
Enterprise Steam Installation and Setup

Release 0.9.1.2

H2O.ai

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Enterprise Steam is an “instant on” platform that streamlines the entire process of building and deploying applications. It is the industry’s first data science hub that lets data scientists and developers collaboratively build, deploy, and refine predictive applications across large scale datasets. Data scientists can publish Python and R code as REST APIs and easily integrate with production applications.

This document applies to Administrators and describes how to install and start Enterprise Steam in a Hadoop environment and make it accessible to a set of users. The process includes uploading an H2O driver and adding users through either the built-in SQLite database or through an LDAP config file.

Note: Before you begin using Enterprise Steam, be sure that your minimum version of H2O is 3.10.4.1. If necessary, follow the instructions on the [H2O Download page](#) for your platform to upgrade H2O. For current customers with enterprise support, earlier versions can be supported. Contact H2O.ai if you require support for an earlier version.

INSTALLING ENTERPRISE STEAM

Enterprise Steam is supported on Ubuntu and Red Hat Enterprise Linux. Be sure to follow the instructions for your platform:

- *Obtaining the License Key*
- *Ubuntu Installation*
- *RHEL Installation*

Notes:

- Admins should verify whether their Hadoop environment requires sudo. If it does, then users must have a root password/root access.
- This installation creates a SQLite database.

1.1 Obtaining the License Key

Contact [H2O Sales](#) to obtain a license key. The Enterprise Steam Admin should save this license file on his/her local machine. The Enterprise Steam Admin will be prompted to enter this license key the first time that Enterprise Steam is started. (See [Uploading a License File](#) section.)

1.2 Ubuntu Installation

This section describes how to install Enterprise Steam on Ubuntu.

1.2.1 Requirements for Enterprise Steam with Ubuntu

- Ubuntu 12.04 or greater
- Enterprise Steam .deb file. This is available on the [Steam download page](#).
- Chrome browser with an Internet connection. Note that Chrome is currently the only supported browser.
- H2O driver for your version of Hadoop. This is available from the [H2O Download page](#). Click the **Install on Hadoop** tab, and select the correct version for your environment.
- HAProxy 1.5 or greater. For Ubuntu, this is available from haproxy.debian.net.

1.2.2 Install HAProxy for Ubuntu

This section describes how to install HAProxy 1.5. You can skip this section if your environment already has HAProxy 1.5 or greater.

1. In your browser, go to <https://haproxy.debian.net>.
2. Select the system and version that you are running, then select an HAProxy version of 1.5-stable or greater.
3. Open a Terminal window and run the commands that are listed (using `sudo` if required). The example below shows the commands to use with Ubuntu version Trusty (14.04 LTS) and HAProxy version 1.7-stable.

Debian/Ubuntu HAProxy packages

The Debian HAProxy packaging team provides various versions of [HAProxy](#) packages for use on different Debian or Ubuntu systems. The following wizard helps you to find the package suitable for your system.

◀ I am running and I want to install HAProxy version .

Instructions for latest release

You need to enable a [dedicated PPA](#) with the following command:

```
# apt-get install software-properties-common
# add-apt-repository ppa:vbernat/haproxy-1.7
```

Then, use the following commands:

```
# apt-get update
# apt-get install haproxy
```

You will get the *latest* release of HAProxy 1.7.

1.2.3 Install Enterprise Steam on Ubuntu

1. On your local machine, download the Enterprise Steam .deb from the [Steam download page](#).
2. Review and accept the terms of the EULA.
3. Open a terminal window and ssh to your Hadoop edge node.

```
ssh <user>@<hadoop_edge_node>
```

4. Copy the Enterprise Steam .deb file to your edge node.


```
scp <user>@<hadoop_edge_node>:./esteam_1.0.0_amd64.deb .
```

5. Unpackage the Enterprise Steam .deb file.

```
sudo dpkg -i esteam_1.0.0_amd64.deb
```

6. Set the administrator username and password.

```
sudo service steam set-admin  
username: administrator  
password: *****
```

7. Install the certificate and private key for the Enterprise Steam server using one of the following methods:

Add a certificate in **/etc/steam/private_key.pem**, **/etc/steam/cert.pem**.

Or

```
sudo service steam create-self-signed-cert
```

8. (Optional) Change the service port numbers in **/etc/steam/steam.conf**.

At this point, you are ready to Start Enterprise Steam.

1.3 RHEL Installation

This section describes how to install Enterprise Steam on Red Hat Enterprise Linux.

1.3.1 Requirements for Enterprise Steam with RHEL

- RHEL 6.7 or greater. Note that HAProxy is already included with this version of Red Hat.
- Enterprise Steam .rpm file. This is available from the [Steam download page](#).
- Chrome browser with an Internet connection. Note that Chrome is currently the only supported browser.
- H2O driver for your version of Hadoop. This is available from the [H2O Download page](#). Click the **Install on Hadoop** tab, and select the correct version for your environment.

1.3.2 Install HAProxy on RHEL

RHEL 6.7 or greater includes HAProxy. Run the following command if you have not already installed HAProxy. Note that SSL must be enabled before you run this command.

```
sudo yum haproxy
```

1.3.3 Install Enterprise Steam on RHEL

1. On your local machine, download the Enterprise Steam .rpm file from the [Steam download page](#).
2. Review and accept the terms of the EULA.
3. Open a terminal window and ssh to your Hadoop edge node.

```
ssh <user>@<hadoop_edge_node>
```

4. Copy the Enterprise Steam .rpm file to your edge node.

```
scp <user>@<hadoop_edge_node>:./esteam_1.0.0_amd64.rpm .
```

5. Install the Enterprise Steam .rpm file.

```
sudo rpm -i <esteam_rpm_package>
```

6. Set the administrator username and password.

```
sudo service steam set-admin  
username: administrator  
password: *****
```

7. Install the certificate and private key for the Enterprise Steam server using one of the following methods:

Add a certificate in **/etc/steam/private_key.pem**, **/etc/steam/cert.pem**.

Or

```
sudo service steam create-self-signed-cert
```

8. (Optional) Change the service port numbers in **/etc/steam/steam.conf**.

At this point, you are ready to Start Enterprise Steam.

STARTING ENTERPRISE STEAM

1. Start Enterprise Steam by running the following command on your YARN edge node.

```
sudo service steam start
```

2. (Optional) Check the log file to verify that Enterprise Steam starts correctly:

```
sudo cat /var/log/steam.log
```

At this point, you can open a Chrome browser and navigate to your Hadoop edge node (where Enterprise Steam is currently running). For example, `https://<hadoop-edge-node>:9000`. Note that in your browser, you may be required to authenticate using the Administrator username and password that you created during the installation process.

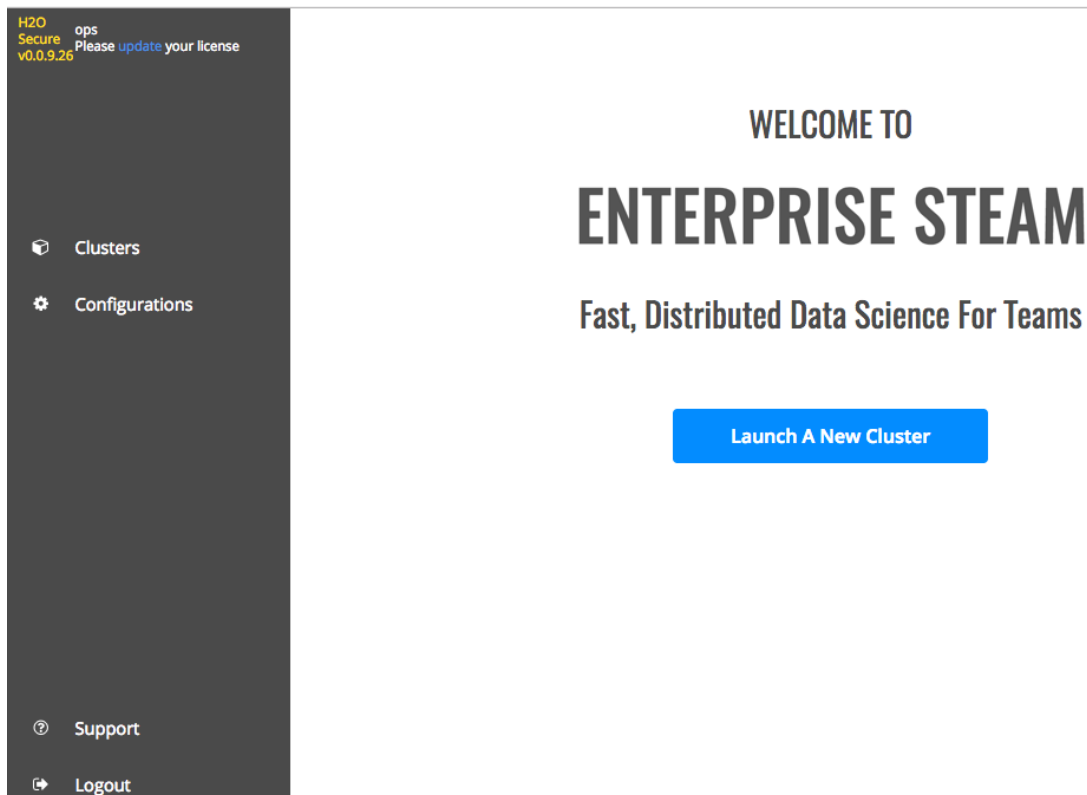


Fig. 2.1: Welcome page

2.1 Uploading a License File

A license is required in order to run Enterprise Steam. The first time you log in to Enterprise Steam, a message will display in the upper-left corner prompting you to enter your license key. This license is obtained from [H2O Sales](#).

1. Click the “Please updated your license” link in the upper-left corner to jump to the **Configurations > Licensing** page.
2. Click the **Browse** button, and navigate to your Enterprise Steam license file.

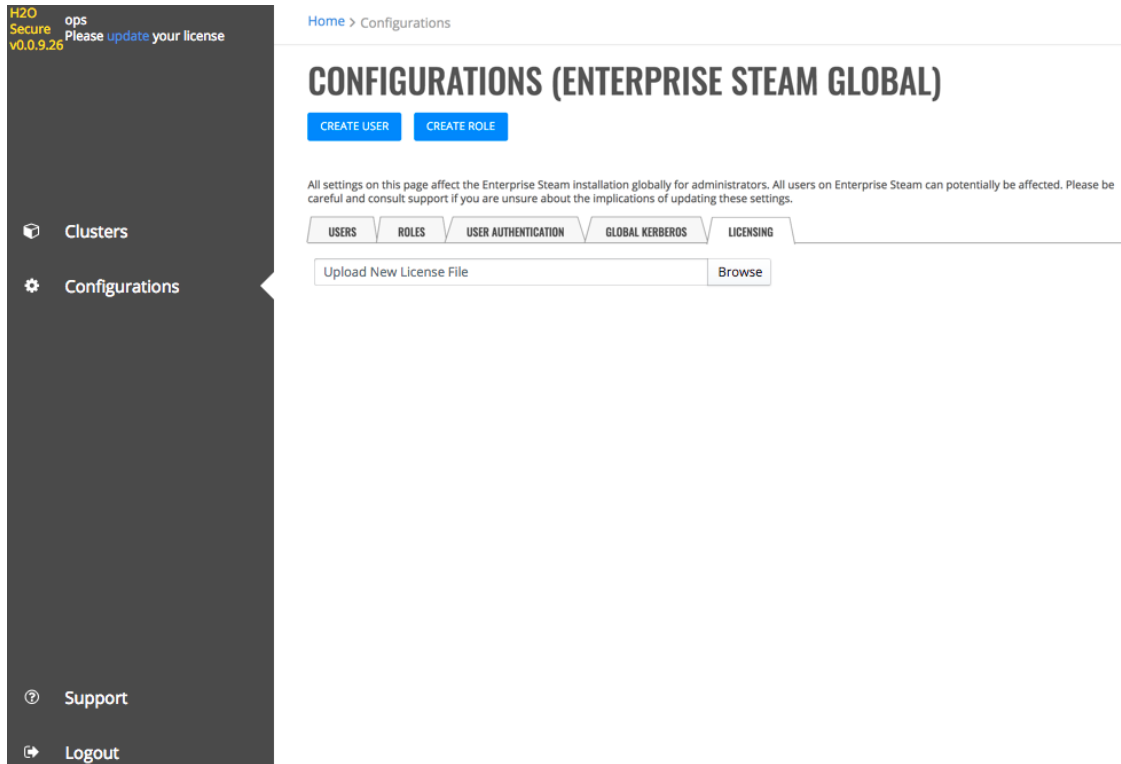


Fig. 2.2: Upload a license

CONFIGURATIONS

The **Configurations** page allows Enterprise Steam Admins to add, edit, and deactivate users and roles. Users can be added either individually using the Enterprise Steam SQLite database or through an existing LDAP directory.

Note: Only Admins have access to the **Configurations** page.

The screenshot shows the Enterprise Steam web interface. On the left is a dark sidebar with navigation options: Clusters, Configurations (selected), Support, and Logout. The top right of the sidebar displays 'Enterprise Steam v0.9.0.62 ops License valid for 306 days'. The main content area is titled 'CONFIGURATIONS (ENTERPRISE STEAM GLOBAL)' and includes 'CREATE USER' and 'CREATE ROLE' buttons. Below this is a warning message: 'All settings on this page affect the Enterprise Steam installation globally for administrators. All users on Enterprise Steam can potentially be affected. Please be careful and consult support if you are unsure about the implications of updating these settings.' There are five tabs: 'USERS' (selected), 'ROLES', 'USER AUTHENTICATION', 'GLOBAL KERBEROS', and 'LICENSING'. The 'USERS' tab contains a table with columns: ROLES, USER, ROLE(S), and ACTIONS. The table lists three users: 'ops' (admin role), 'patrick' (standard user role), and 'angela' (standard user role). Each user row has a 'Deactivate User' link (with a red 'x' icon) and an 'Edit' link (with a blue pencil icon).

ROLES	USER	ROLE(S)	ACTIONS
<input checked="" type="checkbox"/> standard	ops	admin	
<input checked="" type="checkbox"/> user	patrick	standard user	✖ Deactivate User ✎ Edit
<input checked="" type="checkbox"/> admin			
<input checked="" type="checkbox"/> [No roles]	angela	standard user	✖ Deactivate User ✎ Edit

Fig. 3.1: Users tab

The Configurations page consists of the following tabs.

- The Users tab shows the current list of users and their assigned role(s).
- The Roles tab provides a table of the permissions assigned to each role.
- The User Authentication tab allows you to connect Enterprise Steam to your current user database.
- The Global Kerberos tab allows you to enable Kerberos for your Enterprise Steam Environment and to specify an Enterprise Steam principal. This represents the Kerberos principal used for Enterprise Steam monitoring.
- The Licensing tab provides information on your Enterprise Steam License.

3.1 Configure LDAP Connection Settings

Enterprise Steam ships with a built-in SQLite database. By default, Enterprise Steam uses this database to store user and cluster management metadata. You can use this database, or you can configure Enterprise Steam to work with your existing LDAP directory.

1. Navigate to the **Configurations** page and select the **User Authentication** tab.
2. Select LDAP in the **User DB Type** drop down menu, then configure the LDAP connection settings. (Refer to the table below and the image that follows.)

Field	Description	Example
Host	The LDAP host server address	ldap.0xdata.loc
Port	The LDAP server port	389
SSL-Enabled	Enable this if your LDAP supports SSL.	
Bind DN	The Distinguished Name used by the LDAP server if extended access is required. This can be left blank if anonymous bind is sufficient.	cn=admin,dc=0xdata,dc=loc
Bind DN Password/Confirm	The password for the Bind DN user	h2o
User Base DN	The location of the LDAP users, specified by the DN of your user subtree	ou=users,dc=0xdata,dc=loc
User Base Filter	The LDAP search filter used to filter users	department=IT
User Name Attribute	The User Attribute that contains the username	uid
Group DN	The Distinguished Name used for group synch	cn=jettygroup,ou=groups,dc=0xdata,dc=loc
Group Base DN	The location of your LDAP groups, specified by the DN of your user subtree	ou=groups,dc=0xdata,dc=loc
Group Name Attribute	The Group Attribute that contains the username	cn
Static Member Attribute	The attribute for static group entries	memberUid
Search Request Size Limit	Limit the size of search results. 0 indicates unlimited.	
Search Request Time Limit	Limit the time allotted for completing search results. 0 indicates unlimited.	0

The screenshot shows the 'CONFIGURATIONS (ENTERPRISE STEAM GLOBAL)' page. The left sidebar contains 'Enterprise Steam v0.9.0.62 ops License valid for 306 days', 'Clusters', 'Configurations', 'Support', and 'Logout'. The main content area has a breadcrumb 'Home > Configurations' and a title 'CONFIGURATIONS (ENTERPRISE STEAM GLOBAL)'. Below the title are 'CREATE USER' and 'CREATE ROLE' buttons. A warning message states: 'All settings on this page affect the Enterprise Steam installation globally for administrators. All users on Enterprise Steam can potentially be affected. Please be careful and consult support if you are unsure about the implications of updating these settings.' There are five tabs: 'USERS', 'ROLES', 'USER AUTHENTICATION', 'GLOBAL KERBEROS', and 'LICENSING'. The 'USER AUTHENTICATION' tab is active. Under 'User DB Type', 'LDAP' is selected. A section titled 'LDAP Connection Settings' contains the following fields: 'HOST' (ldap.0xdata.loc), 'PORT' (389), 'SSL-ENABLED' (disabled), 'BIND DN' (cn=admin,dc=0xdata,dc=loc), 'BIND DN PASSWORD' (empty), 'CONFIRM PASSWORD' (empty), 'USER BASE DN' (ou=users,dc=0xdata,dc=loc), 'USER BASE FILTER' (empty), and 'USER NAME ATTRIBUTE' (uid).

3. Click **Test Config** when you are done. A valid response message indicates that the configuration was successful.
4. Click **Save Config**.

After LDAP is configured, users can log in to Enterprise Steam using their LDAP username and password.

Note: The **Reset** button clears all user-specified information in this form and resets any default values.

3.2 Kerberos Authentication (Optional)

Keytab files are used for authenticating to remote systems that use Kerberos without requiring a password. A keytab file includes pairs of Kerberos principals and encrypted keys. When using Enterprise Steam with Kerberos Authentication, a default keytab file for the Enterprise Steam environment is required. This default keytab file is used for accessing and monitoring YARN. In addition, individual users will be required to submit their client keytab file in order to launch YARN clusters.

The **Kerberos Authentication** tab allows Admins to upload a default keytab file for monitoring YARN. When Kerberos Authentication is enabled, the **User** page becomes visible, and Enterprise Steam users will be required to upload their client keytab file on this page.

1. Navigate to the **Configurations** page and select the **Global Kerberos** tab.
2. Click the **Kerberos Enabled** button to enable Kerberos. Note that when this is enabled, the **User** page will become enabled. (Refer to the User section.)
3. Specify the Enterprise Steam Principal in the entry field.
4. Specify the default Keytab file that will be used in this Enterprise Steam installation for monitoring YARN. Note that individual/personal principal Keytabs are configured on the User page. Users will see this page when they log into their Enterprise Steam accounts.

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Home > Configurations

CONFIGURATIONS (ENTERPRISE STEAM GLOBAL)

[CREATE USER](#) [CREATE ROLE](#)

All settings on this page affect the Enterprise Steam installation globally for administrators. All users on Enterprise Steam can potentially be affected. Please be careful and consult support if you are unsure about the implications of updating these settings.

[USERS](#) [ROLES](#) [USER AUTHENTICATION](#) [GLOBAL KERBEROS](#) [LICENSING](#)

KERBEROS ENABLED

ENTERPRISE STEAM PRINCIPAL

PRINCIPAL KEYTAB

Keytab

3.3 Users

This section describes how to add, edit, and deactivate Enterprise Steam users.

3.3.1 Adding Users

Admins can add users into the Enterprise Steam SQLite database from within the UI.

1. Click the **Create User** button.
2. Enter the name of the user. Note that the name must match with a username in your YARN system.
3. Specify and confirm a password for the user.
4. Specify the role(s) for this user. Note that Enterprise Steam ships with two default roles: admin and standard user.
5. Click **Create User** when you are done.

The screenshot shows the 'CREATE NEW USER' form in the Enterprise Steam interface. The left sidebar contains navigation links: Clusters, Configurations (selected), User, Support, and Logout. The top right shows the breadcrumb 'Home > Configurations'. The form fields are: USERNAME (jane), PASSWORD (masked with dots), CONFIRM PASSWORD (masked with dots), and ROLE (standard user selected, admin unselected). A 'password confirmed' checkbox is checked. At the bottom are 'Create User' and 'Cancel' buttons.

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Home > Configurations

CREATE NEW USER

USERNAME ⓘ jane

PASSWORD

CONFIRM PASSWORD

password confirmed

ROLE ⓘ standard user admin

Create User Cancel

Fig. 3.2: Create user

Upon successful completion, the new user will appear in the list of Enterprise Steam users.

3.3.2 Editing Users

This section describes how to edit a user's role.

On the Users tab, click the **Edit** link beside the user you want to edit. This opens the Edit User Details form. Change the user's roles, then click **Confirm** when you are done.

EDIT USER DETAILS

Give jane access to these roles:

- standard user
- admin



Fig. 3.3: Edit user

Note: A message will display in the UI if you remove all roles from a user.

3.3.3 Deactivating/Reactivating Users

On the Users tab, click the **Deactivate User** link for the user whose Enterprise Steam access you want to revoke. Click **Reactivate User** to once again grant access for that user.

<input checked="" type="checkbox"/> standard user	ops	admin	
<input checked="" type="checkbox"/> admin	patrick	standard user	✕ Deactivate User
<input checked="" type="checkbox"/> [No roles]	angela	standard user	✕ Deactivate User
	jane	standard user admin	↻ Reactivate User

Fig. 3.4: Deactivate/reactivate user

3.4 Roles

Roles determine the activities/permissions that an Enterprise Steam user can perform within your environment. Enterprise Steam ships with two default roles: admin and standard user. These default roles are sufficient for most Enterprise Steam deployments and, in general, should not be changed. You can create additional roles, however, if you require more granularity in the way that your users access and utilize Enterprise Steam.

3.4.1 Creating Roles

1. To create a new role, click on the **Create Role** button.
2. Specify a name and description for the role.
3. Select the permissions that will be granted to this role.

- Click **Create Role** at the bottom of the form when you are done.

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Home > Configurations

CREATE NEW ROLE

To create a new type of role in Enterprise Steam, provide a name for this role, and select the privileges it should have

Role Name
Devops

Role Description
Devops Role

PERMISSION	IS GRANTED
Manage role	<input type="checkbox"/>
View role	<input type="checkbox"/>
Manage workgroup	<input type="checkbox"/>
View workgroup	<input type="checkbox"/>
Manage identity	<input type="checkbox"/>
View identity	<input type="checkbox"/>
Manage engine	<input type="checkbox"/>
View engine	<input type="checkbox"/>
Manage cluster	<input type="checkbox"/>
View cluster	<input type="checkbox"/>

Fig. 3.5: Create Role

3.4.2 Changing Permissions

Admins can add or remove permissions for each role directly on this page.

- Select the checkbox for the corresponding permission and role that you want to change
- Click **Review Changes** at the bottom of the page. A popup displays, providing you with a summary of the changes.
- Click the **Confirm** button beside each change that you want to make, then click **Save Changes** to complete the update.

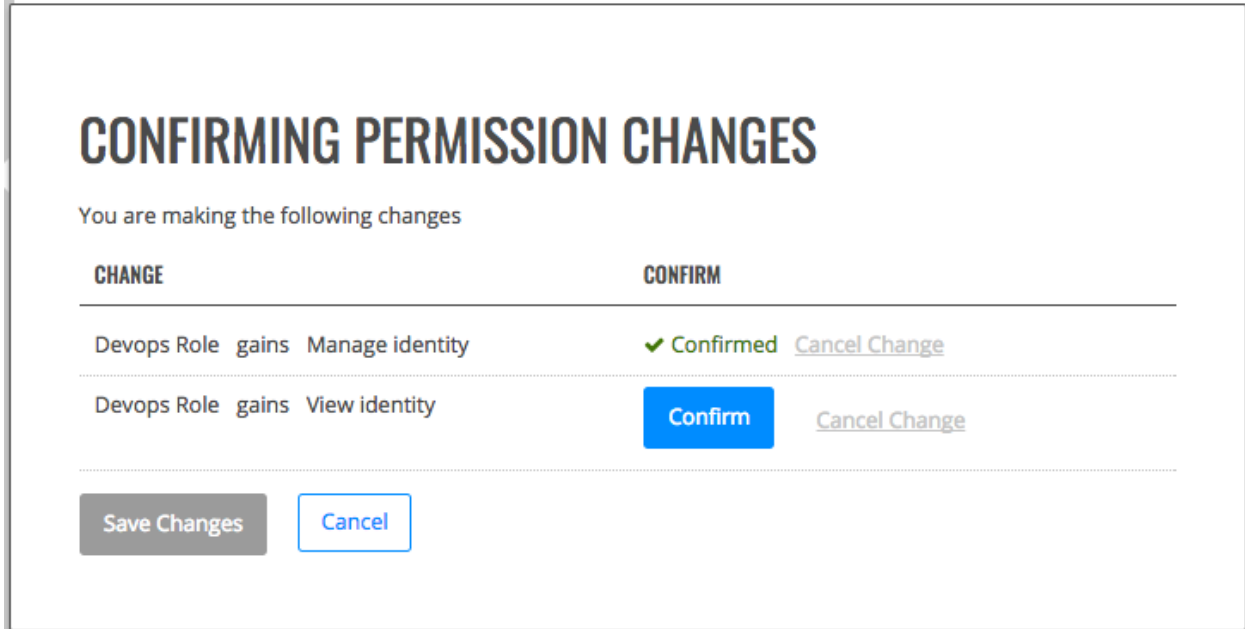


Fig. 3.6: Change permissions

3.4.3 Deleting Roles

On the Roles tab, scroll down to the bottom of the page, and click the trashcan icon under the Role column that you want to delete. A confirmation page will display, prompting you to confirm the deletion. Click **Confirm** to remove the role.



Fig. 3.7: Delete Role

ADDING AN H2O DRIVER

This section describes how Admins can H2O drivers into their Enterprise Steam environment. Once added, these drivers will be available to all Enterprise Steam standard users (or any user who has View Engine permissions).

Note: Only Admins can upload H2O drivers.

1. On your local machine, download the h2odriver from the [H2O Download page](#). Be sure to select the version that corresponds with your version of Hadoop. For example:

```
wget http://h2o-release.s3.amazonaws.com/h2o/rel-tverberg/4/h2o-3.10.3.4-  
→hdp2.2.zip
```

2. In the Enterprise Steam UI, navigate to the **Clusters** page and select **Launch New Cluster**.
3. In the H2O Version section, click the **Please select an engine** dropdown.
4. Click the **Browse** button, and navigate to the H2O driver that you just downloaded. Note that this button is only available to Admins.

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License valid for 306 days

Home > Clusters

LAUNCH NEW CLUSTER

CLUSTER NAME

NUMBER OF NODES

MEMORY PER NODE GB

YARN QUEUE

H2O VERSION

[Launch New Clusters](#)

Upload New Engine...

Support
Logout

A message will display indicating that the engine was successfully uploaded.

USER

Keytab files are used for authenticating to remote systems that use [Kerberos](#) authentication without requiring a password. A keytab file includes pairs of Kerberos principals and encrypted keys. When using Enterprise Steam with Kerberos Authentication, individual users will be required to submit their client keytab file in order to launch YARN clusters.

The **User** page allows Admins to upload a client keytab file for launching YARN clusters from this Enterprise Steam account. Individual users will also see this option when they log into their Enterprise Steam account.

Notes:

- This page is only visible if Kerberos is enabled. (See [Kerberos Authentication \(Optional\)](#).)
- This keytab is only required the first time you log in to an Enterprise Steam environment that has Kerberos Authentication enabled. However, if you change your Kerberos password, then you must recreate your keytab.

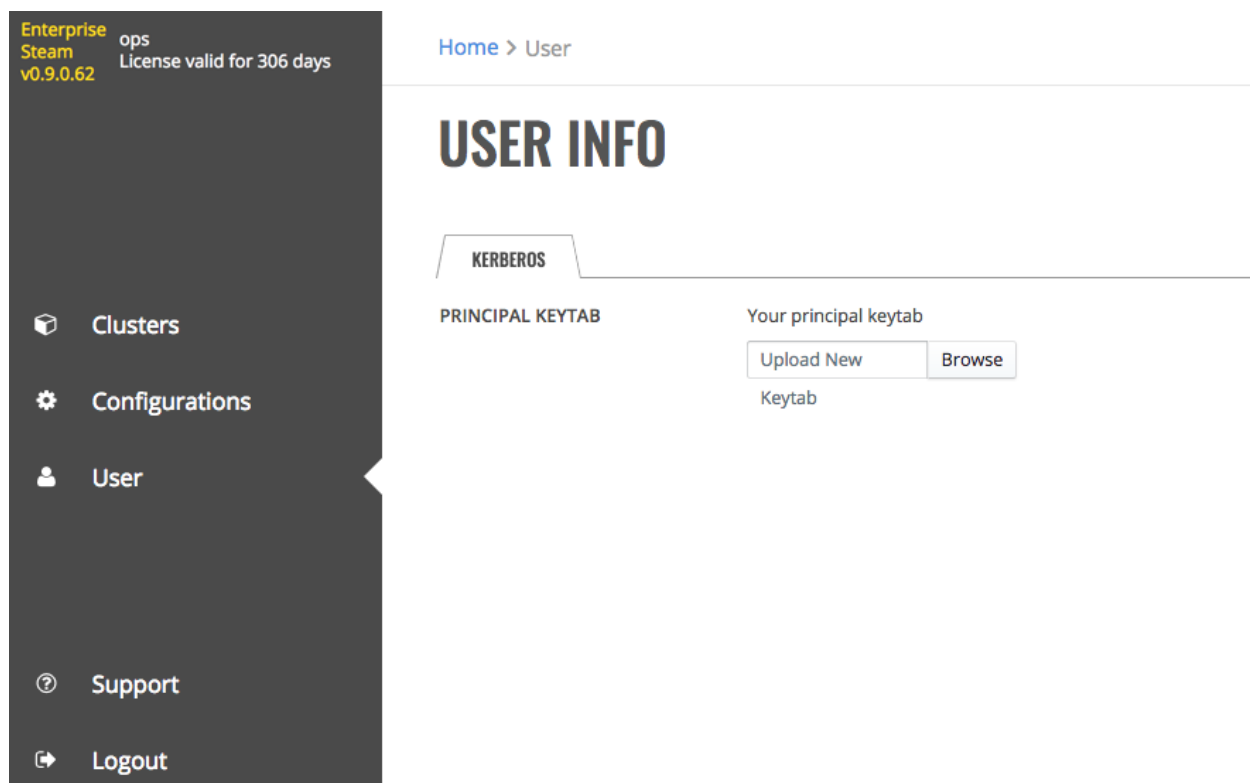


Fig. 5.1: User page