SPEC® CINT2006 Result

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Dell Inc.

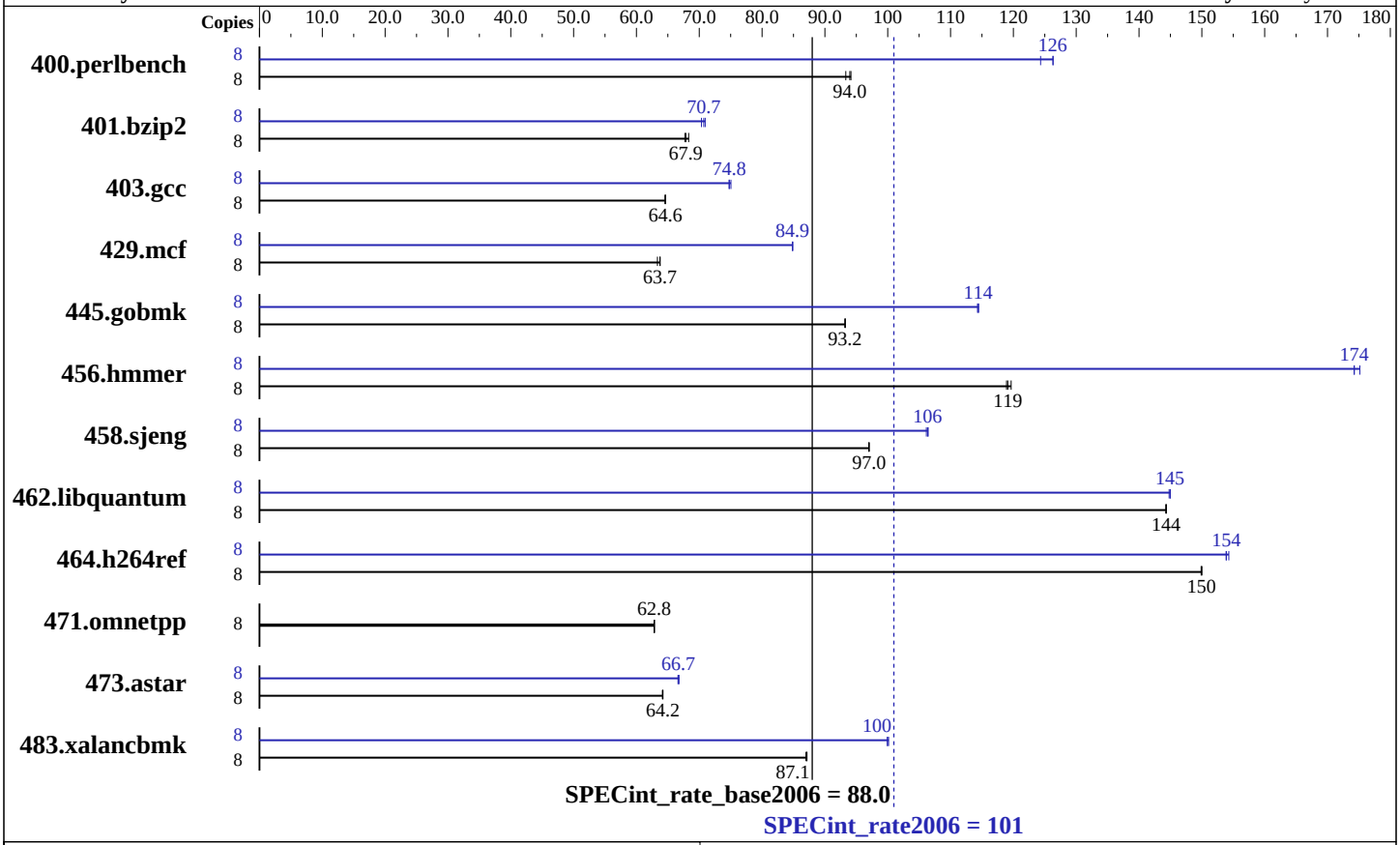
PowerEdge R805 (AMD Opteron 2356, 2.30 GHz)

SPECint®_rate2006 = 101

SPECint_rate_base2006 = 88.0

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

Test date: Mar-2008
Hardware Availability: Apr-2008
Software Availability: May-2008



Hardware

CPU Name:	AMD Opteron 2356
CPU Characteristics:	
CPU MHz:	2300
FPU:	Integrated
CPU(s) enabled:	8 cores, 2 chips, 4 cores/chip
CPU(s) orderable:	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:	2 MB I+D on chip per chip
Other Cache:	None
Memory:	16 GB (8x2GB, DDR2-667, CL5, Reg, Dual Rank)
Disk Subsystem:	1x73GB SAS, 10000 RPM
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 3.1
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						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	8	838	93.3	**832**	**94.0**	830	94.1	8	629	124	**619**	**126**	619	126
401.bzip2	8	1130	68.3	**1137**	**67.9**	1140	67.7	8	1097	70.3	1088	70.9	**1092**	**70.7**
403.gcc	8	998	64.6	**997**	**64.6**	996	64.6	8	**861**	**74.8**	862	74.7	858	75.0
429.mcf	8	1152	63.3	1144	63.8	**1145**	**63.7**	8	860	84.8	860	84.9	**860**	**84.9**
445.gobmk	8	900	93.2	**900**	**93.2**	900	93.2	8	733	114	734	114	**734**	**114**
456.hmmer	8	**627**	**119**	624	120	628	119	8	428	174	426	175	**428**	**174**
458.sjeng	8	**998**	**97.0**	998	97.0	997	97.0	8	912	106	**910**	**106**	909	106
462.libquantum	8	1149	144	**1149**	**144**	1148	144	8	**1144**	**145**	1145	145	1143	145
464.h264ref	8	**1180**	**150**	1180	150	1181	150	8	**1150**	**154**	1151	154	1147	154
471.omnetpp	8	**796**	**62.8**	796	62.8	795	62.9	8	**796**	**62.8**	796	62.8	795	62.9
473.astar	8	875	64.2	876	64.1	**875**	**64.2**	8	843	66.6	**842**	**66.7**	841	66.8
483.xalancbmk	8	633	87.1	**634**	**87.1**	635	87.0	8	552	99.9	551	100	**552**	**100**

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

Operating System Notes

```
'ulimit -s unlimited' was used to set environment stack size
'ulimit -l  2457600'  was used to set environment locked pages in memory quantity
Environment variable PGI_HUGE_PAGES set to 150
Set vm/nr_hugepages=1200 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
numactl used to bind copies to the cores
```

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=jobs:4 -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:150 -tp barcelona-64 -Bstatic_pgi`

C++ benchmarks:
`-fastsse -Mipa=jobs:4 -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:150 --zc_eh -tp barcelona -Bstatic_pgi`

Base Other Flags

C benchmarks:
`-w`

C++ benchmarks:
`-w`

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=jobs:4 -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=jobs:4 -Mipa=const
-Mipa=ptr -Mipa=arg -Mipa=inline -tp barcelona-64
-Bstatic_pgi

458.sjeng: -Mpfi(pass 1) -Mipa=jobs:4(pass 2) -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=jobs:4 -Mipa=fast -Mipa=inline -Mipa=noarg
-tp barcelona-64 -Bstatic_pgi

464.h264ref: -Mpfi=indirect(pass 1) -Mipa=jobs:4(pass 2)
-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

400.perlbench: No flags used

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

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/amd123GH-flags.20090714.00.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/amd123GH-flags.20090714.00.xml

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

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