ExecutorLostFailure (Exit code is 143)

错误信息

```
17/08/19 19:58:21 INFO storage.ShuffleBlockFetcherIterator: Getting 11 non-empty blocks out of 20 blocks
17/08/19 19:58:21 INFO storage.ShuffleBlockFetcherIterator: Getting 12 non-empty blocks out of 20 blocks
17/08/19 19:58:21 INFO storage.ShuffleBlockFetcherIterator: Getting 11 non-empty blocks out of 20 blocks
17/08/19 19:58:21 INFO storage.ShuffleBlockFetcherIterator: Getting 10 non-empty blocks out of 20 blocks
17/08/19 19:58:21 INFO storage.ShuffleBlockFetcherIterator: Getting 11 non-empty blocks out of 20 blocks
17/08/19 19:58:21 INFO storage.ShuffleBlockFetcherIterator: Getting 15 non-empty blocks out of 20 blocks
17/08/19 19:58:21 INFO storage.ShuffleBlockFetcherIterator: Started 4 remote fetches in 0 ms
17/08/19 19:58:21 INFO storage.ShuffleBlockFetcherIterator: Started 4 remote fetches in 0 ms
17/08/19 19:58:21 INFO storage.ShuffleBlockFetcherIterator: Started 4 remote fetches in 0 ms
17/08/19 19:58:21 INFO storage.ShuffleBlockFetcherIterator: Started 4 remote fetches in 0 ms
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17/08/19 19:58:21 INFO storage.ShuffleBlockFetcherIterator: Started 4 remote fetches in 0 ms
17/08/19 19:59:52 INFO collection.ExternalAppendOnlyMap: Thread 185 spilling in-memory map of 6.0 GB to
disk (1 time so far)
17/08/19 20:01:28 INFO collection.ExternalAppendOnlyMap: Thread 184 spilling in-memory map of 1241.1 MB to
disk (1 time so far)
17/08/19 20:06:02 ERROR executor.CoarseGrainedExecutorBackend: RECEIVED SIGNAL 15: SIGTERM
17/08/19 20:06:02 INFO storage.DiskBlockManager: Shutdown hook called
17/08/19 20:06:02 INFO util.ShutdownHookManager: Shutdown hook called
17/08/19 20:06:02 INFO util.ShutdownHookManager: Deleting directory /data10/hadoopdata/nodemanager/local/us
ercache/map_point_pickup/appcache/application_1502793246072_750996/spark-b193fd69-3829-4e46-855e-95524b683e
44
17/08/19 20:06:02 INFO util.ShutdownHookManager: Deleting directory /data3/hadoopdata/nodemanager/local/use
rcache/map_point_pickup/appcache/application_1502793246072_750996/spark-40f7c209-840e-483a-8bd5-0cfced78415
1
17/08/19 20:06:02 INFO util.ShutdownHookManager: Deleting directory /data12/hadoopdata/nodemanager/local/us
ercache/map_point_pickup/appcache/application_1502793246072_750996/spark-7e727944-33e1-4a96-9509-e5c5505f47
b5
```

问题描述(导致结果)

```
ExecutorLostFailure (executor 410 exited caused by one of the running tasks) Reason: Container marked as fa
iled:

container_e84_1502793246072_750996_01_000638 on host: bigdata-hdp-apache4057.xg01.diditaxi.com. Exit
status: 143.

Diagnostics: Container killed on request. Exit code is 143
Container exited with a non-zero exit code 143
Killed by external signal
```

问题分析

Yarn Container日志信息中存在

```
#
# java.lang.OutOfMemoryError: Java heap space
# -XX:OnOutOfMemoryError="kill %p"
# Executing /bin/sh -c "kill 77897"...

#
```

可断定为JVM发生OOM Error 而被Kill

解决方案

1、 增加Heap的值，使每个Task可使用内存增加

spark.executor.memory 默认10g spark.yarn.executor.memoryOverhead 默认2048M 2g

操作方法：在提交脚本中添加 --conf spark.executor.memory=12g〈设置一个更大的值〉 若spark.executor.memory + spark.yarn.executor.memoryOverhead =15G 则请使用下述方法。

2、降低Executor的可用Core的数量 N ，
使Executor中同时运行的任务数减少，在总资源不变的情况下，使每个Task获得的内存相对增加。

操作方法：在提交脚本中添加 --executor-cores=3 〈比原来小的值〉 或 --conf spark.executor.cores=3 〈比原来小的值〉

3、减少每个Task处理的数据量，可降低Task的内存开销，在Spark中，每个partition对应一个处理任务Task,
因此，在数据总量一定的前提下，可以通过增加partition数量的方式来减少每个Task处理的数据量,从而降低Task的内存开销。

针对不同的Spark应用类型，存在不同的partition调整参数如下：

〈1〉P = spark.default.parallism (非SQL应用) 操作方法： 在提交脚本中添加 --conf spark.default.parallism=〈比原来大的值 ， 依数据量估算〉

〈2〉P = spark.sql.shuffle.partitions (SQL 应用) 操作方法： 在提交脚本中添加 --conf spark.sql.shuffle.partitions=〈比原来大的值 ， 依数据量估算〉

通过增加P的值，可在一定程度上使Task现有内存满足任务运行

注：当调整一个参数不能解决问题时，上述方案应进行协同调整 例如： --conf spark.executor.memory=12g --conf spark.executor.cores=3 --conf spark.default.parallism=〈更大的值〉 ……
4、从调整应用逻辑角度进行优化。

5、 若上述方案均无法解决问题，则在提交脚本中添加： --conf spark.shuffle.spill.numElementsForceSpillThreshold=2000000 ，
不建议直接使用此种方式。

该问题的详细描述参见 “Spark on Yarn 之Executor内存管理” 第四节4.1.1小节。