

Re: RAM Speicherauslastung

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 - *Date:* Wed, 14 Nov 2007 03:12:01 -0800
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Hallo,

nun die Antwort von HP:

Ich habe den Eintrag /PAE in die Boot.ini gesetzt und die maschine neugestartet. Lüpft.

If a ProLiant server has 4 GB (or more) of memory installed, certain operating systems may not report all of the installed memory. The operating system may report less than 4 GB of memory. In such cases, Physical Address Extensions (PAE) mode should be enabled to allow the OS to recognize all of the installed memory.

64-bit operating systems, such as Windows Server 2003 x64 Edition, will recognize all of the installed memory without enabling PAE mode. On 32-bit operating systems, PAE mode must be enabled in order to access more than 4 GB of installed memory. See the Resolution section for information on how to enable PAE mode.

While it may not be obvious, a system with exactly 4 GB of memory will require enabling PAE mode for 32-bit operating systems to access all of the installed memory. Some of the installed memory is mapped above 4 GB. Expansion cards and embedded devices such as PCI, PCI-X, and PCI-Express devices require memory that is mapped below 4 GB. The area allocated to these devices is known as the PCI Hole. In addition, systems with PCI-express architectures will support an area referred to as the PCI Extended Configuration Space which is typically 256 MB and must be located below the 4 GB boundary. The addressable memory space allocated to the PCI Hole and the PCI Extended Configuration Space is not available for installed system memory. The installed system memory that would have been located in these regions is automatically remapped to above the 4 GB boundary on HP ProLiant servers. This means that the memory is still available to the OS, but 32-bit operating systems must be configured to access above 4 GB.

For example, on the ProLiant BL20p G4 server blade using the Intel 5000-series chipset family, the amount of memory allocated to the PCI Hole will be 256 MB to 512 MB based on the installed PCI-Express mezzanine cards and the PCI Extended Configuration Space will be allocated 256 MB. Therefore,

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512 MB to 768 MB of addressable memory space will be unavailable below 4 GB. If the server has 4 GB or more of memory installed, this area will automatically be remapped to above 4 GB. 32-bit operating systems will require PAE mode be enabled to access all of the installed memory in the system. If PAE mode is not enabled for such operating systems, the OS will only recognize 3.25 GB to 3.5 GB of installed memory.

As another example, on ProLiant DL585 G2 and ProLiant BL685c servers using the NVIDIA CK8-04, IO-04 chipset, the amount of memory space allocated for this chipset will be approximately 2 GB. Therefore, 2 GB of addressable memory space below 4 GB will be unavailable. If the server has 4 GB or more of memory installed, this area will automatically be remapped to above 4 GB. 32-bit operating systems will require PAE mode be enabled to access all of the installed memory in the system. If PAE mode is not enabled for such operating systems, the OS will only recognize 2.0 GB of installed memory.

The requirement to enable PAE mode on 32-bit operating systems to access memory mapped above 4 GB is an industry standard requirement and is not unique to HP ProLiant servers. For Microsoft Windows 2003 (all versions except Standard Edition) PAE mode will automatically be enabled on the following ProLiant servers, allowing access to memory above 4 GB:

HP ProLiant servers with Hot-Add Memory support enabled (such as the ProLiant DL580 G4)

HP ProLiant servers with AMD Opteron processors with Node Interleaving disabled.

Most versions of 32-bit Linux operating systems enable PAE by default although some versions may require a specific smp kernel.

Microsoft Windows Server 2003 Standard Edition does not support accessing memory above 4 GB, even though PAE can be enabled. This is a limitation of the OS, and the memory space utilized by the PCI Hole and PCI Extended Configuration Space will not be available if the system has 4 GB of memory installed.

Note: The ProLiant DL360 G4, ProLiant DL380 G4, ProLiant ML350 G4, ProLiant ML370 G4, and ProLiant BL20p G3 server blades do not automatically remap memory allocated to the PCI Hole if exactly 4 GB of memory is installed. See Customer Advisory EL041214_CW01 for details regarding these servers:

http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?lang=en&cc=us&objectID=PSD_EL041214_CW

For more information about the Intel 5000 chipset family and programs, refer to the following Intel website:

http://www.intel.com/design/chipsets/embedded/5000P.htm?iid=ipp_embed_chip_5000P

For more information on Intel PCI-Express to PCI-X Bridge Architecture features, including the PCI Express Extended Configuration space region that sits just below 4 GB, refer to page 4 of 8 at the following Intel link:

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<http://www.intel.com/technology/pciexpress/devnet/docs/bridgearchitecture.pdf>

For more information on memory being reserved for the Intel chipset and other PCI devices, refer to the following support note, Not All Memory Is Available After Installing 4GB Of System Memory, available on the Intel website:

<http://support.intel.com/support/motherboards/server/sb/CS-010458.htm>

Note : Although the Intel Support Note addresses the Intel version of system boards with this chipset, it also applies to any system that uses the Intel chipset.

SCOPE

Any of the following ProLiant servers or StorageWorks Servers and Storage Systems with 4 GB (or more) of memory and running 32-bit operating systems that require PAE be enabled to address memory above 4 GB:

ProLiant BL20p G4 server blade
ProLiant BL25p G2 server blade
ProLiant BL45p G2 server blade
ProLiant BL460c server blade
ProLiant BL465c server blade
ProLiant BL480c server blade
ProLiant BL685c server blade
ProLiant DL320 G4
ProLiant DL320 G5
ProLiant DL360 G5
ProLiant DL365
ProLiant DL380 G5
ProLiant DL385 G2
ProLiant DL580 G3
ProLiant ML570 G4
ProLiant ML570 G4
ProLiant DL585 G2
ProLiant ML310 G3
ProLiant ML310 G4
ProLiant ML350 G5
ProLiant ML370 G5
ProLiant ML570 G4
HP ProLiant DL320s Storage Server
HP ProLiant DL380 G5 Data Protection Storage Server
HP ProLiant DL380 G5 Storage Server
HP ProLiant ML310 G3 Data Protection Storage Server
HP ProLiant ML310 G3 Storage Server
HP ProLiant ML310 G4 Storage Server
HP ProLiant ML350 G5 Storage Server
HP StorageWorks 1200 All-in-One Storage System
HP StorageWorks 600 All-in-One Storage System

RESOLUTION

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To allow 32-bit operating systems to access all of the memory installed in a server above 4 GB, PAE mode must be enabled.

PAE Mode on Microsoft Windows:

PAE mode is disabled by default with 32-bit versions Microsoft Windows 2000 and Microsoft Windows Server 2003. PAE mode is supported on Windows 2000 Datacenter Server, Windows 2000 Advanced Server, Windows Server 2003 Enterprise Edition, and Windows Server 2003 Datacenter Edition and can be enabled by adding the /pae boot parameter in the BOOT.INI file.

Note: PAE mode can be enabled under Windows Server 2003 Standard Edition and Windows XP; however, the total physical address space is limited to 4 GB on these versions of Windows. Although support for PAE memory is typically associated with support for more than 4 GB of memory, PAE can be enabled on Windows XP SP2, Windows Server 2003 Standard Edition, and Windows XP SP2 (and later) 32-bit versions of Windows to support hardware enforced Data Execution Prevention (DEP).

For more information on PAE and DEP, refer to the Microsoft article PAE memory and Windows, available at the following Microsoft URL:

<http://www.microsoft.com/whdc/system/platform/server/PAE/PAEdrv.mspx>

PAE Mode on Linux:

PAE mode is enabled by default in the following x86 versions of Linux:

- Red Hat Enterprise Linux 5 (x86)
- Red Hat Enterprise Linux 4 Update 4 (x86)
- Red Hat Enterprise Linux 4 Update 3 (x86)
- SUSE Linux Enterprise Server 10 (x86)
- SUSE Linux Enterprise Server 9 SP3 (x86)
- SUSE Linux Enterprise Server 9 SP2 (x86)

For the SUSE versions of Linux, the "bigsmpt" kernel, rather than the "smp" kernel, must be used to recognize memory greater than 4 GB. PAE is automatically enabled in the "bigsmpt" kernel.

For Red Hat Enterprise Linux 3 Update x (x86), memory greater than 4 GB is recognized on platforms using Intel processors. On platforms using AMD Opteron processors, a manual installation of the "i686-smp" or "hugemem" kernels is required to access memory mapped above 4 GB because these kernels have PAE mode enabled by default. Without this manual installation of the "i686-smp" or "hugemem" kernels, Red Hat Enterprise Linux 3 Ux (x86) cannot enable PAE mode on AMD-based platforms and will not have access to the memory lost to the PCI Hole and the PCI Express Extended Configuration Space.

RECEIVE PROACTIVE UPDATES : Receive support alerts (such as Customer Advisories), as well as updates on drivers, software, firmware, and customer replaceable components, proactively via e-mail through HP Subscriber's Choice. Sign up for Subscriber's Choice at the following URL:

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<http://www.hp.com/go/myadvisory>

SEARCH TIP : For hints on locating similar documents on HP.com, refer to the Search Tips document:

<http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?objectID=c00638154> .

To search for additional advisories related to memory on ProLiant servers, use the following search string:

+ProLiant +Advisory +Memory

KEYWORDS : dimm, missing memory, ram

Hardware Platforms Affected: HP ProLiant DL385 G2 Server series, HP ProLiant DL365 Server series, HP ProLiant BL465c Server series, HP ProLiant ML310 G3 Server series, HP StorageWorks 600 All-in-One 2TB SATA China Storage System(Standard HP Product), HP ProLiant DL320 G4 Server series, HP ProLiant BL480c Server series, HP ProLiant ML310 G3 Storage Server, HP StorageWorks 1200 All-in-One 3.6TB SAS Storage System(Standard HP Product), HP StorageWorks 600 All-in-One 876GB SAS Europe Storage System(Standard HP Product), HP StorageWorks 600 All-in-One 3TB SATA Europe Storage System(Standard HP Product), HP StorageWorks 600 All-in-One 3TB SATA Asia Pacific Storage System(Standard HP Product), HP StorageWorks 600 All-in-One 1.5TB SATA Aus Storage System(Standard HP Product), HP StorageWorks 600 All-in-One 1.5TB SATA America Storage System(Standard HP Product), HP ProLiant BL25p G2 Server series, HP StorageWorks 1200 All-in-One 3TB SATA Storage System(Standard HP Product), HP StorageWorks 600 All-in-One 1.5TB SATA Asia Pacific Storage System(Standard HP Product), HP ProLiant ML350 G5 Storage Server, HP ProLiant BL20p G4 Server series, HP ProLiant DL380 G5 Server series, HP StorageWorks 600 All-in-One 3TB SATA Aus Storage System(Standard HP Product), HP ProLiant DL380 G5 Data Protection Storage Server, HP ProLiant BL45p G2 Server series, HP ProLiant ML310 G4 Server series, HP ProLiant BL460c Server series, HP StorageWorks 1200 All-in-One 9TB SATA Storage System(Standard HP Product), HP StorageWorks 600 All-in-One 876GB SAS Asia Pacific Storage System(Standard HP Product), HP StorageWorks 600 All-in-One 876GB SAS America Storage System(Standard HP Product), HP StorageWorks 600 All-in-One 3TB SATA America Storage System(Standard HP Product), HP ProLiant DL580 G3 Server series, HP ProLiant ML310 G4 Storage Server, HP ProLiant ML570 G4 Server series, HP StorageWorks 1200 All-in-One 6TB SATA Storage System(Standard HP Product), HP ProLiant DL320s Storage Server, HP ProLiant ML350 G5 Server series, HP ProLiant DL360 G5 Server series, HP ProLiant ML370 G5 Server series, HP StorageWorks 600 All-in-One 876GB SAS Aus Storage System(Standard HP Product), HP ProLiant DL380 G5 Storage Server, HP ProLiant DL585 G2 Server series, HP ProLiant DL320 G5 Server series, HP ProLiant BL685c Server series, HP ProLiant ML310 G3 Data Protection Storage Server, HP StorageWorks 1200 All-in-One 1.7TB SAS Storage System(Standard HP Product), HP StorageWorks 600 All-in-One 1TB SATA China Storage System(Standard HP Product), HP StorageWorks 600 All-in-One 1.5TB

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SATA Europe Storage System(Standard HP Product)
Operating Systems Affected: Microsoft Windows Server 2003 Datacenter
Edition(Standard HP Product), Microsoft Windows Server 2003 Enterprise
Edition(Standard HP Product), Microsoft Windows 2000 Datacenter(Standard HP
Product), Microsoft Windows 2000 Advanced Server(Standard HP Product)
Software Affected: Not Applicable

"Mathias Amenda" wrote:

Vielen Dank Oliver,

Frage1:
(Achtung nicht tun!!)

Was kann passieren? Es sind nur 5 Mailboxen mit einem gesamt Volumen von
600MB. Die Store.exe will aber dafür schon 560MB RAM haben, was ich echt viel
finde..

Frage2:
Nicht abschalten besser so:

Hat super geklappt. Zu erst war ich unsicher ob es nur die SBSMonitoring
betrifft und nicht das neue WWS, aber als ich dann alle Links Sorgfalltiger
gelesen hatte, war alles klar. Läuft noch super, warten wir morgen den Tage
ab. Ich weiß jetzt auch wie das wieder zurücksetzen kann.

> Wie sicher und zuverlässig ist er?
Meine die Stabilität und nicht das Hacken, da ich das bis jetzt nur hier
benutze und ganz gut finde.

> Frage 3:
Auch bei einem 64Bit fähigen fast neu (1Jahr) HP Server? Lass das gerade
bei HP überprüfen! Schau wir mal..

Frage 4:

Habe mal auf einer andern Partition ein zweite mit 4096MB angelegt. Geht!
Nun habe ich 2 x 4096MB =8192MB großen Pagefile was aber nicht viel Sinn
macht! Ich finde das faszinierend, was MS sich so dabei gedacht hat! Und nun?
Werden Sie auch benutzt?!?!? Warten wir mal ab. Ich muss den Server am WE
mal vor Ort durch booten..

Du hast mich einganzes Stück weiter gebracht. Werde mich noch melden zu 3 + 4.

Gruß

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Mathias

"Oliver Sommer [MVP]" wrote:

Hallo Mathias,

Frage 1: Wie kann ich die RAM Auslastung beim Exchange begrenzen? Der ist nicht so wichtig.

zu Frage 1: (wie bei Tölke hier...) :)

Gar nicht...oder besser gesagt: Das sollte man nicht tun.

Theoretisch so:

<http://dnn.mssbsfaq.de/SBS2003/Exchange2003/HOWTOExchangeSTOREexeRAMLastbegrenzen/ta>

(Achtung nicht tun!!)

Frage 2:

Wie kann ich vom SBSmonitoring das RAM begrenzen, damit ich ihn nicht immer wieder neu starten muss, oder sollte ich ihn lieber ganz abschalten?

Nicht abschalten besser so:

<http://dnn.mssbsfaq.de/SBS2003/ISA2004/MSFWMSDEverbrauchtsehrvielArbeitsspeicher/tabid/421>

Wie sicher und zuverlässig ist er?

Wer? Der Dienst SBSMonitoring? Was meinst du mit "sicher und zuverlässig"...afaik ist der nicht gehackt und hat auch keine Sicherheitslücke...

Frage 3:

Warum wird nicht der gesamte Speicher angezeigt/benutzt?

Weil deine HW an eine 32 Bit System aufgrund des Speichermapping für PCI

Karten nicht mehr zur Verfügung stellen kann, das ist quasi "normal".

Frage 4:

Warum kann ich den "gewünschten" virtuellen Speicher (5182MB) einstellen, den Windows vorschlägt?

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Vermutung meinerseits:

Weil die Größe der pagefile.sys nichts mit der tatsächlichen Verwendung von max. 4 GB zu tun hat?

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Oliver Sommer [MVP SBS]

Small Business Specialist Partner Area Lead (SBSC PAL)

Wake on LAN für den SBS Remote-Webarbeitsplatz (RWW) unter:

www.wol4rww.de