Big Data Operations Guide for Cloudera Manager v5.x Hadoop

Logging into the Enterprise Cloudera Manager

1. On the server where you have installed 'Cloudera Manager', make sure that the server is running, if not start it. You can stop the Cloudera Manager server (for example, to perform maintenance on its host) without affecting the other services running on your cluster. Statistics data used by Activity Monitoring and Service Monitoring will continue to be collected during the time the server is down.

Controlling the Cloudera Manager service

?

```
To stop the Cloudera Manager server without affecting other services: servicecloudera-scm-server stop
To restart it: servicecloudera-scm-server start
```

2. In a web browser, type the following URL:

http(s)://<Server host>:<port>

where:

<Server host> is the name or IP address of the host machine where the Cloudera Manager Server is installed.

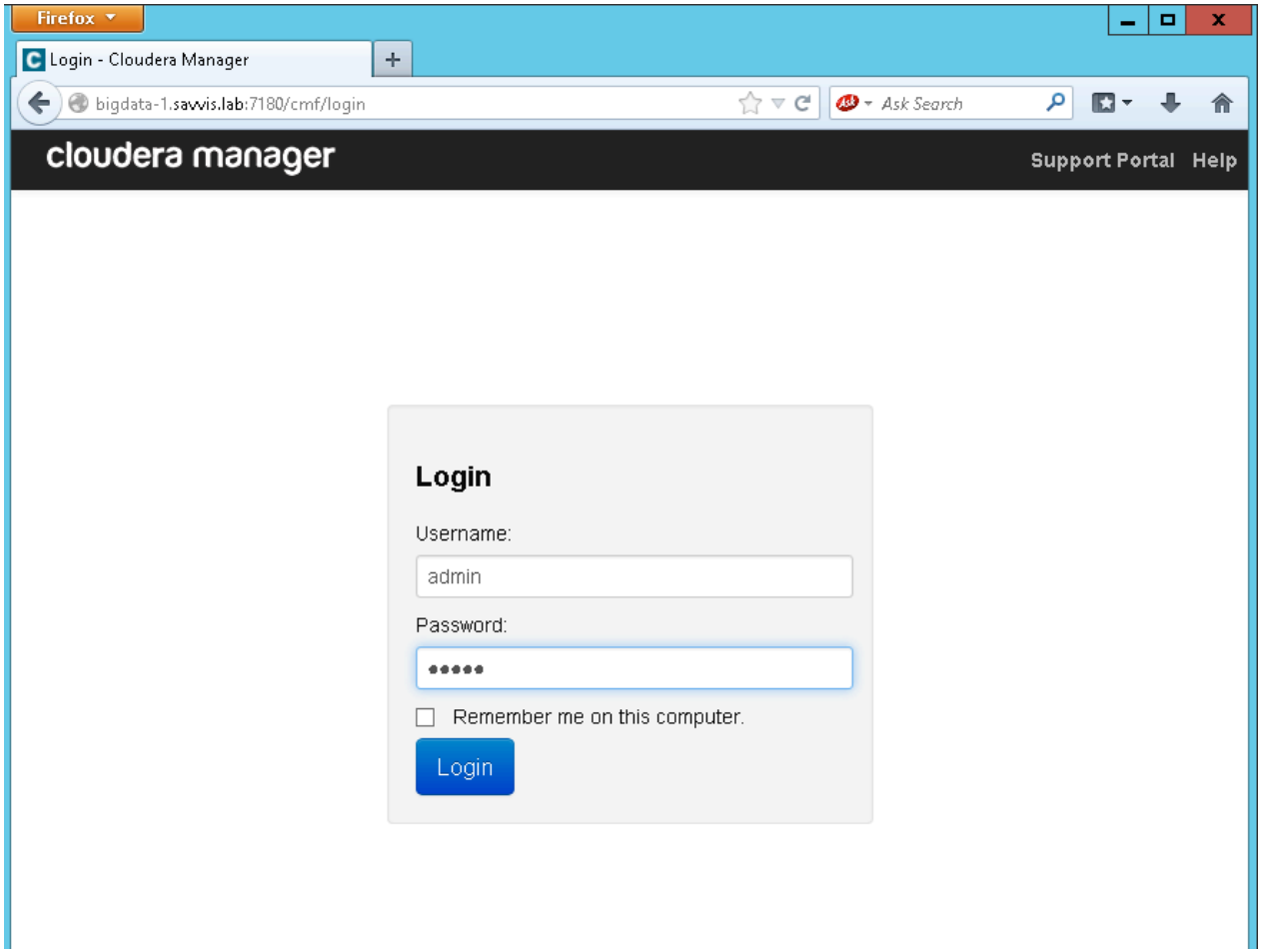
<port> is the port configured for the Cloudera Manager Server. The default port is 7180.

3. Log into the Cloudera Manager Admin Console. For **Enterprise Basic** and **Enterprise Basic With HBase** installations (managed), the review the following link to obtain the admin password.

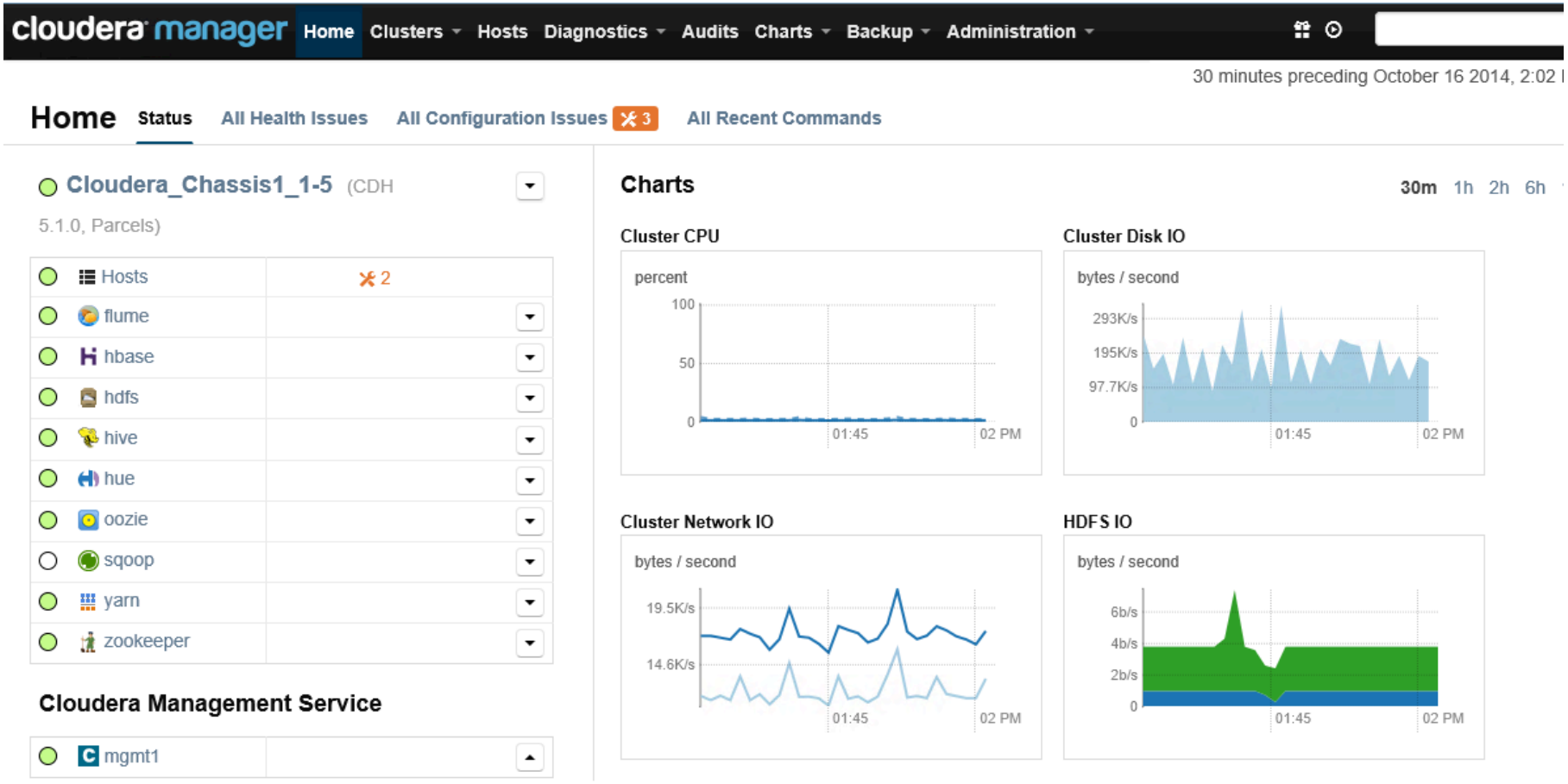
4. For **Cloudera Manager Express** (unmanaged), the admin user credentials are:

Username: admin

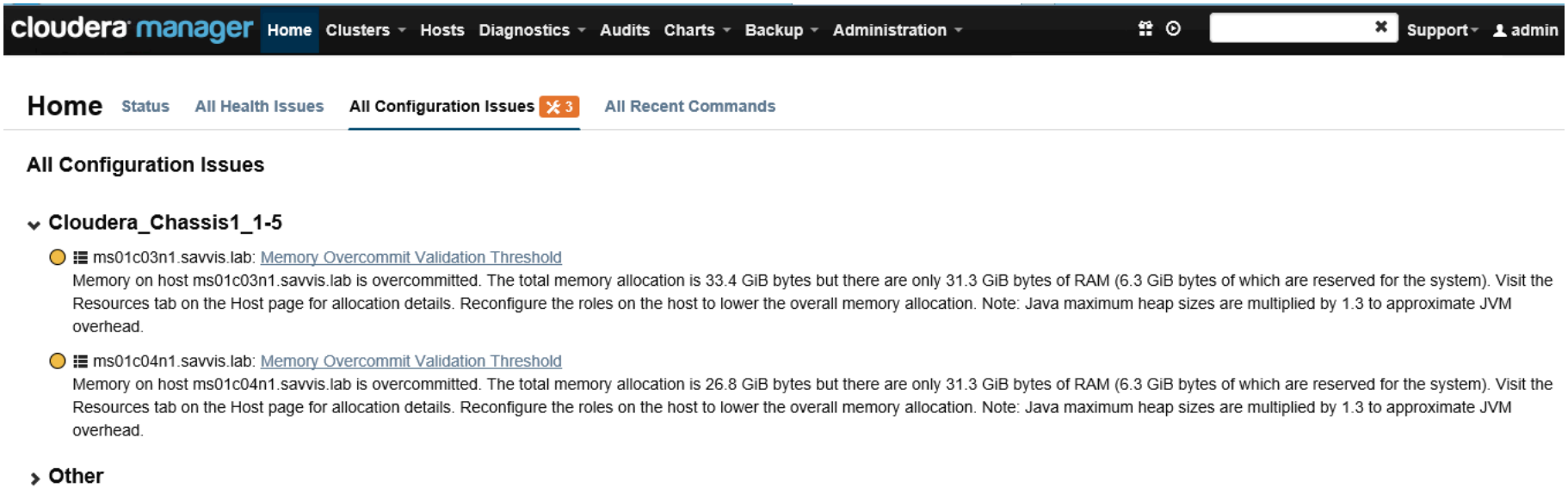
Password: admin



The Cloudera Manager 'dashboard' or 'home' shows Status and overall Cluster Health; note the subtabs for "Status", "All Health Issues", "All Configuration Issues" and "All Recent Commands"



Health and Configuration Issues can be determined by clicking "All Configuration Issues" and "All Recent Commands".



Check Hadoop cluster health from the CLI

On the server that is the 'namenode', execute the following command:

hadoop dfsadmin -report

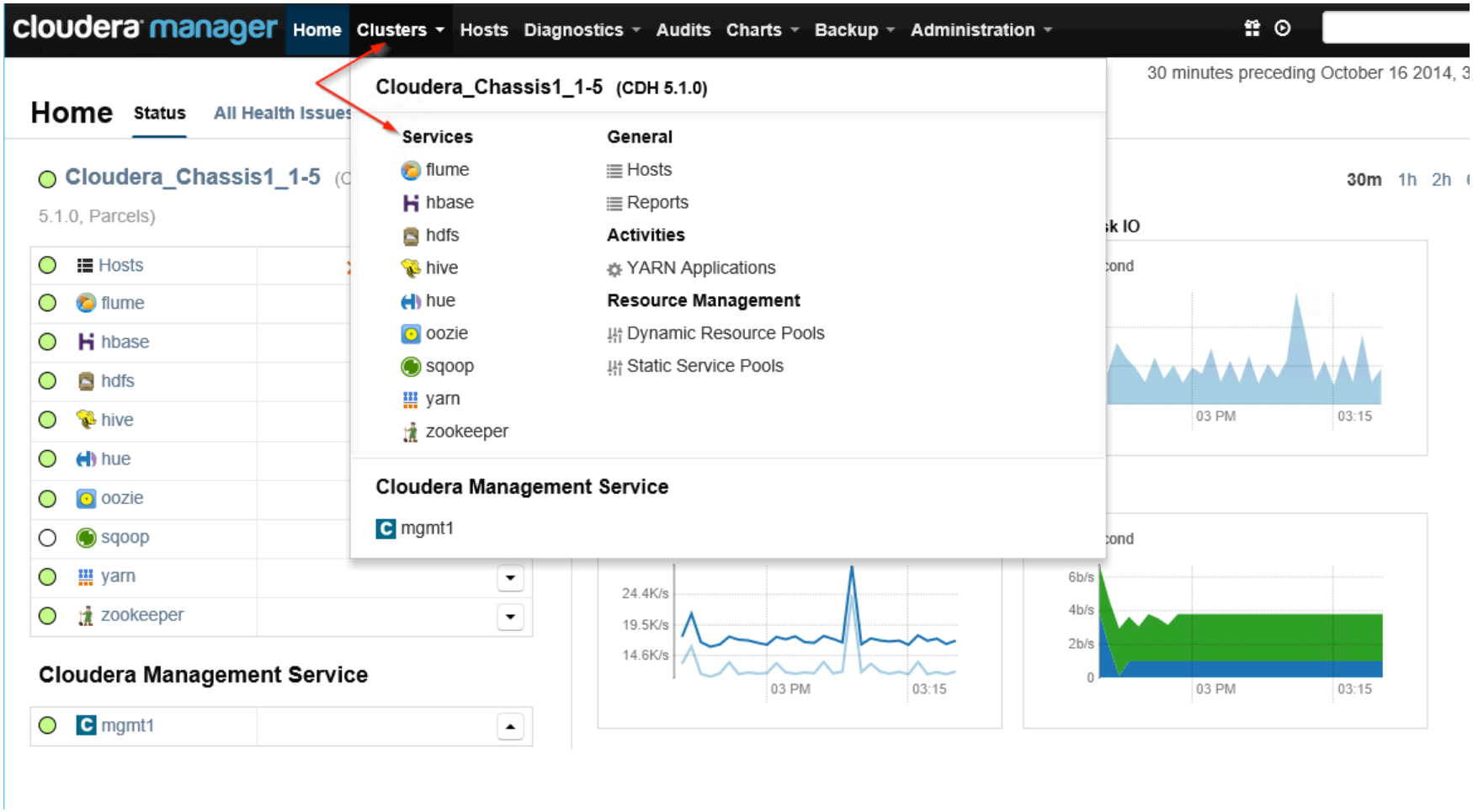
?

```
[root@bigdata-2 ~]# su - hdfs -c "hadoop dfsadmin -report"
DEPRECATED: Use of this script to execute hdfs command is deprecated.
Instead use the hdfs command for it.
Configured Capacity: 26580896243712 (24.18 TB)
Present Capacity: 26580896243712 (24.18 TB)
DFS Remaining: 26580895305594 (24.18 TB)
DFS Used: 938118 (916.13 KB)
```

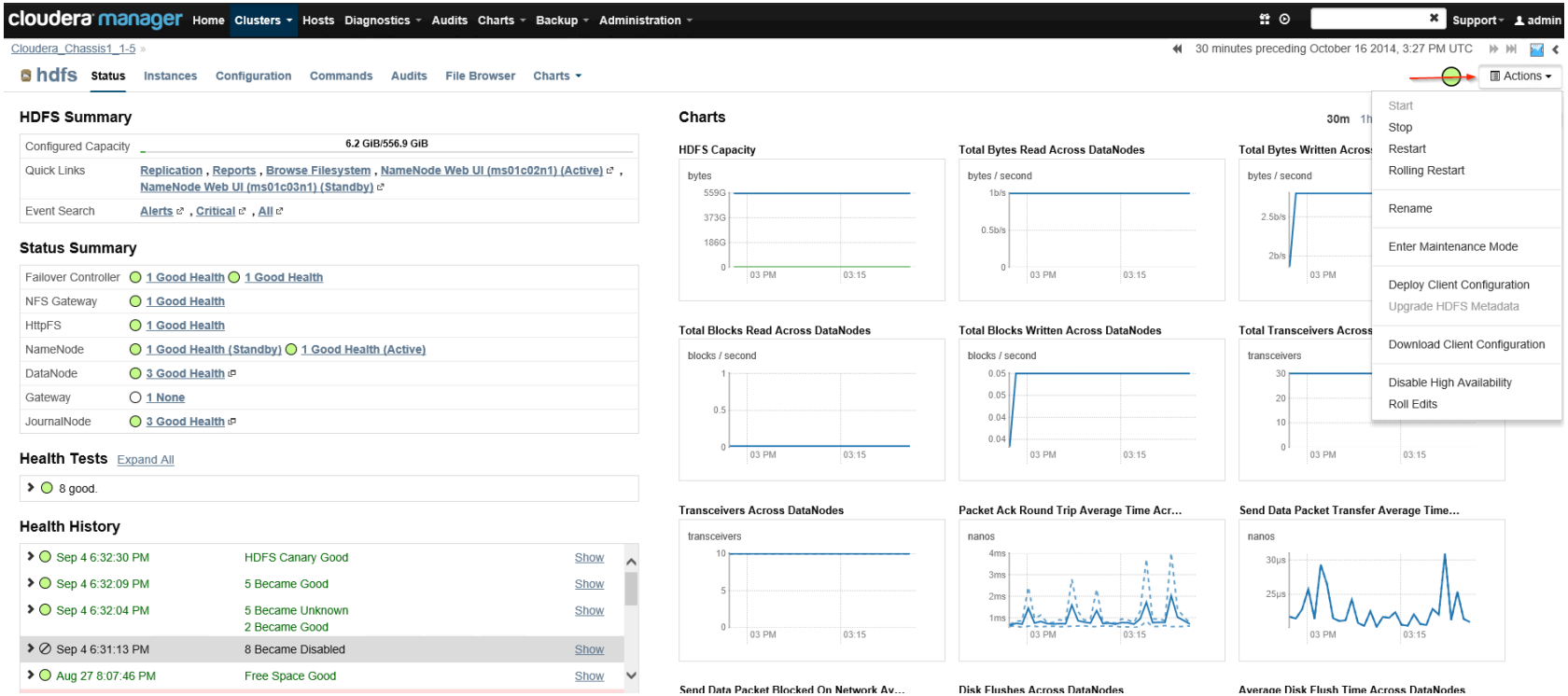
```
DFS Used%: 0.00%
Under replicated blocks: 0
Blocks with corrupt replicas: 0
Missing blocks: 0
-------------------------------------------------
Datanodes available: 3 (3 total, 0 dead)
Live datanodes:
Name: 10.12.49.215:50010 (bigdata-6.savvis.lab)
Hostname: bigdata-6.savvis.lab
Rack: /default
Decommission Status : Normal
Configured Capacity: 8860298747904 (8.06 TB)
DFS Used: 315392 (308 KB)
Non DFS Used: 0 (0 B)
DFS Remaining: 8860298432512 (8.06 TB)
DFS Used%: 0.00%
DFS Remaining%: 100.00%
Last contact: Wed Feb 05 19:36:15 UTC 2014

Name: 10.12.49.214:50010 (bigdata-5.savvis.lab)
Hostname: bigdata-5.savvis.lab
Rack: /default
Decommission Status : Normal
Configured Capacity: 8860298747904 (8.06 TB)
DFS Used: 307267 (300.07 KB)
Non DFS Used: 0 (0 B)
DFS Remaining: 8860298440637 (8.06 TB)
DFS Used%: 0.00%
DFS Remaining%: 100.00%
Last contact: Wed Feb 05 19:36:14 UTC 2014

Name: 10.12.49.217:50010 (bigdata-8.savvis.lab)
Hostname: bigdata-8.savvis.lab
Rack: /default
Decommission Status : Normal
Configured Capacity: 8860298747904 (8.06 TB)
```

```
DFS Used: 315459 (308.07 KB)
Non DFS Used: 0 (0 B)
DFS Remaining: 8860298432445 (8.06 TB)
DFS Used%: 0.00%
DFS Remaining%: 100.00%
Last contact: Wed Feb 05 19:36:15 UTC 2014
```

To view individual Cloudera Services, Click **Clusters** and select the Service Name under **Services**.



You can drill into individual services by clicking the Service from Cluster > Services drop-down menu. The Actions drop-down provides restart options and additional functions.



Note: Your actions are now available to execute on the 'hdfs1' service.

Check hadoop service listing from the CLI

Using jps command to list running services

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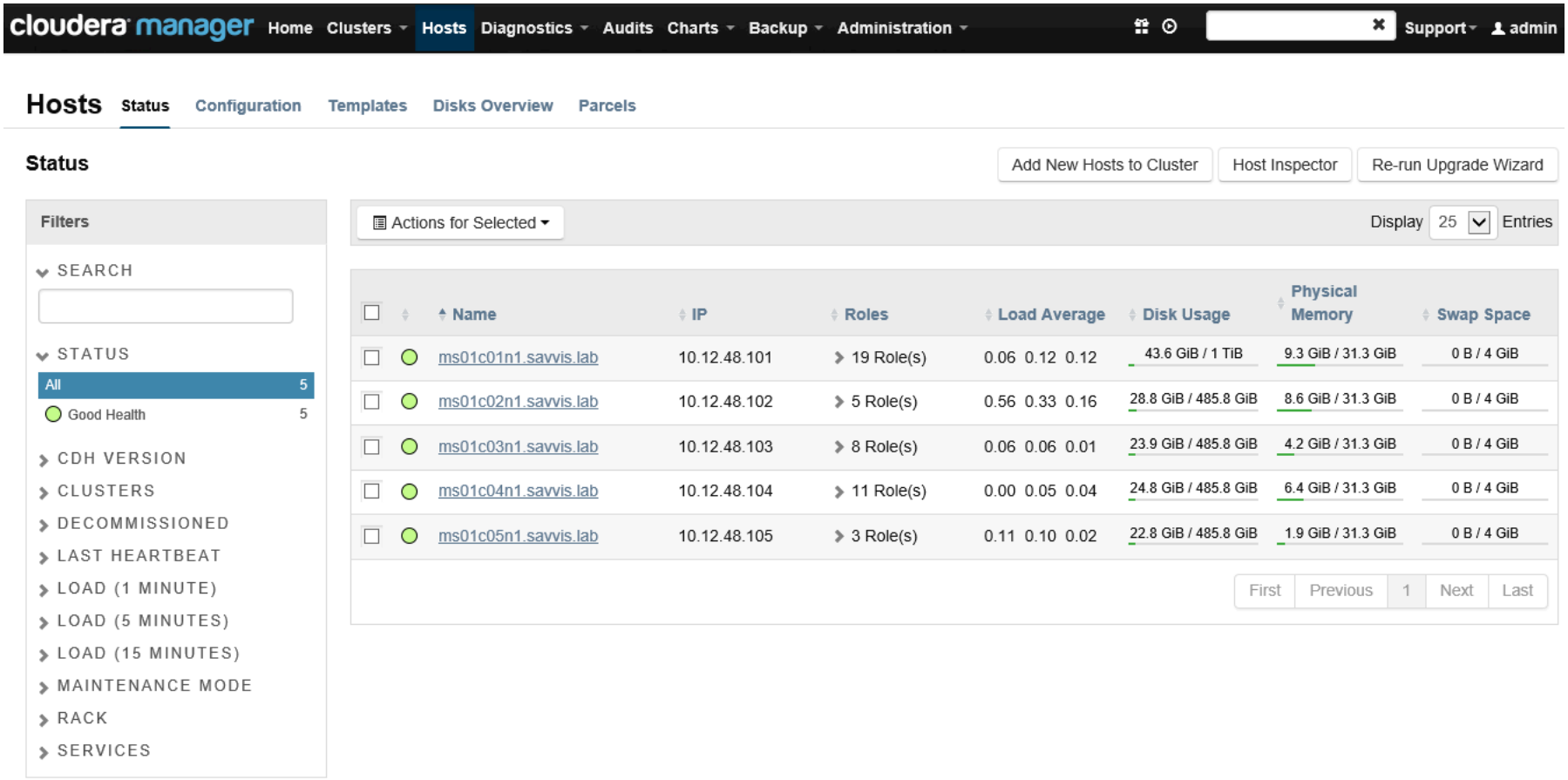
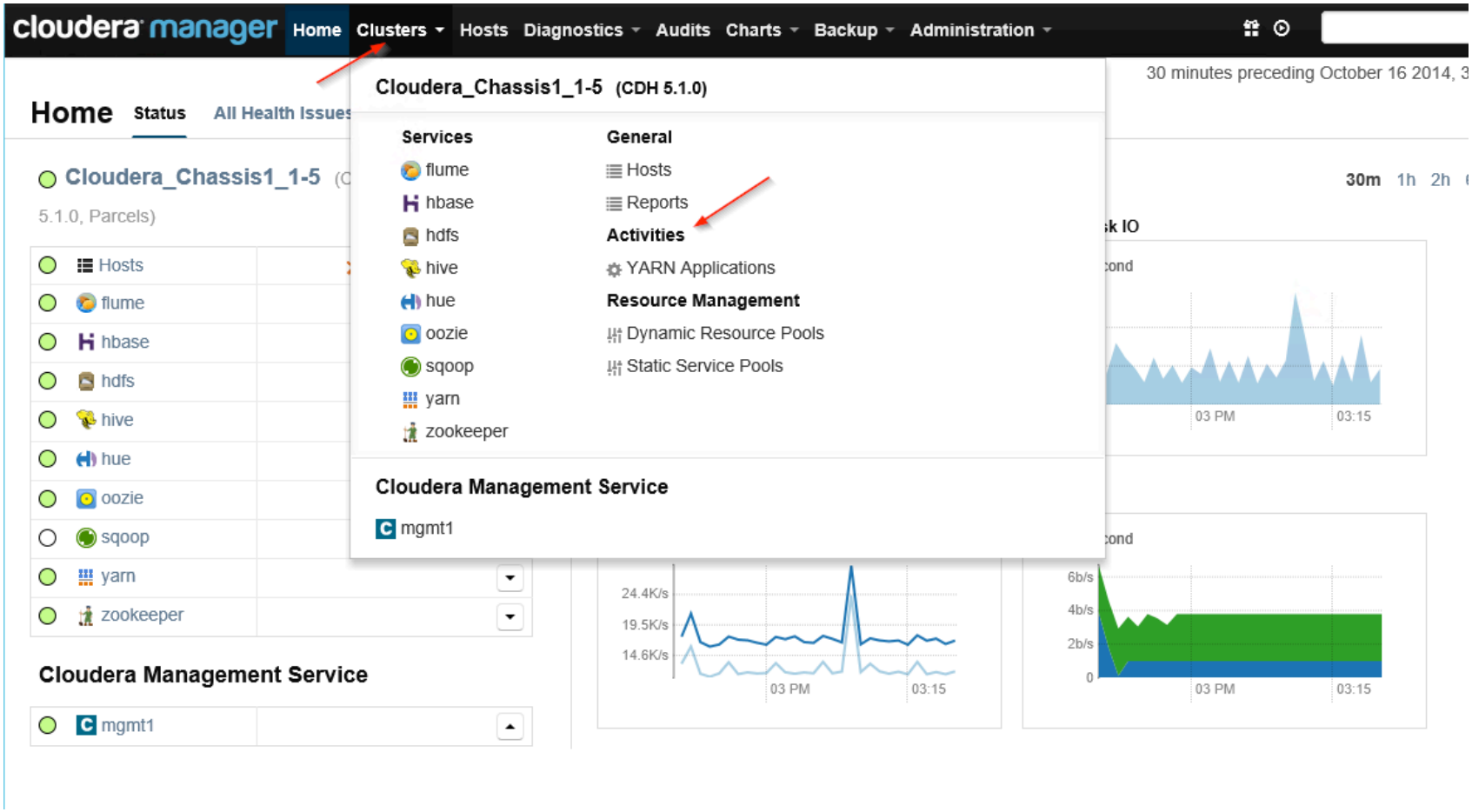
```
[root@bigdata-2 ~]# /usr/java/default/bin/jps
17209 DFSZKFailoverController
50220 Jps
```

```
14500 QuorumPeerMain
17107 JournalNode
17165 NameNode
```

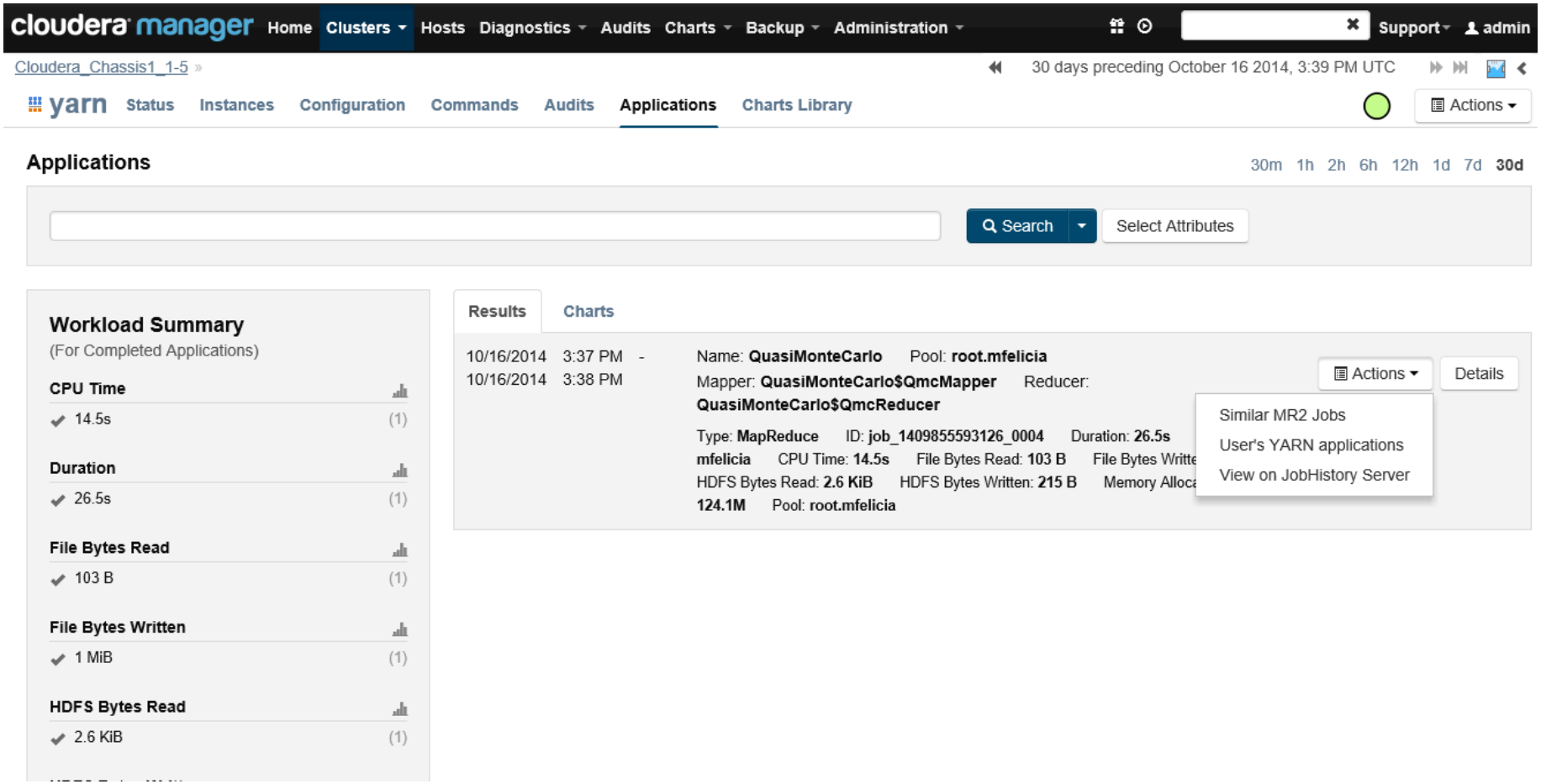
Click on the 'Hosts' tab in the upper menu to the left, note all of the hostnames are listed in the cluster with other vital information, and note the sub-menu's under "Hosts" for 'Status','Configuration','Templates', and 'Parcels'


cloudera manager
Home
Clusters
Hosts
Diagnostics
Audits
Charts
Backup
Administration
Support
admin
Hosts
Status
Configuration
Templates
Disks Overview
Parcels
Status
Add New Hosts to Cluster
Host Inspector
Re-run Upgrade Wizard
Filters
SEARCH
STATUS
All 5
Good Health 5
CDH VERSION
CLUSTERS
DECOMMISSIONED
LAST HEARTBEAT
LOAD (1 MINUTE)
LOAD (5 MINUTES)
LOAD (15 MINUTES)
MAINTENANCE MODE
RACK
SERVICES
Actions for Selected
Display 25 Entries
Name
IP
Roles
Load Average
Disk Usage
Physical Memory
Swap Space
ms01c01n1.savvis.lab 10.12.48.101 19 Role(s) 0.06 0.12 0.12 43.6 GiB / 1 TiB 9.3 GiB / 31.3 GiB 0 B / 4 GiB
ms01c02n1.savvis.lab 10.12.48.102 5 Role(s) 0.56 0.33 0.16 28.8 GiB / 485.8 GiB 8.6 GiB / 31.3 GiB 0 B / 4 GiB
ms01c03n1.savvis.lab 10.12.48.103 8 Role(s) 0.06 0.06 0.01 23.9 GiB / 485.8 GiB 4.2 GiB / 31.3 GiB 0 B / 4 GiB
ms01c04n1.savvis.lab 10.12.48.104 11 Role(s) 0.00 0.05 0.04 24.8 GiB / 485.8 GiB 6.4 GiB / 31.3 GiB 0 B / 4 GiB
ms01c05n1.savvis.lab 10.12.48.105 3 Role(s) 0.11 0.10 0.02 22.8 GiB / 485.8 GiB 1.9 GiB / 31.3 GiB 0 B / 4 GiB
First
Previous
1
Next
Last

Click on 'Activities', to the left of 'Hosts' on the upper menu tab.



Click the 'YARN Applications' to view current and past mapreduce jobs.



Check Hadoop mapreduce jobs from the CLI

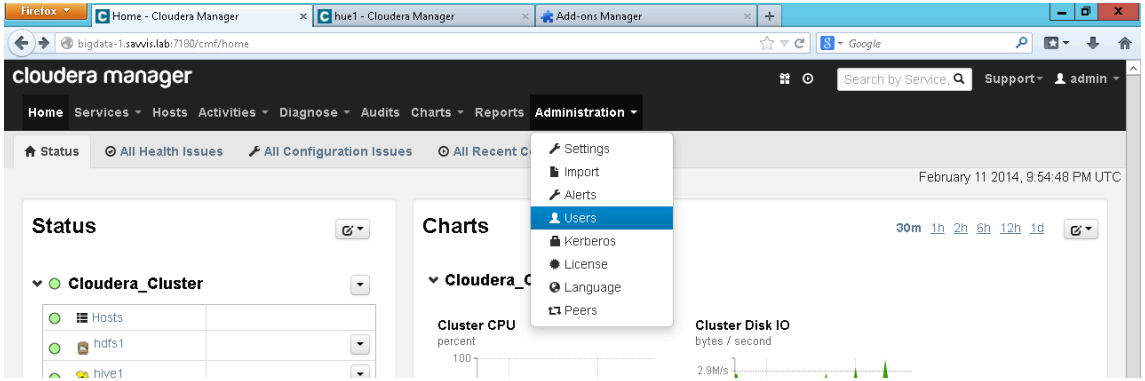
Checking hadoop mapreduce jobs status

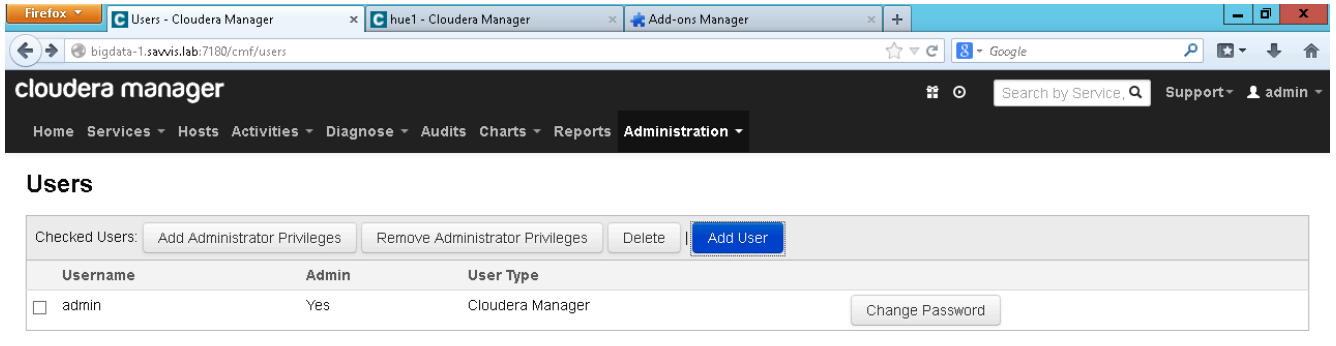
?

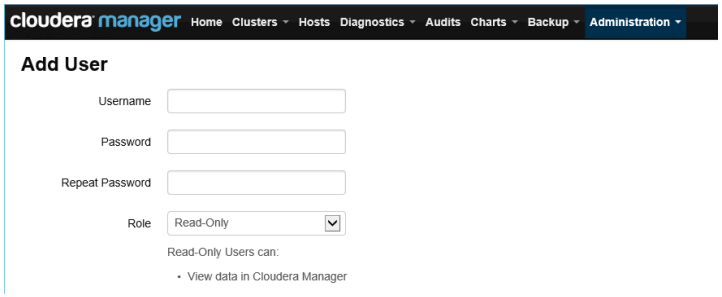
```
[root@bigdata-2 ~]# su - hdfs -c "hadoop job -list"
DEPRECATED: Use of this script to execute mapred command is deprecated.
Instead use the mapred command for it.
14/02/05 19:49:34 WARN conf.Configuration: session.id is deprecated. Instead, use dfs.metrics.session-id
14/02/05 19:49:34 INFO jvm.JvmMetrics: Initializing JVM Metrics with processName=JobTracker, sessionId=
0 jobs currently running
JobId State StartTime UserName Priority SchedulingInfo
```

Cloudera Manager Users and Authentication

To add a Cloudera Manager user account: Administration tab -> Users -> Add User button -> Enter a username and password -> Select User Role -> Click Add.







Upgrading Cloudera Manager

You can upgrade an existing Cloudera Manager to the latest version of Cloudera Manager. Upgrading preserves existing data and settings, while enabling the use of the new features provided with the latest product versions. To enable new features, some new settings are added, and some additional steps may be required, but nothing is removed.

The former Cloudera Manager Standard Editions is now known as Cloudera Express, and includes a number of features that were previously available only with Cloudera Manager Enterprise Edition. Specifically, service and activity, monitoring features are now available, and require databases to be set up for their use. Thus, upon upgrading Cloudera Manager, you will be asked for database information for these services. (You will have the option to use the embedded PostGreSQL database for this).

Understanding Upgrades

The process for upgrading to Cloudera Manager varies based on the starting point. The categories of tasks to be completed include the following:

- Install any databases that are newly required for this release. (If you are upgrading a Free Edition installation, you are asked to configure databases for the monitoring features that are now part of Cloudera Standard).
- Upgrade the Cloudera Manager server.
- Upgrade the hosts in the cluster.

Before Upgrading

- The Cloudera Manager Server must have SSH access to the cluster hosts and you must log in using a root account or an account that has password-less sudo permission. See Requirements for Cloudera Manager for more information.
- Ensure there are no running commands. Use the Admin Console's main navigation bar to check for any running commands. You can either wait for commands to complete or abort any running commands. For more information on viewing and aborting running commands, see Viewing Running and Recent Commands.
- Ensure you have completed any required process for preparing databases, as described in Database Considerations for Cloudera Manager Upgrades.

During the Upgrade

During the upgrade process, the following changes occur:

- The database schemas are modified for any databases storing information for Cloudera Manager Server, Activity Monitor, Service Monitor, Report Manager, and Host Monitor.
- Configuration information is reorganized.

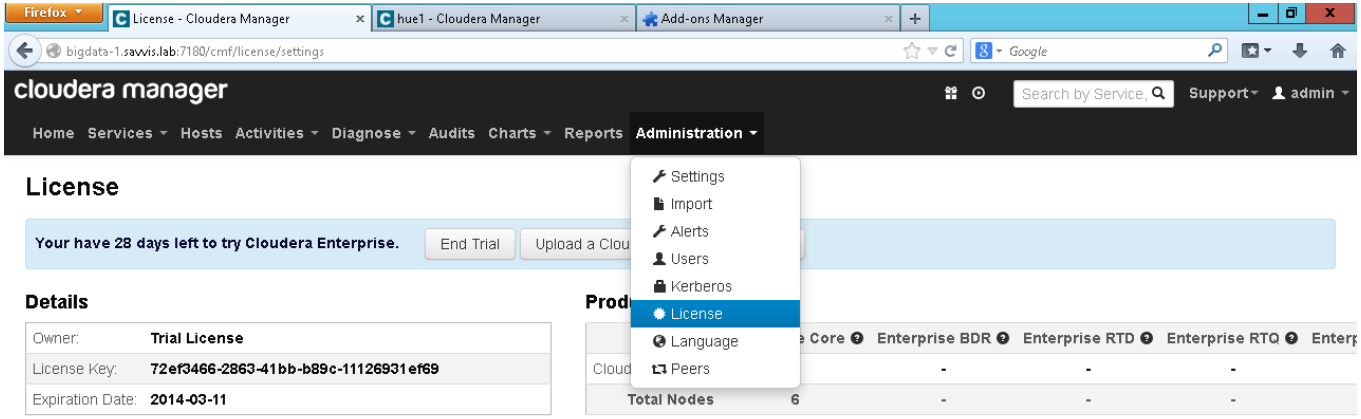
After Upgrading

After completing an upgrade to the latest Cloudera Manager (4.6 or later), the following is true:

- You have re-deployed client configurations to ensure client services have the most current configuration.
- Required databases are established to store information for Cloudera Manager Server, Hive Metastore, Activity Monitor, Service Monitor, Report Manager, and Host Monitor.
- The database schemas reflect the current version.
- The Host Monitor service is added and active.
- The Cloudera Manager Server and all supporting services, such as the Activity Monitor, Service Monitor, Report Manager, and Host Monitor are updated.

Managing Licenses

To access the **License** page, pull down the Administration menu and click License.



Configuring Alert Delivery

Configuring Alert Email Delivery

When you install the Cloudera Manager Management Services, it asks you for information about the mail server you will use with the Alert Publisher.

However, if you need to change these settings, you can do so under the Alert Publisher section of the Management Services configuration tab.

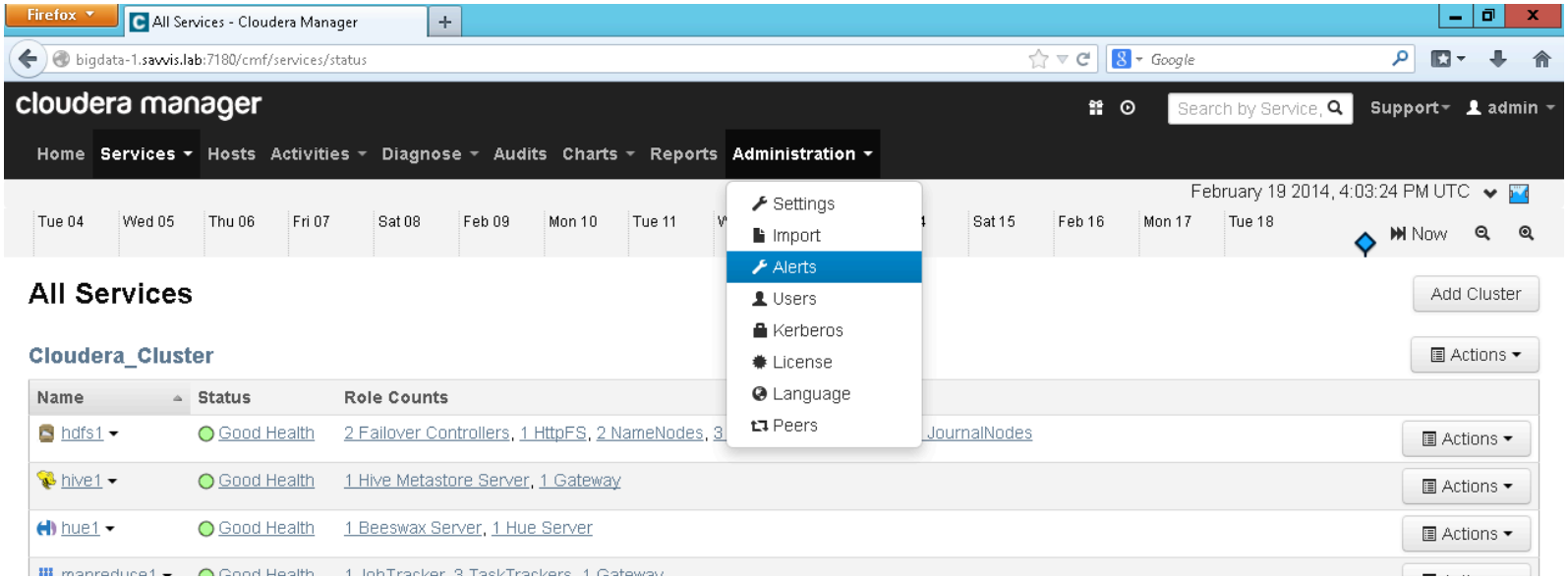
Note that if you just want to add to or modify the list of alert recipient email addresses, you can do from the **Alerts** page, accessed under the Administration tab.

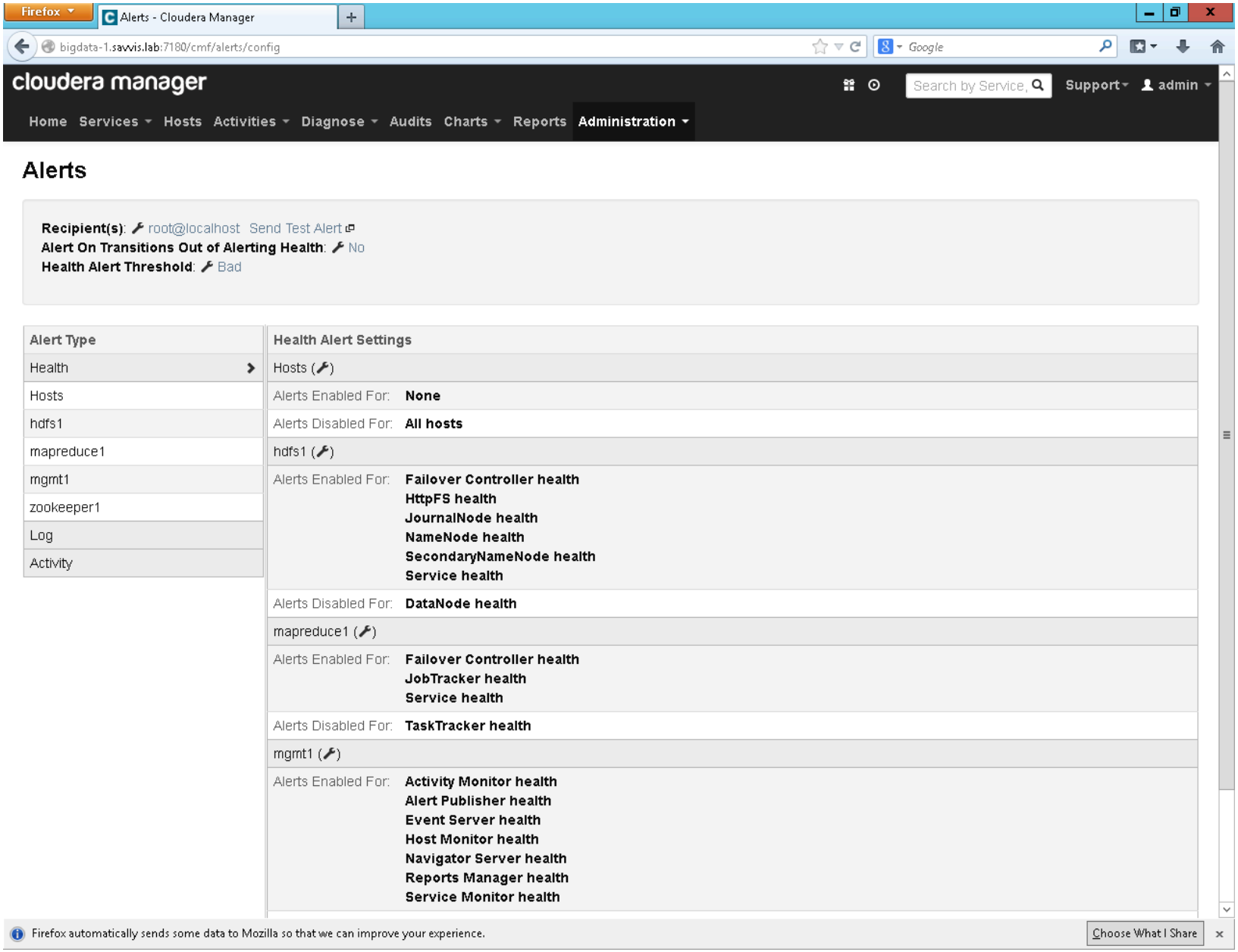
You can also send a test alert e-mail from the **Alerts** page under the **Administration** tab.

You can enable and disable email alerts delivery entirely (without changing the other email settings) with the **Enable email alerts** property.

To enable, disable, or configure email alerts:

1. From the **Clusters** > **Services** tab, select the **Cloudera Management Services** service instance.
2. Select Configuration > View and Edit.
3. Select the **Alert Publisher** and click the **Configuration tab** to see the list of properties. In order to receive email alerts you must set (or verify) the following settings:
   - Email protocol to use.
   - Your mail server hostname and port.
   - The username and password of the email user that will be logged into the mail server as the "sender" of the alert emails.
   - A comma-separated list of email addresses that will be the recipients of alert emails.
   - The format of the email alert message. Select **json** if you need the message to be parsed by a script or program.
4. Click the **Save Changes** button at the top of the page to save your settings.
5. You will need to restart the Alert Publisher role to have these changes take effect.


Firefox
All Services - Cloudera Manager
bigdata-1.savvis.lab:7180/cmf/services/status
Google
cloudera manager
Search by Service,
Support
admin
Home
Services
Hosts
Activities
Diagnose
Audits
Charts
Reports
Administration
Settings
Import
Alerts
Users
Kerberos
License
Language
Peers
February 19 2014, 4:03:24 PM UTC
Tue 04
Wed 05
Thu 06
Fri 07
Sat 08
Feb 09
Mon 10
Tue 11
Sat 15
Feb 16
Mon 17
Tue 18
Now
All Services
Add Cluster
Cloudera_Cluster
Actions
Name
Status
Role Counts
hdfs1
Good Health
2 Failover Controllers, 1 HttpFS, 2 NameNodes, 3
JournalNodes
Actions
hive1
Good Health
1 Hive Metastore Server, 1 Gateway
Actions
hue1
Good Health
1 Beeswax Server, 1 Hue Server
Actions


Firefox
Alerts - Cloudera Manager
bigdata-1.savvis.lab:7180/cmf/alerts/config
Google
cloudera manager
Search by Service,
Support
admin
Home
Services
Hosts
Activities
Diagnose
Audits
Charts
Reports
Administration
Alerts
Recipient(s): root@localhost Send Test Alert
Alert On Transitions Out of Alerting Health: No
Health Alert Threshold: Bad
Alert Type
Health
Hosts
hdfs1
mapreduce1
mgmt1
zookeeper1
Log
Activity
Health Alert Settings
Hosts
Alerts Enabled For: None
Alerts Disabled For: All hosts
hdfs1
Alerts Enabled For: Failover Controller health
HttpFS health
JournalNode health
NameNode health
SecondaryNameNode health
Service health
Alerts Disabled For: DataNode health
mapreduce1
Alerts Enabled For: Failover Controller health
JobTracker health
Service health
Alerts Disabled For: TaskTracker health
mgmt1
Alerts Enabled For: Activity Monitor health
Alert Publisher health
Event Server health
Host Monitor health
Navigator Server health
Reports Manager health
Service Monitor health
Firefox automatically sends some data to Mozilla so that we can improve your experience.
Choose What I Share

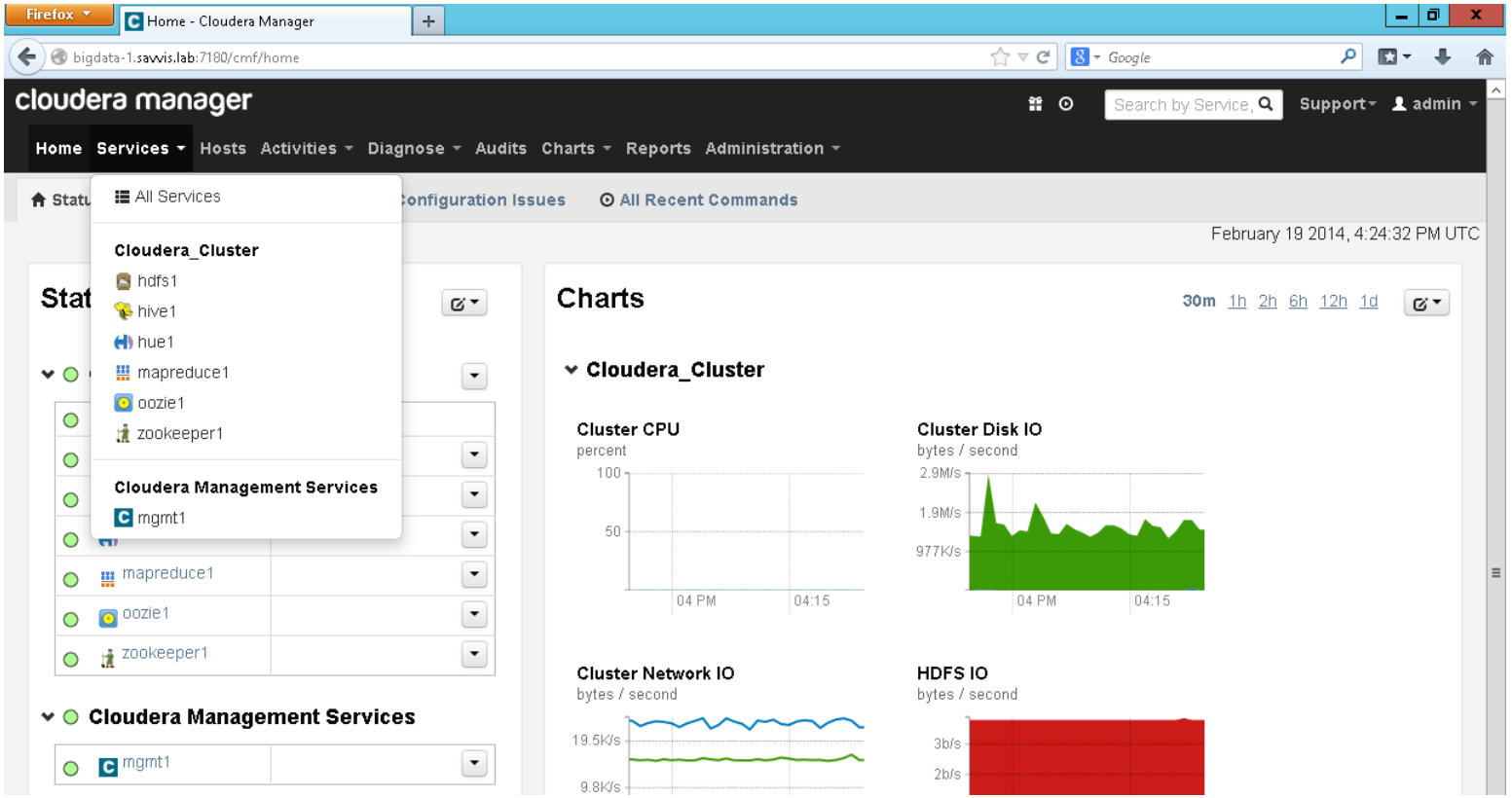
Configuring Management Services Database Limits

Each Cloudera Management Service maintains a database for retaining the data it monitors. These databases (as well as the log files maintained by these services) can grow quite large.
For example, the Activity Monitor maintains data at the service level, the activity level (MapReduce jobs and aggregate activities), and at the task attempt level.
Limits on these data sets are configured when you install your management services, but you can modify these parameters through the Configuration settings in the Cloudera Manager Admin console, for each management service.

For example, the Event Server lets you set a total number of events you want to store. Host Monitor and Service Monitor let you set data expiration thresholds (in hours), and Activity Monitor gives you "purge" settings
(also in hours) for the data it stores. There are also settings for the logs that these various services create. You can throttle how big the logs are allowed to get and how many previous logs to retain.

To change any of the data retention or log size settings:

1.From the Services tab, select the Cloudera Management Services service instance.
2.Select **Configuration** > **View** and **Edit**.
3.In the left-hand column, select the **role group** for the role whose configurations you want to modify. (Note that the management services are singleton roles so there will be only a Base role group for the role.)
4.For some services, such as the **Activity Monitor**, **Service Monitor**, or **Host Monitor**, the purge or expiration period properties are found in the top-level settings for the role.
Typically, **Log file size** settings will be under the **Logs** category under the **role group**.


Firefox
Home - Cloudera Manager
bigdata-1.savvis.lab:7180/cmf/home
cloudera manager
Search by Service,
Support
admin
Home
Services
Hosts
Activities
Diagnose
Audits
Charts
Reports
Administration
All Services
Cloudera_Cluster
hdfs1
hive1
hue1
mapreduce1
oozie1
zookeeper1
Cloudera Management Services
mgmt1
Configuration Issues
All Recent Commands
February 19 2014, 4:24:32 PM UTC
Charts
30m 1h 2h 6h 12h 1d
Cloudera_Cluster
Cluster CPU
percent
100
50
04 PM
04:15
Cluster Disk IO
bytes / second
2.9M/s
1.9M/s
977K/s
04 PM
04:15
Cluster Network IO
bytes / second
19.5K/s
9.8K/s
HDFS IO
bytes / second
3b/s
2b/s
Cloudera Management Services
mgmt1

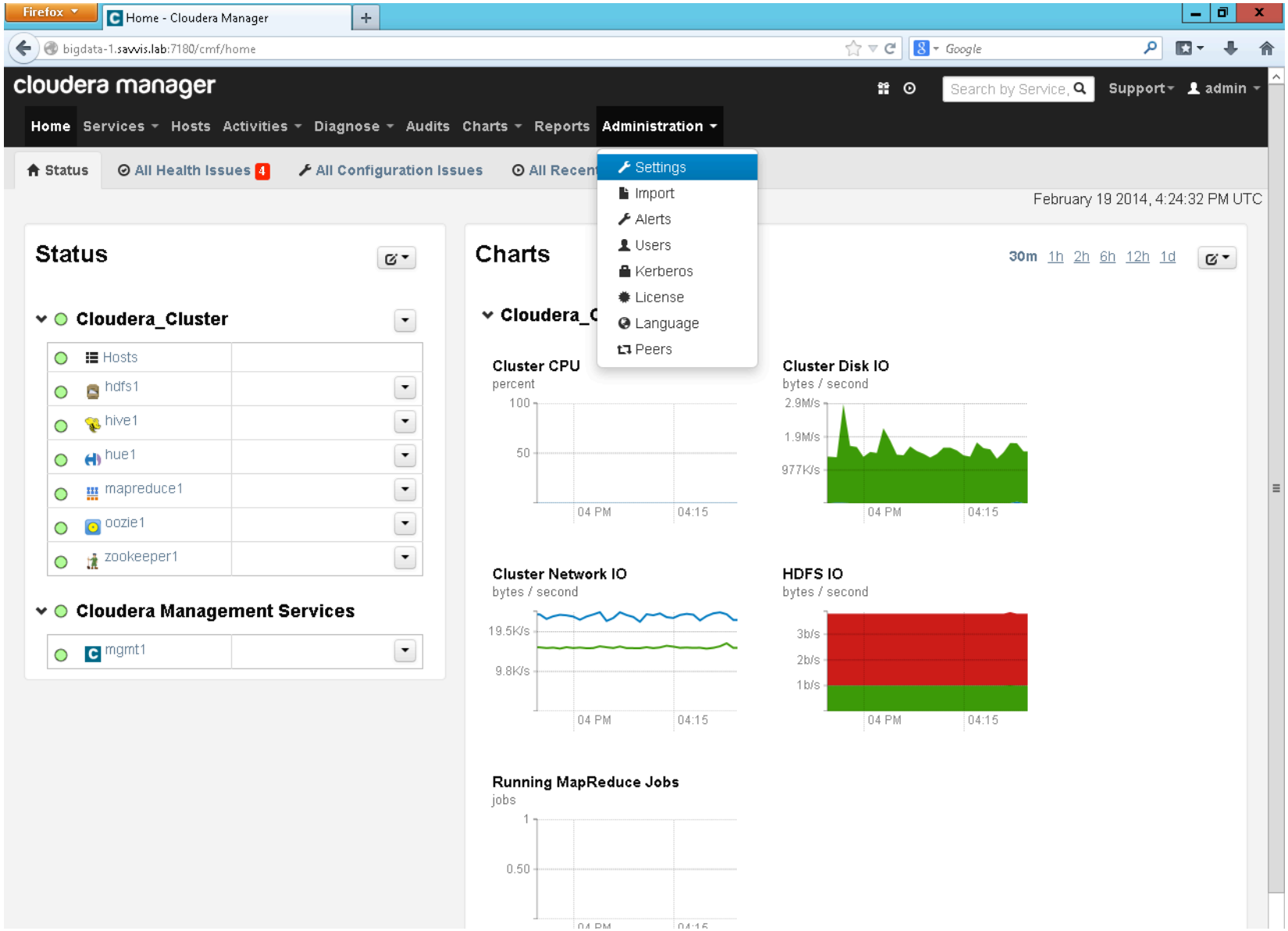
Other Cloudera Manager Settings

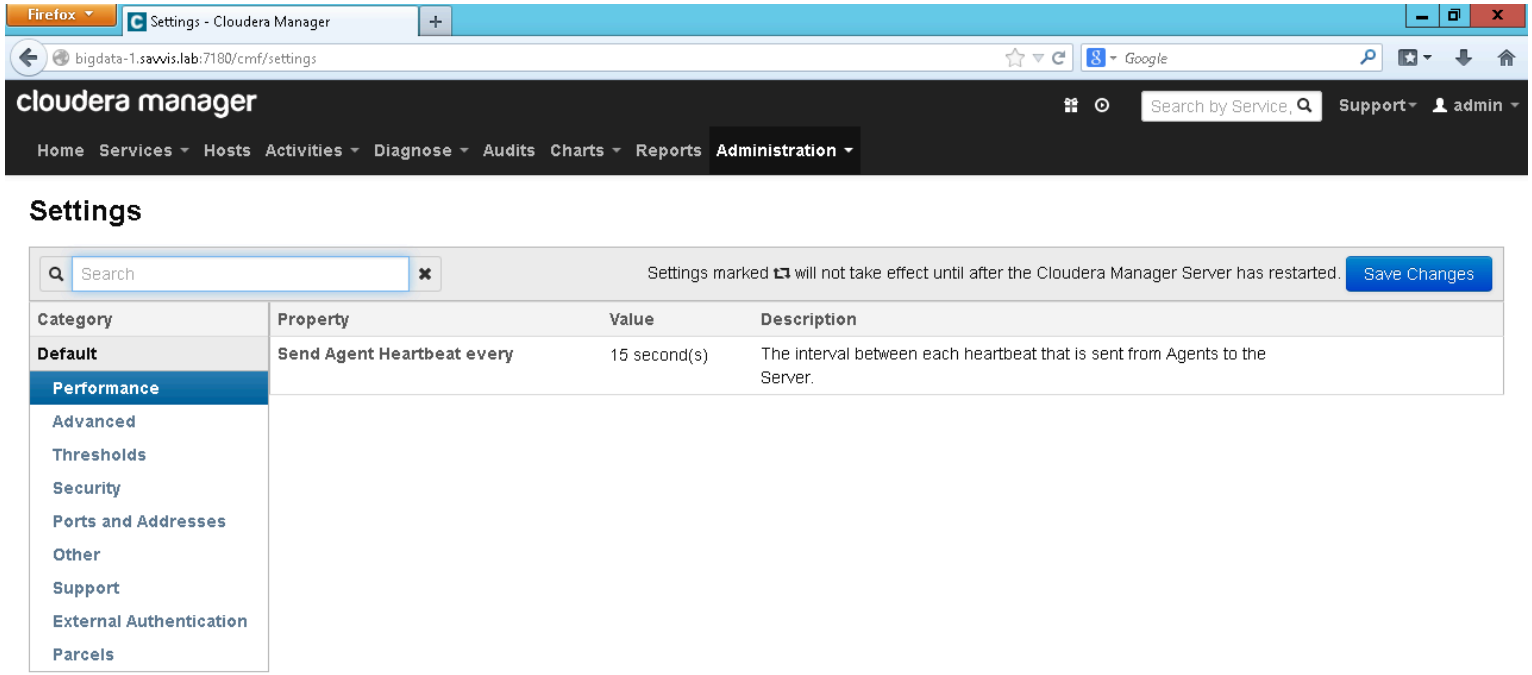
From the Administration tab you can select options for configuring settings that affect how Cloudera Manager interacts with your cluster.

The Administration Settings Page

The **Settings** page provides a number of categories as follows:

- **Performance** — Set the Cloudera Manager Agent heartbeat here.
- **Advanced** — Enable API debugging and other advanced options.
- **Thresholds** — Set Agent Health status parameters. For configuration instructions, see Configuring Agent Heartbeat and Health Status Options.
- **Security** — Set TLS encryption settings to enable TLS encryption between the Cloudera Manager Server, Agents, and clients. For configuration instructions, see Configuring TLS Security for Cloudera Manager
  You can also:
- Set the realm for Kerberos security and point to a custom keytab retrieval script. For configuration instructions, see Configuring Hadoop Security with Cloudera Manager .
- Specify session timeout and a "Remember Me" option.
- **Ports and Addresses** — Set ports for the Cloudera Manager Admin Console and Server. For configuration instructions, see Configuring the Ports for the Admin Console and Agents.
- **Other** — To enable Cloudera usage data collection for configuration instructions, see Sending Usage and Diagnostic Data to Cloudera. You can also:
- Set a custom header color and banner text for the Admin console.
- Set an "Information Assurance Policy" statement – this statement will be presented to every user before they are allowed to access the login dialog. The user must click "I Agree" in order to proceed to the login dialog.
- Disable/enable the auto-search for the Events panel at the bottom of a page.
- **Support** — Enable access to online Help files from the Cloudera web site rather than from locally installed files. (See Opening the Help Files from the Cloudera Web Site), and enable automatic
  sending of diagnostic data to Cloudera when you trigger a data collection (see Sending Diagnostic Data to Cloudera)
- **External Authentication** — Specify the configuration to use LDAP, Active Directory, or an external program for authentication. See Configuring External Authentication for instructions.
- **Parcels**— Configure settings for parcels, including the location of remote repositories that should be made available for download, and other settings such as the frequency with which
  Cloudera Manager will check for new parcels, limits on the number of downloads or concurrent distribution uploads. See Using Parcels for more information.


Firefox
Home - Cloudera Manager
bigdata-1.savvis.lab:7180/cmf/home
cloudera manager
Search by Service,
Support
admin
Home
Services
Hosts
Activities
Diagnose
Audits
Charts
Reports
Administration
Settings
Import
Alerts
Users
Kerberos
License
Language
Peers
Status
All Health Issues 4
All Configuration Issues
February 19 2014, 4:24:32 PM UTC
Status
Cloudera_Cluster
Hosts
hdfs1
hive1
hue1
mapreduce1
oozie1
zookeeper1
Cloudera Management Services
mgmt1
Charts
30m 1h 2h 6h 12h 1d
Cluster CPU
percent
100
50
04 PM
04:15
Cluster Disk IO
bytes / second
2.9M/s
1.9M/s
977K/s
Cluster Network IO
bytes / second
19.5K/s
9.8K/s
HDFS IO
bytes / second
3b/s
2b/s
1b/s
Running MapReduce Jobs
jobs
1
0.50

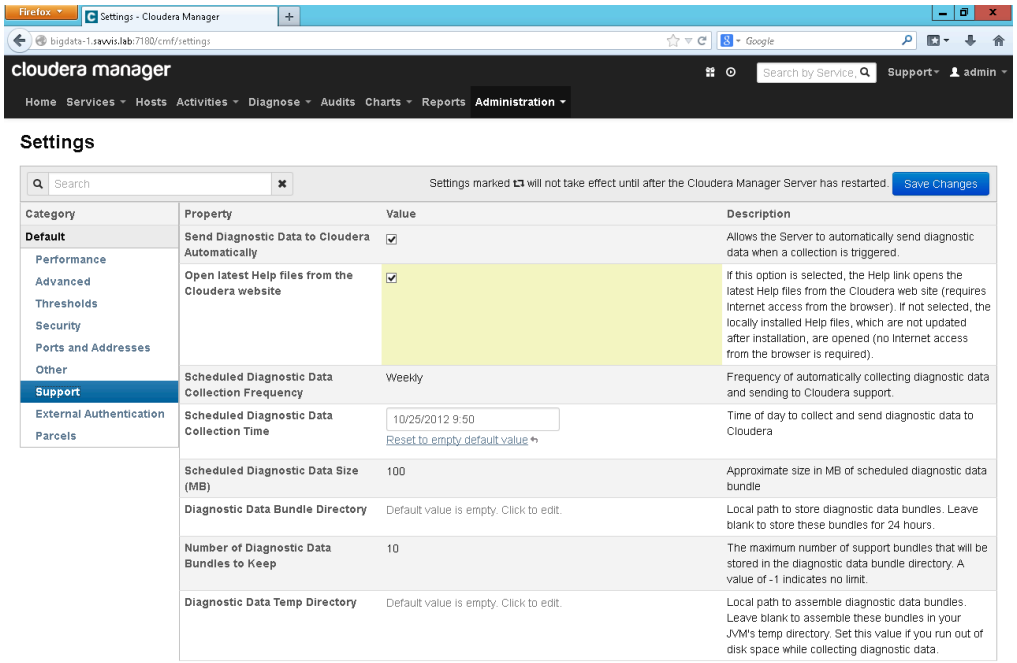

Firefox
Settings - Cloudera Manager
bigdata-1.savvis.lab:7180/cmf/settings
Google
cloudera manager
Search by Service
Support
admin
Home
Services
Hosts
Activities
Diagnose
Audits
Charts
Reports
Administration
Settings
Search
Settings marked will not take effect until after the Cloudera Manager Server has restarted.
Save Changes
Category
Property
Value
Description
Default
Send Agent Heartbeat every
15 second(s)
The interval between each heartbeat that is sent from Agents to the Server.
Performance
Advanced
Thresholds
Security
Ports and Addresses
Other
Support
External Authentication
Parcels

Opening the Help Files from the Cloudera Web Site

By default, when you click the Help link under the Support menu in the Cloudera Manager Admin console, Help files from the Cloudera web site are opened. This is because local Help files are not updated after installation. You can configure Cloudera Manager to open either the latest Help files from the Cloudera web site (this option requires Internet access from the browser) or locally-installed Help files.

To configure **Cloudera Manager** to open the Help files from the Cloudera web site (or local Help files):

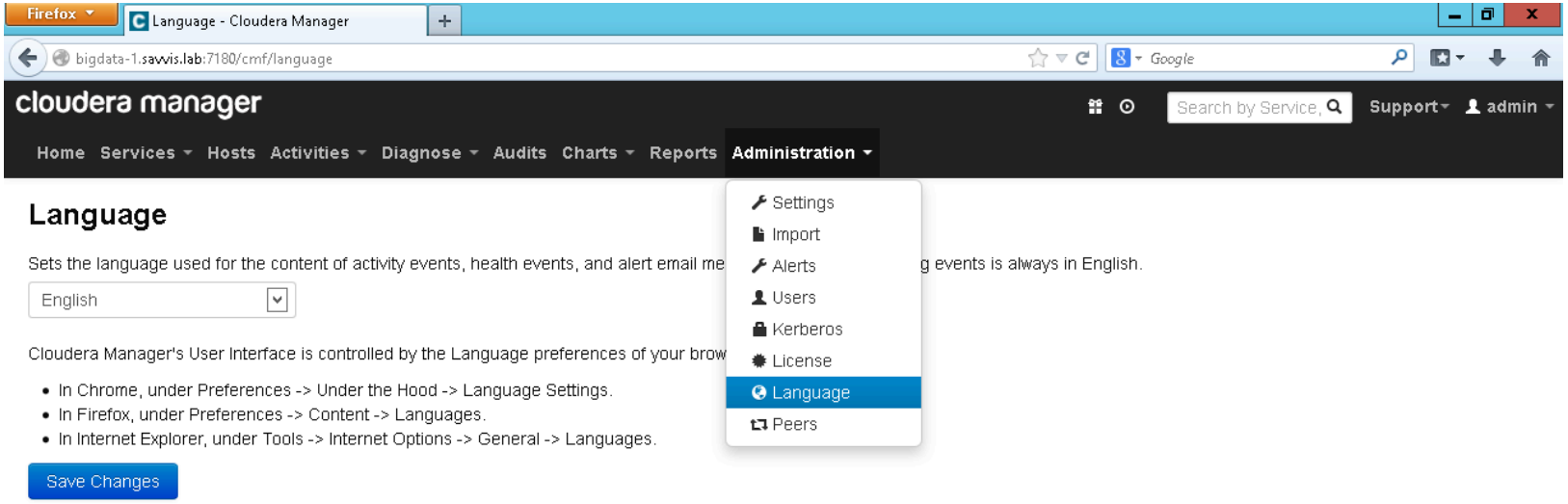
1. From the **Administration** tab, select **Settings**.
2. Under the **Support** category, enable the **Open latest Help files from the Cloudera website**. This setting will be enabled by default and you can uncheck this option to open the locally-installed Help documents.
3. Click **Save Changes**.



User Interface Language Settings

You can change the language of the Cloudera Manager Admin Console User Interface through the language preference in your browser. Information on how to do this for the browsers supported by Cloudera Manager is shown under the **Administration** > **Language** page. You can also change the language for the information provided with activity and health events, and for alert email messages.

To change the language of the activity and health event information and alert email messages, select the language you want from the drop-down list on this page, and then click **Save Changes**.



Sending Usage and Diagnostic Data to Cloudera

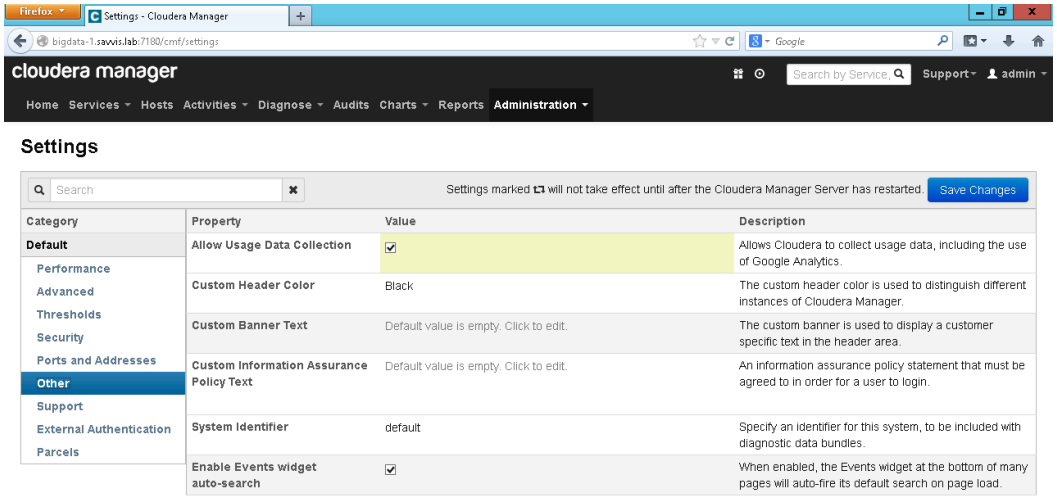
Cloudera Manager collects anonymous usage information and takes regularly scheduled snapshots of the state of your cluster and automatically sends them anonymously to Cloudera.

This helps Cloudera improve and optimize Cloudera Manager. If you are a Cloudera Enterprise user, you can also trigger the collection of diagnostic data and send it to Cloudera Support to aid in resolving a problem you may be having.

Anonymous Usage Data Collection

Cloudera Manager sends anonymous usage information using Google Analytics to Cloudera. The information helps Cloudera improve Cloudera Manager. By default anonymous usage data collection is *enabled*.

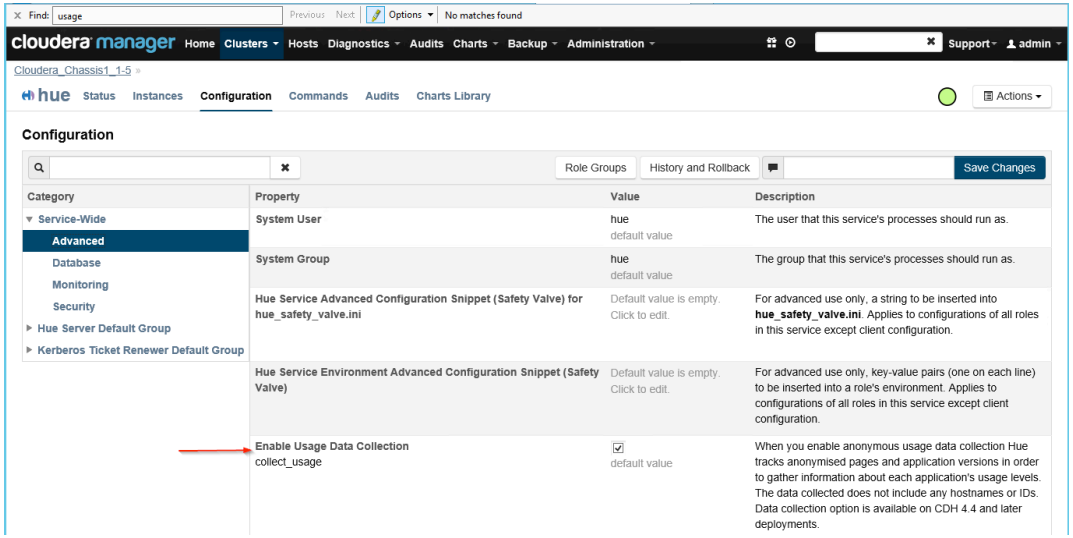
1. From the Administration tab, select Settings.
2. Under the **Other** category, set the **Allow Usage Data Collection** property.
3. Click **Save Changes**.



Managing Hue Analytics Data Collection

Hue tracks anonymised pages and application versions in order to gather information to help compare each application's usage levels. The data collected does not include any hostnames or IDs. For example, the data is of the form: /2.3.0/pig, /2.5.0/beeswax/execute. You can restrict data collection as follows:

1. Go to the **Clusters > Hue** service.
2. Select **Configuration**.
3. Expand the **Service-Wide** category. Click **Advanced.**
4. Uncheck the **Enable Usage Data Collection** checkbox.
5. Click **Save Changes**.
6. Restart the Hue service.



Diagnostic Data Collection

To help with solving problems when using Cloudera Manager on your cluster, Cloudera Manager collects diagnostic data on a regular schedule, and automatically sends it to Cloudera.

By default Cloudera Manager is configured to collect data weekly and to send it *automatically*. You can schedule the frequency of data collection on a daily, weekly, or monthly schedule, or disable the scheduled collection of data entirely. You can also send a collected data set manually.