# SPEC® CINT2006 Result



## IBM Corporation

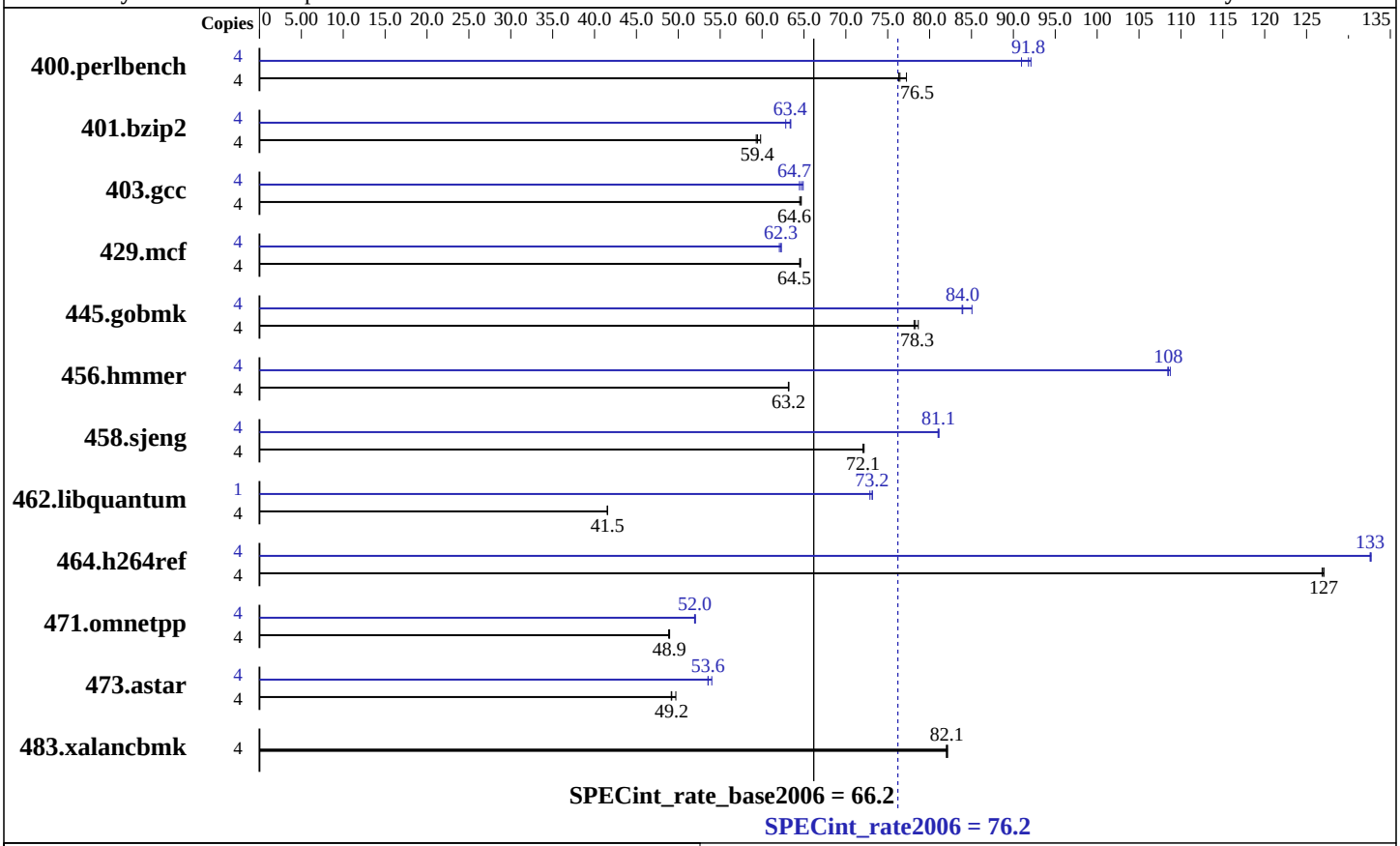
## IBM System x3200 M2 (Intel Xeon X3370)

SPECint®_rate2006 = 76.2

SPECint_rate_base2006 = 66.2

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

**Test date:** Jul-2008
**Hardware Availability:** Sep-2008
**Software Availability:** Nov-2007




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon X3370 |
| CPU Characteristics: | 1333MHz system bus |
| CPU MHz: | 3000 |
| FPU: | Integrated |
| CPU(s) enabled: | 4 cores, 1 chip, 4 cores/chip |
| CPU(s) orderable: | 1 chip |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |
| Secondary Cache: | 12 MB I+D on chip per chip, 6 MB shared / 2 cores |
| L3 Cache: | None |
| Other Cache: | None |
| Memory: | 8 GB (4 x 2 GB DDR2-6400E ECC) |
| Disk Subsystem: | 1 x 160 GB SATA, 7200RPM |
| Other Hardware: | None |

### Software

| | |
|---|---|
| Operating System: | SuSE Linux Enterprise Server 10 (x86_64) SP1, Kernel 2.6.16.46-0.12-smp |
| Compiler: | Intel C++ Compiler 10.1 for Linux Build 20070913 Package ID: l_cc_p_10.1.008 |
| Auto Parallel: | Yes |
| File System: | ReiserFS |
| System State: | Run level 3 (Full multiuser with network) |
| Base Pointers: | 32-bit |
| Peak Pointers: | 32/64-bit |
| Other Software: | MicroQuill SmartHeap 8.1<br>Binutils 2.17.50.0.15 |

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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 | 4 | 506 | 77.2 | 512 | 76.3 | **511** | **76.5** | 4 | 430 | 91.0 | 424 | 92.1 | **426** | **91.8** |
| 401.bzip2 | 4 | 651 | 59.3 | 645 | 59.8 | **649** | **59.4** | 4 | **609** | **63.4** | 614 | 62.8 | 609 | 63.4 |
| 403.gcc | 4 | 498 | 64.7 | **498** | **64.6** | 499 | 64.5 | 4 | 499 | 64.5 | **498** | **64.7** | 496 | 64.9 |
| 429.mcf | 4 | 566 | 64.5 | 565 | 64.6 | **566** | **64.5** | 4 | **586** | **62.3** | 586 | 62.3 | 588 | 62.1 |
| 445.gobmk | 4 | **536** | **78.3** | 537 | 78.1 | 534 | 78.6 | 4 | 493 | 85.1 | **500** | **84.0** | 500 | 83.9 |
| 456.hmmer | 4 | **591** | **63.2** | 591 | 63.2 | 591 | 63.1 | 4 | **344** | **108** | 344 | 108 | 343 | 109 |
| 458.sjeng | 4 | 671 | 72.2 | **672** | **72.1** | 672 | 72.0 | 4 | 597 | 81.1 | **597** | **81.1** | 597 | 81.0 |
| 462.libquantum | 4 | 1995 | 41.5 | 1995 | 41.5 | **1995** | **41.5** | 1 | 283 | 73.2 | **283** | **73.2** | 284 | 72.9 |
| 464.h264ref | 4 | 698 | 127 | 697 | 127 | **697** | **127** | 4 | **668** | **133** | 668 | 133 | 667 | 133 |
| 471.omnetpp | 4 | **511** | **48.9** | 511 | 49.0 | 512 | 48.8 | 4 | 481 | 51.9 | **481** | **52.0** | 480 | 52.0 |
| 473.astar | 4 | 565 | 49.7 | **571** | **49.2** | 571 | 49.2 | 4 | **524** | **53.6** | 524 | 53.5 | 520 | 54.0 |
| 483.xalancbmk | 4 | **336** | **82.1** | 336 | 82.1 | 337 | 82.0 | 4 | **336** | **82.1** | 336 | 82.1 | 337 | 82.0 |

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

## General Notes

```
All benchmarks compiled in 32-bit mode except 401.bzip2 and 456.hmmer,
for peak, are compiled in 64-bit mode
Hardware Sector Prefetch Disabled and Adjacent Sector Prefetch Disabled
OMP_NUM_THREADS set to number of cores
KMP_AFFINITY set to physical,0
KMP_STACKSIZE set to null
taskset utility used to bind CPU(s) to processes
```

## Base Compiler Invocation

C benchmarks:
`icc`

C++ benchmarks:
`icpc`

## Base Portability Flags

400.perlbench: `-DSPEC_CPU_LINUX_IA32`
462.libquantum: `-DSPEC_CPU_LINUX`
483.xalancbmk: `-DSPEC_CPU_LINUX`

## Base Optimization Flags

C benchmarks:
```
-fast -inline-calloc -opt-malloc-options=3
```

C++ benchmarks:
```
-xT -ipo -O3 -no-prec-div -Wl,-z,muldefs
-L/spec/users/rahul/cpu2006.1.0/lib -lsmartheap
```

## Base Other Flags

C benchmarks:

403.gcc: `-Dalloca=_alloca`

## Peak Compiler Invocation

C benchmarks (except as noted below):
```
icc
```

401.bzip2:
```
/opt/intel/cce/10.1.008/bin/icc
-L/opt/intel/cce/10.1.008/lib
-I/opt/intel/cce/10.1.008/include
```

456.hmmer:
```
/opt/intel/cce/10.1.008/bin/icc
-L/opt/intel/cce/10.1.008/lib
-I/opt/intel/cce/10.1.008/include
```

C++ benchmarks:
```
icpc
```

## Peak Portability Flags

400.perlbench: `-DSPEC_CPU_LINUX_IA32`
401.bzip2: `-DSPEC_CPU_LP64`
456.hmmer: `-DSPEC_CPU_LP64`
462.libquantum: `-DSPEC_CPU_LINUX`
483.xalancbmk: `-DSPEC_CPU_LINUX`

## Peak Optimization Flags

C benchmarks:

Continued on next page

## Peak Optimization Flags (Continued)

400.perlbench: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-fast -ansi-alias -prefetch`

401.bzip2: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-fast -prefetch`

403.gcc: `-fast -inline-calloc -opt-malloc-options=3`

429.mcf: `-fast -prefetch`

445.gobmk: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-xT -O2 -ipo -no-prec-div -ansi-alias`

456.hmmer: `-fast -unroll2 -ansi-alias -opt-multi-version-aggressive`

458.sjeng: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-fast -unroll4`

462.libquantum: `-fast -unroll4 -Ob0 -prefetch -opt-streaming-stores always -vec-guard-write -opt-malloc-options=3 -parallel -par-runtime-control`

464.h264ref: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-fast -unroll2 -ansi-alias`

C++ benchmarks:

471.omnetpp: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-xT -O3 -ipo -no-prec-div -ansi-alias -opt-ra-region-strategy=block -Wl,-z,muldefs -L/spec/users/rahul/cpu2006.1.0/lib -lsmartheap`

473.astar: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-xT -O3 -ipo -no-prec-div -ansi-alias -opt-ra-region-strategy=routine -Wl,-z,muldefs -L/spec/users/rahul/cpu2006.1.0/lib -lsmartheap`

483.xalancbmk: `basepeak = yes`

## Peak Other Flags

C benchmarks:

403.gcc: `-Dalloca=_alloca`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/Intel-ic10.1-int-linux64-revC.20090713.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/cpu2006/flags/Intel-ic10.1-int-linux64-revC.20090713.xml`



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

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