



# SPEC® CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECint®\_rate2006 = 47.8

PowerEdge 2970 (AMD Opteron 2216, 2.40 GHz)

SPECint\_rate\_base2006 = 44.4

CPU2006 license: 55

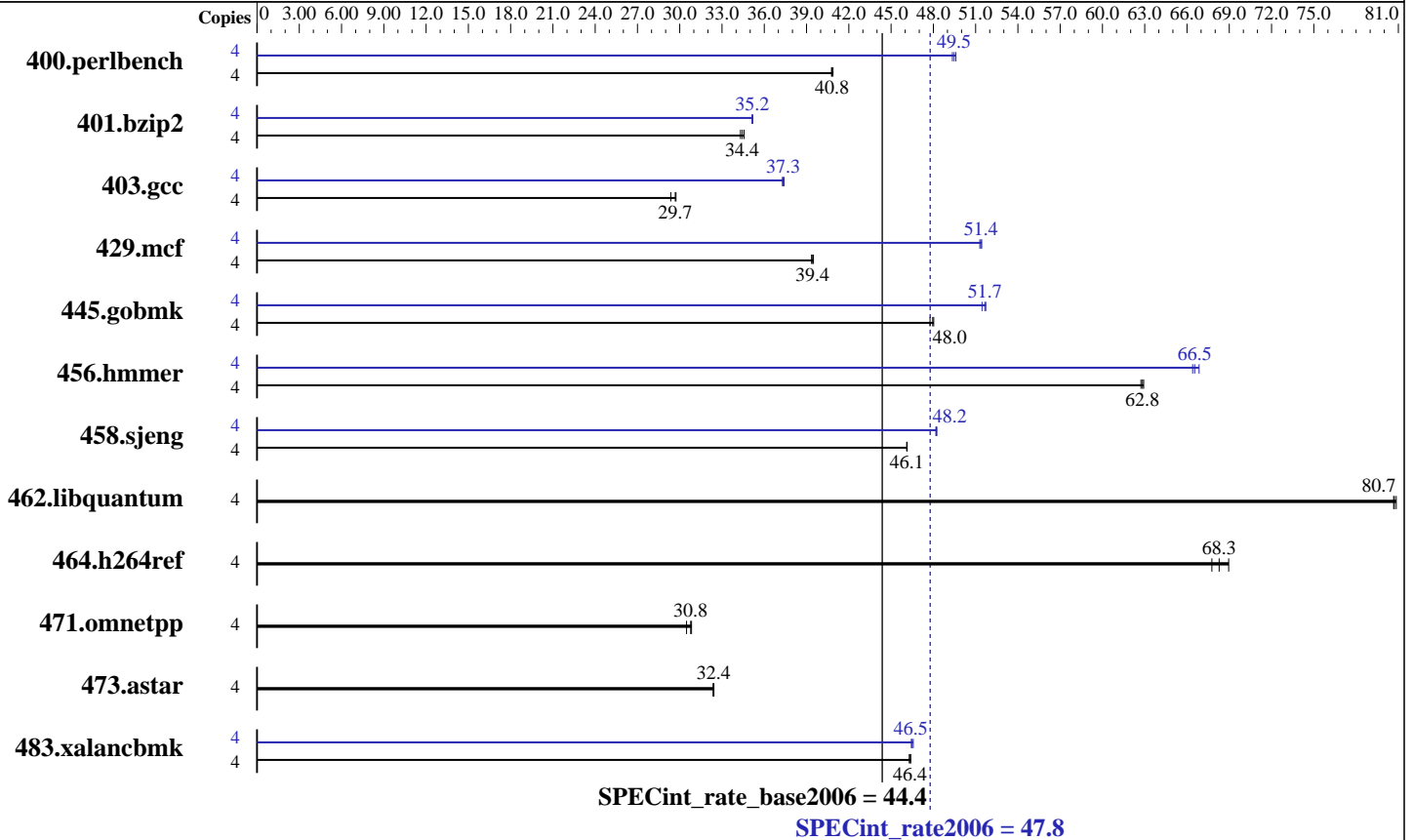
Test date: Oct-2007

Test sponsor: Dell Inc.

Hardware Availability: Apr-2007

Tested by: Dell Inc.

Software Availability: Oct-2007



## Hardware

CPU Name: AMD Opteron 2216  
 CPU Characteristics:  
 CPU MHz: 2400  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 2 chips, 2 cores/chip  
 CPU(s) orderable: 1,2 chips  
 Primary Cache: 64 KB I + 64 KB D on chip per core  
 Secondary Cache: 1 MB I+D on chip per core  
 L3 Cache: None  
 Other Cache: None  
 Memory: 16 GB (8x2GB, DDR2-667 CL5 ECC Dual Rank)  
 Disk Subsystem: 1 x 73 GB SAS 10k RPM  
 Other Hardware: None

## Software

Operating System: 64-Bit SUSE LINUX Enterprise Server 10 SP1  
 Compiler: The Portland Group (PGI)  
 PGI pgcc 7.1-0 C Compiler  
 PGI pgCC 7.1-0 C++ Compiler  
 Auto Parallel: No  
 File System: ReiserFS  
 System State: Multi-user, run level 3  
 Base Pointers: 32/64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: SmartHeap 8.0 32-bit Library for Linux



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## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	4	<b>958</b>	<b>40.8</b>	956	40.9	959	40.8	4	<b>790</b>	<b>49.5</b>	792	49.4	788	49.6
401.bzip2	4	1117	34.6	<b>1121</b>	<b>34.4</b>	1125	34.3	4	1097	35.2	1099	35.1	<b>1098</b>	<b>35.2</b>
403.gcc	4	<b>1085</b>	<b>29.7</b>	1083	29.7	1096	29.4	4	864	37.3	<b>862</b>	<b>37.3</b>	861	37.4
429.mcf	4	924	39.5	<b>925</b>	<b>39.4</b>	927	39.4	4	<b>710</b>	<b>51.4</b>	709	51.4	711	51.3
445.gobmk	4	<b>875</b>	<b>48.0</b>	874	48.0	879	47.8	4	811	51.7	<b>812</b>	<b>51.7</b>	815	51.5
456.hmmer	4	593	62.9	595	62.7	<b>594</b>	<b>62.8</b>	4	562	66.4	<b>561</b>	<b>66.5</b>	558	66.9
458.sjeng	4	<b>1049</b>	<b>46.1</b>	1049	46.1	1050	46.1	4	1005	48.2	<b>1004</b>	<b>48.2</b>	1003	48.3
462.libquantum	4	<b>1027</b>	<b>80.7</b>	1027	80.7	1025	80.9	4	<b>1027</b>	<b>80.7</b>	1027	80.7	1025	80.9
464.h264ref	4	1284	69.0	1306	67.8	<b>1296</b>	<b>68.3</b>	4	1284	69.0	1306	67.8	<b>1296</b>	<b>68.3</b>
471.omnetpp	4	811	30.8	<b>812</b>	<b>30.8</b>	820	30.5	4	811	30.8	<b>812</b>	<b>30.8</b>	820	30.5
473.astar	4	868	32.4	866	32.4	<b>867</b>	<b>32.4</b>	4	868	32.4	866	32.4	<b>867</b>	<b>32.4</b>
483.xalancbmk	4	595	46.4	596	46.3	<b>595</b>	<b>46.4</b>	4	593	46.6	<b>594</b>	<b>46.5</b>	594	46.4

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## General Notes

```
'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 2457600' was used to set environment locked pages in memory quantity
'numactl' was used to bind one copy per core, and memory to a local NUMA node
Set vm/nr_hugepages=1200 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
Environment variable PGI_HUGE_PAGES set to 150
```

## Base Compiler Invocation

C benchmarks:

pgcc

C++ benchmarks:

pgcpp

## Base Portability Flags

```
400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
```

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## Base Portability Flags (Continued)

458.sjeng: -DSPEC\_CPU\_LP64  
462.libquantum: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX  
464.h264ref: -DSPEC\_CPU\_LP64  
483.xalancbmk: -DSPEC\_CPU\_LINUX

## Base Optimization Flags

C benchmarks:

-fast -Mipa=fast -Mipa=inline -Mipa=noarg -Mfprelaxed  
-Msmartalloc=huge:64 -tp k8-64 -Bstatic\_pgi

C++ benchmarks:

-fastsse -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc --zc\_eh  
-tp k8-32 -Bstatic\_pgi -lsmarheap

## Base Other Flags

C benchmarks:

-w

C++ benchmarks:

-w -L/proj/qa/smarheap/SmartHeap\_8/lib

## Peak Compiler Invocation

C benchmarks:

pgcc

C++ benchmarks:

pgcpp

## Peak Portability Flags

400.perlbench: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX\_X64  
401.bzip2: -DSPEC\_CPU\_LP64  
445.gobmk: -DSPEC\_CPU\_LP64  
456.hmmer: -DSPEC\_CPU\_LP64  
458.sjeng: -DSPEC\_CPU\_LP64  
462.libquantum: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX  
464.h264ref: -DSPEC\_CPU\_LP64  
483.xalancbmk: -DSPEC\_CPU\_LINUX



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## Peak Optimization Flags

C benchmarks:

400.perlbench: -Mpfi(pass 1) -Mpfo(pass 2) -Mipa=inline(pass 2) -fast  
-O4 -Mfp relaxed -Msmartalloc=huge:8 -Mnounroll -tp k8-64  
-Bstatic\_pgi

401.bzip2: -Mpfi(pass 1) -Mpfo(pass 2) -fast -O4  
-Msmartalloc=huge:64 -tp k8-64 -Bstatic\_pgi

403.gcc: -fastsse -Mfp relaxed -Msmartalloc=huge:32 -Mipa=fast  
-Mipa=inline -tp k8-32 -Bstatic\_pgi

429.mcf: -fastsse -Mipa=fast -Mipa=inline -Msmartalloc=huge:16  
-tp k8-32 -Bstatic\_pgi

445.gobmk: -Mpfi(pass 1) -Mpfo(pass 2) -Mipa=fast(pass 2) -fast -O4  
-Msmartalloc=huge:32 -Mfp relaxed -Mnovect -tp k8-64  
-Bstatic\_pgi

456.hmmer: -fast -Msmartalloc=huge:32 -Mfp relaxed -Msafeptr  
-Mipa=const -Mipa=ptr -Mipa=arg -tp k8-64 -Bstatic\_pgi

458.sjeng: -Mpfi(pass 1) -Mipa=fast(pass 2) -Mipa=inline(pass 2)  
-Mipa=noarg(pass 2) -Mpfo(pass 2) -fast  
-Msmartalloc=huge:32 -Mfp relaxed -tp k8-64 -Bstatic\_pgi

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

C++ benchmarks:

471.omnetpp: basepeak = yes

473.astar: basepeak = yes

483.xalancbmk: -fastsse -O4 -Mipa=fast -Mipa=inline -Mfp relaxed  
-Msmartalloc --zc\_eh -tp k8-32 -Bstatic\_pgi -lsmarheap

## Peak Other Flags

C benchmarks:

-w

C++ benchmarks:

-w -L/proj/qa/smarheap/SmartHeap\_8/lib



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The flags file that was used to format this result can be browsed at

[http://www.spec.org/cpu2006/flags/pgi710\\_flags.html](http://www.spec.org/cpu2006/flags/pgi710_flags.html)

You can also download the XML flags source by saving the following link:

[http://www.spec.org/cpu2006/flags/pgi710\\_flags.xml](http://www.spec.org/cpu2006/flags/pgi710_flags.xml)

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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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