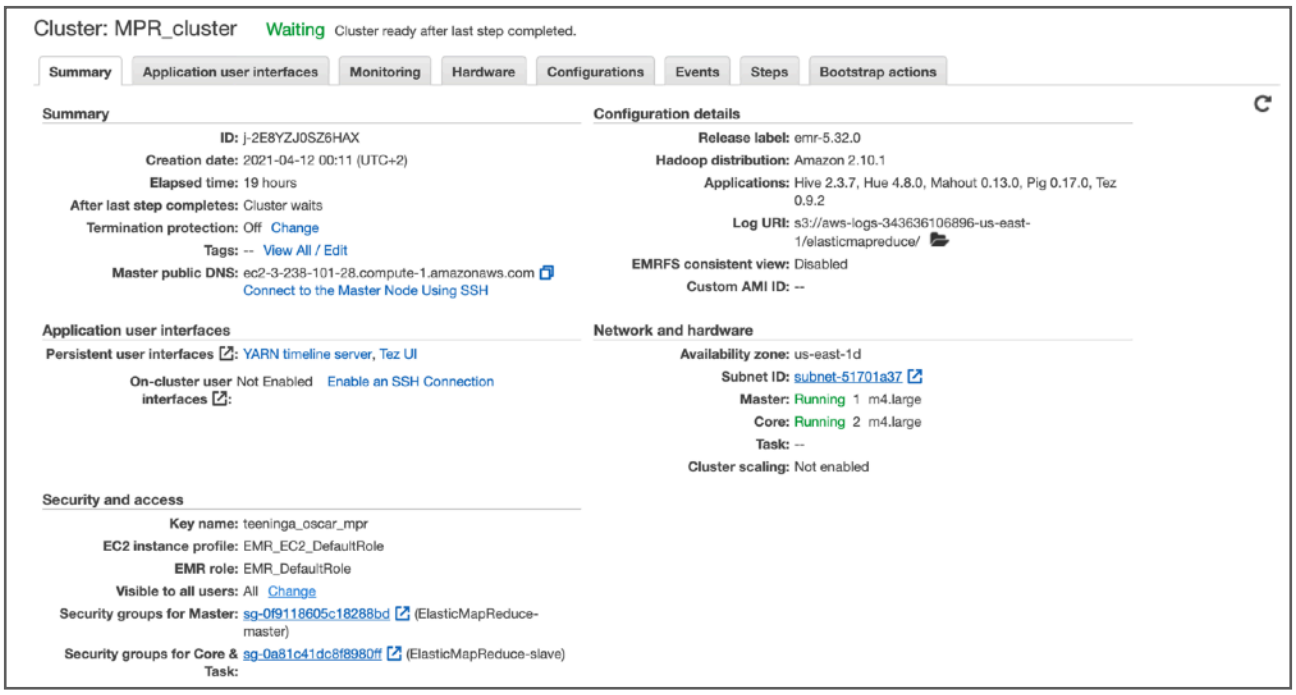
Sprawozdanie
MapReduce 1
Oscar Teeninga

1. Konfiguracja testowa.



2. Zbiór pobrałem za pomocą download.sh w przedziale 1300..1400, a więc 100 tekstów.

```
[hadoop@ip-172-31-9-118 books]$ ls
1300-0.txt  1307-0.txt  1314.txt    1323.txt    1331.txt    1340.txt    1348-0.txt  1355-0.txt  1365-0.txt  1372.txt    1378.txt    1386-0.txt  1392.txt
1300.txt    1307.txt    1315.txt    1324.txt    1332-0.txt  1341.txt    1348.txt    1356.txt    1366-0.txt  1373.txt    1379-0.txt  1386.txt    1393.txt
1301-0.txt  1308-0.txt  1316-0.txt  1325.txt    1332.txt    1342-0.txt  1349.txt    1357-0.txt  1366.txt    1374-0.txt  1379.txt    1387-0.txt  1394.txt
1302.txt    1309.txt    1316.txt    1326.txt    1333.txt    1343-0.txt  1350-0.txt  1357.txt    1367.txt    1374.txt    1380-0.txt  1387.txt    1395.txt
1303-0.txt  1310-0.txt  1317-0.txt  1327-0.txt  1334-0.txt  1343.txt    1351.txt    1358.txt    1368-0.txt  1375-0.txt  1380.txt    1388.txt    1396-0.txt
1303.txt    1311.txt    1317.txt    1327.txt    1334.txt    1344-0.txt  1352-0.txt  1359.txt    1369-0.txt  1375.txt    1381-0.txt  1389-0.txt  1396.txt
1304.txt    1312-0.txt  1318.txt    1328-0.txt  1335.txt    1344.txt    1352.txt    1360.txt    1369.txt    1376-0.txt  1382-0.txt  1389.txt    1397.txt
1305-0.txt  1312.txt    1319.txt    1328.txt    1336.txt    1345-0.txt  1353-0.txt  1361.txt    1370.txt    1376.txt    1383-0.txt  1390-0.txt  1398.txt
1305.txt    1313-0.txt  1320-0.txt  1329-0.txt  1337.txt    1345.txt    1353.txt    1362.txt    1371-0.txt  1377-0.txt  1384.txt    1390.txt    1399-0.txt
1306-0.txt  1313.txt    1321-0.txt  1330-0.txt  1338.txt    1346.txt    1354-0.txt  1363.txt    1371.txt    1377.txt    1385-0.txt  1391-0.txt  1400-0.txt
1306.txt    1314-0.txt  1322-0.txt  1330.txt    1339-0.txt  1347.txt    1354.txt    1364.txt    1372-0.txt  1378-0.txt  1385.txt    1391.txt
```

3. Uruchomiłem przykładową implementację Word Count w postaci mapper.py oraz reducer.py zgodnie z instrukcją. Otrzymany czas to 603,8 s.

```
21/04/12 08:05:37 INFO mapreduce.Job: Counters: 52
        File System Counters
                FILE: Number of bytes read=8285246
                FILE: Number of bytes written=60574685
                FILE: Number of read operations=0
                FILE: Number of large read operations=0
                FILE: Number of write operations=0
                HDFS: Number of bytes read=64876854
                HDFS: Number of bytes written=4494043
                HDFS: Number of read operations=435
                HDFS: Number of large read operations=0
                HDFS: Number of write operations=6
        Job Counters
                Killed map tasks=1
                Killed reduce tasks=1
                Launched map tasks=142
                Launched reduce tasks=4
                Data-local map tasks=98
                Rack-local map tasks=44
                Total time spent by all maps in occupied slots (ms)=111059136
                Total time spent by all reduces in occupied slots (ms)=47329248
                Total time spent by all map tasks (ms)=2313732
                Total time spent by all reduce tasks (ms)=493013
                Total vcore-milliseconds taken by all map tasks=2313732
                Total vcore-milliseconds taken by all reduce tasks=493013
                Total megabyte-milliseconds taken by all map tasks=3553892352
                Total megabyte-milliseconds taken by all reduce tasks=1514535936
        Map-Reduce Framework
                Map input records=1279689
                Map output records=10965196
                Map output bytes=84611156
                Map output materialized bytes=19988214
                Input split bytes=17868
                Combine input records=0
                Combine output records=0
                Reduce input groups=370108
                Reduce shuffle bytes=19988214
                Reduce input records=10965196
                Reduce output records=370108
                Spilled Records=21930392
                Shuffled Maps =426
                Failed Shuffles=0
                Merged Map outputs=426
                GC time elapsed (ms)=42993
                CPU time spent (ms)=306170
                Physical memory (bytes) snapshot=67977322496
                Virtual memory (bytes) snapshot=484520374272
                Total committed heap usage (bytes)=55018258432
        Shuffle Errors
                BAD_ID=0
                CONNECTION=0
                IO_ERROR=0
                WRONG_LENGTH=0
                WRONG_MAP=0
                WRONG_REDUCE=0
        File Input Format Counters
                Bytes Read=64858986
        File Output Format Counters
                Bytes Written=4494043
21/04/12 08:05:37 INFO streaming.StreamJob: Output directory: books-output

real    10m3.814s
user    0m9.806s
sys     0m0.725s
[hadoop@ip-172-31-9-118 lab5]$ ls
```

4. Uruchomiłem własną sekwencyjną wersję Word Count oraz zmierzyłem czasy.

```
[hadoop@ip-172-31-9-118 lab5]$ strings books/*.txt | ./wordcount.py
6.20159101486
```

5. Podsumowanie

   Czas sekwencyjne był znacznie krótszy (6.2s) względem MapReduce (603s) o mniej-więcej dwa rzędy wielkości.