



# SPEC<sup>®</sup> CINT2006 Result

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## NEC Corporation

Express5800/R140a-4  
(Intel Xeon E7310)

SPECint<sup>®</sup>\_rate2006 = 132

SPECint\_rate\_base2006 = 131

CPU2006 license: 9006

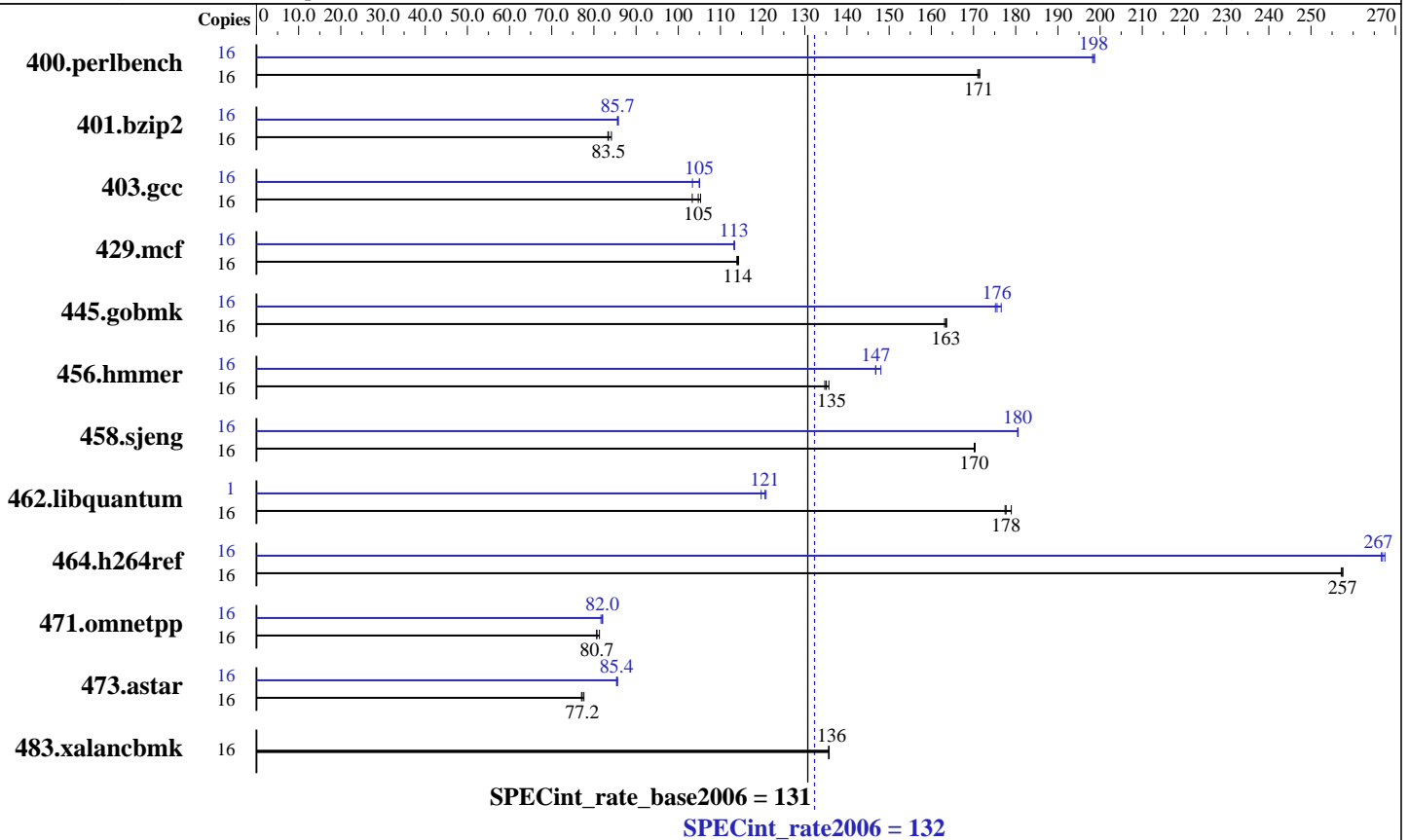
Test sponsor: NEC Corporation

Tested by: NEC Corporation

Test date: Dec-2008

Hardware Availability: Nov-2008

Software Availability: Nov-2008



### Hardware

CPU Name: Intel Xeon E7310  
 CPU Characteristics: 1066 MHz system bus  
 CPU MHz: 1600  
 FPU: Integrated  
 CPU(s) enabled: 16 cores, 4 chips, 4 cores/chip  
 CPU(s) orderable: 1,2,3,4 chips  
 Primary Cache: 32 KB I + 32 KB D on chip per core  
 Secondary Cache: 4 MB I+D on chip per chip, 2 MB shared / 2 cores  
 L3 Cache: None  
 Other Cache: None  
 Memory: 32 GB (16x2 GB PC2-5300F, 2 rank, CL5-5-5, ECC)  
 Disk Subsystem: 1x73.2 GB SAS, 15000 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						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	16	912	171	914	171	<u>913</u>	<u>171</u>	16	789	198	787	199	<u>788</u>	<u>198</u>
401.bzip2	16	<u>1850</u>	<u>83.5</u>	1835	84.2	1853	83.3	16	<u>1802</u>	<u>85.7</u>	1799	85.8	1804	85.6
403.gcc	16	<u>1230</u>	<u>105</u>	1247	103	1223	105	16	1246	103	1226	105	<u>1227</u>	<u>105</u>
429.mcf	16	1277	114	1281	114	<u>1279</u>	<u>114</u>	16	<u>1289</u>	<u>113</u>	1289	113	1287	113
445.gobmk	16	<u>1027</u>	<u>163</u>	1029	163	1026	164	16	<u>956</u>	<u>176</u>	958	175	951	177
456.hammer	16	1100	136	<u>1105</u>	<u>135</u>	1108	135	16	<u>1017</u>	<u>147</u>	1008	148	1017	147
458.sjeng	16	1136	170	1138	170	<u>1138</u>	<u>170</u>	16	1073	180	<u>1073</u>	<u>180</u>	1072	181
462.libquantum	16	1853	179	<u>1865</u>	<u>178</u>	1868	177	1	<u>172</u>	<u>121</u>	171	121	173	120
464.h264ref	16	<u>1375</u>	<u>257</u>	1377	257	1375	258	16	1324	268	<u>1326</u>	<u>267</u>	1328	267
471.omnetpp	16	1230	81.3	<u>1239</u>	<u>80.7</u>	1240	80.7	16	1218	82.1	<u>1220</u>	<u>82.0</u>	1225	81.7
473.astar	16	1447	77.6	<u>1454</u>	<u>77.2</u>	1458	77.1	16	1312	85.6	1316	85.4	<u>1315</u>	<u>85.4</u>
483.xalancbmk	16	<u>813</u>	<u>136</u>	813	136	814	136	16	<u>813</u>	<u>136</u>	813	136	814	136

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 processes to cores except  
for 462.libquantum peak

## 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"  
KMP\_STACKSIZE set to 64M

## Platform Notes

Bios settings:  
Hardware Prefetcher: Disabled  
Adjacent Cache Line Prefetch: Disabled  
FSB High Bandwidth Optimization: Disabled

## General Notes

The NEC Express5800/R140a-4(Intel Xeon E7310) and  
the Bull NovaScale R480 E1(Intel Xeon E7310, 1.60 GHz) models are electronically equivalent.  
The results have been measured on a NEC Express5800/R140a-4(Intel Xeon E7310) model.



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## Base Compiler Invocation

C benchmarks:

icc

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:

-xSSSE3 -ipo -O3 -no-prec-div -static -inline-alloc  
-opt-malloc-options=3 -opt-prefetch

C++ benchmarks:

-xSSSE3 -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

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## Peak Compiler Invocation (Continued)

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) -xSSSE3 -ipo -O3  
-no-prec-div -static -ansi-alias -opt-prefetch  
401.bzip2: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3  
-no-prec-div -static -opt-prefetch -ansi-alias  
403.gcc: -xSSSE3 -ipo -O3 -no-prec-div -static -inline-alloc  
-opt-malloc-options=3  
429.mcf: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3  
-no-prec-div -static -opt-prefetch  
445.gobmk: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -O2 -ipo  
-no-prec-div -ansi-alias  
456.hmmer: -xSSSE3 -ipo -O3 -no-prec-div -static -unroll2  
-ansi-alias  
458.sjeng: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3  
-no-prec-div -static -unroll4  
462.libquantum: -xSSSE3 -ipo -O3 -no-prec-div -static  
-opt-malloc-options=3 -parallel -par-runtime-control  
-opt-prefetch  
464.h264ref: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -ipo -O3  
-no-prec-div -static -unroll2 -ansi-alias

C++ benchmarks:

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## Peak Optimization Flags (Continued)

471.omnetpp: -prof-gen(pass 1) -prof-use(pass 2) -xSSSE3 -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) -xSSSE3 -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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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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