



# SPEC® CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECint®\_rate2006 = 50.6

PowerEdge T105 (AMD Opteron 1352, 2.1 GHz)

SPECint\_rate\_base2006 = 41.4

CPU2006 license: 55

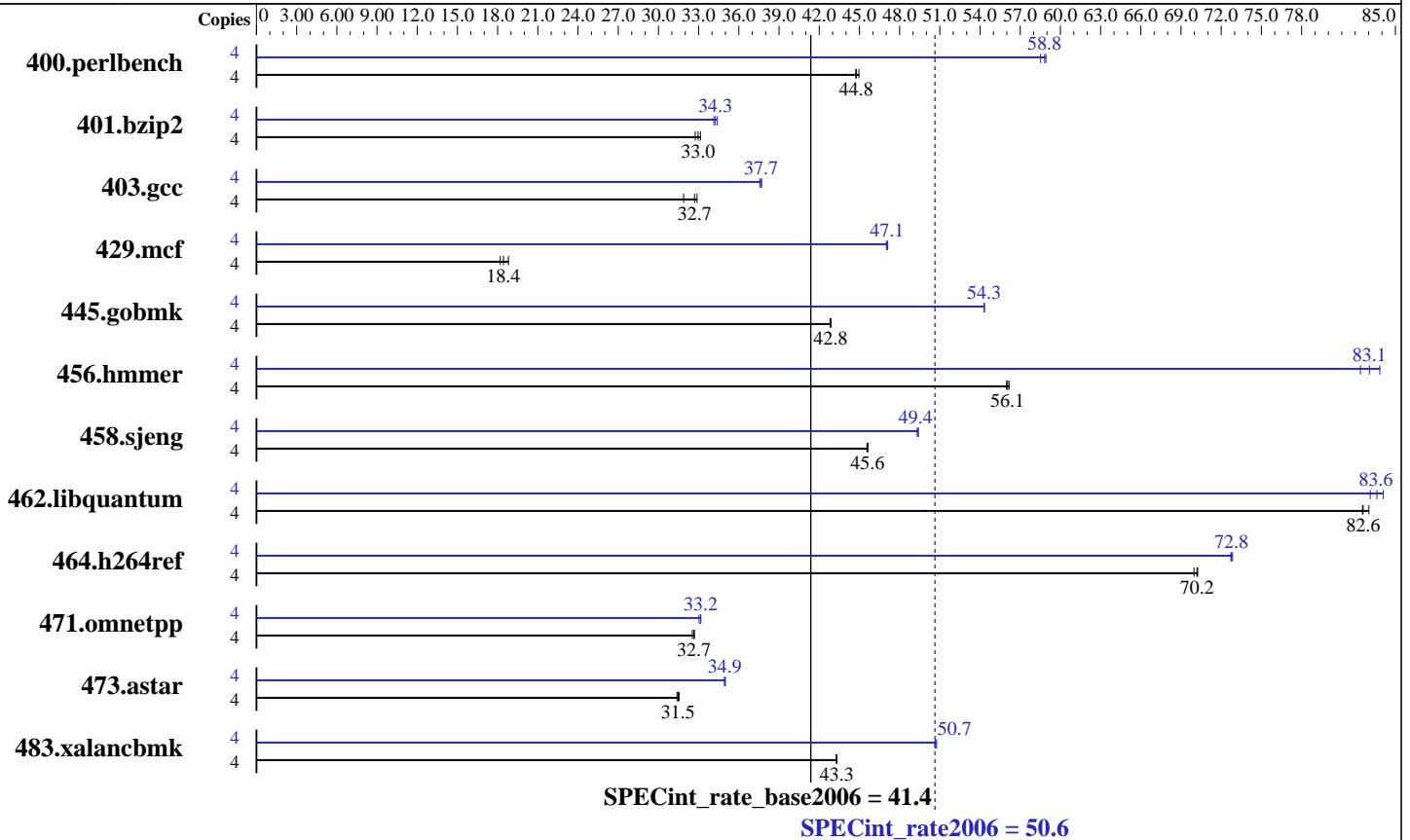
Test date: Jun-2008

Test sponsor: Dell Inc.

Hardware Availability: May-2008

Tested by: Dell Inc.

Software Availability: Jun-2008



## Hardware

CPU Name: AMD Opteron 1352  
 CPU Characteristics: 2100  
 CPU MHz: 2100  
 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	869	45.0	<b>873</b>	<b>44.8</b>	874	44.7	4	668	58.5	663	58.9	<b>664</b>	<b>58.8</b>
401.bzip2	4	1165	33.1	<b>1171</b>	<b>33.0</b>	1179	32.8	4	<b>1127</b>	<b>34.3</b>	1131	34.1	1122	34.4
403.gcc	4	1010	31.9	<b>985</b>	<b>32.7</b>	979	32.9	4	854	37.7	<b>855</b>	<b>37.7</b>	857	37.6
429.mcf	4	1940	18.8	2005	18.2	<b>1979</b>	<b>18.4</b>	4	<b>775</b>	<b>47.1</b>	776	47.0	774	47.1
445.gobmk	4	<b>979</b>	<b>42.8</b>	979	42.9	980	42.8	4	772	54.3	773	54.3	<b>773</b>	<b>54.3</b>
456.hmmer	4	<b>666</b>	<b>56.1</b>	664	56.2	667	56.0	4	445	83.8	<b>449</b>	<b>83.1</b>	453	82.4
458.sjeng	4	<b>1061</b>	<b>45.6</b>	1061	45.6	1062	45.6	4	<b>980</b>	<b>49.4</b>	982	49.3	980	49.4
462.libquantum	4	998	83.0	<b>1003</b>	<b>82.6</b>	1004	82.5	4	<b>991</b>	<b>83.6</b>	997	83.1	986	84.1
464.h264ref	4	1260	70.2	1265	70.0	<b>1261</b>	<b>70.2</b>	4	<b>1217</b>	<b>72.8</b>	1215	72.9	1217	72.7
471.omnetpp	4	<b>765</b>	<b>32.7</b>	765	32.7	769	32.5	4	757	33.0	754	33.2	<b>754</b>	<b>33.2</b>
473.astar	4	<b>892</b>	<b>31.5</b>	895	31.4	890	31.5	4	<b>804</b>	<b>34.9</b>	802	35.0	804	34.9
483.xalancbmk	4	<b>637</b>	<b>43.3</b>	638	43.3	637	43.3	4	544	50.8	545	50.6	<b>545</b>	<b>50.7</b>

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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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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