



# SPEC<sup>®</sup> CINT2006 Result

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## Hewlett-Packard Company

SPECint<sup>®</sup>\_rate2006 = 52.4

ProLiant DL365 G5  
(2.3 GHz AMD Opteron 2356)

SPECint\_rate\_base2006 = 45.7

CPU2006 license: 3

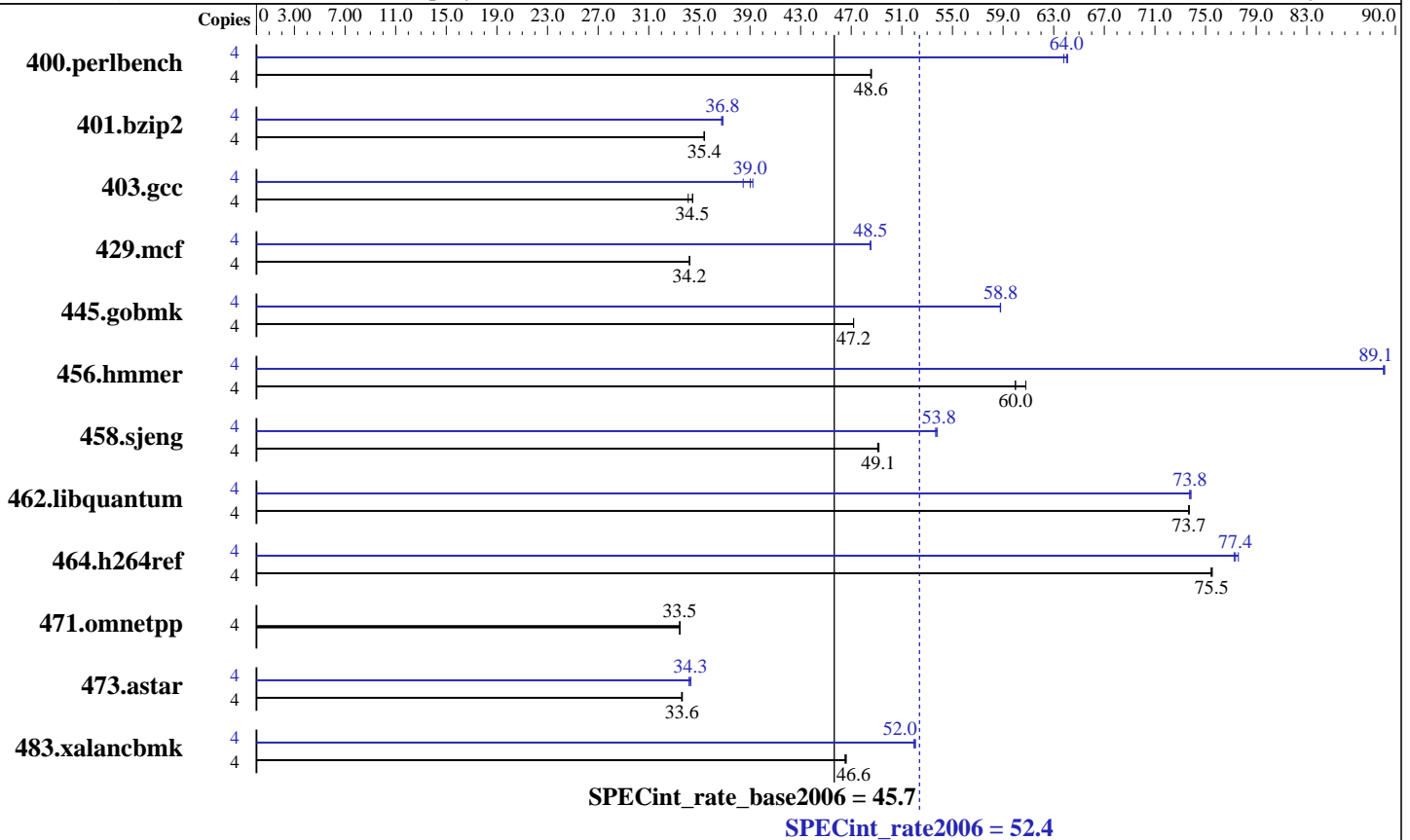
Test date: Mar-2008

Test sponsor: Hewlett-Packard Company

Hardware Availability: Mar-2008

Tested by: Hewlett-Packard Company

Software Availability: May-2008



### Hardware

CPU Name: AMD Opteron 2356  
 CPU Characteristics:  
 CPU MHz: 2300  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 1 chip, 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 (4x4 GB, PC2-5300P CL5)  
 Disk Subsystem: 1x72 GB 10 K SAS  
 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, Release Pre-3.2 Beta  
 Auto Parallel: No  
 File System: ext2  
 System State: Run level 3 (multi-user)  
 Base Pointers: 32/64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: SmartHeap 8.1 32-bit Library for Linux, binutils-2.18.50



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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	<b>805</b>	<b>48.6</b>	804	48.6	805	48.5	4	613	63.8	<b>610</b>	<b>64.0</b>	610	64.1
401.bzip2	4	1091	35.4	1090	35.4	<b>1091</b>	<b>35.4</b>	4	<b>1048</b>	<b>36.8</b>	1047	36.9	1050	36.8
403.gcc	4	934	34.5	944	34.1	<b>935</b>	<b>34.5</b>	4	837	38.5	<b>825</b>	<b>39.0</b>	821	39.2
429.mcf	4	1066	34.2	<b>1066</b>	<b>34.2</b>	1065	34.2	4	752	48.5	752	48.5	<b>752</b>	<b>48.5</b>
445.gobmk	4	889	47.2	<b>889</b>	<b>47.2</b>	889	47.2	4	714	58.8	<b>714</b>	<b>58.8</b>	714	58.8
456.hammer	4	622	60.0	614	60.8	<b>622</b>	<b>60.0</b>	4	419	89.2	419	89.1	<b>419</b>	<b>89.1</b>
458.sjeng	4	984	49.2	<b>985</b>	<b>49.1</b>	986	49.1	4	900	53.8	902	53.7	<b>900</b>	<b>53.8</b>
462.libquantum	4	1125	73.7	1124	73.7	<b>1125</b>	<b>73.7</b>	4	<b>1123</b>	<b>73.8</b>	1122	73.9	1124	73.7
464.h264ref	4	<b>1173</b>	<b>75.5</b>	1172	75.5	1173	75.4	4	1146	77.3	<b>1144</b>	<b>77.4</b>	1141	77.6
471.omnetpp	4	747	33.4	747	33.5	<b>747</b>	<b>33.5</b>	4	747	33.4	747	33.5	<b>747</b>	<b>33.5</b>
473.astar	4	834	33.7	836	33.6	<b>835</b>	<b>33.6</b>	4	821	34.2	<b>819</b>	<b>34.3</b>	818	34.3
483.xalancbmk	4	<b>593</b>	<b>46.6</b>	592	46.6	593	46.5	4	<b>530</b>	<b>52.0</b>	531	52.0	530	52.1

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Operating System Notes

Environment stack size set to 'unlimited'  
Max locked memory set to 2097152  
PGI\_HUGE\_PAGES set to 896.  
Total number of huge pages available is 3584.

## Platform Notes

BIOS configuration:  
Power Regulator set to Static High Performance Mode

## 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

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## Base Portability Flags (Continued)

```

403.gcc: -DSPEC_CPU_LP64
429.mcf: -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.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  
 -OPT:malloc\_alg=1

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:prefetch=1 -LNO:ignore\_feedback=off -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

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## Peak Optimization Flags (Continued)

464.h264ref (continued):

`-Mfprelaxed -tp barcelona-64 -Bstatic_pgi`

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/hp-PGI72-PS32-flags.html>

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

<http://www.spec.org/cpu2006/flags/hp-PGI72-PS32-flags.xml>



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

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