SPEC® CINT2006 Result

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Hewlett-Packard Company

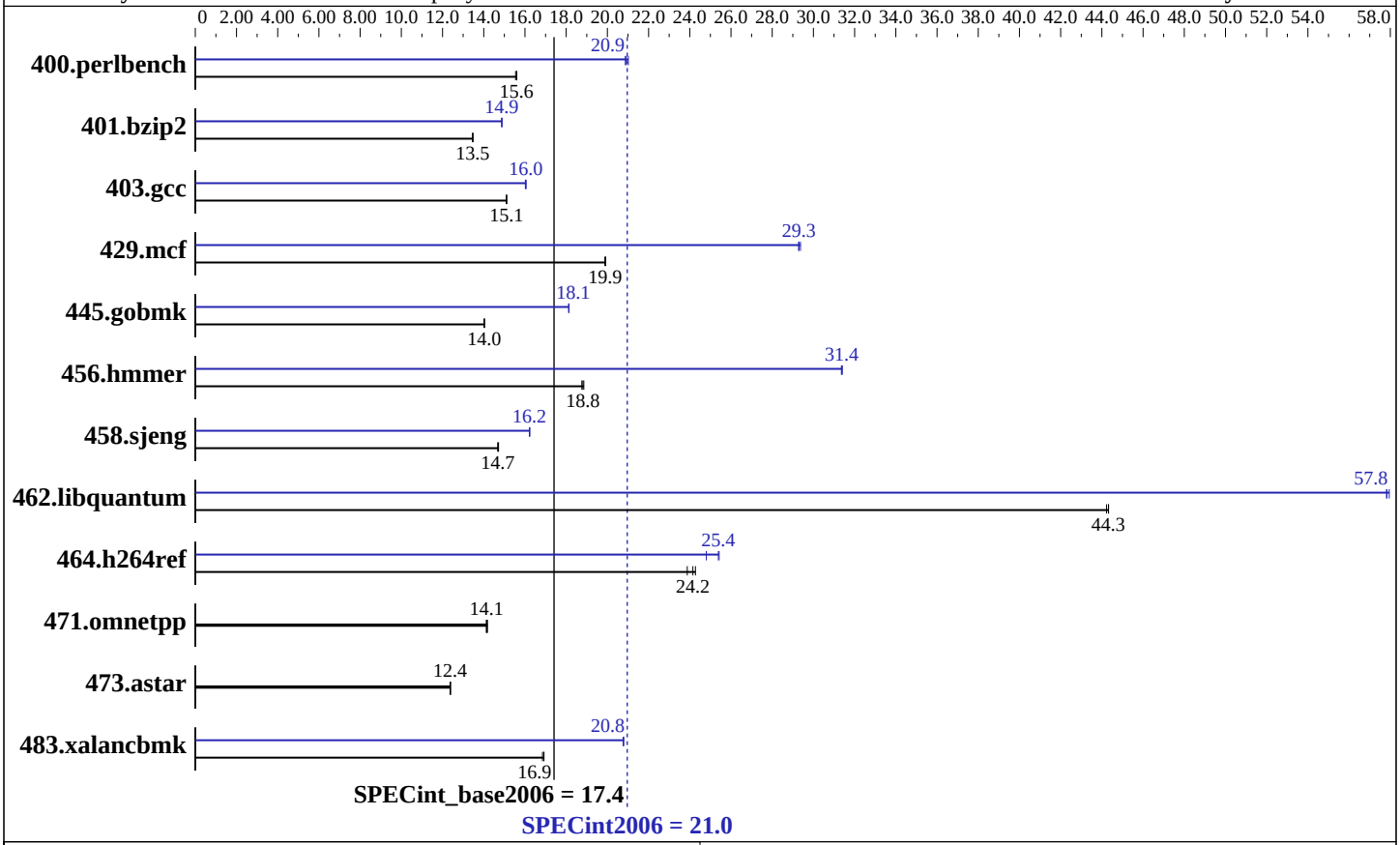
ProLiant DL165 G5
(2.7 GHz AMD Opteron 2384)

SPECint®2006 = 21.0

SPECint_base2006 = 17.4

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

Test date: Jan-2009
Hardware Availability: Nov-2008
Software Availability: Jun-2008



Hardware

CPU Name:	AMD Opteron 2384
CPU Characteristics:	
CPU MHz:	2700
FPU:	Integrated
CPU(s) enabled:	4 cores, 1 chip, 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:	16 GB (4x4 GB, PC2-6400P CL5)
Disk Subsystem:	1x72 GB 15K 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 2.18 32-bit and 64-bit libhugetlbfs libraries SmartHeap 8.1 32-bit Library for Linux

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Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	**626**	**15.6**	626	15.6	628	15.5	468	20.9	**467**	**20.9**	465	21.0
401.bzip2	**717**	**13.5**	716	13.5	717	13.5	649	14.9	**649**	**14.9**	648	14.9
403.gcc	533	15.1	533	15.1	**533**	**15.1**	**502**	**16.0**	503	16.0	501	16.1
429.mcf	458	19.9	459	19.9	**458**	**19.9**	311	29.3	310	29.4	**311**	**29.3**
445.gobmk	748	14.0	**748**	**14.0**	748	14.0	578	18.1	**579**	**18.1**	579	18.1
456.hmmer	497	18.8	**496**	**18.8**	495	18.9	298	31.4	297	31.4	**297**	**31.4**
458.sjeng	824	14.7	822	14.7	**824**	**14.7**	**746**	**16.2**	746	16.2	745	16.2
462.libquantum	468	44.2	**468**	**44.3**	467	44.3	**358**	**57.8**	358	57.9	358	57.8
464.h264ref	927	23.9	912	24.3	**916**	**24.2**	**872**	**25.4**	892	24.8	870	25.4
471.omnetpp	441	14.2	443	14.1	**442**	**14.1**	441	14.2	443	14.1	**442**	**14.1**
473.astar	567	12.4	568	12.4	**567**	**12.4**	567	12.4	568	12.4	**567**	**12.4**
483.xalancbmk	409	16.8	**408**	**16.9**	408	16.9	332	20.8	**332**	**20.8**	332	20.8

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 3584.
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"
```

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.hmmer: 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.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)
-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: `-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: `basepeak = yes`

483.xalancbmk: `-march=barcelona -Ofast -INLINE:aggressive=on -m32`
`-L/cpu2006/SmartHeap_8.1/lib -lsmartheap`

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`

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/pgi72_linux_flags.html`
`http://www.spec.org/cpu2006/flags/CPU2006_flags.20090710.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/pgi72_linux_flags.xml`
`http://www.spec.org/cpu2006/flags/CPU2006_flags.20090710.xml`
`http://www.spec.org/cpu2006/flags/amd-platform-amd909gh.20090710.xml`

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