

Re: Memory issues with 64-bit SQL Server 2005 on 64-bit Win 2003 C

Source:

<http://www.tech-archive.net/Archive/SQL-Server/microsoft.public.sqlserver.clustering/2008-09/msg00079.html>

- *From:* Reuben Sultana <ReubenSultana@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx>
 - *Date:* Wed, 24 Sep 2008 07:55:01 -0700
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Hi Raman,

I checked the installed .NET drivers and (luckily) confirmed they are 64-bit. Reinstalling the whole thing would have been a problem since the setup is a cluster and is live...

- 1) I did set the "lock pages in memory" prior to installing any of the SQL Server instances.
- 2) The Network adapters are "Broadcom NetXtreme Gigabit Ethernet" – here's a stupid question: where do I find the driver version...? :-(
- 3) With regards to the BIOS firmware this is updated by the hardware supplier when an update is available.

I also checked the individual patch levels for the .NET drivers, SQL Server 2005 and the OS (via Windows Update). The .NET drivers are version 2.0.50727.832. A quick check at <http://blogs.msdn.com/dougste/archive/2007/09/06/version-history-of-the-clr-2-0.aspx> shows that we are a few patches behind, however we can catch up with SP1. The SQL Server is fully patched, however Windows Update reported that the OS requires 25 High Priority KB's, etc. one of which is the .NET SP1. Will read some about each and apply if I find nothing worrying.

I am also doing some research into the information returned by the DMV's.

If the performance remains the same we shall have no other alternative besides opening a call with Microsoft.

Thanks,

Reuben.

"Raman Gosala" wrote:

Reuben,

I had this same issue a long time ago and found that the .NET drivers

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installed on the box was 32 bit

So I was recommended to reinstall the OS2003 and then install the .NET 64 bit and then install you SQL Server you should be good, in this case it worked fine

During the above mentioned solution, I had taken care of

- 1) Lock pages in memory -- I guess you might have taken care of it as well.
 - 2) Update your Network card drivers especially if you are using the Broadcom 5708S drivers
 - 3) Update your BIOS firmware.
- <http://support.microsoft.com/kb/918483>
and the issue was resolved was happy with microsoft solution.

However I have been assigned a new project which has about 40 new servers all are from IBM Blades with quad core and 32 GB on some of the machines and 64 GB on some of the machines as soon as I installed the x64 with SP2 and the latest cumulative 9 pack I still see the same error.

I have a case opened with Microsoft now to see what they have to say as in this case I have already applied all the above mentioned fixes but still see the same issue the exact error is read between lines

A significant part of sql server process memory has been paged out. This may result in a performance degradation. Duration: 0 seconds. Working set (KB): 38500, committed (KB): 105592, memory utilization: 36%.

I shall update if I here more from microsoft.

"Reuben Sultana" wrote:

First of all, a big thank you to all for the tips. I ran Performance Monitor and recorded the following figures at one point in time:

```
MSSQL$INSTNAME:Memory Manager | Total Server Memory = 2097152
(2048 MB)
MSSQL$INSTNAME:Memory Manager | Target Server Memory = 2097152
(2048 MB)
Process | Working Set | sqlservr = 2018269594 (1925 MB)
Process | Working Set | sqlservr#1 = 153129247 (146 MB)
Memory | Available MBytes = 1564
Memory | Pages/sec = 15.84 (AVG); 1567 (MAX)
MSSQL$INSTNAME:Buffer Manager | Buffer cache hit ratio = 99.864
MSSQL$INSTNAME:Buffer Manager | Total pages = 262144
```

There seems to be an anomaly with the memory totals. The above were taken on SQLNode1 which had only two active instances. Each instance is configured to use between 0 and 1845MB out of the 8GB available. If we sum the

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"Working

Set (sqlservr)", "Working Set (sqlservr#1)" and "Available MBytes" [1925+146+1564] we get 3635 MB. This leaves us with 4557 MB unaccounted for.

Could it be a memory leak?

Even if we had to take the maximum server memory used by each SQL Server

instance [1845*2] the "Available MBytes" does not make sense [8192 – (1845*2)

– 1564 = 2938]. This does not even leave enough memory for a failover.

What

could be eating away at the available memory?

Reuben.

"Linchi Shea" wrote:

Task Manager cannot count over 2GB so your numbers are not accurate.

This has become beyond amazing. I mean for how many centuries now this Task Manager nuisance has been around, and yet they somehow could never find time to fix it. I just checked one of my Win2K3 x64 boxes that runs SQL2005 x64, and even on a pure x64 box, this Task Manager nuisance is still present. So while Task Manager shows sqlservr to use about 214MB, and SQL Memroy Manager counter Total Server Mmemory shows 18GB.

Linchi

"Geoff N. Hiten" wrote:

Do not use the Task Manager to determine memory usage. Task Manager cannot count over 2GB so your numbers are not accurate. The Paging File usage is due to how the large memory allocation APIs work. They appear to Task Manager as paging file use.

Swap (paging) files for SQL do not need to be more than about 2–4 GB regardless of physical memory on the box. If

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you use Performance Monitor to track actual paging activity, you will see very little on a properly tuned SQL Server. Note that backup activity will show up as paging due to the APIs used.

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Geoff N. Hiten
Principal SQL Infrastructure Consultant
Microsoft SQL Server MVP

"Reuben Sultana"

<ReubenSultana@xxxxxxxxxxxxxxxxxxxxxxxxxxxx>

wrote in message

news:148FF757-0DBD-4399-B5BE-1D769BA03D9C@xxxxxxxxxxxxxxxxxxxx

We have a 2 node 64-bit
Windows 2003
Active/Active Cluster with 2
instances
on each node. Each node
has 2 virtual servers/named
instances; 1 SQL 2000
(32-bit) and 1 SQL 2005
(64-bit). Thus the setup is
as follows:

SQLNode1:

- SrvrA\sql01
- SrvrB\sql51

SQLNode2:

- SrvrC\sql02
- SrvrD\sql52

Each node has 4 dual cores,
8GB RAM. The swap file is
on a separate disk
and
is set to 8 GB. Each instance
is configured/allocated 1845
MB "max server
memory" with no minimum.
The reason why only 1845
MB is allocated to each
instance is because should
all instances move/failover

to the same node
this
would avoid that the SQL
instances would compete for
the memory. As you
can
see the total memory
allocation for all instances is
7380 MB which leaves
812
MB for the operating system
(in a failover state).

Basically what is happening
is that the sqlsrvr.exe (2005)
is using
approximately 150MB
memory and paging the rest.

The SQL 2000's are
working fine, no
performance issues there.
Both SQL
2005's instances are using
approx 150MB RAM and
paging the rest.
Unfortunately no errors
related to this were logged
in the SQL Server
error
log or the Windows Event
Log.

We tried various options,
including setting the "min
server memory" and
also
confirmed that the service
account had the policy "lock
pages in memory"
set.

I found the following
articles which explain
similar issues with similar
environments:

1. Discussion which appears
to be related to 64-bit
systems

http://www.sqlteam.com/forums/topic.asp?TOPIC_ID=100315

2. How to reduce paging of
buffer pool memory in the
64-bit version of SQL
Server 2005
<http://support.microsoft.com/kb/918483>

3. How to determine the
appropriate page file size for
64-bit versions of
Windows Server 2003
<http://support.microsoft.com/kb/889654/>

4. SQL and the Working Set
<http://blogs.technet.com/askperf/archive/2007/05/18/sql-and-the-working-s>

5. A significant part of sql
server process memory has
been paged
http://groups.google.co.uk/group/microsoft.public.sqlserver.server/browse_frm

6. Does SQL Server always
respond to memory
pressure?
<http://blogs.msdn.com/slavao/archive/2006/11/13/q-a-does-sql-server-alwa>

7. The sizes of the working
sets of all the processes in a
console session
may be trimmed when you
use Terminal Services to log
on to or log off from
a
computer that is running
Windows Server 2003
<http://support.microsoft.com/kb/905865/en-us>

8. Windows Server 2003,
Enterprise Edition: System
requirements
<http://technet2.microsoft.com/WindowsServer/en/library/87f23f24-474b-4de>

Most of the environments
mentioned in the above
links had (much more)
RAM
allocated on one SQL
Server instance than the
amount allocated in our
setup.

In a number of documents I

came across the recommendation that besides the amount required for SQL Server, 2 GB are reserved for the operating system, antivirus is not installed on the database servers, and an amount of RAM be allocated for other services and applications.

My gut feeling is that we should do a number of things. The first is to schedule a server reboot at least every month (to clear any possible memory leaks...?). The second is that more RAM is added to the nodes. We could also modify the size of the pagefile to 1.5 times the allocated RAM. What is true is that the pagefile utilisation is very high and we might encounter bottlenecks (due to disk IO) should the activity increase. I would appreciate any comments from your end.

Thanks and regards,

Reuben