# SPEC® CINT2006 Result

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## IBM Corporation

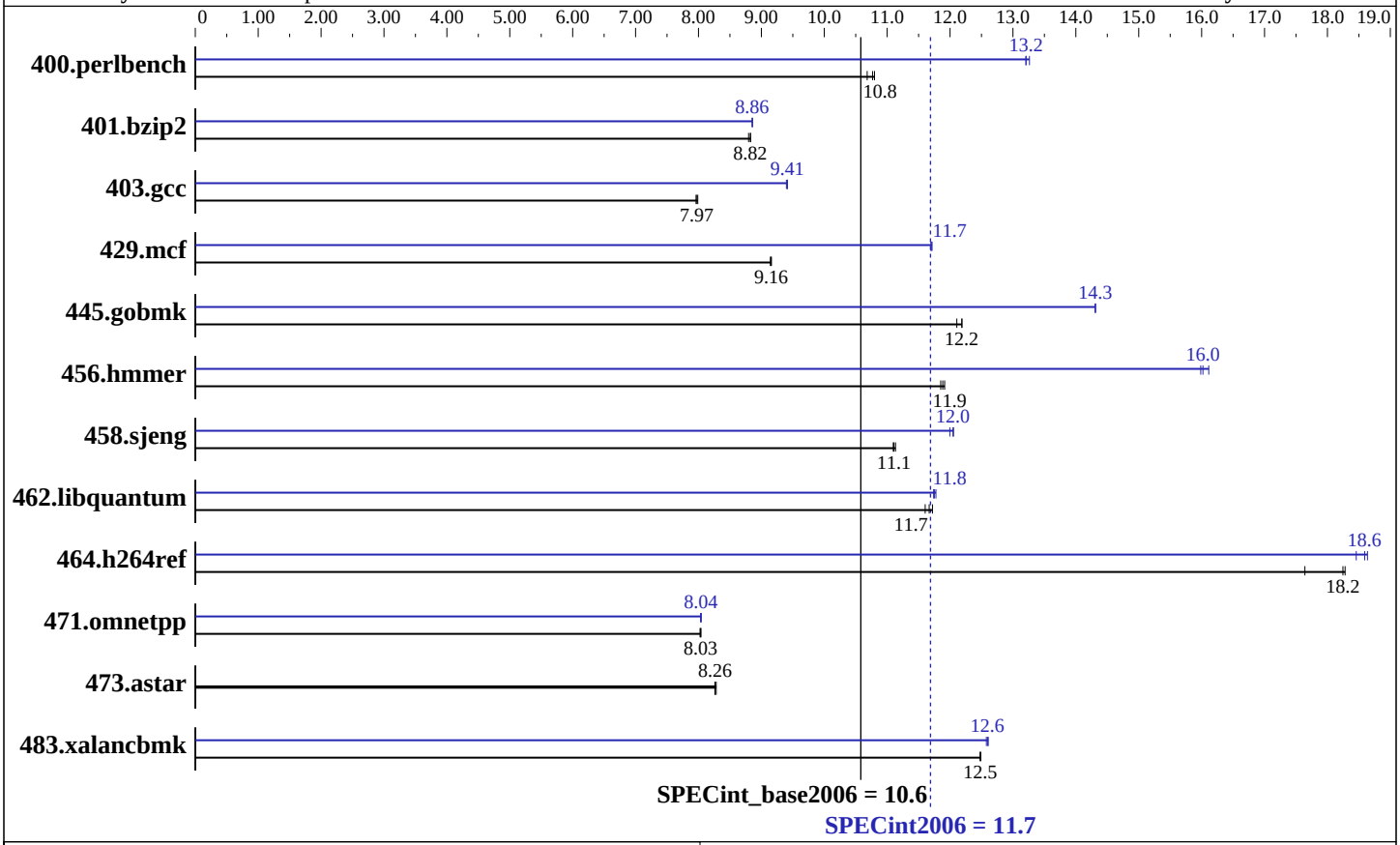
## IBM BladeCenter LS41 (AMD Opteron 8216)

SPECint®2006 = 11.7

SPECint_base2006 = 10.6

**CPU2006 license:** 11
**Test sponsor:** IBM Corporation
**Tested by:** IBM Corporation

**Test date:** Jul-2007
**Hardware Availability:** Oct-2006
**Software Availability:** Mar-2007




### Hardware

| | |
|---|---|
| CPU Name: | AMD Opteron 8216 |
| CPU Characteristics: | |
| CPU MHz: | 2400 |
| FPU: | Integrated |
| CPU(s) enabled: | 8 cores, 4 chips, 2 cores/chip |
| CPU(s) orderable: | 1, 2, 3, 4 chips |
| Primary Cache: | 64 KB I + 64 KB D on chip per core |
| Secondary Cache: | 1 MB I+D on chip per core |
| L3 Cache: | None |
| Other Cache: | None |
| Memory: | 32 GB (16 x 2GB DDR2-5300 ECC) |
| Disk Subsystem: | 1 x 36 GB SAS, 10000 RPM |
| Other Hardware: | None |

### Software

| | |
|---|---|
| Operating System: | SLES 10 (x86_64), 2.6.16.21-0.8-smp |
| Compiler: | QLogic PathScale Compiler Suite, Release 3.0 |
| Auto Parallel: | No |
| File System: | ext3 |
| System State: | Multi-user, run level 3 |
| Base Pointers: | 32/64-bit |
| Peak Pointers: | 32/64-bit |
| Other Software: | MicroQuill SmartHeap 8.1 |

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## Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 400.perlbench | 915 | 10.7 | **907** | **10.8** | 905 | 10.8 | **740** | **13.2** | 737 | 13.3 | 740 | 13.2 |
| 401.bzip2 | 1093 | 8.83 | 1097 | 8.80 | **1094** | **8.82** | **1090** | **8.86** | 1090 | 8.85 | 1089 | 8.86 |
| 403.gcc | 1008 | 7.99 | 1011 | 7.96 | **1009** | **7.97** | **855** | **9.41** | 857 | 9.40 | 855 | 9.41 |
| 429.mcf | **996** | **9.16** | 998 | 9.14 | 996 | 9.16 | 780 | 11.7 | 779 | 11.7 | **779** | **11.7** |
| 445.gobmk | 866 | 12.1 | **861** | **12.2** | 861 | 12.2 | 733 | 14.3 | 733 | 14.3 | **733** | **14.3** |
| 456.hmmer | 783 | 11.9 | 787 | 11.9 | **785** | **11.9** | **582** | **16.0** | 579 | 16.1 | 584 | 16.0 |
| 458.sjeng | **1089** | **11.1** | 1087 | 11.1 | 1090 | 11.1 | **1004** | **12.0** | 1009 | 12.0 | 1004 | 12.1 |
| 462.libquantum | 1785 | 11.6 | **1776** | **11.7** | 1768 | 11.7 | 1765 | 11.7 | **1763** | **11.8** | 1760 | 11.8 |
| 464.h264ref | **1213** | **18.2** | 1254 | 17.6 | 1211 | 18.3 | 1187 | 18.6 | **1190** | **18.6** | 1199 | 18.5 |
| 471.omnetpp | **778** | **8.03** | 779 | 8.02 | 777 | 8.04 | 778 | 8.03 | **777** | **8.04** | 777 | 8.04 |
| 473.astar | 850 | 8.26 | 848 | 8.28 | **849** | **8.26** | 850 | 8.26 | 848 | 8.28 | **849** | **8.26** |
| 483.xalancbmk | **553** | **12.5** | 553 | 12.5 | 553 | 12.5 | 547 | 12.6 | **548** | **12.6** | 549 | 12.6 |

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## General Notes

```
taskset utility used to bind CPU(s) to processes
```

## Base Compiler Invocation

C benchmarks:
pathcc

C++ benchmarks:
pathCC

## 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:
`-Ofast -OPT:malloc_alg=1`

C++ benchmarks:
`-Ofast -m32 -L/tools/SmartHeap_8.1/lib -lsmartheap`

## Base Other Flags

C benchmarks:
`-IPA:max_jobs=2`

C++ benchmarks:
`-IPA:max_jobs=2`

## Peak Compiler Invocation

C benchmarks:
`pathcc`

C++ benchmarks:
`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: `-fb_create fbdata`(pass 1) `-fb_opt fbdata`(pass 2) `-Ofast -LNO:opt=0`

401.bzip2: `-O3 -LNO:ou_prod_max=10 -OPT:Ofast -OPT:alias=disjoint`

Continued on next page

## Peak Optimization Flags (Continued)

403.gcc: `-fb_create fbdata`(pass 1) `-fb_opt fbdata`(pass 2) `-m32 -O3 -OPT:Ofast`

429.mcf: `-m32 -O3 -ipa -L/tools/SmartHeap_8.1/lib -lsmartheap`

445.gobmk: `-fb_create fbdata`(pass 1) `-fb_opt fbdata`(pass 2) `-O3 -OPT:alias=disjoint -LNO:simd=0 -LNO:minvariant=off -WOPT:retype_expr=on`

456.hmmer: `-O2 -OPT:alias=disjoint -OPT:malloc_alg=1 -CG:cflow=0`

458.sjeng: `-fb_create fbdata`(pass 1) `-fb_opt fbdata`(pass 2) `-O3 -IPA:plimit=50000 -IPA:pu_reorder=2`

462.libquantum: `-O3 -ipa -CG:local_fwd_sched=on -IPA:space=1000`

464.h264ref: `-fb_create fbdata`(pass 1) `-fb_opt fbdata`(pass 2) `-O3 -IPA:plimit=20000 -OPT:alias=disjoint -LNO:prefetch=0`

C++ benchmarks:

471.omnetpp: `-Ofast -CG:gcm=off -m32 -L/tools/SmartHeap_8.1/lib -lsmartheap`

473.astar: `basepeak = yes`

483.xalancbmk: `-Ofast -m32 -OPT:unroll_times_max=8 -L/tools/SmartHeap_8.1/lib -lsmartheap`

## Peak Other Flags

C benchmarks:
`-IPA:max_jobs=2`

C++ benchmarks:
`-IPA:max_jobs=2`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.13.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/CPU2006_flags.20090714.13.xml`

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