

Hadoop Capacity Scheduler*

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*The course material is hosted at <https://akermi.org/c1/>.

Learning Objectives

Learn how to configure a Hadoop cluster to use the Capacity Scheduler instead of the default FIFO scheduler. Learn how to submit MapReduce jobs to specific queues.

Pre-Lab Questions

- What is a scheduler in Apache Hadoop?
- Is scheduler a part of HDFS or YARN?
- What are the available schedulers in Hadoop?

Solution

1. In YARN configuration file, set the property `yarn.resourcemanager.scheduler.class` to `org.apache.hadoop.yarn.server.resourcemanager.scheduler.capacity.CapacityScheduler`
2. The file responsible for the capacity scheduler configuration is located here:
`$HADOOP_HOME/etc/hadoop/capacity-scheduler.xml`
3. We are going to set two top-level child-queues: *finance* and *marketing* and some sub-ques for marketing: *topic1* and *topic2*:

```
<property>
  <name>yarn.scheduler.capacity.root.queues</name>
  <value>finance,marketing</value>
</property>
<property>
  <name>yarn.scheduler.capacity.root.marketing.queues</name>
  <value>topic1,topic2</value>
</property>
```

4. Next, we need to setup the capacity and maximum capacity of each queue

- Capacity: `yarn.scheduler.capacity.<queue-path>.capacity`
- Maximum capacity: `yarn.scheduler.capacity.<queue-path>.maximum-capacity`

Examples of *root* and *finance* queues:

```
...
<property>
  <name>yarn.scheduler.capacity.root.capacity</name>
  <value>100</value>
</property>
<property>
  <name>yarn.scheduler.capacity.root.maximum-capacity</name>
  <value>100</value>
</property>
<property>
  <name>yarn.scheduler.capacity.root.finance.capacity</name>
  <value>50</value>
</property>
<property>
  <name>yarn.scheduler.capacity.root.finance.maximum-capacity</name>
```

```
<value>80</value>
</property>
...
```

5. Running a job on a specific queue (e.g. *finance* queue):

```
yarn jar hadoop-mapreduce-examples-3.3.4.jar wordcount -Dmapreduce.job.queueName=finance
 /output
```

Post-Lab Questions

- What happens if the queue name is not specified?
- When developing a MapReduce application, how to deal with the queue name?
- `mapreduce.job.queueName` or `mapred.job.queueName`? What is the difference?