



## Experiences with Adabas on Windows Servers

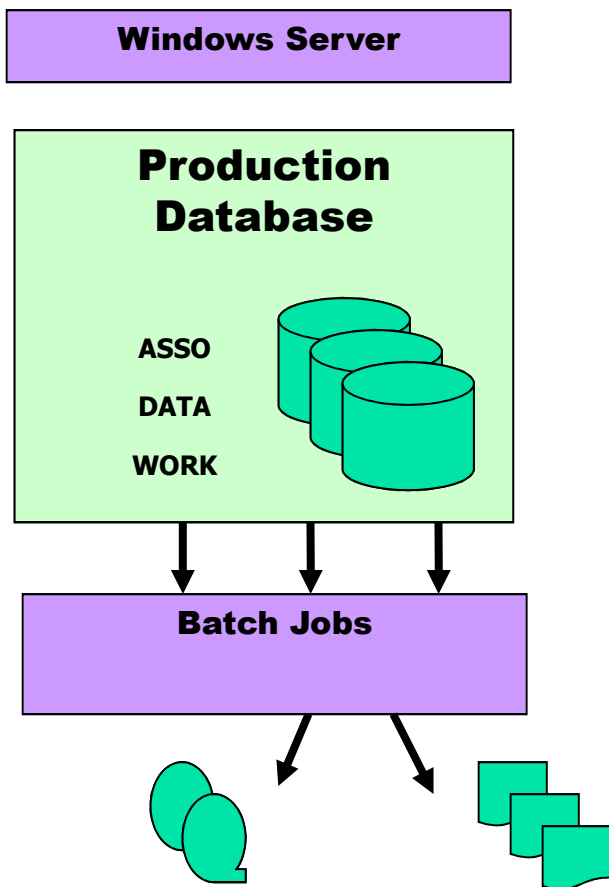
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*May 7, 2012*

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- Why Adabas on Windows?
- Windows Servers 2003 R2 and 2008 R2
- ADA6.2.1.13 and ADA6.3.0.3
- Differences and Challenges with ADA6.2 and 6.3
- Performance and Analysis Tool(s) in Windows

## Why Adabas on Windows?



- Some batch jobs are up to 90% faster than on the mainframe
- Windows server is more inexpensive than the mainframe



## Windows Server 2003 R2

- Built on Windows XP
- Several Editions:
  - Web 2 physical CPUs and 2 GB RAM
  - Standard 1-4 physical CPUs and 4 GB (32-bit), 32 GB (64-bit)
  - Enterprise 1-8 physical CPUs and up to 2 TB RAM
  - Datacenter 8-64 physical CPUs and up to 2 TB RAM
- 32-bit and 64-bit (x64) operating system
- Improvements for Active Directory
- New features IIS 6.0

## Windows Server 2008 R2

- Built on Windows NT 6.1 - same core system as for Windows 7
- First 64-bit-only operating system
- New functionality for Active Directory
- New features IIS 7.5
- Support for up to 256 logical processors or 64 physical processors

# Hyper-Threading in Processors Supported by Windows 7

## Cores

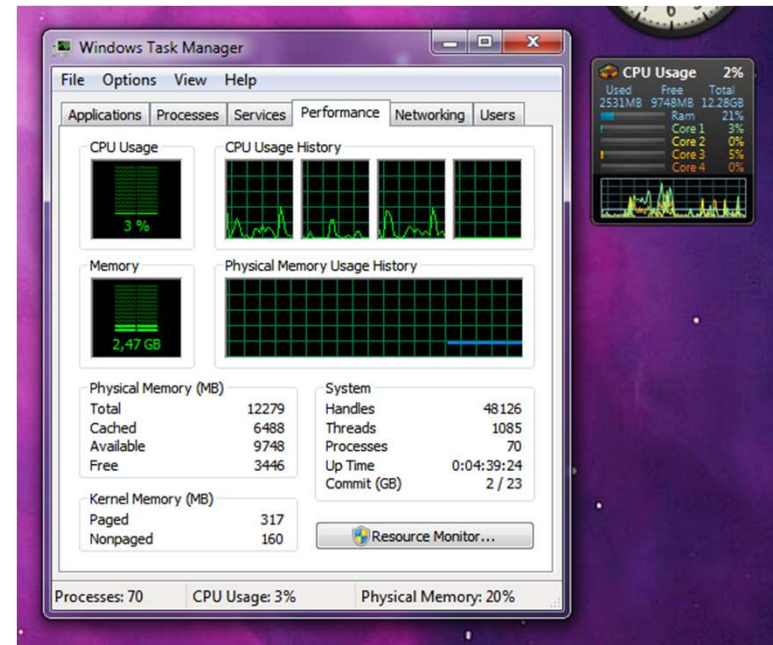
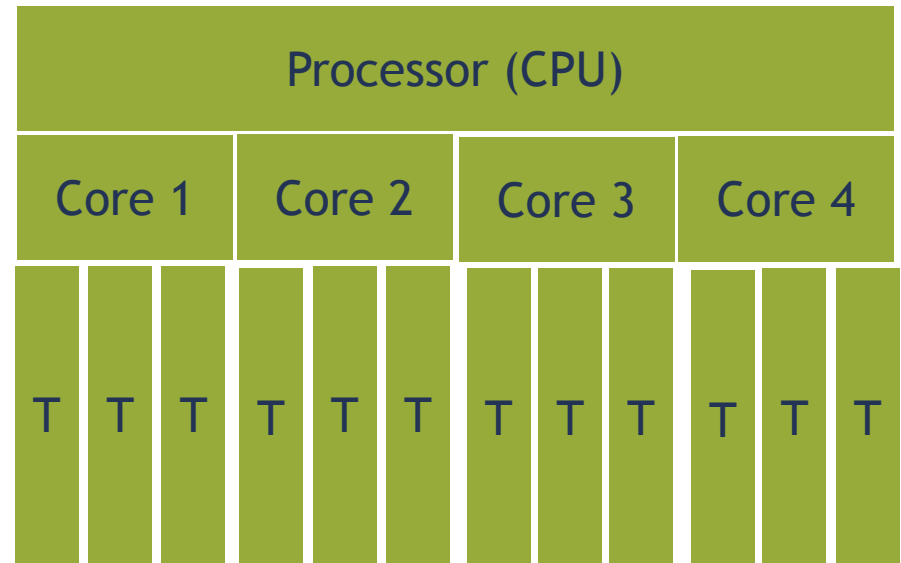
Physical hardware blocks in processors, also called logical processors, runs application serially

## Threads

Software-generated tasks, executed independently. A well threaded program can run across multiple cores

*Hyper-threading can be a bottleneck*  
*Better: multi processors*

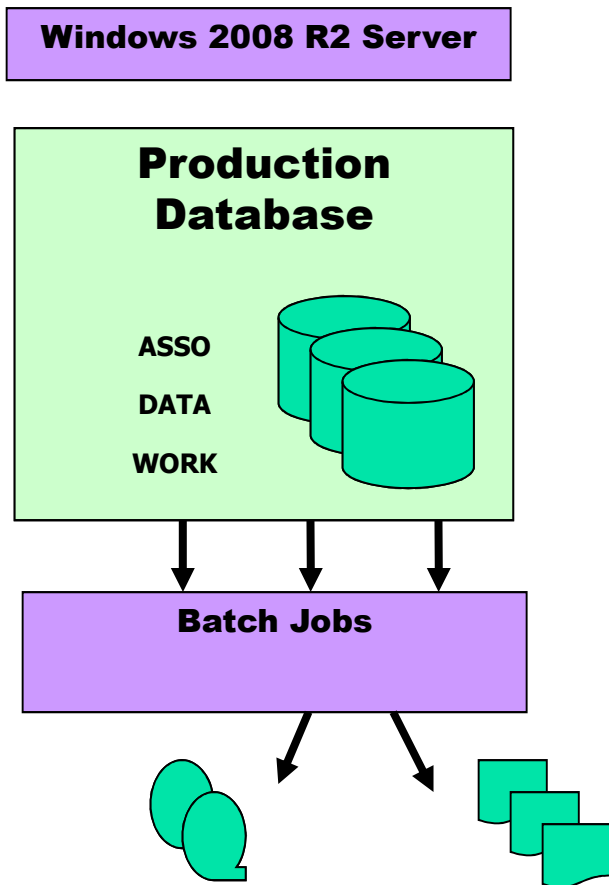
*MS: don't stop HT*



## New in Adabas 6.3 for Windows

- First release that supports 64-bit mode
- Removes the buffer pool size to about 1 GB
- Need Windows Server 2008 64-bit and WCP 7.3.3 or 7.4 and WCL 1.3.3 to access Adabas remotely
- Different security definitions on server 2008 - ADADIR ADAPROGDIR

## Adabas 6.3 - Tests with Production-Sized Data



- 120GB ASSO
- 320GB DATA
- 1 Trill records
- 1 job (out of 10) mostly reads 27 files and causes 80 mill commands
- Job runs 37 hours

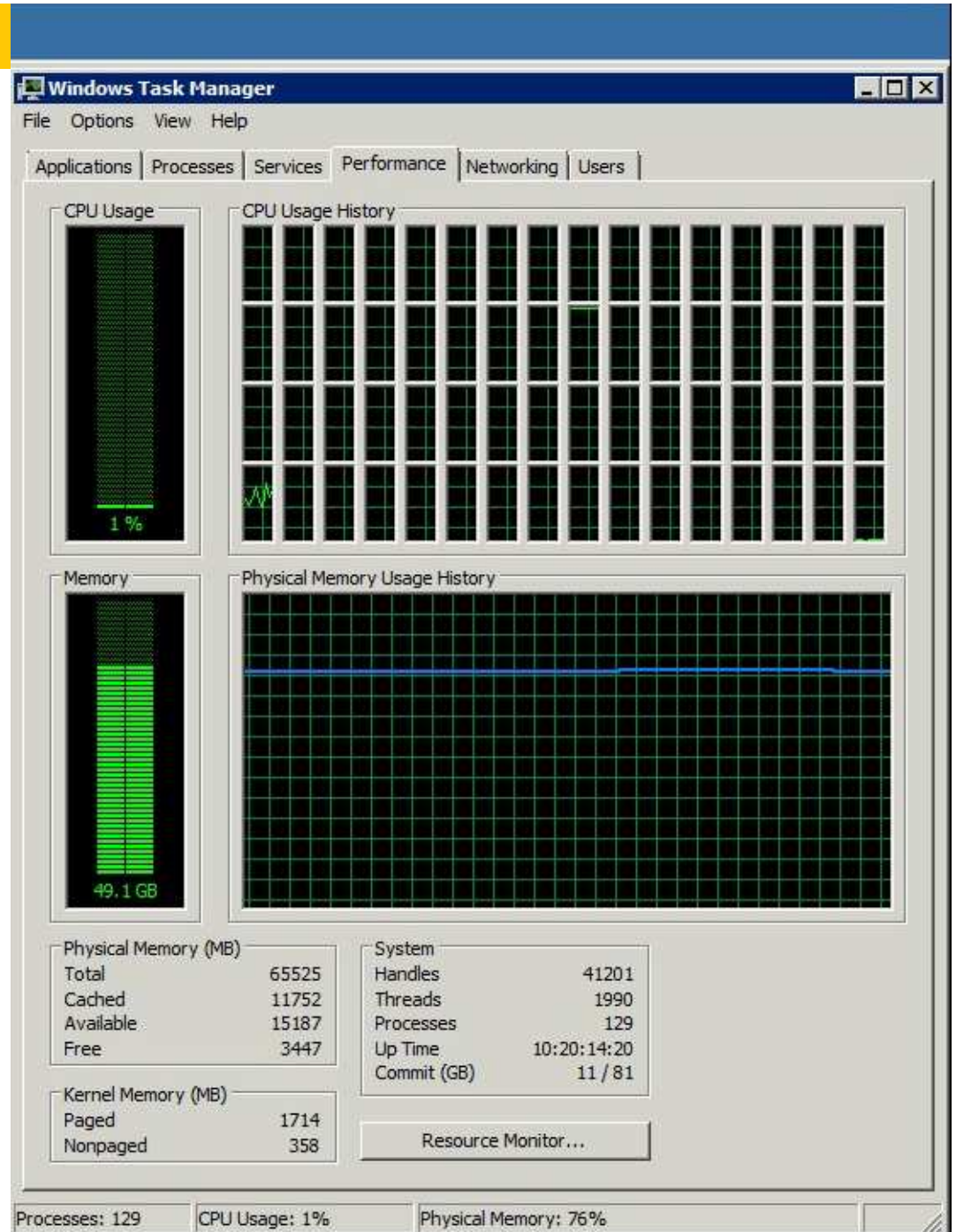


# ADA6.2.1.13 and ADA6.3.0.3 on 2008 Server

Batch job uses all memory  
No memory release after job  
ends

16 physical processors with  
4 cores (log. Processors) each

64GB memory



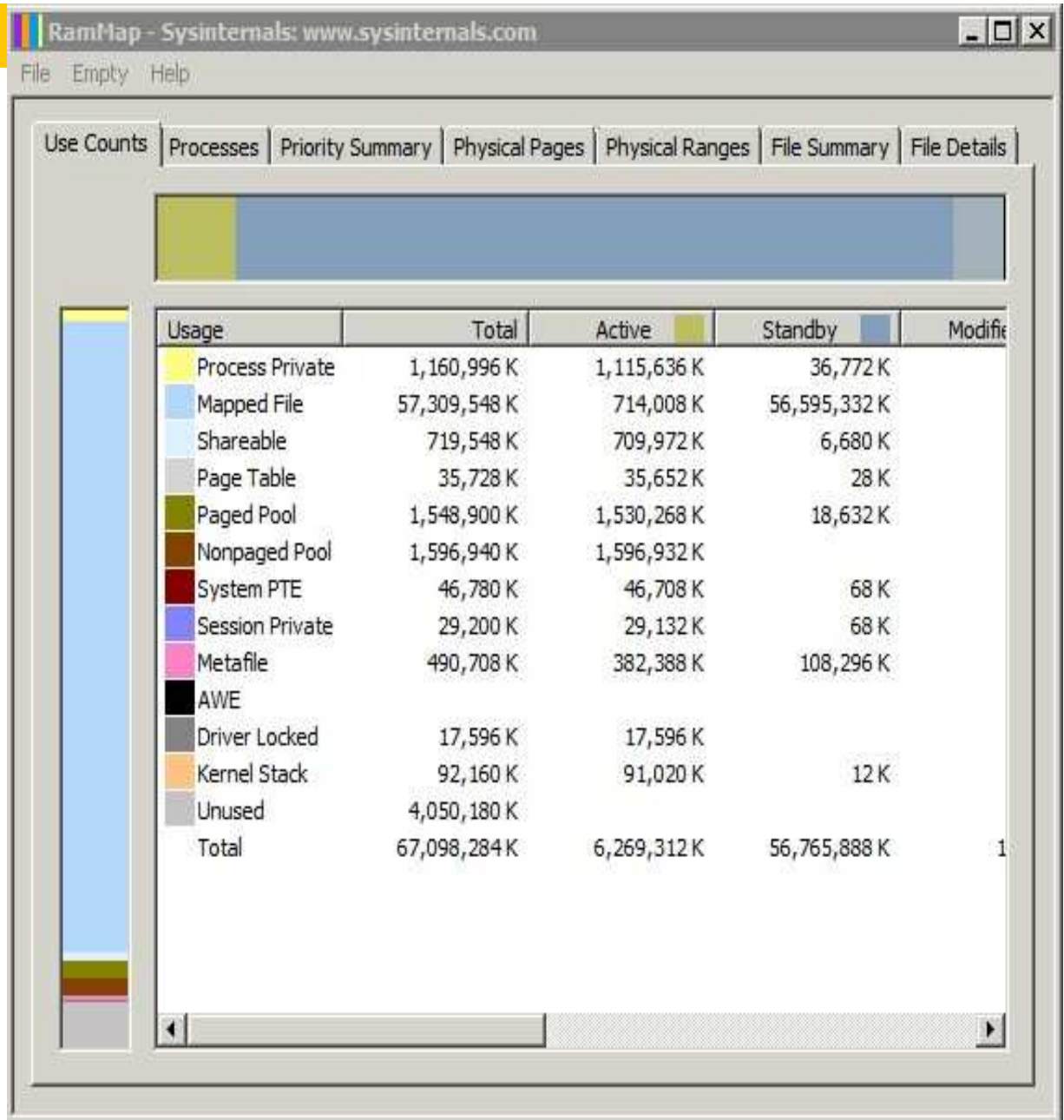
# ADA6.2.1.13 and ADA6.3.0.3 on 2008 Server

## RAMMap

Helps to find system slowdowns and memory issues

57.3 GB mapped files for input output of data into physical memory

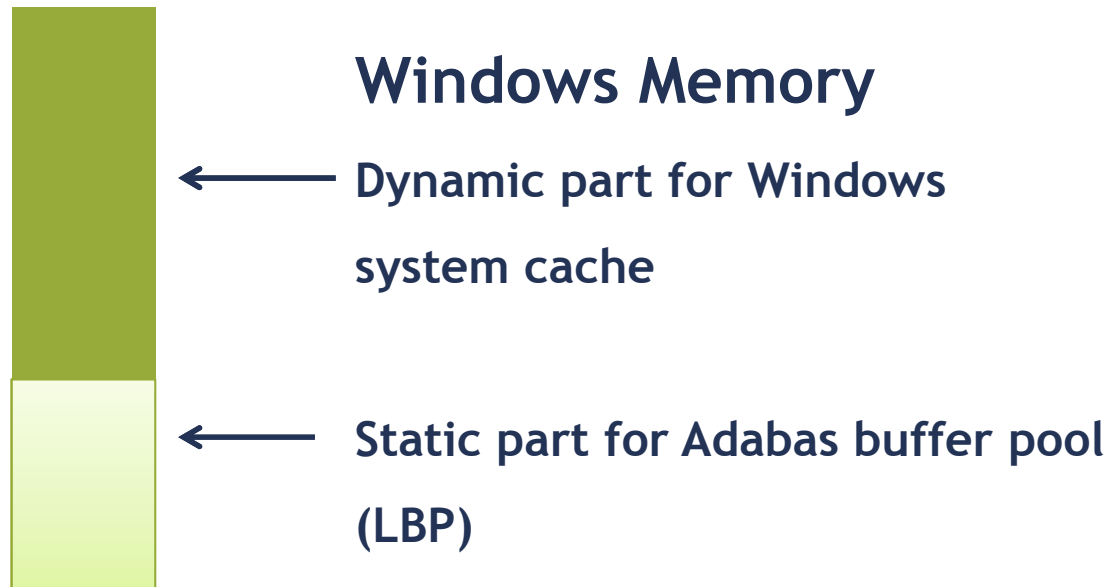
56.6 GB most is in Standby for caching  
File Summary shows for what the memory is used



## ADA6.2.1.13 and ADA6.3.0.3 on 2008 Server

The system file cache consumes most of the physical RAM

64 GB



**Microsoft Workaround:**

Use the API functions `GetSystemFileCacheSize` and `SetSystemFileCacheSize`

Download the source code from

<http://support.microsoft.com/kb/976618/en-us>

## ADA6.3 and Windows Server 2008 R2

### Memory problems

- Memory build all to the top
- 80 million Adabas commands per day
- After job finished, memory stays on top
- After a while, memory was released

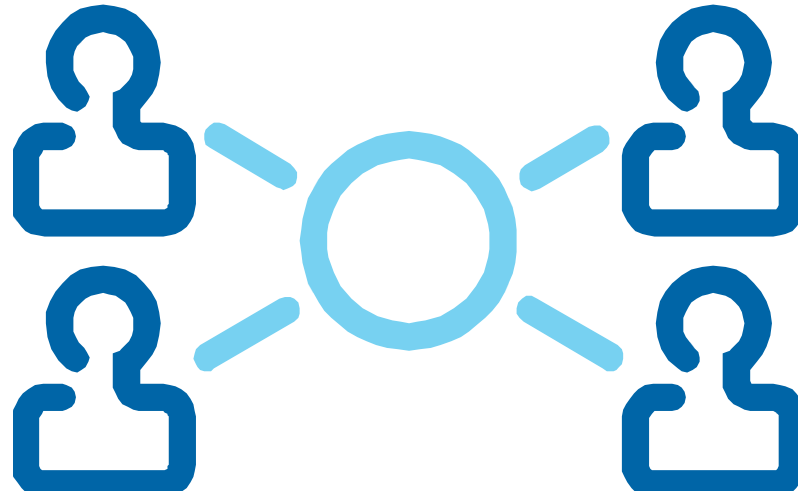
## ADA6.2.1.13 and ADA6.3.0.3

ADA	Windows 2003 Server	Windows 2008 Server R2
6.2.1.13	35%-40% faster	<ul style="list-style-type: none"> <li>• 32-bit and 64-bit compatible</li> <li>• Performance problems - 35%-40% slower</li> </ul>
6.3.03	35%-40% faster	<ul style="list-style-type: none"> <li>• Reported to be a true 64-bit Not true based on PAL reports and Microsoft support person</li> <li>• Performance problems - 35%-40% slower</li> <li>• Side by side C-compiler for 32-bit components NOT in the Installation Manual Microsoft helped to install the 32-bit C-compiler</li> </ul>

## ADABAS and Threads - on MF and Windows

### Load Balancing Methods:

- Round Robin
- Lowest Response Time
- Least Connections
- Proximity



# Adabas Thread Distribution on the Mainframe

Distribution of commands by thread

Thread	Number
1	1301,578
2	679,145
3	19,912
4	2,334
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0

## Adabas Thread Distribution on Windows

ADANUC Version 6.2.1.01

Database 200

Thread Table

on 24-FEB-2011 14:47:35

No	Cmd Count	File	Cmd	Status
--	-----	----	---	-----
1	22,813	0		Free
2	22,815	0		Free
3	22,814	0		Free
4	22,813	0		Free
5	22,813	0		Free
6	22,811	0		Free
7	22,814	0		Free
8	22,811	0		Free
9	22,812	0		Free
10	22,813	0		Free
11	22,812	0		Free
12	22,814	0		Free
13	22,813	0		Free
14	22,813	74	N2	Update , waiting for ASSO / 8567264
15	22,813	0		Free



## High Water Marks

%ADAOPR-I-STARTED, 27-JAN-2010 14:57:15, Version 6.1.8.03 (Windows)

Database 251, startup at 27-JAN-2010 11:32:44

ADANUC Version 6.1.8.03, PID 3388

ADANUC Version 6.1.8.03

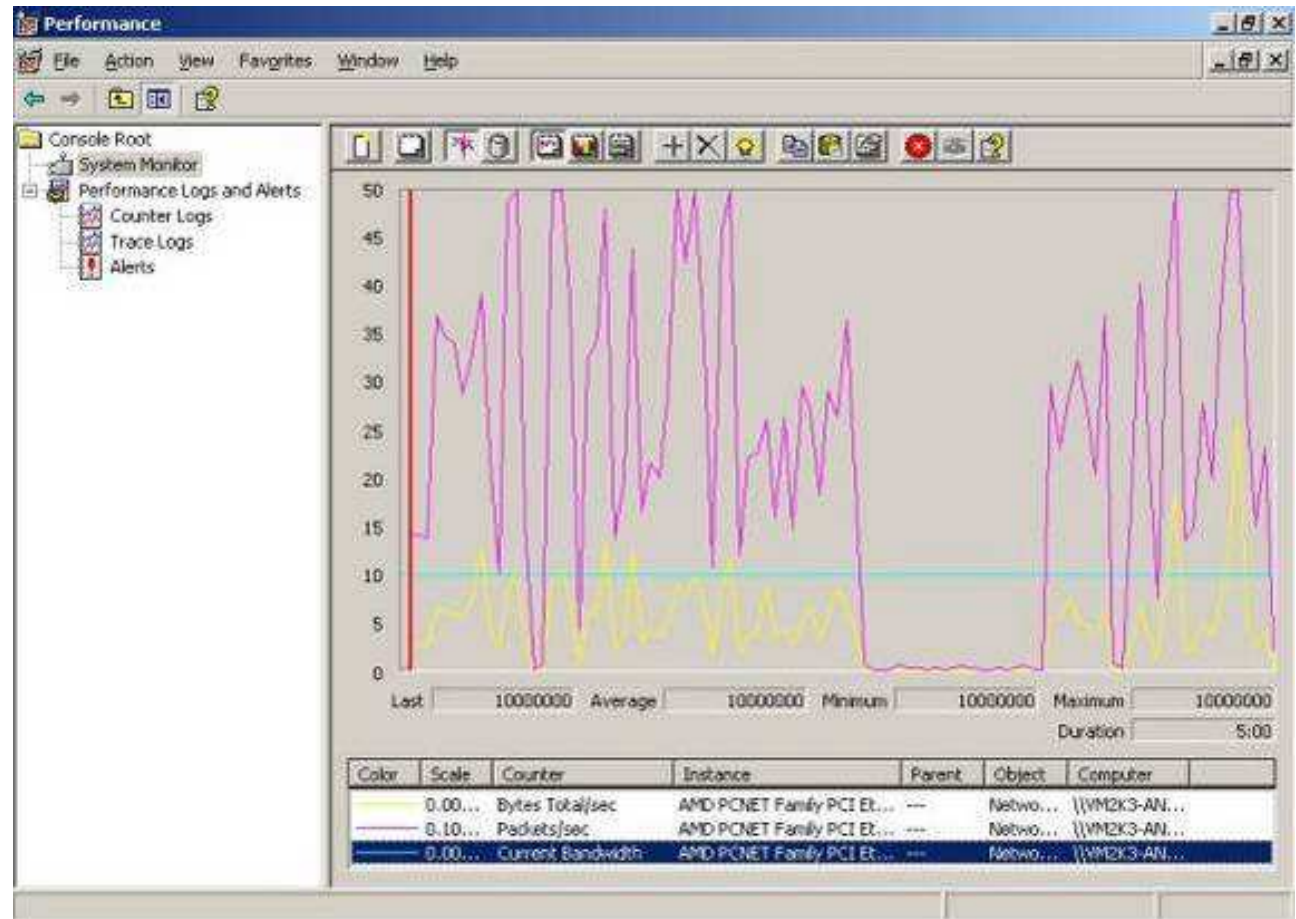
Database 251		High Water Marks			on 27-JAN-2010 14:57:05	
Area/Entry	Size	In Use	High Water	%	Date/Time	
-----	----	-----	-----	-	-----	
User Queue	20	1	2	10	27-JAN-2010 11:36:35	
Command Queue	-	1	2	-	27-JAN-2010 11:36:15	
Hold Queue	-	0	100	-	27-JAN-2010 11:35:55	
Client Queue	50	5	6	12	27-JAN-2010 11:36:15	
HQ User Limit	10,000	-	100	1	27-JAN-2010 11:35:55	
Threads	30	1	2	6	27-JAN-2010 11:36:15	
Workpool	1,000,000	0	250,016	25	27-JAN-2010 11:32:45	
ISN Sort	125,000	-	0	0		
Complex Search	125,000	-	0	0		
Attached Buffer	10,485,760	13,312	46,080	0	27-JAN-2010 14:55:16	
ATBX (MB)	20	0	0	0		
<b>Buffer Pool</b>	<b>314,572,800</b>	<b>314,499,072</b>	<b>314,524,672</b>	<b>99</b>	<b>27-JAN-2010 14:17:05</b>	
Protection Area	665,590					
Active Area	199,677	-	23	0	27-JAN-2010 13:59:15	
Group Commit	50	1	1	2	27-JAN-2010 11:35:55	
Transaction Time	900	-	10	1	27-JAN-2010 14:02:55	
%ADAOPR-I-TERMINATED,	27-JAN-2010 14:57:15,	elapsed time: 00:00:00				

## Changes

- ADA62 - 32-bit
- ADA63 - 64-bit
- Discussions on TechForums: Number of supported CPUs per server - depends on the license (?)
- C\*-variable wrong under ADA63 : record buffer contains the value of the format buffer :  
solved with hotfix ADA\_6.1\_SP10\_Fix010  
what about hotfix for ADA6.3

# Performance Tools for Windows 2003 Server (Base Kernel of XP)

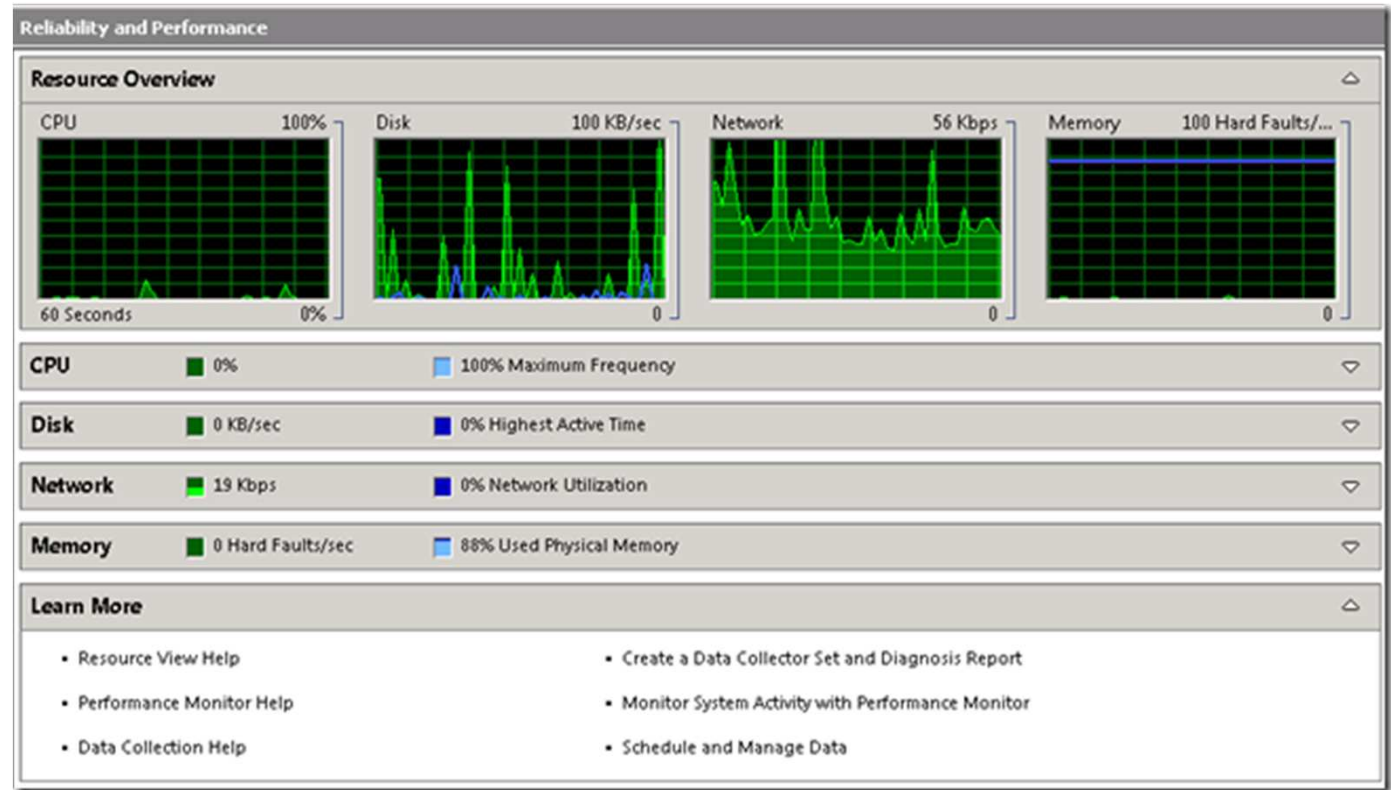
**PerfMon**  
Performance and Reliability monitor collects data about everything and anything on your Windows system



# Performance Tools for Windows 2008 Server

**PerfMon**  
 Performance and Reliability monitor collects data about everything and anything on your Windows system

Logs are input for **PAL**  
 Performance Analysis of Logs



3/5/2012  
 5:23:03 PM  
 - 3/5/2012  
 6:11:03 PM

# PAL

## Performance Analysis of Logs

<http://pal.codeplex.com/>


== free download

- Parameters
- Alerts by Chronological Order
- Logical Disk
- Memory
- Physical Disk
- Processor
- Disclaimer

Condition	Counter	Min	Avg	Max	Hourly Trend
<a href="#">Greater than 15ms physical disk WRITE response times</a>	\\CSTZ008\PhysicalDisk(1 D:)\Avg. Disk sec/Write	.006	.009	.019	0
<a href="#">Greater than 15ms logical disk WRITE response times</a>	\\CSTZ008\LogicalDisk(D:)\Avg. Disk sec/Write	.006	.009	.019	0
<a href="#">More than 60% of Pool Non-Paged Kernel Memory Used</a>	\\CSTZ008\Memory\Pool Nonpaged Bytes	190,521,344	190,532,437	190,550,016	8,110,037
<a href="#">More than 80% of Pool Paged Kernel Memory Used</a>	\\CSTZ008\Memory\Pool Paged Bytes	2,066,038,784	2,066,499,499	2,066,759,680	37,972,321



## Performance Tools for Windows 2008 Server

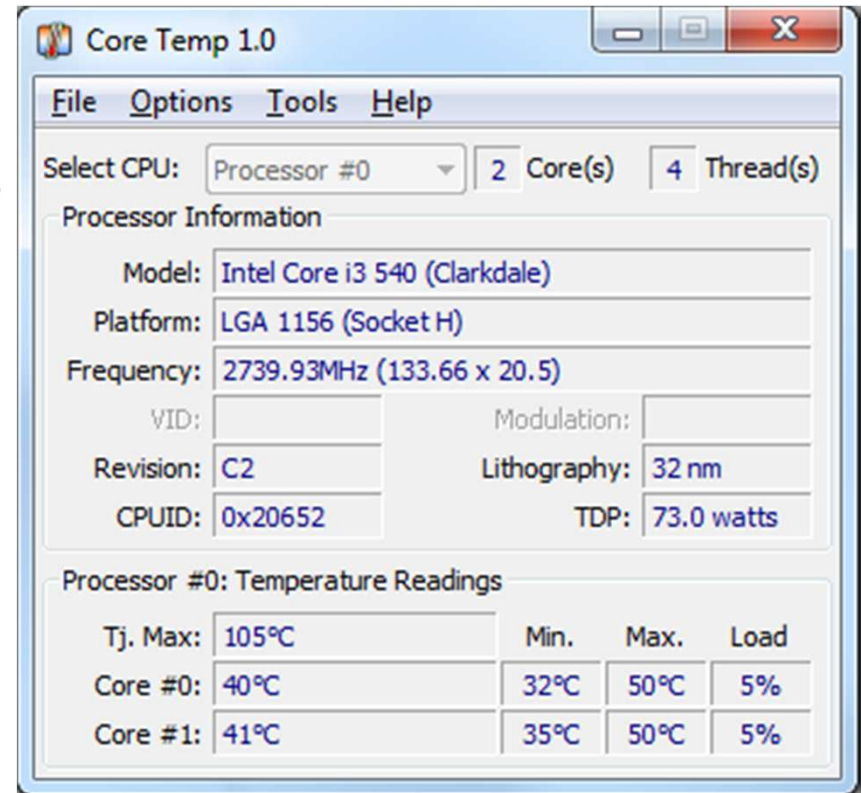
**Core Temp for AMD, Intel, VIA**  
 Program to monitor processor temperature  
 and other vital information  
<http://www.alcpu.com/CoreTemp/>  
 free download

 Name: Main  
 Status: Online

---

Intel Core i3 540 (Clarkdale)  
 1202.89 MHz (133.65 x 9.0)  
 VID: N/A - TjMax: 105 °C

Core 0	[ 37 °C ]	17%	
Core 1	[ 39 °C ]	21%	



Goes Mobile

## TIPS to Improve Performance

- No virus scan on Adabas container files
- Fixed block Size for all Adabas container files
- Define Windows paging files on fast separate drives
- Use free performance tools
- . . . .



**Thank You!**

*Feel free to send questions to  
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