SPEC® CINT2006 Result

IBM Corporation

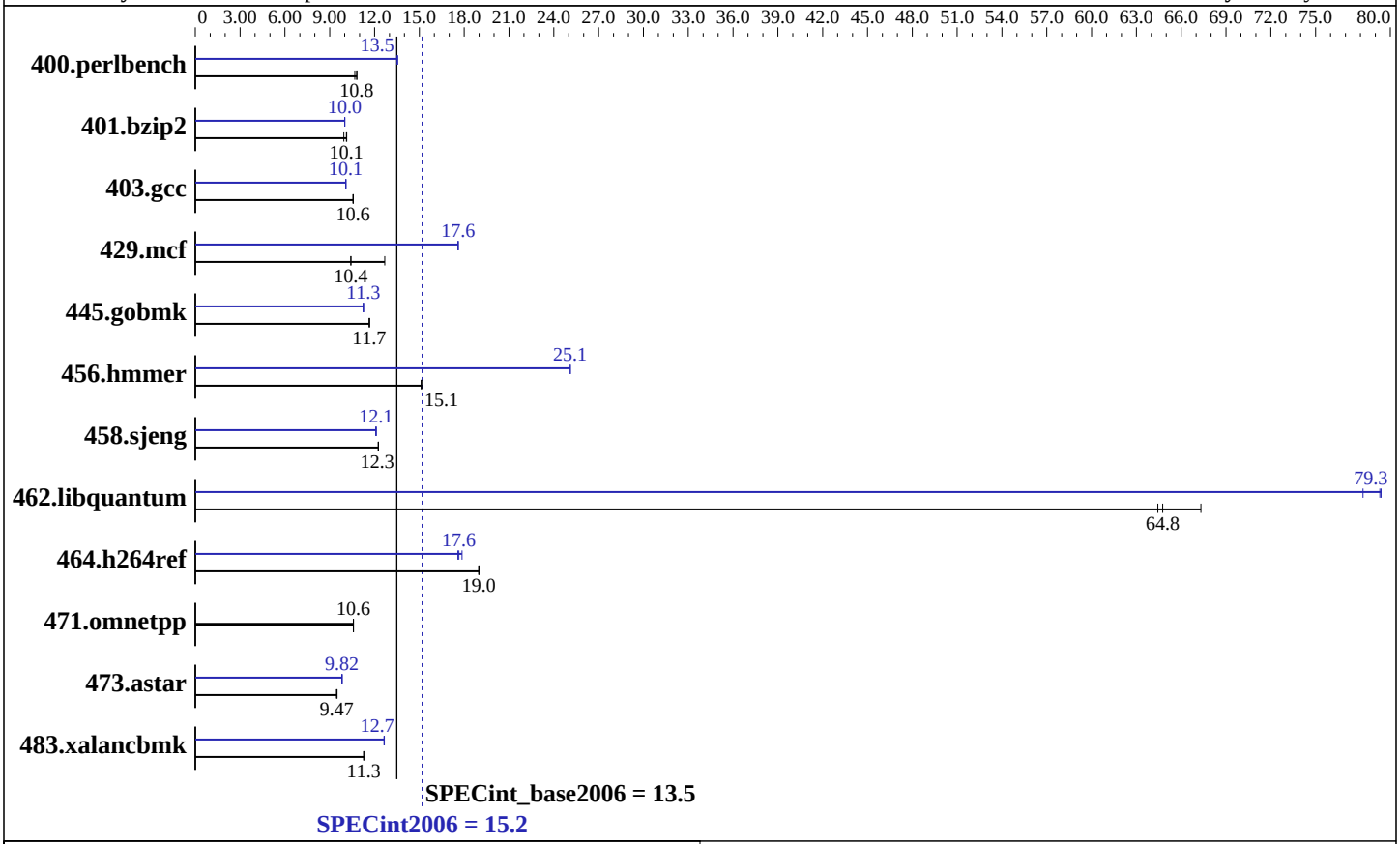
IBM BladeCenter LS22 (AMD Opteron 2356)

SPECint®2006 = 15.2

SPECint_base2006 = 13.5

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

Test date: Aug-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 36 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
Auto Parallel:	Yes
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 8.1 32-bit Library for Linux binutils 2.18.50

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Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	903	10.8	**904**	**10.8**	915	10.7	723	13.5	722	13.5	**722**	**13.5**
401.bzip2	**954**	**10.1**	970	9.94	952	10.1	965	10.0	**964**	**10.0**	964	10.0
403.gcc	761	10.6	762	10.6	**762**	**10.6**	799	10.1	**799**	**10.1**	798	10.1
429.mcf	**875**	**10.4**	719	12.7	876	10.4	518	17.6	**518**	**17.6**	519	17.6
445.gobmk	901	11.6	900	11.7	**900**	**11.7**	932	11.2	932	11.3	**932**	**11.3**
456.hmmer	**616**	**15.1**	616	15.1	617	15.1	**372**	**25.1**	372	25.1	373	25.0
458.sjeng	**987**	**12.3**	987	12.3	987	12.3	1002	12.1	**1000**	**12.1**	999	12.1
462.libquantum	322	64.4	**320**	**64.8**	308	67.3	**261**	**79.3**	265	78.2	261	79.4
464.h264ref	1166	19.0	**1166**	**19.0**	1165	19.0	1239	17.9	1259	17.6	**1254**	**17.6**
471.omnetpp	590	10.6	**591**	**10.6**	591	10.6	590	10.6	**591**	**10.6**	591	10.6
473.astar	742	9.46	740	9.49	**742**	**9.47**	714	9.84	**715**	**9.82**	715	9.81
483.xalancbmk	608	11.4	612	11.3	**611**	**11.3**	**545**	**12.7**	546	12.6	545	12.7

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.
```

Operating System Notes

```
'numactl' was used to bind copies to the cores.
Environment stack size set to 'unlimited'.
'ulimit -l 2097152' was used to set environment locked pages in memory quantity.
NCPUS set to number of cores.
PGI_HUGE_PAGES set to 896.
Set vm/nr_hugepages=7168 in /etc/sysctl.conf
mount -t hugetlbfs none /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
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:896 -Mloop32 -Mconcur=innermost
-Mfprelaxed -Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi

C++ benchmarks:
-fastsse -Msmartalloc=huge:896 -Mloop32 -Mfprelaxed --zc_eh
-Mipa=fast -Mipa=inline -tp barcelona-32 -Bstatic_pgi

Base Other Flags

C benchmarks:
-Mipa=jobs:8

C++ benchmarks:
-Mipa=jobs:8

Peak Compiler Invocation

C benchmarks:
pgcc

C++ benchmarks:
pgcpp

Peak Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64

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Peak 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

Peak Optimization Flags

C benchmarks:

400.perlbench: -Mpfi(pass 1) -Mpfo(pass 2) -Mipa=inline(pass 2) -fastsse
-O4 -Msmartalloc=huge:896 -Mnovect -Mnounroll -Mfprelaxed
-tp barcelona-64 -Bstatic_pgi

401.bzip2: -Mpfi=indirect(pass 1) -Mpfo=indirect(pass 2) -fastsse -O4
-Msmartalloc=huge:896 -Mprefetch=t0 -Mnounroll
-tp barcelona-64 -Bstatic_pgi

403.gcc: -Mpfi(pass 1) -Mpfo(pass 2) -Mipa=fast(pass 2)
-Mipa=inline(pass 2) -fastsse -Msmartalloc=huge:896
-Mprefetch=t0 -Mnodalign -Mloop32 -Mfprelaxed
-tp barcelona-32 -Bstatic_pgi

429.mcf: -fastsse -Msmartalloc=huge:896 -Mipa=fast -Mipa=inline:1
-tp barcelona-32 -Bstatic_pgi

445.gobmk: -Mpfi(pass 1) -Mpfo(pass 2) -Mipa=fast(pass 2) -fastsse
-O4 -Msmartalloc=huge:896 -Mnovect -Mfprelaxed
-tp barcelona-64 -Bstatic_pgi

456.hmmer: -fastsse -Mvect=partial -Munroll=n:8 -Msmartalloc=huge:896
-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:896 -Mfprelaxed -tp barcelona-64
-Bstatic_pgi

462.libquantum: -fastsse -Munroll=m:8 -Msmartalloc=huge:896
-Mprefetch=distance:8 -Mconcur=innermost -Mconcur=noaltcode
-Mfprelaxed -Mipa=fast -Mipa=noarg -tp barcelona-64
-Bstatic_pgi

464.h264ref: -Mpfi=indirect(pass 1) -Mpfo=indirect(pass 2)
-Mipa=fast(pass 2) -Mipa=inline(pass 2) -fastsse
-Msmartalloc=huge:896 -Mfprelaxed -tp barcelona-64
-Bstatic_pgi

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Peak Optimization Flags (Continued)

C++ benchmarks:

471.omnetpp: basepeak = yes

473.astar: -Mpfi(pass 1) -Mpfo(pass 2) -Mipa=fast(pass 2) -Mipa=inline:6(pass 2) -fastsse -O4 -Msmartalloc=huge:896 -Msafeptr=global -Mloop32 -Mfprelaxed --zc_eh -tp barcelona-32 -Bstatic_pgi

483.xalancbmk: --zc_eh -fastsse -O4 -Mfprelaxed -Msmartalloc -Mipa=fast -Mipa=inline -tp barcelona-32 -Bstatic_pgi -lsmartheap

Peak Other Flags

C benchmarks (except as noted below):
-Mipa=jobs:8(pass 2)

401.bzip2: No flags used

C++ benchmarks (except as noted below):
-Mipa=jobs:8(pass 2)

483.xalancbmk: -Mipa=jobs:8 -L/proj/qa/smartheap/SmartHeap_8.1/lib

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/pgi72_flags.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/pgi72_flags.xml

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 Tue Jul 22 19:04:31 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 2 September 2008.