



# SPEC® CINT2006 Result

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## Hewlett-Packard Company

### SPECint®\_rate2006 = 248

ProLiant BL685c G5  
(2.7 GHz AMD Opteron 8384)

### SPECint\_rate\_base2006 = 200

CPU2006 license: 3

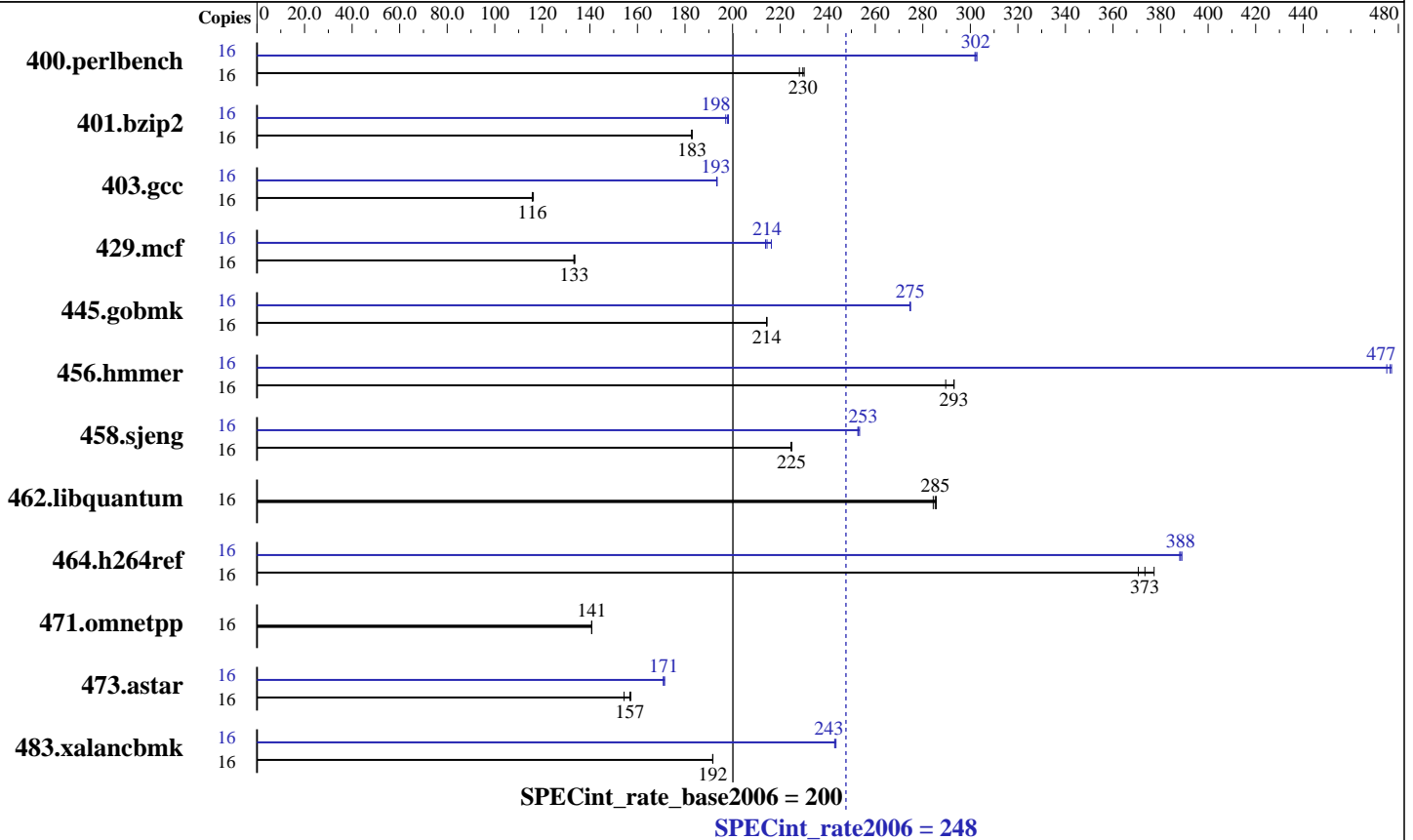
Test date: Nov-2008

Test sponsor: Hewlett-Packard Company

Hardware Availability: Nov-2008

Tested by: Hewlett-Packard Company

Software Availability: Jun-2008



### Hardware

CPU Name: AMD Opteron 8384  
 CPU Characteristics:  
 CPU MHz: 2700  
 FPU: Integrated  
 CPU(s) enabled: 16 cores, 4 chips, 4 cores/chip  
 CPU(s) orderable: 2,4 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: 64 GB (16x4 GB, PC2-6400P CL5)  
 Disk Subsystem: 1x146 GB 10 K SAS  
 Other Hardware: None

### Software

Operating System: Red Hat Enterprise Linux Server release 5.2, Kernel 2.6.18-92.el5  
 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 2.18  
 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	16	<b>681</b>	<b>230</b>	685	228	679	230	16	518	302	<b>517</b>	<b>302</b>	516	303
401.bzip2	16	844	183	<b>844</b>	<b>183</b>	845	183	16	<b>780</b>	<b>198</b>	779	198	783	197
403.gcc	16	1113	116	1108	116	<b>1112</b>	<b>116</b>	16	666	193	<b>666</b>	<b>193</b>	666	194
429.mcf	16	<b>1094</b>	<b>133</b>	1092	134	1095	133	16	675	216	682	214	<b>680</b>	<b>214</b>
445.gobmk	16	783	214	783	214	<b>783</b>	<b>214</b>	16	611	275	<b>611</b>	<b>275</b>	611	275
456.hammer	16	509	293	<b>509</b>	<b>293</b>	515	290	16	313	477	<b>313</b>	<b>477</b>	314	475
458.sjeng	16	861	225	<b>861</b>	<b>225</b>	862	225	16	764	253	<b>765</b>	<b>253</b>	766	253
462.libquantum	16	<b>1162</b>	<b>285</b>	1160	286	1166	284	16	<b>1162</b>	<b>285</b>	1160	286	1166	284
464.h264ref	16	955	371	939	377	<b>948</b>	<b>373</b>	16	910	389	<b>912</b>	<b>388</b>	912	388
471.omnetpp	16	<b>710</b>	<b>141</b>	710	141	711	141	16	<b>710</b>	<b>141</b>	710	141	711	141
473.astar	16	<b>716</b>	<b>157</b>	714	157	728	154	16	655	171	<b>657</b>	<b>171</b>	657	171
483.xalancbmk	16	<b>576</b>	<b>192</b>	576	192	576	192	16	454	243	453	243	<b>454</b>	<b>243</b>

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 14336.  
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.hmmer: -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: basepeak = yes

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: -Mpfi(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 -lsmarheap

## Peak Other Flags

C benchmarks:

456.hmmer: -Mipa=jobs:4

462.libquantum: -Mipa=jobs:4

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## Peak Other Flags (Continued)

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/amd-platform-amd909gh.20090710.html>

[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)

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

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

[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)

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