SPEC® CINT2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

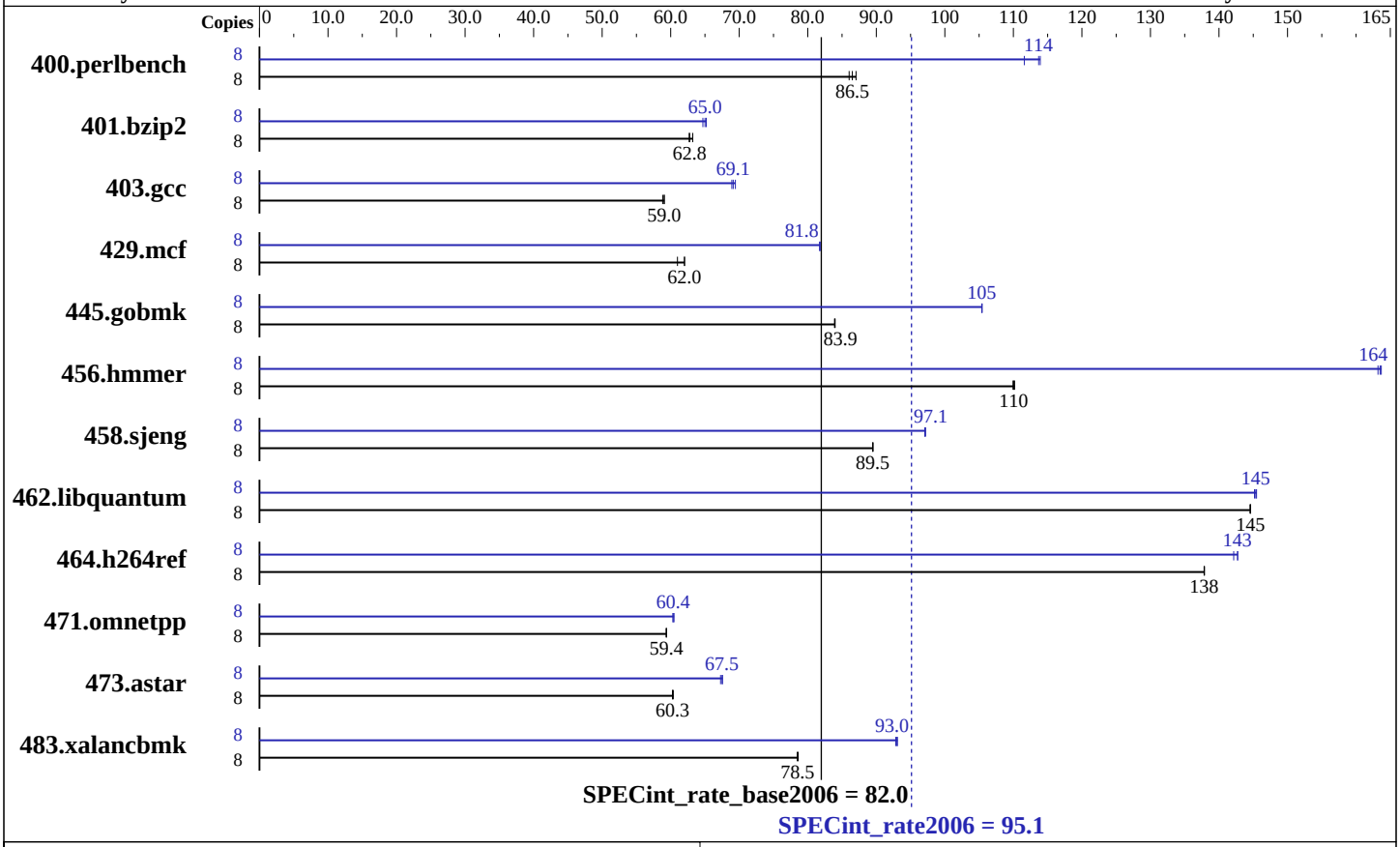
IBM System x3455 (AMD Opteron 2352)

SPECint®_rate2006 = 95.1

SPECint_rate_base2006 = 82.0

CPU2006 license: 11
Test sponsor: IBM Corporation
Tested by: Advanced Micro Devices

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



Hardware

CPU Name:	AMD Opteron 2352
CPU Characteristics:	
CPU MHz:	2100
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:	16 GB (8 x 2 GB, DDR2-667 CL5 Reg Dual Rank)
Disk Subsystem:	1 x 160 GB SATA, 7200 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 3.2
Auto Parallel:	No
File System:	ReiserFS
System State:	Run level 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 System x3455 (AMD Opteron 2352)

SPECint_rate2006 = 95.1

SPECint_rate_base2006 = 82.0

CPU2006 license: 11
Test sponsor: IBM Corporation
Tested by: Advanced Micro Devices

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

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	8	898	87.0	**904**	**86.5**	908	86.0	8	700	112	**688**	**114**	686	114
401.bzip2	8	1221	63.2	1231	62.7	**1230**	**62.8**	8	1193	64.7	**1188**	**65.0**	1184	65.2
403.gcc	8	1090	59.1	1095	58.8	**1091**	**59.0**	8	927	69.4	**932**	**69.1**	934	68.9
429.mcf	8	1196	61.0	1176	62.0	**1177**	**62.0**	8	893	81.7	**892**	**81.8**	892	81.8
445.gobmk	8	**1000**	**83.9**	1000	83.9	999	84.0	8	796	105	796	105	**796**	**105**
456.hmmer	8	679	110	677	110	**678**	**110**	8	456	164	**456**	**164**	457	163
458.sjeng	8	1081	89.5	**1082**	**89.5**	1082	89.5	8	996	97.2	**997**	**97.1**	997	97.1
462.libquantum	8	**1146**	**145**	1147	145	1146	145	8	1139	145	**1140**	**145**	1142	145
464.h264ref	8	1285	138	**1284**	**138**	1284	138	8	1245	142	**1241**	**143**	1240	143
471.omnetpp	8	**842**	**59.4**	842	59.4	842	59.4	8	827	60.5	**828**	**60.4**	829	60.3
473.astar	8	930	60.4	932	60.3	**932**	**60.3**	8	835	67.3	831	67.6	**832**	**67.5**
483.xalancbmk	8	702	78.6	704	78.5	**703**	**78.5**	8	595	92.8	593	93.1	**594**	**93.0**

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 2097152'  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
```

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

Continued on next page

Base Portability Flags (Continued)

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`

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

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

Continued on next page

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.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/amd421GH-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 20:05:12 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 22 July 2008.