# SPEC® CINT2006 Result

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## IBM Corporation

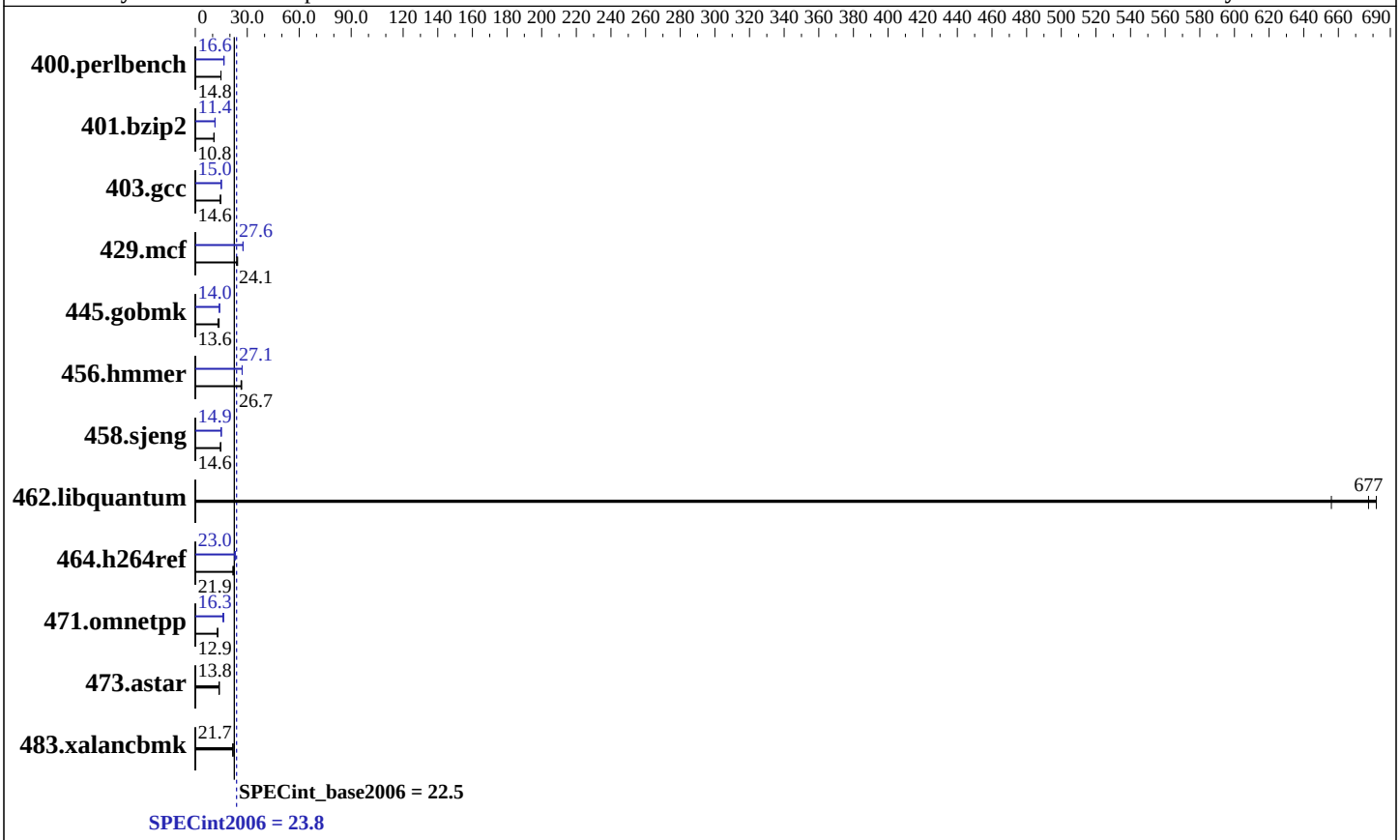
## IBM BladeCenter HX5 (Intel Xeon E7-4807)

SPECint®2006 = 23.8

SPECint_base2006 = 22.5

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

**Test date:** May-2011
**Hardware Availability:** May-2011
**Software Availability:** Jan-2011




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon E7-4807 |
| CPU Characteristics: | None |
| CPU MHz: | 1867 |
| FPU: | Integrated |
| CPU(s) enabled: | 24 cores, 4 chips, 6 cores/chip, 2 threads/core |
| CPU(s) orderable: | 1,2,3,4 chips |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |
| Secondary Cache: | 256 KB I+D on chip per core |
| L3 Cache: | 18 MB I+D on chip per chip |
| Other Cache: | None |
| Memory: | 256 GB (32 x 8 GB 4Rx8 PC3-8500R-7, ECC, running at 800 MHz) |
| Disk Subsystem: | 4 x 50 GB SSD, RAID 0 |
| Other Hardware: | None |

### Software

| | |
|---|---|
| Operating System: | SUSE Linux Enterprise Server 11 SP1 (x86_64), Kernel 2.6.32.12-0.7-default |
| Compiler: | Intel C++ Intel 64 Compiler XE for applications running on Intel 64 Version 12.0.1.116 Build 20101116 |
| Auto Parallel: | Yes |
| File System: | ext3 |
| System State: | Run level 3 (multi-user) |
| Base Pointers: | 32/64-bit |
| Peak Pointers: | 32/64-bit |
| Other Software: | Microquill SmartHeap V9.01 |

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## Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 400.perlbench | **660** | **14.8** | 660 | 14.8 | 659 | 14.8 | **590** | **16.6** | 595 | 16.4 | 589 | 16.6 |
| 401.bzip2 | 894 | 10.8 | 893 | 10.8 | **893** | **10.8** | 847 | 11.4 | 847 | 11.4 | **847** | **11.4** |
| 403.gcc | 553 | 14.6 | **553** | **14.6** | 553 | 14.5 | 536 | 15.0 | 537 | 15.0 | **537** | **15.0** |
| 429.mcf | 382 | 23.9 | **378** | **24.1** | 373 | 24.5 | 331 | 27.6 | **331** | **27.6** | 331 | 27.6 |
| 445.gobmk | **773** | **13.6** | 762 | 13.8 | 803 | 13.1 | 753 | 13.9 | 751 | 14.0 | **752** | **14.0** |
| 456.hmmer | 353 | 26.4 | 350 | 26.7 | **350** | **26.7** | 345 | 27.1 | **345** | **27.1** | 345 | 27.0 |
| 458.sjeng | **829** | **14.6** | 824 | 14.7 | 830 | 14.6 | 807 | 15.0 | **809** | **14.9** | 810 | 14.9 |
| 462.libquantum | **30.6** | **677** | 30.4 | 682 | 31.6 | 656 | **30.6** | **677** | 30.4 | 682 | 31.6 | 656 |
| 464.h264ref | **1010** | **21.9** | 1016 | 21.8 | 1009 | 21.9 | 965 | 22.9 | 963 | 23.0 | **963** | **23.0** |
| 471.omnetpp | **484** | **12.9** | 483 | 12.9 | 489 | 12.8 | 383 | 16.3 | **384** | **16.3** | 391 | 16.0 |
| 473.astar | 510 | 13.8 | 509 | 13.8 | **509** | **13.8** | 510 | 13.8 | 509 | 13.8 | **509** | **13.8** |
| 483.xalancbmk | **317** | **21.7** | 317 | 21.8 | 319 | 21.7 | **317** | **21.7** | 317 | 21.8 | 319 | 21.7 |

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

## Operating System Notes

```
'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
'mount -t hugetlbfs nodev /mnt/hugepages' was used to enable large pages
echo 900 > /proc/sys/vm/nr_hugepages
export HUGETLB_MORECORE=yes
export LD_PRELOAD=/usr/lib64/libhugetlbfs.so
```

## Platform Notes

```
BIOS Settings:
Turbo Boost Power Optimization set to Traditional
```

## General Notes

```
OMP_NUM_THREADS set to number of cores
Binaries were compiled on RHEL5.5
```

## Base Compiler Invocation

C benchmarks:

```
icc  -m64
```

C++ benchmarks:

```
icpc -m64
```

## 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`
471.omnetpp: `-DSPEC_CPU_LP64`
473.astar: `-DSPEC_CPU_LP64`
483.xalancbmk: `-DSPEC_CPU_LP64 -DSPEC_CPU_LINUX`

## Base Optimization Flags

C benchmarks:
`-xSSE4.2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32`
`-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT`

C++ benchmarks:
`-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -Wl,-z,muldefs`
`-L/smartheap -lsmartheap64`
`-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT`

## Base Other Flags

C benchmarks:

403.gcc: `-Dalloca=_alloca`

## Peak Compiler Invocation

C benchmarks (except as noted below):
`icc -m64`

400.perlbench: `icc -m32`

429.mcf: `icc -m32`

445.gobmk: `icc -m32`

464.h264ref: `icc -m32`

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## Peak Compiler Invocation (Continued)

C++ benchmarks (except as noted below):
icpc -m64

471.omnetpp: icpc -m32

## Peak Portability Flags

400.perlbench: -DSPEC_CPU_LINUX_IA32
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX

## Peak Optimization Flags

C benchmarks:

400.perlbench: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-opt-prefetch -ansi-alias
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

401.bzip2: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div -prof-use(pass 2) -auto-ilp32
-opt-prefetch -ansi-alias

403.gcc: -xSSE4.2 -ipo -O3 -no-prec-div -inline-calloc
-opt-malloc-options=3 -auto-ilp32
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

429.mcf: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-auto-ilp32 -ansi-alias
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

445.gobmk: -xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
-auto-ilp32 -ansi-alias
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

456.hmmer: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32
-ansi-alias
-B /usr/share/libhugetlbfs/ -Wl,-melf_x86_64 -Wl,-hugetlbfs-link=BDT

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## Peak Optimization Flags (Continued)

458.sjeng: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2) `-no-prec-div`(pass 2) `-prof-use`(pass 2) `-unroll4`

462.libquantum: `basepeak = yes`

464.h264ref: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2) `-no-prec-div`(pass 2) `-prof-use`(pass 2) `-unroll2 -ansi-alias -B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT`

C++ benchmarks:

471.omnetpp: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2) `-no-prec-div`(pass 2) `-prof-use`(pass 2) `-opt-ra-region-strategy=block -ansi-alias -Wl,-z,muldefs -L/smartheap -lsmartheap -B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT`

473.astar: `basepeak = yes`

483.xalancbmk: `basepeak = yes`

## Peak Other Flags

C benchmarks:

403.gcc: `-Dalloca=_alloca`

The flags files that were used to format this result can be browsed at
`http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.html`
`http://www.spec.org/cpu2006/flags/IBM-platform-linux64-revA.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2006/flags/Intel-ic12.0-linux64-revB.xml`
`http://www.spec.org/cpu2006/flags/IBM-platform-linux64-revA.xml`

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