



SPEC® CINT2006 Result

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IBM Corporation

SPECint®2006 = 20.9

IBM BladeCenter LS42 (AMD Opteron 8384)

SPECint_base2006 = 17.8

CPU2006 license: 11

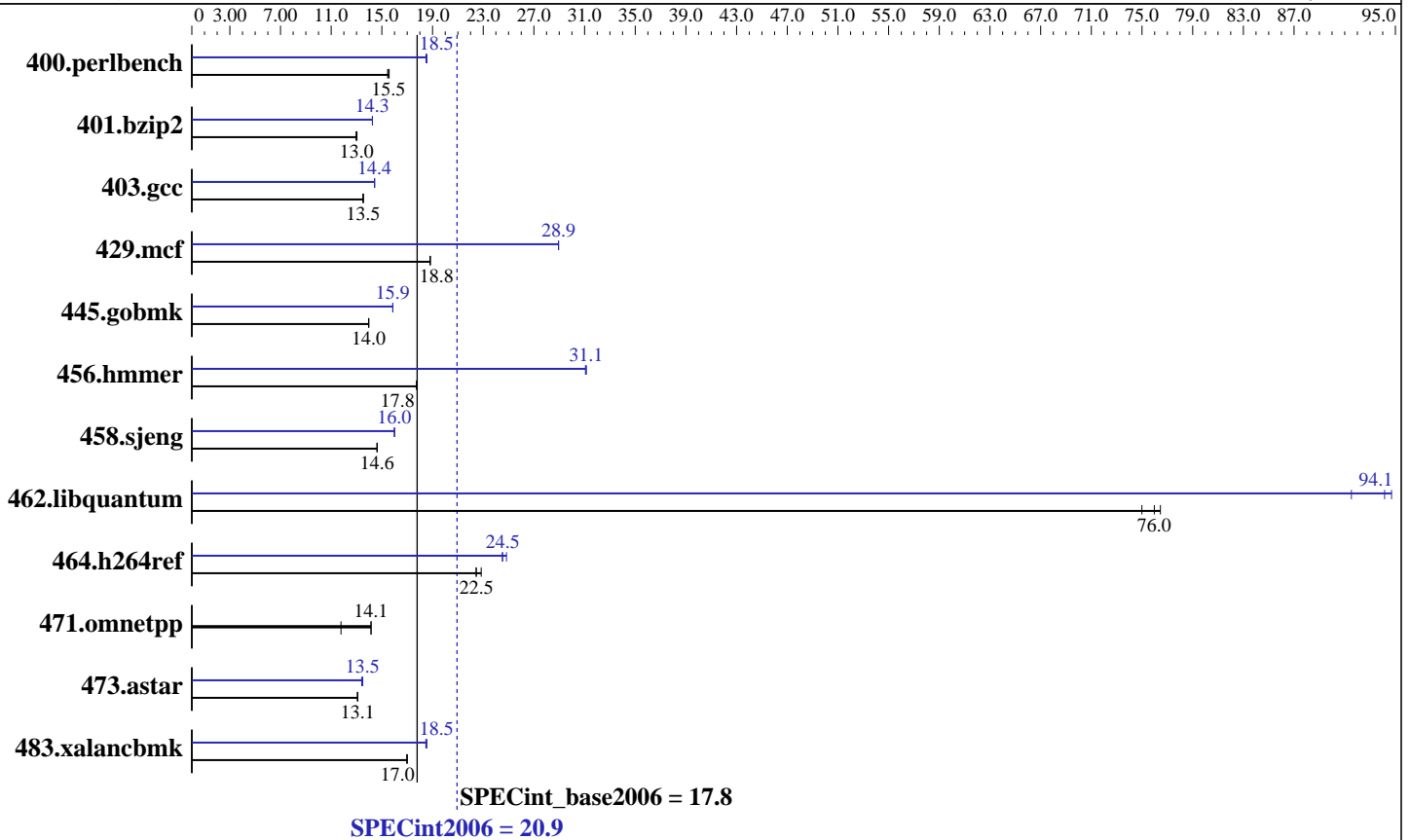
Test date: Nov-2008

Test sponsor: IBM Corporation

Hardware Availability: Nov-2008

Tested by: Advanced Micro Devices

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.hammer	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

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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

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Peak Compiler Invocation (Continued)

C++ benchmarks:
pgcpp

Peak Portability Flags

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

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/smarheap/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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