Subject: How is the privvmpages limit reached?
Posted by Wheel on Sat, 09 Feb 2008 12:45:57 GMT
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I trying to run Java (memory allocation intensive) on a VPS, and getting privvmpages limit problems.

I know that increasing privvmpages limit, using Xen, or decreasing the Java XMX usage, will fix the problem. But I'm wondering why and how Java reaches this privvmpages limit.

I have two VPSes:

XEN VPS:
-256mb guaranteed
-512mb swap
-No memory problems

[root@vps proc]#ps -aux --sort -vsize
Warning: bad syntax, perhaps a bogus '-'? See /usr/share/doc/procps-3.2.7/FAQ
USER PID %CPU %MEM VSZ RSS TTY STAT START TIME COMMAND
tomcat 18099 0.2 26.9 236172 70580 ? Sl Feb08 3:39 jsvc.exec -user tomcat -home /usr/java/default -Dcatalina.home=/opt/tomcat -Dcatalina.base=/opt/
tomcat 23131 27.7 16.9 222084 44592 pts/2 Sl+ 10:19 0:09 /usr/java/default/bin/java -classpath /usr/share/java/ant.jar:/usr/share/java/ant-launcher.jar:/
tomcat 23091 25.4 17.0 221920 44692 pts/0 Sl+ 10:19 0:09 /usr/java/default/bin/java -classpath /usr/share/java/ant.jar:/usr/share/java/ant-launcher.jar:/
tomcat 23306 56.9 16.7 220756 44052 pts/1 Sl+ 10:19 0:08 /usr/java/default/bin/java -classpath /usr/share/java/ant.jar:/usr/share/java/ant-launcher.jar:/
mysql 18071 0.4 12.3 147652 32312 ? Sl Feb08 6:30 /usr/libexec/mysqld --defaults-file=/etc/my.cnf --basedir=/usr --datadir=/var/lib/mysql --user=m
.....

[root@vps proc]#free
	total	used	free	shared	buffers	cached
Mem:	262312	259472	2840	0	1216	35272
-/+ buffers/cache:		222984	39328			
Swap:	525304	2772	522532			

OpenVZ VPS:
-384MB guaranteerd
- ~800MB privvmpages/burst?
-Memory problems when using the same apps as the XEN vps.
[root@vps]# ant -f build-run-linux.xml
Error occurred during initialization of VM
Could not reserve enough space for code cache

```
[root@vps proc]# ps -aux --sort -vsize
Warning: bad syntax, perhaps a bogus '-'? See /usr/share/doc/procps-3.2.7/FAQ
USER       PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
tomcat   17460  0.3  6.1 203984 48340 ?        Sl   01:44   0:06 jsvc.exec -user tomcat -home
/usr/java/default -Dcatalina.home=/opt/tomcat -Dcatalina.base=/opt/tomcat
-Djava.io.tmpdir=/var/tmp -w
root     23818 71.3  5.0 193520 39484 pts/1    Sl+  02:14   0:04 /usr/java/latest/jre/bin/java
-classpath /usr/share/ant/lib/ant-launcher.jar -Dant.home=/usr/share/ant
-Dant.library.dir=/usr/share
root     23808 56.0  5.0 193348 40052 pts/0    Sl+  02:14   0:04 /usr/java/latest/jre/bin/java
-classpath /usr/share/ant/lib/ant-launcher.jar -Dant.home=/usr/share/ant
-Dant.library.dir=/usr/share
mysql    16196  0.1  3.8 143256 30148 pts/0    Sl   01:41   0:02 /usr/libexec/mysqld
--defaults-file=/etc/my.cnf --basedir=/usr --datadir=/var/lib/mysql --user=mysql
--pid-file=/var/run/mysqld/mys
.......
```

```
[root@vps proc]# cat user_beancounters
Version: 2.5
       uid  resource                     held              maxheld              barrier                limit              failcnt
    982850:  kmemsize                  7287695              7764715           2147483646           2147483646
                   0
             lockedpages                  0                    0               999999               999999                    0
             privvmpages                188389               191204               196608               196608
    3
             shmpages                    3885                 3901                98304                98304
0
             dummy                        0                    0                    0                    0                    0
             numproc                    109                  113                999999               999999                    0
             physspages                 40864                43050                    0           2147483647
 0
             vmguarpages                  0                    0                98304           2147483647
0
             oomguarpages               40864                43050                98304           2147483647
        0
             numtcpsock                   62                   67              7999992              7999992
0
             numflock                     6                   11               999999               999999                    0
             numpty                       4                    4               500000               500000                    0
             numsiginfo                   0                    2               999999               999999                    0
             tcpsndbuf              1292928              1334288             80530432            262556672
        0
             tcprcvbuf              1249536              1371040             80530432            262556672
```

```
0
        othersockbuf          13920          32896          80530432          262556672
0
        dgramrcvbuf              0           8464          80530432          262556672
0
        numothersock            18             24           7999992           7999992
0
        dcachesize               0              0        2147483646        2147483646
0
        numfile               2571           2638          23999976          23999976
0
        dummy                    0              0              0              0              0
        dummy                    0              0              0              0              0
        dummy                    0              0              0              0              0
        numiptent               14             14           999999           999999              0


[root@vps proc]# free
          total       used       free     shared    buffers     cached
Mem:       786432     755120      31312          0          0          0
-/+ buffers/cache:     755120      31312
Swap:           0          0          0
```

As can be seen above, the XEN vps with less memory than the OpenVZ vps, did not cause any memory probems, while the OpenVZ vps with more total (inc burst) memory did cause memory problems by hitting privvmpages.

I read on a number of different sites that hitting privvmpages is caused by OpenVZ showing the total ammount of RAM on the hardware machine/Host instead of the amount of RAM on the VPS.

Someone said to me "OpenVZ does offer SLM like propoerties in reporting RAM so you should be ok with day to day usage of it rather than the old method where is reported the RAM of the host". And the "free" command also shows a total RAM of the VPS and not that of the host.

My question is:
1) Why is the OpenVZ having memory problems while it has more memory than the Xen VPS?
2) Is the statement correct that Java sees [as total ram] the amount of the VPS (~800mb) and not that of the host?