2017/4/11 Hue Installation Guide

Hue Installation Guide

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1. Introduction

Hue is a graphical user interface to operate and develop applications for Apache Hadoop. Hue applications are collected into a desktop-style environment and delivered as a Web application, requiring no additional installation for individual users.

This guide describes how to install and configure a Hue tarball. For information about installing Hue packages, see Installing

There is also a companion SDK guide that describes how to develop new Hue applications: Hue SDK Documentation

Conventions Used in this Guide:

- Commands that must be run with root permission have a # command prompt.
- Commands that do not require root permission have a s command prompt.

2. Hue Installation Instructions

The following instructions describe how to install the Hue tarball on a multi-node cluster. You need to also install Hadoop and its satellite components (Oozie, Hive...) and update some Hadoop configuration files before running Hue.

2.1. Install Hue

Hue consists of a web service that runs on a special node in your cluster. Choose one node where you want to run Hue. This guide refers to that node as the *Hue Server*. For optimal performance, this should be one of the nodes within your cluster, though it can be a remote node as long as there are no overly restrictive firewalls. For small clusters of less than 10 nodes, you can use your existing master node as the Hue Server.

You can download the Hue tarball here: https://github.com/cloudera/hue/releases

2.1.1. Hue Dependencies

Hue employs some Python modules which use native code and requires certain development libraries be installed on your system. To install from the tarball, you must have the following installed:

Table 1. Required Dependencies

Redhat	Ubuntu 10.04	Ubuntu 12.04/14.04
gcc	gcc	gcc
g++	g++	g++

1.100.11.00.11.00.11.00.11.00.11.00.11.00.11.00.11.00.11.00.11.00.11.00.11.00.11.00.11.00.11.00.11.00.11.00.11				
Redhat	Ubuntu 10.04	Ubuntu 12.04/14.04		
libxml2-devel	libxml2-dev	libxml2-dev		
libxslt-devel	libxslt-dev	libxslt-dev		
cyrus-sasl-devel	libsasl2-dev	libsasl2-dev		
cyrus-sasl-gssapi	libsasl2-modules-gssapi-mit	libsasl2-modules-gssapi-mit		
mysql-devel	libmysqlclient-dev	libmysqlclient-dev		
python-devel	python-dev	python-dev		
python-setuptools	python-setuptools	python-setuptools		
sqlite-devel	libsqlite3-dev	libsqlite3-dev		
ant	ant	ant		
libsasl2-dev	cyrus-sasl-devel	libsasl2-dev		
libsasl2-modules-gssapi- mit	cyrus-sasl-gssapi	libsasl2-modules-gssapi-mit		
libkrb5-dev	krb5-devel	libkrb5-dev		
libtidy-0.99-0	libtidy	libtidy-0.99-0 (For unit tests only)		
mvn	mvn (From maven2 package or tarball)	mvn (From maven2/maven3 package or tarball)		
openIdap-dev / libIdap2- dev	openIdap-devel	libldap2-dev		

The full list is here: https://github.com/cloudera/hue#development-prerequisites

2.1.2. Build

Configure **SPREFIX** with the path where you want to install Hue by running:

```
$ PREFIX=/usr/share make install
$ cd /usr/share/hue
```

You can install Hue anywhere on your system, and run Hue as a non-root user. The Shell application needs root privileges to launch various sub-processes as the logged in users. Suser should be the group of the user running Hue (same as its username).

It is a good practice to create a new user for Hue and either install Hue in that user's home directory, or in a directory within $\lceil \text{vusr/share} \rceil$.

2.1.3. Troubleshooting the Hue Tarball Installation

Q: I moved my Hue installation from one directory to another and now Hue no. longer functions correctly.

A: Due to the use of absolute paths by some Python packages, you must run a series of commands if you move your Hue installation. In the new location, run:

```
$ rm app.reg
$ rm -r build
$ make apps
```

Q: Why does "make install" compile other pieces of software? A: In order to ensure that Hue is stable on a variety of distributions and architectures, it installs a Python virtual environment which includes its dependencies. This ensures that the software can depend on specific versions of various Python libraries and you don't have to be concerned about missing software components.

Install Hadoop -~~~~~

Depending on which apps you need, you need to make sure that some Hadoop services are already setup (that way Hue can talk to them).

Table 2. Dependency

Component Applications

HDFS Core, Filebrowser

MR1 JobBrowser, JobDesigner, Beeswax

MR2/YARN JobBrowser, JobDesigner, Beeswax

Oozie JobDesigner, Oozie

Hive Beeswax

HBase HBase Browser

Pig Pig Editor

Sqoop2 Sqoop Editor

Search Search

Impala Impala Editor

ZooKeeper ZooKeeper Browser

Spark Spark Editor

Notes

HDFS access through WebHdfs or HttpFS

Job information access through hue-plugins

Job information access through hue-plugins

Oozie access through REST API

Requires HiveServer2

Requires Thrift 1 service

Requires Oozie

Requires Sqoop2 server

Requires Solr server

Requires an Impalad

Requires ZooKeeper server and REST server

Requires Spark Jobserver

2.2. Hadoop Configuration

2.2.1. Configure WebHdfs

You need to enable WebHdfs or run an HttpFS server. To turn on WebHDFS, add this to your hdfs-site.xml and restart your HDFS cluster. Depending on your setup, your hdfs-site.xml might be in /etc/hadoop/conf.

You also need to add this to core-site.html.

If you place your Hue Server outside the Hadoop cluster, you can run an HttpFS server to provide Hue access to HDFS. The HttpFS service requires only one port to be opened to the cluster.

Also add this in httpfs-site.xml which might be in /etc/hadoop-httpfs/conf.

2.2.2. Configure MapReduce 0.23+ (MR2)

Hue is using only standard Hadoop APIs.

2.2.3. Configure MapReduce 0.20 (MR1)

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Hue communicates with the JobTracker via the Hue plugins, which is a jar file that you place in your MapReduce lib directory.

If you JobTracker and Hue are located on the same host, copy it over.

```
$ cd /usr/share/hue
$ cp desktop/libs/hadoop/java-lib/hue-plugins-*.jar /usr/lib/hadoop-0.20-mapreduce/lib
```

If you JobTracker runs on a different host, you need to scp the Hue plugins jar to the JobTracker host.

Then add this to your <code>mapred-site.xml</code> and **restart** your JobTracker. Depending on your setup, your <code>mapred-site.xml</code> might be in <code>/etc/hadoop/conf</code>.

You can confirm that the plugins are running correctly by tailing the daemon logs:

```
$ tail --lines=500 /var/log/hadoop-0.20/hadoop*jobtracker*.log | grep ThriftPlugin
2009-09-28 16:30:44,337 INFO org.apache.hadoop.thriftfs.ThriftPluginServer: Starting Thrift server
2009-09-28 16:30:44,419 INFO org.apache.hadoop.thriftfs.ThriftPluginServer:
Thrift server listening on 0.0.0.0:9290
```

2.2.4. Configure Oozie

Hue submits MapReduce jobs to Oozie as the logged in user. You need to configure Oozie to accept the hue user to be a proxyuser. Specify this in your oozie-site.xml (even in a non-secure cluster), and restart Oozie:

2.3. Further Hadoop Configuration and Caveats

2.3.1. HADOOP_CLASSPATH Caveat

If you are setting shadoop_classpath in your hadoop-env.sh, be sure to set it in such a way that user-specified options are preserved. For example:

Correct:

```
# HADOOP_CLASSPATH=<your_additions>:$HADOOP_CLASSPATH
```

Incorrect:

```
# HADOOP_CLASSPATH=<your_additions>
```

This enables certain components of Hue to add to Hadoop' s classpath using the environment variable.

2.3.2. hadoop.tmp.dir

If your users are likely to be submitting jobs both using Hue and from the same machine via the command line interface, they will be doing so as the hue user if they re using Hue and via their own user account on the command line. This leads to some contention on the directory specified by hadoop.tmp.dir, which defaults to tmp/hadoop-\${user.name}. Specifically, hadoop.tmp.dir is used to unpack jars in bin/hadoop jar. One work around to this is to set hadoop.tmp.dir to tmp/hadoop-\${user.name}-\${hue.suffix} in the core-site.xml file:

Unfortunately, when the variable is unset, you' II end up with directories named tmp/hadoop-user_name-\${hue.suffix} in /tmp. Despite that, Hue will still work.



The Beeswax server writes into a local directory on the Hue machine that is specified by hadoop.tmp.dir to unpack its jars. That directory needs to be writable by the hue user, which is the default user who starts Beeswax Server, or else Beeswax server will not start. You may also make that directory world-writable.

2.3.3. Configuring Your Firewall for Hue

Hue currently requires that the machines within your cluster can connect to each other freely over TCP. The machines outside your cluster must be able to open TCP port 8888 on the Hue Server (or the configured Hue web HTTP port) to interact with the system.

2.4. Hive Configuration

Hue's Beeswax application helps you use Hive to query your data. It depends on a Hive Server 2 running in the cluster. Please read this section to ensure a proper integration.

Your Hive data is stored in HDFS, normally under /user/hive/warehouse (or any path you specify as hive.metastore.warehouse.dir in your hive-site.xml). Make sure this location exists and is writable by the users whom you expect to be creating tables. /tmp (on the local file system) must be world-writable (1777), as Hive makes extensive use of it.



In [hue.ini], modify $[hive_conf_dir]$ to point to the directory containing $[hive_site.xml]$.

3. Configuring Hue

Hue ships with a default configuration that will work for pseudo-distributed clusters. If you are running on a real cluster, you must make a few changes to the hue.ini configuration file (/etc/hue/hue.ini) when installed from the package version) or pseudo-distributed.ini in desktop/conf when in development mode). The following sections describe the key configuration options you must make to configure Hue.



Listing all Configuration Options

To list all available configuration options, run:

\$ /usr/share/hue/build/env/bin/hue config_help | less

This commands outlines the various sections and options in the configuration, and provides help and information on the default values.



Viewing Current Configuration Options

To view the current configuration from within Hue, open:

http://<hue>/dump_config



Using Multiple Files to Store Your Configuration

Hue loads and merges all of the files with extension in located in the /etc/hue directory. Files that are alphabetically later take precedence.

3.1. Web Server Configuration

These configuration variables are under the <code>[desktop]</code> section in the <code>hue.ini</code> configuration file.

3.1.1. Specifying the Hue HTTP Address

Hue uses CherryPy web server. You can use the following options to change the IP address and port that the web server listens on. The default setting is port 8888 on all configured IP addresses.

Webserver listens on this address and port http_host=0.0.0.0 http_port=8888

3.1.2. Specifying the Secret Key

For security, you should also specify the secret key that is used for secure hashing in the session store. Enter a long series of random characters (30 to 60 characters is recommended).

secret_key=jFE93j;2[290-eiw.KEiwN2s3['d;/.q[eIW^y#e=+Iei*@Mn<qW5o



If you don't specify a secret key, your session cookies will not be secure. Hue will run but it will also display error messages telling you to set the secret key.

3.1.3. Authentication

By default, the first user who logs in to Hue can choose any username and password and becomes an administrator automatically. This user can create other user and administrator accounts. User information is stored in the Django database in the Django backend.

The authentication system is pluggable. For more information, see the Hue SDK Documentation.

3.1.4. Configuring Hue for SSL

You can configure Hue to serve over HTTPS. To do so, you must install "pyOpenSSL" within Hue's context and configure your keys.

To install pyopenSSL, from the root of your Hue installation path, do the following steps:

1. Run this command:

\$./build/env/bin/easy_install pyOpenSSL

2. Configure Hue to use your private key by adding the following options to the hue.ini configuration file:

ssl_certificate=/path/to/certificate
ssl_private_key=/path/to/key

3. Ideally, you would have an appropriate key signed by a Certificate Authority. If you' re just testing, you can create a self-signed key using the openss1 command that may be installed on your system:

Create a key
\$ openssl genrsa 1024 > host.key

Create a self-signed certificate
\$ openssl req -new -x509 -nodes -sha1 -key host.key > host.cert



Self-signed Certificates and File Uploads

To upload files using the Hue File Browser over HTTPS requires using a proper SSL Certificate. Self-signed certificates don't work.

3.2. Hue Configuration for Hadoop

These configuration variables are under the <code>[hadoop]</code> section in the <code>hue.ini</code> configuration file.

3.2.1. HDFS Cluster

Hue only support one HDFS cluster currently. That cluster should be defined under the [[[default]]] sub-section.

fs defaultfs

This is the equivalence of fs.defaultrs (aka fs.default.name) in Hadoop configuration.

webhdfs_url

You can also set this to be the HttpFS url. The default value is the HTTP port on the NameNode.

hadoop_hdfs_home

This is the home of your Hadoop HDFS installation. It is the root of the Hadoop untarred directory, or usually https://lib/hadoop.

hadoop bin

Use this as the HDFS Hadoop launcher script, which is usually /usr/bin/hadoop.

hadoop conf dir

This is the configuration directory of the HDFS, typically /etc/hadoop/conf.

3.2.2. MapReduce (MR1) Cluster

Hue only support one MapReduce cluster currently. That cluster should be defined under the [[[default]]] subsection. Note that JobBrowser only works with MR1.

jobtracker_host

The host running the JobTracker. In a secured environment, this needs to be the FQDN of the JobTracker host, and match the "host" portion of the 'mapred' Kerberos principal full name.

jobtracker_port
The port for the JobTracker IPC service.

submit to

If your Oozie is configured with to talk to a 0.20 MapReduce service, then set this to true. Hue will be submitting jobs to this MapReduce cluster.

3.2.3. Yarn (MR2) Cluster

Hue only support one Yarn cluster currently. That cluster should be defined under the [[[default]]] sub-section.

resourcemanager_host

The host running the ResourceManager.

resourcemanager_port

The port for the ResourceManager IPC service.

submit to

If your Oozie is configured with to talk to a Yarn cluster, then set this to true. Hue will be submitting jobs to this Yarn cluster. But note that JobBrowser will not be able to show MR2 jobs.

3.3. Hive Configuration

In the [beeswax] section of the configuration file, you can *optionally* specify the following:

beeswax_server_host

The hostname or IP that the Hive Server should bind to. By default it binds to localhost, and therefore only serves local IPC clients.

hive_home_dir

The base directory of your Hive installation.

hive_conf_dir

The directory containing your hive-site.xml Hive configuration file.

3.4. JobDesigner and Oozie Configuration

In the [liboozie] section of the configuration file, you should specify:

oozie url

The URL of the Oozie service. It is the same as the OOZIE_URL environment variable for Oozie.

3.5. UserAdmin Configuration

In the [useradmin] section of the configuration file, you can optionally specify the following:

default user group

The name of a default group that is suggested when creating a user manually. If the LdapBackend or PamBackend are configured for doing user authentication, new users will automatically be members of the default group.

3.6. Configuration Validation

Hue can detect certain invalid configuration. It will show a red alert icon on the top navigation bar.



To view the configuration of a running Hue instance, navigate to http://myserver:8888/dump_config, also accessible through the About application.

4. Starting Hue from the Tarball

After your cluster is running with the plugins enabled, you can start Hue on your Hue Server by running:

build/env/bin/supervisor

This will start several subprocesses, corresponding to the different Hue components. Your Hue installation is now running.

5. Administering Hue

Now that you' ve installed and started Hue, you can feel free to skip ahead to the Using Hue section. Administrators may want to refer to this section for more details about managing and operating a Hue installation.

5.1. Hue Processes

5.1.1. Process User

Filebrowser requires Hue to be running as the *hue* user.

5.1.2. Process Hierarchy

A script called supervisor manages all Hue processes. The supervisor is a watchdog process—its only purpose is to spawn and monitor other processes. A standard Hue installation starts and monitors the following processes:

• runcpserver - a web server based on CherryPy that provides the core web functionality of Hue

If you have installed other applications into your Hue instance, you may see other daemons running under the supervisor as well.

You can see the supervised processes running in the output of ps -f -u hue:



Note that the supervisor automatically restarts these processes if they fail for any reason. If the processes fail repeatedly within a short time, the supervisor itself shuts down.

5.2. Hue Logging

The Hue logs are found in var/log/hue, or in a logs directory under your Hue installation root. Inside the log directory you can find:

- An access.log file, which contains a log for all requests against the Hue web server.
- A supervisor.log file, which contains log information for the supervisor process.
- A supervisor.out file, which contains the stdout and stderr for the supervisor process.
- A log file for each supervised process described above, which contains the logs for that process.
- A .out file for each supervised process described above, which contains the stdout and stderr for that process.

If users on your cluster have problems running Hue, you can often find error messages in these log files. If you are unable to start Hue from the init script, the supervisor.log log file can often contain clues.

5.2.1. Viewing Recent Log Messages Online

In addition to logging INFO level messages to the logs directory, the Hue web server keeps a small buffer of log messages at all levels in memory. You can view these logs by visiting http://myserver:8888/logs | The DEBUG level messages shown can sometimes be helpful in troubleshooting issues.

5.3. The Hue Database

Hue requires a SQL database to store small amounts of data, including user account information as well as history of job submissions and Hive queries. By default, Hue is configured to use the embedded database SQLite for this purpose, and should require no configuration or management by the administrator. However, MySQL is the recommended database to use. This section contains instructions for configuring Hue to access MySQL and other databases.

5.3.1. Inspecting the Hue Database

The default SQLite database used by Hue is located in: '/usr/share/hue/desktop/desktop.db .

You can inspect this database from the command line using the `sqlite3 program or typing `/usr/share/hue/build/env/bin/hue dbshell' . For example:

```
# sqlite3 /usr/share/hue/desktop/desktop.db
SQLite version 3.6.22
Enter ".heln" for instructions
Enter SQL statements terminated with a ";"
sqlite> select username from auth_user;
admin
test
sample
sqlite
```

It is strongly recommended that you avoid making any modifications to the database directly using SQLite, though this trick can be useful for management or troubleshooting.

5.3.2. Backing up the Hue Database

If you use the default SQLite database, then copy the desktop.db file to another node for backup. It is recommended that you back it up on a regular schedule, and also that you back it up before any upgrade to a new version of Hue.

5.3.3. Configuring Hue to Access Another Database

Although SQLite is the default database type, some advanced users may prefer to have Hue access an alternate database type. Note that if you elect to configure Hue to use an external database, upgrades may require more manual steps in the future.

The following instructions are for MySQL, though you can also configure Hue to work with other common databases such as PostgreSQL and Oracle.

Tested Database Backends



Note that Hue has only been tested with SQLite and MySQL database backends.

5.3.4. Configuring Hue to Store Data in MySQL

To configure Hue to store data in MySQL:

1. Create a new database in MySQL and grant privileges to a Hue user to manage this database.

```
mysql> create database hue;
Query OK, 1 row affected (0.01 sec)
mysql> grant all on hue.* to 'hue'@'localhost' identified by 'secretpassword';
Query OK, 0 rows affected (0.00 sec)
```

- 2. Shut down Hue if it is running.
- 3. To migrate your existing data to MySQL, use the following command to dump the existing database data to a text file. Note that using the ".json" extension is required.

```
$ /usr/share/hue/build/env/bin/hue dumpdata > <some-temporary-file>.json
```

4. Open the hee.ini file in a text editor. Directly below the [[database]] line, add the following options (and modify accordingly for your MySQL setup):

```
host=localhost
port=3306
engine=mysql
user=hue
password=secretpassword
name=hue
```

5. As the Hue user, configure Hue to load the existing data and create the necessary database tables:

```
$ /usr/share/hue/build/env/bin/hue syncdb --noinput
$ mysql -uhue -psecretpassword -e "DELETE FROM hue.django_content_type;"
$ /usr/share/hue/build/env/bin/hue loaddata <temporary-file-containing-dumped-data>.json
```

Your system is now configured and you can start the Hue server as normal.

6. Using Hue

After installation, you can use Hue by navigating to http://myserver:8888/. The following login screen appears:

HUE



Create your Hue account

Since this is your first time logging in, pick any username and password. Be sure to remember these, as they will become your Hue superuser credentials.

Username

Password

Create account

The Help application guides users through the various installed applications.

6.1. Supported Browsers

- Windows: Chrome, Firefox 3.6+, Internet Explorer 9+, Safari 5+
- Linux : Chrome, Firefox 3.6+
- Mac: Chrome, Firefox 3.6+, Safari 5+

6.2. Feedback

Your feedback is welcome. The best way to send feedback is to join the mailing list, and send e-mail, to hue-user@cloudera.org.

6.3. Reporting Bugs

If you find that something doesn't work, it'll often be helpful to include logs from your server. (See the Hue Logging section. Please include the logs as a zip (or cut and paste the ones that look relevant) and send those with your bug

