SPEC® CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Sun Microsystems

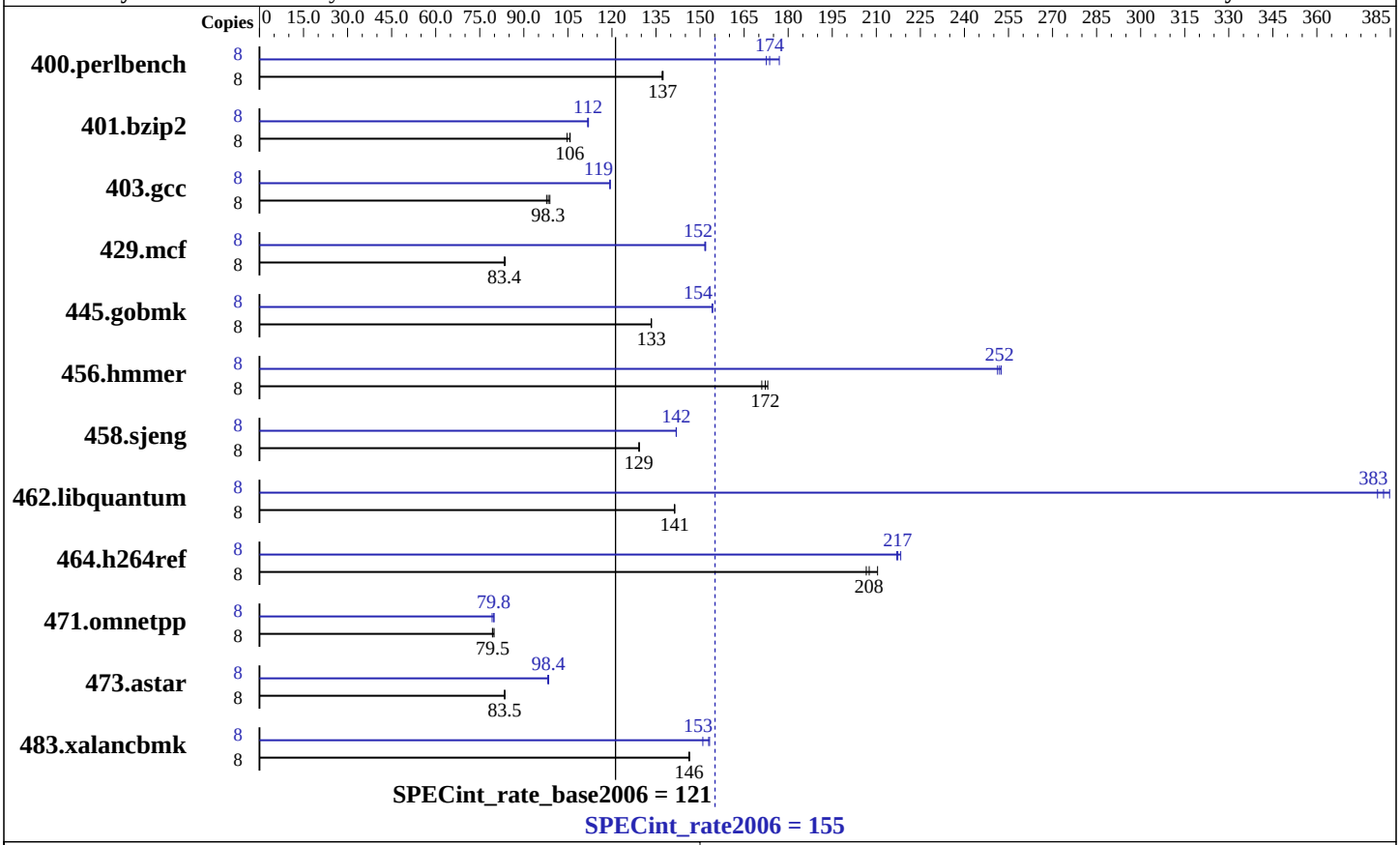
Sun Fire X4140 (AMD Opteron 2389 2.9GHz)

SPECint®_rate2006 = 155

SPECint_rate_base2006 = 121

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

Test date: Sep-2009
Hardware Availability: May-2009
Software Availability: Jul-2009



Hardware

CPU Name:	AMD Opteron 2389
CPU Characteristics:	
CPU MHz:	2900
FPU:	Integrated
CPU(s) enabled:	8 cores, 2 chips, 4 cores/chip
CPU(s) orderable:	1 or 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:	6 MB I+D on chip per chip
Other Cache:	None
Memory:	32 GB (8x4GB, DDR2-667, CL5, Reg, Dual Rank)
Disk Subsystem:	SAS, 72 GB,10 K RPM
Other Hardware:	See additional details below

Software

Operating System:	Red Hat Enterprise Linux Server release 5.3, Kernel 2.6.18-128.el5 for x86_64
Compiler:	PGI Server Complete Version 8.0 x86 Open64 4.2.2 Compiler Suite (from AMD)
Auto Parallel:	No
File System:	ReiserFS
System State:	Run level 3 (Full multiuser with network)
Base Pointers:	64-bit
Peak Pointers:	32/64-bit
Other Software:	binutils 2.18 SmartHeap 8.1 32-bit Library for Linux

SPEC CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

Sun Microsystems

Sun Fire X4140 (AMD Opteron 2389 2.9GHz)

SPECint_rate2006 = 155

SPECint_rate_base2006 = 121

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

Test date: Sep-2009
Hardware Availability: May-2009
Software Availability: Jul-2009

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	8	569	137	570	137	**569**	**137**	8	453	173	**450**	**174**	442	177
401.bzip2	8	730	106	737	105	**731**	**106**	8	691	112	689	112	**690**	**112**
403.gcc	8	651	98.9	**655**	**98.3**	659	97.7	8	**540**	**119**	540	119	539	119
429.mcf	8	872	83.7	**875**	**83.4**	876	83.3	8	481	152	**481**	**152**	480	152
445.gobmk	8	629	133	629	133	**629**	**133**	8	**544**	**154**	545	154	544	154
456.hmmer	8	436	171	431	173	**433**	**172**	8	297	251	296	253	**296**	**252**
458.sjeng	8	**749**	**129**	749	129	749	129	8	682	142	682	142	**682**	**142**
462.libquantum	8	**1173**	**141**	1172	141	1174	141	8	431	385	**433**	**383**	435	381
464.h264ref	8	857	207	**853**	**208**	841	210	8	811	218	**815**	**217**	816	217
471.omnetpp	8	626	79.9	630	79.3	**629**	**79.5**	8	626	79.9	631	79.2	**627**	**79.8**
473.astar	8	**673**	**83.5**	673	83.4	672	83.5	8	572	98.1	**571**	**98.4**	571	98.4
483.xalancbmk	8	377	146	**377**	**146**	378	146	8	366	151	360	153	**361**	**153**

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.
See the configuration file for details.
```

Operating System Notes

```
'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 2097152'  was used to set environment locked pages in memory limit

Set vm/nr_hugepages=7168 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
```

Platform Notes

```
   Default BIOS settings used except:
   DCT Unganged Mode set to "Always" to enable unganged mode.
```

General Notes

```
Environment variables set by runspec before the start of the run:
HUGETLB_LIMIT = "896"
LD_LIBRARY_PATH = "/data1/cpu2006v1.1/amd0905is-libs/64:/data1/cpu2006v1.1/amd0905is-libs/32"
PGI_HUGE_PAGES = "896"

The x86 Open64 Compiler Suite is only available from (and supported by) AMD at
<a href="http://developer.amd.com/cpu/open64">http://developer.amd.com/cpu/open64</a>.
```

Base Compiler Invocation

C benchmarks:
opencc

C++ benchmarks:
openCC

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:
-march=barcelona -Ofast -CG:local_sched_alg=1 -HP:bdt=2m:heap=2m

C++ benchmarks:
-march=barcelona -Ofast -m32 -INLINE:aggressive=on
-L/root/work/libraries/SmartHeap-8.1/lib -lsmartheap

Peak Compiler Invocation

C benchmarks (except as noted below):
opencc

456.hmmer: pgcc

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

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
-OPT:unroll_times_max=8 -OPT:unroll_size=256
-OPT:unroll_level=2 -OPT:keep_ext=on -WOPT:if_conv=0
-CG:local_sched_alg=1 -CG:unroll_fb_req=on
-HP:bdt=2m:heap=2m

401.bzip2: -march=barcelona -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -O3 -OPT:alias=disjoint
-OPT:unroll_size=0 -OPT:Ofast -OPT:goto=off
-INLINE:aggressive=on -CG:local_sched_alg=1 -m3dnow
-HP:bdt=2m:heap=2m

403.gcc: -march=barcelona -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -LNO:trip_count=256
-LNO:prefetch_ahead=10 -CG:cmp_peep=on -m32
-HP:bdt=2m:heap=2m -GRA:unspill=on

429.mcf: -march=barcelona -O3 -ipa -INLINE:aggressive=on
-CG:gcm=off -GRA:prioritize_by_density=on -m32
-HP:bdt=2m:heap=2m

445.gobmk: -march=barcelona -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -O3 -OPT:alias=restrict
-OPT:unroll_times_max=8 -OPT:unroll_size=256
-OPT:unroll_level=2 -OPT:keep_ext=on -ipa -IPA:plimit=750
-IPA:min_hotness=300 -IPA:pu_reorder=1 -LNO:prefetch=1
-LNO:ignore_feedback=off -CG:p2align=on
-CG:unroll_fb_req=on -HP:bdt=2m:heap=2m

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

Continued on next page

Peak Optimization Flags (Continued)

458.sjeng: `-march=barcelona -fb_create fbdata`(pass 1)
`-fb_opt fbdata`(pass 2) `-O3 -ipa -LNO:ignore_feedback=off`
`-LNO:full_unroll=10 -LNO:fusion=0 -LNO:fission=2`
`-IPA:pu_reorder=2 -CG:ptr_load_use=0`
`-OPT:unroll_times_max=8 -INLINE:aggressive=on`
`-HP:bdt=2m:heap=2m`

462.libquantum: `-march=barcelona -Ofast -LNO:pf2=0 -CG:gcm=off`
`-CG:use_prefetchnta=on -CG:cmp_peep=on -WOPT:aggstr=0`
`-HP:bdt=2m:heap=2m -OPT:alias=disjoint`
`-INLINE:aggressive=on -IPA:space=1000 -IPA:plimit=20000`

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 -HP:bdt=2m:heap=2m`

C++ benchmarks:

471.omnetpp: `-march=barcelona -Ofast -CG:gcm=off -INLINE:aggressive=on`
`-OPT:alias=disjoint -WOPT:if_conv=0 -m32`
`-L/root/work/libraries/SmartHeap-8.1/lib -lsmartheap`

473.astar: `-Mpfi`(pass 1) `-Mpfo`(pass 2) `-Mipa=fast`(pass 2)
`-Mipa=inline:6`(pass 2) `-fastsse -O4 -Msmartalloc=huge`
`-Msafeptr=global -Mfprelaxed --zc_eh -tp shanghai-32`
`-Bstatic_pgi`

483.xalancbmk: `-march=barcelona -Ofast -INLINE:aggressive=on -m32`
`-CG:cmp_peep=on -GRA:unspill=on -TENV:frame_pointer=off`
`-L/root/work/libraries/SmartHeap-8.1/lib -lsmartheap`

Peak Other Flags

C benchmarks:

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

C++ benchmarks:

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/amd-platform.20090929.html`
`http://www.spec.org/cpu2006/flags/pgi80_linux_flags.20090915.html`
`http://www.spec.org/cpu2006/flags/x86-open64-4.2.2-flags-revE.20090915.html`

You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2006/flags/amd-platform.20090929.xml
http://www.spec.org/cpu2006/flags/pgi80_linux_flags.20090915.xml
http://www.spec.org/cpu2006/flags/x86-open64-4.2.2-flags-revE.20090915.xml

SPEC and SPECint are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.1.
Report generated on Wed Jul 23 04:44:36 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 13 October 2009.