
Subject: Where has my memory gone?

Posted by [gnutered](#) on Fri, 25 Jul 2008 14:49:40 GMT

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If I add up my memory usage in each VE, it adds up to a lot less than what is (apparently) actually being consumed.

This is causing me grief on a production server, in that I'm running out of RAM, and going into swap, which is really hurting my web server - it slows to a crawl, then processes back up, and memory usage really spirals up.

Evidence:

```
# for v in `cd /proc/bc ; echo * `; do echo $v; vzctl exec $v free -m; done
```

---- VE: 100

	total	used	free	shared	buffers	cached
Mem:	256	9	246	0	0	0
-/+ buffers/cache:		9	246			
Swap:	0	0	0			

---- VE: 101

	total	used	free	shared	buffers	cached
Mem:	921	493	427	0	0	0
-/+ buffers/cache:		493	427			
Swap:	0	0	0			

---- VE: 102

	total	used	free	shared	buffers	cached
Mem:	460	58	402	0	0	0
-/+ buffers/cache:		58	402			
Swap:	0	0	0			

---- VE: 106

	total	used	free	shared	buffers	cached
Mem:	345	20	324	0	0	0
-/+ buffers/cache:		20	324			
Swap:	0	0	0			

---- VE: 107

	total	used	free	shared	buffers	cached
Mem:	115	37	77	0	0	0
-/+ buffers/cache:		37	77			
Swap:	0	0	0			

Add up the "used" columns, and I get around 617MB

On the HN:

```
# free -m
```

	total	used	free	shared	buffers	cached
Mem:	1945	1901	43	0	40	100
-/+ buffers/cache:		1761	184			
Swap:	6143	281	5862			

It is showing 1761MB in use.

If I do some maths on the output of `/proc/bc/*`, I get similar results:

```
# ~/beano < /proc/user_beancounters
VE 107: priv = 36MB, kmem = 0MB
VE 106: priv = 20MB, kmem = 1MB
VE 102: priv = 58MB, kmem = 1MB
VE 101: priv = 497MB, kmem = 11MB
VE 100: priv = 9MB, kmem = 0MB
VE 0: priv = 39MB, kmem = 7MB
```

This totals 679MB (note, this was run a few minutes after the above maths, so numbers differ slightly).

So, why the large discrepancy? Where's my missing 1GB of memory gone?

Caveats: I know I'm probably not doing the maths 100% accurately, but it's near enough to know that something isn't right.

Detail:

Here's `/proc/user_beancount`:

```
# cat /proc/user_beancounters
```

Version: 2.5

uid	resource	held	maxheld	barrier	limit	failcnt
107:	kmemsize	903172	2714806	14372700	14790164	
0						
	lockedpages	0	0	256	256	0
	privvmpages	9457	20561	29491	32768	
0						
	shmpages	0	1296	21504	21504	0
	dummy	0	0	0	0	0
	numproc	9	22	240	240	0
	physpages	493	8769	0	9223372036854775807	
0						
	vmguarpages	0	0	33792	9223372036854775807	
0						
	oomguarpages	1165	8957	26112	9223372036854775807	
0						
	numtcpsock	6	12	360	360	0
	numflock	1	6	188	206	0
	numpty	0	3	16	16	0
	numsiginfo	0	2	256	256	0
	tcpsndbuf	104640	165944	1720320	2703360	

0	tcprcvbuf	98304	401464	1720320	2703360	
0	othersockbuf	11560	22328	1126080	2097152	
0	dgramrcvbuf	0	34880	262144	262144	
0	numothersock	7	16	360	360	0
0	dcachesize	98595	193317	3409920	3624960	
0	numfile	221	471	9312	9312	0
	dummy	0	0	0	0	0
	dummy	0	0	0	0	0
	dummy	0	0	0	0	0
	numiptent	14	14	128	128	0
106:	kmemsize	1798197	3523117	14372700	14790164	
0	lockedpages	0	0	256	256	0
0	privvmpages	5189	19476	88473	98304	
0	shmpages	18	674	21504	21504	0
	dummy	0	0	0	0	0
	numproc	8	22	240	240	0
	physpages	116	5050	0	9223372036854775807	
0	vmguarpages	0	0	29491	32768	0
	oomguarpages	1588	6541	26112	9223372036854775807	
0	numtcpsock	3	11	360	360	0
	numflock	1	2	188	206	0
	numpty	0	1	16	16	0
	numsiginfo	0	2	256	256	0
0	tcpsndbuf	52320	338296	1720320	2703360	
0	tcprcvbuf	49152	0	1720320	2703360	0
0	othersockbuf	2312	9808	1126080	2097152	
0	dgramrcvbuf	0	8456	262144	262144	0
	numothersock	1	9	360	360	0
0	dcachesize	131460	201016	3409920	3624960	
0	numfile	202	430	9312	9312	0
	dummy	0	0	0	0	0
	dummy	0	0	0	0	0
	dummy	0	0	0	0	0
	numiptent	14	14	128	128	0
102:	kmemsize	1725889	4340821	14372700	14790164	
0						

0	lockedpages	0	0	256	256	0
	privvmpages	14717	39041	117964	131072	
	shmpages	0	3216	21504	21504	0
	dummy	0	0	0	0	0
	numproc	9	26	240	240	0
	physpages	9404	25165	0	9223372036854775807	
0	vmguarpages	0	0	29491	32768	0
	oomguarpages	20698	28347	26112	9223372036854775807	
	0					
	numtcpsock	25	360	360	360	2775
	numflock	1	3	188	206	0
	numpty	3	5	16	16	0
	numsiginfo	0	2	256	256	0
	tcpsndbuf	213768	2029080	1720320	2703360	
14887573	tcprcvbuf	202448	2002936	1720320	2703360	
2513133	othersockbuf	2312	322376	1126080	2097152	
0	dgramrcvbuf	0	8456	262144	262144	0
	numothersock	1	35	360	360	0
	dcachesize	181125	444357	3409920	3624960	
0	numfile	771	1103	9312	9312	0
	dummy	0	0	0	0	0
	dummy	0	0	0	0	0
	dummy	0	0	0	0	0
	numiptent	14	14	128	128	0
101:	kmemsize	11635745	46486929	134217728	147639500	
0	lockedpages	0	0	256	256	0
	privvmpages	128074	263359	235929	262144	
165044	shmpages	8512	15568	21504	21504	
0	dummy	0	0	0	0	0
	numproc	65	159	400	400	0
	physpages	36906	85441	0	9223372036854775807	
0	vmguarpages	0	0	58982	65536	0
	oomguarpages	89615	141348	58982	65536	
0	numtcpsock	32	173	360	360	0
	numflock	9	21	188	206	0
	numpty	1	2	16	16	0
	numsiginfo	0	78	256	256	0

113	tcpsndbuf	215952	1724304	1720320	2703360	
0	tcprcvbuf	210216	710136	1720320	2703360	
0	othersockbuf	18496	179904	1126080	2097152	
0	dgramrcvbuf	0	23648	262144	262144	
0	numothersock	20	93	360	360	0
0	dcachesize	452598	620679	3409920	3624960	
	numfile	1569	2534	9312	9312	0
	dummy	0	0	0	0	0
	dummy	0	0	0	0	0
	dummy	0	0	0	0	0
	numiptent	14	14	128	128	0
100:	kmemsize	788463	2142311	14372700	14790164	
0	lockedpages	0	0	256	256	0
0	privvmpages	2372	16843	58982	65536	
	shmpages	0	656	21504	21504	0
	dummy	0	0	0	0	0
	numproc	6	19	240	240	0
0	physpages	133	7774	0	9223372036854775807	
	vmguarpages	0	0	14745	16384	0
	oomguarpages	1915	8764	26112	9223372036854775807	
	numtcpsock	4	10	360	360	0
	numflock	1	5	188	206	0
	numpty	0	1	16	16	0
	numsiginfo	0	3	256	256	0
0	tcpsndbuf	69760	353160	1720320	2703360	
0	tcprcvbuf	65536	484104	1720320	2703360	
0	othersockbuf	11560	34840	1126080	2097152	
0	dgramrcvbuf	0	25168	262144	262144	
0	numothersock	6	14	360	360	0
0	dcachesize	17841	59157	3409920	3624960	
	numfile	153	388	9312	9312	0
	dummy	0	0	0	0	0
	dummy	0	0	0	0	0
	dummy	0	0	0	0	0

numiptent	10	10	128	128	0
0: kmemsize	8083585	9508188	9223372036854775807		
9223372036854775807	0				
lockedpages	0	5209	9223372036854775807		
9223372036854775807	0				
privvmpages	10142	20783	9223372036854775807		
9223372036854775807	0				
shmpages	1927	2599	9223372036854775807		
9223372036854775807	0				
dummy	0	0	9223372036854775807	9223372036854775807	
0					
numproc	78	88	9223372036854775807		
9223372036854775807	0				
physpages	1885	15036	9223372036854775807		
9223372036854775807	0				
vmguarpages	0	0	9223372036854775807		
9223372036854775807	0				
oomguarpages	6012	25423	9223372036854775807		
9223372036854775807	0				
numtcpsock	8	33	9223372036854775807		
9223372036854775807	0				
numflock	2	8	9223372036854775807	9223372036854775807	
0					
numpty	3	4	9223372036854775807	9223372036854775807	
0					
numsiginfo	1	5	9223372036854775807	9223372036854775807	
0					
tcpsndbuf	160128	177568	9223372036854775807		
9223372036854775807	0				
tcprcvbuf	131072	330576	9223372036854775807		
9223372036854775807	0				
othersockbuf	32368	116888	9223372036854775807		
9223372036854775807	0				
dgramrcvbuf	0	65688	9223372036854775807		
9223372036854775807	0				
numothersock	43	56	9223372036854775807		
9223372036854775807	0				
dcachesize	1936469	2800110	9223372036854775807		
9223372036854775807	0				
numfile	1766	2793	9223372036854775807		
9223372036854775807	0				
dummy	0	0	9223372036854775807	9223372036854775807	
0					
dummy	0	0	9223372036854775807	9223372036854775807	
0					
dummy	0	0	9223372036854775807	9223372036854775807	
0					
numiptent	306	321	9223372036854775807		

Here's my beano script:

```
#!/usr/bin/awk -f
$1 ~ /[1-9][0-9]*:/ { veid = substr($1, 0, length($1)) }
$1 ~ /0:/ { veid = substr($1, 0, length($1)) }
$2 ~ /kmemsize/ { kmem = int($3 / 1024 / 1024) ; kmem_mh = int($3 / 1024 / 1024) }
$1 ~ /privvmpages/ { priv = int($2 / 256) ; priv_mh = int($2 / 256) }
$1 ~ /numiptent/ { printf ("VE %s: priv = %dMB, kmem = %dMB\n", veid, priv, kmem) }
```

Operating system is Debian etch. Kernel is:

```
# uname -a
```

```
Linux alpha 2.6.18-12-fza-amd64 #1 SMP Sun May 18 09:57:08 UTC 2008 x86_64 GNU/Linux
```

Packages:

```
# dpkg -l \|*vz\|*
```

```
Desired=Unknown/Install/Remove/Purge/Hold
```

```
| Status=Not/Installed/Config-files/Unpacked/Failed-config/Half-installed
```

```
|/ Err?=(none)/Hold/Reinst-required/X=both-problems (Status,Err: uppercase=bad)
```

```
||/ Name Version Description
```

```
+++=====
```

```
=====
```

```
=====
```

un ovzkernel	<none>	(no description available)
ii vzctl	3.0.22-1dso1	OpenVZ - server virtualization solution -
control tools		
un vzctl-ostemplate	<none>	(no description available)
ii vzctl-ostmpl-debian	4.0-20071003	OpenVZ - OS Template - Debian 4.0
un vzctl-template-debian	<none>	(no description available)
ii vldump	1.0-2	OpenVZ backup scripts
ii vzprocps	2.0.11-1dso2	OpenVZ - server virtualization solution -
procps utilities		
ii vzquota	3.0.11-1dso1	OpenVZ - server virtualization solution -
quota tools		