



# SPEC® CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Dell Inc.

SPECint®\_rate2006 = 94.7

PowerEdge T605 (AMD Opteron 2352, 2.10 GHz)

SPECint\_rate\_base2006 = 82.4

CPU2006 license: 55

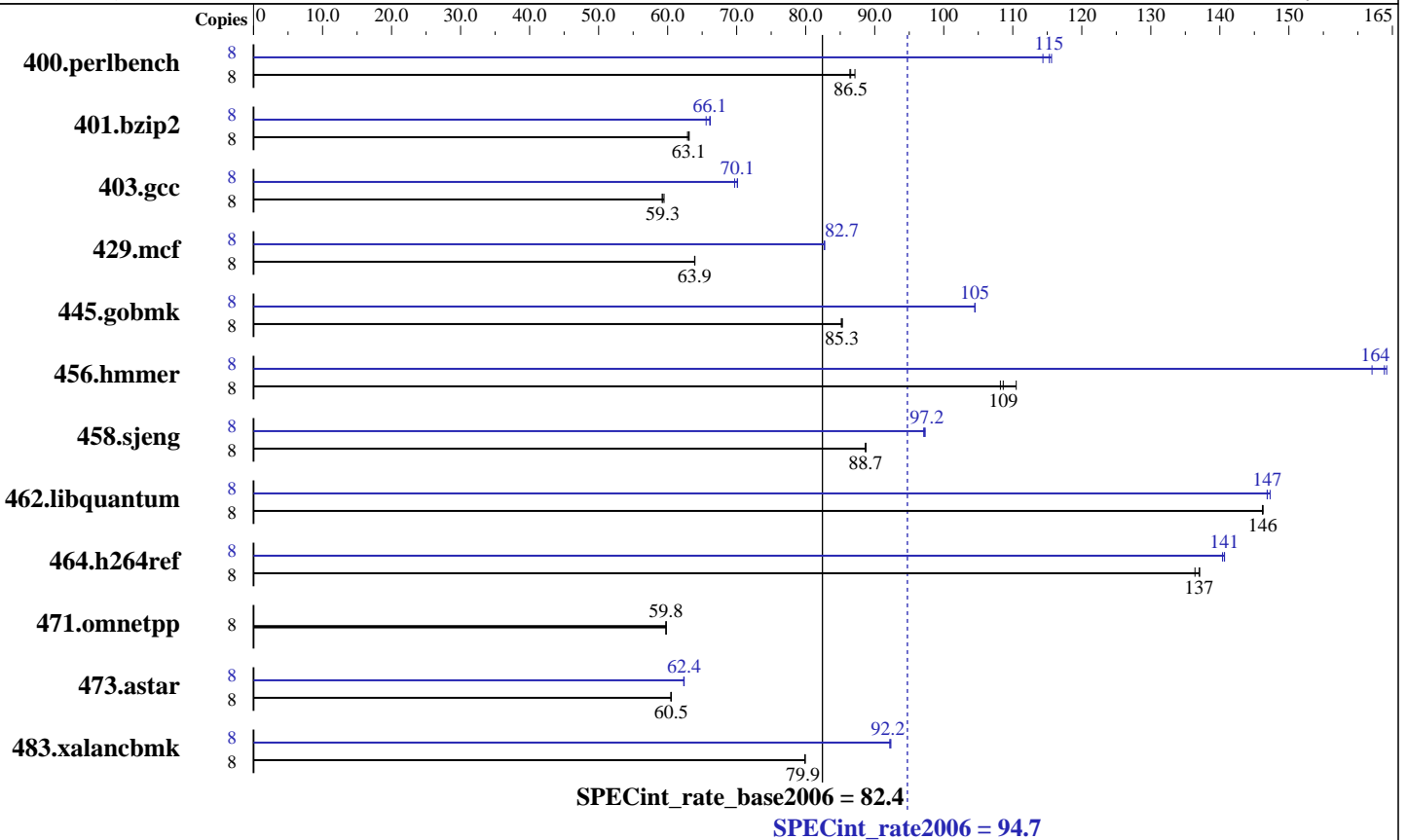
Test date: Mar-2008

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: 1,2 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 (4 x 4 GB, DDR2-667, CL5, Reg, Dual Rank)  
 Disk Subsystem: 2 x 250 GB 7200 RPM SATA (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 3.1  
 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	897	87.1	<b>903</b>	<b>86.5</b>	905	86.4	8	683	114	<b>678</b>	<b>115</b>	676	116
401.bzip2	8	<b>1224</b>	<b>63.1</b>	1223	63.1	1228	62.9	8	1177	65.6	<b>1168</b>	<b>66.1</b>	1167	66.2
403.gcc	8	1088	59.2	<b>1086</b>	<b>59.3</b>	1083	59.5	8	924	69.7	918	70.1	<b>919</b>	<b>70.1</b>
429.mcf	8	1142	63.9	<b>1142</b>	<b>63.9</b>	1141	64.0	8	882	82.7	882	82.7	<b>882</b>	<b>82.7</b>
445.gobmk	8	985	85.2	984	85.3	<b>984</b>	<b>85.3</b>	8	<b>803</b>	<b>105</b>	803	105	803	105
456.hmmer	8	<b>687</b>	<b>109</b>	690	108	675	111	8	461	162	455	164	<b>456</b>	<b>164</b>
458.sjeng	8	1092	88.6	<b>1091</b>	<b>88.7</b>	1091	88.7	8	995	97.3	<b>996</b>	<b>97.2</b>	997	97.1
462.libquantum	8	<b>1134</b>	<b>146</b>	1134	146	1133	146	8	1125	147	1129	147	<b>1128</b>	<b>147</b>
464.h264ref	8	<b>1292</b>	<b>137</b>	1298	136	1292	137	8	1261	140	1258	141	<b>1259</b>	<b>141</b>
471.omnetpp	8	837	59.8	836	59.8	<b>836</b>	<b>59.8</b>	8	837	59.8	836	59.8	<b>836</b>	<b>59.8</b>
473.astar	8	928	60.5	929	60.5	<b>928</b>	<b>60.5</b>	8	901	62.3	900	62.4	<b>900</b>	<b>62.4</b>
483.xalancbmk	8	<b>691</b>	<b>79.9</b>	691	79.9	691	79.9	8	<b>598</b>	<b>92.2</b>	599	92.2	598	92.3

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 /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.html>

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

<http://www.spec.org/cpu2006/flags/amd123GH-flags.20090714.xml>

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For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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