



# SPEC<sup>®</sup> CINT2006 Result

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## Bull SAS

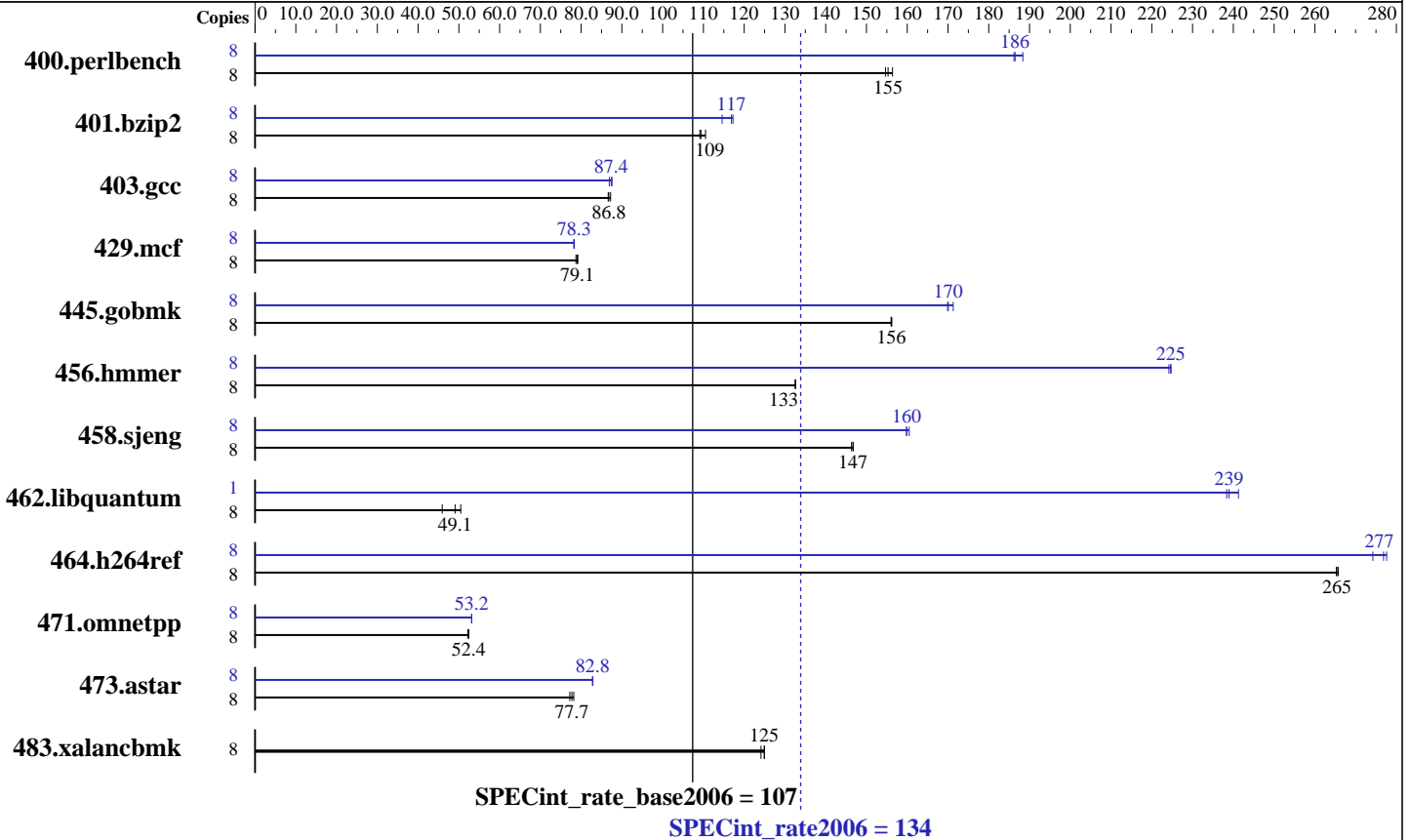
NovaScale R440 E1  
(Intel Xeon X5460,3.16GHz)

SPECint<sup>®</sup>\_rate2006 = 134

SPECint\_rate\_base2006 = 107

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

Test date: Dec-2007  
Hardware Availability: Dec-2007  
Software Availability: Nov-2007



### Hardware

CPU Name: Intel Xeon X5460  
 CPU Characteristics: 3.16 GHz, 2x6 MB L2 shared, 1333 MHz bus  
 CPU MHz: 3160  
 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: 12 MB I+D on chip per chip, 6 MB shared / 2 cores  
 L3 Cache: None  
 Other Cache: None  
 Memory: 12 GB (12x1 GB PC2-5300F, 2 rank, CL5-5-5, ECC)  
 Disk Subsystem: 1x73.2 GB SAS, 15000RPM  
 Other Hardware: None

### Software

Operating System: SUSE Linux Enterprise Server 10 (x86\_64) SP1, Kernel 2.6.16.46-0.12-smp  
 Compiler: Intel C++ Compiler for Linux32 and Linux64 version 10.1 Build 20070913 Package ID: l\_cc\_p\_10.1.008  
 Auto Parallel: Yes  
 File System: ext2  
 System State: Multiuser, Runlevel 3  
 Base Pointers: 32-bit  
 Peak Pointers: 32/64-bit  
 Other Software: MicroQuill SmartHeap library 8.1 binutils-2.17.tar.gz, Version 2.17



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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      | 500        | 156         | 505         | 155         | <b>503</b> | <b>155</b>  | 8      | 420         | 186        | 415        | 188         | <b>419</b> | <b>186</b>  |
| 401.bzip2      | 8      | <b>706</b> | <b>109</b>  | 707         | 109         | 699        | 111         | 8      | 658         | 117        | 674        | 115         | <b>661</b> | <b>117</b>  |
| 403.gcc        | 8      | <b>742</b> | <b>86.8</b> | 743         | 86.6        | 738        | 87.2        | 8      | 735         | 87.6       | 741        | 86.9        | <b>737</b> | <b>87.4</b> |
| 429.mcf        | 8      | 927        | 78.7        | <b>923</b>  | <b>79.1</b> | 921        | 79.2        | 8      | 931         | 78.3       | <b>932</b> | <b>78.3</b> | 933        | 78.2        |
| 445.gobmk      | 8      | 538        | 156         | <b>537</b>  | <b>156</b>  | 537        | 156         | 8      | 494         | 170        | 490        | 171         | <b>493</b> | <b>170</b>  |
| 456.hmmer      | 8      | <b>563</b> | <b>133</b>  | 563         | 133         | 563        | 133         | 8      | 332         | 225        | 333        | 224         | <b>332</b> | <b>225</b>  |
| 458.sjeng      | 8      | 662        | 146         | 660         | 147         | <b>660</b> | <b>147</b>  | 8      | <b>606</b>  | <b>160</b> | 603        | 160         | 606        | 160         |
| 462.libquantum | 8      | 3610       | 45.9        | <b>3378</b> | <b>49.1</b> | 3285       | 50.5        | 1      | <b>86.7</b> | <b>239</b> | 85.9       | 241         | 86.9       | 238         |
| 464.h264ref    | 8      | <b>667</b> | <b>265</b>  | 667         | 265         | 666        | 266         | 8      | <b>639</b>  | <b>277</b> | 638        | 278         | 646        | 274         |
| 471.omnetpp    | 8      | 958        | 52.2        | 953         | 52.4        | <b>954</b> | <b>52.4</b> | 8      | 941         | 53.1       | 940        | 53.2        | <b>941</b> | <b>53.2</b> |
| 473.astar      | 8      | 727        | 77.2        | <b>723</b>  | <b>77.7</b> | 718        | 78.2        | 8      | 678         | 82.9       | <b>678</b> | <b>82.8</b> | 678        | 82.8        |
| 483.xalancbmk  | 8      | 445        | 124         | <b>442</b>  | <b>125</b>  | 442        | 125         | 8      | 445         | 124        | <b>442</b> | <b>125</b>  | 442        | 125         |

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

## Operating System Notes

'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run  
'/usr/bin/taskset' used to bind processes to CPUs  
OMP\_NUM\_THREADS set to number of cores (default).

## Platform Notes

Bios settings:  
Intel SpeedStep Technology: Disabled

## General Notes

All benchmarks compiled in 32-bit mode except 401.bzip2, 456.hmmer, for peak, are compiled in 64-bit mode

The NEC Express5800/120Rh-1(Intel Xeon Processor X5460), the NEC Express5800/120Rj-2(Intel Xeon Processor X5460), the Bull NovaScale R440 E1 (Intel Xeon X5460,3.16GHz) and the Bull NovaScale R460 E1 (Intel Xeon X5460,3.16GHz) models are electronically equivalent. The results have been measured on a NEC Express5800/120Rj-2(Intel Xeon Processor X5460) 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:  
-fast -inline-calloc -opt-malloc-options=3

C++ benchmarks:  
-xT -ipo -O3 -no-prec-div -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/cce/10.1.008/bin/icc  
-L/opt/intel/cce/10.1.008/lib  
-I/opt/intel/cce/10.1.008/include

456.hmmer: /opt/intel/cce/10.1.008/bin/icc  
-L/opt/intel/cce/10.1.008/lib  
-I/opt/intel/cce/10.1.008/include

C++ benchmarks:  
icpc



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## 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) -fast -ansi-alias  
-prefetch  
401.bzip2: -prof-gen(pass 1) -prof-use(pass 2) -fast -prefetch  
403.gcc: -fast -inline-calloc -opt-malloc-options=3  
429.mcf: -fast -prefetch  
445.gobmk: -prof-gen(pass 1) -prof-use(pass 2) -xT -O2 -ipo  
-no-prec-div -ansi-alias  
456.hmmer: -fast -unroll2 -ansi-alias -opt-multi-version-aggressive  
458.sjeng: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll4  
462.libquantum: -fast -unroll4 -Ob0 -prefetch  
-opt-streaming-stores always -vec-guard-write  
-opt-malloc-options=3 -parallel -par-runtime-control  
464.h264ref: -prof-gen(pass 1) -prof-use(pass 2) -fast -unroll2  
-ansi-alias

### C++ benchmarks:

471.omnetpp: -prof-gen(pass 1) -prof-use(pass 2) -xT -O3 -ipo  
-no-prec-div -ansi-alias -opt-ra-region-strategy=block  
-Wl,-z,muldefs -L/opt/SmartHeap\_8.1/lib -lsmarheap  
473.astar: -prof-gen(pass 1) -prof-use(pass 2) -xT -O3 -ipo  
-no-prec-div -ansi-alias -opt-ra-region-strategy=routine  
-Wl,-z,muldefs -L/opt/SmartHeap\_8.1/lib -lsmarheap  
483.xalancbmk: basepeak = yes



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## Peak Other Flags

C benchmarks:

403.gcc: -Dalloca=\_alloca

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/NEC-Intel-ic10.1-FP-intel64-linux-flags.20090713.01.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/NEC-Intel-ic10.1-FP-intel64-linux-flags.20090713.01.xml>

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

Tested with SPEC CPU2006 v1.0.  
Report generated on Tue Jul 22 18:00:52 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 17 April 2008.