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.

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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          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
>   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
>
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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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> asymmetry, unless an instance of the server software goes amok.

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?

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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.
> 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.

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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> Thanks,
> Kirill
