



SPEC® CINT2006 Result

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NEC Corporation

SPECint®_rate2006 = 184

Express5800/T120e (Intel Xeon E5-2403 v2)

SPECint_rate_base2006 = 178

CPU2006 license: 9006

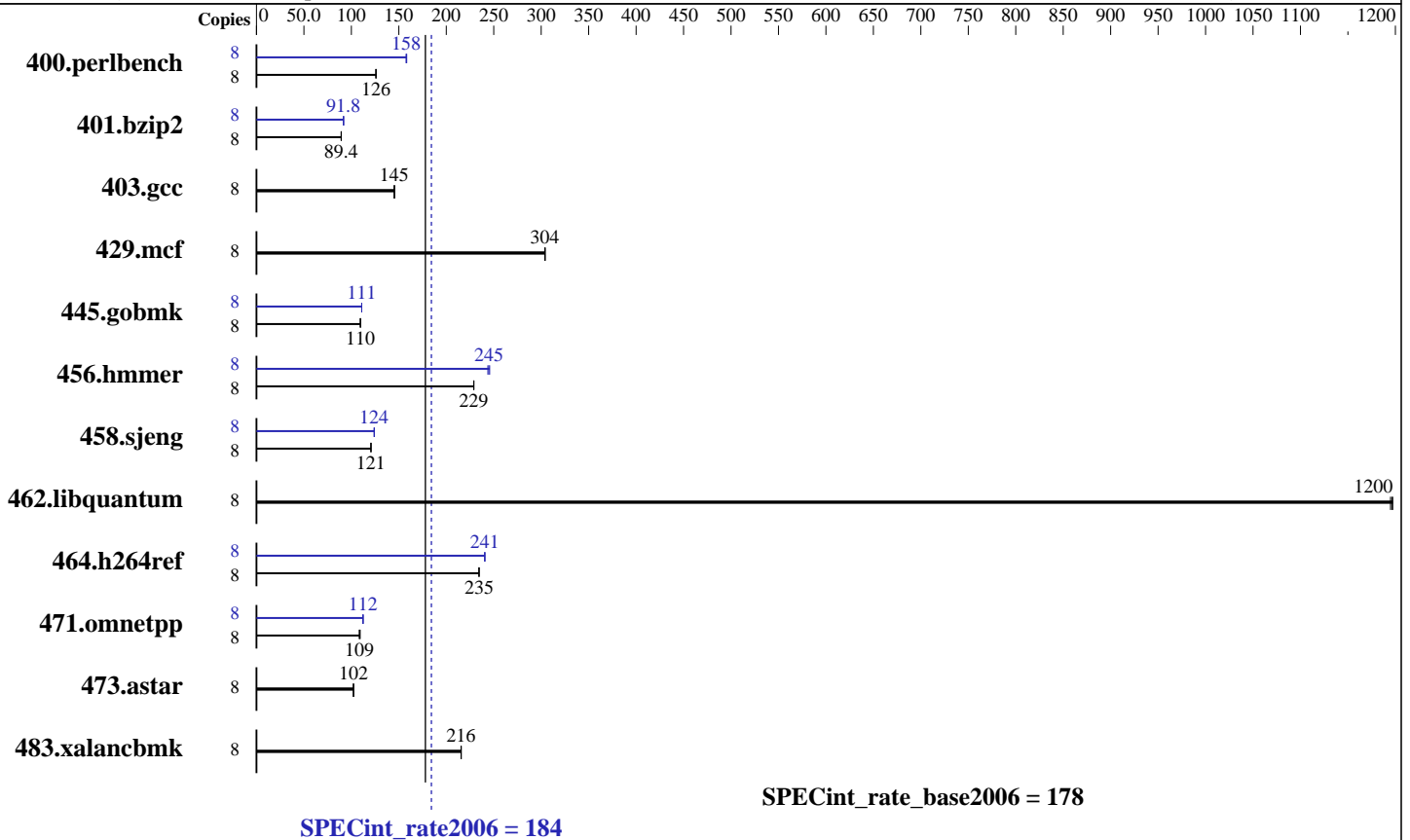
Test date: Apr-2014

Test sponsor: NEC Corporation

Hardware Availability: Jan-2014

Tested by: NEC Corporation

Software Availability: Oct-2013



Hardware

CPU Name: Intel Xeon E5-2403 v2
 CPU Characteristics: 1800
 CPU MHz: 1800
 FPU: Integrated
 CPU(s) enabled: 8 cores, 2 chips, 4 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: 10 MB I+D on chip per chip
 Other Cache: None
 Memory: 192 GB (12 x 16 GB 2Rx4 PC3L-12800R-11, ECC, running at 1333 MHz and CL9)
 Disk Subsystem: 1 x 250 GB SATA, 7200 RPM
 Other Hardware: None

Software

Operating System: Red Hat Enterprise Linux Server release 6.4 (Santiago)
 Kernel 2.6.32-358.23.2.el6.x86_64
 Compiler: C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux
 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 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 | 8 | 620 | 126 | 621 | 126 | <u>621</u> | <u>126</u> | 8 | 494 | 158 | 495 | 158 | <u>495</u> | <u>158</u> |
| 401.bzip2 | 8 | <u>864</u> | <u>89.4</u> | 866 | 89.2 | 864 | 89.4 | 8 | 842 | 91.7 | <u>841</u> | <u>91.8</u> | 841 | 91.8 |
| 403.gcc | 8 | 443 | 146 | <u>443</u> | <u>145</u> | 444 | 145 | 8 | 443 | 146 | <u>443</u> | <u>145</u> | 444 | 145 |
| 429.mcf | 8 | <u>240</u> | <u>304</u> | 240 | 304 | 240 | 304 | 8 | <u>240</u> | <u>304</u> | 240 | 304 | 240 | 304 |
| 445.gobmk | 8 | 766 | 110 | <u>766</u> | <u>110</u> | 766 | 110 | 8 | 757 | 111 | <u>757</u> | <u>111</u> | 756 | 111 |
| 456.hammer | 8 | 326 | 229 | 326 | 229 | <u>326</u> | <u>229</u> | 8 | <u>305</u> | <u>245</u> | 304 | 246 | 306 | 244 |
| 458.sjeng | 8 | 803 | 121 | <u>802</u> | <u>121</u> | 802 | 121 | 8 | <u>780</u> | <u>124</u> | 779 | 124 | 780 | 124 |
| 462.libquantum | 8 | 139 | 1190 | 138 | 1200 | <u>139</u> | <u>1200</u> | 8 | 139 | 1190 | 138 | 1200 | <u>139</u> | <u>1200</u> |
| 464.h264ref | 8 | <u>755</u> | <u>235</u> | 756 | 234 | 755 | 235 | 8 | 736 | 241 | 736 | 241 | <u>736</u> | <u>241</u> |
| 471.omnetpp | 8 | <u>460</u> | <u>109</u> | 458 | 109 | 462 | 108 | 8 | <u>445</u> | <u>112</u> | 446 | 112 | 445 | 112 |
| 473.astar | 8 | 549 | 102 | <u>549</u> | <u>102</u> | 550 | 102 | 8 | 549 | 102 | <u>549</u> | <u>102</u> | 550 | 102 |
| 483.xalancbmk | 8 | 256 | 216 | <u>256</u> | <u>216</u> | 256 | 216 | 8 | 256 | 216 | <u>256</u> | <u>216</u> | 256 | 216 |

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

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

Platform Notes

BIOS Settings:
Energy Performance: Performance
Memory Voltage: 1.5 V

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"

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>



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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:

-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3

C++ benchmarks:

-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3
-Wl,-z,muldefs -L/sh -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



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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: -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

401.bzip2: -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 -auto-ilp32 -ansi-alias

403.gcc: basepeak = yes

429.mcf: basepeak = yes

445.gobmk: -xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
 -ansi-alias -opt-mem-layout-trans=3

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

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 -auto-ilp32

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

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)
 -ansi-alias -opt-ra-region-strategy=block -Wl,-z,muldefs
 -L/sh -lsmartheap

473.astar: basepeak = yes

Continued on next page



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Peak Optimization Flags (Continued)

483.xalanbmk: 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-ic14.0-official-linux64.20140128.html>

<http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-R120-RevB.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml>

<http://www.spec.org/cpu2006/flags/NEC-Platform-Settings-V1.2-R120-RevB.xml>

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.
Report generated on Thu Jul 24 23:03:10 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 20 May 2014.