SPEC® CINT2006 Result

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Bull SAS

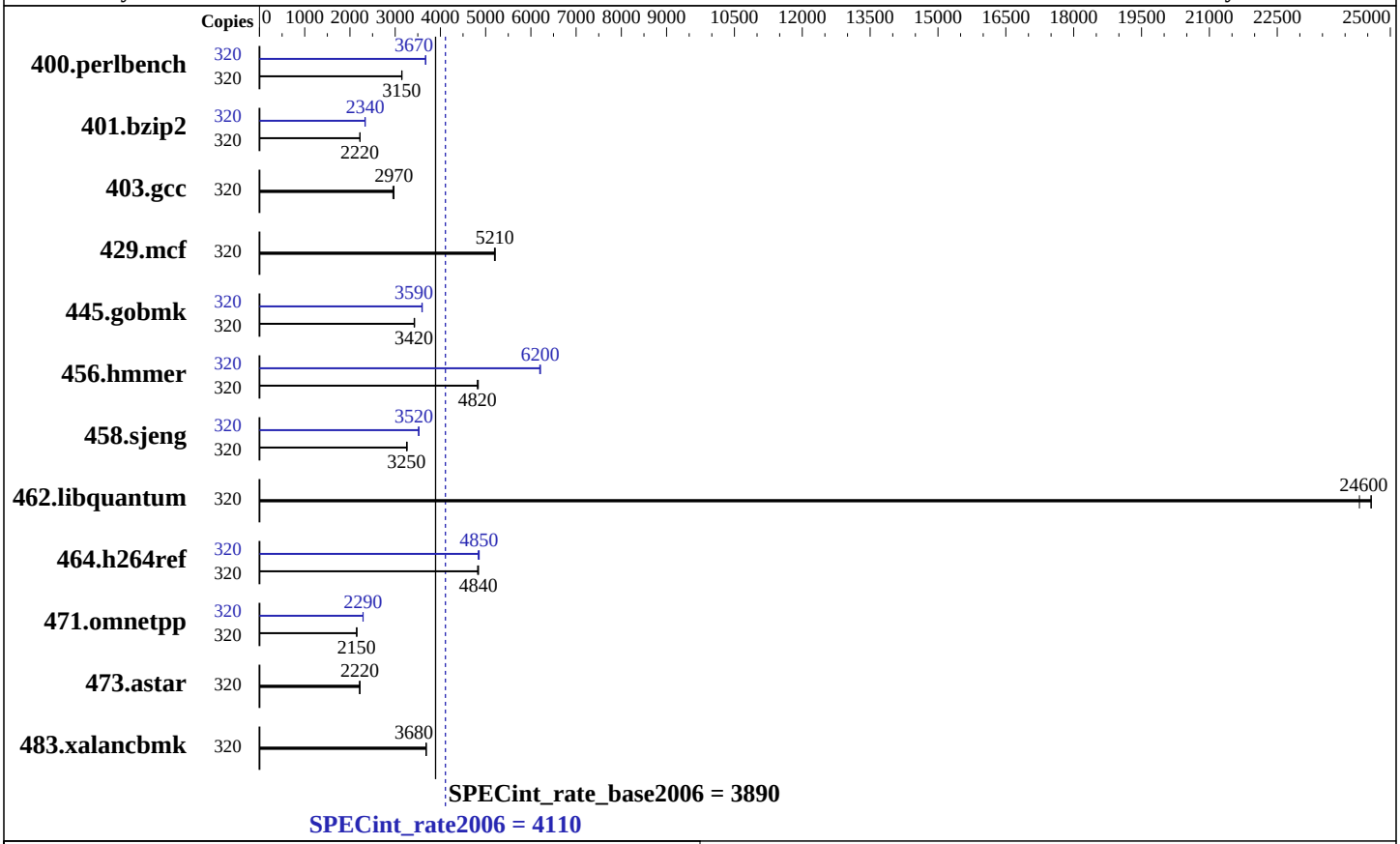
bullion E7-4870 (160 cores - 4TB RAM)

SPECint®_rate2006 = 4110

SPECint_rate_base2006 = 3890

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

Test date: Jun-2012
Hardware Availability: Jan-2012
Software Availability: Oct-2011



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:	160 cores, 16 chips, 10 cores/chip, 2 threads/core
CPU(s) orderable:	4,8,12,16 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:	4 TB (256 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 6.1 (Santiago) 2.6.32-131.0.15.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	320	992	3150	**994**	**3150**	995	3140	320	850	3680	**851**	**3670**	852	3670
401.bzip2	320	**1390**	**2220**	1389	2220	1390	2220	320	1324	2330	**1323**	**2340**	1321	2340
403.gcc	320	873	2950	**867**	**2970**	866	2970	320	873	2950	**867**	**2970**	866	2970
429.mcf	320	**561**	**5210**	560	5210	562	5190	320	**561**	**5210**	560	5210	562	5190
445.gobmk	320	978	3430	**981**	**3420**	982	3420	320	932	3600	935	3590	**934**	**3590**
456.hmmer	320	**619**	**4820**	617	4840	620	4820	320	481	6210	**481**	**6200**	482	6200
458.sjeng	320	**1190**	**3250**	1191	3250	1186	3270	320	**1100**	**3520**	1101	3520	1098	3530
462.libquantum	320	270	24600	273	24300	**270**	**24600**	320	270	24600	273	24300	**270**	**24600**
464.h264ref	320	1469	4820	**1464**	**4840**	1463	4840	320	**1459**	**4850**	1458	4860	1465	4830
471.omnetpp	320	931	2150	**930**	**2150**	930	2150	320	873	2290	**873**	**2290**	874	2290
473.astar	320	1010	2220	**1012**	**2220**	1016	2210	320	1010	2220	**1012**	**2220**	1016	2210
483.xalancbmk	320	600	3680	**600**	**3680**	598	3690	320	600	3680	**600**	**3680**	598	3690

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=900G
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 rh61-mesca-wsm64 Sat Jun 16 22:20:10 2012

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
      16 "physical id"s (chips)
```

Continued on next page

Platform Notes (Continued)

```
      320 "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
      physical 8: cores 0 1 2 8 9 16 17 18 24 25
      physical 9: cores 0 1 2 8 9 16 17 18 24 25
      physical 10: cores 0 1 2 8 9 16 17 18 24 25
      physical 11: cores 0 1 2 8 9 16 17 18 24 25
      physical 12: cores 0 1 2 8 9 16 17 18 24 25
      physical 13: cores 0 1 2 8 9 16 17 18 24 25
      physical 14: cores 0 1 2 8 9 16 17 18 24 25
      physical 15: cores 0 1 2 8 9 16 17 18 24 25
   cache size : 30720 KB

From /proc/meminfo
   MemTotal:       4233494120 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux Server release 6.1 (Santiago)

From /etc/*release* /etc/*version*
   redhat-release: Red Hat Enterprise Linux Server release 6.1 (Santiago)
   system-release: Red Hat Enterprise Linux Server release 6.1 (Santiago)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

uname -a:
   Linux rh61-mesca-wsm64 2.6.32-131.0.15.el6.x86_64 #1 SMP Tue May 10 15:42:40
   EDT 2011 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jun 14 01:41 last=5

SPEC is set to: /spec2006
   Filesystem     Type    Size  Used Avail Use% Mounted on
   none          tmpfs    900G  604G  297G  68% /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:
 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`

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`

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Peak Optimization Flags (Continued)

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) -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-linux64.20111122.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-linux64.20111122.xml
http://www.spec.org/cpu2006/flags/Bull-Platform-Settings-V1.2-revB.xml

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