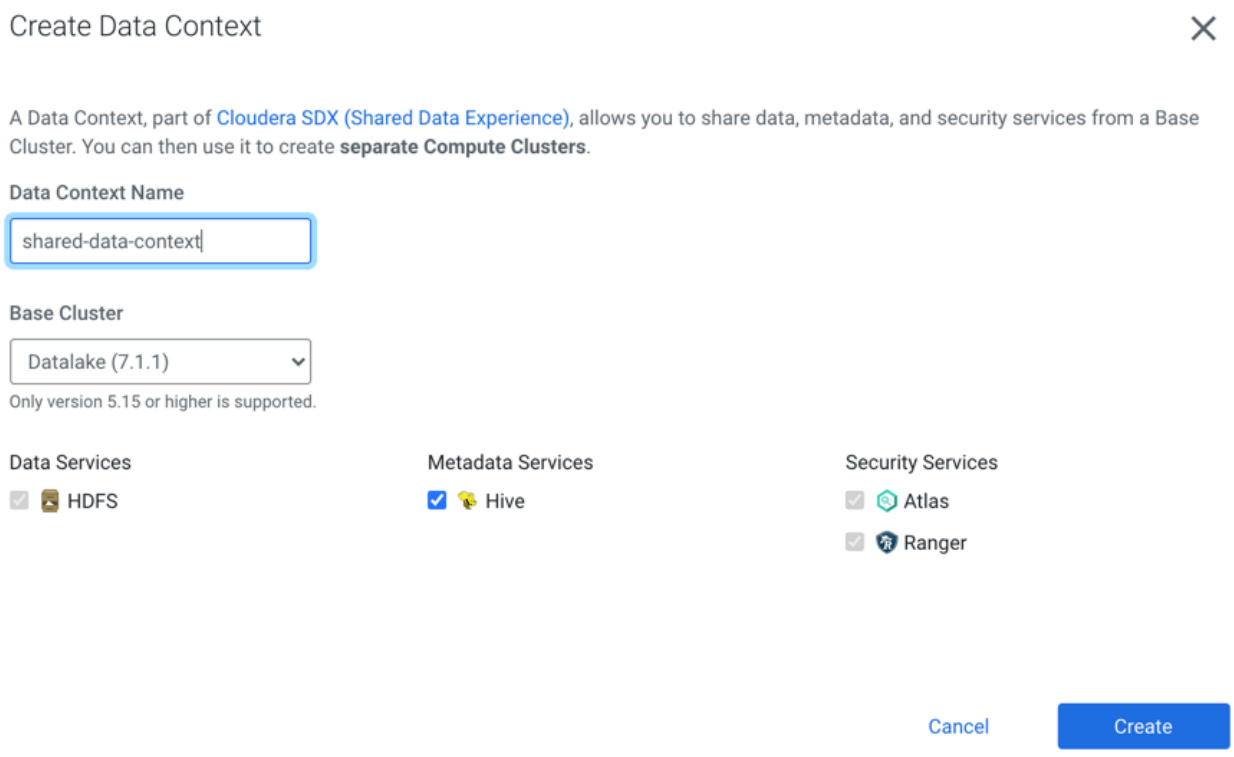
Before you begin

- You have reviewed *Cloudera Flow Management installation workflow* and have decided to install NiFi on a Compute cluster.
- You have installed NiFi Registry on your Base cluster.
- Your Base cluster has data, metadata, and security services to share.

Procedure

1. From Cloudera Manager Home, click on your Base cluster name to go the Detail page.
2. In the Data Contexts section, click Create.
3. In the Create Data Context dialog, provide a Data Context Name, specify your Base cluster, and click Create.

Example



What to do next

When you have finished creating a Shared Data Context, proceed to adding NiFi and NiFi Registry groups to Ranger.

Related Information

Cloudera Flow Management installation workflow
Installing NiFi Registry on your Base cluster

Adding the NiFi and NiFi Registry groups to Ranger in the Base cluster

Add the NiFi and NiFi Registry groups to Ranger on the Base cluster if the Cloudera Flow Management parcel has not been activated there. This ensures proper permission management for services running on the Compute cluster.

About this task

Note:

If the Cloudera Flow Management parcel has been activated on the Base cluster, the nifi and nifiregistry groups in Ranger are automatically created and you may skip this task.

If your Compute cluster uses a Shared Data Context that shares the Ranger service, you must create the nifi and nifi registry groups in Ranger on the Base cluster. You must create these groups before you install the NiFi and NiFi Registry service so that the required NiFi and NiFi Registry Ranger access policies are created.

Before you begin

- You have created a Shared Data Context.

Procedure

1. Go to Ranger.
2. Select Settings > Users/Groups/Roles

   The **Users/Groups/Roles** page appears.
3. Select the Groups tab, then click Add New Group.

   The **Group Detail** page appears.
4. For Group Name, enter nifi. Click Save.
5. Click Add New Group.
6. For Group Name, enter nifiregistry. Click Save.

What to do next

When you have finished creating the Ranger groups, proceed to creating a Compute cluster.

Creating Compute cluster

Provides the steps to create a Cloudera Base on premises Compute cluster.

About this task

You should follow the instructions in the *Cloudera Installation Guide* for complete information about installing Cloudera Manager and a Cloudera Base cluster. At minimum, you should ensure that you perform the following steps.

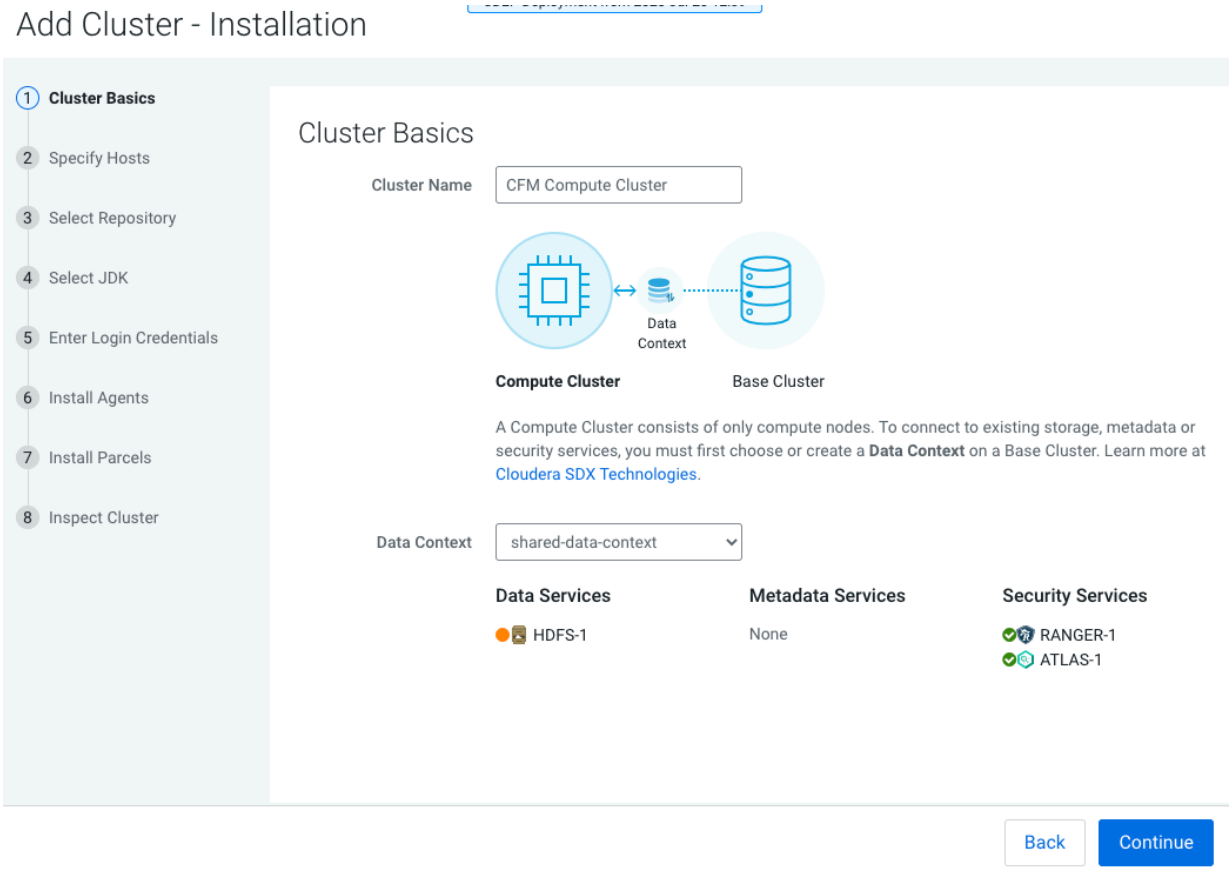
Before you begin

- You have prepared your Cloudera Base on premises Base cluster.
- You have created a Shared Data Context in your Base cluster.
- You have added NiFi and NiFi Registry groups to Ranger in your Base cluster.

Procedure

1. Launch the Add Cluster – Installation wizard.

   From your Base cluster detail page, select Add Compute Cluster from the Actions drop-down.
2. From the Cluster Basics step, add a cluster name, and select your Shared Data Context from the Data Context drop-down. Click Continue.



3. From the Specify Hosts step, select the hosts you want to belong to your Compute cluster. Click Continue.
4. From the Select Repository step, select the Cloudera Flow Management parcel. If the Cloudera Flow Management parcel has not been added yet, select Parcel Repositories & Network Settings and add the Parcel URL

   See *Install the Cloudera Flow Management parcel from the repository* for more information.

   Click Continue to download, distribute, and activate the Cloudera Flow Management parcel.
5. From the Inspect Cluster step, run the Inspect Network Performance and Inspect Hosts inspections. Click Continue to select services to install.

What to do next

When you have finished creating your Compute cluster, proceed by adding NiFi to your Compute cluster.

Related Information

Cloudera Base on premises Installation Guide
Adding the NiFi and NiFi Registry groups to Ranger in the Base cluster
Adding NiFi to the Compute cluster

Adding NiFi to the Compute cluster

Add and configure the NiFi service to a Compute cluster to enable distributed dataflow processing managed by NiFi Registry on the Base cluster.

Before you begin

- You have created a Shared Data Context and a Compute cluster.
- You have added the NiFi and NiFi Registry groups to Ranger in the Base cluster.
- You have created a Compute cluster with a Cloudera Flow Management parcel installed.

Procedure

1. After your Compute cluster is created, the Add Cluster - Configuration wizard displays.
2. From the Select Services step, select Custom Services. Select NiFi and click Continue.
3. From the Assign Roles step, select the hosts onto which you want to install your new NiFi roles.

   ZooKeeper is a required dependency of NiFi. Select the hosts onto which you want to install ZooKeeper. Click Continue.
4. From the Review Changes step, review changes to your configuration. Provide a value for your Initial Admin Identity. You may choose to further customize your NiFi configurations here.

   Note:

   You must add any group name or identity set by these parameters to Ranger, in order for your installation install to succeed.

   - Initial Admin Identity (nifi.initial.admin.identity)
   - NiFi proxy group (nifi.proxy.group)
   - Initial Admin Groups (nifi.initial.admin.groups)

   Click Continue.
5. From the Configure Kerberos step, install Kerberos client libraries on all Compute cluster hosts as needed.

   Click Continue to initiate the Kerberos enablement.
6. When you have completed these steps, click Continue. This starts the NiFi service installation.
7. Click Continue and Finish to complete the installation.
8. Open a browser and enter the URL to the NiFi UI.

   The URL format for the NiFi UI is based on whether or not you selected Knox as a dependency during the installation:

   - If you did not select Knox, the URL format is:

     ```
     https://[***HOSTNAME***]:8443/nifi
     ```
   - If you selected Knox, use the Knox URL as a single entry point to securely access all NiFi nodes and switch nodes if one fails. The format is:

     ```
     https://[***KNOX-GATEWAY-HOSTNAME***]:[***KNOX-GATEWAY-PORT***]/gateway/
     cdp-proxy/nifi-app/nifi/
     ```

Results

Verify the new services are added properly by checking the health status for the new services. If the Health Status is Good, then the services added properly.

What to do next

When you have finished adding the NiFi service, proceed by creating NiFi node users for NiFi Registry and Ranger.

Related Information

Creating Compute cluster
Setting up NiFi node users in NiFi Registry

Setting up NiFi node users in NiFi Registry

Create NiFi node users in NiFi Registry and configure corresponding Ranger permissions. This setup allows NiFi to save and retrieve versioned dataflows from the NiFi Registry.

About this task

You must perform this task to be able to save versioned NiFi dataflows to NiFi Registry.

Before you begin

- You have installed NiFi Registry on your base cluster.
- You have created a compute cluster and added the NiFi service.

Procedure

1. Perform this step if you want to set up NiFi node users through group identity.

   Important: This step requires that you configure NiFi Registry to include the "file-user-group-provider" in the authorizers.xml first.

   a) Add a new user for each NiFi node (node user is derived from the NiFi nodes certificate DNs) in your compute cluster on the NiFi Registry UI.
   b) Add "nifiregistry" group and then add the node users you have created in the previous step to this group on the NiFi Registry UI.
2. From Ranger, perform one of the following steps:
   - If you completed Step 1, verify that the "nifiregistry" group exists in Ranger. If it does not exist, add it.
   - If you did not perform Step 1, add a new user for each NiFi node (node user is derived from the NiFi nodes certificate DNs) in your compute cluster.
3. Based on the path followed in Step 2, add either the "nifiregistry" group or all NiFi node users to the following NiFi Registry policies in Ranger:
   - /buckets policy with Read permissions
   - /proxy policy with Read, Write, and Delete permissions

What to do next

Once you have created NiFi node users for NiFi Registry and Ranger, proceed by connecting NiFi and NiFi Registry and complete any additional optional tasks.

Related Information

Adding NiFi to the Compute cluster
Connecting NiFi to NiFi Registry

Connecting NiFi to NiFi Registry

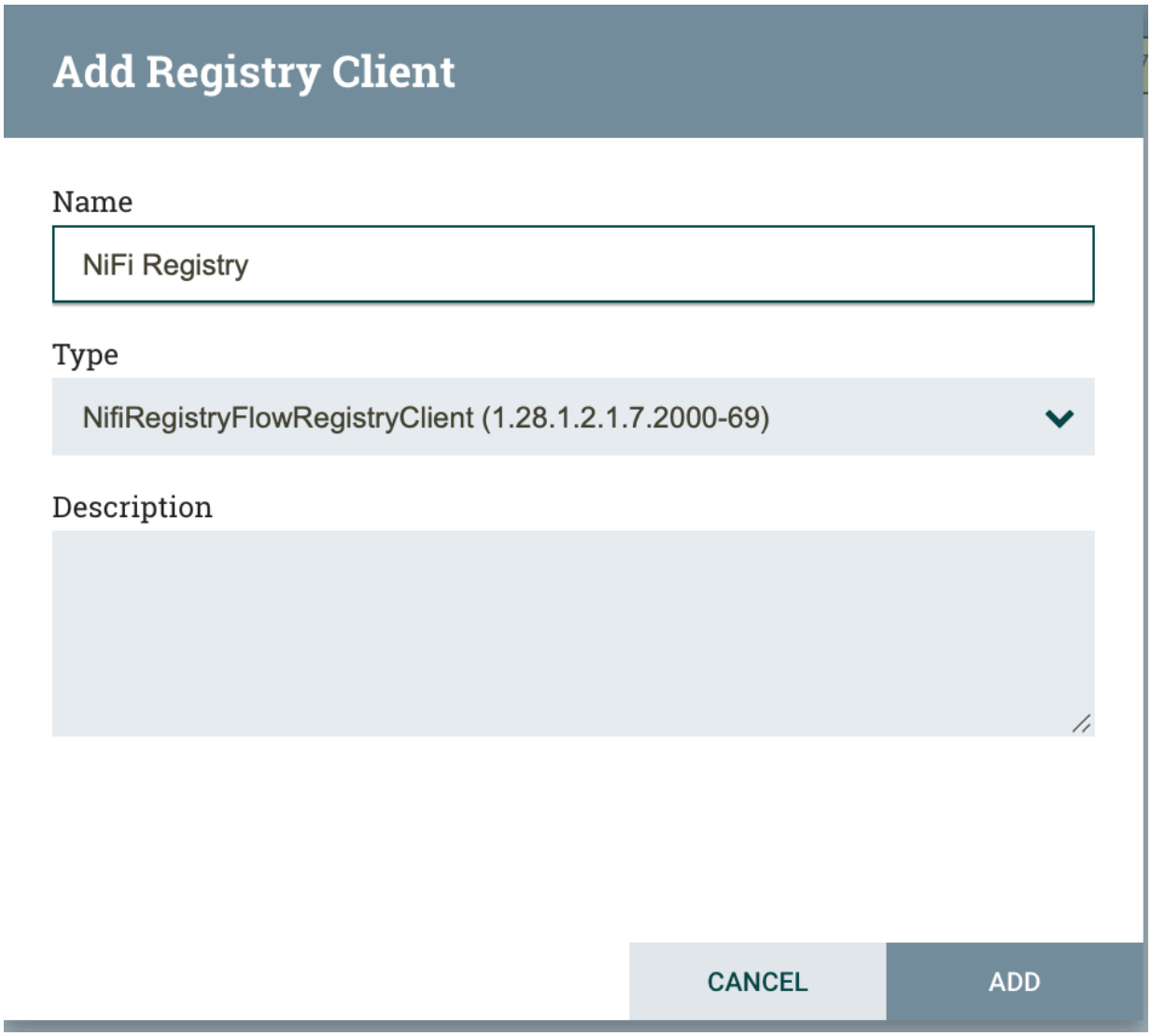
Configure NiFi to connect to the NiFi Registry. This enables versioned flow management and synchronization between the two services.

Before you begin

- You have added and configured NiFi and NiFi Registry.
- You have started both NiFi and NiFi Registry.

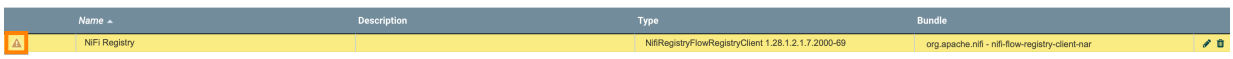
Procedure

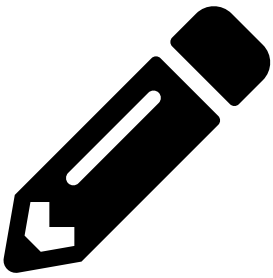
1. In the NiFi UI, open the Global Menu and select Controller Settings.
2. Navigate to the Registry Clients tab.
3. Click the Add icon (+) to launch the Add Registry Client dialog.
   The following modal window is displayed:



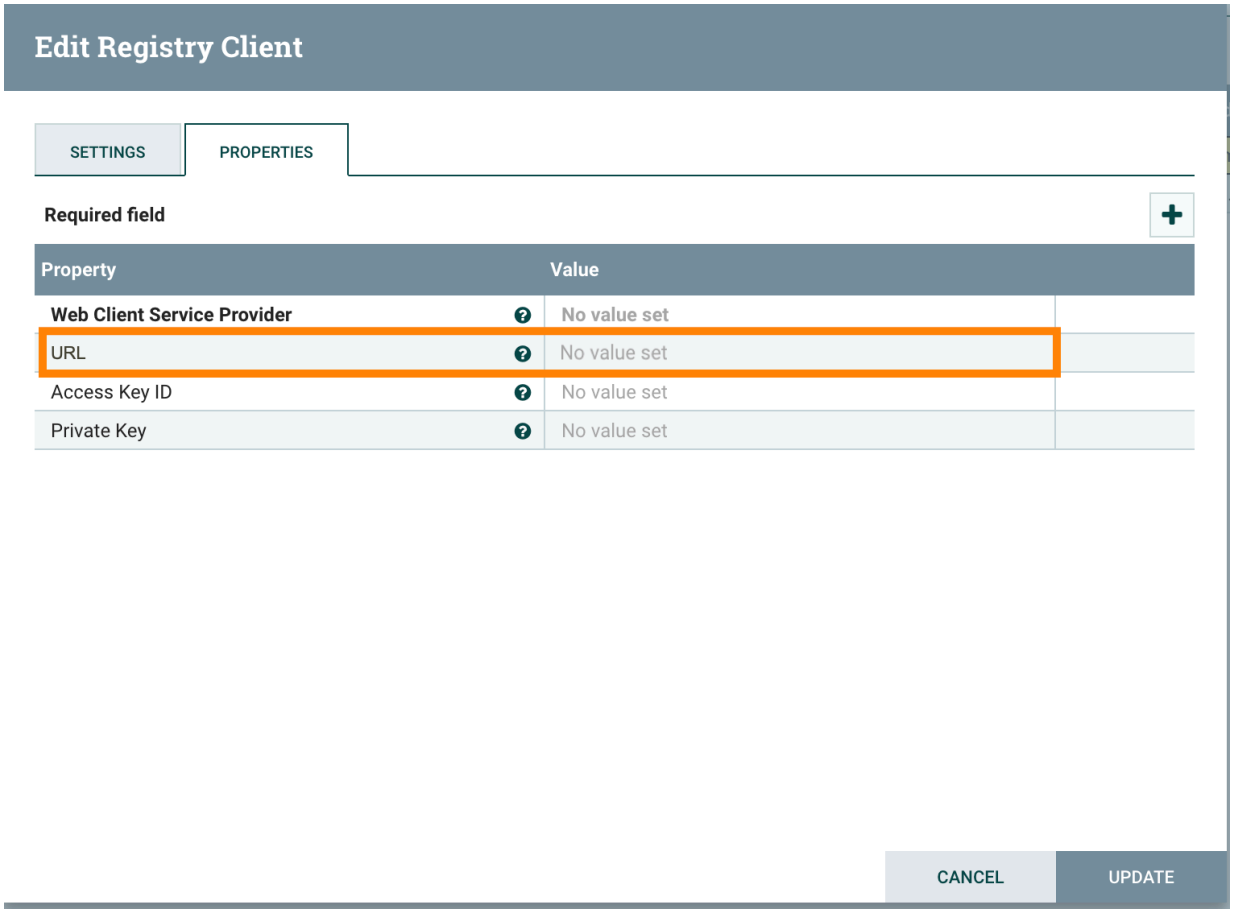
4. Enter NiFi Registry as the name of the service you just created.
5. Click ADD.

   The new entry appears marked with ⚠ indicating that the URL is missing. This is expected behavior.



6. To provide the Registry URL, click  on the right side of the Registry Client row and enter the URL of your NiFi Registry instance, including the port.

Note: The URL should be the server on which the NiFi registry was deployed with its port. For example: https://nifiregistry.server.com:18443).



7. Click UPDATE.

The warning ( ) disappears, confirming that the connection is established. You can close the configuration.

What to do next

Once you have connected NiFi and NiFi Registry, add users or groups to Ranger policies, and if needed, deselect unwanted NiFi Registry dependencies.

Adding users or groups to Ranger policies

Define access control for NiFi and NiFi Registry by adding users or user groups to Ranger policies.

About this task

Ranger polcieis determine what each user or group can modify, control, or observe in NiFi dataflows and in NiFi Registry resources. Each predefined Ranger access policy grants specific privileges to NiFi or NiFi Registry components. Assign users and groups based on their operational responsibilities and the level of access they require.

For details on available policies, see:

- *Predefined Ranger access policies for Apache NiFi*
- *Predefined Ranger access policies for Apache NiFi Registry*

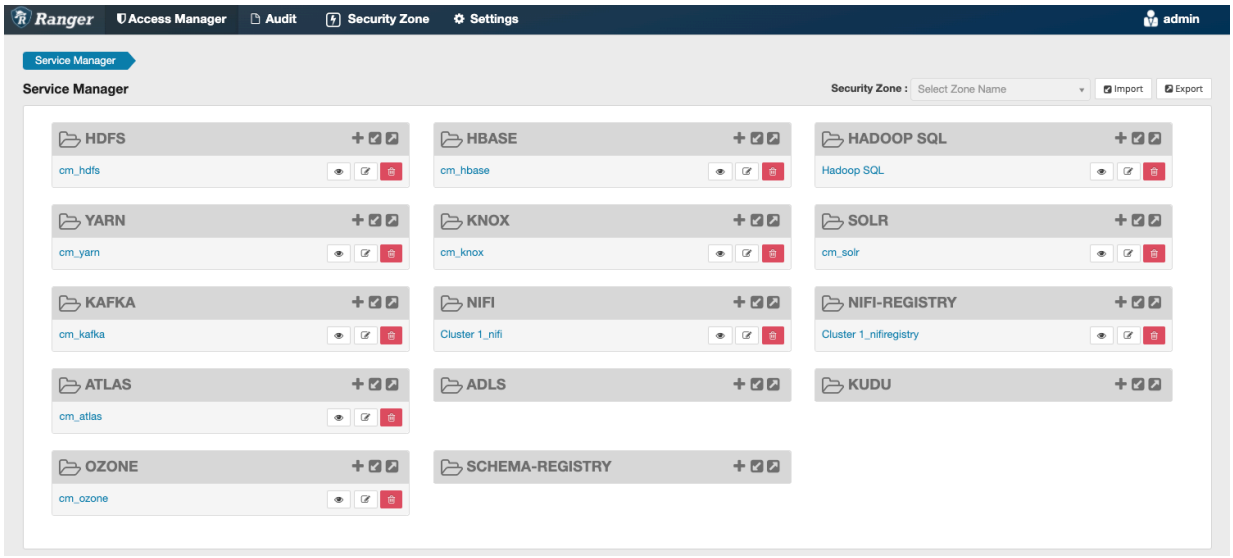
Before you begin

- Ensure that Ranger is installed on your Base Cloudera Base on premises cluster.
- rify that NiFi and NiFi Registry are installed and connected to Ranger.

Procedure

1. From the Base cluster, select Ranger from the list of services. Click Ranger Admin Web UI and log into Ranger.

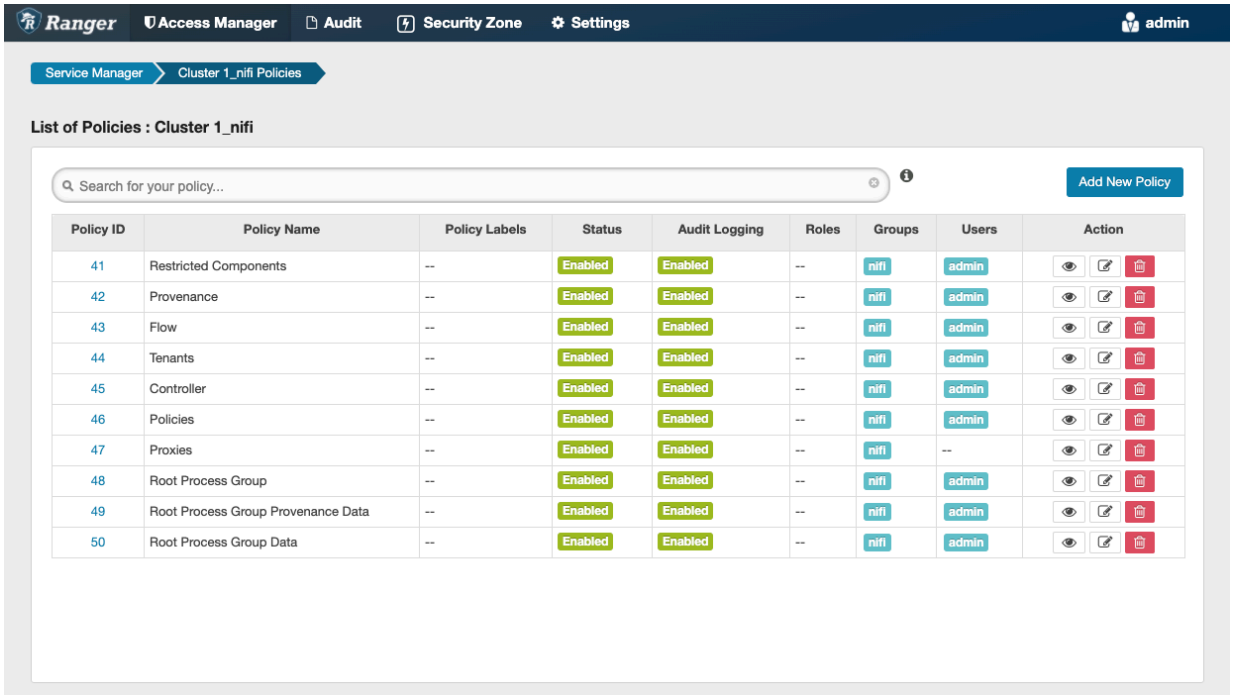
   The **Ranger Service Manager** page displays.



   Each cluster in the environment is listed under its respective service. For example, the NiFi clusters in the environment are listed under NiFi.

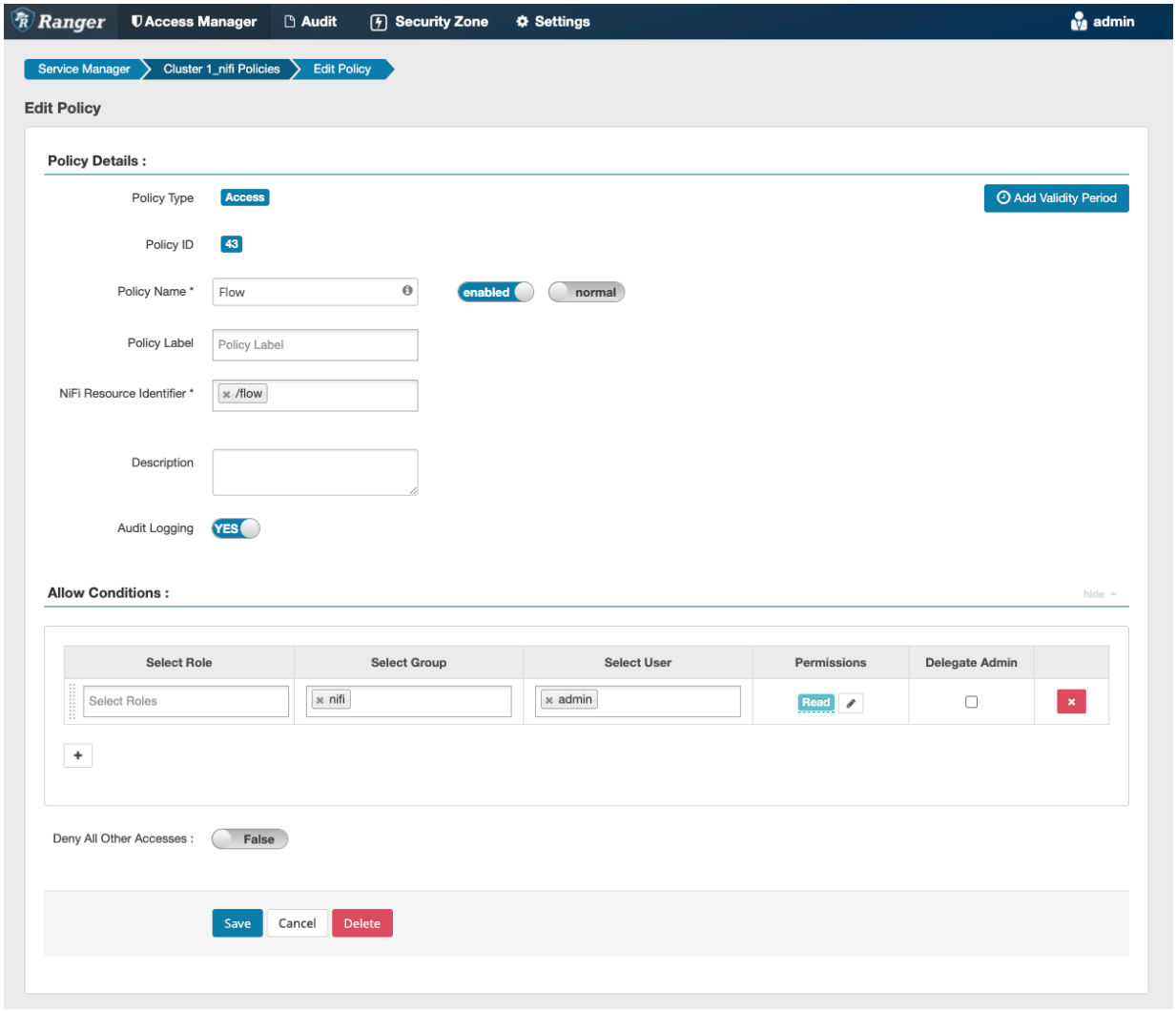
2. Select a cluster from either the NiFi or NiFi Registry section.

   The **List of Policies** page appears.



3. Click the ID for a policy.

   The **Edit Policy** page appears.



4. In the Allow Conditions section, add the user or the user group to the Select User field.
5. Click Save.

Results

The user now has the NiFi and NiFi Registry rights according to the policies you added the user or user group to. These rights are inherited down the hierarchy unless there is a more specific policy on a component.

What to do next

When you have completed the steps for adding users and groups to Ranger policies, review the steps to deselect unwanted NiFi Registry dependencies to determine whether it applies to your environment.

Deselecting unwanted NiFi Registry dependencies

Remove unnecessary dependencies that might have been been added to NiFi Registry during cluster installation to maintain a clean and optimized configuration.

About this task

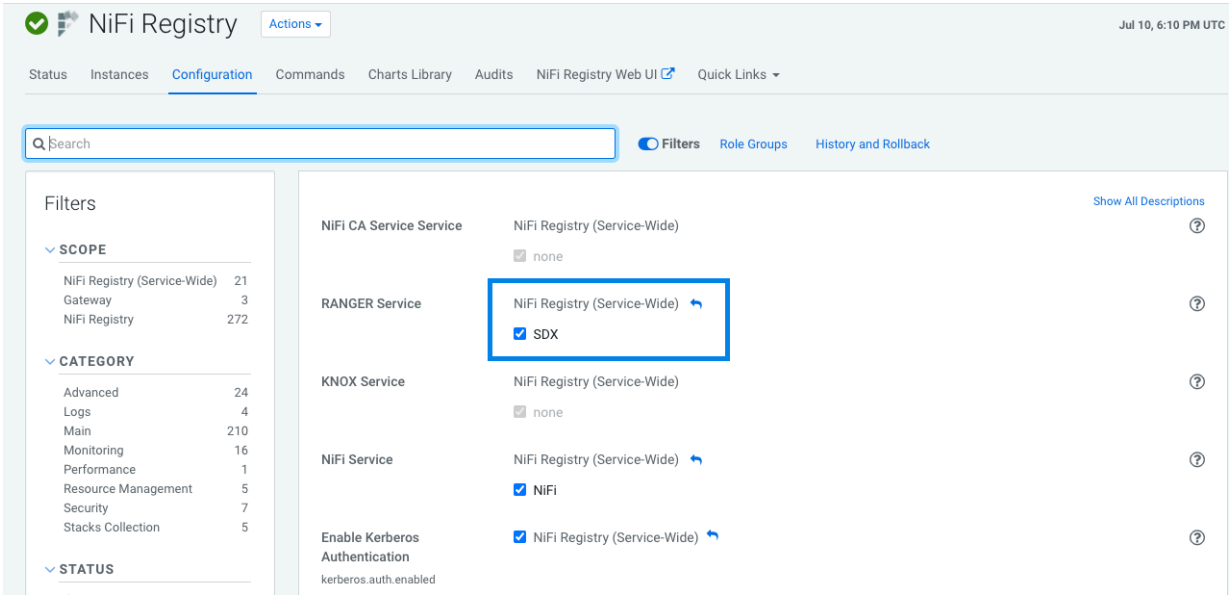
This is an optional task. During your cluster installation, some dependencies may have been added to NiFi Registry. If you do not want these dependencies, follow these steps to remove them.

Before you begin

- You have installed a Cloudera Base on premises cluster.
- You have added the NiFi Registry service.
- You have added users or user groups to Ranger policies.

Procedure

1. From Cloudera Manager, click the Clusters tab in the left-hand navigation.
2. Click NiFi Registry in the list of services to display the NiFi Registry service page.
3. Select the Configuration tab.
4. Deselect any unwanted dependencies.



5. Click Save Changes. Restart the NiFi Registry service.

Results

You have completed your cluster and Cloudera Flow Management installation.