



SPEC® CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECint®_rate2006 = 52.3

PowerEdge T105 (AMD Opteron 1354, 2.2 GHz)

SPECint_rate_base2006 = 42.6

CPU2006 license: 55

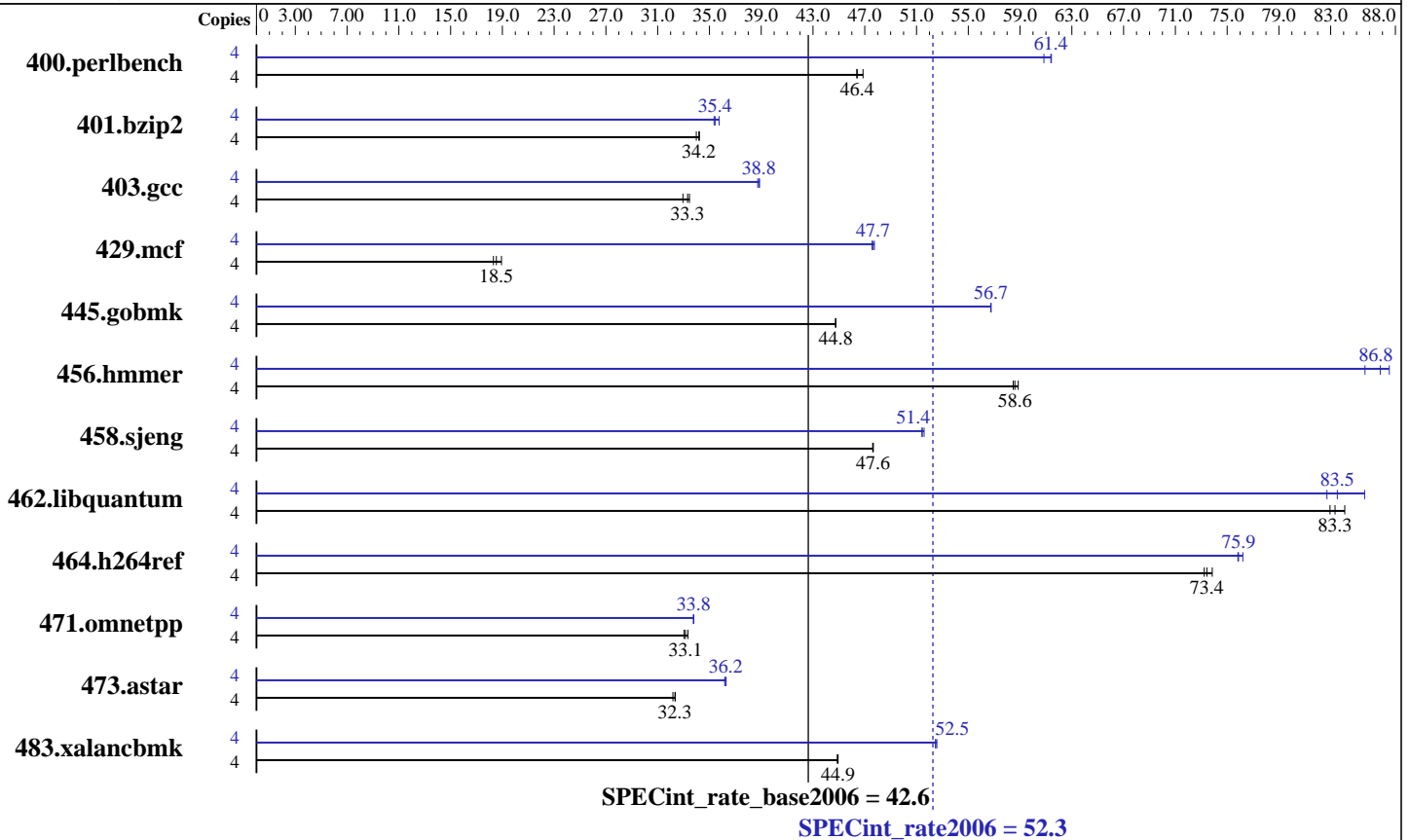
Test date: Jun-2008

Test sponsor: Dell Inc.

Hardware Availability: May-2008

Tested by: Dell Inc.

Software Availability: Jun-2008



Hardware

CPU Name: AMD Opteron 1354
 CPU Characteristics: 2200
 CPU MHz: 2200
 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	834	46.9	843	46.4	<u>842</u>	<u>46.4</u>	4	642	60.8	636	61.4	<u>637</u>	<u>61.4</u>
401.bzip2	4	1128	34.2	1136	34.0	<u>1129</u>	<u>34.2</u>	4	1092	35.4	1080	35.7	<u>1089</u>	<u>35.4</u>
403.gcc	4	<u>967</u>	<u>33.3</u>	962	33.5	977	33.0	4	831	38.7	<u>829</u>	<u>38.8</u>	828	38.9
429.mcf	4	1927	18.9	<u>1968</u>	<u>18.5</u>	1993	18.3	4	767	47.6	764	47.7	<u>766</u>	<u>47.7</u>
445.gobmk	4	938	44.7	937	44.8	<u>937</u>	<u>44.8</u>	4	739	56.8	<u>739</u>	<u>56.7</u>	739	56.7
456.hmmer	4	<u>637</u>	<u>58.6</u>	634	58.9	638	58.5	4	436	85.7	<u>430</u>	<u>86.8</u>	426	87.5
458.sjeng	4	1016	47.7	1017	47.6	<u>1016</u>	<u>47.6</u>	4	<u>941</u>	<u>51.4</u>	941	51.4	938	51.6
462.libquantum	4	986	84.1	<u>995</u>	<u>83.3</u>	999	82.9	4	1002	82.7	<u>992</u>	<u>83.5</u>	968	85.6
464.h264ref	4	1209	73.2	<u>1205</u>	<u>73.4</u>	1199	73.8	4	1167	75.8	1161	76.2	<u>1167</u>	<u>75.9</u>
471.omnetpp	4	<u>754</u>	<u>33.1</u>	757	33.0	750	33.3	4	741	33.8	<u>740</u>	<u>33.8</u>	740	33.8
473.astar	4	873	32.2	868	32.4	<u>868</u>	<u>32.3</u>	4	776	36.2	774	36.3	<u>775</u>	<u>36.2</u>
483.xalancbmk	4	<u>614</u>	<u>44.9</u>	614	44.9	615	44.9	4	525	52.6	526	52.5	<u>526</u>	<u>52.5</u>

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
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
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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Tested with SPEC CPU2006 v1.0.
Report generated on Tue Jul 22 19:21:56 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 19 August 2008.