

## Hadoop Authentication

Date published: 2020-02-28

Date modified: 2020-12-15

The Cloudera logo is displayed in a bold, orange, sans-serif font. The word "CLOUDERA" is written in all caps, with a stylized 'E' that has three horizontal bars.

# 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

## **Hadoop Authentication with Kerberos for Cloudera Data Science**

### **Workbench.....4**

UI Behavior for Non-Kerberized Clusters.....4

Limitations..... 5

### **Configure FreeIPA..... 5**

# Hadoop Authentication with Kerberos for Cloudera Data Science Workbench

Cloudera Data Science Workbench users can authenticate themselves using Kerberos against the cluster KDC defined in the host's `/etc/krb5.conf` file.

Cloudera Data Science Workbench does not assume that your Kerberos principal is always the same as your login information. Therefore, you will need to make sure Cloudera Data Science Workbench knows your Kerberos identity when you sign in.

To authenticate against your cluster's Kerberos KDC, go to the top-right dropdown menu, click Account settings Hadoop Authentication, and enter your Kerberos principal. To authenticate, either enter your password or click Upload Keytab to upload the keytab file directly to Cloudera Data Science Workbench. Once successfully authenticated, Cloudera Data Science Workbench uses your stored credentials to ensure that you are secure when running your workloads.

When you authenticate with Kerberos, Cloudera Data Science Workbench will store your keytab in an internal database. When you subsequently run an engine, the keytab is used by a Cloudera Data Science Workbench sidecar container to generate ticket-granting tickets for use by your code. Ticket-granting tickets allow you to access resources such as Spark, Hive, and Impala, on Kerberized CDH clusters.

While you can view your current ticket-granting ticket by typing `klist` in an engine terminal, there is no way for you or your code to view your keytab. This prevents malicious code and users from stealing your keytab.



## Important:

- (New in 1.6.1) CDSW 1.6.1 fixes an issue where setting `HADOOP_USER_NAME` to the CDSW username had certain unintended consequences. This fix now sets `HADOOP_USER_NAME` to the first part of the Kerberos principal in kerberized environments. In non-kerberized environments, it is still set to the CDSW username.
- If the `/etc/krb5.conf` file is not available on all Cloudera Data Science Workbench hosts, authentication will fail.
- If you do not see the Hadoop Authentication tab, make sure you are accessing your personal account's settings from the top right menu. If you have selected a team account, the tab will not be visible when accessing the Team Settings from the left sidebar.
- When you upload a Kerberos keytab to authenticate yourself to the CDH cluster, Cloudera Data Science Workbench might display a fleeting error message ('cancelled') in the bottom right corner of the screen, even if authentication was successful. This error message can be ignored.

## UI Behavior for Non-Kerberized Clusters

The contents of the Hadoop Authentication tab change depending on whether the cluster is kerberized.

For a secure cluster with Kerberos enabled, the Hadoop Authentication tab displays a Kerberos section with fields to enter your Kerberos principal and username. However, if Cloudera Data Science Workbench cannot detect a `krb5.conf` file on the host, it will assume the cluster is not kerberized, and the Hadoop Authentication tab will display Hadoop Username Override configuration instead.

For a non-kerberized cluster, by default, your Hadoop username will be set to your Cloudera Data Science Workbench username. To override this default and set an alternative `HADOOP_USER_NAME`, go to the Hadoop Username Override setting at Account settingsHadoop Authentication.

If the Hadoop Authentication tab is incorrectly displaying Kerberos configuration fields for a non-kerberized cluster, make sure the `krb5.conf` file is not present on the host running Cloudera Data Science Workbench. If you do find any instances of `krb5.conf` on the host, depending on your deployment, perform one of the following sets of actions:

- On CSD deployments, go to Cloudera Manager and stop the CDSW service. Remove the krb5.conf file(s) from the Cloudera Data Science Workbench gateway host, and then start the CDSW in Cloudera Manager.
- OR
- On RPM deployments, run `cdsw stop`, remove the krb5.conf file(s) from the Cloudera Data Science Workbench gateway host, and run `cdsw start`.

You should now see the expected Hadoop Username Override configuration field.

### Limitations

- Cloudera Data Science Workbench does not support the use of [Kerberos plugin modules](#) in krb5.conf.

## Limitations

Provides limitations for Cloudera Data Science Workbench support for Kerberos.

Cloudera Data Science Workbench does not support the use of [Kerberos plugin modules](#) in krb5.conf.

## Configure FreeIPA

In addition to MIT Kerberos and Active Directory, Cloudera Data Science Workbench also supports FreeIPA as an identity management system. However, this support comes with one major caveat: if your Kerberos configuration file (`/etc/krb5.conf`) contains references to any external files that reside on the host operating system, Kerberos authentication could fail. This is because those files will not automatically be mounted into the engines where Cloudera Data Science Workbench runs workloads. As a result, any utilities or plugins referenced in this manner will not work.

### About this task

To enable FreeIPA support you must perform the following steps.

### Procedure

1. Modify `krb5.conf` to remove references to external files

You do not need to edit the `krb5.conf` file on the host operating system. Instead, make a copy of the file, and make your changes there. Points to note:

#### **include and includedir directives**

While the `include` and `includedir` directives do typically reference external files, CDSW does account for those directives. Therefore, they are safe to use and no changes need to be made here.

#### **[plugins] directives**

The `[plugins]` will always refer to a shared library on the host, which will not be available inside engines. An example of this is:

```
[plugins]
localauth = {
module = sssd:/usr/lib64/sss/modules/sss_krb5_localauth_plugi
n.so
```

```
}
```

You must remove the entire [plugins] section from krb5.conf. It is not needed for the commands used by Cloudera Data Science Workbench.

### PKINIT

The **PKINIT** option can also point to external files which will not exist by default in CDSW engines. An example of such a configuration is:

```
[libdefaults]
    EXAMPLE.COM = {
        pkinit_anchors = FILE:/usr/local/example.com.crt
    }
```

If the realm that uses PKINIT is not one that CDSW users will need a keytab for, it can be removed from the krb5.conf file. Otherwise, users will need to create a keytab outside of CDSW and upload it to the Settings Hadoop Authentication page.

### default\_ccache\_name directive

A default\_ccache\_name using the Linux-specific KEYRING directive does not work with Cloudera Data Science Workbench. An example of this line is:

```
default_ccache_name = KEYRING:persistent:%
```

You must remove this line from the krb5.conf file; the default value will work properly inside CDSW engines.



**Note:** If you require other configurations of krb5.conf that have not been discussed here, the recommended alternative method is to manually upload a keytab on the User SettingsHadoop Authentication page in the Cloudera Data Science Workbench web UI.

2. Copy the contents of krb5.conf to the Site Administration panel
  - a. Log into Cloudera Data Science Workbench as a site administrator.
  - b. Click Admin Security.
  - c. Copy the contents of the modified krb5.conf from Step 1 to the Kerberos Configuration text box. Click Update.

The contents of this text box will now be used as the krb5.conf file in engines launched for user workloads.