
Subject: How is the privvmpages limit reached?

Posted by [Wheel](#) on Sat, 09 Feb 2008 12:45:57 GMT

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I'm 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 ?    SI  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  SI+ 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  SI+ 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  SI+ 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 ?    SI  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 guaranteed

- ~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 ?        SI   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    SI+  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    SI+  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    SI   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
	physpages	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
	numsignifo	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 problems, 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 amount 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?