



SPEC® CINT2006 Result

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Dell Inc.

SPECint®2006 = 13.7

PowerEdge M905 (AMD Opteron 8356, 2.3 GHz)

SPECint_base2006 = 12.0

CPU2006 license: 55

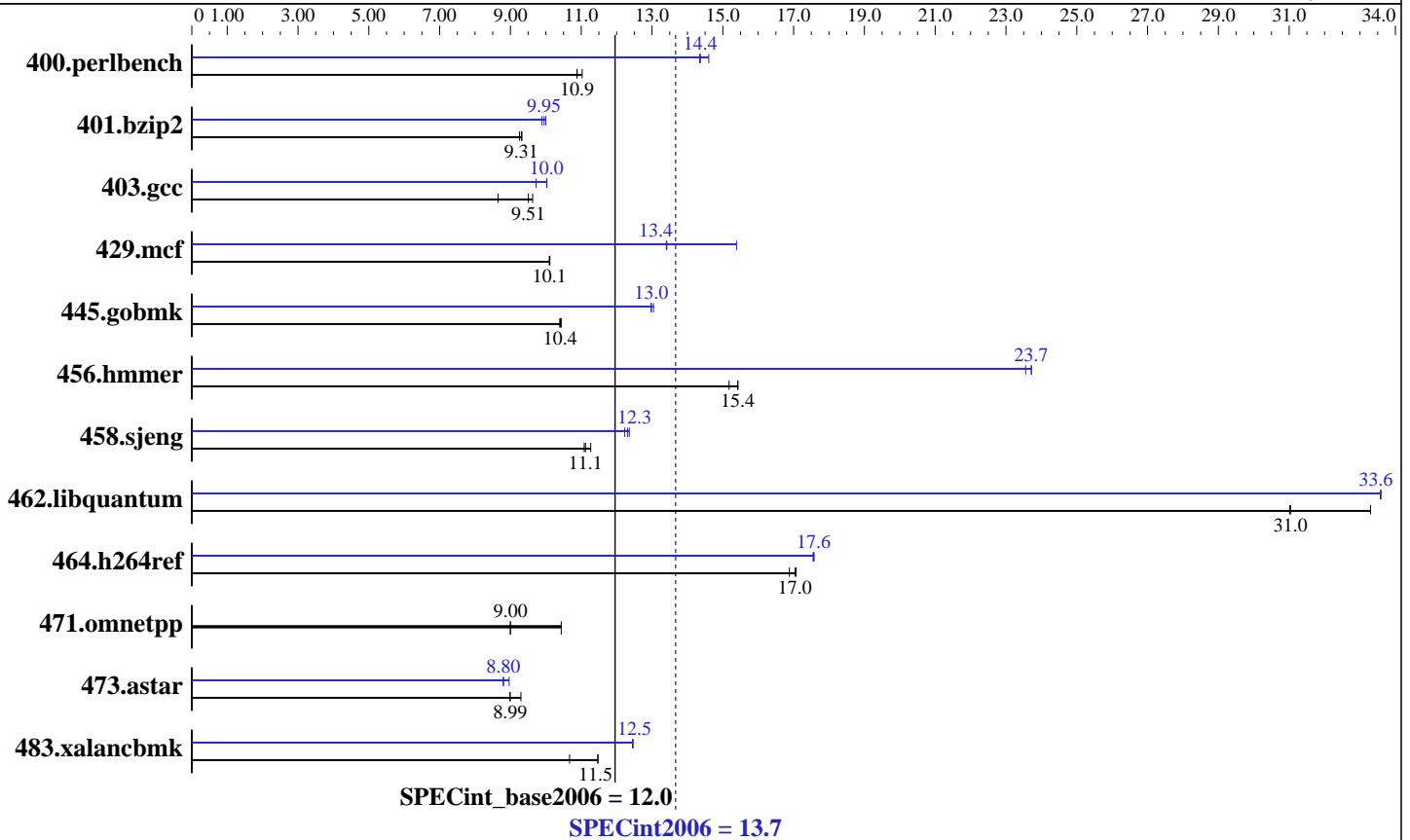
Test date: Jul-2008

Test sponsor: Dell Inc.

Hardware Availability: Aug-2008

Tested by: Dell Inc.

Software Availability: May-2008



Hardware

CPU Name: AMD Opteron 8356
 CPU Characteristics:
 CPU MHz: 2300
 FPU: Integrated
 CPU(s) enabled: 16 cores, 4 chips, 4 cores/chip
 CPU(s) orderable: 4 chips
 Primary Cache: 64 KB I + 64 KB D on chip per core
 Secondary Cache: 512 KB I+D on chip per core
 L3 Cache: 2 MB I+D on chip per chip
 Other Cache: None
 Memory: 32 GB (16 x 2 GB, DDR2-667, CL5, Reg, Dual Rank)
 Disk Subsystem: 1 x 36 GB SAS 15000 RPM (OS), 1 x 73 GB SAS 10000 RPM (CPU2006)
 Other Hardware: None

Software

Operating System: SUSE Linux Enterprise Server 10 (x86_64) SP2, Kernel 2.6.16-60.0.21-smp
 Compiler: PGI Server Complete Version 7.2 PathScale Compiler Suite Version 3.1
 Auto Parallel: No
 File System: ReiserFS
 System State: Run level 3 (multi-user)
 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					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	898	10.9	898	10.9	886	11.0	669	14.6	680	14.4	681	14.3
401.bzip2	1043	9.26	1037	9.31	1035	9.33	965	10.0	970	9.95	976	9.89
403.gcc	847	9.51	931	8.65	836	9.63	828	9.73	802	10.0	803	10.0
429.mcf	903	10.1	903	10.1	902	10.1	593	15.4	680	13.4	680	13.4
445.gobmk	1008	10.4	1009	10.4	1005	10.4	804	13.0	808	13.0	809	13.0
456.hmmer	605	15.4	605	15.4	615	15.2	393	23.7	393	23.7	396	23.6
458.sjeng	1074	11.3	1092	11.1	1088	11.1	983	12.3	989	12.2	979	12.4
462.libquantum	622	33.3	668	31.0	668	31.0	617	33.6	617	33.6	617	33.6
464.h264ref	1299	17.0	1296	17.1	1311	16.9	1259	17.6	1260	17.6	1261	17.6
471.omnetpp	599	10.4	694	9.00	694	9.00	599	10.4	694	9.00	694	9.00
473.astar	781	8.99	755	9.30	781	8.99	783	8.96	797	8.80	798	8.80
483.xalancbmk	601	11.5	647	10.7	602	11.5	554	12.4	553	12.5	554	12.5

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

Operating System Notes

```
'numactl' was used to bind copies to the cores
Environment variable PGI_HUGE_PAGES set to 150
'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 4915200' was used to set environment locked pages in memory quantity
Set vm/nr_hugepages = 2400 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
```

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 -Mfprelaxed -Msmartalloc=huge:150
-tp barcelona-64 -Bstatic_pgi

C++ benchmarks:

-fastsse -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:150
--zc_eh -tp barcelona -Bstatic_pgi

Base Other Flags

C benchmarks:

-w -Mipa=jobs:4

C++ benchmarks:

-w -Mipa=jobs:4

Peak Compiler Invocation

C benchmarks (except as noted below):

gcc

400.perlbench: pathcc

403.gcc: pathcc

445.gobmk: pathcc

C++ benchmarks (except as noted below):

pathCC

471.omnetpp: pgcpp



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Peak Portability Flags

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 458.sjeng: -DSPEC_CPU_LP64
 462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
 464.h264ref: -DSPEC_CPU_LP64
 483.xalanbmk: -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:

400.perlbench: -march=barcelona -fb_create fbdata(pass 1)
 -fb_opt fbdata(pass 2) -Ofast -IPA:plimit=20000 -LNO:opt=0
 -WOPT:if_conv=0 -CG:local_sched_alg=1

401.bzip2: -Mpfi(pass 1) -Mpfo(pass 2) -fast -O4
 -Msmartalloc=huge:150 -Mnounroll -tp barcelona-64
 -Bstatic_pgi

403.gcc: -march=barcelona -fb_create fbdata(pass 1)
 -fb_opt fbdata(pass 2) -m32 -O3 -OPT:Ofast

429.mcf: -fastsse -Mipa=fast -Mipa=inline:1 -Msmartalloc=huge:150
 -tp barcelona -Bstatic_pgi

445.gobmk: -march=barcelona -fb_create fbdata(pass 1)
 -fb_opt fbdata(pass 2) -O3 -OPT:alias=restrict -LNO:opt=0
 -CG:p2align=on

456.hmmer: -fastsse -Munroll=n:8 -Msmartalloc=huge:150 -Mfprelaxed
 -Mvect=partial -Msafeptr -Mipa=const -Mipa=ptr -Mipa=arg
 -Mipa=inline -tp barcelona-64 -Bstatic_pgi

458.sjeng: -Mpfi(pass 1) -Mipa=fast(pass 2) -Mipa=inline:1(pass 2)
 -Mipa=noarg(pass 2) -Mpfo(pass 2) -fastsse
 -Msmartalloc=huge:150 -Mfprelaxed -tp barcelona-64
 -Bstatic_pgi

462.libquantum: -fastsse -Mfprelaxed -Msmartalloc=huge:150 -Munroll=m:8
 -Mipa=fast -Mipa=inline -Mipa=noarg -tp barcelona-64
 -Bstatic_pgi

464.h264ref: -Mpfi=indirect(pass 1) -Mipa=fast(pass 2)
 -Mipa=inline(pass 2) -Mpfo=indirect(pass 2) -fastsse
 -Msmartalloc=huge:150 -Mfprelaxed -tp barcelona-64
 -Bstatic_pgi

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Peak Optimization Flags (Continued)

C++ benchmarks:

471.omnetpp: basepeak = yes

473.astar: -march=barcelona -Ofast -TENV:frame_pointer=off
-WOPT:if_conv=0 -GRA:optimize_boundary=on -IPA:plimit=525
-m32 -lsmartheap

483.xalancbmk: -march=barcelona -Ofast -m32 -OPT:unroll_times_max=8
-CG:push_pop_int_saved_regs=off -CG:ptr_load_use=0
-lsmartheap

Peak Other Flags

C benchmarks (except as noted below):

-w -Mipa=jobs:4(pass 2)

400.perlbench: No flags used

401.bzip2: -w

403.gcc: No flags used

445.gobmk: No flags used

C++ benchmarks (except as noted below):

-L/root/work/cpu2006/amd123GH.libs/32

471.omnetpp: -w -Mipa=jobs:4

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

<http://www.spec.org/cpu2006/flags/amd123GH-flags.20090713.01.html>

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

<http://www.spec.org/cpu2006/flags/amd123GH-flags.20090713.01.xml>

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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