SPEC® CINT2006 Result

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Hewlett-Packard Company

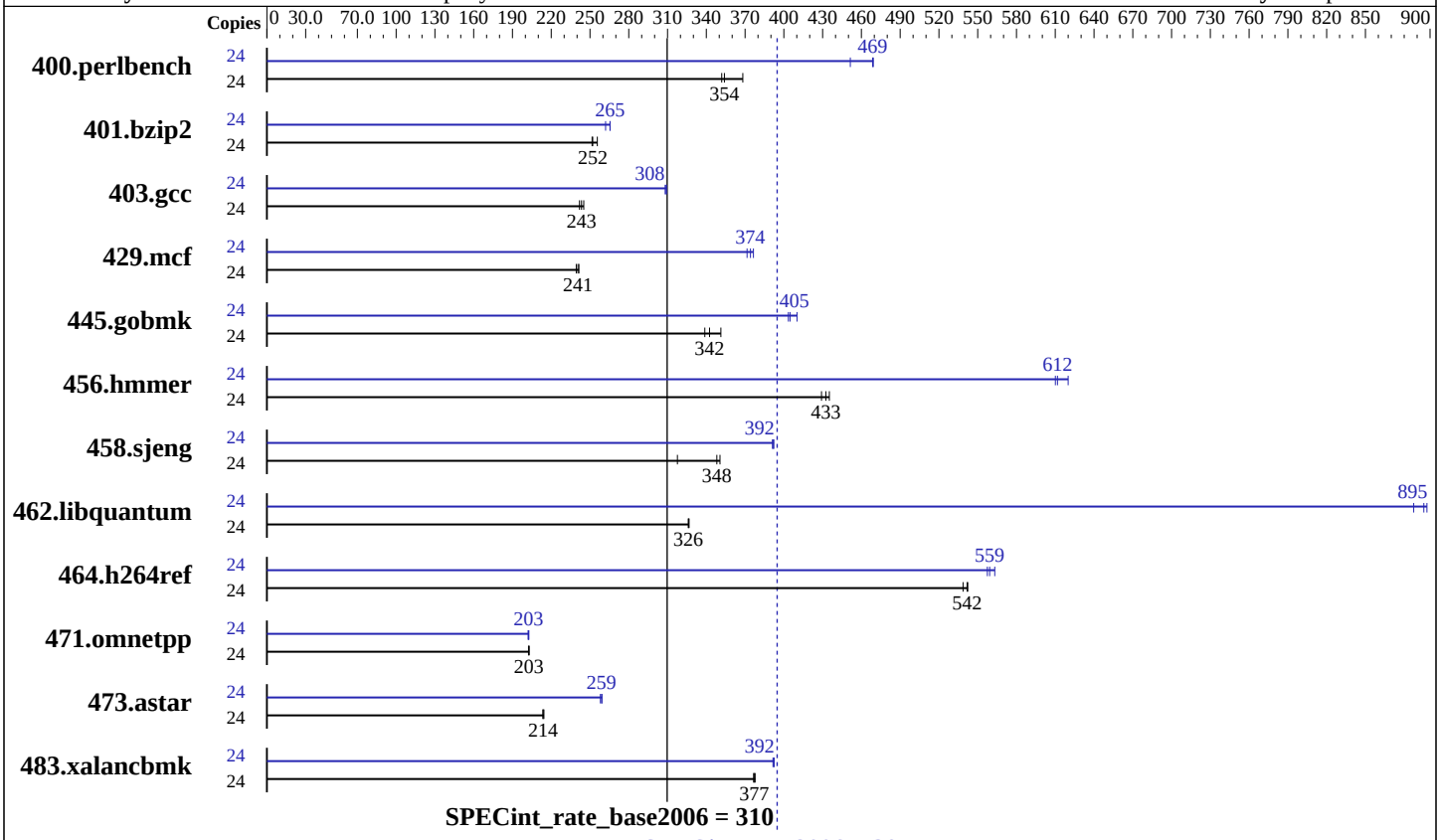
ProLiant BL685c G6
(2.6 GHz AMD Opteron 8435)

SPECint®_rate2006 = 395

SPECint_rate_base2006 = 310

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

Test date: May-2009
Hardware Availability: Jun-2009
Software Availability: Apr-2009



Hardware

CPU Name:	AMD Opteron 8435
CPU Characteristics:	
CPU MHz:	2600
FPU:	Integrated
CPU(s) enabled:	24 cores, 4 chips, 6 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:	2x146 GB 10 K SAS
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 5.3, Advanced Platform, Kernel 2.6.18-128.el5
Compiler:	PGI Server Complete Version 8.0 x86 Open64 4.2.2 Compiler Suite
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 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	24	637	368	666	352	**662**	**354**	24	519	451	**500**	**469**	500	469
401.bzip2	24	906	256	920	252	**919**	**252**	24	884	262	872	266	**872**	**265**
403.gcc	24	799	242	788	245	**794**	**243**	24	**626**	**308**	625	309	627	308
429.mcf	24	907	241	914	239	**909**	**241**	24	**585**	**374**	589	372	581	376
445.gobmk	24	743	339	717	351	**735**	**342**	24	**622**	**405**	614	410	624	403
456.hmmer	24	**518**	**433**	515	435	522	429	24	361	620	**366**	**612**	367	610
458.sjeng	24	914	318	828	351	**834**	**348**	24	**741**	**392**	742	391	740	392
462.libquantum	24	1522	327	**1525**	**326**	1525	326	24	**556**	**895**	560	887	554	898
464.h264ref	24	986	539	**980**	**542**	979	542	24	953	557	943	563	**950**	**559**
471.omnetpp	24	**740**	**203**	739	203	741	202	24	742	202	**741**	**203**	740	203
473.astar	24	786	214	**788**	**214**	789	214	24	653	258	650	259	**651**	**259**
483.xalancbmk	24	**439**	**377**	438	378	440	377	24	423	392	**422**	**392**	422	392

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
 The libhugetlbfs libraries were installed using the
 installation rpms that came with the distribution.

 Set vm/nr_hugepages=10800 in /etc/sysctl.conf
 mount -t hugetlbfs nodev /mnt/hugepages
```

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_LIMIT = "450"
LD_LIBRARY_PATH = "/cpu2006/amd0905is-libs/64:/cpu2006/amd0905is-libs/32"
PGI_HUGE_PAGES = "450"
```

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General Notes (Continued)

```
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 -Ofast -CG:local_sched_alg=1 -HP:bdt=2m:heap=2m

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

Peak Compiler Invocation

C benchmarks (except as noted below):
opencc

456.hmmer: pgcc

C++ benchmarks (except as noted below):
openCC

Continued on next page

Peak Compiler Invocation (Continued)

473.astar: pgcpp

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: -march=barcelona -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 -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -O3 -OPT:alias=disjoint
-OPT:unroll_size=0 -OPT:Ofast -OPT:goto=off
-INLINE:aggressive=on -CG:local_sched_alg=1 -m3dnow
-HP:bdt=2m:heap=2m

403.gcc: -march=barcelona -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

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

445.gobmk: -march=barcelona -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

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Peak Optimization Flags (Continued)

456.hmmer: -fastsse -Mvect=partial -Munroll=n:8 -Msmartalloc=huge
-Msafeptr -Mprefetch=t0 -Mfprelaxed -Mipa=const -Mipa=ptr
-Mipa=arg -Mipa=inline -tp shanghai-64 -Bstatic_pgi

458.sjeng: -march=barcelona -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
-HP:bdt=2m:heap=2m

462.libquantum: -march=barcelona -Ofast -LNO:pf2=0 -CG:gcm=off
-CG:use_prefetchnta=on -CG:cmp_peep=on -WOPT:aggstr=0
-HP:bdt=2m:heap=2m -OPT:alias=disjoint
-INLINE:aggressive=on -IPA:space=1000 -IPA:plimit=20000

464.h264ref: -march=barcelona -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 -HP:bdt=2m:heap=2m

C++ benchmarks:

471.omnetpp: -march=barcelona -Ofast -CG:gcm=off -INLINE:aggressive=on
-OPT:alias=disjoint -WOPT:if_conv=0 -m32
-L/root/work/libraries/SmartHeap-8.1/lib -lsmartheap

473.astar: -Mpfi(pass 1) -Mpfo(pass 2) -Mipa=fast(pass 2)
-Mipa=inline:6(pass 2) -fastsse -O4 -Msmartalloc=huge
-Msafeptr=global -Mfprelaxed --zc_eh -tp shanghai-32
-Bstatic_pgi

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

Peak Other Flags

C benchmarks:

456.hmmer: -Mipa=jobs:4

C++ benchmarks:

473.astar: -Mipa=jobs:4(pass 2)

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

http://www.spec.org/cpu2006/flags/amd-platform-amd909gh.20090710.00.html
http://www.spec.org/cpu2006/flags/pgi80_linux_flags.20090710.html
http://www.spec.org/cpu2006/flags/x86-open64-4.2.2-flags.html

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

http://www.spec.org/cpu2006/flags/amd-platform-amd909gh.20090710.00.xml
http://www.spec.org/cpu2006/flags/pgi80_linux_flags.20090710.xml
http://www.spec.org/cpu2006/flags/x86-open64-4.2.2-flags.xml

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