

Using MiNiFi as a Log Collector Pod in Kubernetes

Date published: 2020-10-14

Date modified: 2024-07-30



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

Using MiNiFi as a log collector pod in Kubernetes.....	4
---	----------

Using MiNiFi as a log collector pod in Kubernetes

Learn how to use MiNiFi as a log collector pod in Kubernetes.

If you have a Kubernetes deployment, which contains some pods, you can see the logs from these pods in a centralized location by using MiNiFi. To do so, you need to set up a log collector pod (in a daemon set) which runs MiNiFi. MiNiFi collects the logs from the other pods, and pushes those logs to the central location you want (for example, Kafka). After the logs are in the central location, they can be searched, archived and so on.

To set up a log collector pod in Kubernetes, you at least need the following:

- A KubernetesControllerService controller service

You can configure which pods to collect logs from by setting the Namespace Filter, Pod Name Filter, and Container Name Filter attributes on the KubernetesControllerService. If none of these are set, the default is to collect logs from all pods in the default namespace.

- A TailFile processor with the following properties set:
 - The Attribute Provider Service property set to the name of the KubernetesControllerService
 - The tail-mode property set to Multiple file
 - The File to Tail property set to `.*\log`
 - The tail-base-directory property set to

```
/var/log/pods/${namespace}_${pod}_${uid}/${container}
```

- Some other processor which uploads the log lines output by the TailFile processor somewhere (for example, PublishKafka)

You can find a sample config.yml file, which contains all these settings, at https://github.com/apache/nifi-minifi-cpp/blob/main/examples/kubernetes_tailfile_config.yml.

The output of the TailFile processor contains single stream flow files, each containing one line of text, from all the pods. On each flow file, the following attributes are set:

- `kubernetes.namespace`
The namespace of the pod.
- `kubernetes.pod`
The name of the pod.
- `kubernetes.uid`
The unique ID of the pod.
- `kubernetes.container`
The name of the container inside the pod.
- `absolute.path`

The location of the log file on the node; usually something like:

```
/var/log/pods/default_mypod_dd5befc8-5573-40c3-a136-8daf6eb77b01/mycontainer/0.log
```

You can further use the following processors to modify the output of the TailFile processor:

- The RouteOnAttribute processor to separate the flow files by any of the attributes above.
- The DefragmentText processor to merge multi-line log messages into a single flow file.
- The MergeContent processor to batch multiple log lines into a single flow file.
- The UpdateAttribute processor to create further attributes based on the existing ones.

The log collector pod which runs MiNiFi needs permissions to list namespaces and pods, and MiNiFi needs to run as root so that it can read the log files from other pods. Some volume mounts need to be set up, as well. See <https://github.com/apache/nifi-minifi-cpp/tree/main/docker/test/integration/resources/kubernetes/pods-etc> for a working example of Kubernetes YAML files which ensure all of this.

**Note:**

- MiNiFi runs in the log-collector pod; the two hello-world pods are for testing only, and should not be included in your deployment.
- In the list of volume mounts, /var/log/pods is required; the other two are for testing only, and should not be included in your deployment.

As you probably want the log collector pod to run on all nodes in your cluster, Cloudera recommends to run it as a Daemon Set. For more information, see <https://kubernetes.io/docs/concepts/workloads/controllers/daemonset/>.

Different configurations can be applied in Kubernetes for different log collection use cases. For more information, see <https://github.com/apache/nifi-minifi-cpp/tree/main/examples/kubernetes>.

For more information about collecting and processing data at the edge, check out the video on the Cloudera Edge Management YouTube playlist: