



# SPEC® CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECint®\_rate2006 = 78.6

PowerEdge 6950 (AMD Opteron 8212, 2.00 GHz)

SPECint\_rate\_base2006 = 72.4

CPU2006 license: 55

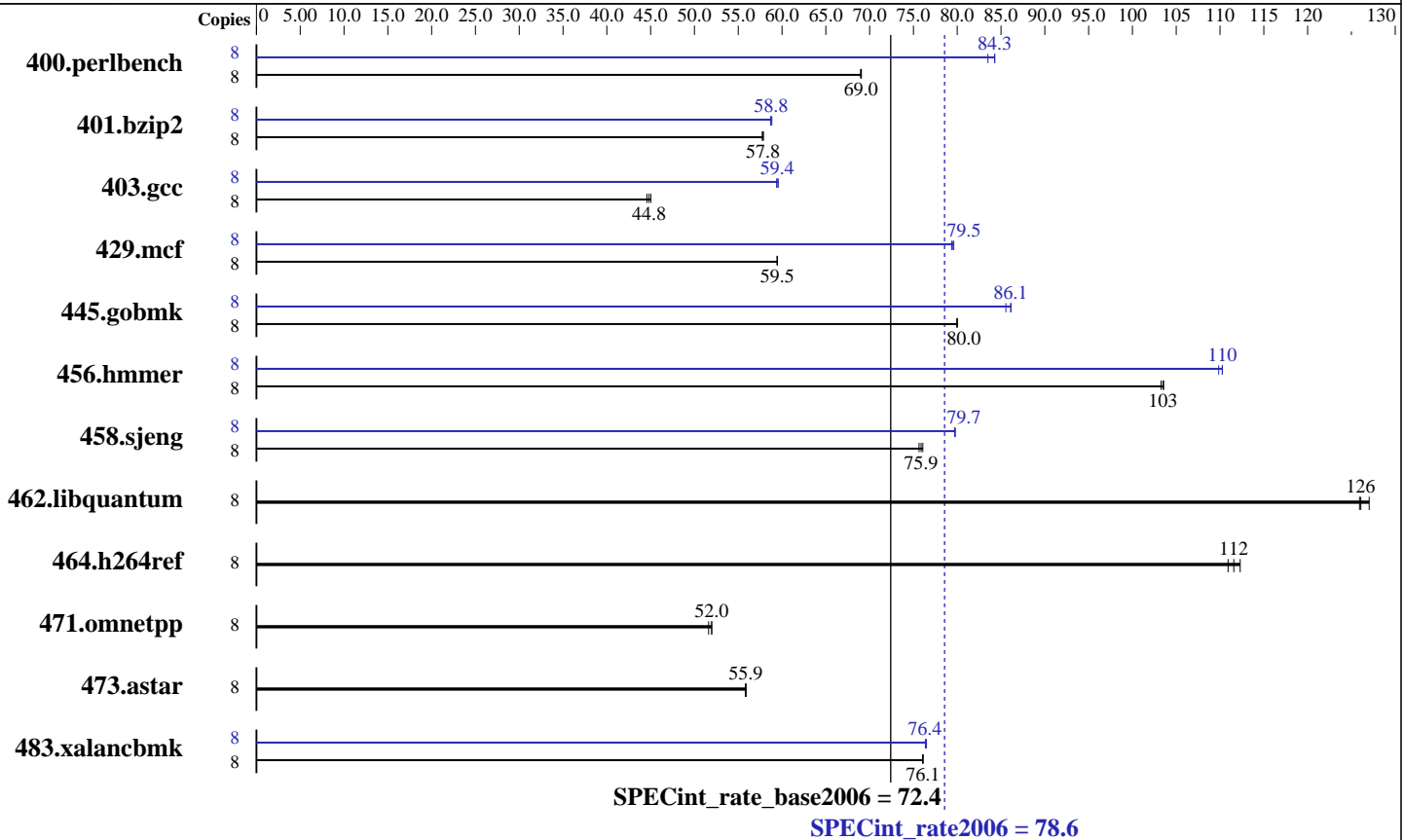
Test date: Oct-2007

Test sponsor: Dell Inc.

Hardware Availability: Dec-2006

Tested by: Dell Inc.

Software Availability: Oct-2007



## Hardware

CPU Name: AMD Opteron 8212  
 CPU Characteristics: 2000  
 CPU MHz: Integrated  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 4 chips, 2 cores/chip  
 CPU(s) orderable: 2,4 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: 32 GB (16x2GB, DDR2-667 CL5 ECC Dual Rank)  
 Disk Subsystem: 1 x 250 GB SATA 7200 RPM  
 Other Hardware: None

## Software

Operating System: SUSE Linux Enterprise Server 10 (x86\_64) SP1, Kernel 2.6.16.46-0.12-smp  
 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	8	<u>1132</u>	<u>69.0</u>	1133	69.0	1132	69.1	8	936	83.5	927	84.3	<u>927</u>	<u>84.3</u>
401.bzip2	8	<u>1335</u>	<u>57.8</u>	1334	57.9	1337	57.7	8	1312	58.8	<u>1314</u>	<u>58.8</u>	1315	58.7
403.gcc	8	1430	45.0	<u>1437</u>	<u>44.8</u>	1444	44.6	8	<u>1083</u>	<u>59.4</u>	1081	59.6	1084	59.4
429.mcf	8	1227	59.4	1227	59.5	<u>1227</u>	<u>59.5</u>	8	919	79.4	<u>918</u>	<u>79.5</u>	916	79.6
445.gobmk	8	1049	80.0	<u>1049</u>	<u>80.0</u>	1049	80.0	8	981	85.6	<u>975</u>	<u>86.1</u>	974	86.1
456.hmmer	8	721	104	723	103	<u>721</u>	<u>103</u>	8	679	110	677	110	<u>677</u>	<u>110</u>
458.sjeng	8	1280	75.6	1272	76.1	<u>1276</u>	<u>75.9</u>	8	1213	79.8	<u>1214</u>	<u>79.7</u>	1215	79.7
462.libquantum	8	<u>1315</u>	<u>126</u>	1316	126	1305	127	8	<u>1315</u>	<u>126</u>	1316	126	1305	127
464.h264ref	8	1576	112	1596	111	<u>1587</u>	<u>112</u>	8	1576	112	1596	111	<u>1587</u>	<u>112</u>
471.omnetpp	8	962	52.0	<u>962</u>	<u>52.0</u>	969	51.6	8	962	52.0	<u>962</u>	<u>52.0</u>	969	51.6
473.astar	8	<u>1005</u>	<u>55.9</u>	1006	55.8	1005	55.9	8	<u>1005</u>	<u>55.9</u>	1006	55.8	1005	55.9
483.xalancbmk	8	<u>725</u>	<u>76.1</u>	725	76.1	726	76.0	8	722	76.5	723	76.4	<u>723</u>	<u>76.4</u>

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 -lsmartheap

## Base Other Flags

C benchmarks:

-w

C++ benchmarks:

-w -L/proj/qa/smartheap/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 -lsmartheap

## Peak Other Flags

C benchmarks:

-w

C++ benchmarks:

-w -L/proj/qa/smartheap/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).

Tested with SPEC CPU2006 v1.0.  
Report generated on Tue Jul 22 14:31:01 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 27 November 2007.