SPEC® CINT2006 Result

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Dell Inc.

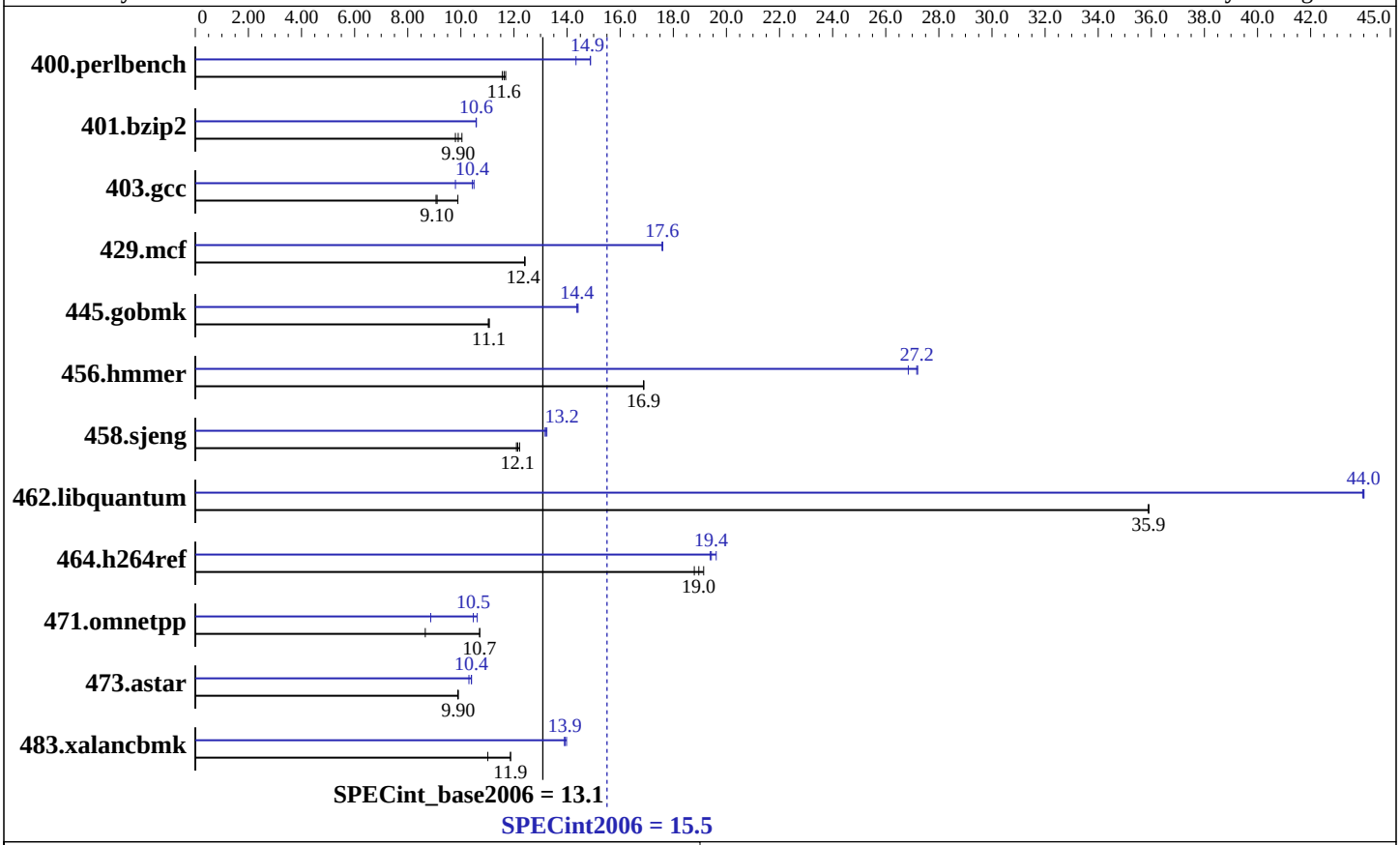
PowerEdge M905 (AMD Opteron 8360 SE, 2.50 GHz)

SPECint®2006 = 15.5

SPECint_base2006 = 13.1

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

Test date: Sep-2008
Hardware Availability: Oct-2008
Software Availability: Aug-2008



Hardware

CPU Name:	AMD Opteron 8360 SE
CPU Characteristics:	
CPU MHz:	2500
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 667 MHz CL5 DDR2 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 3.2
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 8.1 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	**840**	**11.6**	836	11.7	845	11.6	657	14.9	682	14.3	**657**	**14.9**
401.bzip2	**975**	**9.90**	961	10.0	985	9.79	912	10.6	**912**	**10.6**	913	10.6
403.gcc	**884**	**9.10**	888	9.07	814	9.89	**771**	**10.4**	822	9.80	767	10.5
429.mcf	**735**	**12.4**	735	12.4	734	12.4	518	17.6	519	17.6	**519**	**17.6**
445.gobmk	951	11.0	948	11.1	**948**	**11.1**	730	14.4	**729**	**14.4**	728	14.4
456.hmmer	552	16.9	**553**	**16.9**	553	16.9	343	27.2	348	26.8	**343**	**27.2**
458.sjeng	**997**	**12.1**	991	12.2	1001	12.1	914	13.2	**918**	**13.2**	918	13.2
462.libquantum	577	35.9	**577**	**35.9**	577	35.9	**471**	**44.0**	471	44.0	471	44.0
464.h264ref	1156	19.1	1178	18.8	**1167**	**19.0**	1128	19.6	1141	19.4	**1139**	**19.4**
471.omnetpp	**584**	**10.7**	584	10.7	722	8.66	705	8.87	**597**	**10.5**	589	10.6
473.astar	709	9.90	710	9.88	**709**	**9.90**	675	10.4	**675**	**10.4**	681	10.3
483.xalancbmk	**581**	**11.9**	626	11.0	581	11.9	**496**	**13.9**	494	14.0	496	13.9

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

```
 'ulimit -s unlimited' was used to set environment stack size
 'ulimit -l 4915200' was used to set environment locked pages in memory limit
 Environment variable PGI_HUGE_PAGES set to 896
 Set vm/nr_hugepages=3584 in /etc/sysctl.conf
 mount -t hugetlbfs nodev /mnt/hugepages
```

General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/root/cpu2006-1.1/amd729gh-libs:/root/cpu2006-1.1/amd729gh-libs/32:\$LD_LIBRARY_PATH"
```

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:
-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

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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
-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

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Peak Optimization Flags (Continued)

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`

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/libraries/SmartHeap-8.1/lib`

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/amd729gh-flags.html`
`http://www.spec.org/cpu2006/flags/amd-platform.20090713.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2006/flags/amd729gh-flags.xml`
`http://www.spec.org/cpu2006/flags/amd-platform.20090713.xml`

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