# 4. Instalación de YARN en modo pseudo-distribuido

### 4.1. Configuración

Editar con permisos de administrador el archivo "~/.profile" para configurar las variables locales y actualizar la variable PATH

```
$ sudo gedit ~/.profile
```

Modificar la variable PATH para incluir las rutas por defecto y otras variables de configuración. IMPORTANTE: Utilizar la ruta de vuestra instalación, en este ejemplo el usuario se llama hadoop y la carpeta donde está la aplicación también se llama hadoop

```
PATH="/home/hadoop/hadoop/hadoop-3.3.4-aarch64/hadoop-3.3.4/bin:$PATH"

PATH="/home/hadoop/hadoop/hadoop-3.3.4-aarch64/hadoop-3.3.4/sbin:$PATH"

export HADOOP_HOME=/home/hadoop/hadoop/hadoop-3.3.1-aarch64/hadoop-3.3.4

export HADOOP_MAPRED_HOME=$HADOOP_HOME

export HADOOP_COMMON_HOME=$HADOOP_HOME local

export HADOOP_HDFS_HOME=$HADOOP_HOME

export YARN_HOME=$HADOOP_HOME
```

```
24 # set PATH so it includes user's private bin if it exists
25 if [ -d "$HOME/.local/bin" ]; then
      PATH="$HOME/.local/bin:$PATH"
27 fi
28
29 #Modificamos PATH para incluir las rutas de Haddop
30 PATH="/home/hadoop/hadoop/hadoop-3.3.1-aarch64/hadoop-3.3.1/bin:$PATH"
31 PATH="/home/hadoop/hadoop/hadoop-3.3.1-aarch64/hadoop-3.3.1/sbin:$PATH"
33 #Definimos variables adicionales
34 export HADOOP_HOME="/home/hadoop/hadoop/3.3.1-aarch64/hadoop-3.3.1"
35 export HADOOP MAPRED HOME=$HADOOP HOME
36 export HADOOP COMMON HOME=$HADOOP HOME
37 export HADOOP HDFS HOME=$HADOOP HOME
38 export YARN HOME=$HADOOP HOME
39
40
```

Nota el carácter  $\sim$  desde el editor podemos escribirlo con "ALT+SHIFT+U" muestra una  $\underline{u}$  continuar tecleando el código de  $\sim$  en hexadecimal "7e" y pulsar la barra espaciadora.

Guardar los cambios y reiniciar sesión (también con gnome-session-quit)

Verificar que se han cargado correctamente las variables por ejemplo con

```
$ hadoop versión
```

```
hadoop@hadoop2:~$ hadoop version
Hadoop 3.3.1
Source code repository https://github.com/apache/hadoop.git -r a3b9c37a397ad4188
041dd80621bdeefc46885f2
Compiled by ubuntu on 2021-06-15T10:51Z
Compiled with protoc 3.7.1
From source with checksum 88a4ddb2299aca054416d6b7f81ca55
This command was run using /home/hadoop/hadoop/hadoop-3.3.1-aarch64/hadoop-3.3.1
/share/hadoop/common/hadoop-common-3.3.1.jar
hadoop@hadoop2:~$
```

# 4.2. Configuración de archivos de registro

Modificar etc/hadoop/mapred-site.xml

1. Obtener la ruta de las librerías de hadoop con el comando

```
$hadoop classpath
```

hadoop@hadoop2:~\$ hadoop classpath
/home/hadoop/hadoop/hadoop-3.3.1-aarch64/hadoop-3.3.1/etc/hadoop:/home/hadoop/hadoop/hadoop-3.3.1-aarch64/hadoop-3.3.1/sha
re/hadoop/common/tib/\*:/home/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop-3.3.1/share/hadoop/hadoop-3.3.1/share/hadoop/hadoop-3.3.1/share/hadoop/hadoop-3.3.1-aarch64/had

- 2. Copiar el resultado
- 3. Modificar etc/hadoop/mapred-site.xml indicando en el valor de la propiedad

```
varn-site.xml
                                                                                                                                                                                                                                            *mapred-site.xml
   2 <?xml-stylesheet type="text/xsl" href="configuration.xsl"?>
          Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License at
              http://www.apache.org/licenses/LICENSE-2.0
          Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License. See accompanying LICENSE file.
 12
 13 S
14 l
15 -->
 16
17 <!-- Put site-specific property overrides in this file. -->
 19 <configuration>
20
21
22
                           23
24
25
                           </property>
                           came>mapreduce.application.classpath</name>
cvalue>/home/hadoop/hadoop/hadoop-3.3.1-aarch64/hadoop-3.3.1/etc/hadoop:/home/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop-3.3.1-aarch64/hadoop-3.3.1/share/hadoop/common/*:/home/hadoop/hadoop-3.3.1-aarch64/hadoop-3.3.1-aarch64/hadoop-3.3.1-aarch64/hadoop-3.3.1-aarch64/hadoop-3.3.1-aarch64/hadoop-3.3.1-aarch64/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/hadoop/s.3.1-aarch64/hadoop/yarn/hadoop/hadoop-3.3.1-aarch64/hadoop-3.3.1/share/hadoop/yarn/*c/value>
// cyronetys
27 
28 | 29 | 30 </configuration>
                         </property>
```

### Modificar el archivo etc/hadoop/yarn-site.xml:

# 4.3. \_Iniciamos el servicio YARN de NodeManager

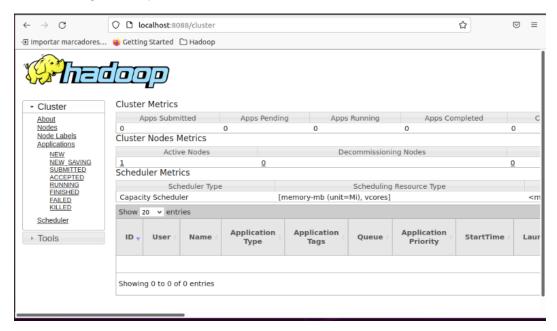
#### Conectar con ssh a localhost

```
$ sbin/start-yarn.sh
```

```
hadoop@hadoop2:~/hadoop/hadoop-3.3.1-aarch64/hadoop-3.3.1$ sbin/start-yarn.sh
Starting resourcemanager
Starting nodemanagers
```

#### Acceder a la interfaz web de Yar

### Resource Manager → <a href="http://localhost:8088">http://localhost:8088</a>



## 4.4. Detener el servicio de YARN

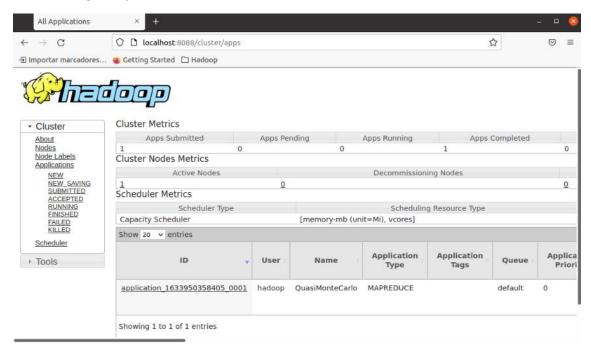
```
$ sbin/stop-yarn.sh
```

### 4.5. Prueba de ejecución con YARN

#### Ejecutar el ejemplo de cálculo de PI con YARN

yarn jar \$YARN\_HOME/share/hadoop/mapreduce/hadoop-mapreduce-examples3.3.4.jar pi 16 100000

#### Consultar logs de ejecución desde la consola localhost:8088



#### En la Ventana de terminal podemos ver el proceso

```
Mrote input for Map #13
Mrote input for Map #14
Wrote input for Map #14
Wrote input for Map #15
Starting Job
2021-10-11 13:09:41,954 INFO client.DefaultNoHARMFailoverProxyProvider: Connecting to ResourceManager at /0.
0.0:8032
2021-10-11 13:09:42,305 INFO mapreduce.JobResourceUploader: Disabling Erasure Coding for path: /tmp/hadoop-y
arn/staging/hadoop/.staging/job_1633959358405_0001
2021-10-11 13:09:42,472 INFO input.FileInputFormat: Total input files to process: 16
2021-10-11 13:09:42,533 INFO mapreduce.JobSubmitter: Submitting tokens for job: job_1633950358405_0001
2021-10-11 13:09:42,653 INFO mapreduce.JobSubmitter: Submitting tokens for job: job_1633950358405_0001
2021-10-11 13:09:42,849 INFO conf.Configuration: resource-types.xml not found
2021-10-11 13:09:42,849 INFO conf.Configuration: resource-types.xml not found
2021-10-11 13:09:43,908 INFO mpl.YarnClientImpl: Submitted application application_1633950358405_0001
2021-10-11 13:09:43,152 INFO mapreduce.Job: The url to track the job: http://hadoop2:8088/proxy/application_
1633950358405_0001/
2021-10-11 13:09:43,152 INFO mapreduce.Job: Running job: job_1633950358405_0001
2021-10-11 13:09:43,152 INFO mapreduce.Job: Map 186 reduce 0%
2021-10-11 13:09:43,152 INFO mapreduce.Job: map 38% reduce 0%
2021-10-11 13:09:53,299 INFO mapreduce.Job: map 38% reduce 0%
2021-10-11 13:10:15,556 INFO mapreduce.Job: map 38% reduce 0%
2021-10-11 13:10:23,685 INFO mapreduce.Job: map 30% reduce 0%
2021-10-11 13:10:23,685 INFO mapreduce.Job: map 100% reduce 0%
2021-10-11 13:10:27,048 INFO mapreduce.Job: map 100% reduce 0%
2021-10-11 13:10:27,048
```

#### Resultado final

NOTA: Para practicar, ejecutar el ejemplo 3.7 con yarn en vez de hadoop

## 4.6. Proceso completo

- 1. Iniciar servicio dfs → start-dfs.sh
- 2. Verificar que tanto el namenode como el datanode está activo → localhost:9870.
  - 2.1. Si no está levantado el datanode.
    - 2.1.1.Parar servicio namenode y datanode stop-dfs.sh
    - 2.1.2.Borrar carpeta (recorder que la ruta puede variar con vuestro usuario de Ubuntu)

      → tmp/hadoop-hadoop/dfs
    - 2.1.3. Formatear en nodo → hdfs namenode -format
    - 2.1.4.Iniciar el servicio de datanode y namenode → start-dfs.sh
- 3. Iniciar Yarn → start-yarn.sh
- 4. Verificar que el servicio está activo → localhost/8088
- 5. Ejecutar comando mapred