SPEC® CINT2006 Result

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IBM Corporation

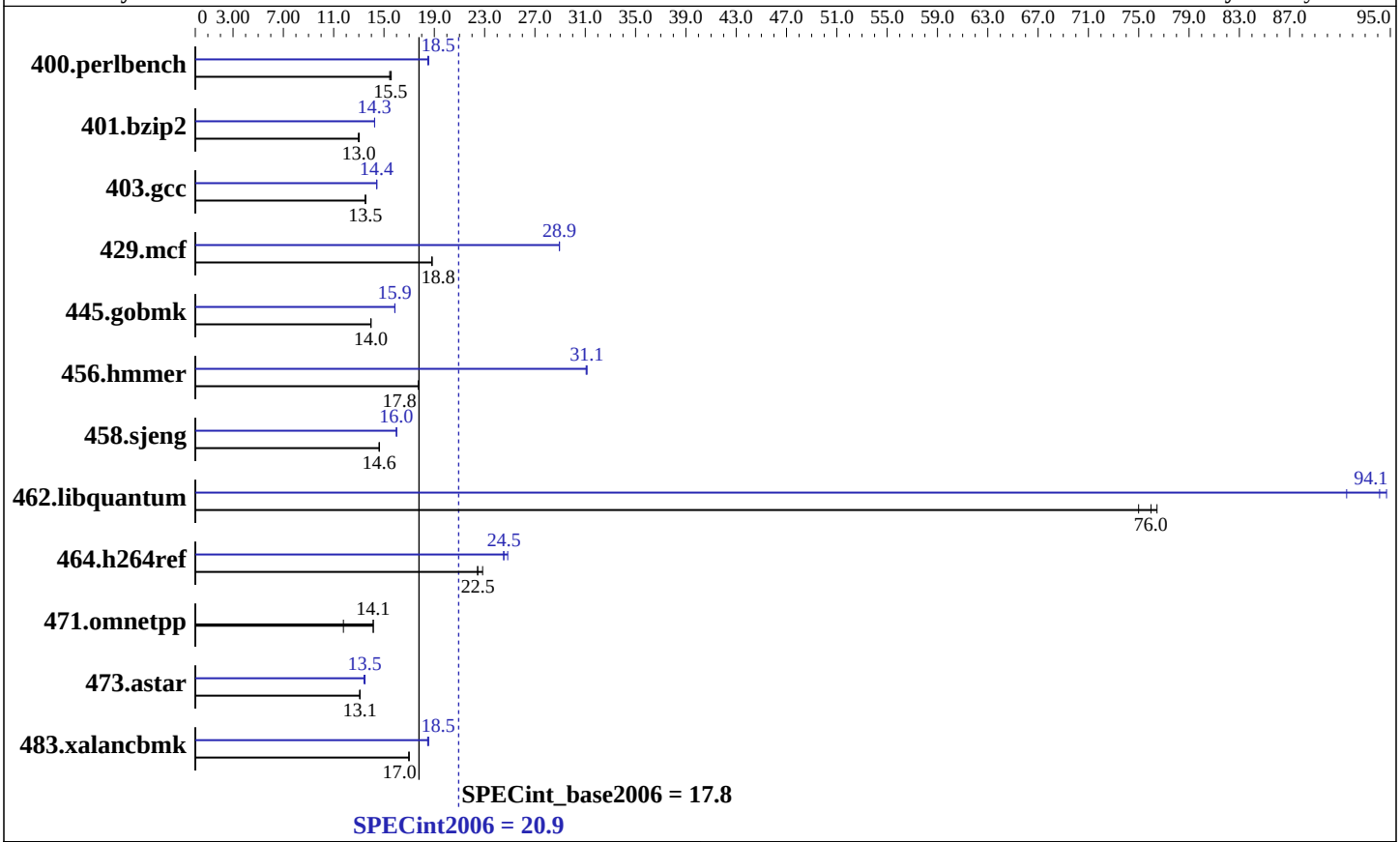
IBM BladeCenter LS42 (AMD Opteron 8384)

SPECint®2006 = 20.9

SPECint_base2006 = 17.8

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

Test date: Nov-2008
Hardware Availability: Nov-2008
Software Availability: May-2008



Hardware

CPU Name:	AMD Opteron 8384
CPU Characteristics:	
CPU MHz:	2700
FPU:	Integrated
CPU(s) enabled:	8 cores, 2 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:	6 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) SP2, Kernel 2.6.16.60-0.21-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:	binutils 2.18.50 32-bit and 64-bit libhugetlbfs libraries SmartHeap 8.1 32-bit Library for Linux

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Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	**630**	**15.5**	632	15.5	627	15.6	529	18.5	**528**	**18.5**	527	18.6
401.bzip2	740	13.0	**742**	**13.0**	744	13.0	**677**	**14.3**	677	14.3	677	14.3
403.gcc	**595**	**13.5**	596	13.5	594	13.5	**558**	**14.4**	558	14.4	558	14.4
429.mcf	**485**	**18.8**	484	18.8	485	18.8	315	29.0	315	28.9	**315**	**28.9**
445.gobmk	752	14.0	751	14.0	**751**	**14.0**	**661**	**15.9**	661	15.9	661	15.9
456.hmmer	526	17.7	524	17.8	**525**	**17.8**	300	31.1	300	31.1	**300**	**31.1**
458.sjeng	828	14.6	826	14.6	**827**	**14.6**	**756**	**16.0**	756	16.0	757	16.0
462.libquantum	276	75.0	271	76.5	**273**	**76.0**	219	94.7	**220**	**94.1**	226	91.5
464.h264ref	986	22.4	969	22.8	**986**	**22.5**	903	24.5	**902**	**24.5**	891	24.8
471.omnetpp	**442**	**14.1**	442	14.1	531	11.8	**442**	**14.1**	442	14.1	531	11.8
473.astar	537	13.1	536	13.1	**537**	**13.1**	**521**	**13.5**	523	13.4	520	13.5
483.xalancbmk	**406**	**17.0**	406	17.0	407	17.0	**373**	**18.5**	374	18.5	372	18.6

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.
 'numactl' was used to bind copies to the cores.
```

General Notes

```
The libhugetlbfs libraries were installed using the
installation rpms that came with the distribution.

'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 2097152'  was used to set environment locked pages in memory limit

Set vm/nr_hugepages=7168 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/root/work/cpu2006v1.1/pgi72/linux_lib64:/root/work/cpu2006v1.1/pgi72/linux_lib32"
PGI_HUGE_PAGES = "7168"
NCPUS = "8"
The powersaved was disabled, set the CPU frequency to its maximum.
Memory ChipKill Disabled in BIOS
```

Base Compiler Invocation

C benchmarks:

```
pgcc
```

Continued on next page

Base Compiler Invocation (Continued)

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:
-Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge -Mloop32
-Mconcur=innermost -Mfprelaxed -Mipa=fast -Mipa=inline
-tp barcelona-64 -Bstatic_pgi

C++ benchmarks:
-Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge -Mloop32
-Mfprelaxed --zc_eh -Mipa=fast -Mipa=inline:10 -tp barcelona-32
-Bstatic_pgi

Base Other Flags

C benchmarks:
-Mipa=jobs:8

C++ benchmarks:
-Mipa=jobs:8

Peak Compiler Invocation

C benchmarks:
pgcc

Continued on next page

Peak Compiler Invocation (Continued)

C++ benchmarks:
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: -Mpfi(pass 1) -Mpfo(pass 2) -Mipa=inline(pass 2)
-Mvect=cachesize:6291456 -fastsse -O4 -Msmartalloc=huge
-Mnovect -Mnounroll -Mfprelaxed -tp barcelona-64
-Bstatic_pgi

401.bzip2: -Mpfi=indirect(pass 1) -Mpfo=indirect(pass 2)
-Mvect=cachesize:6291456 -fastsse -O4 -Msmartalloc=huge
-Mprefetch=t0 -Mnounroll -tp barcelona-64 -Bstatic_pgi

403.gcc: -Mpfi(pass 1) -Mpfo(pass 2) -Mipa=fast(pass 2)
-Mipa=inline(pass 2) -Mvect=cachesize:6291456 -fastsse
-Msmartalloc=huge -Mprefetch=t0 -Mnodalign -Mloop32
-Mfprelaxed -tp barcelona-32 -Bstatic_pgi

429.mcf: -Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge
-Mipa=fast -Mipa=inline:1 -tp barcelona-32 -Bstatic_pgi

445.gobmk: -Mpfi(pass 1) -Mpfo(pass 2) -Mipa=fast(pass 2)
-Mvect=cachesize:6291456 -fastsse -O4 -Msmartalloc=huge
-Mnovect -Mfprelaxed -tp barcelona-64 -Bstatic_pgi

456.hmmer: -Mvect=cachesize:6291456 -fastsse -Mvect=partial
-Munroll=n:8 -Msmartalloc=huge -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)
-Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge

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Peak Optimization Flags (Continued)

458.sjeng (continued):
-Mfprelaxed -tp barcelona-64 -Bstatic_pgi

462.libquantum: -Mvect=cachesize:6291456 -fastsse -Munroll=m:8
-Msmartalloc=huge -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)
-Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge
-Mfprelaxed -tp barcelona-64 -Bstatic_pgi

C++ benchmarks:

471.omnetpp: basepeak = yes

473.astar: -Mpfi(pass 1) -Mpfo(pass 2) -Mipa=fast(pass 2)
-Mipa=inline:6(pass 2) -Mvect=cachesize:6291456 -fastsse
-O4 -Msmartalloc=huge -Msafeptr=global -Mloop32
-Mfprelaxed --zc_eh -tp barcelona-32 -Bstatic_pgi

483.xalancbmk: -Mvect=cachesize:6291456 --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_linux_flags.20090713.01.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/pgi72_linux_flags.20090713.01.xml

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Tested with SPEC CPU2006 v1.1.
Report generated on Tue Jul 22 21:21:56 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 9 December 2008.