



SPEC® CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECint®_rate2006 = 54.4

PowerEdge T105 (AMD Opteron 1356, 2.3 GHz)

SPECint_rate_base2006 = 44.3

CPU2006 license: 55

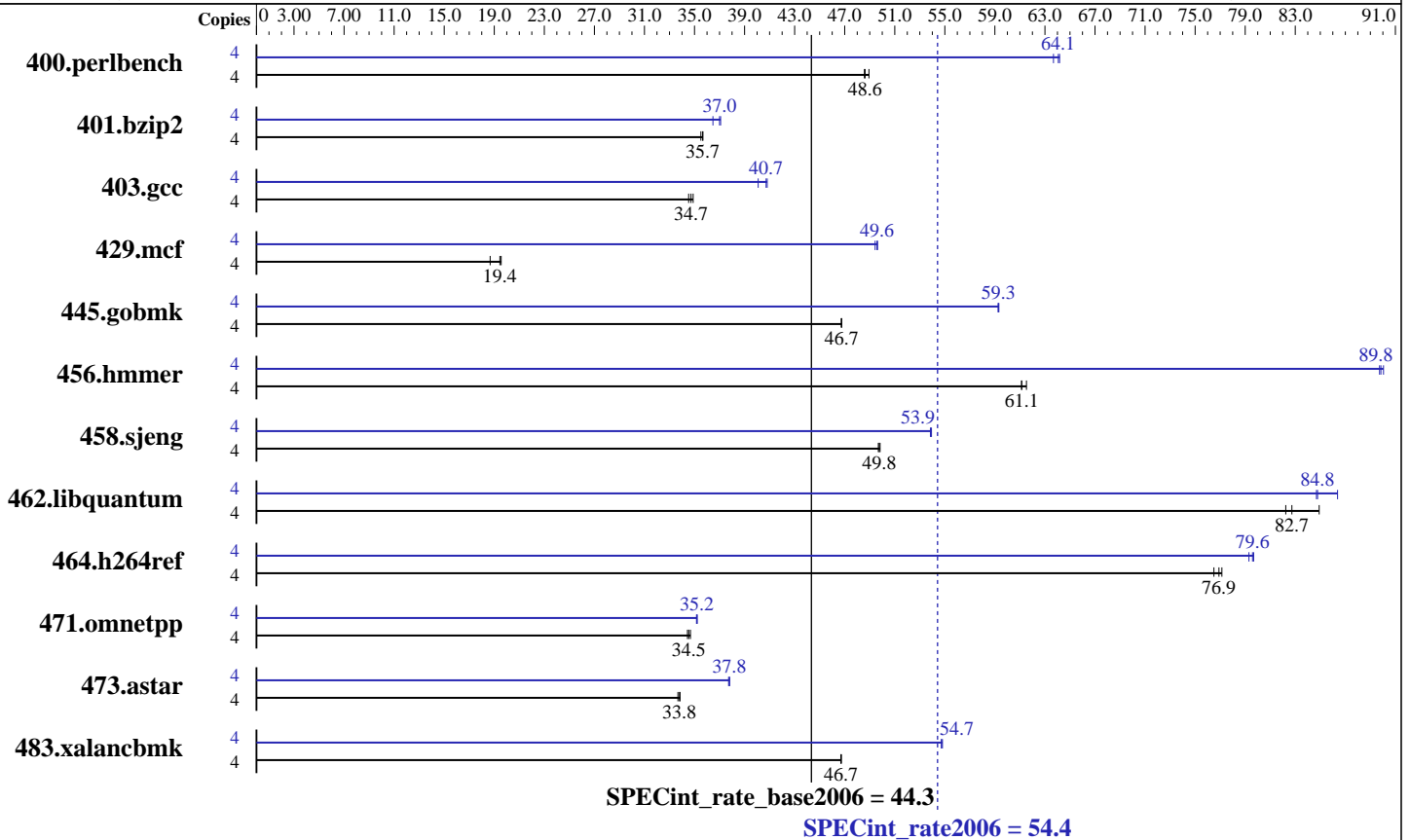
Test date: Jun-2008

Test sponsor: Dell Inc.

Hardware Availability: May-2008

Tested by: Dell Inc.

Software Availability: Jun-2008



Hardware

CPU Name: AMD Opteron 1356
 CPU Characteristics:
 CPU MHz: 2300
 FPU: Integrated
 CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip
 CPU(s) orderable: 1 chip
 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: 8 GB (4 x 2GB 800 MHz DDR2)
 Disk Subsystem: 2 x 250GB SATA, 7200 RPM (RAID-0)
 Other Hardware: None

Software

Operating System: SUSE Linux Enterprise Server 10 (x86_64) SP1, Kernel 2.6.16.46-0.12-smp
 Compiler: PGI Server Complete Version 7.2 PathScale Compiler Suite Version 3.2
 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						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	4	799	48.9	805	48.6	804	48.6	4	614	63.7	609	64.2	610	64.1
401.bzip2	4	1082	35.7	1087	35.5	1083	35.7	4	1058	36.5	1041	37.1	1043	37.0
403.gcc	4	927	34.7	923	34.9	932	34.5	4	803	40.1	791	40.7	789	40.8
429.mcf	4	1876	19.4	1954	18.7	1866	19.6	4	738	49.4	736	49.6	735	49.6
445.gobmk	4	898	46.7	898	46.8	898	46.7	4	707	59.3	708	59.3	708	59.3
456.hmmer	4	610	61.1	607	61.5	611	61.1	4	416	89.7	415	89.8	414	90.0
458.sjeng	4	971	49.8	973	49.8	974	49.7	4	899	53.8	897	53.9	898	53.9
462.libquantum	4	976	84.9	1002	82.7	1008	82.2	4	978	84.8	959	86.4	979	84.7
464.h264ref	4	1157	76.5	1148	77.1	1151	76.9	4	1112	79.6	1116	79.3	1111	79.7
471.omnetpp	4	721	34.7	726	34.4	724	34.5	4	710	35.2	710	35.2	711	35.2
473.astar	4	830	33.8	834	33.7	831	33.8	4	744	37.7	743	37.8	743	37.8
483.xalancbmk	4	591	46.7	591	46.7	591	46.7	4	504	54.8	504	54.7	504	54.7

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
mount -t hugetlbfs nodev /mnt/hugepages
'ulimit -l 1228800' was used to set environment locked pages in memory limit
Set vm/nr_hugepages=600 in /etc/sysctl.conf
```

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
 471.omnetpp: -DSPEC_CPU_LP64
 473.astar: -DSPEC_CPU_LP64
 483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:
 -fastsse -Msmartalloc=huge:150 -Mfprelaxed -Mipa=fast -Mipa=inline
 -tp barcelona-64 -Bstatic_pgi

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

Base Other Flags

C benchmarks:
 -Mipa=jobs:4

C++ benchmarks:
 -Mipa=jobs:4

Peak Compiler Invocation

C benchmarks (except as noted below):
 pgcc

400.perlbench: pathcc

403.gcc: pathcc

445.gobmk: pathcc

464.h264ref: pathcc

C++ benchmarks (except as noted below):
 pathCC

473.astar: pgcpp



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Peak Portability Flags

```

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
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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
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -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=indirect(pass 1) -Mpfo=indirect(pass 2) -fastsse -O4
           -Msmartalloc=huge:150 -Mprefetch=t0 -Mnounroll
           -tp barcelona-64 -Bstatic_pgi

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

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

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

456.hmmer: -fastsse -Mvect=partial -Munroll=n:8 -Msmartalloc=huge:150
           -Msafeptr -Mprefetch=t0 -Mfprelaxed -Mipa=const -Mipa=ptr
           -Mipa=arg -Mipa=inline -tp barcelona-64 -Bstatic_pgi

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

462.libquantum: -fastsse -Munroll=m:8 -Msmartalloc=huge:150
                -Mprefetch=distance:4 -Mfprelaxed -Mipa=fast -Mipa=inline
                -Mipa=noarg -tp barcelona-64 -Bstatic_pgi

464.h264ref: -march=barcelona -fb_create fbdata(pass 1)
              -fb_opt fbdata(pass 2) -O3 -IPA:plimit=20000
              -OPT:alias=disjoint -LNO:prefetch=0 -CG:ptr_load_use=0
              -CG:push_pop_int_saved_regs=off

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Peak Optimization Flags (Continued)

C++ benchmarks:

```

471.omnetpp: -march=barcelona -Ofast -CG:gcm=off -INLINE:aggressive=on
             -OPT:alias=disjoint -WOPT:if_conv=0 -m32 -lsmarheap

473.astar: -Mpfi(pass 1) -Mpfo(pass 2) -Mipa=fast(pass 2)
           -Mipa=inline:6(pass 2) -fastsse -O4 -Msmartalloc=huge:150
           -Msafeptr=global -Mfprelaxed --zc_eh -tp barcelona
           -Bstatic_pgi

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

```

Peak Other Flags

C benchmarks:

```

429.mcf: -Mipa=jobs:4

456.hmmer: -Mipa=jobs:4

458.sjeng: -Mipa=jobs:4(pass 2)

462.libquantum: -Mipa=jobs:4

```

C++ benchmarks (except as noted below):

```

-L/root/work/cpu2006-amd421gh/amd421gh.libs/32

473.astar: -Mipa=jobs:4(pass 2)

```

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

<http://www.spec.org/cpu2006/flags/amd421GH-flags.20090713.01.html>

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

<http://www.spec.org/cpu2006/flags/amd421GH-flags.20090713.01.xml>



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