



SPEC® CINT2006 Result

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Dell Inc.

SPECint®2006 = 14.4

PowerEdge M805 (AMD Opteron 2356, 2.3 GHz)

SPECint_base2006 = 12.4

CPU2006 license: 55

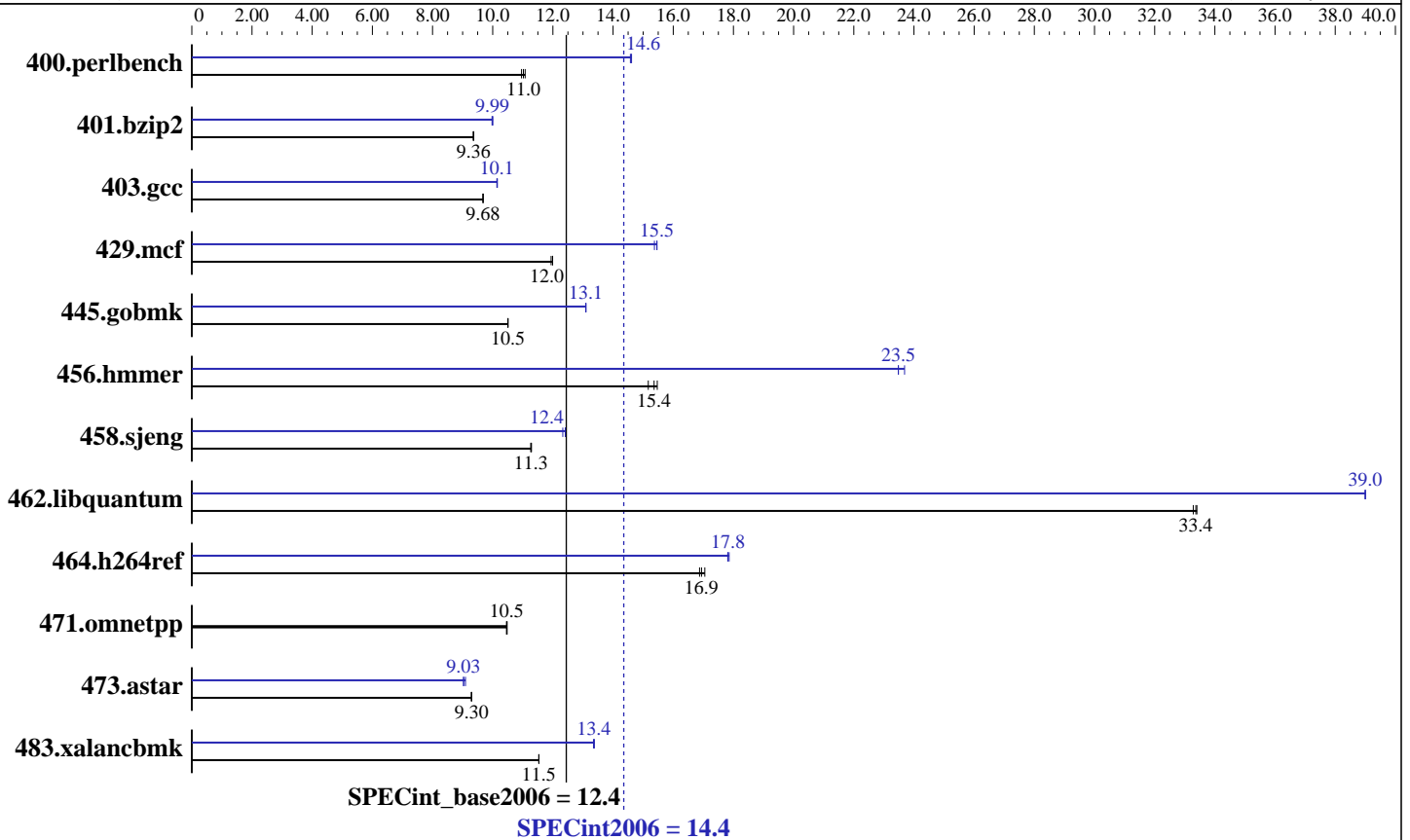
Test date: Aug-2008

Test sponsor: Dell Inc.

Hardware Availability: Aug-2008

Tested by: Dell Inc.

Software Availability: May-2008



Hardware

CPU Name: AMD Opteron 2356
 CPU Characteristics:
 CPU MHz: 2300
 FPU: Integrated
 CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip
 CPU(s) orderable: 2 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: 16 GB (8 x 2 GB, DDR2-667, CL5, Reg, Dual Rank)
 Disk Subsystem: 1 x 36 GB SAS 15000 RPM
 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	887	11.0	892	11.0	882	11.1	669	14.6	669	14.6	670	14.6
401.bzip2	1032	9.35	1031	9.36	1030	9.37	965	10.0	966	9.99	967	9.98
403.gcc	831	9.68	832	9.68	832	9.68	794	10.1	793	10.2	794	10.1
429.mcf	761	12.0	761	12.0	764	11.9	593	15.4	590	15.5	590	15.5
445.gobmk	999	10.5	999	10.5	998	10.5	801	13.1	801	13.1	801	13.1
456.hmmer	607	15.4	615	15.2	603	15.5	397	23.5	397	23.5	394	23.7
458.sjeng	1074	11.3	1074	11.3	1072	11.3	981	12.3	975	12.4	975	12.4
462.libquantum	621	33.4	620	33.4	623	33.3	531	39.0	531	39.0	531	39.0
464.h264ref	1311	16.9	1298	17.0	1306	16.9	1242	17.8	1239	17.9	1242	17.8
471.omnetpp	597	10.5	596	10.5	597	10.5	597	10.5	596	10.5	597	10.5
473.astar	756	9.29	755	9.30	755	9.30	777	9.03	777	9.03	772	9.10
483.xalancbmk	598	11.5	598	11.5	598	11.5	516	13.4	516	13.4	517	13.3

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 2457600' was used to set environment locked pages in memory quantity
Set vm/nr_hugepages = 1200 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):

pgcc

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

```

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
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456.hmmer: -DSPEC_CPU_LP64
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 other inquiries, please contact webmaster@spec.org.

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