



# SPEC® CINT2006 Result

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## Bull SAS

## SPECint®\_rate2006 = 2110

### Bullion E7-4870 (80 cores - 2TB RAM)

## SPECint\_rate\_base2006 = 2000

CPU2006 license: 20

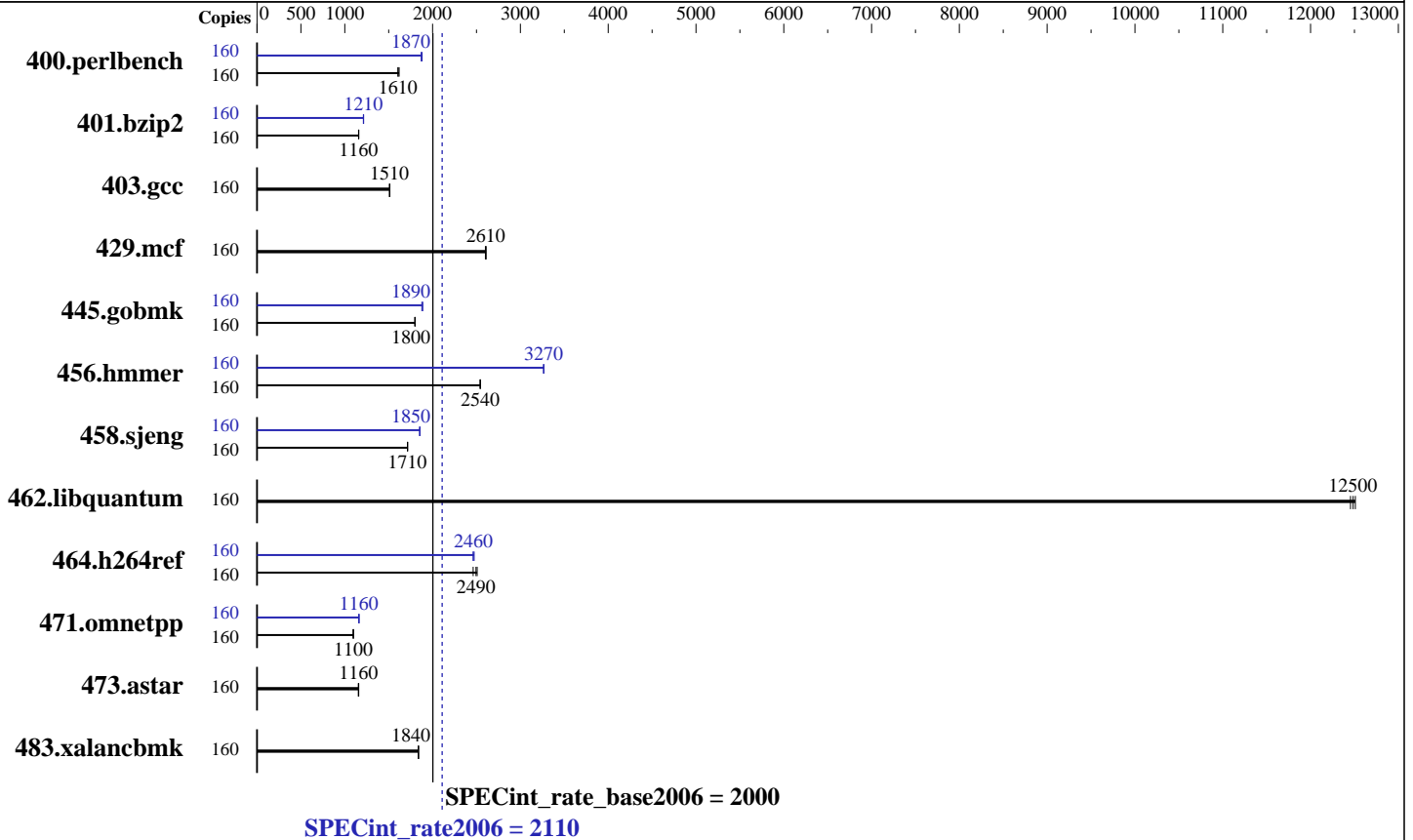
Test sponsor: Bull SAS

Tested by: Bull SAS

Test date: Jan-2013

Hardware Availability: Jan-2012

Software Availability: Jun-2012



### Hardware

CPU Name: Intel Xeon E7-4870  
 CPU Characteristics: Intel Turbo Boost Technology up to 2.80 GHz  
 CPU MHz: 2400  
 FPU: Integrated  
 CPU(s) enabled: 80 cores, 8 chips, 10 cores/chip, 2 threads/core  
 CPU(s) orderable: 4,8 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: 30 MB I+D on chip per chip  
 Other Cache: None  
 Memory: 2 TB (128 x 16 GB 2Rx4 PC3-8500R-7, ECC)  
 Disk Subsystem: 1 x 500 GB SATA, 7200 RPM  
 Other Hardware: None

### Software

Operating System: Red Hat Enterprise Linux Server release 6.3 (Santiago)  
 2.6.32-279.el6.x86\_64  
 Compiler: C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux  
 Auto Parallel: No  
 File System: tmpfs  
 System State: Run level 3 (multiuser)  
 Base Pointers: 32-bit  
 Peak Pointers: 32/64-bit  
 Other Software: Microquill SmartHeap V9.01



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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	160	973	1610	966	1620	<u>973</u>	<u>1610</u>	160	<u>835</u>	<u>1870</u>	831	1880	835	1870
401.bzip2	160	1335	1160	1331	1160	<u>1334</u>	<u>1160</u>	160	<u>1273</u>	<u>1210</u>	1274	1210	1271	1210
403.gcc	160	854	1510	<u>853</u>	<u>1510</u>	851	1510	160	854	1510	<u>853</u>	<u>1510</u>	851	1510
429.mcf	160	561	2600	559	2610	<u>560</u>	<u>2610</u>	160	561	2600	559	2610	<u>560</u>	<u>2610</u>
445.gobmk	160	933	1800	932	1800	<u>933</u>	<u>1800</u>	160	894	1880	<u>890</u>	<u>1890</u>	890	1890
456.hammer	160	<u>587</u>	<u>2540</u>	588	2540	587	2550	160	<u>457</u>	<u>3270</u>	457	3270	457	3260
458.sjeng	160	<u>1129</u>	<u>1710</u>	1130	1710	1128	1720	160	1045	1850	1044	1850	<u>1044</u>	<u>1850</u>
462.libquantum	160	<u>266</u>	<u>12500</u>	265	12500	266	12500	160	<u>266</u>	<u>12500</u>	265	12500	266	12500
464.h264ref	160	1412	2510	<u>1420</u>	<u>2490</u>	1438	2460	160	<u>1437</u>	<u>2460</u>	1432	2470	1438	2460
471.omnetpp	160	<u>912</u>	<u>1100</u>	911	1100	913	1100	160	861	1160	862	1160	<u>861</u>	<u>1160</u>
473.astar	160	969	1160	973	1150	<u>971</u>	<u>1160</u>	160	969	1160	973	1150	<u>971</u>	<u>1160</u>
483.xalancbmk	160	601	1840	600	1840	<u>600</u>	<u>1840</u>	160	601	1840	600	1840	<u>600</u>	<u>1840</u>

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

### Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

### Operating System Notes

SPEC files placed in /spec2006, with /spec2006 mounted as tmpfs with mpol=interleave, size=480G  
Stack size set to unlimited using "ulimit -s unlimited"  
Kernel booted with option clocksource=jiffies (allows to count time with interrupts at 1 jiffy period instead using HPET counters)  
Bios set with Max\_Numa\_Nodes\_per\_module to 4  
Bios set with Memory hemisphere mode

### Platform Notes

Sysinfo program /spec2006/config/sysinfo.rev6800  
\$Rev: 6800 \$ \$Date:: 2011-10-11 #\$ 6f2ebdff5032aaa42e583f96b07f99d3  
running on turin12 Fri Jan 18 15:15:37 2013

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:  
<http://www.spec.org/cpu2006/Docs/config.html#sysinfo>

From /proc/cpuinfo  
model name : Intel(R) Xeon(R) CPU E7- 4870 @ 2.40GHz  
8 "physical id"s (chips)

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### Platform Notes (Continued)

160 "processors"  
cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)

```
cpu cores : 10
siblings  : 20
physical 0: cores 0 1 2 8 9 16 17 18 24 25
physical 1: cores 0 1 2 8 9 16 17 18 24 25
physical 2: cores 0 1 2 8 9 16 17 18 24 25
physical 3: cores 0 1 2 8 9 16 17 18 24 25
physical 4: cores 0 1 2 8 9 16 17 18 24 25
physical 5: cores 0 1 2 8 9 16 17 18 24 25
physical 6: cores 0 1 2 8 9 16 17 18 24 25
physical 7: cores 0 1 2 8 9 16 17 18 24 25
cache size : 30720 KB
```

```
From /proc/meminfo
MemTotal:      2115654452 kB
HugePages_Total: 0
Hugepagesize:  2048 kB
```

```
/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.3 (Santiago)
```

```
From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.3 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.3 (Santiago)
system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server
```

```
uname -a:
Linux turin12 2.6.32-279.el6.x86_64 #1 SMP Wed Jun 13 18:24:36 EDT 2012
x86_64 x86_64 x86_64 GNU/Linux
```

```
run-level 3 Jan 18 14:00 last=5
```

```
SPEC is set to: /spec2006
Filesystem      Type      Size  Used Avail Use% Mounted on
none            tmpfs    480G  2.6G  478G   1% /spec2006
```

Additional information from dmidecode:

(End of data from sysinfo program)

### General Notes

Environment variables set by runspec before the start of the run:  
LD\_LIBRARY\_PATH = "/spec2006/libs/32:/spec2006/libs/64"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB  
memory using RHEL5.5  
Transparent Huge Pages enabled with:

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## General Notes (Continued)

```
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
Filesystem page cache cleared with:
echo 1> /proc/sys/vm/drop_caches
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>
```

## Base Compiler Invocation

C benchmarks:  
icc -m32

C++ benchmarks:  
icpc -m32

## 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 -opt-prefetch -opt-mem-layout-trans=3

C++ benchmarks:  
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3  
-Wl,-z,muldefs -L/smartheap -lsmartheap

## Base Other Flags

C benchmarks:  
403.gcc: -Dalloca=\_alloca

## Peak Compiler Invocation

C benchmarks (except as noted below):  
icc -m32

400.perlbench: icc -m64

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## Peak Compiler Invocation (Continued)

401.bzip2: `icc -m64`

456.hmmer: `icc -m64`

458.sjeng: `icc -m64`

C++ benchmarks:

`icpc -m32`

## Peak Portability Flags

400.perlbench: `-DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64`  
401.bzip2: `-DSPEC_CPU_LP64`  
456.hmmer: `-DSPEC_CPU_LP64`  
458.sjeng: `-DSPEC_CPU_LP64`  
462.libquantum: `-DSPEC_CPU_LINUX`  
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) -prof-use(pass 2)`  
`-auto-ilp32`

401.bzip2: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)`  
`-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)`  
`-opt-prefetch -auto-ilp32 -ansi-alias`

403.gcc: `basepeak = yes`

429.mcf: `basepeak = yes`

445.gobmk: `-xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)`  
`-ansi-alias -opt-mem-layout-trans=3`

456.hmmer: `-xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32`

458.sjeng: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)`  
`-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)`  
`-unroll4 -auto-ilp32`

462.libquantum: `basepeak = yes`

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## Peak Optimization Flags (Continued)

464.h264ref: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)  
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)  
-unroll2 -ansi-alias

C++ benchmarks:

471.omnetpp: -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=block -Wl,-z,muldefs  
-L/smartheap -lsmartheap

473.astar: basepeak = yes

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-ic12.1-official-linux64.20130214.html>  
<http://www.spec.org/cpu2006/flags/Bull-Platform-Settings-V1.2-revB.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20130214.xml>  
<http://www.spec.org/cpu2006/flags/Bull-Platform-Settings-V1.2-revB.xml>

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