SPEC® CINT2006 Result

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IBM Corporation

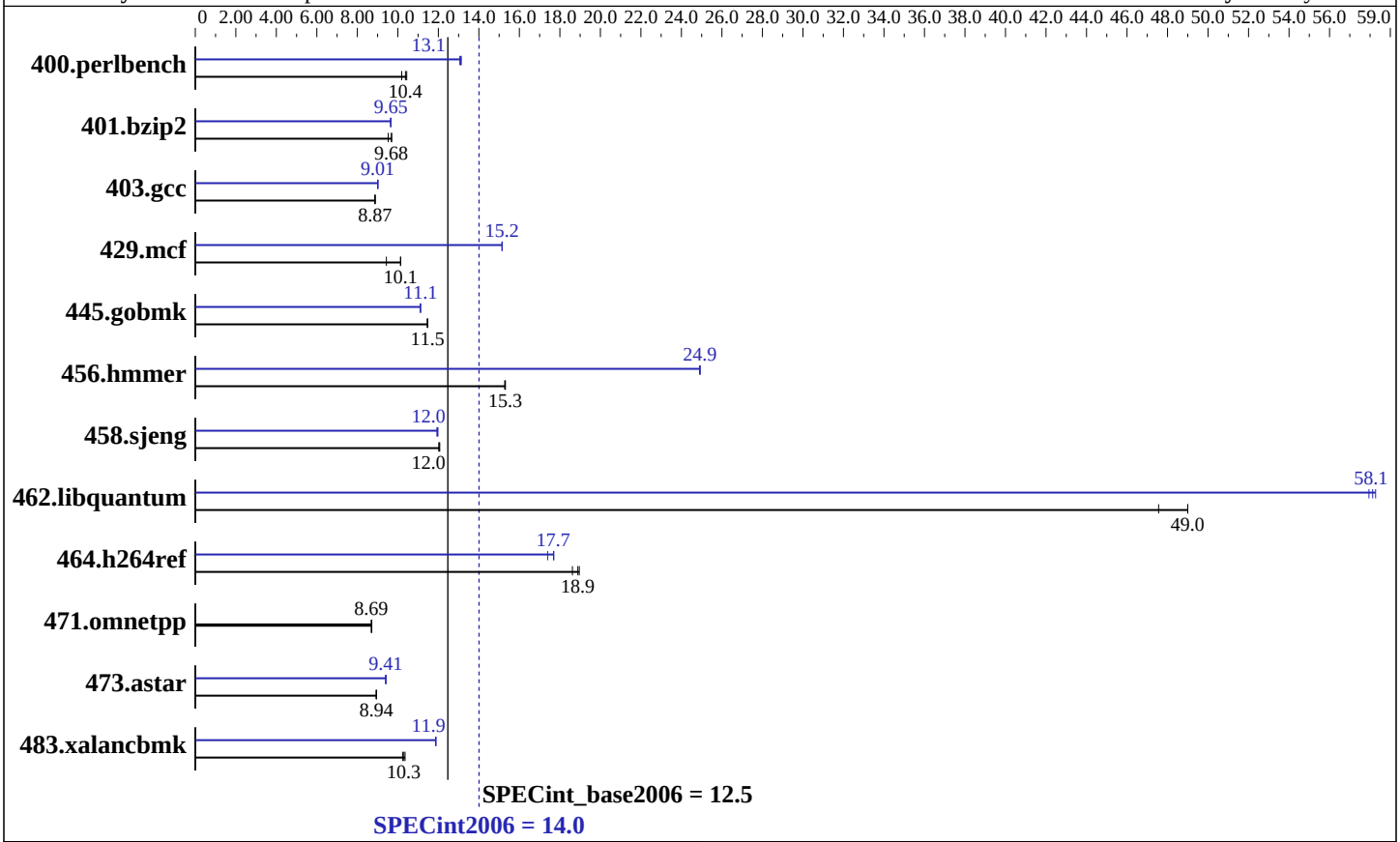
IBM BladeCenter LS42 (AMD Opteron 8356)

SPECint®2006 = 14.0

SPECint_base2006 = 12.5

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 8356
CPU Characteristics:	
CPU MHz:	2300
FPU:	Integrated
CPU(s) enabled:	16 cores, 4 chips, 4 cores/chip
CPU(s) orderable:	1,2,3,4 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:	64 GB (16 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
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	936	10.4	**942**	**10.4**	959	10.2	**746**	**13.1**	748	13.1	744	13.1
401.bzip2	1013	9.52	995	9.70	**997**	**9.68**	**999**	**9.65**	999	9.66	1001	9.64
403.gcc	908	8.86	**907**	**8.87**	906	8.89	**893**	**9.01**	894	9.01	893	9.02
429.mcf	899	10.1	**900**	**10.1**	967	9.43	**602**	**15.2**	602	15.2	602	15.1
445.gobmk	915	11.5	915	11.5	**915**	**11.5**	**944**	**11.1**	943	11.1	944	11.1
456.hmmer	609	15.3	611	15.3	**610**	**15.3**	375	24.9	**374**	**24.9**	374	24.9
458.sjeng	1003	12.1	1006	12.0	**1006**	**12.0**	**1012**	**12.0**	1010	12.0	1014	11.9
462.libquantum	436	47.6	423	49.0	**423**	**49.0**	**356**	**58.1**	356	58.3	358	57.9
464.h264ref	1167	19.0	1189	18.6	**1172**	**18.9**	**1251**	**17.7**	1272	17.4	1250	17.7
471.omnetpp	717	8.71	**719**	**8.69**	719	8.69	717	8.71	**719**	**8.69**	719	8.69
473.astar	786	8.93	784	8.95	**786**	**8.94**	747	9.39	**746**	**9.41**	746	9.41
483.xalancbmk	666	10.4	674	10.2	**670**	**10.3**	581	11.9	581	11.9	**581**	**11.9**

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=14336 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`

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

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