



# SPEC<sup>®</sup> CINT2006 Result

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NEC Corporation

SPECint<sup>®</sup>\_rate2006 = 137

Express5800/GT110d (Intel Xeon E3-1220)

SPECint\_rate\_base2006 = 130

CPU2006 license: 9006

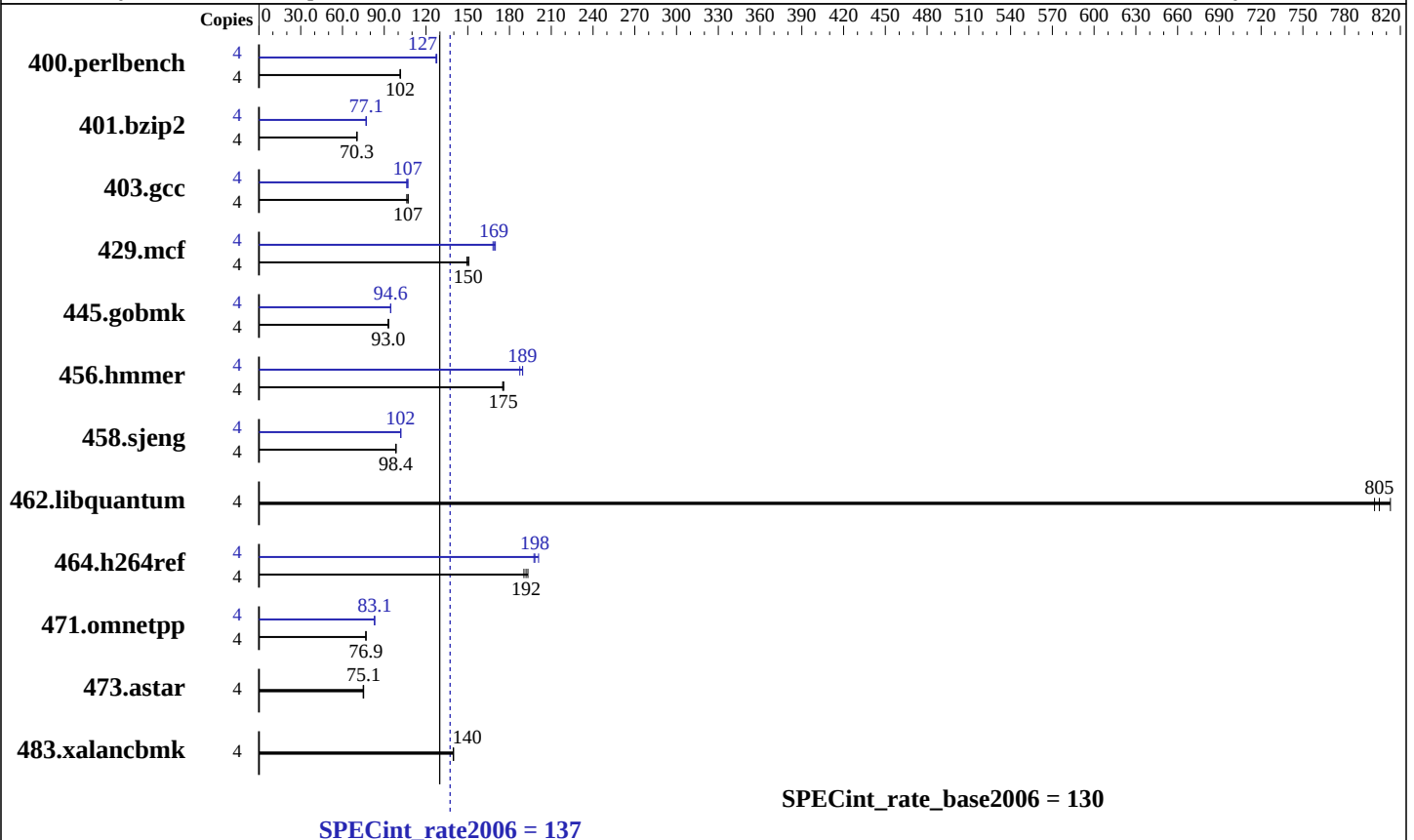
Test date: May-2011

Test sponsor: NEC Corporation

Hardware Availability: Jun-2011

Tested by: NEC Corporation

Software Availability: Mar-2011



## Hardware

CPU Name: Intel Xeon E3-1220  
CPU Characteristics: Intel Turbo Boost Technology up to 3.40 GHz  
CPU MHz: 3100  
FPU: Integrated  
CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip  
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: 8 MB I+D on chip per chip  
Other Cache: None  
Memory: 8 GB (2 x 4 GB 2Rx8 PC3-10600E-9, ECC)  
Disk Subsystem: 1 x 160 GB SATA, 7200 RPM  
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++ Compiler XE for applications running on IA32, Version 12.0.3.174 Build 20110309  
Auto Parallel: No  
File System: ext3  
System State: Run level 3 (multi-user)  
Base Pointers: 32-bit  
Peak Pointers: 32/64-bit  
Other Software: Microquill SmartHeap V8.1



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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      | 385               | 101                | <b><u>385</u></b> | <b><u>102</u></b>  | 384               | 102               | 4      | 307               | 127               | <b><u>307</u></b> | <b><u>127</u></b>  | 306               | 128                |
| 401.bzip2      | 4      | <b><u>549</u></b> | <b><u>70.3</u></b> | 549               | 70.3               | 547               | 70.5              | 4      | 501               | 77.1              | <b><u>501</u></b> | <b><u>77.1</u></b> | 501               | 77.0               |
| 403.gcc        | 4      | 303               | 106                | <b><u>301</u></b> | <b><u>107</u></b>  | 300               | 107               | 4      | <b><u>302</u></b> | <b><u>107</u></b> | 303               | 106                | 301               | 107                |
| 429.mcf        | 4      | 244               | 149                | 242               | 151                | <b><u>243</u></b> | <b><u>150</u></b> | 4      | 215               | 170               | 217               | 168                | <b><u>216</u></b> | <b><u>169</u></b>  |
| 445.gobmk      | 4      | 451               | 93.1               | <b><u>451</u></b> | <b><u>93.0</u></b> | 452               | 92.8              | 4      | 443               | 94.6              | <b><u>443</u></b> | <b><u>94.6</u></b> | 443               | 94.7               |
| 456.hammer     | 4      | 212               | 176                | 213               | 175                | <b><u>213</u></b> | <b><u>175</u></b> | 4      | 197               | 189               | 199               | 187                | <b><u>197</u></b> | <b><u>189</u></b>  |
| 458.sjeng      | 4      | 492               | 98.4               | <b><u>492</u></b> | <b><u>98.4</u></b> | 492               | 98.4              | 4      | 475               | 102               | <b><u>475</u></b> | <b><u>102</u></b>  | 475               | 102                |
| 462.libquantum | 4      | 103               | 801                | 102               | 813                | <b><u>103</u></b> | <b><u>805</u></b> | 4      | 103               | 801               | 102               | 813                | <b><u>103</u></b> | <b><u>805</u></b>  |
| 464.h264ref    | 4      | 465               | 190                | 458               | 193                | <b><u>461</u></b> | <b><u>192</u></b> | 4      | 441               | 201               | <b><u>447</u></b> | <b><u>198</u></b>  | 448               | 198                |
| 471.omnetpp    | 4      | <b><u>325</u></b> | <b><u>76.9</u></b> | 325               | 76.9               | 325               | 76.8              | 4      | 301               | 83.1              | 301               | 83.0               | <b><u>301</u></b> | <b><u>83.1</u></b> |
| 473.astar      | 4      | 375               | 74.8               | <b><u>374</u></b> | <b><u>75.1</u></b> | 373               | 75.2              | 4      | 375               | 74.8              | <b><u>374</u></b> | <b><u>75.1</u></b> | 373               | 75.2               |
| 483.xalancbmk  | 4      | 198               | 140                | <b><u>198</u></b> | <b><u>140</u></b>  | 197               | 140               | 4      | 198               | 140               | <b><u>198</u></b> | <b><u>140</u></b>  | 197               | 140                |

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  
Huge pages were not configured for this run

## Platform Notes

Default BIOS settings were used.

## General Notes

The Express5800/GT110d (Intel Xeon E3-1220) and  
the Express5800/GT110d-S (Intel Xeon E3-1220) models are electronically equivalent.  
The results have been measured on the Express5800/GT110d-S (Intel Xeon E3-1220) model.

## Base Compiler Invocation

C benchmarks:  
icc -m32

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## Base Compiler Invocation (Continued)

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  
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

C++ benchmarks:  
-xAVX -ipo -O3 -no-prec-div -opt-prefetch -Wl,-z,muldefs  
-L/opt/SmartHeap\_8.1/lib -lsmartheap  
-B /usr/share/libhugetlbfs/ -Wl,-hugetlbfs-link=BDT

## 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



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## 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)  
-B /usr/share/libhugetlbfs/ -Wl, -melf\_x86\_64 -Wl, -hugetlbfs-link=BDT

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  
-B /usr/share/libhugetlbfs/ -Wl, -melf\_x86\_64 -Wl, -hugetlbfs-link=BDT

403.gcc: -xAVX -ipo -O3 -no-prec-div  
-B /usr/share/libhugetlbfs/ -Wl, -hugetlbfs-link=BDT

429.mcf: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)  
-no-prec-div(pass 2) -prof-use(pass 2) -ansi-alias  
-auto-ilp32

445.gobmk: -xAVX(pass 2) -prof-gen(pass 1) -prof-use(pass 2)  
-ansi-alias -auto-ilp32

456.hmmer: -xAVX -ipo -O3 -no-prec-div -unroll2 -auto-ilp32  
-B /usr/share/libhugetlbfs/ -Wl, -melf\_x86\_64 -Wl, -hugetlbfs-link=BDT

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  
-B /usr/share/libhugetlbfs/ -Wl, -melf\_x86\_64 -Wl, -hugetlbfs-link=BDT

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

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## Peak Optimization Flags (Continued)

471.omnetpp (continued):  
-L/opt/SmartHeap\_8.1/lib -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-ic12.0-linux64-revB.html>

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