



# SPEC<sup>®</sup> CINT2006 Result

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## NEC Corporation

Express5800/R120a-1  
(Intel Xeon E5502)

SPECint<sup>®</sup>\_rate2006 = 71.3

SPECint\_rate\_base2006 = 66.3

CPU2006 license: 9006

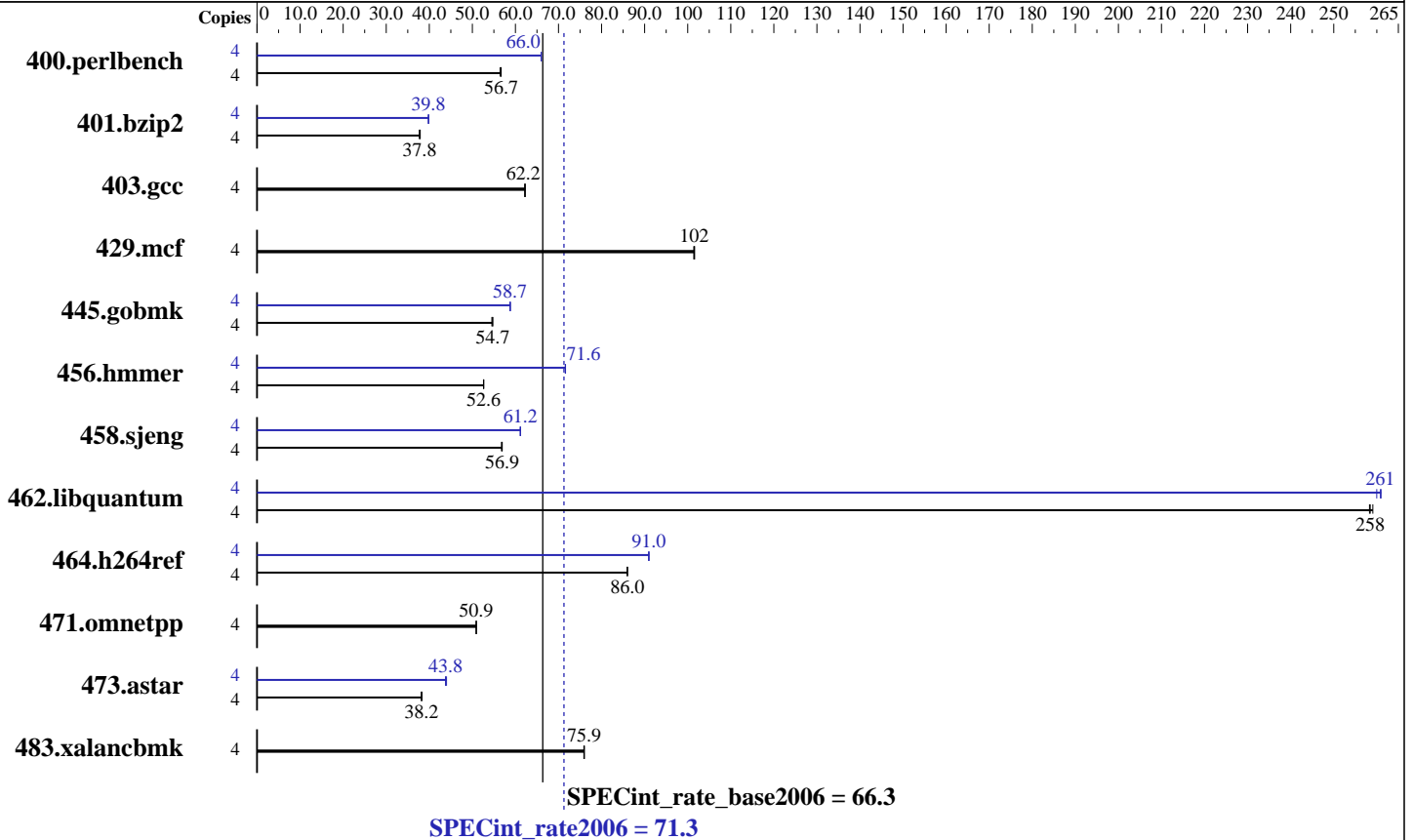
Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: Mar-2009

Hardware Availability: Apr-2009

Software Availability: Feb-2009



### Hardware

CPU Name: Intel Xeon E5502  
 CPU Characteristics:  
 CPU MHz: 1867  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 2 chips, 2 cores/chip  
 CPU(s) orderable: 1,2 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: 4 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 48 GB (12 X 4 GB PC3-8500R running at 800 MHz)  
 Disk Subsystem: 1x146.5 GB SAS, 15000 RPM  
 Other Hardware: None

### Software

Operating System: SUSE Linux Enterprise Server 10 (x86\_64) SP2 with patch Linux kernel 20090119, Kernel 2.6.16.60-0.34-smp  
 Compiler: Intel C++ Compiler 11.0 for Linux Build 20090131 Package ID: l\_cproc\_p\_11.0.081  
 Auto Parallel: No  
 File System: ReiserFS  
 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   |            |             |            |             |            |             |
|----------------|--------|-------------|-------------|-------------|-------------|------------|-------------|--------|------------|-------------|------------|-------------|------------|-------------|
|                | Copies | Seconds     | Ratio       | Seconds     | Ratio       | Seconds    | Ratio       | Copies | Seconds    | Ratio       | Seconds    | Ratio       | Seconds    | Ratio       |
| 400.perlbench  | 4      | 692         | 56.4        | 689         | 56.7        | <b>690</b> | <b>56.7</b> | 4      | 592        | 66.0        | 592        | 66.0        | <b>592</b> | <b>66.0</b> |
| 401.bzip2      | 4      | 1019        | 37.9        | <b>1022</b> | <b>37.8</b> | 1024       | 37.7        | 4      | 970        | 39.8        | <b>970</b> | <b>39.8</b> | 969        | 39.8        |
| 403.gcc        | 4      | <b>517</b>  | <b>62.2</b> | 518         | 62.2        | 517        | 62.3        | 4      | <b>517</b> | <b>62.2</b> | 518        | 62.2        | 517        | 62.3        |
| 429.mcf        | 4      | <b>359</b>  | <b>102</b>  | 360         | 101         | 359        | 102         | 4      | <b>359</b> | <b>102</b>  | 360        | 101         | 359        | 102         |
| 445.gobmk      | 4      | 770         | 54.5        | <b>767</b>  | <b>54.7</b> | 767        | 54.7        | 4      | 713        | 58.8        | 714        | 58.7        | <b>714</b> | <b>58.7</b> |
| 456.hammer     | 4      | 710         | 52.6        | 709         | 52.6        | <b>709</b> | <b>52.6</b> | 4      | 521        | 71.6        | <b>521</b> | <b>71.6</b> | 521        | 71.6        |
| 458.sjeng      | 4      | 850         | 56.9        | <b>851</b>  | <b>56.9</b> | 853        | 56.8        | 4      | 792        | 61.1        | 791        | 61.2        | <b>791</b> | <b>61.2</b> |
| 462.libquantum | 4      | <b>321</b>  | <b>258</b>  | 320         | 259         | 321        | 258         | 4      | 319        | 260         | <b>318</b> | <b>261</b>  | 318        | 261         |
| 464.h264ref    | 4      | <b>1030</b> | <b>86.0</b> | 1030        | 86.0        | 1029       | 86.0        | 4      | <b>973</b> | <b>91.0</b> | 973        | 91.0        | 973        | 90.9        |
| 471.omnetpp    | 4      | <b>491</b>  | <b>50.9</b> | 491         | 50.9        | 491        | 50.9        | 4      | <b>491</b> | <b>50.9</b> | 491        | 50.9        | 491        | 50.9        |
| 473.astar      | 4      | 733         | 38.3        | 736         | 38.2        | <b>735</b> | <b>38.2</b> | 4      | 638        | 44.0        | 641        | 43.8        | <b>641</b> | <b>43.8</b> |
| 483.xalancbmk  | 4      | 363         | 76.0        | <b>363</b>  | <b>75.9</b> | 364        | 75.9        | 4      | 363        | 76.0        | <b>363</b> | <b>75.9</b> | 364        | 75.9        |

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.  
numactl was used to bind copies to the cores

## Operating System Notes

'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run

## Platform Notes

BIOS setting:  
NUMA configuration: Enabled

## General Notes

The NEC Express5800/R120a-1(Intel Xeon E5502),  
the NEC Express5800/R120a-2(Intel Xeon E5502),  
the Bull NovaScale R440 E2 (Intel Xeon E5502, 1.86 GHz) and  
the Bull NovaScale R460 E2 (Intel Xeon E5502, 1.86 GHz) models are electronically equivalent.  
The results have been measured on a NEC Express5800/R120a-2(Intel Xeon E5502) model.

## Base Compiler Invocation

C benchmarks:  
icc

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## Base Compiler Invocation (Continued)

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:  
-xSSE4.2 -ipo -O3 -no-prec-div -static -inline-alloc  
-opt-malloc-options=3 -opt-prefetch

C++ benchmarks:  
-xSSE4.2 -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/11.0/081/bin/intel64/icc  
456.hmmer: /opt/intel/Compiler/11.0/081/bin/intel64/icc  
458.sjeng: /opt/intel/Compiler/11.0/081/bin/intel64/icc

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

473.astar: /opt/intel/Compiler/11.0/081/bin/intel64/icpc



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**Test sponsor:** NEC Corporation

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**Tested by:** NEC Corporation

**Software Availability:** Feb-2009

## Peak Portability Flags

```

400.perlbench: -DSPEC_CPU_LINUX_IA32
401.bzip2: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LINUX
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -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) -static(pass 2)
               -prof-use(pass 2) -ansi-alias -opt-prefetch

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

403.gcc: basepeak = yes

429.mcf: basepeak = yes

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

456.hmmer: -xSSE4.2 -ipo -O3 -no-prec-div -static -unroll2
            -ansi-alias -auto-ilp32

458.sjeng: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
            -O3(pass 2) -no-prec-div(pass 2) -static(pass 2)
            -prof-use(pass 2) -unroll4 -auto-ilp32

462.libquantum: -xSSE4.2 -ipo -O3 -no-prec-div -static
                -opt-malloc-options=3 -opt-prefetch

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

```

C++ benchmarks:

```

471.omnetpp: basepeak = yes

473.astar: -xSSE4.2(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=routine -auto-ilp32
            -Wl,-z,muldefs -L/opt/SmartHeap_8.1/lib64 -lsmartheap64

```

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## Peak Optimization Flags (Continued)

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-revF.html>

<http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revE.20090710.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-revF.xml>

<http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revE.20090710.xml>

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For questions about this result, please contact the tester.  
For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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