

Yog Chaudhary

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ADTA 5240 Week 3'rd (harvesting, Storing, And Retrieving Data)

Professor: Dr. Zeynep Orhan

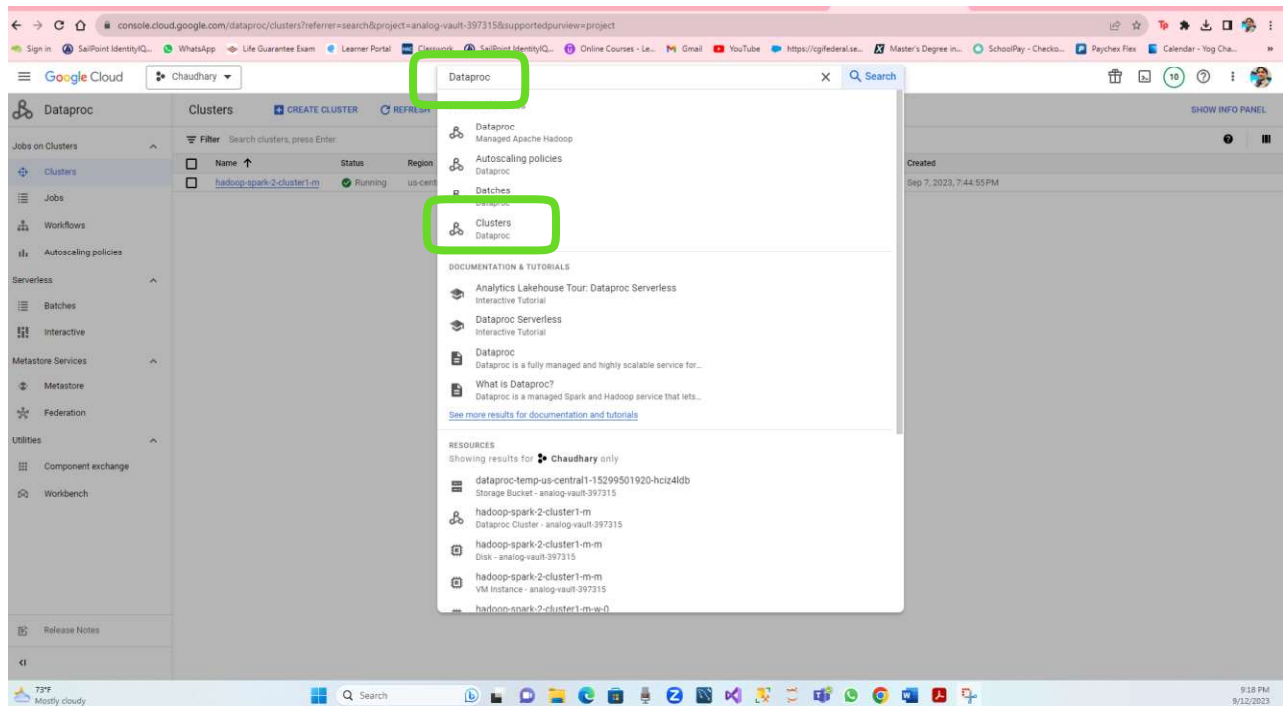
Sep 15, 2023

University Of North Texas

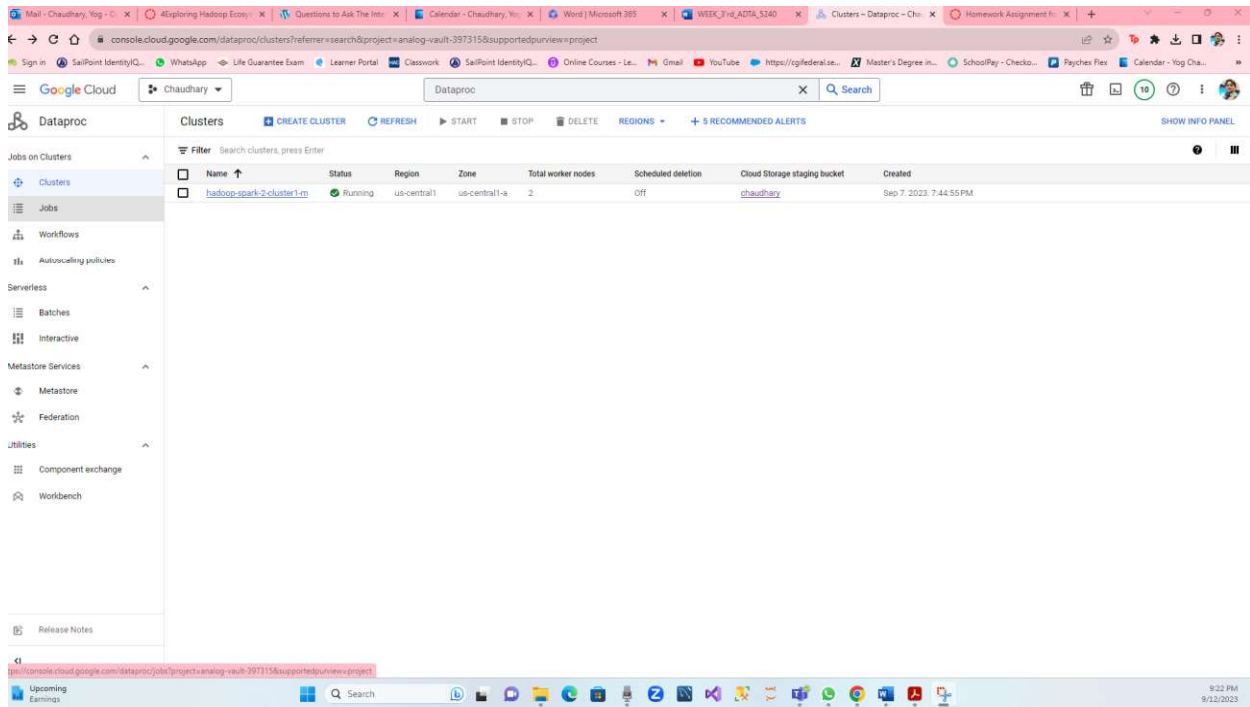
Exploring Remote Virtual Machine in the Cloud. Hadoop Ecosystem with Simple Linux Commands. Pdf

❖ Monitoring the cluster in GCP:

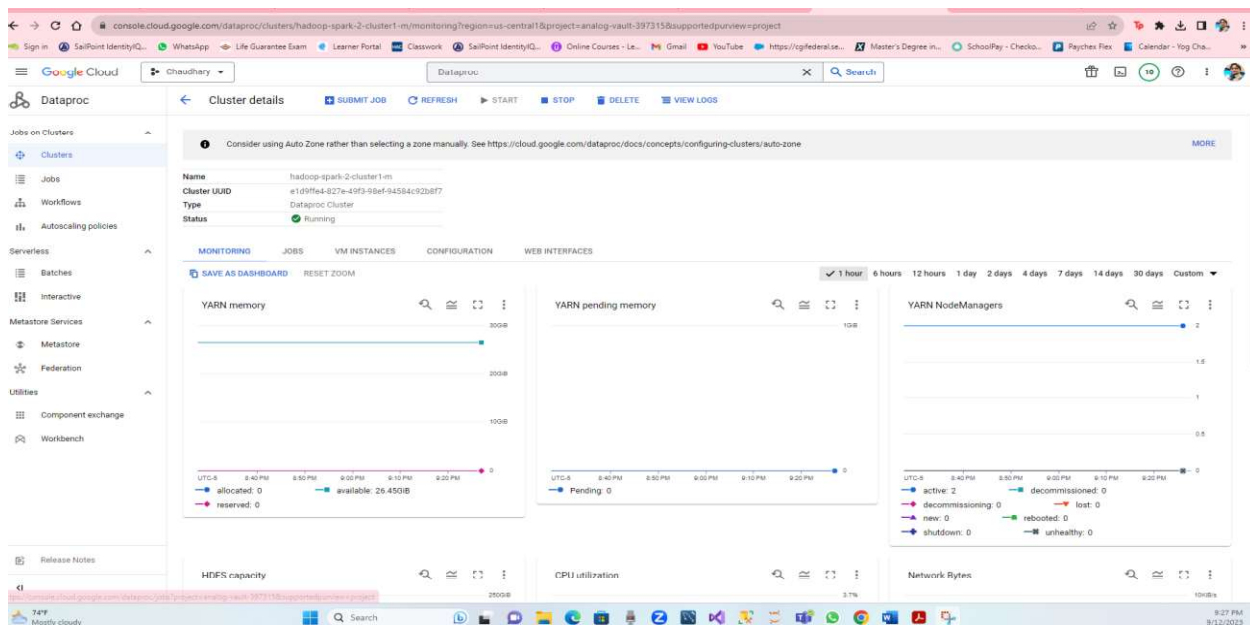
- 1. For setting up a virtual machine with Linux as the operating system, I have signed into a Google GCP console.**
 - Then I clicked on three horizontal lines.**
 - In the search bar I typed “Cluster” and clicked on “Clusters Dataproc.”**
 - Here is screenshot**



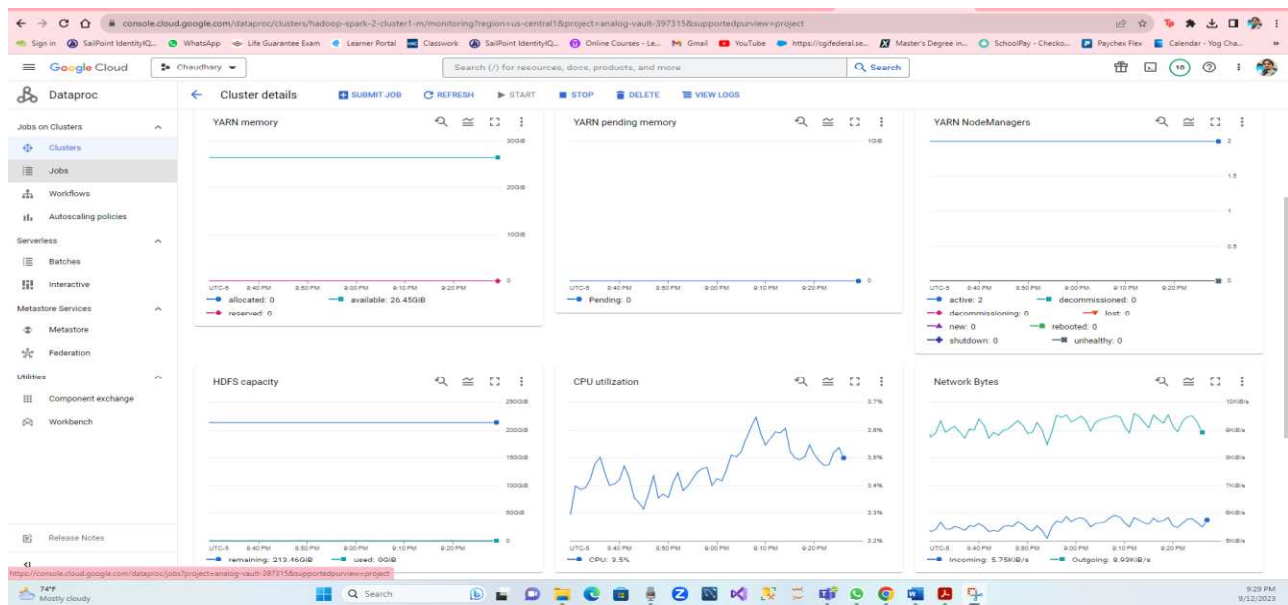
- After clicking on clusters data proc it will mention the cluster that I have previously created, and it will show that it was running (with a green check mark).**
- Below shows a screenshot of that.**



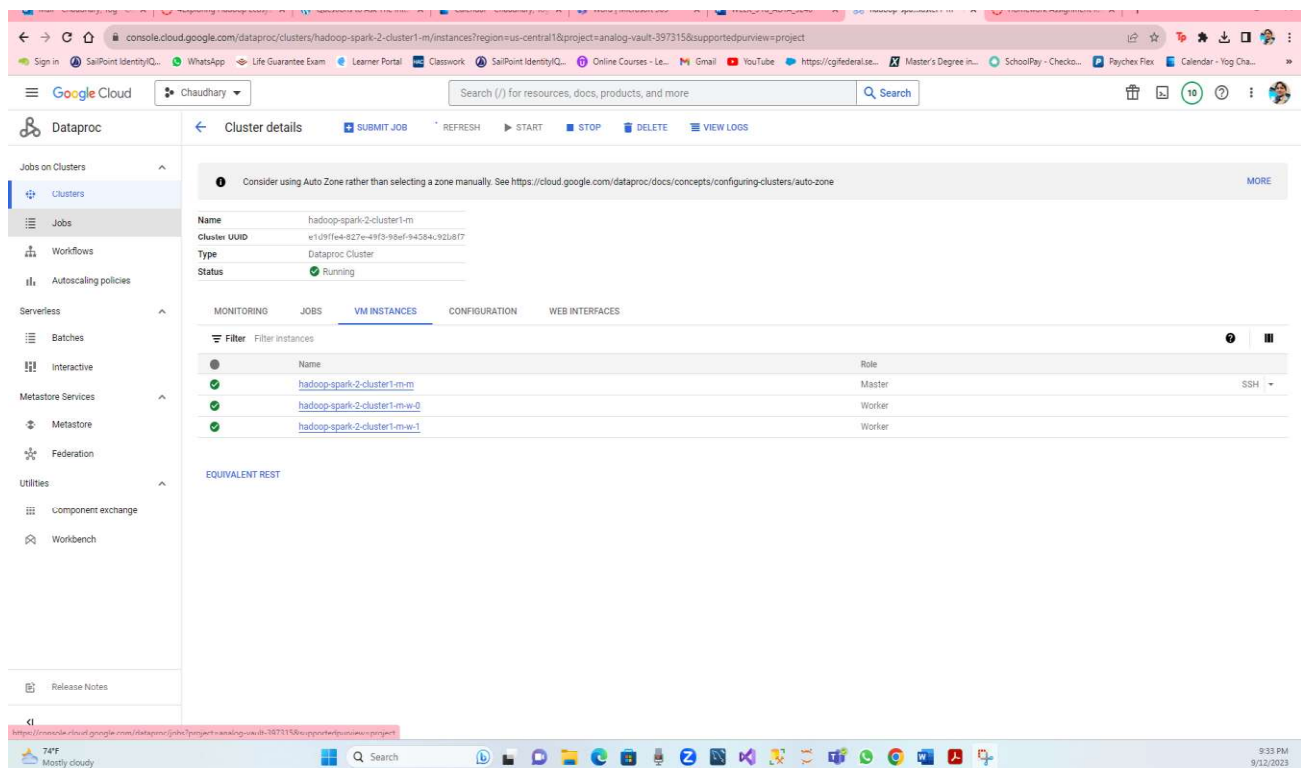
- While doing this we need to start nodes by checking on the navigation panel.
- Clicked on computing engine.
- Then clicked on three vertical dots and clicked on start/resume.
- Now click on the cluster, and we can see a dashboard that monitors the cluster.
- Below shows the screenshot of that.



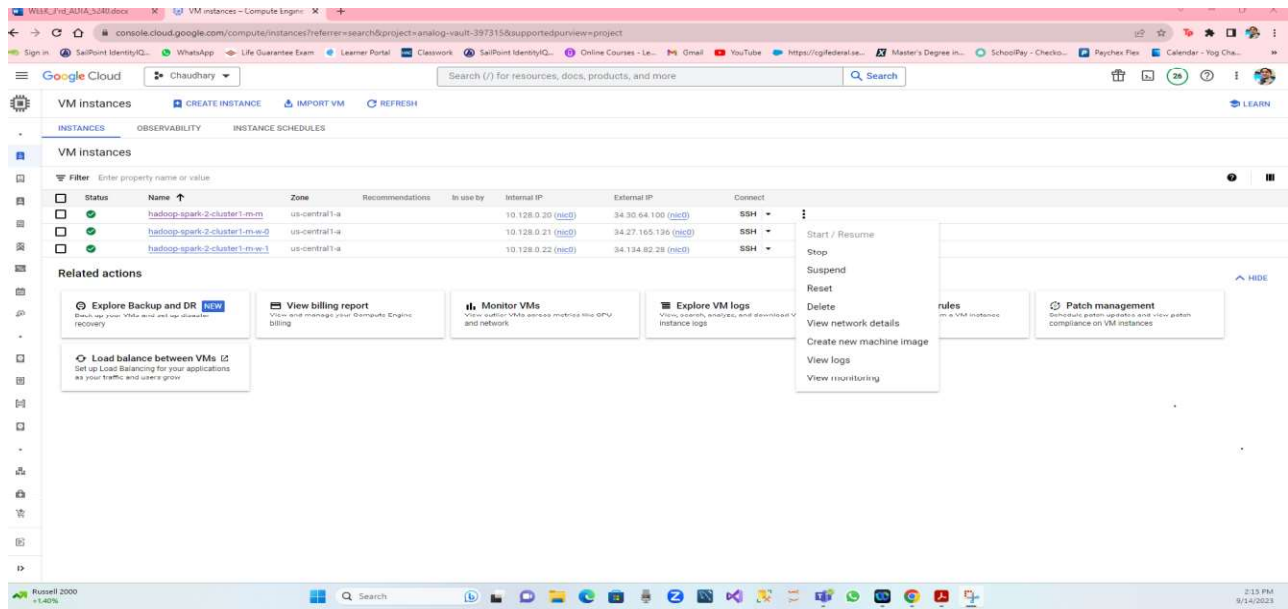
- When I scroll down it will show how the monitoring is changing according to the usage.



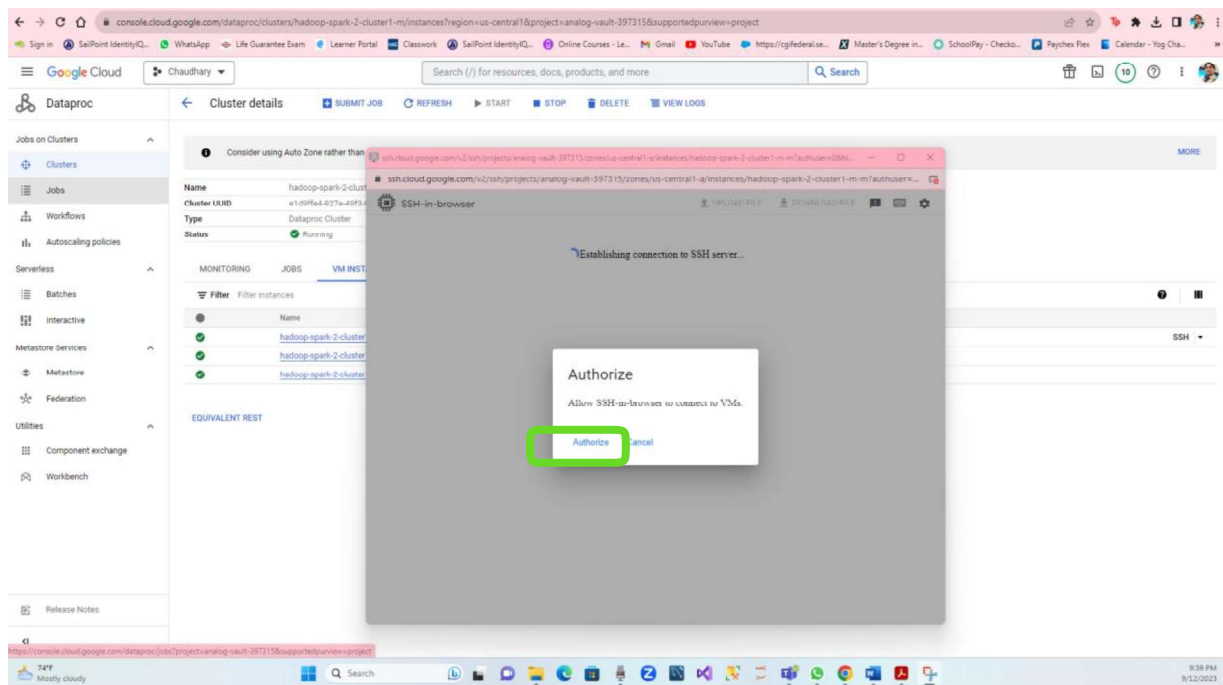
- By scrolling up and clicking on the virtual machines the screen will show the cluster details.
- We will see one master node and one worker node.
- After that I accessed the master node through “SSH.”
- Click on “SSH.”
- Click on “Open in browser.”



- Then I clicked on the drop-down button next to SSH, then clicked on open in new
- browser window.



- Click authorized.



- I used the commands
→ **Whoami**
→ **Pwd**


```
ssh.cloud.google.com/v2/ssh/projects/analog-vault-397315/zones/us-central1-a/instances/hadoop-spark-2-cluster1-m-m?authuser=0&hl=...
SSH-in-browser
Linux hadoop-spark-2-cluster1-m-m 5.10.0-25-cloud-amd64 #1 SMP Debian 5.10.191-1 (2023-08-16) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Thu Sep 14 00:13:16 2023 from 35.235.244.33
yogchaudhary2459@hadoop-spark-2-cluster1-m-m:~$ whoami
yogchaudhary2459
yogchaudhary2459@hadoop-spark-2-cluster1-m-m:~$ pwd
/home/yogchaudhary2459
yogchaudhary2459@hadoop-spark-2-cluster1-m-m:~$
```

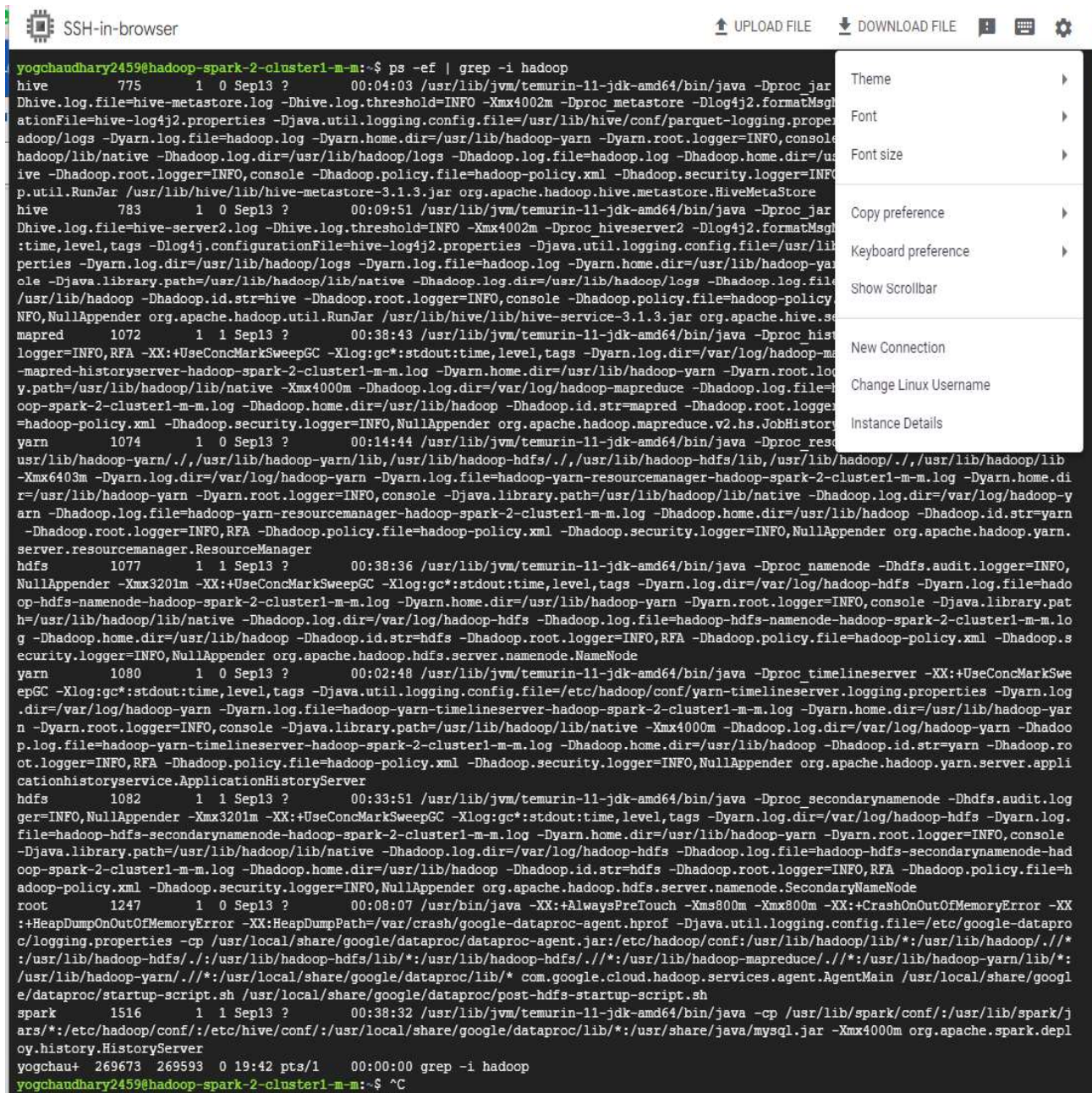
- Try to another commands
- Ps -ef | grep -I hadoop
- This will list all the processing currently running.
- Hare screenshot

```
ssh.cloud.google.com/v2/ssh/projects/analog-vault-397315/zones/us-central1-a/instances/hadoop-spark-2-cluster1-m-m?authuser=0&hl=en_US&projectNumber=1529...
SSH-in-browser
yogchaudhary2459@hadoop-spark-2-cluster1-m-m:~$ ps -ef | grep -I hadoop
hive      775      1      0 Sep13 ?      00:04:03 /usr/lib/jvm/temurin-11-jdk-amd64/bin/java -Dproc_jar -Dhive.log.dir=/var/log/hive -Dhive
.log.file=hive-metastore.log -Dhive.log.threshold=INFO -Xmx4000m -Dproc_metastore -Dlog4j2.formatMsgNoLookups=true -Dlog4j2.configurationFile=
hive-log4j2.properties -Djava.util.logging.config.file=/usr/lib/hive/conf/parquet-logging.properties -Dyarn.log.dir=/usr/lib/hadoop/logs -Dya
rn.log.file=hadoop.log -Dyarn.home.dir=/usr/lib/hadoop-yarn -Dyarn.root.logger=INFO,console -Djava.library.path=/usr/lib/hadoop/lib/native -D
hadoop.log.dir=/usr/lib/hadoop/logs -Dhadoop.log.file=hadoop.log -Dhadoop.home.dir=/usr/lib/hadoop -Dhadoop.id.str=hive -Dhadoop.root.logger=
INFO,console -Dhadoop.policy.file=hadoop-policy.xml -Dhadoop.security.logger=INFO,NullAppender org.apache.hadoop.util.RunJar /usr/lib/hive/li
b/hive-metastore-3.11.3.jar org.apache.hadoop.hive.metastore.HiveMetaStore
hive      783      1      0 Sep13 ?      00:09:51 /usr/lib/jvm/temurin-11-jdk-amd64/bin/java -Dproc_jar -Dhive.log.dir=/var/log/hive -Dhive
.log.file=hive-server2.log -Dhive.log.threshold=INFO -Xmx4000m -Dproc_hiveserver2 -Dlog4j2.formatMsgNoLookups=true -Xloggc*:stdout:time,leve
l,tags -Dlog4j2.configurationFile=hive-log4j2.properties -Djava.util.logging.config.file=/usr/lib/hive/conf/parquet-logging.properties -Dyarn
.log.dir=/usr/lib/hadoop/logs -Dyarn.log.file=hadoop.log -Dyarn.home.dir=/usr/lib/hadoop-yarn -Dyarn.root.logger=INFO,console -Djava.library.p
ath=/usr/lib/hadoop/lib/native -Dhadoop.log.dir=/usr/lib/hadoop/logs -Dhadoop.log.file=hadoop.log -Dhadoop.home.dir=/usr/lib/hadoop -Dhadoop
.id.str=hive -Dhadoop.root.logger=INFO,console -Dhadoop.policy.file=hadoop-policy.xml -Dhadoop.security.logger=INFO,NullAppender org.apache.ha
dop.util.RunJar /usr/lib/hive/lib/hive-service-3.11.3.jar org.apache.hive.service.server.HiveServer2
mapred    1072      1      1 Sep13 ?      00:38:43 /usr/lib/jvm/temurin-11-jdk-amd64/bin/java -Dproc_historyserver -Dmapred.jobsummary.logge
r=INFO,RFA -XX:+UseConcMarkSweepGC -Xloggc*:stdout:time,level,tags -Dyarn.log.dir=/var/log/hadoop-mapreduce -Dyarn.log.file=hadoop-mapred-hi
storyserver-hadoop-spark-2-cluster1-m-m.log -Dyarn.home.dir=/usr/lib/hadoop-yarn -Dyarn.root.logger=INFO,console -Djava.library.path=/usr/lib
/hadoop/lib/native -Xmx4000m -Dhadoop.log.dir=/var/log/hadoop-mapreduce -Dhadoop.log.file=hadoop-mapred-historyserver-hadoop-spark-2-cluster1
-m-m.log -Dhadoop.home.dir=/usr/lib/hadoop -Dhadoop.id.str=mapred -Dhadoop.root.logger=INFO,RFA -Dhadoop.policy.file=hadoop-policy.xml -Dhado
op.security.logger=INFO,NullAppender org.apache.hadoop.mapreduce.v2.hs.JobHistoryServer
yarn      1074      1      0 Sep13 ?      00:14:44 /usr/lib/jvm/temurin-11-jdk-amd64/bin/java -Dproc_resourcecmanager -Dservice.libdir=/usr/l
ib/hadoop-yarn/./, /usr/lib/hadoop-yarn/lib, /usr/lib/hadoop-hdfs/./, /usr/lib/hadoop-hdfs/lib, /usr/lib/hadoop/./, /usr/lib/hadoop/lib -Xmx6403m
-Dyarn.log.dir=/var/log/hadoop-yarn -Dyarn.log.file=hadoop-yarn-resourcecmanager-hadoop-spark-2-cluster1-m-m.log -Dyarn.home.dir=/usr/lib/hadoo
p-yarn -Dyarn.root.logger=INFO,console -Djava.library.path=/usr/lib/hadoop/lib/native -Dhadoop.log.dir=/var/log/hadoop-yarn -Dhadoop.log.fil
e=hadoop-yarn-resourcecmanager-hadoop-spark-2-cluster1-m-m.log -Dhadoop.home.dir=/usr/lib/hadoop -Dhadoop.id.str=yarn -Dhadoop.root.logger=INF
O,RFA -Dhadoop.policy.file=hadoop-policy.xml -Dhadoop.security.logger=INFO,NullAppender org.apache.hadoop.yarn.server.resourcemanager.Resource
cManager
hdfs      1077      1      1 Sep13 ?      00:38:36 /usr/lib/jvm/temurin-11-jdk-amd64/bin/java -Dproc_namenode -Dhdfs.audit.logger=INFO,NullA
ppender -Xmx3201m -XX:+UseConcMarkSweepGC -Xloggc*:stdout:time,level,tags -Dyarn.log.dir=/var/log/hadoop-hdfs -Dyarn.log.file=hadoop-hdfs-na
menode-hadoop-spark-2-cluster1-m-m.log -Dyarn.home.dir=/usr/lib/hadoop-yarn -Dyarn.root.logger=INFO,console -Djava.library.path=/usr/lib/hadoo
p/lib/native -Dhadoop.log.dir=/var/log/hadoop-hdfs -Dhadoop.log.file=hadoop-hdfs-namenode-hadoop-spark-2-cluster1-m-m.log -Dhadoop.home.dir=
/usr/lib/hadoop -Dhadoop.id.str=hdfs -Dhadoop.root.logger=INFO,RFA -Dhadoop.policy.file=hadoop-policy.xml -Dhadoop.security.logger=INFO,NullA
ppender org.apache.hadoop.hdfs.server.namenode.NameNode
yarn      1080      1      0 Sep13 ?      00:02:48 /usr/lib/jvm/temurin-11-jdk-amd64/bin/java -Dproc_timelineserver -XX:+UseConcMarkSweepGC
-Xloggc*:stdout:time,level,tags -Djava.util.logging.config.file=/etc/hadoop/conf/yarn-timelineserver-logging.properties -Dyarn.log.dir=/var/
log/hadoop-yarn -Dyarn.log.file=hadoop-yarn-timelineserver-hadoop-spark-2-cluster1-m-m.log -Dyarn.home.dir=/usr/lib/hadoop-yarn -Dyarn.root.l
ogger=INFO,console -Djava.library.path=/usr/lib/hadoop/lib/native -Xmx4000m -Dhadoop.log.dir=/var/log/hadoop-yarn -Dhadoop.log.file=hadoop-ya
rn-timelineserver-hadoop-spark-2-cluster1-m-m.log -Dhadoop.home.dir=/usr/lib/hadoop -Dhadoop.id.str=yarn -Dhadoop.root.logger=INFO,RFA -Dhado
op.policy.file=hadoop-policy.xml -Dhadoop.security.logger=INFO,NullAppender org.apache.hadoop.yarn.server.applicationhistoryservice.Applicati
onHistoryServer
hdfs      1082      1      1 Sep13 ?      00:33:51 /usr/lib/jvm/temurin-11-jdk-amd64/bin/java -Dproc_secondarynamenode -Dhdfs.audit.logger=I
NFO,NullAppender -Xmx3201m -XX:+UseConcMarkSweepGC -Xloggc*:stdout:time,level,tags -Dyarn.log.dir=/var/log/hadoop-hdfs -Dyarn.log.file=hadoo
p-hdfs-secondarynamenode-hadoop-spark-2-cluster1-m-m.log -Dyarn.home.dir=/usr/lib/hadoop-yarn -Dyarn.root.logger=INFO,console -Djava.library
.path=/usr/lib/hadoop/lib/native -Dhadoop.log.dir=/var/log/hadoop-hdfs -Dhadoop.log.file=hadoop-hdfs-secondarynamenode-hadoop-spark-2-cluster1
-m-m.log -Dhadoop.home.dir=/usr/lib/hadoop -Dhadoop.id.str=hdfs -Dhadoop.root.logger=INFO,RFA -Dhadoop.policy.file=hadoop-policy.xml -Dhadoop
.security.logger=INFO,NullAppender org.apache.hadoop.hdfs.server.namenode.SecondaryNameNode
root      1247      1      0 Sep13 ?      00:08:07 /usr/bin/java -XX:+AlwaysPreTouch -Xms800m -Xmx800m -XX:+CrashOnOutOfMemoryError -XX:+Heap
DumpOnOutOfMemoryError -XX:HeapDumpPath=/var/crash/google-dataproc-agent-hprof -Djava.util.logging.config.file=/etc/google-dataproc/logging
.properties -cp /usr/local/share/google/dataproc/dataproc-agent.jar:/etc/hadoop/conf:/usr/lib/hadoop/lib/*:/usr/lib/hadoop/.//*:/usr/lib/hadoo
p-hdfs/./:/usr/lib/hadoop-hdfs/lib/*:/usr/lib/hadoop-hdfs/./:/usr/lib/hadoop-mapreduce/./:/usr/lib/hadoop-yarn/lib/*:/usr/lib/hadoop-yarn
./:/usr/local/share/google/dataproc/lib/* com.google.cloud.hadoop.services.agent.AgentMain /usr/local/share/google/dataproc/startup-script
.sh /usr/local/share/google/dataproc/post-hdfs-startup-script.sh
spark     1516      1      1 Sep13 ?      00:38:32 /usr/lib/jvm/temurin-11-jdk-amd64/bin/java -cp /usr/lib/spark/conf:/usr/lib/spark/jars/*
:/etc/hadoop/conf:/etc/hive/conf:/usr/local/share/google/dataproc/lib/*:/usr/share/java/mysql.jar -Xmx4000m org.apache.spark.deploy.history
.HistoryServer
yogchaud 269673 269593 0 19:42 pts/1 00:00:00 grep -i hadoop
yogchaudhary2459@hadoop-spark-2-cluster1-m-m:~$
```

- Then, I move up and down on the terminal window.
- Click on the setting icon in the upper right-hand side of the terminal

→ Click on “Show Scrollbar” to see the scrollbar.

Include screenshots that record the steps, and the Hadoop Ecosystem with Linux Commands is successfully screenshot



```
yogchaudhary2459@hadoop-spark-2-cluster1-m-m:~$ ps -ef | grep -i hadoop
hive      775      1  0 Sep13 ?        00:04:03 /usr/lib/jvm/temurin-11-jdk-amd64/bin/java -Dproc.jar -Dhive.log.file=hive-metastore.log -Dhive.log.threshold=INFO -Xmx4002m -Dproc.metastore -Dlog4j2.formatMsg
ationFile=hive-log4j2.properties -Djava.util.logging.config.file=/usr/lib/hive/conf/parquet-logging.properties
hadoop/logs -Dyarn.log.file=hadoop.log -Dyarn.home.dir=/usr/lib/hadoop-yarn -Dyarn.root.logger=INFO,console
hadoop/lib/native -Dhadoop.log.dir=/usr/lib/hadoop/logs -Dhadoop.log.file=hadoop.log -Dhadoop.home.dir=/usr
ive -Dhadoop.root.logger=INFO,console -Dhadoop.policy.file=hadoop-policy.xml -Dhadoop.security.logger=INFO,NullAppender org.apache.hadoop.util.RunJar /usr/lib/hive/lib/hive-service-3.1.3.jar org.apache.hive.se
hive      783      1  0 Sep13 ?        00:09:51 /usr/lib/jvm/temurin-11-jdk-amd64/bin/java -Dproc.jar -Dhive.log.file=hive-server2.log -Dhive.log.threshold=INFO -Xmx4002m -Dproc.hiveserver2 -Dlog4j2.formatMsg
:time,level,tags -Dlog4j2.configurationFile=hive-log4j2.properties -Djava.util.logging.config.file=/usr/lib
properties -Dyarn.log.dir=/usr/lib/hadoop/logs -Dyarn.log.file=hadoop.log -Dyarn.home.dir=/usr/lib/hadoop-yar
-Djava.library.path=/usr/lib/hadoop/lib/native -Dhadoop.log.dir=/usr/lib/hadoop/logs -Dhadoop.log.file=
/usr/lib/hadoop -Dhadoop.id.str=hive -Dhadoop.root.logger=INFO,console -Dhadoop.policy.file=hadoop-policy
INFO,NullAppender org.apache.hadoop.util.RunJar /usr/lib/hive/lib/hive-service-3.1.3.jar org.apache.hive.se
mapred    1072      1  1 Sep13 ?        00:38:43 /usr/lib/jvm/temurin-11-jdk-amd64/bin/java -Dproc.jar -Dmapred.historyserver.hadoop-spark-2-cluster1-m-m.log -Dyarn.home.dir=/usr/lib/hadoop-yarn -Dyarn.root.log
y.path=/usr/lib/hadoop/lib/native -Dhadoop.log.dir=/var/log/hadoop-mapreduce -Dhadoop.log.file=h
hadoop-spark-2-cluster1-m-m.log -Dhadoop.home.dir=/usr/lib/hadoop -Dhadoop.id.str=mapred -Dhadoop.root.logger
=hadoop-policy.xml -Dhadoop.security.logger=INFO,NullAppender org.apache.hadoop.mapreduce.v2.hs.JobHistory
yarn      1074      1  0 Sep13 ?        00:14:44 /usr/lib/jvm/temurin-11-jdk-amd64/bin/java -Dproc.jar -Dyarn.resourcemanager.hadoop-spark-2-cluster1-m-m.log -Dhadoop.home.dir=/usr/lib/hadoop -Dhadoop.id.str=yarn
-Dhadoop.root.logger=INFO,RFA -Dhadoop.policy.file=hadoop-policy.xml -Dhadoop.security.logger=INFO,NullAppender org.apache.hadoop.yarn.
server.resourcemanager.ResourceManager
hdfs      1077      1  1 Sep13 ?        00:38:36 /usr/lib/jvm/temurin-11-jdk-amd64/bin/java -Dproc.namenode -Dhdfs.audit.logger=INFO,
NullAppender -Xmx3201m -XX:+UseConcMarkSweepGC -Xlog:gc*:stdout:time,level,tags -Dyarn.log.dir=/var/log/hadoop-hdfs -Dyarn.log.file=hado
op-hdfs-namenode-hadoop-spark-2-cluster1-m-m.log -Dyarn.home.dir=/usr/lib/hadoop-yarn -Dyarn.root.logger=INFO,console -Djava.library.pat
h=/usr/lib/hadoop/lib/native -Dhadoop.log.dir=/var/log/hadoop-hdfs -Dhadoop.log.file=hadoop-hdfs-namenode-hadoop-spark-2-cluster1-m-m.lo
g -Dhadoop.home.dir=/usr/lib/hadoop -Dhadoop.id.str=hdfs -Dhadoop.root.logger=INFO,RFA -Dhadoop.policy.file=hadoop-policy.xml -Dhadoop.s
ecurity.logger=INFO,NullAppender org.apache.hadoop.hdfs.server.namenode.NameNode
yarn      1080      1  0 Sep13 ?        00:02:48 /usr/lib/jvm/temurin-11-jdk-amd64/bin/java -Dproc.timelineserver -XX:+UseConcMarkSwe
epGC -Xlog:gc*:stdout:time,level,tags -Djava.util.logging.config.file=/etc/hadoop/conf/yarn-timelineserver.logging.properties -Dyarn.log
.dir=/var/log/hadoop-yarn -Dyarn.log.file=hadoop-yarn-timelineserver-hadoop-spark-2-cluster1-m-m.log -Dyarn.home.dir=/usr/lib/hadoop-yar
n -Dyarn.root.logger=INFO,console -Djava.library.path=/usr/lib/hadoop/lib/native -Xmx4000m -Dhadoop.log.dir=/var/log/hadoop-yarn -Dhado
p.log.file=hadoop-yarn-timelineserver-hadoop-spark-2-cluster1-m-m.log -Dhadoop.home.dir=/usr/lib/hadoop -Dhadoop.id.str=yarn -Dhadoop.ro
ot.logger=INFO,RFA -Dhadoop.policy.file=hadoop-policy.xml -Dhadoop.security.logger=INFO,NullAppender org.apache.hadoop.yarn.server.appli
cationhistoryservice.ApplicationHistoryServer
hdfs      1082      1  1 Sep13 ?        00:33:51 /usr/lib/jvm/temurin-11-jdk-amd64/bin/java -Dproc.secondarynamenode -Dhdfs.audit.log
ger=INFO,NullAppender -Xmx3201m -XX:+UseConcMarkSweepGC -Xlog:gc*:stdout:time,level,tags -Dyarn.log.dir=/var/log/hadoop-hdfs -Dyarn.log.
file=hadoop-hdfs-secondarynamenode-hadoop-spark-2-cluster1-m-m.log -Dyarn.home.dir=/usr/lib/hadoop-yarn -Dyarn.root.logger=INFO,console
-Djava.library.path=/usr/lib/hadoop/lib/native -Dhadoop.log.dir=/var/log/hadoop-hdfs -Dhadoop.log.file=hadoop-hdfs-secondarynamenode-had
oop-spark-2-cluster1-m-m.log -Dhadoop.home.dir=/usr/lib/hadoop -Dhadoop.id.str=hdfs -Dhadoop.root.logger=INFO,RFA -Dhadoop.policy.file=h
adoop-policy.xml -Dhadoop.security.logger=INFO,NullAppender org.apache.hadoop.hdfs.server.namenode.SecondaryNameNode
root      1247      1  0 Sep13 ?        00:08:07 /usr/bin/java -XX:+AlwaysPreTouch -Xms800m -Xmx800m -XX:+CrashOnOutOfMemoryError -XX
:+HeapDumpOnOutOfMemoryError -XX:HeapDumpPath=/var/crash/google-dataproc-agent.hprof -Djava.util.logging.config.file=/etc/google-datapro
c/logging.properties -cp /usr/local/share/google/dataproc/dataproc-agent.jar:/etc/hadoop/conf:/usr/lib/hadoop/lib/*:/usr/lib/hadoop/*
:/usr/lib/hadoop-hdfs/*:/usr/lib/hadoop-hdfs/lib/*:/usr/lib/hadoop-hdfs/*:/usr/lib/hadoop-mapreduce/*:/usr/lib/hadoop-yarn/lib/*
:/usr/lib/hadoop-yarn/*:/usr/local/share/google/dataproc/lib/* com.google.cloud.hadoop.services.agent.AgentMain /usr/local/share/googl
e/dataproc/startup-script.sh /usr/local/share/google/dataproc/post-hdfs-startup-script.sh
spark     1516      1  1 Sep13 ?        00:38:32 /usr/lib/jvm/temurin-11-jdk-amd64/bin/java -cp /usr/lib/spark/conf:/usr/lib/spark/j
ars/*:/etc/hadoop/conf:/etc/hive/conf:/usr/local/share/google/dataproc/lib/*:/usr/share/java/mysql.jar -Xmx4000m org.apache.spark.depl
oy.history.HistoryServer
yogchau+ 269673 269593  0 19:42 pts/1    00:00:00 grep -i hadoop
yogchaudhary2459@hadoop-spark-2-cluster1-m-m:~$ ^C
```

- They are all components of the Hadoop Ecosystem (ex. hive). Include the process ID number (ex. 744) and the subsystem currently running in the component (ex. Job History).
- hive. Process number 775 running Hive MetaStor
- hive. Process number 783 running HiveServer2
- Mapred. Process number 1072 running JobHistoryServer
- Yarn process number 1074 running ResourceManager
- Hdfs process number 1077 running NameNode.

- Yarn. Process number 1080 running ApplicationHistoryServer
- Hdfs. Process number 1082 running SecondaryNameNode
- Root. Process number 12347ResourceManager
- Spark. Process number 1516 running HistoryServer

2. Now we must open another new SSH terminal. For this, we need to go back to the master node to access another SSH terminal.

- Going back to GCP and typing “computer engine.”
- New clicked on “SSH” then I clicked on “open in browser.”

The screenshot shows the Google Cloud Platform console interface. The top navigation bar includes the Google Cloud logo, a user profile dropdown, and a search bar. Below the navigation bar, the 'VM instances' section is active, displaying a table of instances. The table has columns for Status, Name, Zone, Recommendations, In use by, Internal IP, External IP, and Connect. Three instances are listed, all with a status of 'Running' and a zone of 'us-central1-a'. The 'Connect' column shows an SSH icon and a dropdown menu. Below the table, there are several 'Related actions' cards, including 'Explore Backup and DR', 'View billing report', 'Monitor VMs', 'Explore VM logs', 'Set up firewall rules', 'Patch management', and 'Load balance between VMs'.

Status	Name	Zone	Recommendations	In use by	Internal IP	External IP	Connect
Running	hadoop-spark-2-cluster1-m-m	us-central1-a			10.128.0.20 (nic0)	34.30.64.100 (nic0)	SSH
Running	hadoop-spark-2-cluster1-m-w-0	us-central1-a			10.128.0.21 (nic0)	34.27.165.136 (nic0)	SSH
Running	hadoop-spark-2-cluster1-m-w-1	us-central1-a			10.128.0.22 (nic0)	34.134.82.28 (nic0)	SSH

Related actions

- Explore Backup and DR** (NEW): Back up your VMs and set up disaster recovery.
- View billing report**: View and manage your Compute Engine billing.
- Monitor VMs**: View outlier VMs across metrics like CPU and network.
- Explore VM logs**: View, search, analyze, and download VM instance logs.
- Set up firewall rules**: Control traffic to and from a VM instance.
- Patch management**: Schedule patch updates and view patch compliance on VM instances.
- Load balance between VMs**: Set up Load Balancing for your applications as your traffic and users grow.


```
Linux hadoop-spark-2-cluster1-m-w-0 5.10.0-25-cloud-amd64 #1 SMP Debian 5.10.191-1 (2023-08-16) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Wed Sep 13 05:29:51 2023 from 35.235.244.33
yogchaudhary2459@hadoop-spark-2-cluster1-m-w-0:~$ whoami
yogchaudhary2459
yogchaudhary2459@hadoop-spark-2-cluster1-m-w-0:~$ pwd
/home/yogchaudhary2459
yogchaudhary2459@hadoop-spark-2-cluster1-m-w-0:~$ ps -ef | grep -i hadoop
hdfs      1097      1  0 Sep13 ?        00:05:13 /usr/lib/jvm/temurin-11-jdk-amd64/bin/java -Dproc_datanode
-Xmx512m -Dyarn.log.dir=/var/log/hadoop-hdfs -Dyarn.log.file=hadoop-hdfs-datanode-hadoop-spark-2-cluster1-m-w-0
.log -Dyarn.home.dir=/usr/lib/hadoop-yarn -Dyarn.root.logger=INFO,console -Djava.library.path=/usr/lib/hadoop/lib/
native -Dhadoop.log.dir=/var/log/hadoop-hdfs -Dhadoop.log.file=hadoop-hdfs-datanode-hadoop-spark-2-cluster1-
m-w-0.log -Dhadoop.home.dir=/usr/lib/hadoop -Dhadoop.id.str=hdfs -Dhadoop.root.logger=INFO,RFA -Dhadoop.policy.
file=hadoop-policy.xml -Dhadoop.security.logger=INFO,NullAppender org.apache.hadoop.hdfs.server.datanode.DataNo
de
yarn      1108      1  1 Sep13 ?        00:40:00 /usr/lib/jvm/temurin-11-jdk-amd64/bin/java -Dproc_nodemanager
-Dyarn.log.dir=/var/log/hadoop-yarn -Dyarn.log.file=hadoop-yarn-nodemanager-hadoop-spark-2-cluster1-m-w-0.lo
g -Dyarn.home.dir=/usr/lib/hadoop-yarn -Dyarn.root.logger=INFO,console -Djava.library.path=/usr/lib/hadoop/lib/
native -Xmx1638m -Dhadoop.log.dir=/var/log/hadoop-yarn -Dhadoop.log.file=hadoop-yarn-nodemanager-hadoop-spark-2
-cluster1-m-w-0.log -Dhadoop.home.dir=/usr/lib/hadoop -Dhadoop.id.str=yarn -Dhadoop.root.logger=INFO,RFA -Dhado
op.policy.file=hadoop-policy.xml -Dhadoop.security.logger=INFO,NullAppender org.apache.hadoop.yarn.server.nodem
anager.NodeManager
root      1191      1  0 Sep13 ?        00:03:37 /usr/bin/java -XX:+AlwaysPreTouch -Xms150m -Xmx150m -XX:+Cr
ashOnOutOfMemoryError -XX:+HeapDumpOnOutOfMemoryError -XX:HeapDumpPath=/var/crash/google-dataproc-agent.hprof -
Djava.util.logging.config.file=/etc/google-dataproc/logging.properties -cp /usr/local/share/google/dataproc/dat
aproc-agent.jar:/etc/hadoop/conf:/usr/lib/hadoop/lib/*:/usr/lib/hadoop/./*/usr/lib/hadoop-hdfs/./*/usr/lib/ha
dooop-hdfs/lib/*:/usr/lib/hadoop-hdfs/./*/usr/lib/hadoop-mapreduce/./*/usr/lib/hadoop-yarn/lib/*:/usr/lib/ha
dooop-yarn/./*/usr/local/share/google/dataproc/lib/* com.google.cloud.hadoop.services.agent.AgentMain /usr/loc
al/share/google/dataproc/startup-script.sh /usr/local/share/google/dataproc/post-hdfs-startup-script.sh
yogchau+  39496  39478  0 20:43 pts/0    00:00:00 grep -i hadoop
yogchaudhary2459@hadoop-spark-2-cluster1-m-w-0:~$ ls -
ls: cannot access '-': No such file or directory
yogchaudhary2459@hadoop-spark-2-cluster1-m-w-0:~$
```

- Now finally all 3 virtual machine instances were stopped as shown below in GCP by selecting stop from the three dots present at the top right to the **SSH** each node.

console.cloud.google.com/compute/instances?project=analog-vault-397315&supportedpurview=project

Google Cloud Chaudhary Search (/) for resources, docs, products, and more

VM instances CREATE INSTANCE IMPORT VM REFRESH

INSTANCES OBSERVABILITY INSTANCE SCHEDULES

VM instances

Filter Enter property name or value

Status	Name	Zone	Recommendations	In use by	Internal IP	External IP	Connect
<input type="checkbox"/>	hadoop-spark-2-cluster1-m-m	us-central1-a			10.128.0.20 (nic0)		SSH
<input type="checkbox"/>	hadoop-spark-2-cluster1-m-w-0	us-central1-a			10.128.0.21 (nic0)		SSH
<input type="checkbox"/>	hadoop-spark-2-cluster1-m-w-1	us-central1-a			10.128.0.22 (nic0)		SSH

Related actions

- Explore Backup and DR NEW: Back up your VMs and set up disaster recovery
- View billing report: View and manage your Compute Engine billing
- Monitor VMs: View outlier VMs across metrics like CPU and network
- Explore VM logs: View, search, analyze, and download VM instance logs
- Set up firewall rules: Control traffic to and from a VM instance
- Patch management: Schedule patch updates and view patch compliance on VM instances

4. The components of the Ecosystem for record and steps, included screenshot
 → Here is the screenshot

