



# SPEC<sup>®</sup> CINT2006 Result

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## Bull SAS

NovaScale R440 E1  
(Intel Xeon X5460, 3.16GHz)

SPECint<sup>®</sup>\_rate2006 = 72.0

SPECint\_rate\_base2006 = 60.8

CPU2006 license: 20

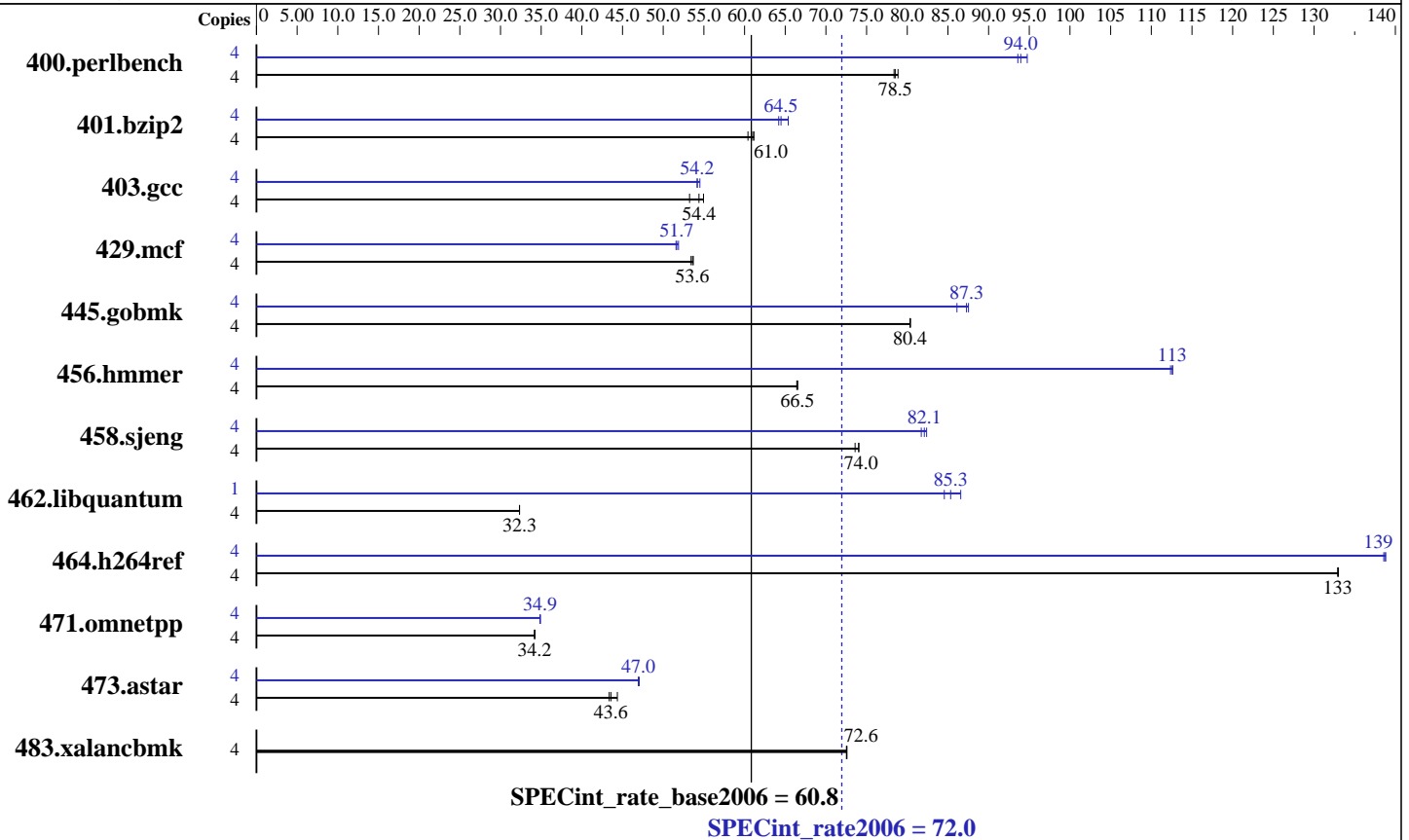
Test sponsor: Bull SAS

Tested by: Bull SAS

Test date: Mar-2008

Hardware Availability: Jan-2008

Software Availability: Nov-2007



### Hardware

CPU Name: Intel Xeon X5460  
 CPU Characteristics: 3.16 GHz, 12 MB L2, 1333 MHz system bus  
 CPU MHz: 3166  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 1 chip, 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: 16 GB (8x2 GB PC2-5300F, 2 rank, CL5-5-5, ECC)  
 Disk Subsystem: 1x73 GB SAS, 15000 RPM  
 Other Hardware: None

### Software

Operating System: SUSE LINUX Enterprise Server 10 SP1, Kernel 2.6.16.46-0.12-smp for x86\_64  
 Compiler: Intel C++ Compiler 10.1 for Linux Build 20070913 Package ID: l\_cc\_p\_10.1.008  
 Auto Parallel: Yes  
 File System: ReiserFS  
 System State: Run level 3 (multi-user)  
 Base Pointers: 32-bit  
 Peak Pointers: 32/64-bit  
 Other Software: Binutils 2.17.50.0.15 SmartHeap library 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	<b>498</b>	<b>78.5</b>	499	78.4	496	78.9	4	412	94.8	418	93.6	<b>416</b>	<b>94.0</b>
401.bzip2	4	<b>633</b>	<b>61.0</b>	631	61.2	639	60.4	4	590	65.4	<b>599</b>	<b>64.5</b>	601	64.2
403.gcc	4	586	55.0	<b>592</b>	<b>54.4</b>	605	53.2	4	594	54.2	591	54.5	<b>594</b>	<b>54.2</b>
429.mcf	4	<b>681</b>	<b>53.6</b>	683	53.4	679	53.7	4	703	51.9	<b>706</b>	<b>51.7</b>	707	51.6
445.gobmk	4	<b>522</b>	<b>80.4</b>	522	80.3	522	80.4	4	487	86.1	479	87.5	<b>481</b>	<b>87.3</b>
456.hmmer	4	562	66.4	561	66.5	<b>561</b>	<b>66.5</b>	4	332	112	<b>332</b>	<b>113</b>	331	113
458.sjeng	4	<b>654</b>	<b>74.0</b>	654	74.1	658	73.6	4	588	82.4	<b>590</b>	<b>82.1</b>	592	81.7
462.libquantum	4	2563	32.3	<b>2563</b>	<b>32.3</b>	2563	32.3	1	245	84.6	<b>243</b>	<b>85.3</b>	239	86.6
464.h264ref	4	666	133	<b>666</b>	<b>133</b>	666	133	4	639	139	638	139	<b>638</b>	<b>139</b>
471.omnetpp	4	731	34.2	731	34.2	<b>731</b>	<b>34.2</b>	4	<b>717</b>	<b>34.9</b>	717	34.9	717	34.9
473.astar	4	648	43.4	633	44.4	<b>644</b>	<b>43.6</b>	4	<b>598</b>	<b>47.0</b>	598	46.9	597	47.1
483.xalancbmk	4	<b>380</b>	<b>72.6</b>	381	72.5	380	72.6	4	<b>380</b>	<b>72.6</b>	381	72.5	380	72.6

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)

## General Notes

All benchmarks compiled in 32-bit mode except 401.bzip2 and 456.hmmer, for peak, are compiled in 64-bit mode  
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 NovaScale R460 E1 (Intel Xeon X5460, 3.16GHz) model.

## Base Compiler Invocation

C benchmarks:  
icc

C++ benchmarks:  
icpc



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## 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/spec/cpu2006/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.hmmmer: /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

## Peak Portability Flags

400.perlbench: -DSPEC\_CPU\_LINUX\_IA32  
401.bzip2: -DSPEC\_CPU\_LP64  
456.hmmmer: -DSPEC\_CPU\_LP64  
462.libquantum: -DSPEC\_CPU\_LINUX

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## Peak Portability Flags (Continued)

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/spec/cpu2006/lib -lsmartheap

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/spec/cpu2006/lib -lsmartheap

483.xalancbmk: basepeak = yes

## Peak Other Flags

C benchmarks:

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## Peak Other Flags (Continued)

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.20090713.03.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.20090713.03.xml>

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

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