210701238

Exp.1 Downloading and installing Hadoop, Understanding different Hadoop modes, Startup scripts, Configuration files.

Aim:

To Download and install Hadoop, Understanding different Hadoop modes, Startup scripts, Configuration files.

Procedure:

1. Install WSL and a Linux Distribution

If you haven't already, install WSL and a Linux distribution (such as Ubuntu):

- **Install WSL:** Open PowerShell as Administrator and run:

powershell

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wsl --install

- **Install a Linux Distribution:** You can install Ubuntu or another distribution from the Microsoft Store.

2. Update and Install Required Packages

Once you have WSL set up, open your WSL terminal and update your package lists:

bash

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sudo apt update

sudo apt upgrade

Install Java Development Kit (JDK) and other required packages:

bash

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sudo apt install openjdk-8-jdk wget ssh pdsh

3. Download and Install Hadoop

1. **Download Hadoop:**

Visit the Apache Hadoop releases page to get the latest version URL, or use the command below for Hadoop 3.2.1:

bash

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wget https://downloads.apache.org/hadoop/common/hadoop-3.2.1/hadoop-3.2.1.tar.gz

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2. **Extract Hadoop:**

bash

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tar -xzf hadoop-3.2.1.tar.gz

3. **Move Hadoop to /opt:**

bash

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sudo mv hadoop-3.2.1 /opt/hadoop

4. **Set Environment Variables:**

Edit your profile file (~/.bashrc or ~/.zshrc) to set the Hadoop environment variables:

bash

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nano ~/.bashrc

Add the following lines:

bash

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export HADOOP_HOME=/opt/hadoop

export JAVA_HOME=/usr/lib/jvm/java-8-openjdk-amd64

export PATH=$HADOOP_HOME/bin:$HADOOP_HOME/sbin:$PATH

Apply the changes:

bash

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source ~/.bashrc

4. Configure Hadoop

1. **Edit core-site.xml:**

Open the configuration file:

bash

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nano $HADOOP_HOME/etc/hadoop/core-site.xml

Add the following configuration:

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xml

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<configuration>

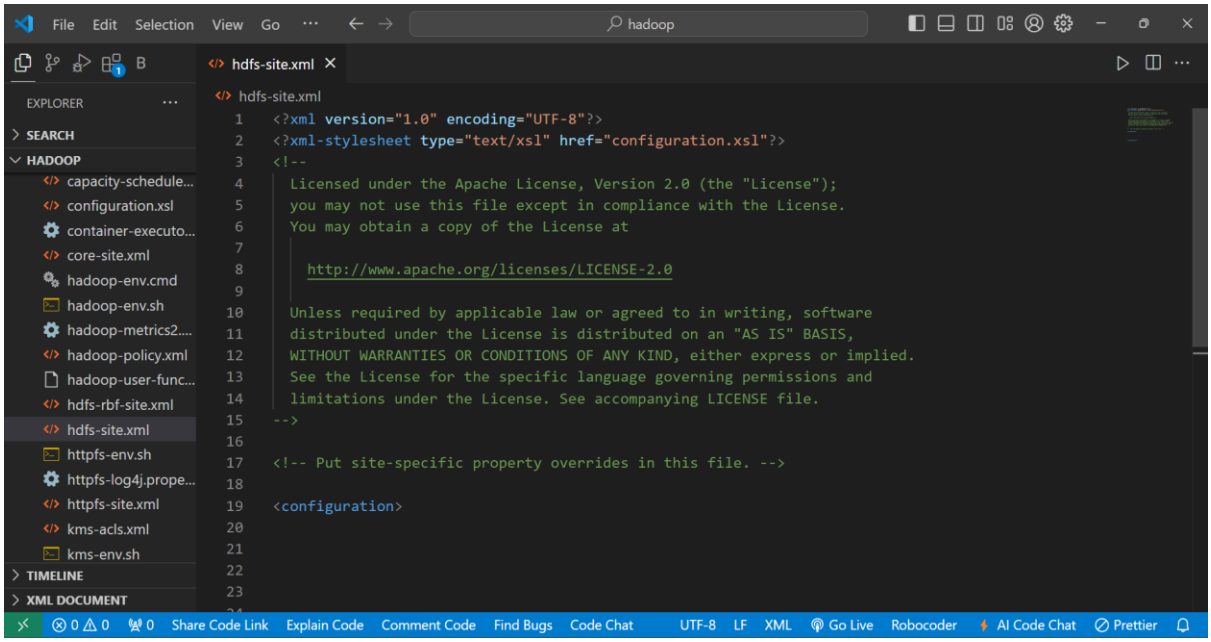
 <property>

  <name>fs.defaultFS</name>

  <value>hdfs://localhost:9000</value>

 </property>

</configuration>



2. **Edit hdfs-site.xml:**

Open the configuration file:

bash

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nano $HADOOP_HOME/etc/hadoop/hdfs-site.xml

Add the following configuration:

xml

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<configuration>

 <property>

  <name>dfs.replication</name>

  <value>1</value>

```
 </property>
 <property>
  <name>dfs.namenode.name.dir</name>
  <value>/home/$(whoami)/hadoop/dfs/name</value>
 </property>
 <property>
  <name>dfs.datanode.data.dir</name>
  <value>/home/$(whoami)/hadoop/dfs/data</value>
 </property>
</configuration>
```

3. **Edit mapred-site.xml:**

Create a new file if it doesn't exist:

bash

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```
cp $HADOOP_HOME/etc/hadoop/mapred-site.xml.template $HADOOP_HOME/etc/hadoop/mapred-site.xml
```

Edit the file:

bash

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```
nano $HADOOP_HOME/etc/hadoop/mapred-site.xml
```

Add the following configuration:

xml

Copy code

```
<configuration>
 <property>
  <name>mapreduce.framework.name</name>
  <value>yarn</value>
 </property>
</configuration>
```

4. **Edit yarn-site.xml:**

Open the configuration file:

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bash

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nano $HADOOP_HOME/etc/hadoop/yarn-site.xml

Add the following configuration:

xml

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```
<configuration>
  <property>
    <name>yarn.nodemanager.aux-services</name>
    <value>mapreduce_shuffle</value>
  </property>
  <property>
    <name>yarn.nodemanager.aux-services.mapreduce_shuffle.class</name>
    <value>org.apache.hadoop.mapred.ShuffleHandler</value>
  </property>
</configuration>
```

5. Format the Namenode

Format the HDFS filesystem (only needed for a new setup):

bash

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```
hdfs namenode -format
```

6. Start Hadoop

Start Hadoop services:

bash

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```
start-dfs.sh
start-yarn.sh
```

7. Verify Installation

Check the status of Hadoop services:

bash

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jps

You should see the following processes running:

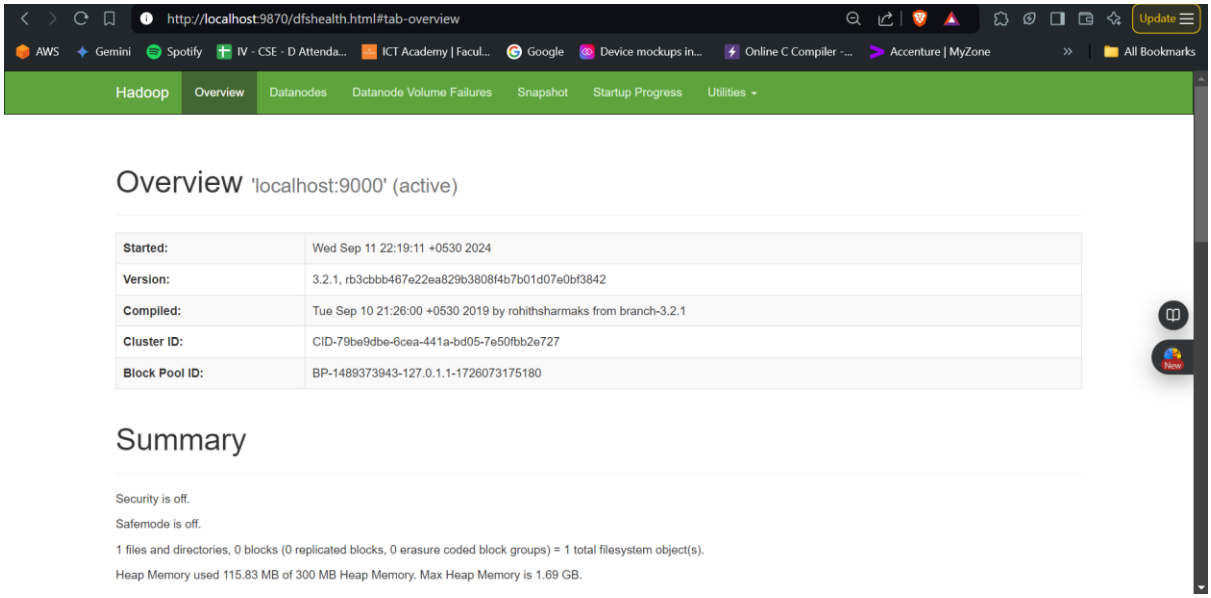
- NameNode
- DataNode
- ResourceManager
- NodeManager

8. Access Hadoop Web UI

You can access the Hadoop web interfaces in your browser:

- **NameNode Web UI:** http://localhost:9870
- **ResourceManager Web UI:** http://localhost:8088

```
senthil@Senthil-2463:~/hadoop/etc/hadoop$ start-all.sh
WARNING: Attempting to start all Apache Hadoop daemons as senthil in 10 seconds.
WARNING: This is not a recommended production deployment configuration.
WARNING: Use CTRL-C to abort.
Starting namenodes on [localhost]
Starting datanodes
Starting secondary namenodes [Senthil-2463]
2024-09-11 22:19:18,578 WARN util.NativeCodeLoader: Unable to load native-hadoop
ses where applicable
Starting resourcemanager
Starting nodemanagers
senthil@Senthil-2463:~/hadoop/etc/hadoop$ jps
57173 ResourceManager
56758 DataNode
56953 SecondaryNameNode
57306 NodeManager
56602 NameNode
57708 Jps
```



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