



# SPEC<sup>®</sup> CINT2006 Result

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## Bull SAS

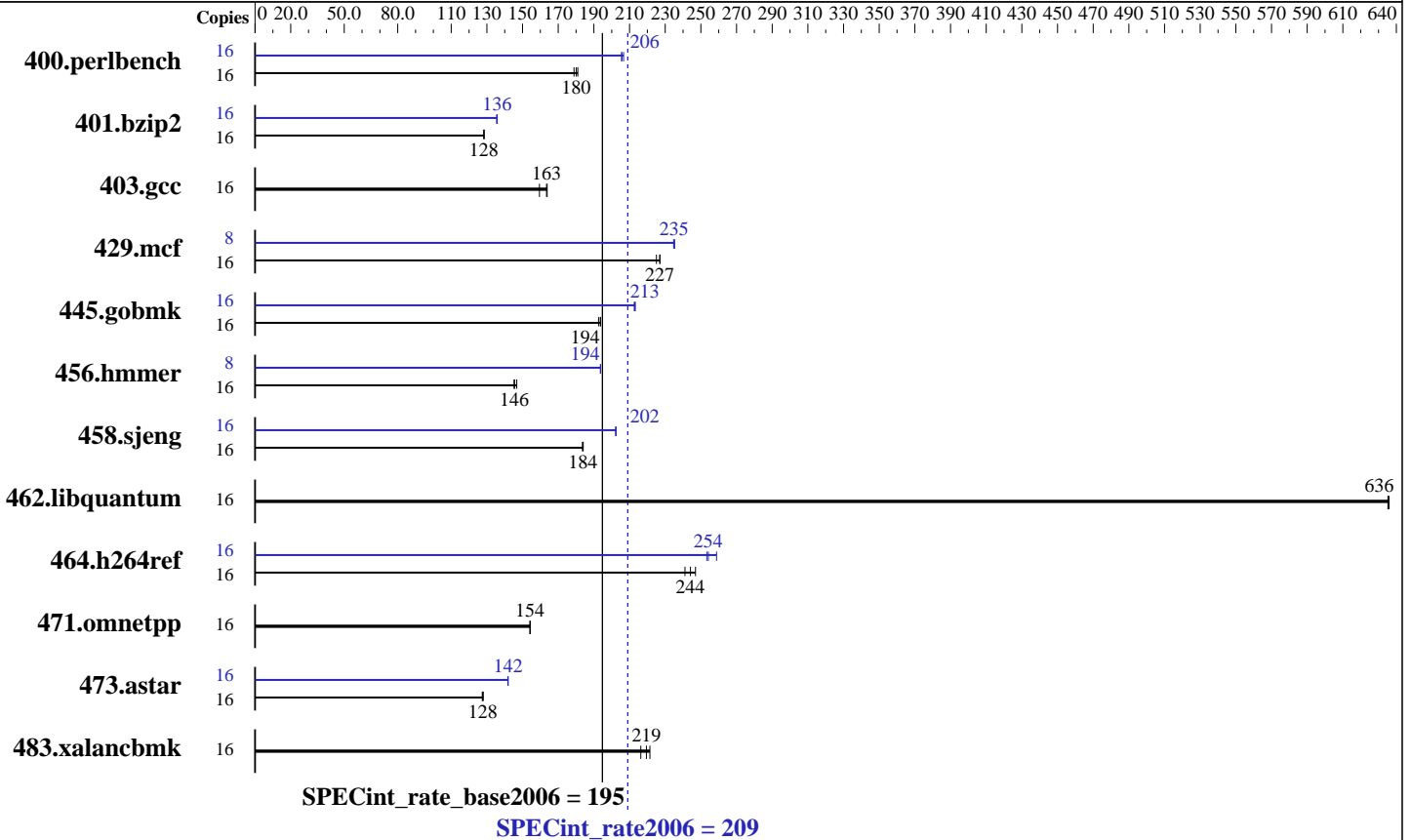
NovaScale R440 E2  
(Intel Xeon E5530, 2.40 GHz)

SPECint<sup>®</sup>\_rate2006 = 209

SPECint\_rate\_base2006 = 195

CPU2006 license: 20  
Test sponsor: Bull SAS  
Tested by: NEC Corporation

Test date: May-2009  
Hardware Availability: Apr-2009  
Software Availability: Feb-2009



### Hardware

CPU Name: Intel Xeon E5530  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.66 GHz  
 CPU MHz: 2400  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip, 2 threads/core  
 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: 8 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 48 GB (12 X 4 GB PC3-8500R, 2 rank, CL7, ECC)  
 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 Professional 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	16	864	181	<b>868</b>	<b>180</b>	874	179	16	756	207	<b>760</b>	<b>206</b>	761	206
401.bzip2	16	1202	128	1203	128	<b>1203</b>	<b>128</b>	16	1140	135	<b>1137</b>	<b>136</b>	1137	136
403.gcc	16	<b>788</b>	<b>163</b>	808	159	786	164	16	<b>788</b>	<b>163</b>	808	159	786	164
429.mcf	16	<b>643</b>	<b>227</b>	643	227	648	225	8	311	235	310	235	<b>310</b>	<b>235</b>
445.gobmk	16	866	194	<b>867</b>	<b>194</b>	871	193	16	789	213	787	213	<b>788</b>	<b>213</b>
456.hammer	16	<b>1026</b>	<b>146</b>	1017	147	1028	145	8	<b>385</b>	<b>194</b>	385	194	385	194
458.sjeng	16	1055	184	1052	184	<b>1052</b>	<b>184</b>	16	957	202	957	202	<b>957</b>	<b>202</b>
462.libquantum	16	522	635	521	636	<b>522</b>	<b>636</b>	16	522	635	521	636	<b>522</b>	<b>636</b>
464.h264ref	16	1434	247	1469	241	<b>1450</b>	<b>244</b>	16	<b>1393</b>	<b>254</b>	1368	259	1398	253
471.omnetpp	16	648	154	648	154	<b>648</b>	<b>154</b>	16	648	154	648	154	<b>648</b>	<b>154</b>
473.astar	16	<b>880</b>	<b>128</b>	882	127	878	128	16	792	142	<b>792</b>	<b>142</b>	792	142
483.xalancbmk	16	510	216	<b>503</b>	<b>219</b>	499	221	16	510	216	<b>503</b>	<b>219</b>	499	221

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 E5530),  
the NEC Express5800/R120a-2(Intel Xeon E5530),  
the Bull NovaScale R440 E2 (Intel Xeon E5530, 2.40 GHz) and  
the Bull NovaScale R460 E2 (Intel Xeon E5530, 2.40 GHz) models are electronically equivalent.  
The results have been measured on a NEC Express5800/R120a-1(Intel Xeon E5530) model.

## Base Compiler Invocation

C benchmarks:  
icc

Continued on next page



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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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## 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: -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

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: basepeak = yes

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

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## Peak Optimization Flags (Continued)

473.astar (continued):

`-Wl,-z,muldefs -L/opt/SmartHeap_8.1/lib64 -lsmartheap64`

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.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.xml>

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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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