



# SPEC® CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECint®\_rate2006 = 94.6

PowerEdge R805 (AMD Opteron 2352, 2.10 GHz)

SPECint\_rate\_base2006 = 82.3

CPU2006 license: 55

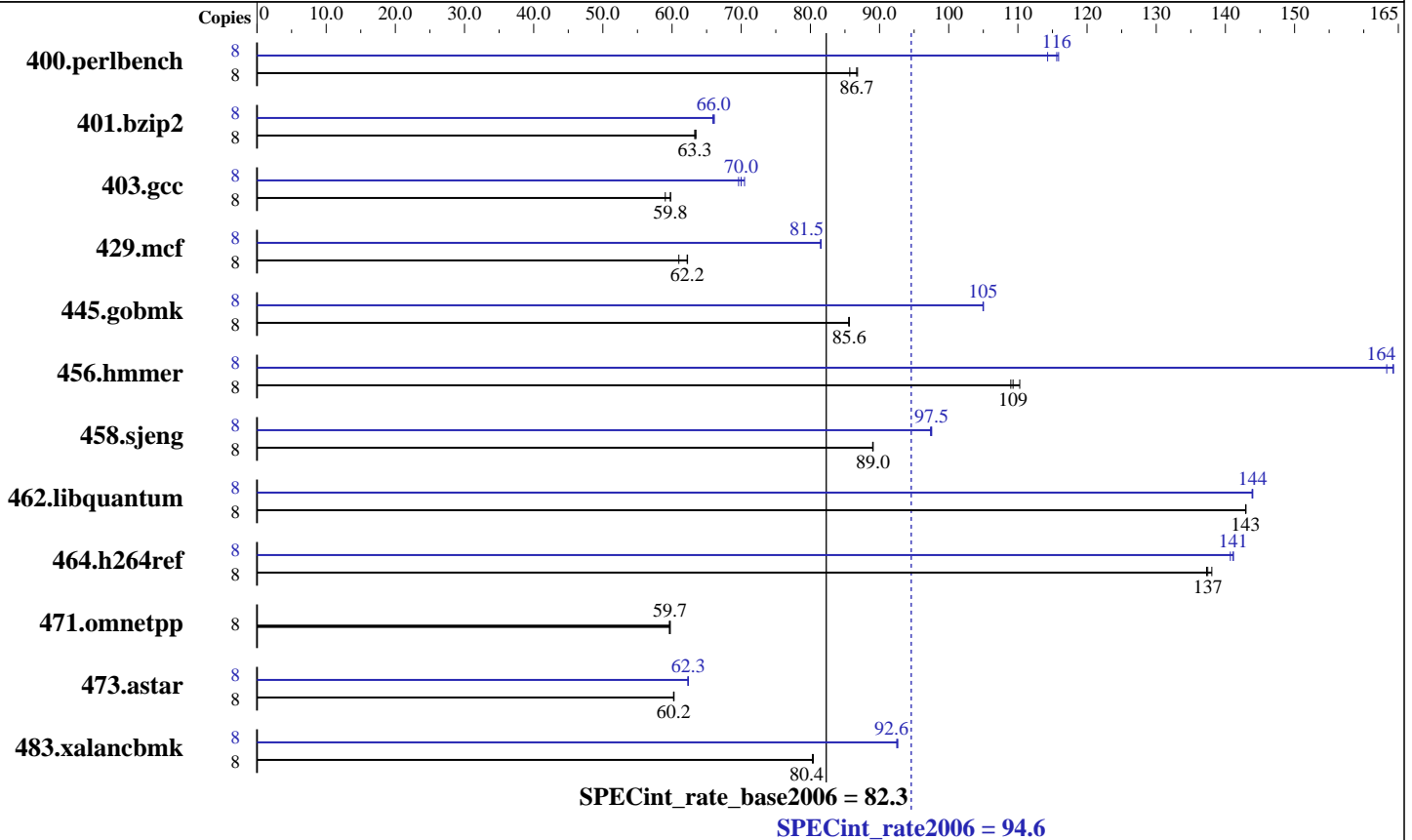
Test date: Apr-2008

Test sponsor: Dell Inc.

Hardware Availability: Apr-2008

Tested by: Dell Inc.

Software Availability: May-2008



## Hardware

CPU Name: AMD Opteron 2352  
 CPU Characteristics:  
 CPU MHz: 2100  
 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 73 GB SAS, 15000 RPM  
 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 3.1  
 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						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	8	<b>902</b>	<b>86.7</b>	900	86.8	912	85.7	8	684	114	674	116	<b>676</b>	<b>116</b>
401.bzip2	8	1216	63.5	<b>1219</b>	<b>63.3</b>	1219	63.3	8	1171	65.9	1168	66.1	<b>1169</b>	<b>66.0</b>
403.gcc	8	1091	59.0	1077	59.8	<b>1078</b>	<b>59.8</b>	8	925	69.6	914	70.5	<b>920</b>	<b>70.0</b>
429.mcf	8	1196	61.0	<b>1173</b>	<b>62.2</b>	1172	62.2	8	895	81.5	895	81.5	<b>895</b>	<b>81.5</b>
445.gobmk	8	981	85.5	980	85.6	<b>980</b>	<b>85.6</b>	8	799	105	800	105	<b>799</b>	<b>105</b>
456.hmmer	8	685	109	677	110	<b>683</b>	<b>109</b>	8	457	163	454	164	<b>455</b>	<b>164</b>
458.sjeng	8	1087	89.1	<b>1087</b>	<b>89.0</b>	1088	89.0	8	994	97.4	<b>993</b>	<b>97.5</b>	992	97.5
462.libquantum	8	1160	143	1159	143	<b>1160</b>	<b>143</b>	8	1152	144	1152	144	<b>1152</b>	<b>144</b>
464.h264ref	8	<b>1288</b>	<b>137</b>	1290	137	1283	138	8	1254	141	1258	141	<b>1254</b>	<b>141</b>
471.omnetpp	8	839	59.6	837	59.7	<b>837</b>	<b>59.7</b>	8	839	59.6	837	59.7	<b>837</b>	<b>59.7</b>
473.astar	8	931	60.3	932	60.2	<b>932</b>	<b>60.2</b>	8	<b>901</b>	<b>62.3</b>	901	62.4	901	62.3
483.xalancbmk	8	688	80.3	686	80.4	<b>687</b>	<b>80.4</b>	8	597	92.5	<b>596</b>	<b>92.6</b>	596	92.6

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 /proc/sys/vm/nr_hugepages=1200
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=jobs:4 -Mipa=fast -Mipa=inline -Mfprelaxed  
-Msmartalloc=huge:150 -tp barcelona-64 -Bstatic\_pgi

C++ benchmarks:

-fastsse -Mipa=jobs:4 -Mipa=fast -Mipa=inline -Mfprelaxed  
-Msmartalloc=huge:150 --zc\_eh -tp barcelona -Bstatic\_pgi

## Base Other Flags

C benchmarks:

-w

C++ benchmarks:

-w

## 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
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
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=jobs:4 -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=jobs:4 -Mipa=const
            -Mipa=ptr -Mipa=arg -Mipa=inline -tp barcelona-64
            -Bstatic_pgi

458.sjeng: -Mpfi(pass 1) -Mipa=jobs:4(pass 2) -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=jobs:4 -Mipa=fast -Mipa=inline -Mipa=noarg
                -tp barcelona-64 -Bstatic_pgi

464.h264ref: -Mpfi=indirect(pass 1) -Mipa=jobs:4(pass 2)
              -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

400.perlbench: No flags used

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

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

<http://www.spec.org/cpu2006/flags/amd123GH-flags.20090714.02.html>

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

<http://www.spec.org/cpu2006/flags/amd123GH-flags.20090714.02.xml>

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

Tested with SPEC CPU2006 v1.0.  
Report generated on Tue Jul 22 18:08:29 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 7 May 2008.