SPEC® CINT2006 Result

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Dell Inc.

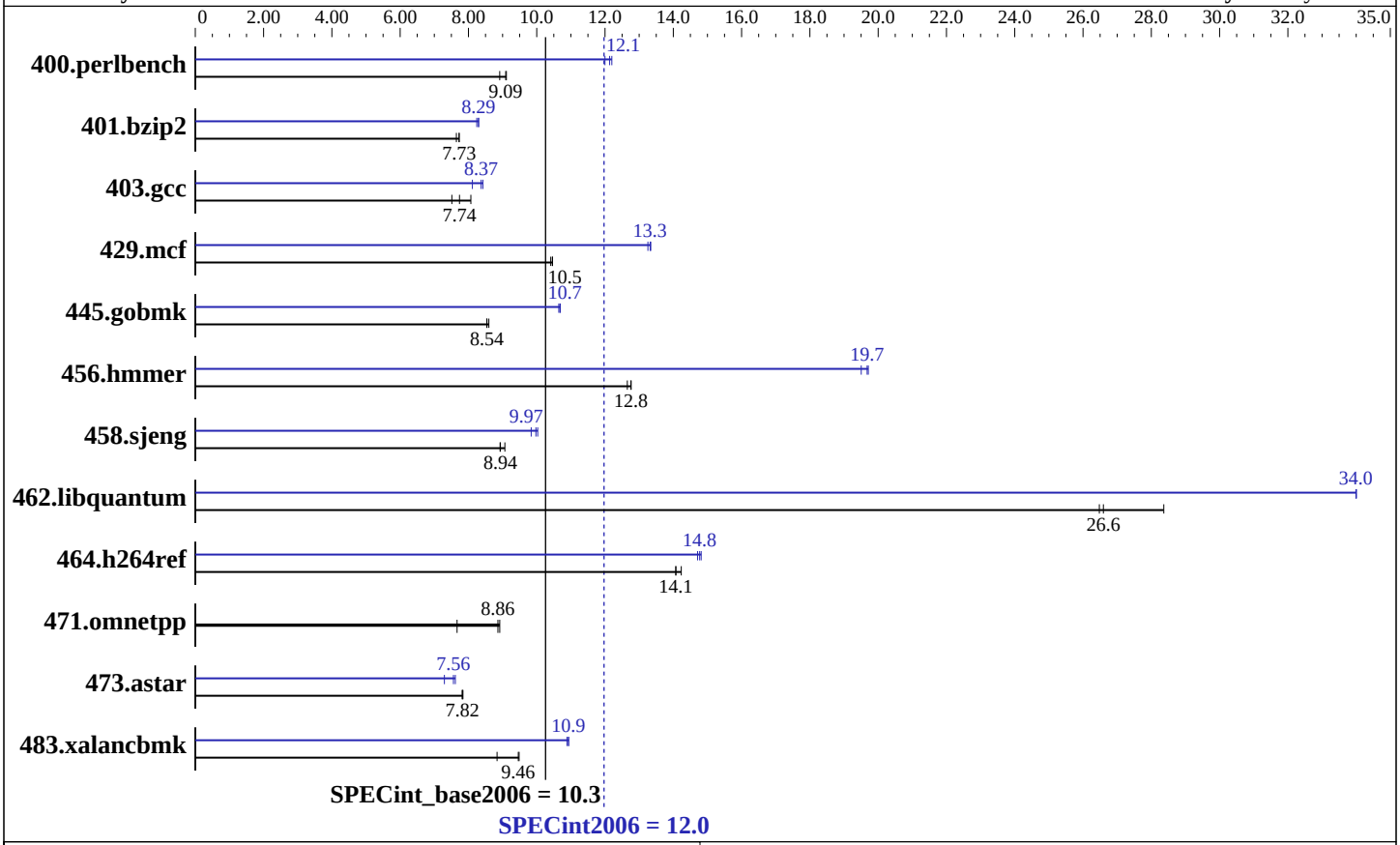
PowerEdge M905 (AMD Opteron 8347 HE, 1.9 GHz)

SPECint®2006 = 12.0

SPECint_base2006 = 10.3

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Jul-2008
Hardware Availability: Aug-2008
Software Availability: May-2008



Hardware

CPU Name:	AMD Opteron 8347 HE
CPU Characteristics:	
CPU MHz:	1900
FPU:	Integrated
CPU(s) enabled:	16 cores, 4 chips, 4 cores/chip
CPU(s) orderable:	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:	2 MB I+D on chip per chip
Other Cache:	None
Memory:	32 GB (16 x 2 GB, DDR2-667, CL5, Reg, Dual Rank)
Disk Subsystem:	1 x 36 GB SAS 15000 RPM (OS), 1 x 73 GB SAS 10000 RPM (CPU2006)
Other Hardware:	None

Software

Operating System:	SUSE Linux Enterprise Server 10 (x86_64) SP2, Kernel 2.6.16-60.0.21-smp
Compiler:	PGI Server Complete Version 7.2 PathScale Compiler Suite Version 3.1
Auto Parallel:	No
File System:	ReiserFS
System State:	Run level 3 (multi-user)
Base Pointers:	32/64-bit
Peak Pointers:	32/64-bit
Other Software:	SmartHeap 8.0 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	1072	9.11	1096	8.92	**1075**	**9.09**	814	12.0	**805**	**12.1**	801	12.2
401.bzip2	**1249**	**7.73**	1262	7.65	1249	7.73	**1163**	**8.29**	1171	8.24	1163	8.30
403.gcc	**1040**	**7.74**	1071	7.51	997	8.07	992	8.11	**962**	**8.37**	956	8.42
429.mcf	872	10.5	**872**	**10.5**	876	10.4	684	13.3	688	13.3	**685**	**13.3**
445.gobmk	**1228**	**8.54**	1220	8.60	1228	8.54	985	10.6	981	10.7	**982**	**10.7**
456.hmmer	731	12.8	**731**	**12.8**	737	12.7	473	19.7	478	19.5	**474**	**19.7**
458.sjeng	1335	9.07	1356	8.93	**1354**	**8.94**	1207	10.0	1230	9.84	**1213**	**9.97**
462.libquantum	783	26.5	**779**	**26.6**	730	28.4	**610**	**34.0**	609	34.0	610	34.0
464.h264ref	1572	14.1	**1572**	**14.1**	1555	14.2	**1498**	**14.8**	1504	14.7	1494	14.8
471.omnetpp	815	7.67	701	8.92	**705**	**8.86**	815	7.67	701	8.92	**705**	**8.86**
473.astar	898	7.82	**898**	**7.82**	896	7.84	922	7.62	**929**	**7.56**	962	7.30
483.xalancbmk	781	8.84	728	9.48	**729**	**9.46**	631	10.9	**631**	**10.9**	634	10.9

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

Operating System Notes

```
'numactl' was used to bind copies to the cores
Environment variable PGI_HUGE_PAGES set to 150
'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 4915200' was used to set environment locked pages in memory quantity
Set vm/nr_hugepages=2400 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
```

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`

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Base Portability Flags (Continued)

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:
`-fast -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:150 -tp barcelona-64 -Bstatic_pgi`

C++ benchmarks:
`-fastsse -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:150 --zc_eh -tp barcelona -Bstatic_pgi`

Base Other Flags

C benchmarks:
`-w -Mipa=jobs:4`

C++ benchmarks:
`-w -Mipa=jobs:4`

Peak Compiler Invocation

C benchmarks (except as noted below):
`pgcc`

400.perlbench: `pathcc`

403.gcc: `pathcc`

445.gobmk: `pathcc`

C++ benchmarks (except as noted below):
`pathCC`

471.omnetpp: `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
-WOPT:if_conv=0 -CG:local_sched_alg=1

401.bzip2: -Mpfi(pass 1) -Mpfo(pass 2) -fast -O4
-Msmartalloc=huge:150 -Mnounroll -tp barcelona-64
-Bstatic_pgi

403.gcc: -march=barcelona -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -m32 -O3 -OPT:Ofast

429.mcf: -fastsse -Mipa=fast -Mipa=inline:1 -Msmartalloc=huge:150
-tp barcelona -Bstatic_pgi

445.gobmk: -march=barcelona -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -O3 -OPT:alias=restrict -LNO:opt=0
-CG:p2align=on

456.hmmer: -fastsse -Munroll=n:8 -Msmartalloc=huge:150 -Mfprelaxed
-Mvect=partial -Msafeptr -Mipa=const -Mipa=ptr -Mipa=arg
-Mipa=inline -tp barcelona-64 -Bstatic_pgi

458.sjeng: -Mpfi(pass 1) -Mipa=fast(pass 2) -Mipa=inline:1(pass 2)
-Mipa=noarg(pass 2) -Mpfo(pass 2) -fastsse
-Msmartalloc=huge:150 -Mfprelaxed -tp barcelona-64
-Bstatic_pgi

462.libquantum: -fastsse -Mfprelaxed -Msmartalloc=huge:150 -Munroll=m:8
-Mipa=fast -Mipa=inline -Mipa=noarg -tp barcelona-64
-Bstatic_pgi

464.h264ref: -Mpfi=indirect(pass 1) -Mipa=fast(pass 2)
-Mipa=inline(pass 2) -Mpfo=indirect(pass 2) -fastsse
-Msmartalloc=huge:150 -Mfprelaxed -tp barcelona-64
-Bstatic_pgi

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Peak Optimization Flags (Continued)

C++ benchmarks:

471.omnetpp: `basepeak = yes`

473.astar: `-march=barcelona -Ofast -TENV:frame_pointer=off -WOPT:if_conv=0 -GRA:optimize_boundary=on -IPA:plimit=525 -m32 -lsmartheap`

483.xalancbmk: `-march=barcelona -Ofast -m32 -OPT:unroll_times_max=8 -CG:push_pop_int_saved_regs=off -CG:ptr_load_use=0 -lsmartheap`

Peak Other Flags

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

400.perlbench: `No flags used`

401.bzip2: `-w`

403.gcc: `No flags used`

445.gobmk: `No flags used`

C++ benchmarks (except as noted below):
`-L/root/work/cpu2006/amd123GH.libs/32`

471.omnetpp: `-w -Mipa=jobs:4`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/amd123GH-flags.20090713.01.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/amd123GH-flags.20090713.01.xml`

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For other inquiries, please contact webmaster@spec.org.

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