APLICACIÓN DEL MAPREDUCE EN LA DISTRO

UBUNTU POR EL VIRTUAL BOX

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Paso 1: tenemos que tener el dfs y el yarn corriendo en nuestra distro, para eso se usa los comandos“start-dfs.sh” y “start-yarn.sh” (por si un caso no lo tienes corriendo en tu distro) y nos aseguramos que tengamos los daemons con el comando “jps”

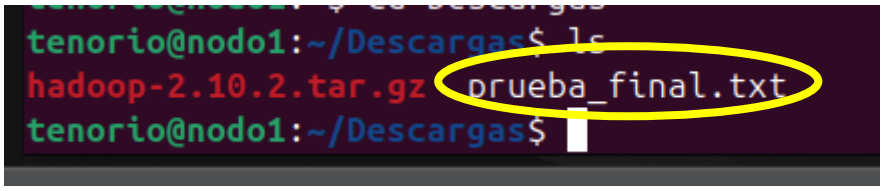
```
tenorio@nodo1:~/Descargas$ start-dfs.sh
Starting namenodes on [nodo1]
nodo1: starting namenode, logging to /opt/hadoop/logs/hadoop-tenorio-namenode-nodo1.out
localhost: starting datanode, logging to /opt/hadoop/logs/hadoop-tenorio-datanode-nodo1.
out
nodo2: starting datanode, logging to /opt/hadoop/logs/hadoop-tenorio-datanode-nodo2.out
nodo3: starting datanode, logging to /opt/hadoop/logs/hadoop-tenorio-datanode-nodo3.out
Starting secondary namenodes [0.0.0.0]
0.0.0.0: starting secondarynamenode, logging to /opt/hadoop/logs/hadoop-tenorio-secondar
ynamenode-nodo1.out
```

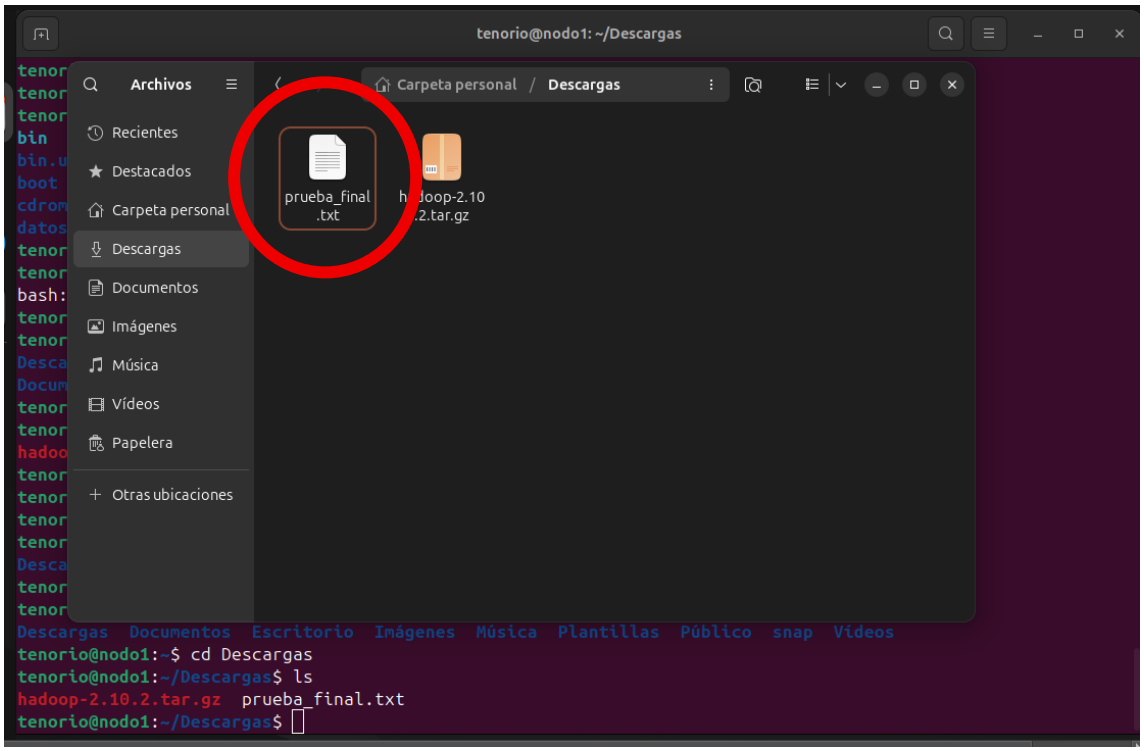
```
tenorio@nodo1:~/Descargas$ start-yarn.sh
starting yarn daemons
starting resourcemanager, logging to /opt/hadoop/logs/yarn-tenorio-resourcemanager-nodo1
.out
nodo2: starting nodemanager, logging to /opt/hadoop/logs/yarn-tenorio-nodemanager-nodo2.
out
localhost: starting nodemanager, logging to /opt/hadoop/logs/yarn-tenorio-nodemanager-no
do1.out
nodo3: starting nodemanager, logging to /opt/hadoop/logs/yarn-tenorio-nodemanager-nodo3.
out
tenorio@nodo1:~/Descargas$ jps
8085 SecondaryNameNode
8230 ResourceManager
8375 NodeManager
7882 DataNode
7706 NameNode
8699 Jps
```

Paso 2: usamos el comando “nano Descargas/prueba_ultima.txt” saldrá un apartado como en la imagen y escribiremos dentro (en mi caso un ejemplo), con este comando crearemos un texto en nuestra carpeta Descargas, le damos “control + O” para guardar y “control + x” para salir, asi crearemos nuestro archivo .txt

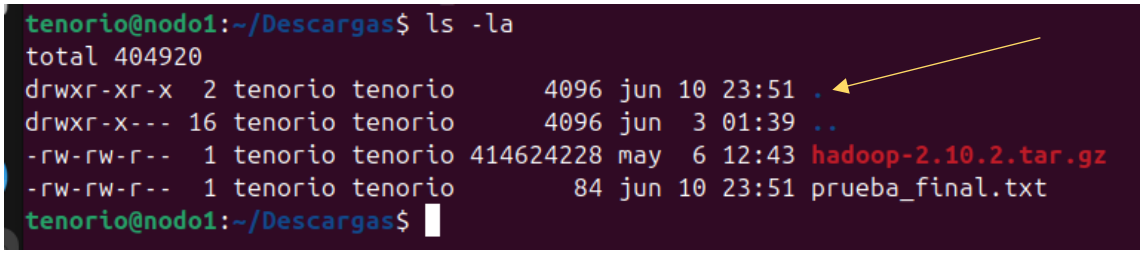
```
tenorio@nodo1: ~
  GNU nano 7.2                    /Descargas/prueba_final.txt *
Hola a todos
esto es una prueba
para poder ejecutar en mi mapreduce
espero te sirva

^G Ayuda      ^O Guardar     ^W Buscar      ^K Cortar      ^T Ejecutar    ^C Ubicación   M-U Deshacer
^X Salir      ^R Leer fich.  ^\ Reemplazar  ^U Pegar       ^J Justificar  ^/ Ir a línea   M-E Rehacer
```

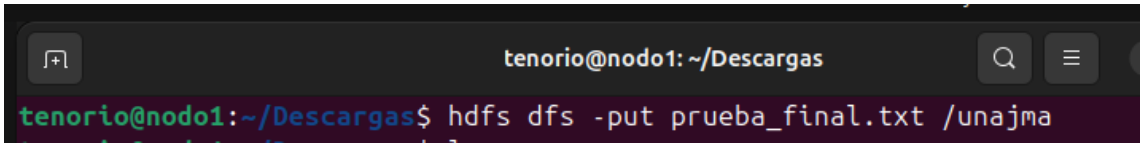




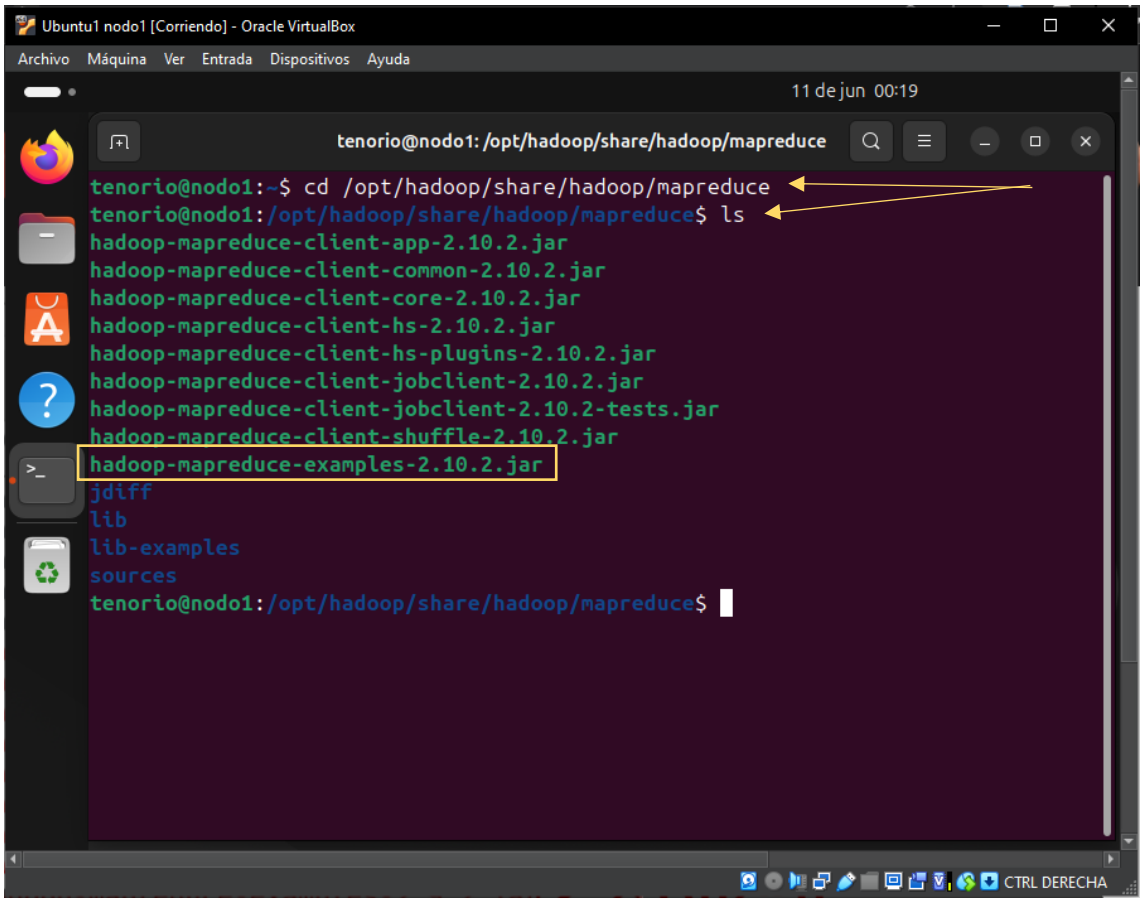
Paso 3: ahora creamos la carpeta “unajma” en la carpeta de Descargas, para eso usaremos el comando “hdfs dfs -mkdir /unajma” (nota: esto crea una carpeta en el sistema de archivos distribuidos de hadoop{HDFS}) y verificamos con el comando “ls -la”



Paso 4: ahora subimos el archivo que creamos “prueba_final.txt” a la carpeta creada con el comando “hdfs dfs -put prueba_ultima.txt /unajma” Esto sube el archivo local a HDFS dentro de /unajma



Paso 5: entramos al directorio para hacer correr nuestro mapreduce con el siguiente comando “cd /opt/hadoop/share/hadoop/mapreduce” y usamos el comando “ls” para verificar como se ve en la imagen



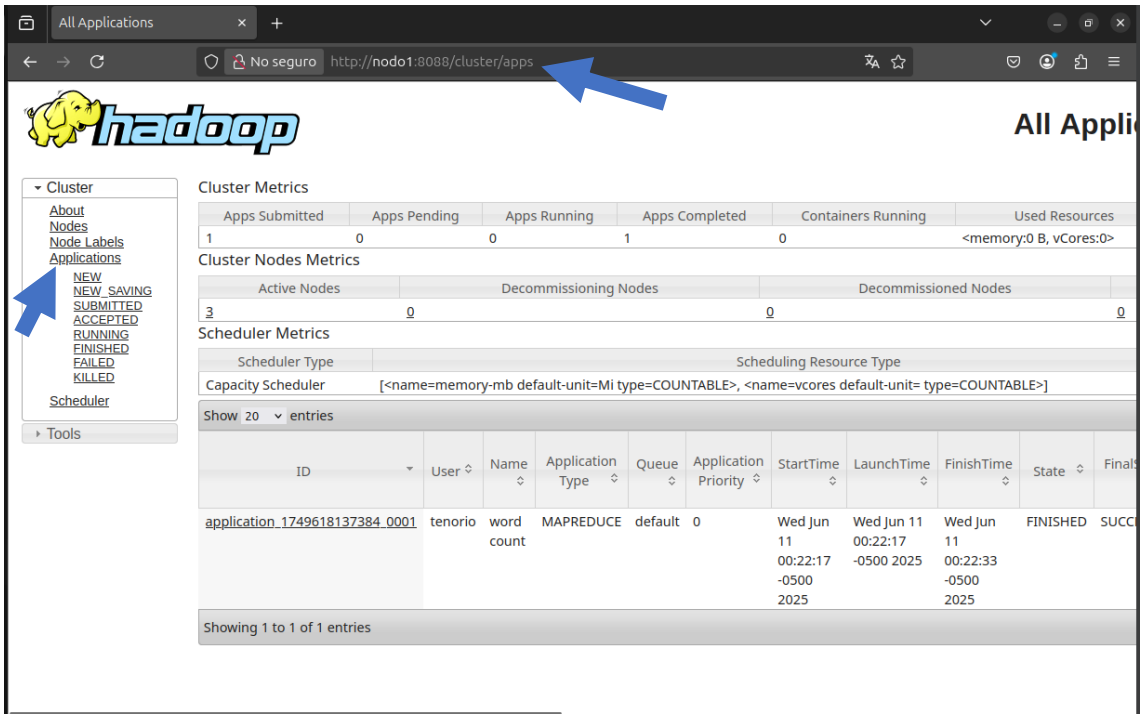
Paso 6: usamos el siguiente comando para ejecutar el mapreduce “hadoop jar hadoop-mapreduce-examples-2.10.2.jar wordcount /unajma /examen_final”

```
tenorio@nodo1:/opt/hadoop/share/hadoop/mapreduce$ hadoop jar hadoop-mapreduce-ex
amples-2.10.2.jar wordcount /unajma /examen_final
25/06/11 00:22:16 INFO client.RMProxy: Connecting to ResourceManager at nodo1/19
2.168.100.101:8032
25/06/11 00:22:16 INFO input.FileInputFormat: Total input files to process : 1
25/06/11 00:22:16 INFO mapreduce.JobSubmitter: number of splits:1
25/06/11 00:22:16 INFO mapreduce.JobSubmitter: Submitting tokens for job: job_17
49618137384_0001
25/06/11 00:22:17 INFO conf.Configuration: resource-types.xml not found
25/06/11 00:22:17 INFO resource.ResourceUtils: Unable to find 'resource-types.xm
l'.
25/06/11 00:22:17 INFO resource.ResourceUtils: Adding resource type - name = mem
ory-mb, units = Mi, type = COUNTABLE
25/06/11 00:22:17 INFO resource.ResourceUtils: Adding resource type - name = vco
res, units = , type = COUNTABLE
25/06/11 00:22:17 INFO impl.YarnClientImpl: Submitted application application_17
49618137384_0001
25/06/11 00:22:17 INFO mapreduce.Job: The url to track the job: http://nodo1:808
8/proxy/application_1749618137384_0001/
25/06/11 00:22:17 INFO mapreduce.Job: Running job: job_1749618137384_0001
25/06/11 00:22:24 INFO mapreduce.Job: Job job_1749618137384_0001 running in uber
 mode : false
25/06/11 00:22:24 INFO mapreduce.Job:  map 0% reduce 0%
25/06/11 00:22:30 INFO mapreduce.Job:  map 100% reduce 0%
```

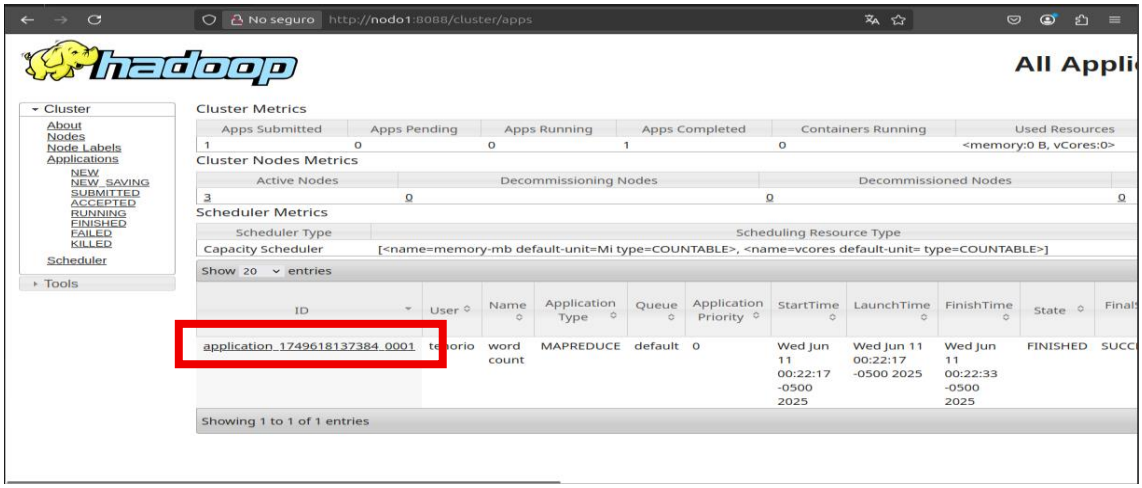
```
25/06/11 00:22:35 INFO mapreduce.Job:  map 100% reduce 100%
25/06/11 00:22:35 INFO mapreduce.Job: Job job_1749618137384_0001 completed succe
ssfully
25/06/11 00:22:35 INFO mapreduce.Job: Counters: 49
        File System Counters
                FILE: Number of bytes read=186
                FILE: Number of bytes written=420897
                FILE: Number of read operations=0
                FILE: Number of large read operations=0
                FILE: Number of write operations=0
                HDFS: Number of bytes read=190
                HDFS: Number of bytes written=116
                HDFS: Number of read operations=6
                HDFS: Number of large read operations=0
                HDFS: Number of write operations=2
        Job Counters
                Launched map tasks=1
                Launched reduce tasks=1
                Data-local map tasks=1
                Total time spent by all maps in occupied slots (ms)=3424
                Total time spent by all reduces in occupied slots (ms)=2331
                Total time spent by all map tasks (ms)=3424
                Total time spent by all reduce tasks (ms)=2331
                Total vcore-milliseconds taken by all map tasks=3424
```

```
        Map-Reduce Framework
                Map input records=4
                Map output records=16
                Map output bytes=148
                Map output materialized bytes=186
                Input split bytes=106
                Combine input records=16
                Combine output records=16
                Reduce input groups=16
                Reduce shuffle bytes=186
                Reduce input records=16
                Reduce output records=16
                Spilled Records=32
                Shuffled Maps =1
                Failed Shuffles=0
                Merged Map outputs=1
                GC time elapsed (ms)=171
                CPU time spent (ms)=1330
                Physical memory (bytes) snapshot=508706816
                Virtual memory (bytes) snapshot=3816669184
                Total committed heap usage (bytes)=319815680
```

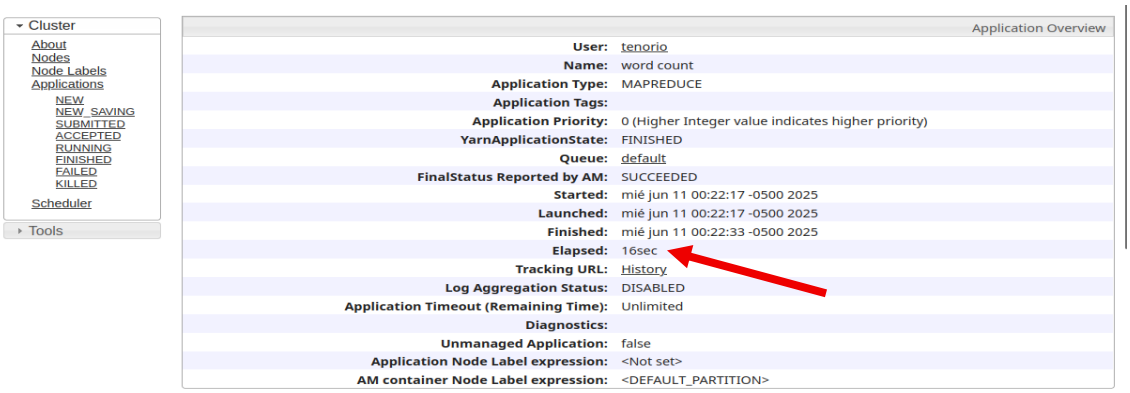
Paso 7: Verificamos en el siguiente URL (en este caso en mi maquina es la siguiente) “htt://nodo1:8088/cluster/apps”



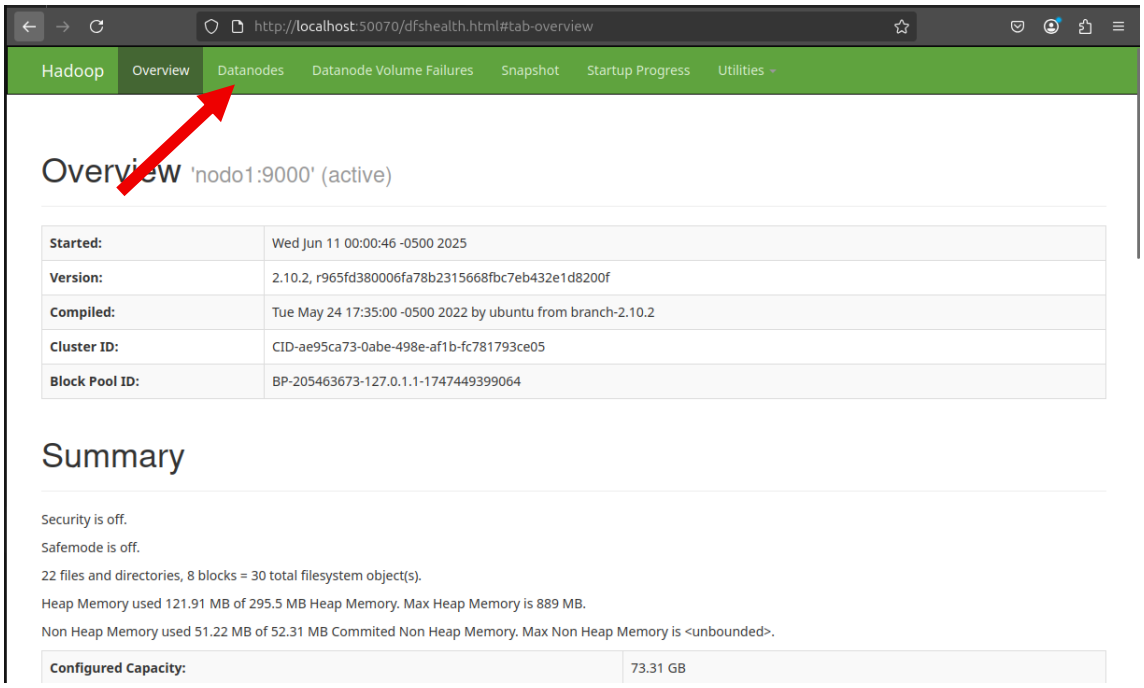
Paso 8: le damos click en el apartado como indica la imagen

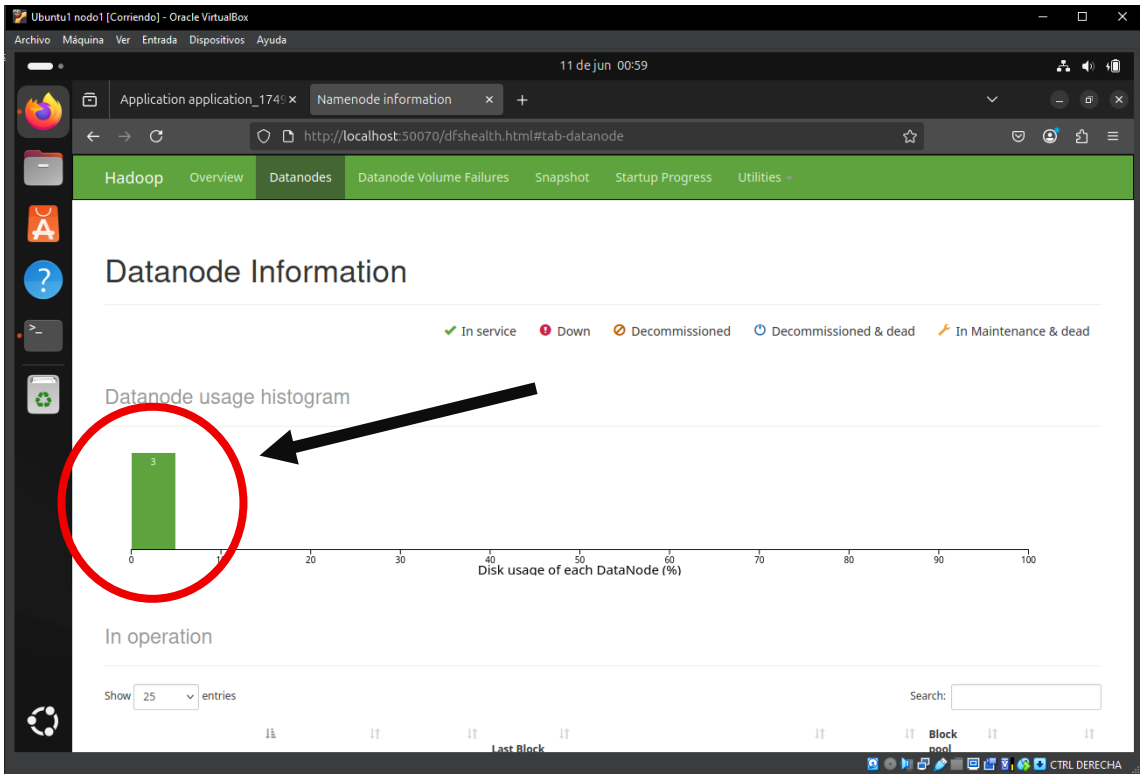


En este punto nos indica que solo fueron 16 segundos el tiempo de rendimiento, esto se debe a que el archivo es muy pequeño y contiene muy pocas letras, lo que hizo que el proceso durase ese tiempo estimado.



Paso 9: verificamos ahora en el siguiente URL http://localhost:50070 y nos vamos al apartado de Datanodes, en este punto como estoy trabajando con 3 nodos (el maestro y 2 esclavos), me aparecerá los 3 en una barra como se muestra en la segunda imagen





OPCIONAL: en este punto cuando cierras tu distro, el historial se borra automáticamente ya que no esta configurado para que el historial se guarde, pero si se guarda en la carpeta designada, para poder visualizarlo nuevamente tendrías que eliminar la salida del archivo con el siguiente comando “hdfs dfs -rm -r /examen_final” y volverlo a ejecutar con el comando anterior “hadoop jar hadoop-mapreduce-examples-2.10.2.jar wordcount /unajma /examen_final” y vuelves a visualizar en tu navegador.

```
tenorio@nodo1:/opt/hadoop/share/hadoop/mapreduce$ hdfs dfs -rm -r /examen_final
Deleted /examen_final
tenorio@nodo1:/opt/hadoop/share/hadoop/mapreduce$ hadoop jar hadoop-mapreduce-examples
-2.10.2.jar wordcount /unajma /examen_final
25/06/11 01:42:06 INFO client.RMProxy: Connecting to ResourceManager at nodo1/192.168.
100.101:8032
25/06/11 01:42:07 INFO input.FileInputFormat: Total input files to process : 1
25/06/11 01:42:07 INFO mapreduce.JobSubmitter: number of splits:1
25/06/11 01:42:07 INFO mapreduce.JobSubmitter: Submitting tokens for job: job_17496225
23180_0001
25/06/11 01:42:08 INFO conf.Configuration: resource-types.xml not found
25/06/11 01:42:08 INFO resource.ResourceUtils: Unable to find 'resource-types.xml'.
25/06/11 01:42:08 INFO resource.ResourceUtils: Adding resource type - name = memory-mb
, units = Mi, type = COUNTABLE
25/06/11 01:42:08 INFO resource.ResourceUtils: Adding resource type - name = vcores, u
nits = , type = COUNTABLE
25/06/11 01:42:08 INFO impl.YarnClientImpl: Submitted application application_17496225
23180_0001
25/06/11 01:42:08 INFO mapreduce.Job: The url to track the job: http://nodo1:8088/prox
y/application_1749622523180_0001/
25/06/11 01:42:08 INFO mapreduce.Job: Running job: job_1749622523180_0001
25/06/11 01:42:14 INFO mapreduce.Job: Job job_1749622523180_0001 running in uber mode
: false
25/06/11 01:42:14 INFO mapreduce.Job:  map 0% reduce 0%
25/06/11 01:42:20 INFO mapreduce.Job:  map 100% reduce 0%
25/06/11 01:42:26 INFO mapreduce.Job:  map 100% reduce 100%
25/06/11 01:42:26 INFO mapreduce.Job: Job job_1749622523180_0001 completed successfull
y
```