**一个由-XXSurvivorRatio失效引发的探索**

<https://blog.csdn.net/rickiyeat/article/details/78906235>

最近死磕一个关注吞吐量的应用程序，初期参数如下：

-Xms4096m

-Xmx4096m

-Xss256K

-XX:PermSize=128m

-XX:MaxPermSize=256m

-Xmn3g

-XX:SurvivorRatio=4

-XX:+UseParallelGC

-XX:ParallelGCThreads=16

-XX:+UseParallelOldGC

-XX:MaxGCPauseMillis=100

-XX:+UseAdaptiveSizePolicy

-XX:+PrintGCDetails

-Xloggc:gclog.log

其中，我将新生代大小设置为3G，Survivor区与from/to区比例设置为4，所以计算得出from/to其中一个的大小为512M，但是在执行命令jmap -heap pid的时候，如下所示：

Debugger attached successfully.

Server compiler detected.

JVM version is 25.121-b13

using thread-local object allocation.

Parallel GC with 16 thread(s)

Heap Configuration:

MinHeapFreeRatio = 0

MaxHeapFreeRatio = 100

MaxHeapSize = 4294967296 (4096.0MB)

NewSize = 3221225472 (3072.0MB)

MaxNewSize = 3221225472 (3072.0MB)

OldSize = 1073741824 (1024.0MB)

NewRatio = 2

SurvivorRatio = 4

MetaspaceSize = 21807104 (20.796875MB)

CompressedClassSpaceSize = 1073741824 (1024.0MB)

MaxMetaspaceSize = 17592186044415 MB

G1HeapRegionSize = 0 (0.0MB)

Heap Usage:

PS Young Generation

Eden Space:

capacity = 3213885440 (3065.0MB)

used = 2467054208 (2352.7662353515625MB)

free = 746831232 (712.2337646484375MB)

76.76235678145392% used

From Space:

capacity = 3670016 (3.5MB)

used = 2850816 (2.71875MB)

free = 819200 (0.78125MB)

77.67857142857143% used

To Space:

capacity = 3670016 (3.5MB)

used = 0 (0.0MB)

free = 3670016 (3.5MB)

0.0% used

PS Old Generation

capacity = 1073741824 (1024.0MB)

used = 128621512 (122.66303253173828MB)

free = 945120312 (901.3369674682617MB)

11.978811770677567% used

32603 interned Strings occupying 3739840 bytes.

上面的From区和to区的大小只有几M？？？什么情况？

原来，**在HotSpot VM里，并行系的收集器（UseParallelGC / UseParallelOldGC）默认开启-XX:+UseAdaptiveSizePolicy**， 这个配置会在每次Minor GC之后对From和To区进行自适应分配大小，而**SurvivorRatio使用默认值8**，设置成任何非8的数值都会无效。所以，我这个参数里面的-XX:+UseAdaptiveSizePolicy其实是画蛇添足了。

如果既想用ParallelScavenge收集器，又想自己按照应用特点来设置From和To区大小，需要手动：

-Xms4096m

-Xmx4096m

-Xmn3g

-XX:SurvivorRatio=4

-XX:+UseParallelOldGC

-XX:PrintGCDateStamps

-XX:+PrintGCDetails

**-XX:-UseAdaptiveSizePolicy**

-XX:+PrintAdaptiveSizePolicy

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反复调整-XX:SurvivorRatio，直到GC数最少就行了，也可以对每次-XX:+PrintAdaptiveSizePolicy 动态调整的值取一个合适的值。

最后总结下，运用并行GC收集器，与设置一个较大的新生代，对吞吐量提升有很大帮助。