# SPEC® CINT2006 Result

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## NEC Corporation

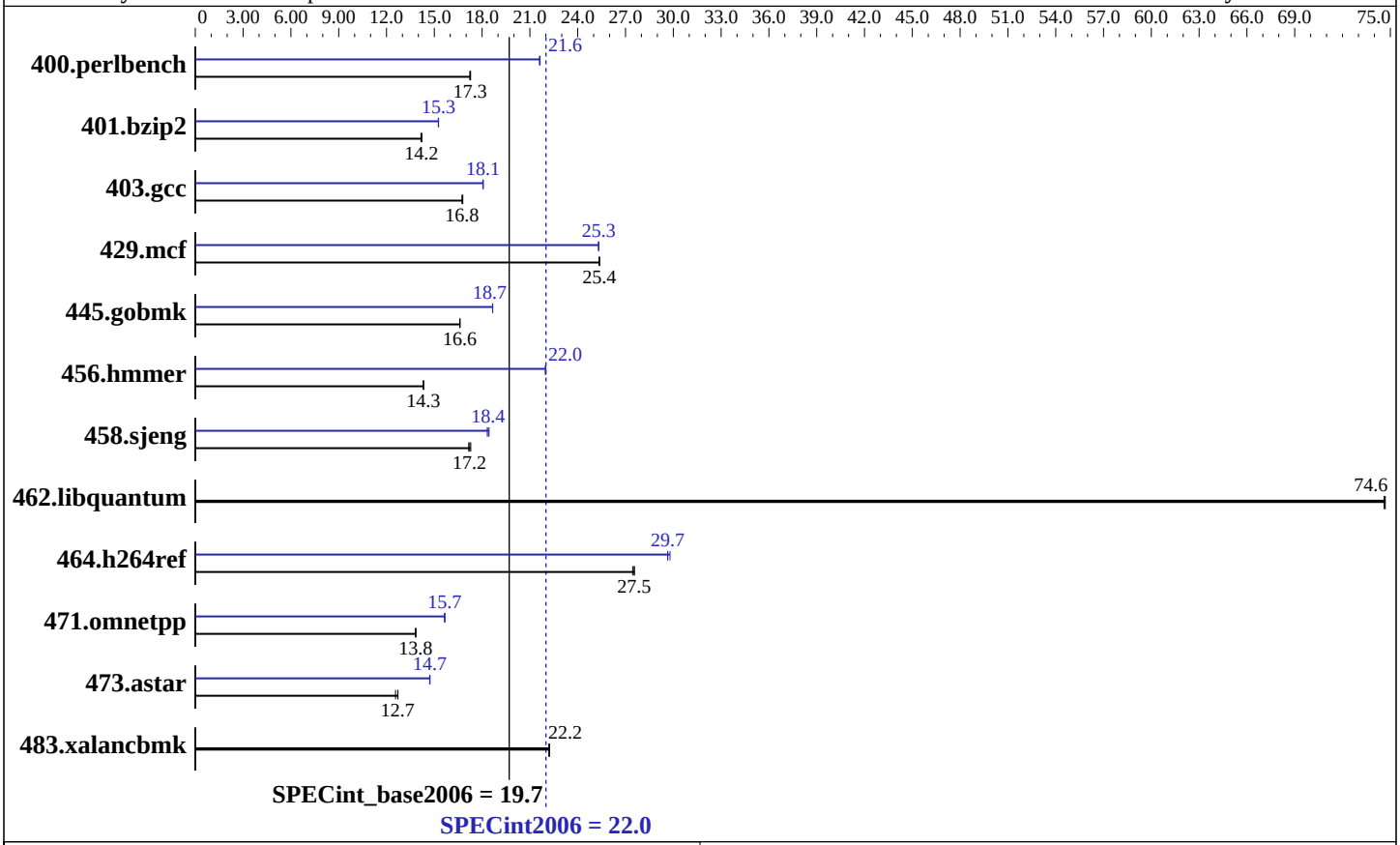
Express5800/R110a-1H
(Intel Core 2 Duo T9400)

SPECint®2006 = 22.0

SPECint_base2006 = 19.7

**CPU2006 license:** 9006
**Test sponsor:** NEC Corporation
**Tested by:** NEC Corporation

**Test date:** Feb-2009
**Hardware Availability:** Jan-2009
**Software Availability:** Nov-2008




### Hardware

| | |
|---|---|
| CPU Name: | Intel Core 2 Duo T9400 |
| CPU Characteristics: | 1066 MHz system bus |
| CPU MHz: | 2533 |
| FPU: | Integrated |
| CPU(s) enabled: | 2 cores, 1 chip, 2 cores/chip |
| CPU(s) orderable: | 1 chip |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |
| Secondary Cache: | 6 MB I+D on chip per chip |
| L3 Cache: | None |
| Other Cache: | None |
| Memory: | 8 GB (4x2 GB PC2-5300P, 1 rank, CL5-5-5, ECC) |
| Disk Subsystem: | 1x160 GB SATAII, 7200 RPM |
| Other Hardware: | None |

### Software

| | |
|---|---|
| Operating System: | SUSE Linux Enterprise Server 10 (x86_64) SP2, Kernel 2.6.16.60-0.21-smp |
| Compiler: | Intel C++ Compiler 11.0 for Linux Build 20081105 Package ID: l_cproc_p_11.0.074 |
| Auto Parallel: | Yes |
| File System: | ext2 |
| System State: | Run level 3 (multi-user) |
| Base Pointers: | 32-bit |
| Peak Pointers: | 32/64-bit |
| Other Software: | MicroQuill SmartHeap Library 8.1 Binutils 2.18.50.0.7.20080502 |

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## Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 400.perlbench | 567 | 17.2 | **566** | **17.3** | 565 | 17.3 | **452** | **21.6** | 452 | 21.6 | 451 | 21.6 |
| 401.bzip2 | **680** | **14.2** | 679 | 14.2 | 681 | 14.2 | **632** | **15.3** | 633 | 15.3 | 632 | 15.3 |
| 403.gcc | **481** | **16.8** | 481 | 16.7 | 479 | 16.8 | 446 | 18.0 | 445 | 18.1 | **446** | **18.1** |
| 429.mcf | 360 | 25.3 | 359 | 25.4 | **360** | **25.4** | 361 | 25.3 | **360** | **25.3** | 360 | 25.3 |
| 445.gobmk | 632 | 16.6 | 632 | 16.6 | **632** | **16.6** | 562 | 18.7 | **562** | **18.7** | 562 | 18.7 |
| 456.hmmer | 652 | 14.3 | 651 | 14.3 | **652** | **14.3** | 424 | 22.0 | **424** | **22.0** | 425 | 22.0 |
| 458.sjeng | 705 | 17.2 | **703** | **17.2** | 700 | 17.3 | 656 | 18.4 | **658** | **18.4** | 660 | 18.3 |
| 462.libquantum | 278 | 74.6 | 277 | 74.7 | **278** | **74.6** | 278 | 74.6 | 277 | 74.7 | **278** | **74.6** |
| 464.h264ref | 806 | 27.4 | 803 | 27.6 | **803** | **27.5** | 743 | 29.8 | **746** | **29.7** | 747 | 29.6 |
| 471.omnetpp | 452 | 13.8 | 451 | 13.8 | **452** | **13.8** | 400 | 15.6 | 399 | 15.7 | **399** | **15.7** |
| 473.astar | 552 | 12.7 | **552** | **12.7** | 559 | 12.6 | 477 | 14.7 | 477 | 14.7 | **477** | **14.7** |
| 483.xalancbmk | 311 | 22.2 | 310 | 22.2 | **311** | **22.2** | 311 | 22.2 | 310 | 22.2 | **311** | **22.2** |

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
OMP_NUM_THREADS set to number of cores
KMP_AFFINITY set to "physical,0"
```

## Platform Notes

```
Bios settings:
Hardware Prefetcher:            Enabled
Adjacent Cache Line Prefetch:   Enabled
```

## Base Compiler Invocation

C benchmarks:
`icc`

C++ benchmarks:
`icpc`

## Base Portability Flags

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

Continued on next page

## Base Portability Flags (Continued)

483.xalancbmk: -DSPEC_CPU_LINUX

## Base Optimization Flags

C benchmarks:
-xSSE4.1 -ipo -O3 -no-prec-div -static -parallel
-par-runtime-control -opt-prefetch

C++ benchmarks:
-xSSE4.1 -ipo -O3 -no-prec-div -opt-prefetch -Wl,-z,muldefs
-L/opt/SmartHeap_8.1/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/Compiler/11.0/074/bin/intel64/icc
-L/opt/intel/Compiler/11.0/074/ipp/em64t/lib
-I/opt/intel/Compiler/11.0/074/ipp/em64t/include

456.hmmer: /opt/intel/Compiler/11.0/074/bin/intel64/icc
-L/opt/intel/Compiler/11.0/074/ipp/em64t/lib
-I/opt/intel/Compiler/11.0/074/ipp/em64t/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:

400.perlbench: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-xSSE4.1 -ipo -O3 -no-prec-div -static -ansi-alias -opt-prefetch`

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

403.gcc: `-xSSE4.1 -ipo -O3 -no-prec-div -static -inline-calloc -opt-malloc-options=3`

429.mcf: `-xSSE4.1 -ipo -O3 -no-prec-div -static -opt-prefetch`

445.gobmk: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-xSSE4.1 -O2 -ipo -no-prec-div -ansi-alias`

456.hmmer: `-xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2 -ansi-alias -auto-ilp32`

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

462.libquantum: `basepeak = yes`

464.h264ref: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2 -ansi-alias`

C++ benchmarks:

471.omnetpp: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-xSSE4.1 -ipo -O3 -no-prec-div -ansi-alias -opt-ra-region-strategy=block -Wl,-z,muldefs -L/opt/SmartHeap_8.1/lib -lsmartheap`

473.astar: `-prof-gen`(pass 1) `-prof-use`(pass 2) `-xSSE4.1 -ipo -O3 -no-prec-div -ansi-alias -opt-ra-region-strategy=routine -Wl,-z,muldefs -L/opt/SmartHeap_8.1/lib -lsmartheap`

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-ic11.0-int-linux64-revE.html
http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revB.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic11.0-int-linux64-revE.xml
http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revB.xml


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