SPEC® CINT2006 Result
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Dell Inc.

PowerEdge R905 (AMD Opteron 8380, 2.50 GHz)

SPECint®_rate2006 =   228

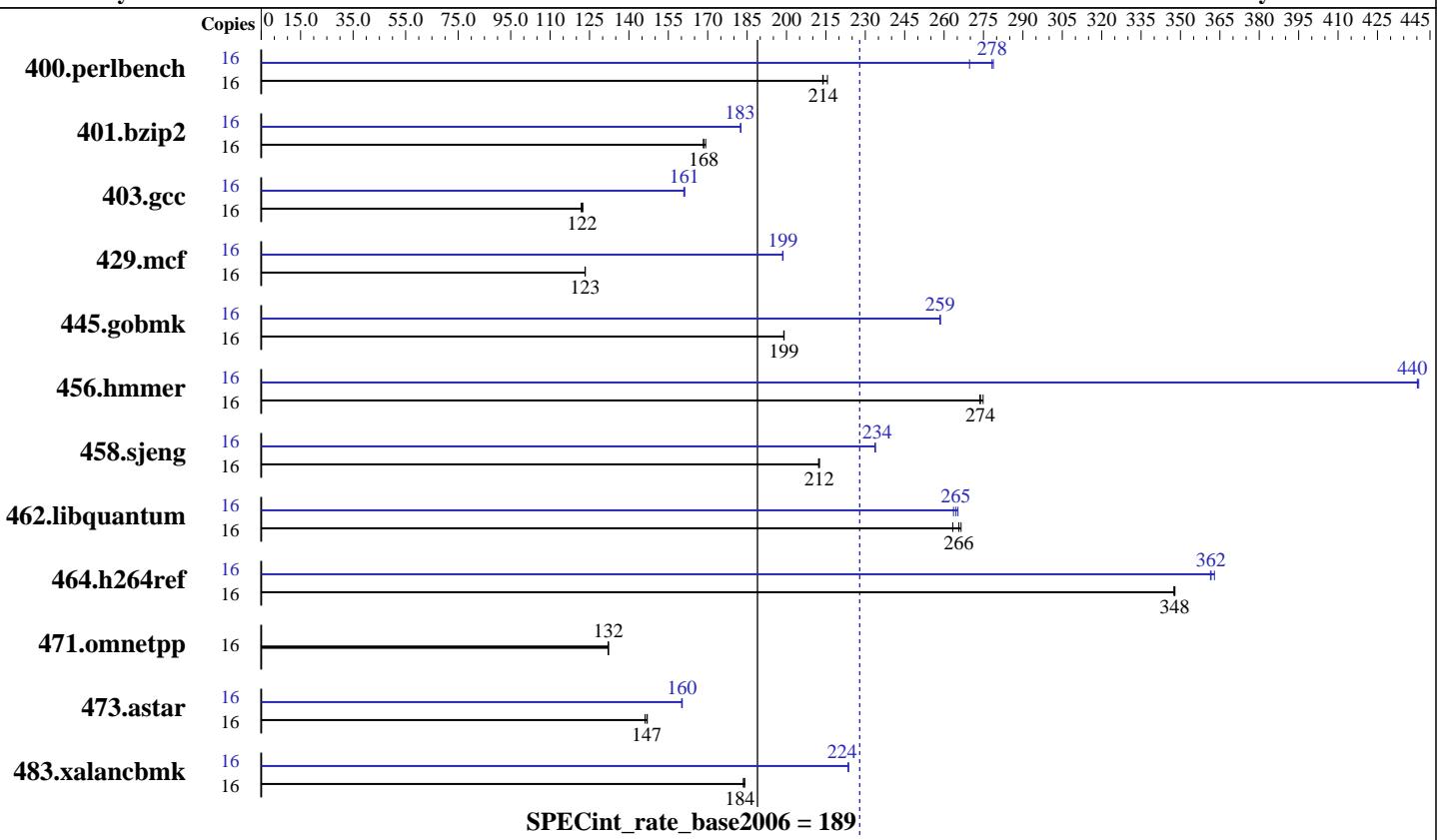SPECint_rate_base2006 = 189

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

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

Copies	Benchmark	Value
16	400.perlbench	278
16	400.perlbench	214
16	401.bzip2	183
16	401.bzip2	168
16	403.gcc	161
16	403.gcc	122
16	429.mcf	199
16	429.mcf	123
16	445.gobmk	259
16	445.gobmk	199
16	456.hmmer	440
16	456.hmmer	274
16	458.sjeng	234
16	458.sjeng	212
16	462.libquantum	265
16	462.libquantum	266
16	464.h264ref	362
16	464.h264ref	348
16	471.omnetpp	132
16	473.astar	160
16	473.astar	147
16	483.xalancbmk	224
16	483.xalancbmk	184

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Hardware

CPU Name:	AMD Opteron 8380
CPU Characteristics:	
CPU MHz:	2500
FPU:	Integrated
CPU(s) enabled:	16 cores, 4 chips, 4 cores/chip
CPU(s) orderable:	2,4 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:	64 GB (16 x 4 GB DDR2-800)
Disk Subsystem:	1 x 73 GB 15000 RPM SAS
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 PathScale Compiler Suite Version 3.2
Auto Parallel:	No
File System:	ReiserFS
System State:	Run level 3 (multi-user)
Base Pointers:	32/64-bit
Peak Pointers:	32/64-bit
Other Software:	binutils 2.18 32-bit and 64-bit libhugetlbfs libraries SmartHeap 8.1 32-bit Library for Linux

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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	16	**731**	**214**	725	216	731	214	16	**562**	**278**	580	270	561	279
401.bzip2	16	912	169	917	168	**916**	**168**	16	**846**	**183**	845	183	846	183
403.gcc	16	1052	122	1057	122	**1054**	**122**	16	**799**	**161**	800	161	799	161
429.mcf	16	1184	123	1182	123	**1183**	**123**	16	734	199	**735**	**199**	735	199
445.gobmk	16	843	199	844	199	**843**	**199**	16	649	259	**649**	**259**	649	258
456.hmmer	16	546	274	**545**	**274**	543	275	16	339	441	**339**	**440**	339	440
458.sjeng	16	911	213	**911**	**212**	912	212	16	829	234	828	234	**828**	**234**
462.libquantum	16	1259	263	1244	266	**1248**	**266**	16	1258	264	1250	265	**1253**	**265**
464.h264ref	16	**1018**	**348**	1018	348	1019	347	16	**979**	**362**	980	361	976	363
471.omnetpp	16	**757**	**132**	757	132	756	132	16	**757**	**132**	757	132	756	132
473.astar	16	**765**	**147**	764	147	769	146	16	**701**	**160**	702	160	701	160
483.xalancbmk	16	**601**	**184**	601	184	600	184	16	494	224	**494**	**224**	494	223

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

Operating System 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=14336 in /etc/sysctl.conf
    mount -t hugetlbfs nodev /mnt/hugepages

General Notes

    Environment variables set by runspec before the start of the run:
    HUGETLB_MORECORE = "yes"
    LD_LIBRARY_PATH = "/root/cpu2006-1.1/amd909gh-libs/64:/root/cpu2006-1.1/amd909gh-libs/32"

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

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

Base Other Flags

C benchmarks:
    -Mipa=jobs:4

C++ benchmarks:
    -Mipa=jobs:4

Peak Compiler Invocation

C benchmarks (except as noted below):
    pathcc

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Peak Compiler Invocation (Continued)

456.hmmer: `pgcc`

462.libquantum: `pgcc`

C++ benchmarks (except as noted below):
  `pgcpp`

483.xalancbmk: `pathCC`

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: -march=barcelona -fb_create fbdata(pass 1)
        -fb_opt fbdata(pass 2)
        -Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT(pass 2)
        -L/usr/lib64 -lhugetlbfs(pass 2) -Ofast -IPA:plimit=20000
        -IPA:field_reorder=on -LNO:opt=0 -WOPT:if_conv=0
        -CG:local_sched_alg=1

   401.bzip2: -march=barcelona -O3 -OPT:alias=disjoint -OPT:Ofast
        -OPT:goto=off -INLINE:aggressive=on -CG:local_sched_alg=1
        -m3dnow
        -Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT
        -L/usr/lib64 -lhugetlbfs

     403.gcc: -march=barcelona -fb_create fbdata(pass 1)
        -fb_opt fbdata(pass 2) -Ofast -OPT:malloc_alg=1
        -LNO:trip_count=256 -LNO:prefetch_ahead=10
        -CG:prefer_lru_reg=off -m32

     429.mcf: -march=barcelona -O3 -ipa -INLINE:aggressive=on
        -CG:gcm=off -GRA:prioritize_by_density=on -m32
        -L/usr/lib -lhugetlbfs
```

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Peak Optimization Flags (Continued)

```
445.gobmk: -march=barcelona -fb_create fbdata(pass 1)
           -fb_opt fbdata(pass 2)
           -Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT(pass 2)
           -L/usr/lib64 -lhugetlbfs(pass 2) -O3 -OPT:alias=restrict
           -LNO:prefetch=1 -LNO:ignore_feedback=off -CG:p2align=on

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: -march=barcelona -fb_create fbdata(pass 1)
           -fb_opt fbdata(pass 2)
           -Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT(pass 2)
           -L/usr/lib64 -lhugetlbfs(pass 2) -O3 -ipa
           -LNO:ignore_feedback=off -LNO:full_unroll=10 -LNO:fusion=0
           -LNO:fission=2 -IPA:pu_reorder=2 -CG:ptr_load_use=0
           -OPT:unroll_times_max=8 -INLINE:aggressive=on

462.libquantum: -Mvect=cachesize:6291456 -fastsse -Munroll=m:8
           -Msmartalloc=huge -Mprefetch=distance:4 -Mfprelaxed
           -Mipa=fast -Mipa=inline -Mipa=noarg -tp barcelona-64
           -Bstatic_pgi

464.h264ref: -march=barcelona -fb_create fbdata(pass 1)
           -fb_opt fbdata(pass 2)
           -Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT(pass 2)
           -L/usr/lib64 -lhugetlbfs(pass 2) -O3 -IPA:plimit=20000
           -OPT:alias=disjoint -LNO:prefetch=0 -CG:ptr_load_use=0
           -CG:push_pop_int_saved_regs=off -CG:prefer_lru_reg=off
```

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 -Mfprelaxed
           --zc_eh -tp barcelona-32 -Bstatic_pgi

483.xalancbmk: -march=barcelona -Ofast -INLINE:aggressive=on -m32
           -L/root/work/libraries/SmartHeap_8.1/lib -lsmartheap
```

Peak Other Flags

C benchmarks:

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Peak Other Flags (Continued)

456.hmmer: `-Mipa=jobs:4`

462.libquantum: `-Mipa=jobs:4`

C++ benchmarks (except as noted below):
`-Mipa=jobs:4`(pass 2)

483.xalancbmk: `No flags used`

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/pgi72_linux_flags.20090713.html
http://www.spec.org/cpu2006/flags/CPU2006_flags.20090710.html
http://www.spec.org/cpu2006/flags/amd-platform-amd909gh.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/pgi72_linux_flags.20090713.xml
http://www.spec.org/cpu2006/flags/CPU2006_flags.20090710.xml
http://www.spec.org/cpu2006/flags/amd-platform-amd909gh.xml

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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