SPEC® CINT2006 Result

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Dell Inc.

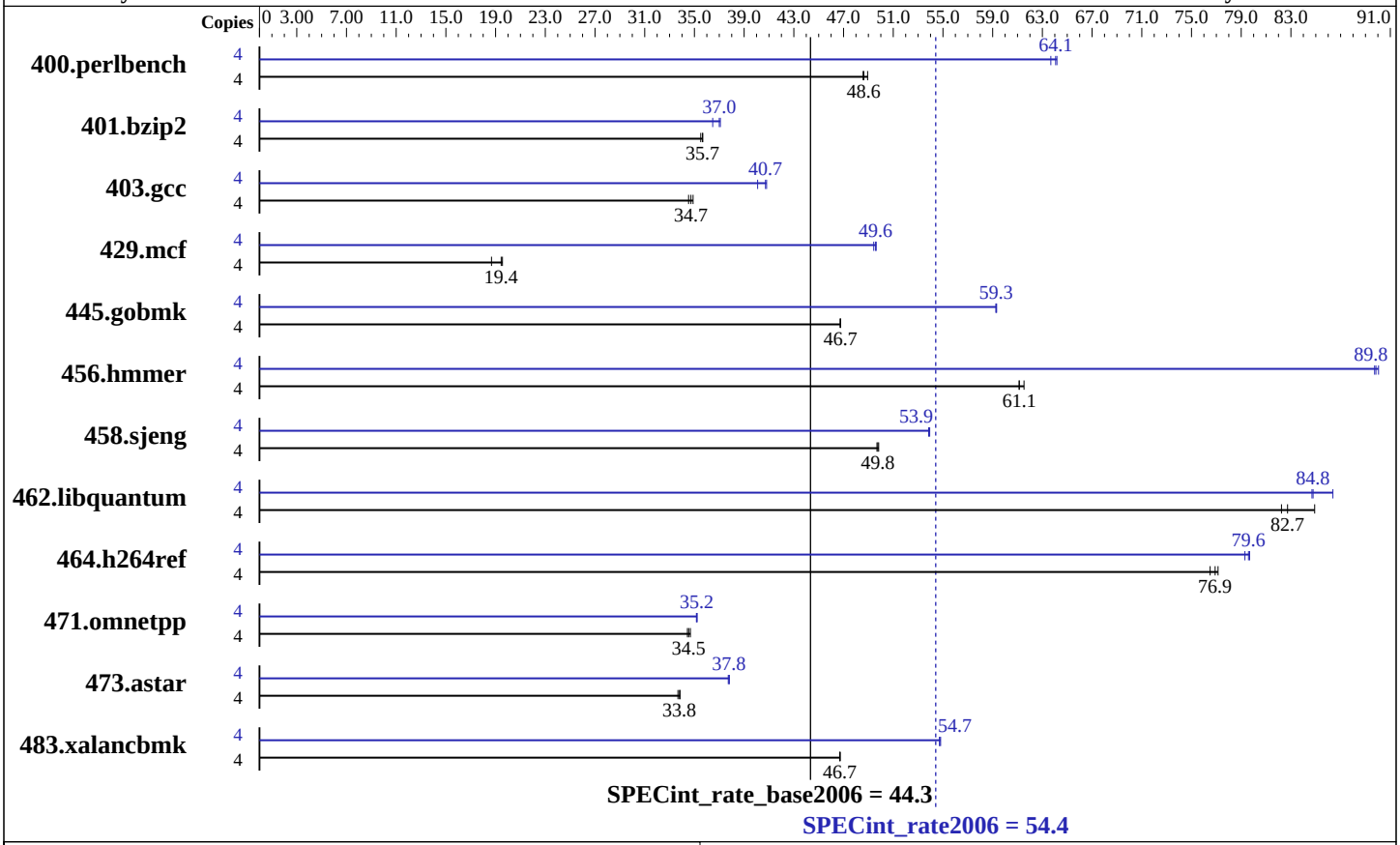
PowerEdge T105 (AMD Opteron 1356, 2.3 GHz)

SPECint®_rate2006 = 54.4

SPECint_rate_base2006 = 44.3

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

Test date: Jun-2008
Hardware Availability: May-2008
Software Availability: Jun-2008



Hardware

CPU Name:	AMD Opteron 1356
CPU Characteristics:	
CPU MHz:	2300
FPU:	Integrated
CPU(s) enabled:	4 cores, 1 chip, 4 cores/chip
CPU(s) orderable:	1 chip
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:	8 GB (4 x 2GB 800 MHz DDR2)
Disk Subsystem:	2 x 250GB SATA, 7200 RPM (RAID-0)
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:	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	4	799	48.9	805	48.6	**804**	**48.6**	4	614	63.7	609	64.2	**610**	**64.1**
401.bzip2	4	1082	35.7	1087	35.5	**1083**	**35.7**	4	1058	36.5	1041	37.1	**1043**	**37.0**
403.gcc	4	**927**	**34.7**	923	34.9	932	34.5	4	803	40.1	**791**	**40.7**	789	40.8
429.mcf	4	**1876**	**19.4**	1954	18.7	1866	19.6	4	738	49.4	**736**	**49.6**	735	49.6
445.gobmk	4	898	46.7	898	46.8	**898**	**46.7**	4	707	59.3	**708**	**59.3**	708	59.3
456.hmmer	4	**610**	**61.1**	607	61.5	611	61.1	4	416	89.7	**415**	**89.8**	414	90.0
458.sjeng	4	971	49.8	**973**	**49.8**	974	49.7	4	899	53.8	897	53.9	**898**	**53.9**
462.libquantum	4	976	84.9	**1002**	**82.7**	1008	82.2	4	**978**	**84.8**	959	86.4	979	84.7
464.h264ref	4	1157	76.5	1148	77.1	**1151**	**76.9**	4	**1112**	**79.6**	1116	79.3	1111	79.7
471.omnetpp	4	721	34.7	726	34.4	**724**	**34.5**	4	**710**	**35.2**	710	35.2	711	35.2
473.astar	4	830	33.8	834	33.7	**831**	**33.8**	4	744	37.7	743	37.8	**743**	**37.8**
483.xalancbmk	4	**591**	**46.7**	591	46.7	591	46.7	4	504	54.8	504	54.7	**504**	**54.7**

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
mount -t hugetlbfs nodev /mnt/hugepages
'ulimit -l 1228800'  was used to set environment locked pages in memory limit
Set vm/nr_hugepages=600 in /etc/sysctl.conf
```

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`
471.omnetpp: `-DSPEC_CPU_LP64`
473.astar: `-DSPEC_CPU_LP64`
483.xalancbmk: `-DSPEC_CPU_LP64 -DSPEC_CPU_LINUX`

Base Optimization Flags

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

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

Base Other Flags

C benchmarks:
`-Mipa=jobs:4`

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

Peak Compiler Invocation

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

400.perlbench: `pathcc`

403.gcc: `pathcc`

445.gobmk: `pathcc`

464.h264ref: `pathcc`

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

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
473.astar: -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=indirect(pass 1) -Mpfo=indirect(pass 2) -fastsse -O4
-Msmartalloc=huge:150 -Mprefetch=t0 -Mnounroll
-tp barcelona-64 -Bstatic_pgi

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

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

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

456.hmmer: -fastsse -Mvect=partial -Munroll=n:8 -Msmartalloc=huge:150
-Msafeptr -Mprefetch=t0 -Mfprelaxed -Mipa=const -Mipa=ptr
-Mipa=arg -Mipa=inline -tp barcelona-64 -Bstatic_pgi

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

462.libquantum: -fastsse -Munroll=m:8 -Msmartalloc=huge:150
-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) -O3 -IPA:plimit=20000
-OPT:alias=disjoint -LNO:prefetch=0 -CG:ptr_load_use=0
-CG:push_pop_int_saved_regs=off

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Peak Optimization Flags (Continued)

C++ benchmarks:

471.omnetpp: `-march=barcelona -Ofast -CG:gcm=off -INLINE:aggressive=on -OPT:alias=disjoint -WOPT:if_conv=0 -m32 -lsmartheap`

473.astar: `-Mpfi`(pass 1) `-Mpfo`(pass 2) `-Mipa=fast`(pass 2) `-Mipa=inline:6`(pass 2) `-fastsse -O4 -Msmartalloc=huge:150 -Msafeptr=global -Mfprelaxed --zc_eh -tp barcelona -Bstatic_pgi`

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

Peak Other Flags

C benchmarks:

429.mcf: `-Mipa=jobs:4`

456.hmmer: `-Mipa=jobs:4`

458.sjeng: `-Mipa=jobs:4`(pass 2)

462.libquantum: `-Mipa=jobs:4`

C++ benchmarks (except as noted below):
`-L/root/work/cpu2006-amd421gh/amd421gh.libs/32`

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

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/amd421GH-flags.20090713.01.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/amd421GH-flags.20090713.01.xml`

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