
Subject: Memory overflow in an OpenVZ VPS

Posted by [samuli.seppanen](#) on Wed, 26 Sep 2007 07:31:54 GMT

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Hello everybody!

I'm having problems with OpenVZ memory management. I have (probably) read all the Wiki articles there are that touch that subject, and browsed through the mailing list archives to no avail.

Most of my OpenVZ VPS'es work just fine after a bit of fiddling, but one of them is misbehaving constantly. It always runs out of memory, no matter how much I give it. It is running 10 instances of a same server to give better interactive responsiveness. I was just wondering if the server program is leaking memory and causing this erratic behavior, or if there is something wrong with my OpenVZ VPS's configuration.

The physical server runs only this one VPS. The hardware node has 2GB of RAM plus 2GB of swap. The VPS is given roughly 3.5GB of that if available (privvmpages limit). It is guaranteed 2.5GB (vmguarpages barrier). This is FAR more than the server software in question needs, but still it occasionally (and predictably) runs out of memory.

The strange thing about the VPS is that the HELD values in oomguarpages and privvmpages are much lower than the MAXHELD values - almost triple. There should be no usage peaks that should cause this kind of asymmetry, unless an instance of the server software goes amok.

The VPS's resource information is shown below. The parameters are not optimized, as you can see, but that not my biggest problem right now :). So can you see anything wrong with these settings, or should I take a look at the server software that is running on the VPS?

```
[root@VPS_NODE ~]# cat /proc/user_beancounters
```

```
Version: 2.5
```

uid	resource	held	maxheld	barrier	limit	failcnt
103:	kmemsize	19265157	40765738	183079731	201387704	0
	lockedpages	0	0	8939	8939	0
	privvmpages	383368	930126	917504	930000	153
	shmpages	21647	24239	31099	31099	0
	dummy	0	0	0	0	
	numproc	229	524	8000	8000	0
	physpages	236810	485688	0	2147483647	0
	vmguarpages	0	0	655360	2147483647	0
	oomguarpages	382472	874046	310999	2147483647	0
	numtcpsock	532	793	8000	8000	0
	numflock	18	594	1000	1100	0
	numpty	1	4	512	512	0

numsiginfo	0	39	1024	1024	0	
tcpsndbuf	3524644	4236356	28258577	61026577	0	
tcprcvbuf	3530300	6528712	28258577	61026577	0	
othersockbuf	190060	1737340	14129288	46897288	0	
dgramrcvbuf	0	41836	14129288	14129288	0	
numothersock	204	1169	8000	8000	0	
dcachesize	0	0	39977755	41177088	0	
numfile	11106	22346	71488	71488	0	
dummy	0	0	0	0	0	
dummy	0	0	0	0	0	
dummy	0	0	0	0	0	
numiptent	10	10	200	200	0	

[root@HOST_NODE ~]# free

	total	used	free	shared	buffers	cached
Mem:	2073344	2017716	55628	0	66928	954828
-/+ buffers/cache:	995960	1077384				
Swap:	2031608	586508	1445100			

Anyways, thanks for a great Open Source virtualization project!

Subject: Re: Memory overflow in an OpenVZ VPS
 Posted by [samuli.seppanen](#) on Wed, 26 Sep 2007 07:44:04 GMT
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Forgot to mention that I have monit watching the memory usage of the VPS and it goes up steadily, for example:

1:30 PM: mem usage = 75%
 2:30 PM: mem usage = 78%
 3:25 PM: mem usage = 80%
 16:10 PM: mem usage = 100%

At which point memory allocations probably fail and privvmpages failcount goes up.

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>   dummy          0      0      0        0        0
>   numproc        229     524     8000     8000     0
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>   vmguarpages    0      0      655360  2147483647 0
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>   numothersock   204     1169     8000     8000     0
>   dcachesize     0      0 39977755 41177088 0
>   numfile        11106   22346   71488    71488    0
>   dummy          0      0      0        0        0
>   dummy          0      0      0        0        0
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```

```
> numiptent      10      10      200      200      0
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> [root@HOST_NODE ~]# free
>      total      used      free      shared    buffers     cached
> Mem:   2073344  2017716    55628         0     66928    954828
> -/+ buffers/cache:  995960  1077384
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>
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```

Subject: Re: Memory overflow in an OpenVZ VPS
Posted by [dev](#) on Wed, 26 Sep 2007 08:16:42 GMT
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```
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Yes, privvmpages maxheld shows that software tried to allocate lots of memory in reality. And this VE used 874046 pages of RAM+swap (oomguarpages) in the peak, i.e. ~3.4Gb !!! It looks like accounting doesn't lie and your software really tries to allocate that much from time to time.

Have you seen yourself when this was happening and failcounters were increasing?
If you can observe this VE being near the limit,
run top in host system and sort processes by RSS usage.
This will show you which processes consume most of the memory (RSS column).

BTW, have you did something to make VE use less memory (like server restart)
or the memory usage drops that low itself after some time of being high?

> The VPS's resource information is shown below. The parameters are not
> optimized, as you can see, but that not my biggest problem right now :).
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> Anyways, thanks for a great Open Source virtualization project!
you are welcome :@)

Thanks,
Kirill

Subject: Re: Memory overflow in an OpenVZ VPS
Posted by [samuli.seppanen](#) on Wed, 26 Sep 2007 13:00:33 GMT
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> Yes, privvmpages maxheld shows that software tried to allocate lots of memory in reality.
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> It looks like accounting doesn't lie and your software really tries
> to allocate that much from time to time.

Yes, oomguarpages maxheld is suspiciously high, and probably slows
things down considerably when the server starts swapping.

>
> Have you seen yourself when this was happening and failcounters were increasing?
> If you can observe this VE being near the limit,

- > run top in host system and sort processes by RSS usage.
- > This will show you which processes consume most of the memory (RSS column).

I'll have to monitor the VPS when it's approaching the privvmpages limit. Luckily monit will tell me when that is happening :). I'll let you know what I find out. It starts to seem like the servers in the VPS are just misbehaving.

- > BTW, have you did something to make VE use less memory (like server restart)
- > or the memory usage drops that low itself after some time of being high?

No, I've done nothing special after the latest failure. Sometimes one of the server instances dies and has to be restarted, but it's only `_one_` instance, and there are several others still around.

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