



# SPEC® CINT2006 Result

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## Hewlett-Packard Company

## SPECint®\_rate2006 = 53.0

## ProLiant BL465c (AMD Opteron 2220)

## SPECint\_rate\_base2006 = 47.3

CPU2006 license: 3

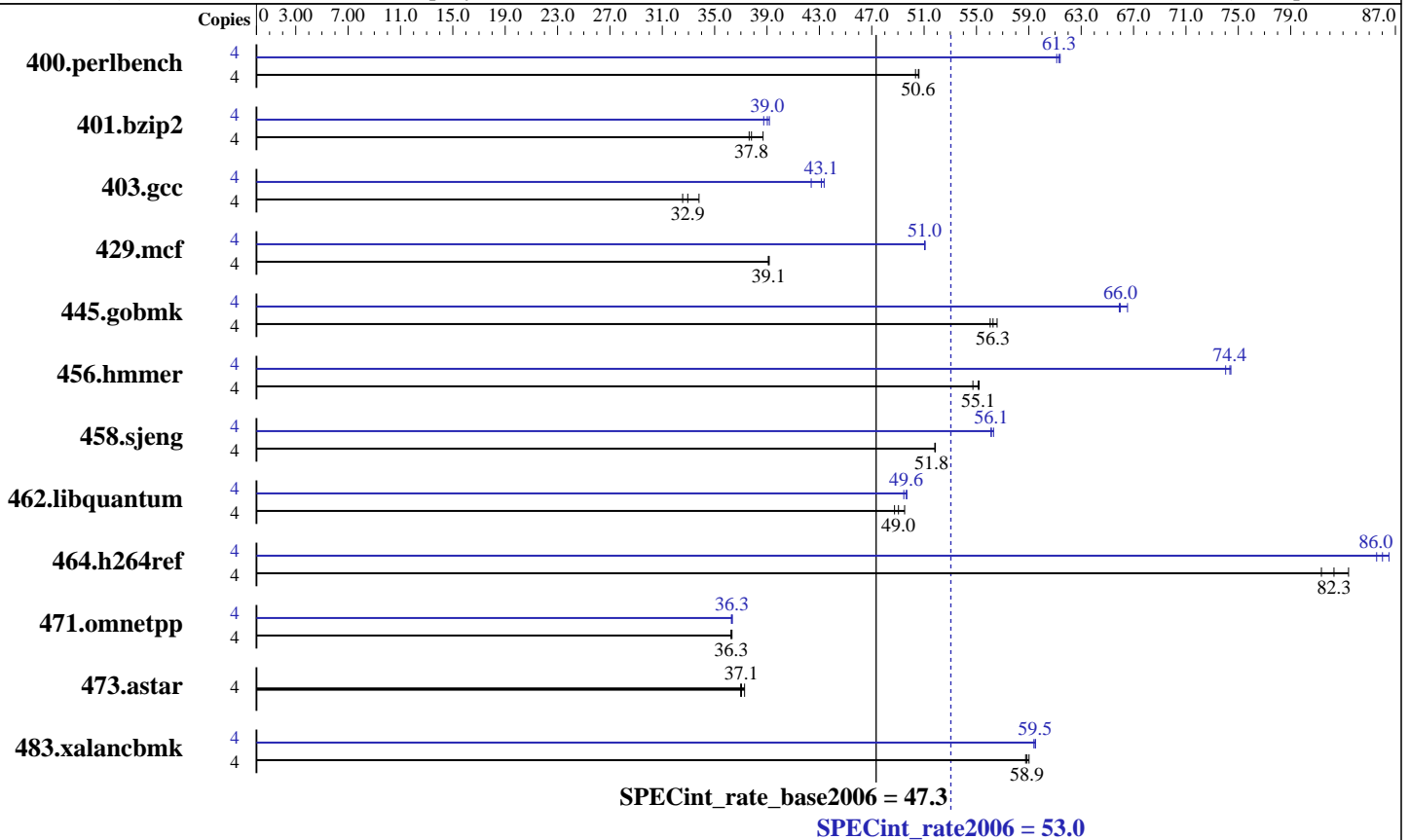
Test sponsor: Hewlett-Packard Company

Tested by: Hewlett-Packard Company

Test date: Jul-2007

Hardware Availability: Jan-2007

Software Availability: Apr-2007



### Hardware

CPU Name: AMD Opteron 2220  
 CPU Characteristics: 2.8 GHz, 1 MB L2 cache  
 CPU MHz: 2800  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 2 chips, 2 cores/chip  
 CPU(s) orderable: 1,2 chips  
 Primary Cache: 64 KB I + 64 KB D on chip per core  
 Secondary Cache: 1 MB I+D on chip per core  
 L3 Cache: None  
 Other Cache: None  
 Memory: 32 GB (8x4 GB, PC2-5300P CL5)  
 Disk Subsystem: 2x72 GB 10 K SAS  
 Other Hardware: None

### Software

Operating System: SuSE Linux Enterprise Server 10 (x86\_64) kernel 2.6.16.21-0.8-smp  
 Compiler: QLogic PathScale Compiler Suite, Release 3.0  
 Auto Parallel: No  
 File System: ext2  
 System State: Multi-user, run level 3  
 Base Pointers: 32/64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: MicroQuill SmartHeap Library 8.1



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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><u>773</u></b>	<b><u>50.6</u></b>	776	50.3	772	50.6	4	<b><u>637</u></b>	<b><u>61.3</u></b>	639	61.1	637	61.4
401.bzip2	4	997	38.7	1026	37.6	<b><u>1021</u></b>	<b><u>37.8</u></b>	4	985	39.2	<b><u>989</u></b>	<b><u>39.0</u></b>	996	38.7
403.gcc	4	989	32.6	953	33.8	<b><u>977</u></b>	<b><u>32.9</u></b>	4	743	43.4	<b><u>746</u></b>	<b><u>43.1</u></b>	760	42.4
429.mcf	4	931	39.2	933	39.1	<b><u>933</u></b>	<b><u>39.1</u></b>	4	<b><u>715</u></b>	<b><u>51.0</u></b>	714	51.1	715	51.0
445.gobmk	4	749	56.0	<b><u>746</u></b>	<b><u>56.3</u></b>	742	56.6	4	631	66.5	<b><u>636</u></b>	<b><u>66.0</u></b>	637	65.9
456.hmmer	4	<b><u>677</u></b>	<b><u>55.1</u></b>	682	54.7	676	55.2	4	<b><u>502</u></b>	<b><u>74.4</u></b>	501	74.4	504	74.0
458.sjeng	4	933	51.9	<b><u>934</u></b>	<b><u>51.8</u></b>	934	51.8	4	860	56.3	<b><u>862</u></b>	<b><u>56.1</u></b>	863	56.1
462.libquantum	4	1700	48.7	<b><u>1690</u></b>	<b><u>49.0</u></b>	1674	49.5	4	1676	49.4	1668	49.7	<b><u>1670</u></b>	<b><u>49.6</u></b>
464.h264ref	4	1061	83.4	1088	81.4	<b><u>1075</u></b>	<b><u>82.3</u></b>	4	<b><u>1029</u></b>	<b><u>86.0</u></b>	1035	85.6	1023	86.5
471.omnetpp	4	688	36.3	<b><u>689</u></b>	<b><u>36.3</u></b>	690	36.3	4	688	36.3	<b><u>688</u></b>	<b><u>36.3</u></b>	689	36.3
473.astar	4	<b><u>758</u></b>	<b><u>37.1</u></b>	753	37.3	759	37.0	4	<b><u>758</u></b>	<b><u>37.1</u></b>	753	37.3	759	37.0
483.xalancbmk	4	468	59.0	<b><u>469</u></b>	<b><u>58.9</u></b>	470	58.8	4	464	59.5	<b><u>464</u></b>	<b><u>59.5</u></b>	465	59.4

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

## General Notes

Node interleaving is disabled  
ulimit -s unlimited set

## Base Compiler Invocation

C benchmarks:  
pathcc

C++ benchmarks:  
pathCC

## 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  
458.sjeng: -DSPEC\_CPU\_LP64  
462.libquantum: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX  
464.h264ref: -DSPEC\_CPU\_LP64  
483.xalancbmk: -DSPEC\_CPU\_LINUX



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## Base Optimization Flags

C benchmarks:

-Ofast -OPT:malloc\_alg=1

C++ benchmarks:

-Ofast -m32 -L/cpu2006/SmartHeap\_8.1/lib -lsmartheap

## Base Other Flags

C benchmarks:

-IPA:max\_jobs=4

C++ benchmarks:

-IPA:max\_jobs=4

## Peak Compiler Invocation

C benchmarks:

pathcc

C++ benchmarks:

pathCC

## 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.xalancbmk: -DSPEC\_CPU\_LINUX

## Peak Optimization Flags

C benchmarks:

400.perlbench: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -Ofast  
-LNO:opt=0

401.bzip2: -O3 -LNO:ou\_prod\_max=10 -OPT:Ofast -OPT:alias=disjoint

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## Peak Optimization Flags (Continued)

403.gcc: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -m32 -O3  
-OPT:Ofast

429.mcf: -m32 -O3 -ipa -L/cpu2006/SmartHeap\_8.1/lib -lsmartheap

445.gobmk: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -O3  
-OPT:alias=disjoint -LNO:simd=0 -LNO:minvariant=off  
-WOPT:retype\_expr=on

456.hmmr: -O2 -OPT:alias=disjoint -OPT:malloc\_alg=1 -CG:cflow=0

458.sjeng: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -O3  
-IPA:plimit=50000 -IPA:pu\_reorder=2

462.libquantum: -O3 -ipa -CG:local\_fwd\_sched=on -IPA:space=1000

464.h264ref: -fb\_create fbdata(pass 1) -fb\_opt fbdata(pass 2) -O3  
-IPA:plimit=20000 -OPT:alias=disjoint -LNO:prefetch=0

C++ benchmarks:

471.omnetpp: -Ofast -CG:gcm=off -m32  
-L/cpu2006/SmartHeap\_8.1/lib -lsmartheap

473.astar: basepeak = yes

483.xalancbmk: -Ofast -m32 -OPT:unroll\_times\_max=8  
-L/cpu2006/SmartHeap\_8.1/lib -lsmartheap

## Peak Other Flags

C benchmarks:

-IPA:max\_jobs=4

C++ benchmarks:

-IPA:max\_jobs=4

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

[http://www.spec.org/cpu2006/flags/CPU2006\\_flags.20090714.15.html](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.15.html)

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

[http://www.spec.org/cpu2006/flags/CPU2006\\_flags.20090714.15.xml](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.15.xml)



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

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