# SPEC® CINT2006 Result

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## IBM Corporation

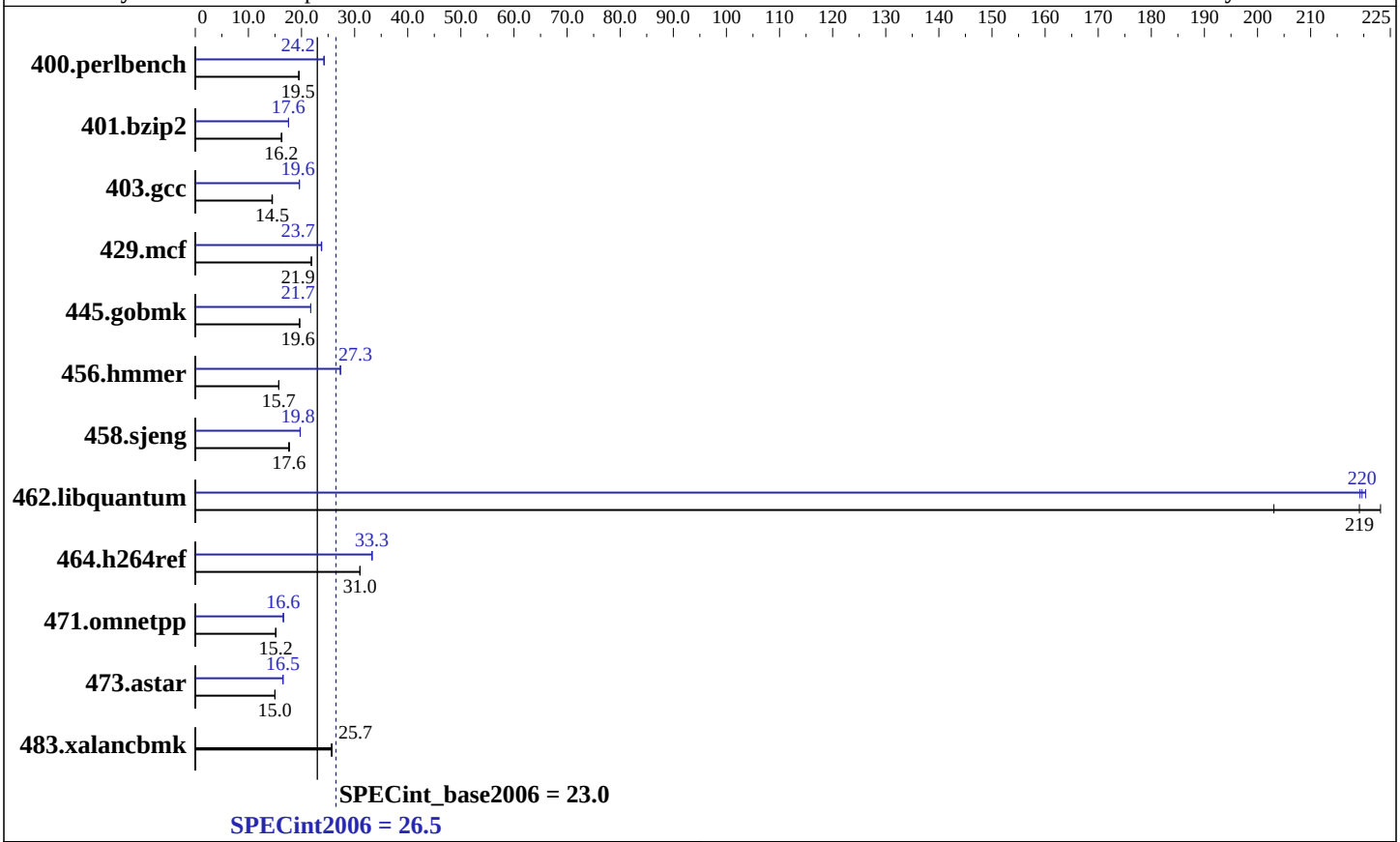
## IBM System x3550 (Intel Xeon X5450)

SPECint®2006 = 26.5

SPECint_base2006 = 23.0

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

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




## Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon X5450 |
| CPU Characteristics: | 1333MHz system bus |
| CPU MHz: | 3000 |
| FPU: | Integrated |
| CPU(s) enabled: | 8 cores, 2 chips, 4 cores/chip |
| CPU(s) orderable: | 1,2 chips |
| 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: | 16 GB (8 x 2 GB DDR2-5300F ECC) |
| Disk Subsystem: | 1 x 36 GB SAS, 15000 RPM |
| Other Hardware: | None |

## Software

| | |
|---|---|
| Operating System: | SuSE Linux Enterprise Server 10 (x86_64), Kernel 2.6.16.21-0.8-smp |
| Compiler: | Intel C++ Compiler 10.1 for Linux<br>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 |

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## Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 400.perlbench | **501** | **19.5** | 501 | 19.5 | 500 | 19.5 | 402 | 24.3 | 403 | 24.2 | **403** | **24.2** |
| 401.bzip2 | 592 | 16.3 | **595** | **16.2** | 596 | 16.2 | 550 | 17.6 | 550 | 17.5 | **550** | **17.6** |
| 403.gcc | 558 | 14.4 | **556** | **14.5** | 554 | 14.5 | 411 | 19.6 | 411 | 19.6 | **411** | **19.6** |
| 429.mcf | 417 | 21.8 | 417 | 21.9 | **417** | **21.9** | 383 | 23.8 | 384 | 23.7 | **384** | **23.7** |
| 445.gobmk | 534 | 19.6 | 534 | 19.6 | **534** | **19.6** | 482 | 21.8 | **483** | **21.7** | 483 | 21.7 |
| 456.hmmer | 593 | 15.7 | **593** | **15.7** | 594 | 15.7 | 341 | 27.3 | 342 | 27.3 | **341** | **27.3** |
| 458.sjeng | 687 | 17.6 | 683 | 17.7 | **686** | **17.6** | 614 | 19.7 | 612 | 19.8 | **612** | **19.8** |
| 462.libquantum | 102 | 203 | 92.8 | 223 | **94.5** | **219** | 94.5 | 219 | **94.3** | **220** | 94.0 | 220 |
| 464.h264ref | **714** | **31.0** | 714 | 31.0 | 713 | 31.0 | 666 | 33.2 | 665 | 33.3 | **665** | **33.3** |
| 471.omnetpp | **412** | **15.2** | 411 | 15.2 | 413 | 15.1 | **377** | **16.6** | 376 | 16.6 | 377 | 16.6 |
| 473.astar | 468 | 15.0 | **468** | **15.0** | 468 | 15.0 | 425 | 16.5 | **425** | **16.5** | 425 | 16.5 |
| 483.xalancbmk | **269** | **25.7** | 269 | 25.7 | 269 | 25.7 | **269** | **25.7** | 269 | 25.7 | 269 | 25.7 |

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 Enabled and Adjacent Sector Prefetch Enabled
OMP_NUM_THREADS set to number of cores
KMP_AFFINITY set to physical,0
KMP_STACKSIZE set to null
Powersaved dameon was disabled in OS
```

## 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-ia32-intel64-linux-flags.20090714.14.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/Intel-ic10-ia32-intel64-linux-flags.20090714.14.xml


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