



SPEC[®] CINT2006 Result

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Dell Inc.

SPECint[®]_rate2006 = 53.9

PowerEdge 2970 (AMD Opteron 2220, 2.80GHz)

SPECint_rate_base2006 = 50.0

CPU2006 license: 0055

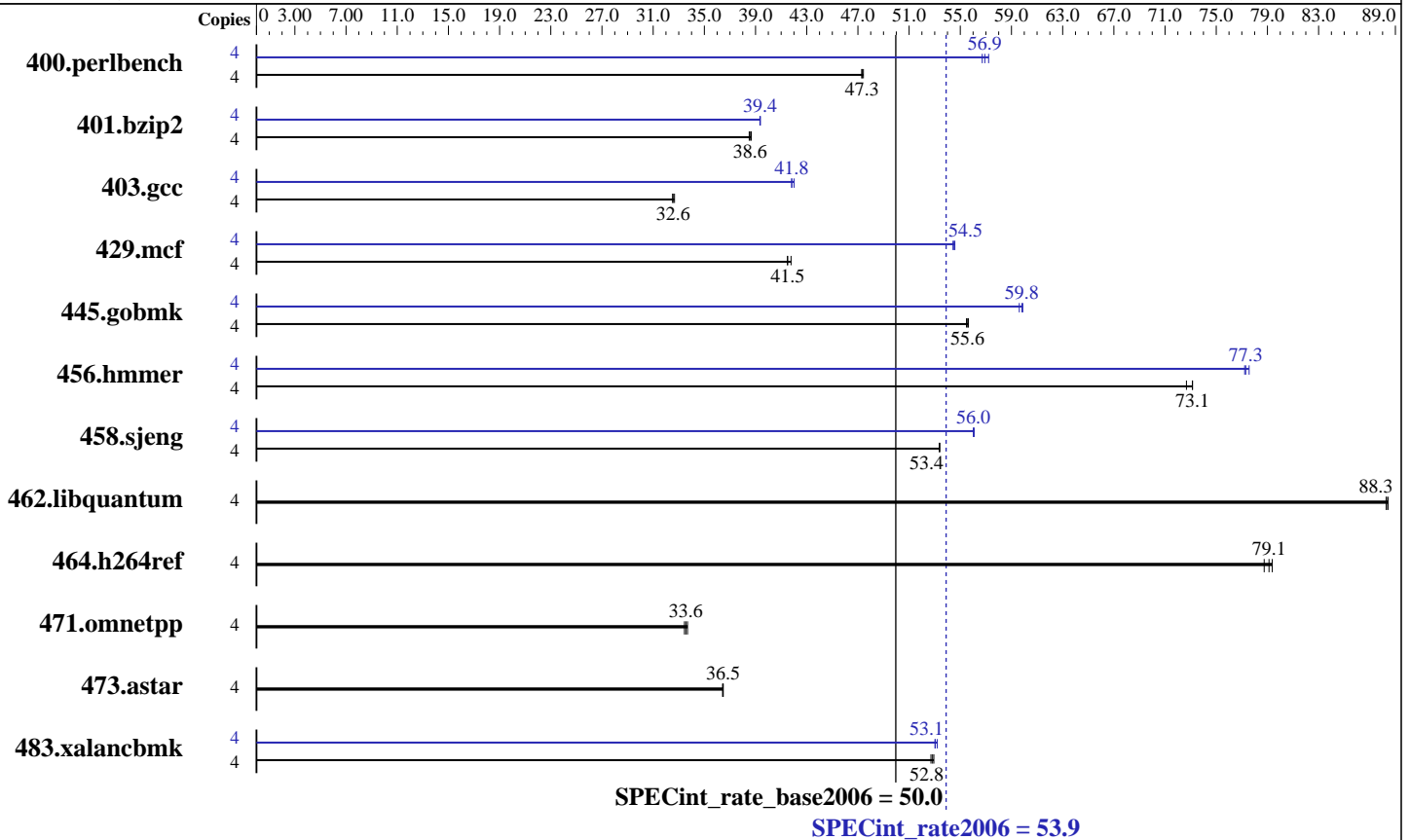
Test date: Sep-2007

Test sponsor: Dell Inc.

Hardware Availability: Apr-2007

Tested by: Dell Inc.

Software Availability: Oct-2007



Hardware

CPU Name: AMD Opteron 2220
 CPU Characteristics:
 CPU MHz: 2800
 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: 1xSAS, 73 GB, 10k RPM
 Other Hardware: None

Software

Operating System: SuSE Linux Enterprise Server 10 SP1 64-bit kernel
 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	824	47.4	<u>826</u>	<u>47.3</u>	826	47.3	4	689	56.7	<u>687</u>	<u>56.9</u>	683	57.2
401.bzip2	4	1002	38.5	<u>1001</u>	<u>38.6</u>	998	38.7	4	<u>981</u>	<u>39.4</u>	980	39.4	981	39.3
403.gcc	4	990	32.5	<u>989</u>	<u>32.6</u>	986	32.7	4	766	42.0	<u>770</u>	<u>41.8</u>	770	41.8
429.mcf	4	873	41.8	<u>879</u>	<u>41.5</u>	879	41.5	4	<u>669</u>	<u>54.5</u>	668	54.6	670	54.4
445.gobmk	4	<u>755</u>	<u>55.6</u>	756	55.5	754	55.6	4	701	59.9	<u>701</u>	<u>59.8</u>	704	59.6
456.hmmer	4	514	72.7	510	73.1	<u>510</u>	<u>73.1</u>	4	483	77.2	481	77.6	<u>483</u>	<u>77.3</u>
458.sjeng	4	907	53.4	906	53.4	<u>907</u>	<u>53.4</u>	4	864	56.0	<u>864</u>	<u>56.0</u>	863	56.1
462.libquantum	4	939	88.3	<u>939</u>	<u>88.3</u>	937	88.4	4	939	88.3	<u>939</u>	<u>88.3</u>	937	88.4
464.h264ref	4	1124	78.7	1115	79.4	<u>1119</u>	<u>79.1</u>	4	1124	78.7	1115	79.4	<u>1119</u>	<u>79.1</u>
471.omnetpp	4	742	33.7	<u>745</u>	<u>33.6</u>	748	33.4	4	742	33.7	<u>745</u>	<u>33.6</u>	748	33.4
473.astar	4	<u>770</u>	<u>36.5</u>	770	36.5	771	36.4	4	<u>770</u>	<u>36.5</u>	770	36.5	771	36.4
483.xalancbmk	4	521	52.9	<u>522</u>	<u>52.8</u>	524	52.7	4	519	53.2	<u>520</u>	<u>53.1</u>	521	53.0

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
```

Continued on next page



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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 -Mfprelaxed -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 -Mfprelaxed -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 -Mfprelaxed -Mnovect -tp k8-64
-Bstatic_pgi

456.hmmer: -fast -Msmartalloc=huge:32 -Mfprelaxed -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 -Mfprelaxed -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 -Mfprelaxed
-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

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

http://www.spec.org/cpu2006/flags/pgi710_flags.xml

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For other inquiries, please contact webmaster@spec.org.

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