Cloudera Runtime 7.1.5

Configuring Streams Replication Manager

Date published: 2019-09-13
Date modified: 2020-12-02

https://docs.cloudera.com/

Legal Notice

© Cloudera Inc. 2024. 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

Add Streams Replication Manager to an existing cluster..... 4

Configuring clusters and replications.....6

Configuring the driver role target clusters.....8

Configuring the service role target cluster..... 8

Configuring properties not exposed in Cloudera Manager.....9

New topic and consumer group discovery..... 10

Configuration examples..... 10

Bidirectional replication example of two active clusters.....11

Cross data center replication example of multiple clusters..... 13

Add Streams Replication Manager to an existing cluster

Streams Replication Manager can be installed on an existing cluster managed by Cloudera Manager. To do this, you need to add Streams Replication Manager to the cluster and configure a number of mandatory properties related to clusters, replications, and role targets.

About this task

Streams Replication Manager is comprised of two roles:

- Streams Replication Manager Driver role: This role is responsible for connecting to the specified clusters and performing replication between them. The driver can be installed on one or more hosts.
- Streams Replication Manager Service role: This role consist of a REST API and a Kafka Streams application to aggregate and expose cluster, topic and consumer group metrics. The service can be installed on one host only.

You can install Streams Replication Manager independent of the clusters that replication is happening between.

The following steps walk you through the process of adding Streams Replication Manager to your cluster. The configuration examples on this page are simple examples that are meant to demonstrate the type of information that you have to enter. For comprehensive configuration examples, Configuration examples in the *Related information* section below.

Note: Do not confuse Streams Replication Manager, which is a service managed by Cloudera Manager, with the Streams Replication Manager Service role, which is a role within Streams Replication Manager.

Before you begin

- If you are planning on replicating data to or from a Kafka service running in either a CDH 5.x or 6.x cluster and you are using Sentry for authorization, make sure that the streamsrepmgr user is added to the Kafka Super users property. You can find the Super users property by going to Kafka service Configuration . Do this on all CDH 5.x or 6.x clusters where data replication will happen.
- If you are planning on replicating data to or from a Kafka service running in Runtime 7.x and you are using Ranger for authorization, make sure that the streamsrepmgr user has all required permissions assigned to it in Ranger. Do this on all Runtime 7.x clusters where data replication will happen.

Procedure

1. From the Cloudera Manager Home page, select the drop-down to the right of your cluster, and select Add a Service.
2. Select Streams Replication Manager from the list of services and click Continue.
3. Assign role instances to hosts:

   Note: In certain cases role names on this page are incorrectly displayed and may become truncated. The Streams Replication Manager Driver role is the role displayed on the left, while the Streams Replication Manager Service role is the role displayed on the right.

   a) Click the field below Streams Replication Manager Driver to display a dialog box containing a list of hosts.
   b) Select 1 or more hosts that the Streams Replication Manager Driver should be assigned to and Click Ok.
   c) Click the field below Streams Replication Manager Service to display a dialog box containing a list of hosts.
   d) Select 1 host that the Streams Replication Manager Service should be assigned to and Click Ok.
4. Click Continue.

5. Specify cluster aliases:
   a) Find the Streams Replication Manager Cluster alias property.
   b) Add a comma delimited list of cluster aliases. For example:

   ```
   primary, secondary
   ```

   Cluster aliases are arbitrary names defined by the user. Aliases specified here are used in other configuration properties and with the srm-control tool to refer to the clusters added for replication.
6. Specify cluster connection information:
   a) Find the Streams Replication Manager's Replication Configs property.
   b) Click the add button and add new lines for each cluster alias you have specified in the Streams Replication Manager Cluster alias property
   c) Add connection information for your clusters. For example:

   ```
   primary.bootstrap.servers=primary_host1:9092,primary_host2:9092,primary_
   host3:9092
   secondary.bootstrap.servers=secondary_host1:9092,secondary_host2:9092
   ,secondary_host3:9092
   ```

   Each cluster has to be added to a new line. If a cluster has multiple hosts, add them to the same line but delimit them with commas.
7. Add and enable replications:
   a) Find the Streams Replication Manager's Replication Configs property.
   b) Click the add button and add new lines for each unique replication you want to add and enable.
   c) Add and enable your replications. For example:

   ```
   primary->secondary.enabled=true
   secondary->primary.enabled=true
   ```

8. Specify the Streams Replication Manager Service role target cluster:
   a) Find the Streams Replication Manager Service Target Cluster property.
   b) Add the target cluster alias. For example:

   ```
   secondary
   ```

   The target cluster is where the service gathers replication information from. Cloudera recommends that you deploy the service on every cluster and configure each instance of the service to target the cluster that it is running on.
9. Optional: Specify the Streams Replication Manager Driver role target clusters:
   a) Find the Streams Replication Manager Driver Target Cluster property.
   b) Add the cluster aliases that you want the driver role to target. For example:

   ```
   primary, secondary
   ```

   You can use the Streams Replication Manager Driver Target Cluster property to specify a subset of clusters that the driver should target or in other words write data to. When this property is left empty (default) the driver will read from and write to all clusters added to SRMs configuration. When this property is set, the driver will collect data from all clusters, but will only write to the clusters specified in this property. However, in order for monitoring to function correctly, this property has to contain the target as well as source clusters. As a result, custom configuration of this property is considered an advanced configuration practice, which is only viable in complex replication scenarios. Cloudera recommends that you either leave this property empty or add all clusters taking part in the replication.

10. Configure properties not exposed in Cloudera Manager:

    SRM accepts a number of additional configuration properties that are not available in Cloudera Manager. Depending on your requirements you may need to configure these properties as well. You can find a comprehensive list of these properties in Configuration Properties Reference for Properties not Available in Cloudera Manager.

    a) Find the Streams Replication Manager's Replication Configs property.
    b) Click the add button and add new lines for each additional property you want to configure.
    c) Add configuration properties. For example:

    ```
    replication.factor=3
    ```

11. Depending on your requirement, review and configure other properties available on this page.
12. Click Continue and wait until Streams Replication Manager is started.
13. Click Continue then click Finish.

Results

- Replicating data to or from the specified clusters is now possible.
- The SRM service REST API Swagger UI is available at one of the following addresses:
  - ```
    http://<srm-service-host>:<srm-service-port/swagger
    ```
  - ```
    https://<srm-service-host>:<srm-service-port/swagger
    ```

What to do next

- Enable Kerberos and TLS/SSL for SRM.
- Use the srm-control tool to kick off replication by adding topics or groups to the allowlist.

If you plan to use Streams Messaging Manager (SMM) to monitor Kafka cluster replications, configure SMM to communicate with Streams Replication Manager (SRM). For information, see *Configuring SMM for Monitoring SRM Replications*.

Related Information

Configuration examples

srm-control

Configuration Properties Reference for Properties not Available in Cloudera Manager

Configuring SMM for Monitoring SRM Replications

Configuring clusters and replications

You can expand an existing deployment of Streams Replication Manager by adding new clusters and replications to the configuration. To do this, you need to specify cluster aliases and cluster connection information, as well as add and enable replications.

About this task

Specifying your clusters and enabling replications does not start replication of data itself. When clusters and replications are added with the following method to the configuration, SRM will connect and set up communication with them, but will not automatically replicate any data. To start replicating data you need to specify which topics to replicate with the srm-control command line tool.

Use the following steps as reference when you want to add new clusters or replications to your deployment.

Before you begin

- If you are planning on replicating data to or from a Kafka service running in either a CDH 5.x or 6.x cluster and you are using Sentry for authorization, make sure that the streamsrepmgr user is added to the Kafka Super users property. You can find the Super users property by going to Kafka service Configuration . Do this on all CDH 5.x or 6.x clusters where data replication will happen.
- If you are planning on replicating data to or from a Kafka service running in Runtime 7.x and you are using Ranger for authorization, make sure that the streamsrepmgr user has all required permissions assigned to it in Ranger. Do this on all Runtime 7.x clusters where data replication will happen.

Procedure

1. In Cloudera Manager, select Streams Replication Manager.
2. Go to Configuration.
3. Specify cluster aliases:
   a) Find the Streams Replication Manager Cluster alias property.
   b) Add a comma delimited list of cluster aliases. For example:

   ```
   primary, secondary
   ```

   Cluster aliases are arbitrary names defined by the user. Aliases specified here are used in other configuration properties and with the srm-control tool to refer to the clusters added for replication.
4. Specify cluster connection information:
   a) Find the Streams Replication Manager's Replication Configs property.
   b) Click the add button and add new lines for each cluster alias you have specified in the Streams Replication Manager Cluster alias property
   c) Add connection information for your clusters. For example:

   ```
   primary.bootstrap.servers=primary_host1:9092,primary_host2:9092,primary_
   host3:9092
   secondary.bootstrap.servers=secondary_host1:9092,secondary_host2:9092
   ,secondary_host3:9092
   ```

   Each cluster has to be added to a new line. If a cluster has multiple hosts, add them to the same line but delimit them with commas.
5. Add and enable replications:
   a) Find the Streams Replication Manager's Replication Configs property.
   b) Click the add button and add new lines for each unique replication you want to add and enable.
   c) Add and enable your replications. For example:

   ```
   primary->secondary.enabled=true
   secondary->primary.enabled=true
   ```
6. Enter a Reason for change, and then click Save Changes to commit the changes.
7. Restart Streams Replication Manager.

Results

Replicating data to or from the specified clusters is now possible.

What to do next

Use the srm-control tool to kick off replication by adding topics or groups to the allowlist.

Related Information

srm-control

Configuring the driver role target clusters

The Streams Replication Manager Driver role's target clusters are the clusters that the driver is writing data to. You can configure these target clusters for each instance of the driver with the Streams Replication Manager Driver Target Cluster property. Custom configuration of these targets is only recommended in advanced deployments.

About this task

The Streams Replication Manager Driver role is responsible for connecting to the specified clusters and performing replication between them. The driver can be installed on one or more hosts within a cluster.

The clusters the driver connects to are the clusters that you specify with the Streams Replication Manager Cluster alias and Streams Replication Manager's Replication Configs properties.

Target clusters of the driver are clusters that the driver writes data to. By default when the driver is started it will connect to all clusters, gather data from them, and write to all of them. In other words, by default a driver targets all clusters in your configuration. You can limit the number of clusters that each driver targets. This can be done with the Streams Replication Manager Driver Target Cluster property, which allows you to specify which cluster or clusters the driver targets.

When you specify a driver target, the driver still connects to all clusters and gathers data from them, but will only write to the clusters specified.

However, in order for monitoring to function correctly, the driver has to target all clusters taking part in the replication. That is, it has to contain the actual target, the cluster you want to write data to, as well as the source clusters for that target, where data is being pulled from. If the source clusters are not specified, you will not be able to monitor your replications. As a result of this, configuring driver targets and limiting the number of clusters each instance of the driver writes to is considered an advanced configuration practice. This practice is only viable in complex replication scenarios that involve a high number clusters and replications. Therefore, Cloudera recommends that you either leave this property empty or add all clusters taking part in the replication.

By default the Streams Replication Manager Driver Target Cluster property is left empty, meaning that all clusters are targeted. The property accepts any cluster alias that is specified in Streams Replication Manager Cluster alias. When adding multiple cluster aliases, delimit them with a comma.

Procedure

1. In Cloudera Manager, select Streams Replication Manager.
2. Go to Configuration.
3. Find the Streams Replication Manager Driver Target Cluster property.
4. Add the cluster aliases that you want the driver role to target. For example:

   ```
   primary, secondary
   ```

5. Enter a Reason for change, and then click Save Changes to commit the changes.
6. Restart Streams Replication Manager.

Results

Driver targets are configured. Drivers only write data to the targeted clusters.

Configuring the service role target cluster

The Streams Replication Manager Service role's target cluster is the cluster from which metrics are gathered and exposed. A single target can be configured for each instance of the service with the Streams Replication Manager Service Target Cluster property. Configuration is mandatory.

About this task

The Streams Replication Manager Service role consists of a REST API and a Kafka Streams application that aggregates and exposes cluster, topic, and consumer group metrics. With the help of these metrics, users can monitor replications. The service can only be installed on one host per cluster.

Each instance of the service is associated with a single target cluster. The target is the cluster that the service gathers and exposes metrics from. Because each instance of the service can only target and expose metrics from a single cluster, monitoring multiple clusters requires the deployment of multiple instances of the service.

The target cluster of the service is configured with the Streams Replication Manager Service Target Cluster property. The property accepts any cluster alias that is specified in Streams Replication Manager Cluster alias as long as data is being replicated to that cluster. Configuring a service target is mandatory.

Procedure

1. In Cloudera Manager, select Streams Replication Manager.
2. Go to Configuration.
3. Find the Streams Replication Manager Service Target Cluster property.
4. Add the target cluster alias. For example:

   ```
   secondary
   ```

5. Enter a Reason for change, and then click Save Changes to commit the changes.
6. Restart Streams Replication Manager.

Results

The service target is set. The service gathers and exposes metrics from the specified cluster.

Configuring properties not exposed in Cloudera Manager

There are number of configuration properties that Streams Replication Manager accepts, but are not exposed directly in Cloudera Manager. You can configure these properties with the Streams Replication Manager's Replication Configs property. Additionally these properties can be configured on a top, cluster, or replication level.

About this task

In addition to the configuration properties exposed directly for configuration through Cloudera Manager, Streams Replications Manager accepts a number of additional Streams Replication Manager specific properties as well as Kafka client properties available in the version of Kafka that you are using. Properties not exposed directly in Cloudera Manager can be set through the Streams Replication Manager's Replication Configs property. For a comprehensive list of SRM properties not available in Cloudera Manager, see Configuration Properties Reference for Properties not Available in Cloudera Manager. For a comprehensive list of Kafka client properties, see the upstream Apache Kafka documentation.

Configuration properties for SRM can be set on three different levels, which are the following:

- Top level: Top level or global configuration is achieved by adding the property on its own. For example:

  ```
  replication.factor=3
  ```

- Cluster level: Cluster level configuration can be achieved by prepending the configuration property with a cluster alias specified in Streams Replication Manager Cluster alias. For example:

  ```
  primary.replication.factor=3
  ```

- Replication level:Replication level configuration can be achieved by prepending the configuration property with the name of the replication. For example:

```
primary->secondary.replication.factor=3
```

Before you begin

Make sure that cluster aliases and replications are configured. Otherwise cluster or replication level configuration is not possible.

Procedure

1. In Cloudera Manager, select Streams Replication Manager.
2. Go to Configuration.
3. Configure properties not exposed in Cloudera Manager:
   a) Find the Streams Replication Manager's Replication Configs property.
   b) Click the add button and add new lines for each additional property you want to configure.
   c) Add configuration properties. For example:

   ```
   replication.factor=3
   ```

4. Enter a Reason for change, and then click Save Changes to commit the changes.
5. Restart Streams Replication Manager.

Results

Configuration properties not directly exposed in Cloudera Manager are configured.

Related Information

Configuration Properties Reference for Properties not Available in Cloudera Manager

Configuration Properties Reference

New topic and consumer group discovery

Kafka topics or consumer groups may not get replicated instantly when they are added to white and blacklists. This is due to the default behaviour of how topics and consumer groups are discovered by Streams Replication Manager.

The discovery and replication of newly created topics or consumer groups is not instantaneous. Streams Replication Manager checks source clusters for new topics and consumer groups periodically, as controlled by the Refresh Topics Interval Seconds and Refresh Groups Interval Seconds properties. By default both properties are set to 10 minutes. As a result, the discovery and replication of new topics or groups can take up to 10 minutes.

Cloudera does not recommend using a refresh interval lower than the default value for production environments as it can lead to severe performance degradation.

Related Information

srm-control Topics and Groups Subcommand

Configuration examples

These configuration examples give step-by-step instructions on how you can set up and configure typical deployments of Streams Replication Manager. Reviewing these examples can help you gain a better understanding of how your specific setup can be configured.

Bidirectional replication example of two active clusters

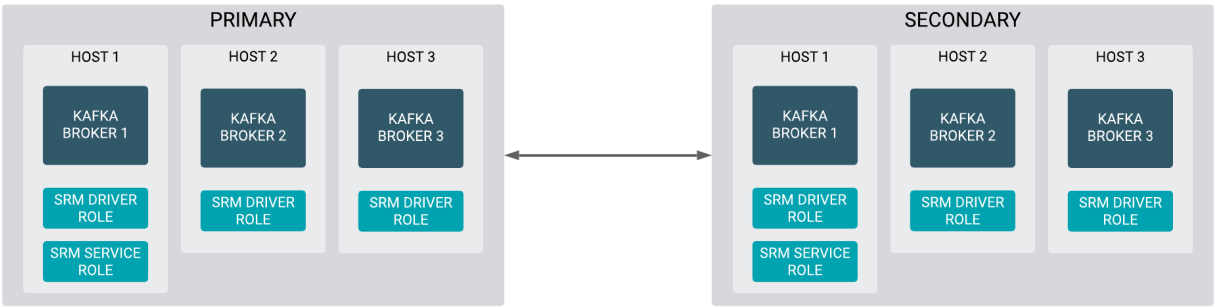
Review the bidirectional replication example to learn how you can configure and start replication with Streams Replication Manager in a deployment with two active clusters configured with bidirectional replication.

About this task

In a typical scenario, you may have two active Kafka clusters within the same region but in separate availability zones. With bidirectional replication, clients can connect to either cluster in case one is temporarily unavailable.

This example demonstrates the steps required to configure the deployment shown below. Additionally, it also provides example commands to start replication between clusters.

Figure 1: Bidirectional Replication of Active Clusters



The steps shown here have to be carried out on all clusters in a given deployment. Configuration properties presented in Steps 3-5 are configured identically on all clusters. The configuration property presented in Step 7 will differ for each cluster.

Note: The following list of steps assume that the Streams Replication Manager Service role is running on 1 host on each cluster and is targeting the cluster it is running on.

Procedure

1. In Cloudera Manager, select Streams Replication Manager.
2. Go to Configuration.
3. Specify cluster aliases:
   a) Find the Streams Replication Manager Cluster alias property.
   b) Add a comma delimited list of cluster aliases. For example:

   ```
   primary, secondary
   ```

   Cluster aliases are arbitrary names defined by the user. Aliases specified here are used in other configuration properties and with the srm-control tool to refer to the clusters added for replication.

4. Specify cluster connection information:
   a) Find the Streams Replication Manager's Replication Configs property.
   b) Click the add button and add new lines for each cluster alias you have specified in the Streams Replication Manager Cluster alias property
   c) Add connection information for your clusters. For example:

```
primary.bootstrap.servers=primary_host1:9092,primary_host2:9092,primary_
host3:9092
secondary.bootstrap.servers=secondary_host1:9092,secondary_host2:9092
,secondary_host3:9092
```

   Each cluster has to be added to a new line. If a cluster has multiple hosts, add them to the same line but delimit them with commas.
5. Add and enable replications:
   a) Find the Streams Replication Manager's Replication Configs property.
   b) Click the add button and add new lines for each unique replication you want to add and enable.
   c) Add and enable your replications. For example:

```
primary->secondary.enabled=true
secondary->primary.enabled=true
```

6. Enter a Reason for change, and then click Save Changes to commit the changes.
7. Add Streams Replication Manager Driver role instances to all Kafka broker hosts:
   a) Go to Instances.
   b) Click Add Role Instances.
   c) Click Select Hosts.
   d) Select all Kafka broker hosts and click Ok.
   e) Click Continue.
   f) Find the Streams Replication Manager Driver Target Cluster property.
   g) Add the cluster aliases that you want the driver role to target. For example:
      - On the primary cluster:

```
primary
```

      - On the secondary cluster:

```
secondary
```

   The Streams Replication Manager Driver Target Cluster property allows you to specify which clusters the driver should write to. In this example, the drivers read data from all clusters, but only write to the cluster they are running on. This allows you to distribute replication workloads.
   h) Click Continue.
8. Restart Streams Replication Manager.
9. Replicate data between clusters with the following commands:

```
srm-control topics --source primary --target secondary --add ".*"
```

```
srm-control topics --source secondary --target primary --add ".*"
```

Cross data center replication example of multiple clusters

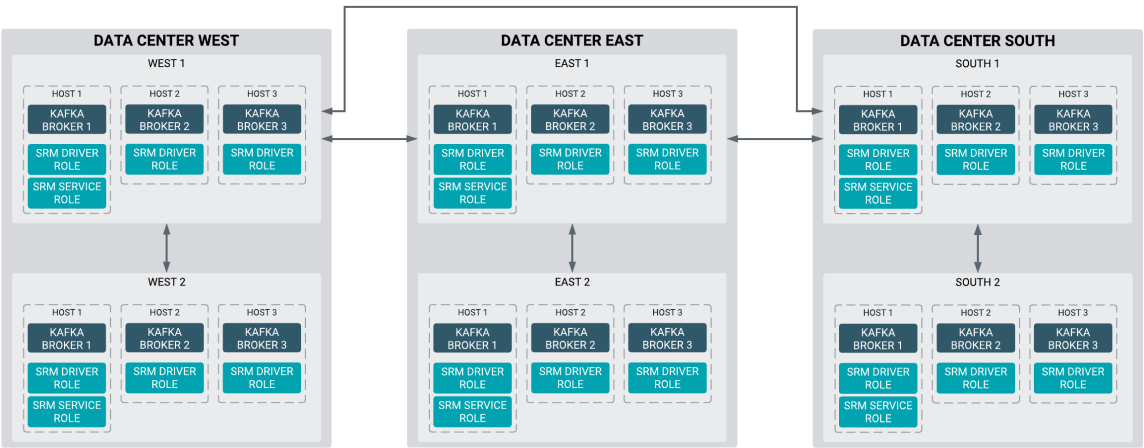
Review the cross data center replication example to understand how you can configure and start replication with Streams Replication Manager in a deployment with three data centers that each have two Kafka clusters.

About this task

In more advanced deployments, you may have multiple Kafka clusters in each of several data centers. To prevent creating a fully-connected mesh of all Kafka clusters, Cloudera recommends leveraging a single Kafka cluster in each data center for cross data center replication.

This example demonstrates the steps required to configure the deployment shown below. Additionally, it also provides example commands to start bidirectional replication of all topics within each data center and an example on how to replicate a single topic across all data centers.

Figure 2: Cross Data Center Replication of Multiple Clusters



The steps shown here have to be carried out on all clusters in a given deployment. Configuration properties presented in Steps 3-5 are configured identically on all clusters. The configuration property presented in Step 7 will differ for each cluster.

Note: The following list of steps assume that the Streams Replication Manager Service role is running on 1 host on each cluster and is targeting the cluster it is running on.

Procedure

1. In Cloudera Manager, select Streams Replication Manager.
2. Go to Configuration.
3. Specify cluster aliases:
   a) Find the Streams Replication Manager Cluster alias property.
   b) Add a comma delimited list of cluster aliases. For example:

```
west1, west2, east1, east2, south1, south2
```

   Cluster aliases are arbitrary names defined by the user. Aliases specified here are used in other configuration properties and with the srm-control tool to refer to the clusters added for replication.

4. Specify cluster connection information:
   a) Find the Streams Replication Manager's Replication Configs property.
   b) Click the add button and add new lines for each cluster alias you have specified in the Streams Replication Manager Cluster alias property
   c) Add connection information for your clusters. For example:

```
west1.bootstrap.servers=west1_host1:9092,west1_host2:9092,west1_host3:90
92
west2.bootstrap.servers=west2_host1:9092,west2_host2:9092,west2_host3
:9092

east1.boostrap.servers=east1_host1:9092,east1_host2:9092,east1_host3:
9092
east2.boostrap.servers=east2_host1:9092,east2_host2:9092,east2_host3:90
92

south1.boostrap.servers=south1_host1:9092,south1_host2:9092,south1_host3
:9092
south2.boostrap.servers=south2_host1:9092,south2_host2:9092,south2_hos
t3:9092
```

   Each cluster has to be added to a new line. If a cluster has multiple hosts, add them to the same line but delimit them with commas.

5. Add and enable replications:
   a) Find the Streams Replication Manager's Replication Configs property.
   b) Click the add button and add new lines for each unique replication you want to add and enable.
   c) Add and enable your replications. For example:

   Enable cross data center replication by adding the following replications:

```
west1->east1.enabled=true
west1->south1.enabled=true
east1->west1.enabled=true
east1->south1.enabled=true
south1->west1.enabled=true
south1->east1.enabled=true
```

   Enable bidirectional replication within each data center by adding the following replications:

```
west1->west2.enabled=true
west2->west1.enabled=true
east1->east2.enabled=true
east2->east1.enabled=true
south1->south2.enabled=true
south2->south1.enabled=true
```

6. Enter a Reason for change, and then click Save Changes to commit the changes.

7. Add Streams Replication Manager Driver role instances to all Kafka broker hosts:
   a) Go to Instances.
   b) Click Add Role Instances.
   c) Click Select Hosts.
   d) Select all Kafka broker hosts and click Ok.
   e) Click Continue.
   f) Find the Streams Replication Manager Driver Target Cluster property.
   g) Add the cluster aliases that you want the driver role to target. For example:
      - In the west data center:

        ```
        west1, west2
        ```

      - In the east data center:

        ```
        east1, east2
        ```

      - In the south data center:

        ```
        south1, south2
        ```

      The Streams Replication Manager Driver Target Cluster property allows you to specify which clusters the driver should write to. In this example, the drivers read data from all clusters, but only write to the cluster they are running on. This allows you to distribute replication workloads.
   h) Click Continue.
8. Restart Streams Replication Manager.
9. Replicate topics between hosts within each data center:

```
srm-control topics --source west1 --target west2 --add ".*"
```

```
srm-control topics --source west2 --target west1 --add ".*"
```

```
srm-control topics --source east1 --target east2 --add ".*"
```

```
srm-control topics --source east2 --target east1 --add ".*"
```

```
srm-control topics --source south1 --target south2 --add ".*"
```

```
srm-control topics --source south2 --target south1 --add ".*"
```

10. Replicate topic1 across all data centers:

```
srm-control topics --source west1 --target east1 --add topic1,west2.topic1
```

```
srm-control topics --source west1 --target south1 --add topic1,west2.top
ic1
```

```
srm-control topics --source east1 --target west1 --add topic1,east2.topic1
```

```
srm-control topics --source east1 --target south1 --add topic1,east2.top
ic1
```

```
srm-control topics --source south1 --target west1 --add topic1,south2.to
pic1
```

```
srm-control topics --source south1 --target east1 --add topic1,south2.to
pic1
```