SPEC® CINT2006 Result

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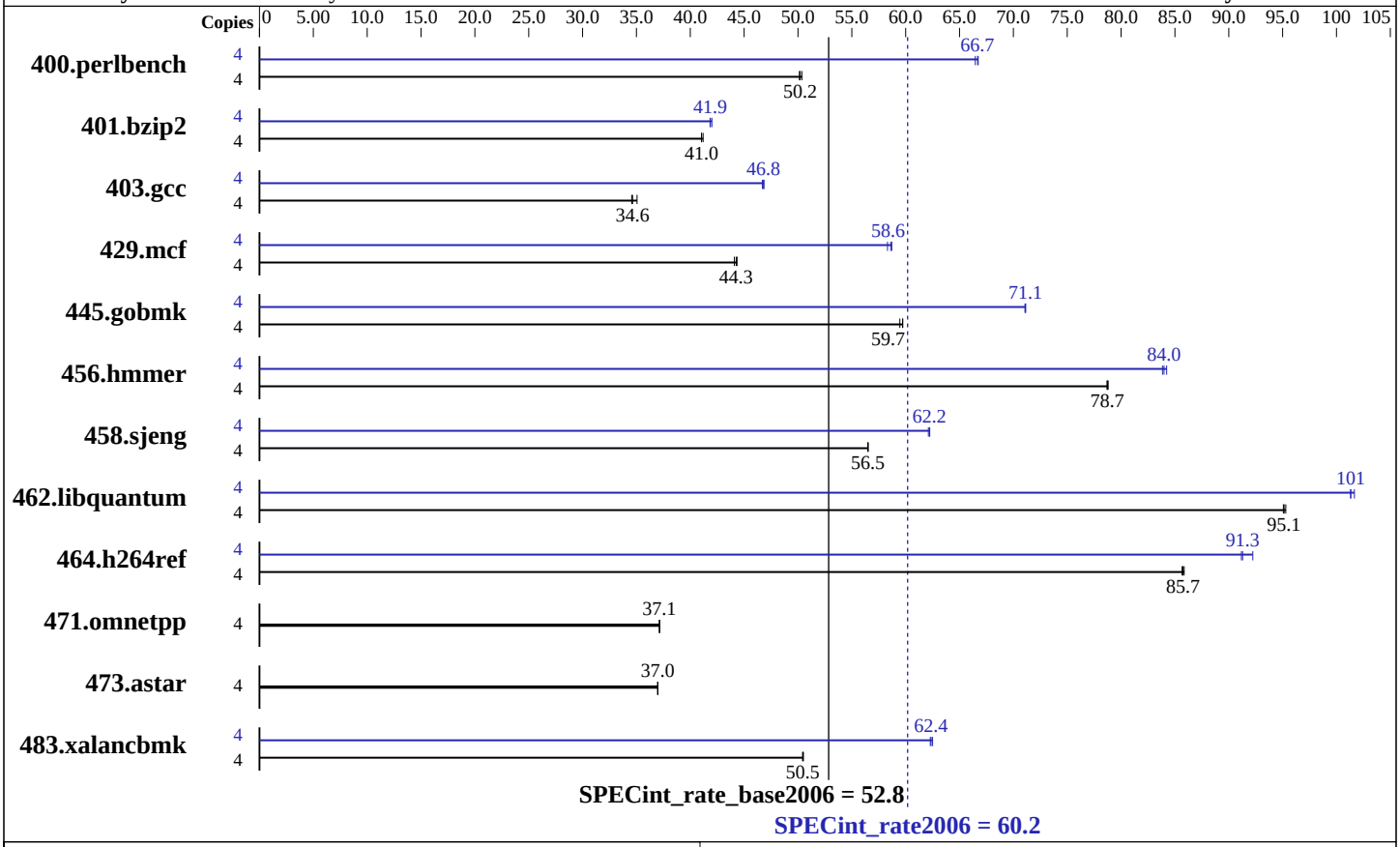
Sun Microsystems
Sun Fire X4140

SPECint®_rate2006 = 60.2

SPECint_rate_base2006 = 52.8

CPU2006 license: 6
Test sponsor: Sun Microsystems
Tested by: Sun Microsystems

Test date: Mar-2008
Hardware Availability: Apr-2008
Software Availability: Dec-2007



Hardware

CPU Name:	AMD Opteron 2222
CPU Characteristics:	
CPU MHz:	3000
FPU:	Integrated
CPU(s) enabled:	4 cores, 2 chips, 2 cores/chip
CPU(s) orderable:	1,2 chips
Primary Cache:	64 KB I + 64 KB D on chip per core
Secondary Cache:	1 MB I+D on chip per core
L3 Cache:	None
Other Cache:	None
Memory:	16 GB (8x2GB, DDR2-667 CL5 Reg Dual Rank)
Disk Subsystem:	SAS, 72 GB,10 K RPM
Other Hardware:	None

Software

Operating System:	SuSE Linux Enterprise Server 10 SP1 64-bit kernel
Compiler:	The Portland Group (PGI) PGI pgcc 7.1-3 C Compiler PGI pgCC 7.1-3 C++ Compiler The PathScale Compiler v3.0 PathScale pathcc 3.0 C Compiler PathScale pathCC 3.0 C++ Compiler
Auto Parallel:	No
File System:	ReiserFS
System State:	Multi-user, run level 3
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						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	4	776	50.4	**778**	**50.2**	780	50.1	4	586	66.7	588	66.5	**586**	**66.7**
401.bzip2	4	**940**	**41.0**	940	41.0	937	41.2	4	919	42.0	**922**	**41.9**	923	41.8
403.gcc	4	919	35.1	932	34.6	**930**	**34.6**	4	**688**	**46.8**	690	46.7	687	46.8
429.mcf	4	823	44.3	827	44.1	**824**	**44.3**	4	626	58.3	621	58.7	**622**	**58.6**
445.gobmk	4	706	59.5	**703**	**59.7**	703	59.7	4	**590**	**71.1**	590	71.1	590	71.1
456.hmmer	4	**474**	**78.7**	474	78.8	474	78.7	4	443	84.2	445	83.8	**444**	**84.0**
458.sjeng	4	**857**	**56.5**	857	56.5	857	56.5	4	**778**	**62.2**	779	62.1	778	62.2
462.libquantum	4	870	95.3	**871**	**95.1**	872	95.1	4	815	102	**818**	**101**	818	101
464.h264ref	4	1031	85.9	**1032**	**85.7**	1033	85.7	4	960	92.2	**970**	**91.3**	971	91.2
471.omnetpp	4	**673**	**37.1**	673	37.1	673	37.1	4	**673**	**37.1**	673	37.1	673	37.1
473.astar	4	759	37.0	760	37.0	**759**	**37.0**	4	759	37.0	760	37.0	**759**	**37.0**
483.xalancbmk	4	546	50.5	**547**	**50.5**	547	50.4	4	442	62.5	443	62.3	**443**	**62.4**

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

Operating System Notes

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

Platform Notes

```
Default BIOS configurations were used.
```

Base Compiler Invocation

C benchmarks:
pgcc

C++ benchmarks:
pgcpp

Base Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64

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Base Portability Flags (Continued)

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:
-fast -Mipa=fast -Mipa=inline -Mipa=noarg -Mfprelaxed
-Msmartalloc=huge:840 -tp k8-64 -Bstatic_pgi

C++ benchmarks:
-fastsse -Mipa=fast -Mipa=inline -Mfprelaxed -Msmartalloc=huge:448
--zc_eh -tp k8 -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

464.h264ref: pathcc

C++ benchmarks (except as noted below):
pgcpp

Continued on next page

Peak Compiler Invocation (Continued)

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: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -Ofast
-LNO:opt=0

401.bzip2: -Mpfi(pass 1) -Mpfo(pass 2) -fast -O4
-Msmartalloc=huge:448 -tp k8-64 -Bstatic_pgi

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

429.mcf: -fastsse -Mipa=fast -Mipa=inline:1 -Msmartalloc=huge:420
-tp k8 -Bstatic_pgi

445.gobmk: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -O3
-OPT:alias=disjoint -LNO:simd=0 -LNO:minvariant=off
-WOPT:retype_expr=on

456.hmmer: -fast -Msmartalloc=huge:448 -Mfprelaxed -Msafeptr
-Mipa=const -Mipa=ptr -Mipa=arg -tp k8-64 -Bstatic_pgi

458.sjeng: -Mpfi(pass 1) -Mipa=fast(pass 2) -Mipa=inline:1(pass 2)
-Mipa=noarg(pass 2) -Mpfo(pass 2) -fast
-Msmartalloc=huge:448 -Mfprelaxed -tp k8-64 -Bstatic_pgi

462.libquantum: -fast -Mfprelaxed -Msmartalloc=huge:448 -Munroll=m:4
-Mipa=fast -Mipa=inline -Mipa=noarg -Bstatic_pgi

464.h264ref: -fb_create fbdata(pass 1) -fb_opt fbdata(pass 2) -O3
-IPA:plimit=20000 -OPT:alias=disjoint -LNO:prefetch=0

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Peak Optimization Flags (Continued)

C++ benchmarks:

471.omnetpp: `basepeak = yes`

473.astar: `basepeak = yes`

483.xalancbmk: `-Ofast -m32 -OPT:unroll_times_max=8 -L/data1/SmartHeap_8.1/lib -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`

464.h264ref: `No flags used`

C++ benchmarks (except as noted below):
`-w`

483.xalancbmk: `No flags used`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/amd814GH-flags.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/amd814GH-flags.xml`

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

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