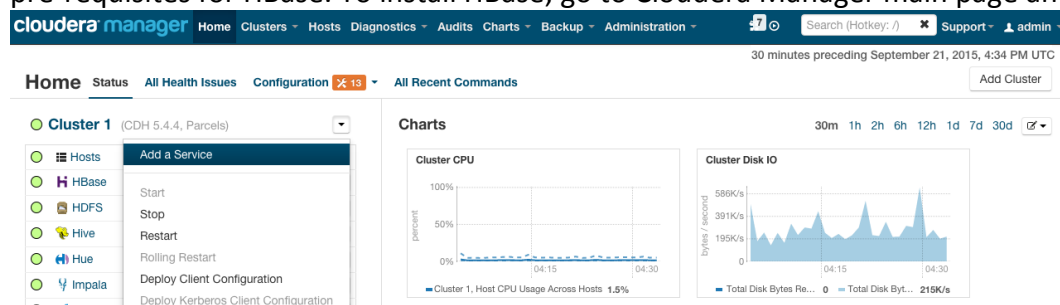




HBase Installation

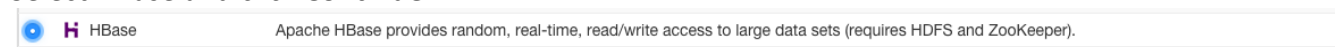
September 2015

HBase is one of Hadoop core components, included in CDH parcel already. HDFS and Zookeeper are 2 pre-requisites for HBase. To install HBase, go to Cloudera Manager main page and click **Add a Service**.



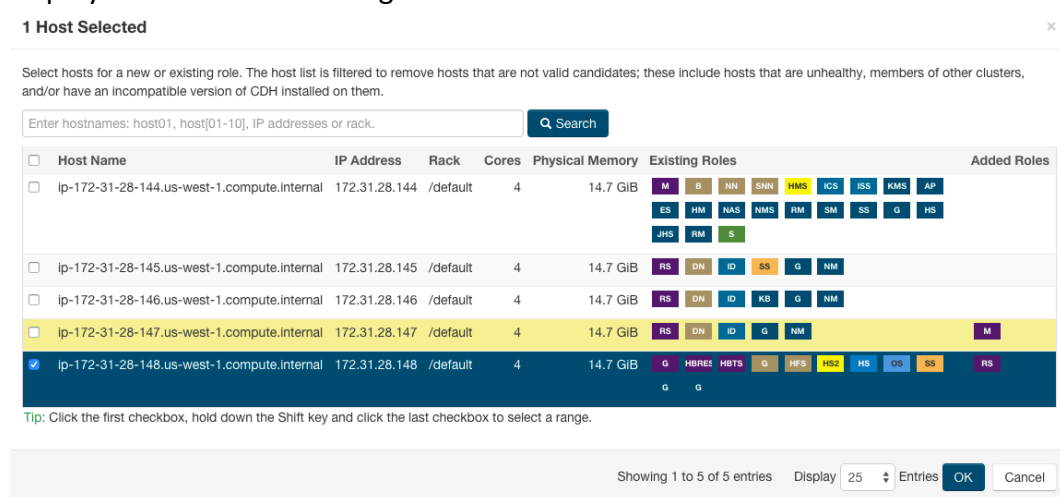
The screenshot shows the Cloudera Manager interface. At the top, there's a navigation bar with 'Home', 'Clusters', 'Hosts', 'Diagnostics', 'Audits', 'Charts', 'Backup', and 'Administration'. Below this, a 'Home' section shows 'Cluster 1 (CDH 5.4.4, Parcels)' with a dropdown menu open, listing 'Add a Service', 'Start', 'Stop', 'Restart', 'Rolling Restart', 'Deploy Client Configuration', and 'Deploy Kerberos Client Configuration'. To the right, there are two charts: 'Cluster CPU' and 'Cluster Disk IO'.

Select HBase and click **Continue**.



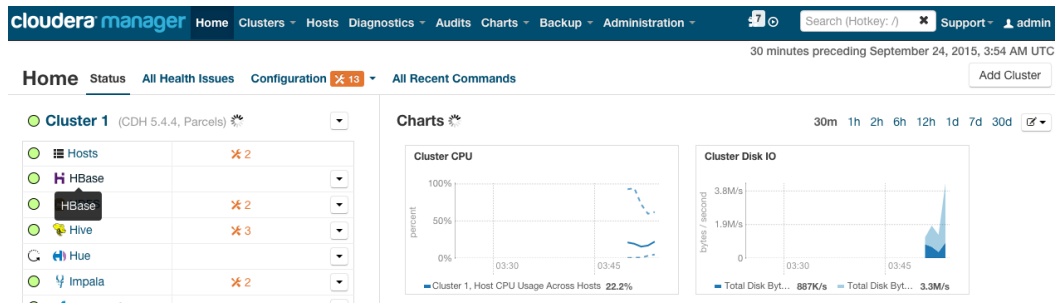
The screenshot shows the 'HBase' service selection screen. It features a blue circular icon with a white 'H' and the text 'HBase'. To the right, it says 'Apache HBase provides random, real-time, read/write access to large data sets (requires HDFS and ZooKeeper)'.

Deploy HBase master and region servers.



The screenshot shows the '1 Host Selected' dialog. It has a search bar with the text 'Enter hostnames: host01, host[01-10], IP addresses or rack.' and a 'Search' button. Below the search bar is a table with columns: Host Name, IP Address, Rack, Cores, Physical Memory, Existing Roles, and Added Roles. The table lists five hosts, with the last one (ip-172-31-28-148.us-west-1.compute.internal) selected. At the bottom, there's a tip: 'Tip: Click the first checkbox, hold down the Shift key and click the last checkbox to select a range.' and a footer showing 'Showing 1 to 5 of 5 entries' and buttons for 'Display', 'Entries', 'OK', and 'Cancel'.

Cloudera manager starts HBaseservice.



By default, HBase will create directory in HDFS and Zookeeper.

HDFS Root Directory
hbase.rootdir

HBase (Service-Wide)

```
$>hdfsdfs -ls /
Found 4 items
drwxr-xr-x  - hbasehbase          0 2015-09-24 03:52 /hbase
...
```

ZooKeeper Znode Parent
zookeeper.znode.parent

HBase (Service-Wide)

```
$>hbasezkcli
ls /
[isr_change_notification, hbase, admin, zookeeper, consumers, hive_zookeeper_namespace_hive, config, solr,
controller, brokers, controller_epoch]

ls /hbase
[meta-region-server, acl, backup-masters, region-in-transition, draining, table, running, table-lock, master,
namespace, hbaseid, online-snapshot, replication, recovering-regions, splitWAL, rs, flush-table-proc]
```

Sanity Check

```
$>hbase shell
hbase(main):001:0> list
TABLE
0 row(s) in 0.2190 seconds

=> []
hbase(main):002:0> create 'test', {NAME => 'f'}
0 row(s) in 0.6820 seconds

=>Hbase::Table - test
```

```

hbase(main):003:0> list
TABLE
test
1 row(s) in 0.0120 seconds

=> ["test"]
hbase(main):004:0> put 'test', 'r1', 'f:c', 'data'
0 row(s) in 0.2500 seconds

hbase(main):005:0> scan 'test'
ROW          COLUMN+CELL
r1           column=f:c, timestamp=1443067646259, value=data
1 row(s) in 0.0480 seconds

hbase(main):006:0> put 'test', 'r2', 'f:d', 'data2'
0 row(s) in 0.0070 seconds

hbase(main):007:0> scan 'test'
ROW          COLUMN+CELL
r1           column=f:c, timestamp=1443067646259, value=data
r2           column=f:d, timestamp=1443067662860, value=data2
2 row(s) in 0.0090 seconds

hbase(main):008:0> get 'test', 'r2'
COLUMN      CELL
f:d         timestamp=1443067662860, value=data2
1 row(s) in 0.0160 seconds

hbase(main):009:0> disable 'test'
0 row(s) in 1.2300 seconds

hbase(main):010:0> drop 'test'
0 row(s) in 0.1740 seconds

```

Please be aware of that HBase is a NO-SQL storage engine, normally you have to use HBase API to access HBase.

HBase Security

For HBase security, you are allowed to enable HBase Kerberos authentication and authorization. By default HBase use simple authentication and authorization is disabled.

Enable HBase Kerberos



HBase Secure Authentication
hbase.security.authentication

HBase (Service-Wide)

simple

kerberos

?

Enable HBase Authorization

HBase Secure Authorization
hbase.security.authorization

HBase (Service-Wide)

?

Verification

Run as HBasesuperuser, e.g. hbase (superuser is configurable in Cloudera Manager).

Q super	✖	Role Groups	History and Rollback	Notes	Save Changes
Saved 2 change(s).					
Category	Property	Value	Description		
Service-Wide	HBase Superusers hbase.superuser	Default value is empty. Click to edit.	List of users or groups, who are allowed full privileges, regardless of stored ACLs, across the cluster. Only used when HBase security is enabled.		

```
$>kinithbase
```

```
$>hbase shell
```

```
hbase(main):003:0> create 'acl', {NAME => 'cf'}
```

```
0 row(s) in 1.8640 seconds
```

```
=>Hbase::Table - acl
```

```
hbase(main):007:0> put 'acl', 'r1', 'cf:c1', 'data'
```

```
0 row(s) in 0.0970 seconds
```

```
hbase(main):008:0> grant 'root', 'R', 'acl', 'cf'
```

```
0 row(s) in 0.6390 seconds
```

after this command, root is allowed to read data but not able to write data

```
hbase(main):011:0> revoke 'root', 'acl', 'cf'
```

```
0 row(s) in 0.0780 seconds
```

after this command, root is NOT allowed to read data any more

Run as HBase users.

```
root$>kinit
```

```
root $>hbase shell
```

```
hbase(main):003:0> create 'acl', {NAME => 'cf'}
```

```
ERROR: org.apache.hadoop.hbase.security.AccessDeniedException: Insufficient permissions for user 'root'
(global, action=CREATE)
```

```
# root don't have permissions to create table in HBase default namespace by default
```

```
hbase(main):005:0> put 'acl', 'r1', 'cf:c1', 'data'
```

```
ERROR: Failed 1 action: org.apache.hadoop.hbase.security.AccessDeniedException: Insufficient permissions  
(user=root, scope=acl, family=cf:c1, action=WRITE)
```

```
hbase(main):006:0> scan 'acl'
```

```
ROW          COLUMN+CELL
```

```
r1           column=cf:c1, timestamp=1430233449977, value=data
```

```
1 row(s) in 0.0640 seconds
```

If you run hbase shell without kinit, when you execute command like 'list', 'create ...', you may get error messages like below:

```
15/04/14 06:15:43 WARN security.UserGroupInformation: PrivilegedActionExceptionas:root (auth:KERBEROS)  
cause:javax.security.sasl.SaslException: GSS initiate failed [Caused by GSSException: No valid credentials  
provided (Mechanism level: Failed to find any Kerberos tgt)]
```

```
15/04/14 06:15:43 WARN ipc.RpcClient: Exception encountered while connecting to the server :  
javax.security.sasl.SaslException: GSS initiate failed [Caused by GSSException: No valid credentials provided  
(Mechanism level: Failed to find any Kerberos tgt)]
```