SPEC® CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

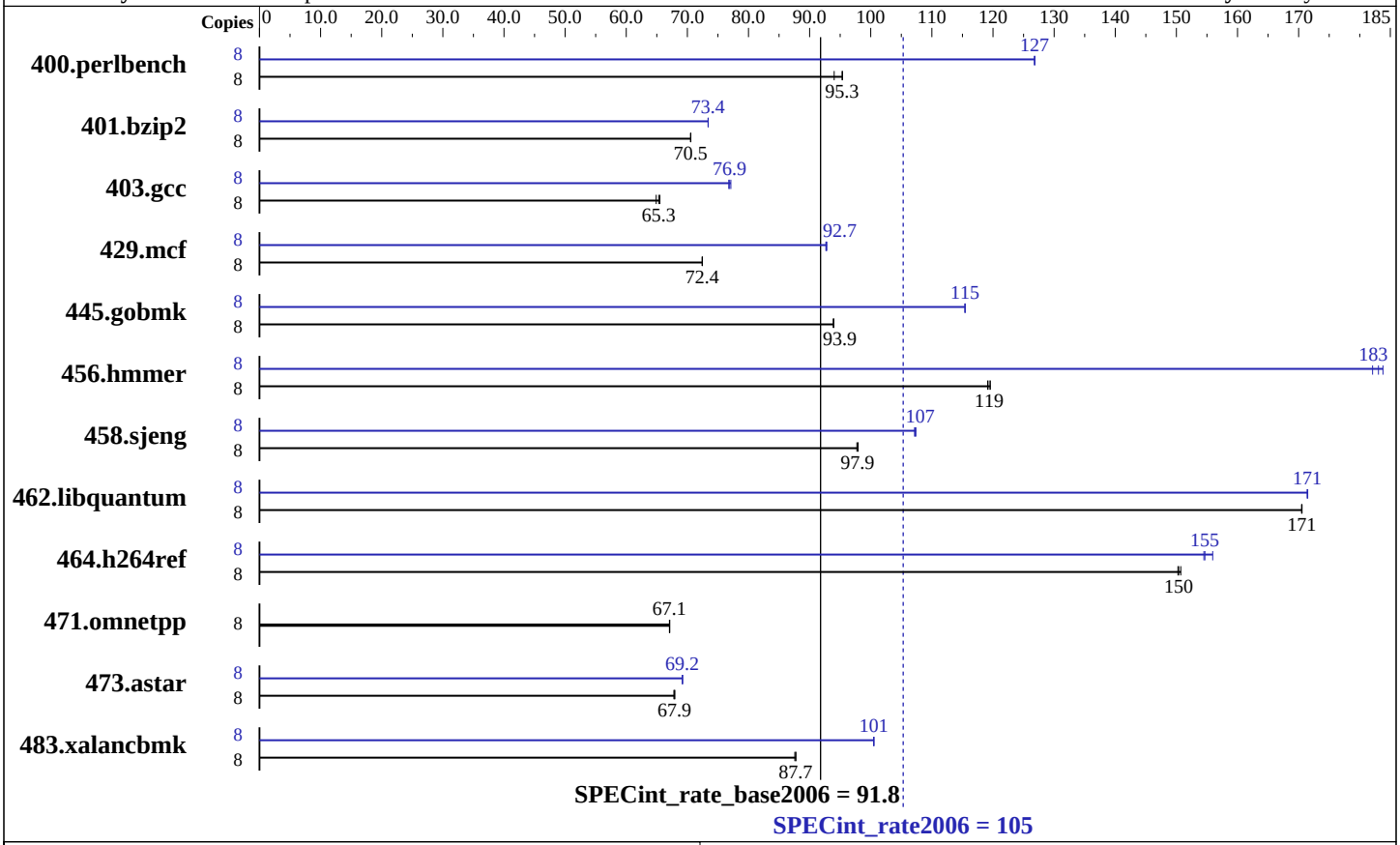
IBM BladeCenter LS22 (AMD Opteron 2356)

SPECint®_rate2006 = 105

SPECint_rate_base2006 = 91.8

CPU2006 license: 11
Test sponsor: IBM Corporation
Tested by: IBM Corporation

Test date: Jun-2008
Hardware Availability: Sep-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:	1,2 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:	32 GB (8 x 4 GB DDR2-6400 ECC)
Disk Subsystem:	1 x 73 GB 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:	Runlevel 3 (Full multiuser with network)
Base Pointers:	32/64-bit
Peak Pointers:	32/64-bit
Other Software:	SmartHeap 8.0 32-bit Library for Linux

SPEC CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM BladeCenter LS22 (AMD Opteron 2356)

SPECint_rate2006 = 105

SPECint_rate_base2006 = 91.8

CPU2006 license: 11
Test sponsor: IBM Corporation
Tested by: IBM Corporation

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

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	8	831	94.0	819	95.4	**820**	**95.3**	8	616	127	**616**	**127**	617	127
401.bzip2	8	1094	70.6	**1094**	**70.5**	1095	70.5	8	1052	73.4	1052	73.4	**1052**	**73.4**
403.gcc	8	983	65.5	**986**	**65.3**	992	64.9	8	**837**	**76.9**	835	77.1	839	76.8
429.mcf	8	1007	72.5	**1007**	**72.4**	1008	72.4	8	787	92.7	**787**	**92.7**	786	92.8
445.gobmk	8	**894**	**93.9**	893	94.0	894	93.9	8	727	115	**727**	**115**	727	115
456.hmmer	8	624	120	**625**	**119**	627	119	8	**408**	**183**	410	182	406	184
458.sjeng	8	991	97.7	988	97.9	**989**	**97.9**	8	903	107	**902**	**107**	901	107
462.libquantum	8	972	170	**972**	**171**	972	171	8	967	171	**967**	**171**	967	171
464.h264ref	8	**1177**	**150**	1175	151	1178	150	8	**1145**	**155**	1135	156	1146	154
471.omnetpp	8	745	67.1	746	67.1	**745**	**67.1**	8	745	67.1	746	67.1	**745**	**67.1**
473.astar	8	**827**	**67.9**	827	67.9	828	67.8	8	812	69.2	811	69.2	**812**	**69.2**
483.xalancbmk	8	**629**	**87.7**	629	87.7	630	87.6	8	549	101	**549**	**101**	549	100

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
'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 2457600'  was used to set environment locked pages in memory limit
Environment variable PGI_HUGE_PAGES set to 150
Set vm/nr_hugepages=1200 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages
Processor Performance States Disabled in BIOS
Memory ChipKill Disabled in BIOS
```

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

Continued on next page

Base Portability Flags (Continued)

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 -Mfprelaxed -Msmartalloc=huge:150
-tp barcelona-64 -Bstatic_pgi

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

Base Other Flags

C benchmarks:
-w -Mipa=jobs:4

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

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=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=const -Mipa=ptr -Mipa=arg
-Mipa=inline -tp barcelona-64 -Bstatic_pgi

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

464.h264ref: -Mpfi=indirect(pass 1) -Mipa=fast(pass 2)
-Mipa=inline(pass 2) -Mpfo=indirect(pass 2) -fastsse
-Msmartalloc=huge:150 -Mfprelaxed -tp barcelona-64
-Bstatic_pgi

Continued on next page

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 -Mipa=jobs:4`(pass 2)

400.perlbench: `No flags used`

401.bzip2: `-w`

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 -Mipa=jobs:4`

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

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/amd123GH-flags.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 v1.0.
Report generated on Tue Jul 22 19:45:45 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 8 July 2008.