SPEC® CINT2006 Result

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IBM Corporation

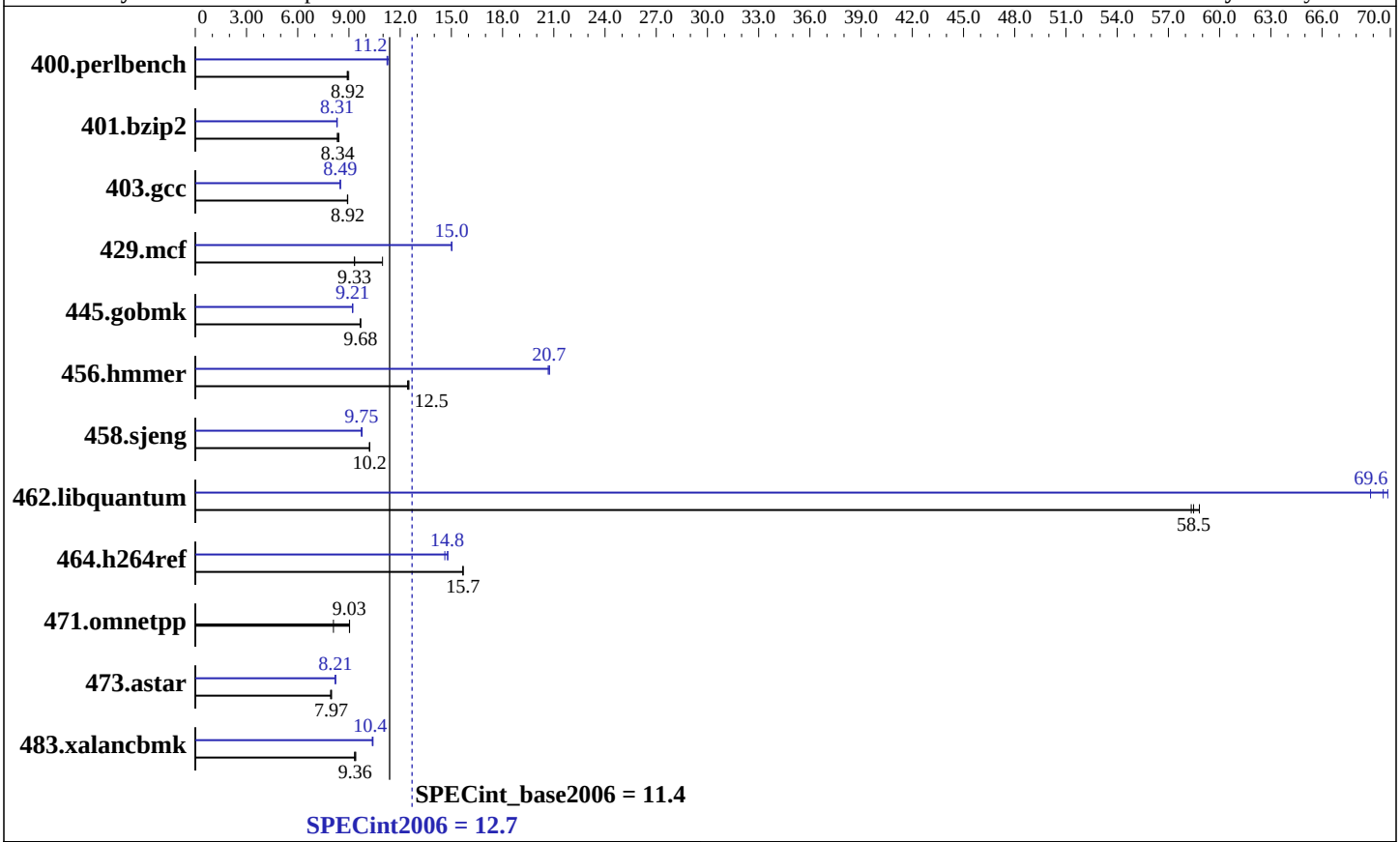
IBM BladeCenter LS22 (AMD Opteron 2347 HE)

SPECint®2006 = 12.7

SPECint_base2006 = 11.4

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 2347 HE
CPU Characteristics:	
CPU MHz:	1900
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	1098	8.90	1087	8.99	**1095**	**8.92**	**869**	**11.2**	863	11.3	870	11.2
401.bzip2	1147	8.41	**1157**	**8.34**	1160	8.32	1161	8.31	**1162**	**8.31**	1164	8.29
403.gcc	903	8.91	902	8.93	**902**	**8.92**	**948**	**8.49**	947	8.50	948	8.49
429.mcf	979	9.32	832	11.0	**977**	**9.33**	607	15.0	607	15.0	**607**	**15.0**
445.gobmk	1084	9.68	**1084**	**9.68**	1084	9.68	**1138**	**9.21**	1138	9.22	1139	9.21
456.hmmer	**746**	**12.5**	750	12.4	746	12.5	450	20.7	**450**	**20.7**	451	20.7
458.sjeng	**1185**	**10.2**	1186	10.2	1184	10.2	**1241**	**9.75**	1239	9.77	1244	9.73
462.libquantum	352	58.8	**354**	**58.5**	355	58.3	**298**	**69.6**	297	69.8	301	68.8
464.h264ref	1412	15.7	**1411**	**15.7**	1411	15.7	1496	14.8	**1498**	**14.8**	1514	14.6
471.omnetpp	**692**	**9.03**	692	9.04	772	8.09	**692**	**9.03**	692	9.04	772	8.09
473.astar	886	7.93	880	7.98	**881**	**7.97**	854	8.22	**855**	**8.21**	857	8.19
483.xalancbmk	734	9.40	**737**	**9.36**	740	9.33	665	10.4	663	10.4	**664**	**10.4**

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

Continued on next page

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`

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

Tested with SPEC CPU2006 v1.1.
Report generated on Tue Jul 22 18:59:10 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 2 September 2008.