



# SPEC® CINT2006 Result

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## Bull SAS

NovaScale R630 E1 LR  
(Intel Xeon E5405, 2.00 GHz)

SPECint®\_rate2006 = 103

SPECint\_rate\_base2006 = 90.9

CPU2006 license: 20

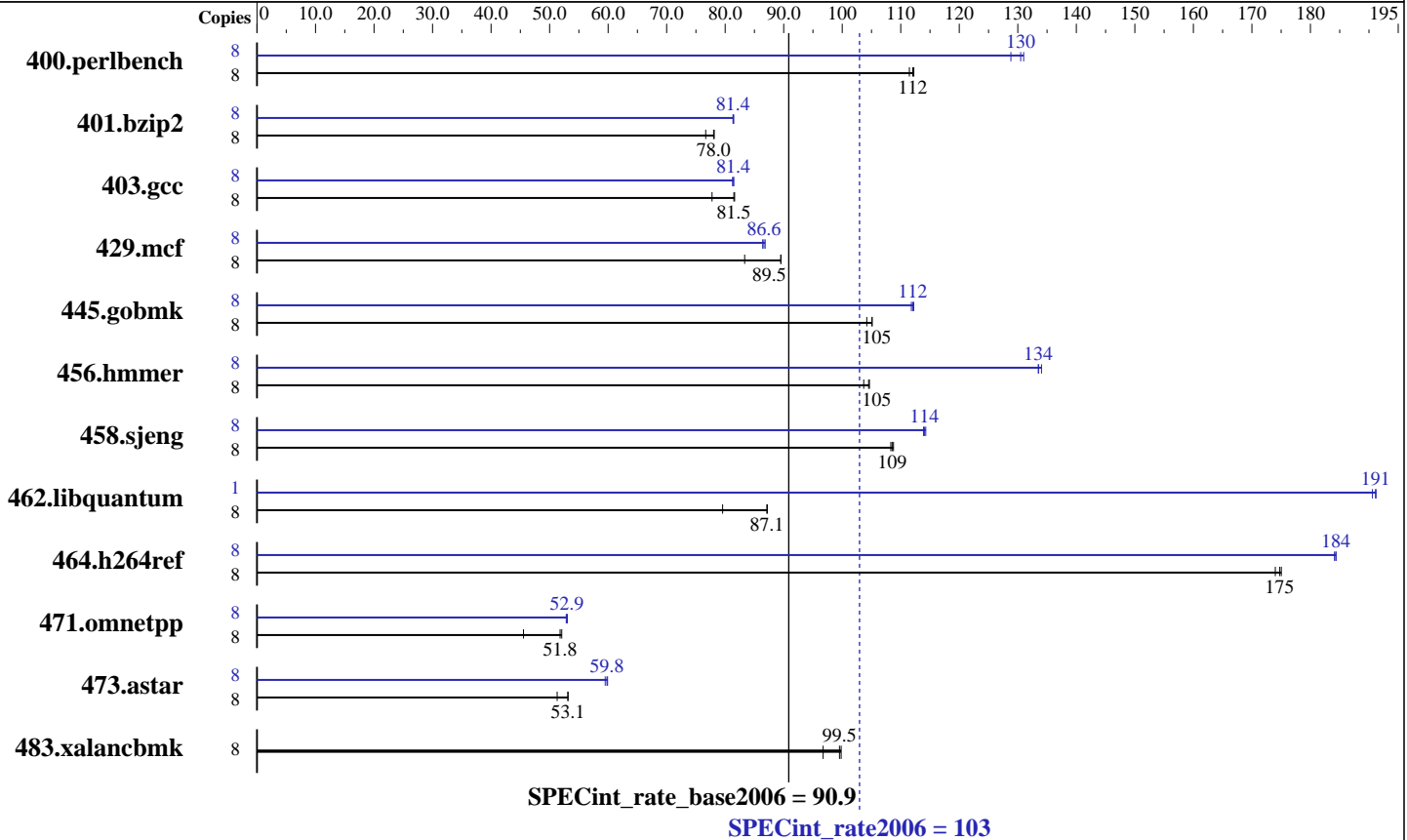
Test sponsor: Bull SAS

Tested by: NEC Corporation

Test date: Dec-2008

Hardware Availability: Oct-2008

Software Availability: Nov-2008



### Hardware

CPU Name: Intel Xeon E5405  
 CPU Characteristics: 1333 MHz system bus  
 CPU MHz: 2000  
 FPU: Integrated  
 CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip  
 CPU(s) orderable: 1,2 chips (fault tolerant, see Platform Notes)  
 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 (6x2 GB PC2-5300F, 2 rank, CL5-5-5, ECC)  
 Disk Subsystem: 2x146.5 GB SAS, 15000 RPM, Software RAID Level1  
 Other Hardware: None

### Software

Operating System: Red Hat Enterprise Linux Server release 5.2  
 Advanced Platform, Kernel 2.6.18-92.1.13.el5 on an x86\_64  
 Compiler: Intel C++ Compiler 11.0 for Linux  
 Build 20081105 Package ID: l\_cproc\_p\_11.0.074  
 Auto Parallel: Yes  
 File System: ext3  
 System State: Run level 3 (multi-user)  
 Base Pointers: 32-bit  
 Peak Pointers: 32/64-bit  
 Other Software: MicroQuill SmartHeap Library 8.1  
 ft Server Control Software 6.0.2-198



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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	<b>698</b>	<b>112</b>	701	111	696	112	8	607	129	597	131	<b>599</b>	<b>130</b>
401.bzip2	8	1007	76.7	<b>989</b>	<b>78.0</b>	988	78.1	8	948	81.5	949	81.3	<b>949</b>	<b>81.4</b>
403.gcc	8	828	77.8	<b>790</b>	<b>81.5</b>	789	81.6	8	793	81.3	791	81.5	<b>791</b>	<b>81.4</b>
429.mcf	8	876	83.3	815	89.5	<b>815</b>	<b>89.5</b>	8	<b>842</b>	<b>86.6</b>	844	86.4	840	86.8
445.gobmk	8	805	104	<b>799</b>	<b>105</b>	798	105	8	751	112	<b>749</b>	<b>112</b>	748	112
456.hammer	8	720	104	713	105	<b>714</b>	<b>105</b>	8	<b>559</b>	<b>134</b>	559	134	557	134
458.sjeng	8	<b>892</b>	<b>109</b>	890	109	894	108	8	<b>849</b>	<b>114</b>	850	114	847	114
462.libquantum	8	2083	79.6	<b>1903</b>	<b>87.1</b>	1901	87.2	1	109	191	108	191	<b>108</b>	<b>191</b>
464.h264ref	8	1017	174	1012	175	<b>1013</b>	<b>175</b>	8	<b>960</b>	<b>184</b>	960	184	962	184
471.omnetpp	8	1098	45.5	<b>965</b>	<b>51.8</b>	960	52.1	8	<b>945</b>	<b>52.9</b>	946	52.8	943	53.0
473.astar	8	1095	51.3	1056	53.2	<b>1057</b>	<b>53.1</b>	8	<b>939</b>	<b>59.8</b>	944	59.5	937	59.9
483.xalancbmk	8	571	96.7	<b>555</b>	<b>99.5</b>	553	99.8	8	571	96.7	<b>555</b>	<b>99.5</b>	553	99.8

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

This Express5800/320Fd-LR is a fault-tolerant server.  
Two modules are installed in this server.  
Each module physically has "2CPU chips,12GB memory", The total physical configuration  
is "4CPU chips,24GB memory".  
Using fault-tolerant lockstep technology, these two modules communicate with each other  
and execute the same instructions at the same time, The operating system only sees  
"2CPU chips,12GB memory" as the other components add only redundancy and do not  
contribute to any performance benefit.



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## General Notes

The NEC Express5800/320Fd-LR(Intel Xeon E5405) and the Bull NovaScale R630 E1 LR(Intel Xeon E5405, 2.00 GHz) models are electronically equivalent. The results have been measured on a NEC Express5800/320Fd-LR(Intel Xeon E5405) model.

## 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:

-xSSE4.1 -ipo -O3 -no-prec-div -static -inline-calloc  
-opt-malloc-options=3 -opt-prefetch

C++ benchmarks:

-xSSE4.1 -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

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## Peak Compiler Invocation (Continued)

```
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
```

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) -xSSE4.1 -ipo -O3
              -no-prec-div -static -ansi-alias -opt-prefetch

401.bzip2: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
           -no-prec-div -static -opt-prefetch -ansi-alias

403.gcc: -xSSE4.1 -ipo -O3 -no-prec-div -static -inline-calloc
         -opt-malloc-options=3

429.mcf: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
         -no-prec-div -static -opt-prefetch

445.gobmk: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -O2 -ipo
          -no-prec-div -ansi-alias

456.hmmer: -xSSE4.1 -ipo -O3 -no-prec-div -static -unroll2
          -ansi-alias

458.sjeng: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -ipo -O3
          -no-prec-div -static -unroll4

462.libquantum: -xSSE4.1 -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) -xSSE4.1 -ipo -O3
            -no-prec-div -static -unroll2 -ansi-alias
```

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## Peak Optimization Flags (Continued)

C++ benchmarks:

471.omnetpp: -prof-gen(pass 1) -prof-use(pass 2) -xSSE4.1 -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) -xSSE4.1 -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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