



# SPEC® CINT2006 Result

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## Hewlett-Packard Company

### SPECint®\_rate2006 = 135

ProLiant DL365 G5  
(2.7 GHz AMD Opteron 2384)

### SPECint\_rate\_base2006 = 112

CPU2006 license: 3

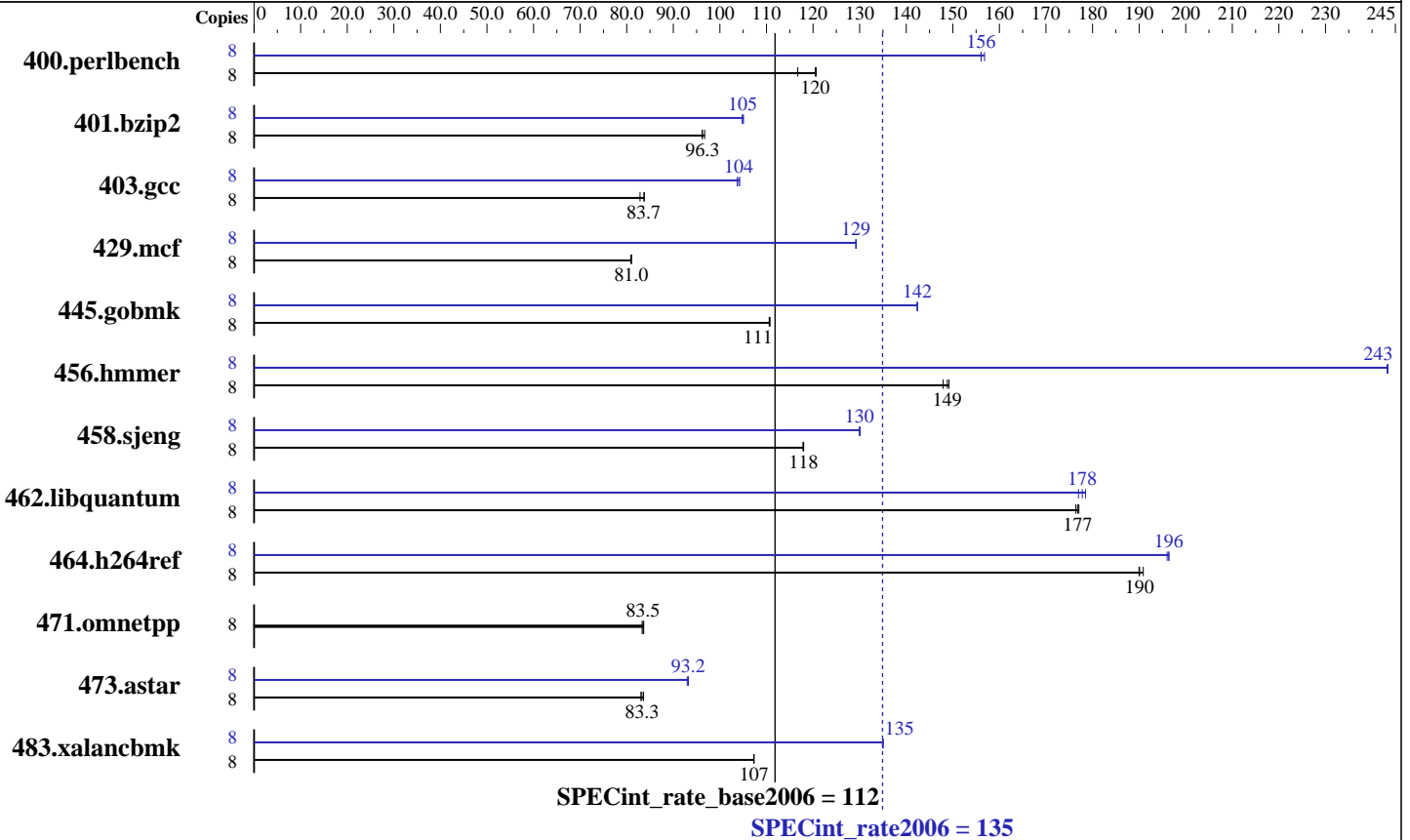
Test date: Dec-2008

Test sponsor: Hewlett-Packard Company

Hardware Availability: Nov-2008

Tested by: Hewlett-Packard Company

Software Availability: Jun-2008



### Hardware

CPU Name: AMD Opteron 2384  
 CPU Characteristics:  
 CPU MHz: 2700  
 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: 6 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 32 GB (8x4 GB, PC2-6400P CL5)  
 Disk Subsystem: 1x72 GB 15 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 Version 3.2  
 Auto Parallel: No  
 File System: ext3  
 System State: Run level 3 (multi-user)  
 Base Pointers: 32/64-bit  
 Peak Pointers: 32/64-bit  
 Other Software: binutils 2.17.50.20070611-2  
 32-bit and 64-bit libhugetlbfs libraries  
 SmartHeap 8.1 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	648	121	<b>649</b>	<b>120</b>	670	117	8	498	157	501	156	<b>501</b>	<b>156</b>
401.bzip2	8	803	96.2	<b>802</b>	<b>96.3</b>	798	96.7	8	<b>736</b>	<b>105</b>	735	105	737	105
403.gcc	8	777	82.9	769	83.8	<b>770</b>	<b>83.7</b>	8	618	104	621	104	<b>619</b>	<b>104</b>
429.mcf	8	902	80.9	901	81.0	<b>901</b>	<b>81.0</b>	8	564	129	565	129	<b>565</b>	<b>129</b>
445.gobmk	8	758	111	<b>758</b>	<b>111</b>	759	111	8	589	142	589	142	<b>589</b>	<b>142</b>
456.hammer	8	<b>502</b>	<b>149</b>	505	148	500	149	8	307	243	307	243	<b>307</b>	<b>243</b>
458.sjeng	8	<b>821</b>	<b>118</b>	820	118	822	118	8	745	130	<b>745</b>	<b>130</b>	744	130
462.libquantum	8	<b>938</b>	<b>177</b>	940	176	936	177	8	929	178	937	177	<b>932</b>	<b>178</b>
464.h264ref	8	927	191	<b>931</b>	<b>190</b>	932	190	8	903	196	901	196	<b>902</b>	<b>196</b>
471.omnetpp	8	598	83.6	<b>599</b>	<b>83.5</b>	600	83.3	8	598	83.6	<b>599</b>	<b>83.5</b>	600	83.3
473.astar	8	672	83.6	<b>675</b>	<b>83.3</b>	676	83.0	8	602	93.2	<b>603</b>	<b>93.2</b>	604	93.0
483.xalancbmk	8	<b>514</b>	<b>107</b>	515	107	514	107	8	409	135	<b>409</b>	<b>135</b>	409	135

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

## Submit Notes

The config file option 'submit' was used.  
numactl was used to bind copies to the cores

## Operating System Notes

Environment stack size set to 'unlimited'  
Max locked memory set to 2097152  
The libhugetlbfs libraries were installed using the installation rpms that came with the distribution.  
PGI\_HUGE\_PAGES set to 896.  
Total number of huge pages available is 7168.  
NCPUS set to number of cores

## Platform Notes

BIOS configuration:  
Power Regulator set to Static High Performance Mode

## General Notes

Environment variables set by runspec before the start of the run:  
HUGETLB\_MORECORE = "yes"



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## 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
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:

```

-Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge -Mfprelaxed
-Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi

```

C++ benchmarks:

```

-Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge -Mfprelaxed
--zc_eh -Mipa=fast -Mipa=inline:6 -tp barcelona-32 -Bstatic_pgi

```

## Base Other Flags

C benchmarks:

-Mipa=jobs:4

C++ benchmarks:

-Mipa=jobs:4

## Peak Compiler Invocation

C benchmarks (except as noted below):

pathcc

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## Peak Compiler Invocation (Continued)

456.hmmcr: pgcc

462.libquantum: pgcc

C++ benchmarks (except as noted below):

pgcpp

483.xalancbmk: pathCC

## Peak Portability Flags

400.perlbench: -DSPEC\_CPU\_LP64 -DSPEC\_CPU\_LINUX\_X64  
401.bzip2: -DSPEC\_CPU\_LP64  
445.gobmk: -DSPEC\_CPU\_LP64  
456.hmmcr: -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: -march=barcelona -fb\_create fbdata(pass 1)  
-fb\_opt fbdata(pass 2)  
-Wl,-T/usr/share/libhugetlbfs/ldscripts/elf\_x86\_64.xBDT(pass 2)  
-L/usr/lib64 -lhugetlbfs(pass 2) -Ofast -IPA:plimit=20000  
-IPA:field\_reorder=on -LNO:opt=0 -WOPT:if\_conv=0  
-CG:local\_sched\_alg=1  
401.bzip2: -march=barcelona -O3 -OPT:alias=disjoint -OPT:Ofast  
-OPT:goto=off -INLINE:aggressive=on -CG:local\_sched\_alg=1  
-m3dnow  
-Wl,-T/usr/share/libhugetlbfs/ldscripts/elf\_x86\_64.xBDT  
-L/usr/lib64 -lhugetlbfs  
403.gcc: -march=barcelona -fb\_create fbdata(pass 1)  
-fb\_opt fbdata(pass 2) -Ofast -OPT:malloc\_alg=1  
-LNO:trip\_count=256 -LNO:prefetch\_ahead=10  
-CG:prefer\_lru\_reg=off -m32  
429.mcf: -march=barcelona -O3 -ipa -INLINE:aggressive=on  
-CG:gcm=off -GRA:prioritize\_by\_density=on -m32  
-L/usr/lib -lhugetlbfs

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## Peak Optimization Flags (Continued)

445.gobmk: -march=barcelona -fb\_create fbdata(pass 1)  
-fb\_opt fbdata(pass 2)  
-Wl,-T/usr/share/libhugetlbfs/ldscripts/elf\_x86\_64.xBDT(pass 2)  
-L/usr/lib64 -lhugetlbfs(pass 2) -O3 -OPT:alias=restrict  
-LNO:prefetch=1 -LNO:ignore\_feedback=off -CG:p2align=on

456.hmmcr: -Mvect=cachesize:6291456 -fastsse -Mvect=partial  
-Munroll=n:8 -Msmartalloc=huge -Msafeptr -Mprefetch=t0  
-Mfprelaxed -Mipa=const -Mipa=ptr -Mipa=arg -Mipa=inline  
-tp barcelona-64 -Bstatic\_pgi

458.sjeng: -march=barcelona -fb\_create fbdata(pass 1)  
-fb\_opt fbdata(pass 2)  
-Wl,-T/usr/share/libhugetlbfs/ldscripts/elf\_x86\_64.xBDT(pass 2)  
-L/usr/lib64 -lhugetlbfs(pass 2) -O3 -ipa  
-LNO:ignore\_feedback=off -LNO:full\_unroll=10 -LNO:fusion=0  
-LNO:fission=2 -IPA:pu\_reorder=2 -CG:ptr\_load\_use=0  
-OPT:unroll\_times\_max=8 -INLINE:aggressive=on

462.libquantum: -Mvect=cachesize:6291456 -fastsse -Munroll=m:8  
-Msmartalloc=huge -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)  
-Wl,-T/usr/share/libhugetlbfs/ldscripts/elf\_x86\_64.xBDT(pass 2)  
-L/usr/lib64 -lhugetlbfs(pass 2) -O3 -IPA:plimit=20000  
-OPT:alias=disjoint -LNO:prefetch=0 -CG:ptr\_load\_use=0  
-CG:push\_pop\_int\_saved\_regs=off -CG:prefer\_lru\_reg=off

C++ benchmarks:

471.omnetpp: basepeak = yes

473.astar: -Mphi(pass 1) -Mpfo(pass 2) -Mipa=fast(pass 2)  
-Mipa=inline:6(pass 2) -Mvect=cachesize:6291456 -fastsse  
-O4 -Msmartalloc=huge -Msafeptr=global -Mfprelaxed  
--zc\_eh -tp barcelona-32 -Bstatic\_pgi

483.xalancbmk: -march=barcelona -Ofast -INLINE:aggressive=on -m32  
-L/cpu2006/SmartHeap\_8.1/lib -lsmartheap

## Peak Other Flags

C benchmarks:

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## Peak Other Flags (Continued)

456.hmmer: -Mipa=jobs:4

462.libquantum: -Mipa=jobs:4

C++ benchmarks (except as noted below):  
-Mipa=jobs:4(pass 2)

483.xalancbmk: No flags used

The flags files that were used to format this result can be browsed at

[http://www.spec.org/cpu2006/flags/CPU2006\\_flags.20090710.html](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090710.html)

[http://www.spec.org/cpu2006/flags/pgi72\\_linux\\_flags.html](http://www.spec.org/cpu2006/flags/pgi72_linux_flags.html)

<http://www.spec.org/cpu2006/flags/amd-platform-amd909gh.20090710.html>

You can also download the XML flags sources by saving the following links:

[http://www.spec.org/cpu2006/flags/CPU2006\\_flags.20090710.xml](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090710.xml)

[http://www.spec.org/cpu2006/flags/pgi72\\_linux\\_flags.xml](http://www.spec.org/cpu2006/flags/pgi72_linux_flags.xml)

<http://www.spec.org/cpu2006/flags/amd-platform-amd909gh.20090710.xml>

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