# SPEC® CINT2006 Result

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## IBM Corporation

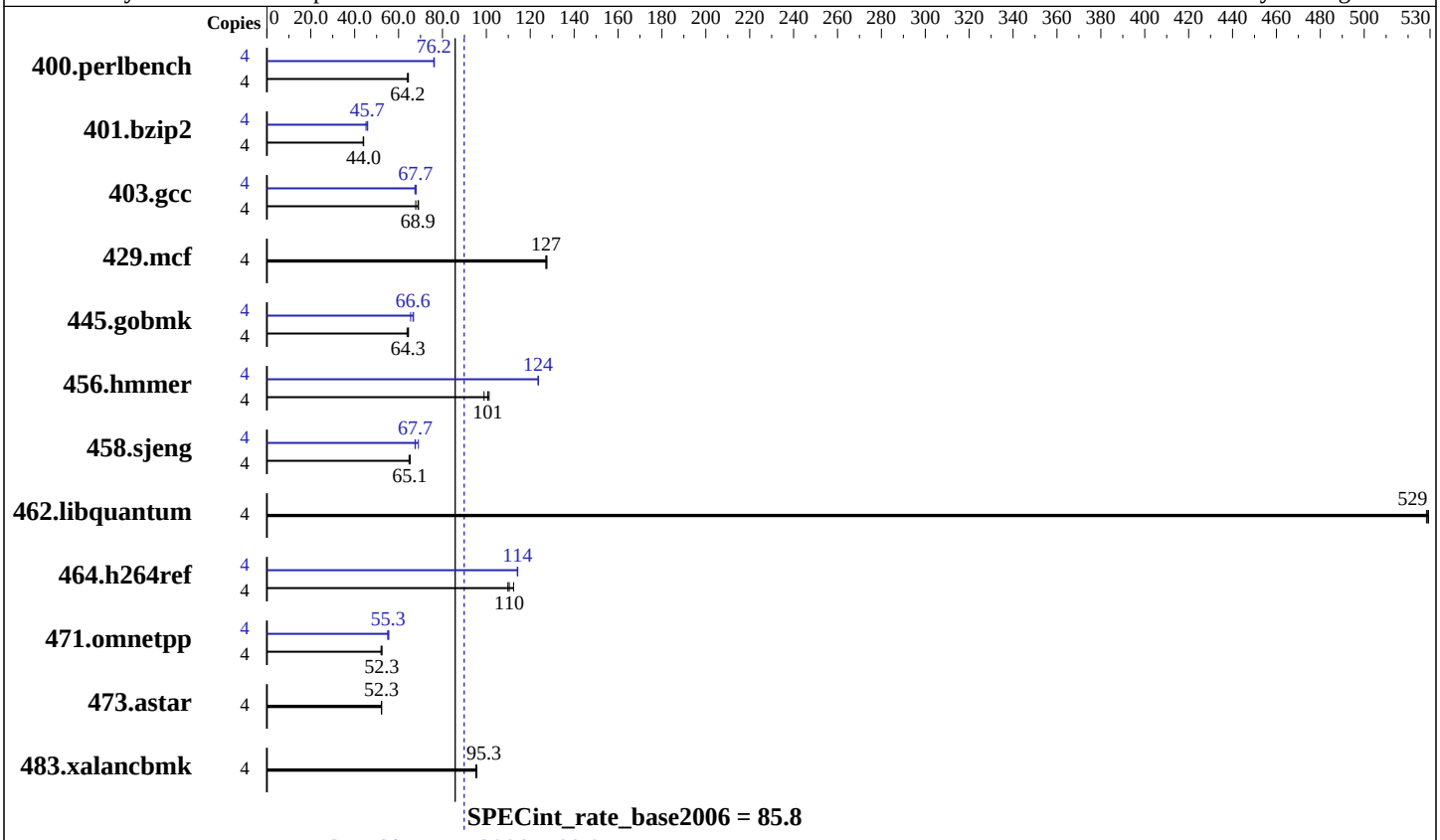
## IBM System x3100 M4 (Intel Core i3-2120)

**SPECint®_rate2006 = 89.9**

**SPECint_rate_base2006 = 85.8**

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

**Test date:** Nov-2011
**Hardware Availability:** Oct-2011
**Software Availability:** Aug-2011




### Hardware

| | |
|---|---|
| CPU Name: | Intel Core i3-2120 |
| CPU Characteristics: | |
| CPU MHz: | 3300 |
| FPU: | Integrated |
| CPU(s) enabled: | 2 cores, 1 chip, 2 cores/chip, 2 threads/core |
| CPU(s) orderable: | 1 chip |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |
| Secondary Cache: | 256 KB I+D on chip per core |
| L3 Cache: | 3 MB I+D on chip per chip |
| Other Cache: | None |
| Memory: | 16 GB (2 x 8 GB 2Rx8 PC3-10600E-9, ECC) |
| Disk Subsystem: | 1 x 250 GB SATA, 7200 RPM |
| Other Hardware: | None |

### Software

| | |
|---|---|
| Operating System: | Red Hat Enterprise Linux Server Release 6.1, Kernel 2.6.32-131.0.15.el6.x86_64 |
| Compiler: | C/C++: Version 12.1.0.225 of Intel Compiler XE Build 20110803 |
| Auto Parallel: | No |
| File System: | ext4 |
| System State: | Run level 3 (multi-user) |
| Base Pointers: | 32-bit |
| Peak Pointers: | 32/64-bit |
| Other Software: | Microquill SmartHeap V9.01 |

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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 | 610 | 64.1 | **608** | **64.2** | 606 | 64.5 | 4 | 514 | 76.0 | 512 | 76.3 | **513** | **76.2** |
| 401.bzip2 | 4 | 875 | 44.1 | **877** | **44.0** | 880 | 43.9 | 4 | 840 | 45.9 | **845** | **45.7** | 854 | 45.2 |
| 403.gcc | 4 | 466 | 69.1 | **468** | **68.9** | 475 | 67.8 | 4 | **475** | **67.7** | 477 | 67.5 | 473 | 68.0 |
| 429.mcf | 4 | 286 | 128 | 287 | 127 | **287** | **127** | 4 | 286 | 128 | 287 | 127 | **287** | **127** |
| 445.gobmk | 4 | 650 | 64.5 | 657 | 63.9 | **652** | **64.3** | 4 | 641 | 65.5 | 628 | 66.8 | **630** | **66.6** |
| 456.hmmer | 4 | **371** | **101** | 369 | 101 | 377 | 98.9 | 4 | 302 | 124 | 302 | 124 | **302** | **124** |
| 458.sjeng | 4 | **743** | **65.1** | 741 | 65.3 | 747 | 64.8 | 4 | **715** | **67.7** | 717 | 67.5 | 701 | 69.0 |
| 462.libquantum | 4 | 157 | 528 | 157 | 529 | **157** | **529** | 4 | 157 | 528 | 157 | 529 | **157** | **529** |
| 464.h264ref | 4 | **802** | **110** | 806 | 110 | 788 | 112 | 4 | **775** | **114** | 774 | 114 | 776 | 114 |
| 471.omnetpp | 4 | 477 | 52.4 | **478** | **52.3** | 481 | 52.0 | 4 | 454 | 55.1 | **452** | **55.3** | 450 | 55.6 |
| 473.astar | 4 | 538 | 52.2 | **537** | **52.3** | 537 | 52.3 | 4 | 538 | 52.2 | **537** | **52.3** | 537 | 52.3 |
| 483.xalancbmk | 4 | 289 | 95.7 | 290 | 95.2 | **290** | **95.3** | 4 | 289 | 95.7 | 290 | 95.2 | **290** | **95.3** |

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

## Submit Notes

```
The config file option 'submit' was used.
 taskset was used to bind copies to the cores
```

## Platform Notes

```
BIOS Settings:
C-State enabled in BIOS
```

## General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/root/SPECcpu12.1/smartheap:/root/SPECcpu12.1/ic12.1-libs/ia32/:/root/SPECcpu12.1/ic12.1-libs/intel64"

 Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
 memory using RHEL5.5 with binutils-2.17.50.0.6-14.el5
 Stack size set to unlimited using "ulimit -s unlimited"
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
 Filesystem page cache cleared with:
 echo 1>       /proc/sys/vm/drop_caches
 runspec command invoked through numactl i.e.:
 numactl --interleave=all runspec <etc>
```

## Base Compiler Invocation

C benchmarks:
```
icc  -m32
```

C++ benchmarks:
```
icpc -m32
```

## Base Portability Flags

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

## Base Optimization Flags

C benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3
```

C++ benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3
-Wl,-z,muldefs -L/smartheap -lsmartheap
```

## Base Other Flags

C benchmarks:

403.gcc: `-Dalloca=_alloca`

## Peak Compiler Invocation

C benchmarks (except as noted below):
```
icc  -m32
```

400.perlbench: `icc -m64`

401.bzip2: `icc -m64`

456.hmmer: `icc -m64`

458.sjeng: `icc -m64`

C++ benchmarks:
```
icpc -m32
```

## Peak Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LINUX
483.xalancbmk: -DSPEC_CPU_LINUX

## Peak Optimization Flags

C benchmarks:

400.perlbench: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -auto-ilp32

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

403.gcc: -xAVX -ipo -O3 -no-prec-div

429.mcf: basepeak = yes

445.gobmk: -xAVX(pass 2) -prof-gen(pass 1) -prof-use(pass 2) -ansi-alias -opt-mem-layout-trans=3

456.hmmer: -xAVX -ipo -O3 -no-prec-div -unroll2 -auto-ilp32

458.sjeng: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -auto-ilp32

462.libquantum: basepeak = yes

464.h264ref: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2 -ansi-alias

C++ benchmarks:

471.omnetpp: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -ansi-alias -opt-ra-region-strategy=block -Wl,-z,muldefs -L/smartheap -lsmartheap

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-ic12.1-linux64.html`
`http://www.spec.org/cpu2006/flags/IBM-platform-linux64-revB.20111206.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2006/flags/Intel-ic12.1-linux64.xml`
`http://www.spec.org/cpu2006/flags/IBM-platform-linux64-revB.20111206.xml`


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Tested with SPEC CPU2006 v1.1.
Report generated on Thu Jul 24 01:19:54 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 6 December 2011.