SPEC® CINT2006 Result

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Huawei

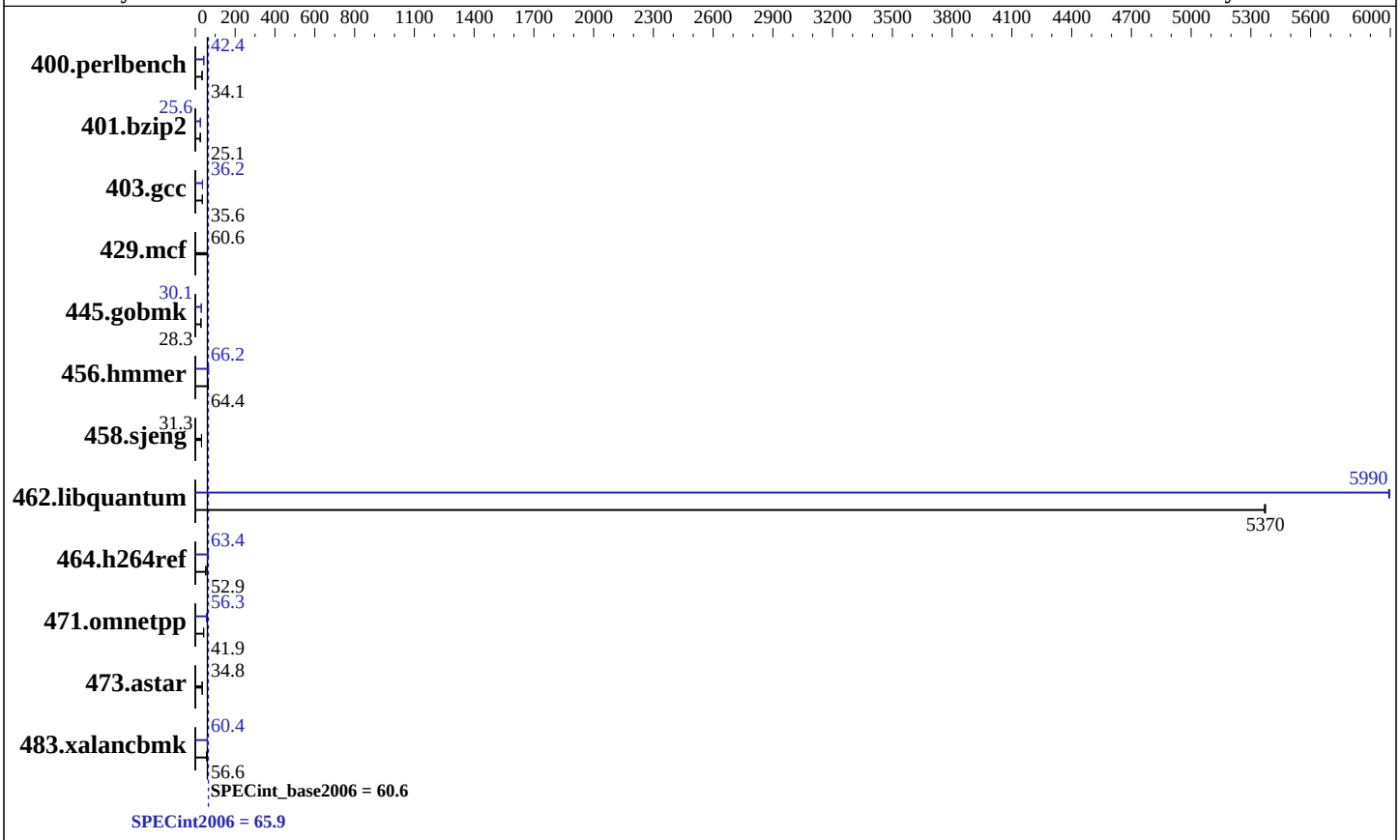
Huawei RH8100 V3 (Intel Xeon E7-8891 v2)

SPECint®2006 = 65.9

SPECint_base2006 = 60.6

CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei

Test date: Oct-2014
Hardware Availability: Feb-2014
Software Availability: Nov-2013



Hardware

CPU Name:	Intel Xeon E7-8891 v2
CPU Characteristics:	Intel Turbo Boost Technology up to 3.70 GHz
CPU MHz:	3200
FPU:	Integrated
CPU(s) enabled:	80 cores, 8 chips, 10 cores/chip
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:	37.5 MB I+D on chip per chip
Other Cache:	None
Memory:	1 TB (128 x 8 GB 2Rx8 PC3-12800R-11, ECC, running at 1333 MHz and CL9)
Disk Subsystem:	1 x 600 GB SAS, 10K RPM
Other Hardware:	None

Software

Operating System:	Red Hat Enterprise Linux Server release 6.5 (Santiago) 2.6.32-431.el6.x86_64
Compiler:	C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux
Auto Parallel:	Yes
File System:	ext4
System State:	Run level 3 (multi-user)
Base Pointers:	32/64-bit
Peak Pointers:	32/64-bit
Other Software:	Microquill SmartHeap V9.01

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Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	286	34.1	**286**	**34.1**	286	34.1	231	42.4	**230**	**42.4**	230	42.5
401.bzip2	384	25.1	**385**	**25.1**	385	25.1	**377**	**25.6**	376	25.6	377	25.6
403.gcc	226	35.6	227	35.5	**226**	**35.6**	223	36.1	223	36.2	**223**	**36.2**
429.mcf	150	60.8	**151**	**60.6**	151	60.5	150	60.8	**151**	**60.6**	151	60.5
445.gobmk	371	28.3	**371**	**28.3**	371	28.3	348	30.2	348	30.1	**348**	**30.1**
456.hmmer	145	64.5	**145**	**64.4**	145	64.4	**141**	**66.2**	141	66.0	141	66.2
458.sjeng	386	31.3	386	31.3	**386**	**31.3**	386	31.3	386	31.3	**386**	**31.3**
462.libquantum	3.86	5370	3.86	5370	**3.86**	**5370**	**3.46**	**5990**	3.46	5990	3.45	6000
464.h264ref	418	52.9	**419**	**52.9**	420	52.7	349	63.4	**349**	**63.4**	349	63.4
471.omnetpp	**149**	**41.9**	150	41.6	149	42.0	111	56.4	112	55.9	**111**	**56.3**
473.astar	202	34.7	**202**	**34.8**	201	34.9	202	34.7	**202**	**34.8**	201	34.9
483.xalancbmk	123	56.2	122	56.7	**122**	**56.6**	**114**	**60.4**	115	60.2	114	60.5

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

Operating System Notes

```
Stack size set to unlimited using "ulimit -s unlimited"
```

Platform Notes

```
BIOS configuration:
Set Power Efficiency Mode to Performance
Set Lock_step to disabled
Baseboard Management Controller used to adjust the fan speed to 100%
C-State disabled
Set Intel Hyper Threading to disabled
Sysinfo program /spec/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
running on RH8100V3 Wed Oct 22 06:30:32 2014

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 E7-8891 v2 @ 3.20GHz
      8 "physical id"s (chips)
      80 "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  : 10
```

Continued on next page

Platform Notes (Continued)

```
        physical 0: cores 2 3 4 5 6 7 8 10 11 12
        physical 1: cores 2 3 4 5 6 7 8 10 11 12
        physical 2: cores 2 3 4 5 6 7 8 10 11 12
        physical 3: cores 2 3 4 5 6 7 8 10 11 12
        physical 4: cores 2 3 4 5 6 7 8 10 11 12
        physical 5: cores 2 3 4 5 6 7 8 10 11 12
        physical 6: cores 2 3 4 5 6 7 8 10 11 12
        physical 7: cores 2 3 4 5 6 7 8 10 11 12
     cache size : 38400 KB

  From /proc/meminfo
     MemTotal:       1058598780 kB
     HugePages_Total:       0
     Hugepagesize:       2048 kB

  /usr/bin/lsb_release -d
     Red Hat Enterprise Linux Server release 6.5 (Santiago)

  From /etc/*release* /etc/*version*
     redhat-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
     system-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
     system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

  uname -a:
     Linux RH8100V3 2.6.32-431.el6.x86_64 #1 SMP Sun Nov 10 22:19:54 EST 2013
     x86_64 x86_64 x86_64 GNU/Linux

  run-level 3 Oct 22 06:28

  SPEC is set to: /spec
     Filesystem     Type  Size  Used Avail Use% Mounted on
     /dev/sda3      ext4  533G   28G  478G   6% /

  Additional information from dmidecode:
    Memory:
     128x Hynix HMT41GR7AFR8C-PB 8 GB 1600 MHz 2 rank

  (End of data from sysinfo program)
  memory is 1 TB and the dmidecode description should have one line reading as:
     128x Hynix HMT41GR7AFR8C-PB 8 GB 1600 MHz 2 rank
  Dmidecode mistakenly believes the memory was running at 1600 MHz, when it
  should only run at 1333 MHz
  This benchmark result is intended to provide perspective on past
  performance using the historical software described on this result page.
  The system as described on this result page was formerly generally available(Oct-2014).
  But at the time of this publication (November 2014), the compiler specified
  (Intel Compiler 12) was not listed as supported per
   https://software.intel.com/en-us/articles/intel-compilers-supported-compiler-versions
  This measured result may not be representative of the result that would be measured
  were this benchmark run with hardware and software available as of the publication date.
```

General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,0,1"
LD_LIBRARY_PATH = "/spec/libs/32:/spec/libs/64"
OMP_NUM_THREADS = "80"

 Binaries compiled on a system with 2 x Xeon X5645 CPU + 16GB memory
 using RHEL 6.1
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
```

Base Compiler Invocation

C benchmarks:
```
icc  -m64
```

C++ benchmarks:
```
icpc -m64
```

Base Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
464.h264ref: -DSPEC_CPU_LP64
471.omnetpp: -DSPEC_CPU_LP64
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32
```

C++ benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
-Wl,-z,muldefs -L/smartheap -lsmartheap64
```

Base Other Flags

C benchmarks:

403.gcc: `-Dalloca=_alloca`

Peak Compiler Invocation

C benchmarks (except as noted below):
`icc -m64`

400.perlbench: `icc -m32`

445.gobmk: `icc -m32`

464.h264ref: `icc -m32`

C++ benchmarks (except as noted below):
`icpc -m32`

473.astar: `icpc -m64`

Peak Portability Flags

400.perlbench: `-DSPEC_CPU_LINUX_IA32`
401.bzip2: `-DSPEC_CPU_LP64`
403.gcc: `-DSPEC_CPU_LP64`
429.mcf: `-DSPEC_CPU_LP64`
456.hmmer: `-DSPEC_CPU_LP64`
458.sjeng: `-DSPEC_CPU_LP64`
462.libquantum: `-DSPEC_CPU_LP64 -DSPEC_CPU_LINUX`
473.astar: `-DSPEC_CPU_LP64`
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)
`-opt-prefetch -ansi-alias`

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

Continued on next page

Peak Optimization Flags (Continued)

403.gcc: -xAVX -ipo -O3 -no-prec-div -inline-calloc
-opt-malloc-options=3 -auto-ilp32

429.mcf: basepeak = yes

445.gobmk: -xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
-ansi-alias

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

458.sjeng: basepeak = yes

462.libquantum: -xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch
-auto-p32

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)
-opt-ra-region-strategy=block -ansi-alias
-Wl,-z,muldefs -L/smartheap -lsmartheap

473.astar: basepeak = yes

483.xalancbmk: -xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias
-Wl,-z,muldefs -L/smartheap -lsmartheap

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/Huawei-Platform-Settings-V1.0-IVB-RevG.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/Huawei-Platform-Settings-V1.0-IVB-RevG.xml

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Tested with SPEC CPU2006 v1.2.
Report generated on Tue Nov 18 16:32:14 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 18 November 2014.