SPEC® CINT2006 Result

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Hewlett-Packard Company

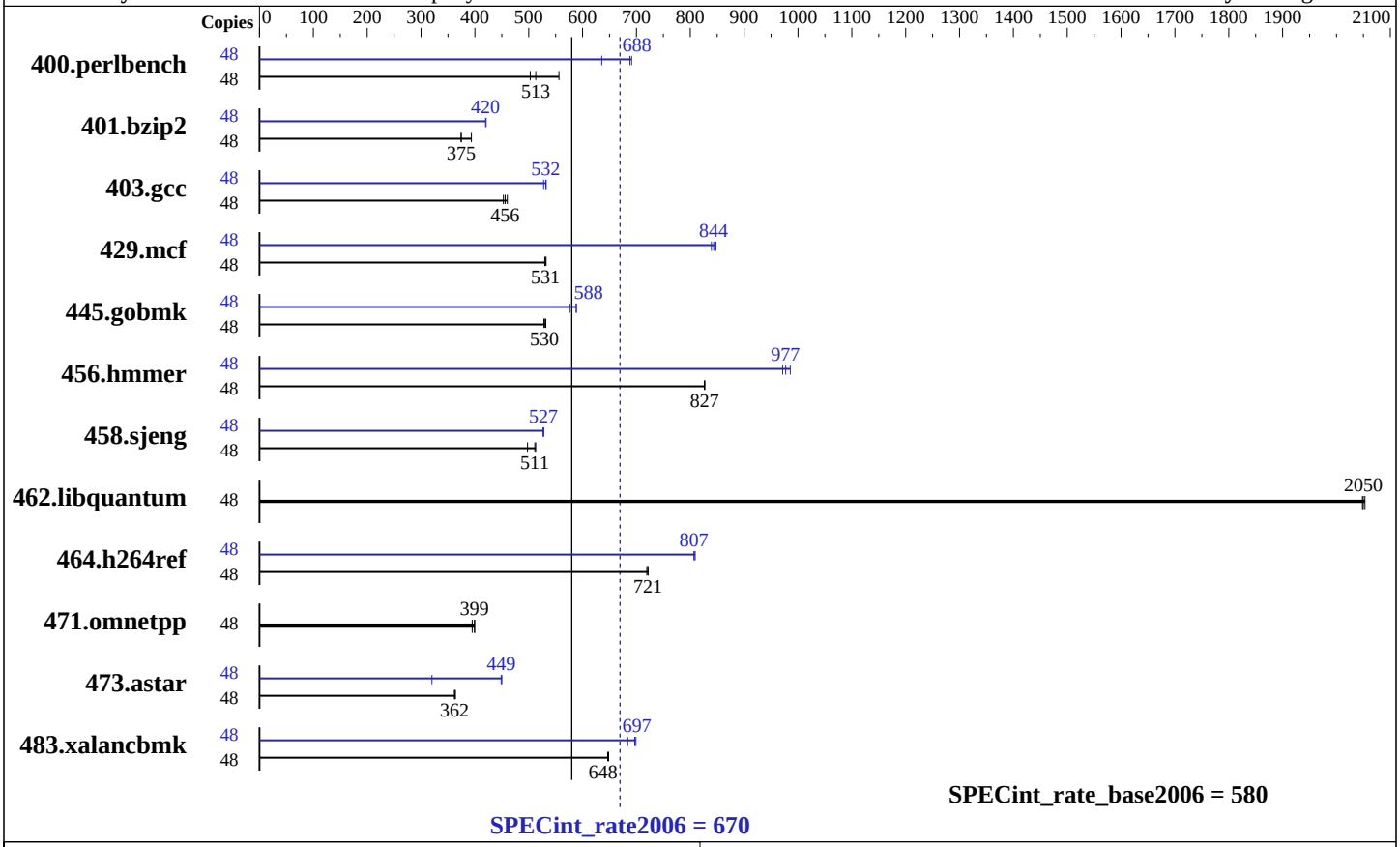
ProLiant DL585 G7
(1.8 GHz AMD Opteron 6166 HE)

SPECint®_rate2006 = 670

SPECint_rate_base2006 = 580

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Test date: May-2011
Hardware Availability: Feb-2011
Software Availability: Aug-2010



Hardware

CPU Name:	AMD Opteron 6166 HE
CPU Characteristics:	
CPU MHz:	1800
FPU:	Integrated
CPU(s) enabled:	48 cores, 4 chips, 12 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:	12 MB I+D on chip per chip, 6 MB shared / 6 cores
Other Cache:	None
Memory:	128 GB (32 x 4 GB 2Rx4 PC3-10600R-9, ECC)
Disk Subsystem:	2 x 146 GB 10 K SAS
Other Hardware:	None

Software

Operating System:	SUSE Linux Enterprise Server 11 (x86_64) SP1, Kernel 2.6.32.12-0.7-default
Compiler:	x86 Open64 4.2.4 Compiler Suite (from AMD)
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:	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	48	843	556	933	503	**914**	**513**	48	738	636	679	691	**682**	**688**
401.bzip2	48	1177	394	1237	374	**1236**	**375**	48	1126	411	1100	421	**1103**	**420**
403.gcc	48	853	453	**847**	**456**	840	460	48	732	528	726	532	**727**	**532**
429.mcf	48	826	530	823	532	**824**	**531**	48	**519**	**844**	516	848	522	839
445.gobmk	48	953	528	**951**	**530**	947	532	48	874	576	**856**	**588**	856	588
456.hmmer	48	542	826	**542**	**827**	542	827	48	**458**	**977**	454	986	461	972
458.sjeng	48	**1136**	**511**	1167	498	1132	513	48	**1101**	**527**	1103	527	1101	528
462.libquantum	48	486	2050	**485**	**2050**	484	2050	48	486	2050	**485**	**2050**	484	2050
464.h264ref	48	1477	719	**1473**	**721**	1472	722	48	**1316**	**807**	1316	807	1313	809
471.omnetpp	48	751	400	760	395	**751**	**399**	48	751	400	760	395	**751**	**399**
473.astar	48	**930**	**362**	930	362	926	364	48	**751**	**449**	749	450	1052	320
483.xalancbmk	48	511	648	**511**	**648**	512	647	48	484	684	474	699	**475**	**697**

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.
See the configuration file for details.
```

Operating System Notes

```
'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 2097152'  was used to set environment locked pages in memory limit

Set vm/nr_hugepages=21600 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
```

Platform Notes

```
BIOS Configuration:
  HP Power Profile set to Maximum Performance
  Thermal Configuration set to Increased Cooling
```

General Notes

```
Environment variables set by runspec before the start of the run:
HUGETLB_LIMIT = "450"
LD_LIBRARY_PATH = "/cpu2006/amd1002mc-rate-libs-revC/64:/cpu2006/amd1002mc-rate-libs-revC/32"

The x86 Open64 Compiler Suite is only available from (and supported by) AMD at
http://developer.amd.com/cpu/open64
```

Base Compiler Invocation

C benchmarks:
opencc

C++ benchmarks:
openCC

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:
-march=barcelona -mso -Ofast -CG:local_sched_alg=1
-INLINE:aggressive=on -IPA:plimit=8000 -IPA:small_pu=100
-HP:bdt=2m:heap=2m

C++ benchmarks:
-march=barcelona -mso -Ofast -m32 -INLINE:aggressive=on
-CG:cmp_peep=on -L/root/work/libraries/SmartHeap-8.1/lib -lsmartheap

Peak Compiler Invocation

C benchmarks:
opencc

C++ benchmarks:
openCC

Peak Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64

Continued on next page

Peak Portability Flags (Continued)

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: -march=barcelona -mso -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -IPA:plimit=20000 -LNO:opt=0
-OPT:unroll_times_max=8 -OPT:unroll_size=256
-OPT:unroll_level=2 -OPT:keep_ext=on -WOPT:if_conv=0
-CG:local_sched_alg=1 -CG:unroll_fb_req=on
-HP:bdt=2m:heap=2m

401.bzip2: -march=barcelona -mso -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -O3 -OPT:alias=disjoint
-OPT:goto=off -CG:local_sched_alg=1 -HP:bdt=2m:heap=2m

403.gcc: -march=barcelona -mso -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -LNO:trip_count=256
-LNO:prefetch_ahead=10 -CG:cmp_peep=on -m32
-HP:bdt=2m:heap=2m -GRA:unspill=on -IPA:small_pu=200

429.mcf: -march=barcelona -mso -O3 -ipa -INLINE:aggressive=on
-CG:gcm=off -GRA:prioritize_by_density=on -m32
-HP:bdt=2m:heap=2m

445.gobmk: -march=barcelona -mso -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -O3 -OPT:alias=restrict
-OPT:unroll_times_max=8 -OPT:unroll_size=256
-OPT:unroll_level=2 -OPT:keep_ext=on -ipa -IPA:plimit=750
-IPA:min_hotness=300 -IPA:pu_reorder=1 -LNO:prefetch=1
-LNO:ignore_feedback=off -CG:p2align=on
-CG:unroll_fb_req=on -HP:bdt=2m:heap=2m

456.hmmer: -march=barcelona -mso -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -LNO:prefetch=0
-OPT:alias=disjoint -OPT:unroll_times_max=8
-OPT:unroll_size=256 -OPT:unroll_level=2 -OPT:keep_ext=on
-CG:local_sched_alg=1 -CG:cflow=0
-CG:push_pop_int_saved_regs=off -CG:cmp_peep=on
-HP:bdt=2m:heap=2m

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Peak Optimization Flags (Continued)

458.sjeng: -march=barcelona -mso -fb_create fbdata(pass 1)
-fb_opt fbdata(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 -mso -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -O3 -IPA:plimit=20000
-OPT:alias=disjoint -LNO:prefetch=0 -CG:ptr_load_use=0
-CG:push_pop_int_saved_regs=off

C++ benchmarks:

471.omnetpp: basepeak = yes

473.astar: -march=barcelona -mso -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -TENV:frame_pointer=off
-WOPT:if_conv=0 -GRA:optimize_boundary=on
-OPT:alias=disjoint -INLINE:aggressive=on
-IPA:small_pu=3000 -IPA:plimit=3000 -m32
-HP:bdt=2m:heap=2m

483.xalancbmk: -march=barcelona -mso -Ofast -INLINE:aggressive=on -m32
-CG:cmp_peep=on -GRA:unspill=on -TENV:frame_pointer=off
-fno-emit-exceptions
-L/root/work/libraries/SmartHeap-8.1/lib -lsmartheap

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/hp-amd-linux-flags.20100330.html
http://www.spec.org/cpu2006/flags/x86-open64-424-flags-rate-revC.20100901.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/hp-amd-linux-flags.20100330.xml
http://www.spec.org/cpu2006/flags/x86-open64-424-flags-rate-revC.20100901.xml

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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