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2009
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SpeedGeeking

All you need to know about 64 bit & Domino -- in 5 minutes

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About me

- Daniel Nashed

  - Nash!Com - IBM/Lotus Advanced Business Partner/ISV
  - Member of The Penumbra group
    - an international consortium of selected Business Partners pooling their talent and resources
  - focused on Cross-Platform C-API, Domino® Infrastructure, Administration, Integration and Troubleshooting
  - Platform Focus: W32, Linux®, AIX® and Solaris®
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Agenda

- Introduction
- Domino 32bit on Win64, Linux64, AIX and Solaris
- Domino native 64bit on Win64 and AIX64
- What you should know ...

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Introduction

- Without "tricks" a 32 Bit OS can only address at most 3-4 GB Memory
- Thats's why 32 Bit Process can at most allocate 4 GB Memory
  - Each platform has different limits – see details next slide
- Domino uses 2 memory types
  - Local Memory – separate for each process
  - Shared Memory – shared between all Domino processes
    - Prominent Example: NSF Buffer Pool (usually 512 – 800 MB)
    - All Shared Memory is mapped to all processes
- Address Space Limits
  - 32 Bit = 2^32 = 4 GB
  - 64 Bit = 2^64 = 18,446,744,073,709,551,615 = 18.45 Exabytes
    - That's more than we will "ever" need ...

32Bit - Limits

- Domino 8.x - 32Bit on AIX (always 64Bit mode)
  - Up to 9 segments a 256MB = 2,3 GB Shared Memory
  - Up to 2 segments a 256MB = 512 MB Local Memory per Process/Task
- Domino 8.x – 32Bit on Solaris (always 64Bit mode)
  - Up to 3 GB Shared Memory
  - Up to 1 GB Local Memory per Process/Task
- Domino 8.x - 32Bit on Linux (32Bit mode)
  - Up to 3 GB Shared Memory
  - Up to 1 GB local Memory per Process/Task
- Domino 8.x – 32Bit on Windows (32Bit mode)
  - Up to 2 GB Local + Shared Memory absolute limit
  - Windows splits the Memory in 2 GB for System + 2 GB for Applications
- So Windows 32Bit Memory is quite limited

32Bit Domino – 64Bit Operating System

- Supported Platforms
  - since Domino 6 on AIX64 + Solaris64
  - since Domino 7.0.1 Linux (SLES 9/10 + REHL 4/5 64Bit)
  - since Domino 7.0.2 on Win2003 R2 64Bit
- 64Bit OS allows multiple partitions with dedicated 32Bit address space
  - Very good for consolidation of multiple Domino servers
- Changed Limits
  - Win2003 R2 64Bit
    - 4 GB Total Memory per Partition (Local + Shared Memory)
- The remaining memory is used by the OS 64Bit
  - File caching, buffers, internal resources
- So running 32Bit Domino on Linux64 and Win64 gives you already a lot of scalability and performance benefits

64Bit Domino – 64Bit Operating System

- Supported Platforms
  - since Domino 8.0.1 on AIX64
  - since Domino 8.0.1 on Win2003 R2 64Bit
- Domino 64Bit Application allows almost unlimited memory
  - On AIX still 256MB segments but not limited to 16 segments
  - But Domino 8.0.x / 8.5 64Bit does only allow more memory but is not specially optimized for larger memory
  - Tests have not show performance improvement – only scalability is improved
- Constraints
  - All add-on applications need to be ported to 64Bit
    - Also all Lotus Script API calls need to be ported
  - Each 64Bit port is a separate platform which needs separate attention and testing!
  - Most add-on applications are not yet ported
  - There have been issues with the first 64Bit C-API toolkit version
  - There is also a bug that does not allow C-API calls from Lotus Script (LS2CAPI) on Domino 8.0.x Win64
    - SPR #ADEE7JRLJQ fixed in D8.5

How much memory is needed?

- 4 GB Memory is sufficient for most Domino Servers
  - Domino is well optimized for this amount of memory
  - Only very very large Servers need more memory
  - NSF Buffer Pool, Router, HTTP need most resources
- The limit is per partition on a 64Bit OS!
  - Multiple partitions can use up to 4 GB Memory each
- So probably Domino 8.x on a 64Bit is was best fits you
  - For Linux there are no special requirements
  - But on Win64 there are some important details to take care about (next slide)

32Bit Domino on Win64

- You need Win2003 R2 64Bit with current Service Pack
  - Domino needs a special Win64 API call to limit the Windows OS Level Cache
    - Domino 8 ships a tool "cacheset" to set the cache size
      - See TN #1270452 for details
      - Automatically invoked in Domino 8.0.2 / 8.5
        - Default is 30% of memory
        - Can be tuned via notes.ini MEM_FSCachePercentMem
- Add-On Applications need to be recompiled and linked with Visual Studio .Net 2003 with link flag /LARGEADDRESSAWARE
  - Else if one process (servertask) exceeds the 2 GB limit it would crash!
    - (Local + Shared Memory per process)
- Domino 8.5 also supports Windows 2008 32Bit and 64Bit

Finish

- Thanks for your attention!
- I hope you had fun

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