# SPEC® CINT2006 Result

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## IBM Corporation

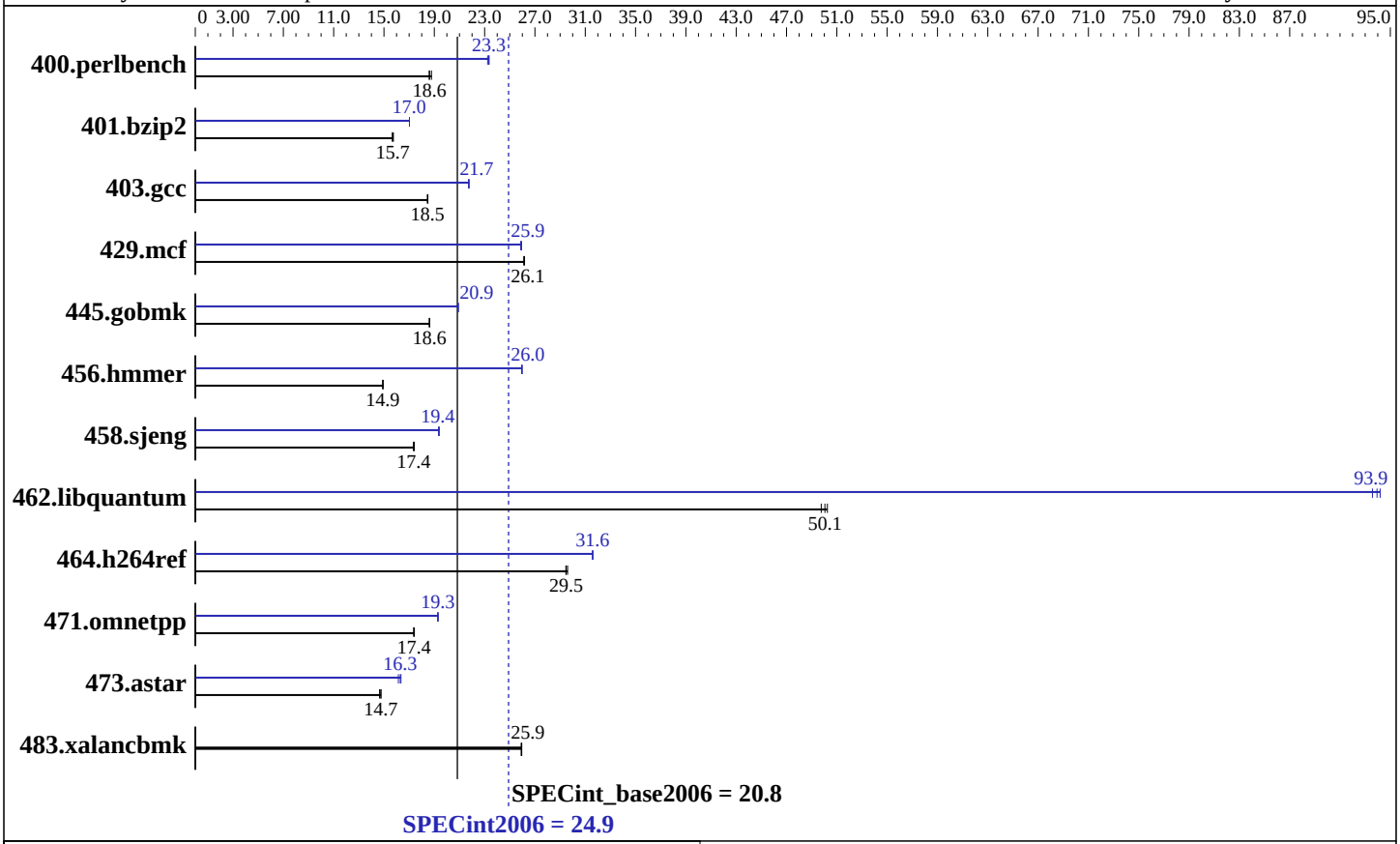
## IBM System x3200 M2 (Intel Xeon X3360)

SPECint®2006 = 24.9

SPECint_base2006 = 20.8

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

**Test date:** Jan-2008
**Hardware Availability:** Apr-2008
**Software Availability:** Nov-2007




## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon X3360 |
| CPU Characteristics: | 1333MHz system bus |
| CPU MHz: | 2833 |
| 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 DDR2-5300 ECC) |
| Disk Subsystem: | 1 x 146 GB SAS, 15000 RPM |
| 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: | Multi-user, run level 3 |
| Base Pointers: | 32-bit |
| Peak Pointers: | 32/64-bit |
| Other Software: | MicroQuill SmartHeap 8.1<br>Binutils 2.17.50.0.15 |

## Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 400.perlbench | 525 | 18.6 | 520 | 18.8 | **525** | **18.6** | 420 | 23.2 | **419** | **23.3** | 418 | 23.4 |
| 401.bzip2 | 616 | 15.7 | 613 | 15.7 | **614** | **15.7** | **567** | **17.0** | 567 | 17.0 | 567 | 17.0 |
| 403.gcc | 435 | 18.5 | **436** | **18.5** | 436 | 18.5 | 370 | 21.8 | **370** | **21.7** | 370 | 21.7 |
| 429.mcf | **349** | **26.1** | 349 | 26.1 | 348 | 26.2 | **352** | **25.9** | 352 | 25.9 | 352 | 25.9 |
| 445.gobmk | 564 | 18.6 | 563 | 18.6 | **563** | **18.6** | 502 | 20.9 | **502** | **20.9** | 502 | 20.9 |
| 456.hmmer | 625 | 14.9 | **625** | **14.9** | 626 | 14.9 | 359 | 26.0 | **359** | **26.0** | 359 | 26.0 |
| 458.sjeng | **696** | **17.4** | 698 | 17.3 | 695 | 17.4 | 626 | 19.3 | 624 | 19.4 | **624** | **19.4** |
| 462.libquantum | 416 | 49.8 | 412 | 50.2 | **414** | **50.1** | 221 | 93.6 | **221** | **93.9** | 220 | 94.2 |
| 464.h264ref | **750** | **29.5** | 751 | 29.5 | 748 | 29.6 | 701 | 31.6 | **701** | **31.6** | 700 | 31.6 |
| 471.omnetpp | 359 | 17.4 | 360 | 17.4 | **360** | **17.4** | 324 | 19.3 | **324** | **19.3** | 324 | 19.3 |
| 473.astar | 479 | 14.6 | **476** | **14.7** | 476 | 14.8 | 429 | 16.4 | **431** | **16.3** | 435 | 16.1 |
| 483.xalancbmk | 266 | 26.0 | 266 | 25.9 | **266** | **25.9** | 266 | 26.0 | 266 | 25.9 | **266** | **25.9** |

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
OMP_NUM_THREADS set to number of cores
KMP_AFFINITY set to physical,0
KMP_STACKSIZE set to null
```

## 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 -vec-guard-write -parallel -par-runtime-control
```

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 -auto-ilp32

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 -auto-ilp32

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-ia32-linux-flags.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-ia32-linux-flags.20090713.xml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