SPEC® CINT2006 Result

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Sugon

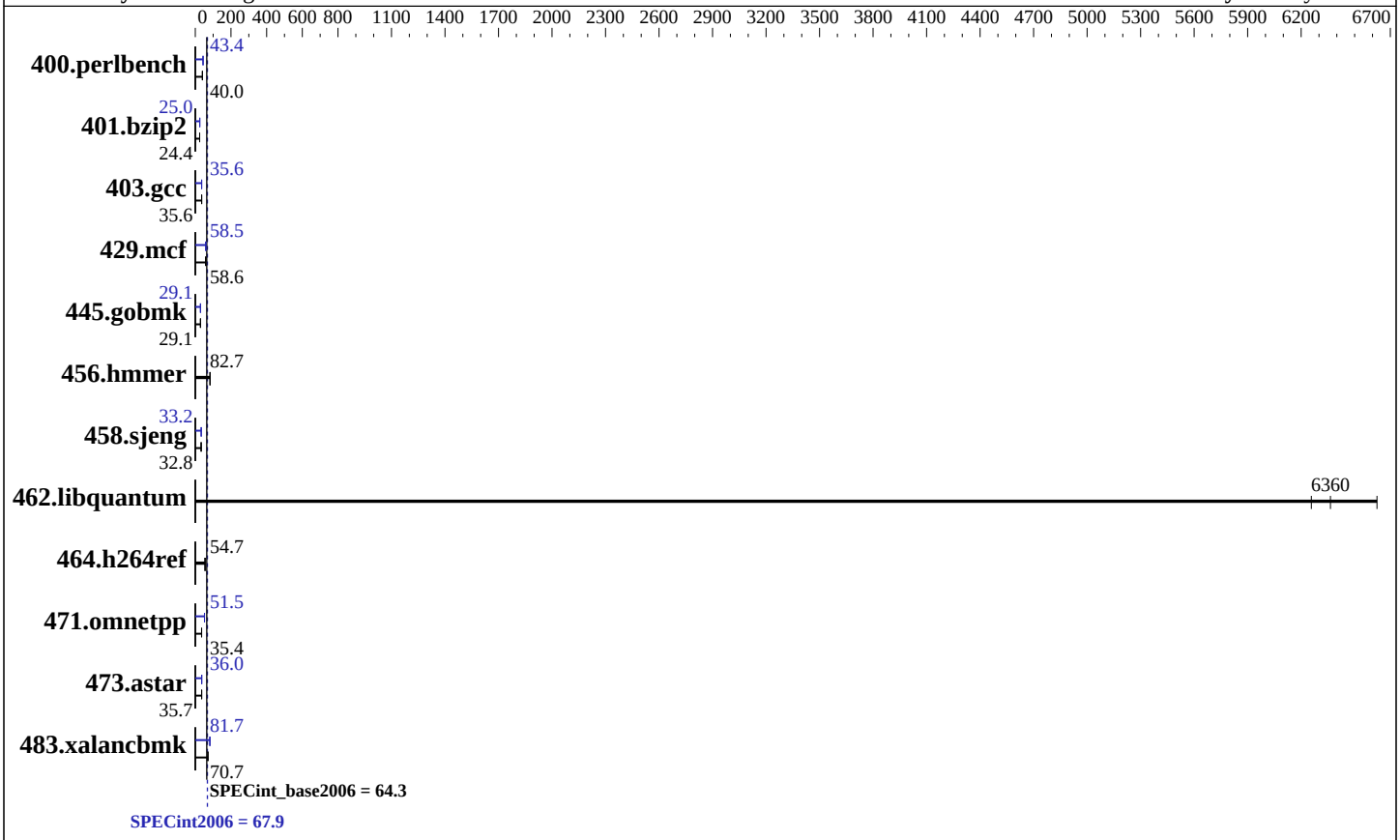
Sugon I840-G25 (Intel Xeon E7-8890 v4)

SPECint®2006 = 67.9

SPECint_base2006 = 64.3

CPU2006 license: 9046
Test sponsor: Sugon
Tested by: Sugon

Test date: May-2016
Hardware Availability: May-2016
Software Availability: May-2016



Hardware

CPU Name:	Intel Xeon E7-8890 v4
CPU Characteristics:	Intel Turbo Boost Technology up to 3.40 GHz
CPU MHz:	2200
FPU:	Integrated
CPU(s) enabled:	96 cores, 4 chips, 24 cores/chip, 2 threads/core
CPU(s) orderable:	2,4 chip
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core
L3 Cache:	60 MB I+D on chip per chip
Other Cache:	None
Memory:	1 TB (64 x 16 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)
Disk Subsystem:	2 x 1 TB SATA, 7200 RPM, RAID 1
Other Hardware:	None

Software

Operating System:	NeoKylin Linux Advanced Server release V7Update2 (Potassium) 3.10.0-327.el7.x86_64
Compiler:	C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux
Auto Parallel:	Yes
File System:	xfs
System State:	Run level 3 (multi-user)
Base Pointers:	32/64-bit
Peak Pointers:	32/64-bit
Other Software:	Microquill SmartHeap V10.2

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Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	**244**	**40.0**	245	39.8	244	40.0	224	43.6	**225**	**43.4**	225	43.4
401.bzip2	**395**	**24.4**	396	24.4	393	24.5	386	25.0	**386**	**25.0**	386	25.0
403.gcc	226	35.7	**226**	**35.6**	226	35.6	**226**	**35.6**	227	35.5	225	35.8
429.mcf	**156**	**58.6**	157	58.0	156	58.6	154	59.3	156	58.4	**156**	**58.5**
445.gobmk	**361**	**29.1**	361	29.1	360	29.1	360	29.1	**361**	**29.1**	361	29.1
456.hmmer	113	82.7	**113**	**82.7**	113	82.5	113	82.7	**113**	**82.7**	113	82.5
458.sjeng	**369**	**32.8**	369	32.8	369	32.8	364	33.2	364	33.2	**364**	**33.2**
462.libquantum	3.13	6630	**3.26**	**6360**	3.31	6260	3.13	6630	**3.26**	**6360**	3.31	6260
464.h264ref	402	55.1	405	54.6	**404**	**54.7**	402	55.1	405	54.6	**404**	**54.7**
471.omnetpp	**177**	**35.4**	178	35.1	175	35.6	**121**	**51.5**	120	51.9	122	51.4
473.astar	198	35.4	196	35.8	**197**	**35.7**	196	35.9	195	36.0	**195**	**36.0**
483.xalancbmk	**97.7**	**70.7**	97.7	70.6	97.5	70.8	**84.5**	**81.7**	84.5	81.6	84.3	81.9

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.
```

Operating System Notes

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

Platform Notes

```
BIOS Settings:
Package C State limit set as "C0/C1 state"
Enhanced Halt State (C1E) set as "Disable"
Energy Performance BIAS setting. set as "Performance"
ACPI T-States set as "Disable"
 Sysinfo program /cpu2006/config/sysinfo.rev6914
 $Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
 running on I840G25 Thu May 19 19:17:26 2016

 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 E7-8890 v4 @ 2.20GHz
       4 "physical id"s (chips)
       192 "processors"
    cores, siblings (Caution: counting these is hw and system dependent.  The
    following excerpts from /proc/cpuinfo might not be reliable.  Use with
```

Continued on next page

Platform Notes (Continued)

```
      caution.)
         cpu cores : 24
         siblings  : 48
         physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
         27 28 29
         physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
         27 28 29
         physical 2: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
         27 28 29
         physical 3: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26
         27 28 29
      cache size : 30720 KB

   From /proc/meminfo
      MemTotal:       1056727052 kB
      HugePages_Total:       0
      Hugepagesize:       2048 kB

   /usr/bin/lsb_release -d
      NeoKylin Linux Advanced Server release V7Update2 (Potassium)

   From /etc/*release* /etc/*version*
      neokylin-release: NeoKylin Linux Advanced Server release V7Update2
      (Potassium)
      os-release:
         NAME="NeoKylin Linux Advanced Server"
         VERSION="V7Update2 (Potassium)"
         ID="neokylin"
         ID_LIKE="fedora"
         VERSION_ID="V7Update2"
         PRETTY_NAME="NeoKylin Linux Advanced Server V7Update2 (Potassium)"
         ANSI_COLOR="0;31"
         CPE_NAME="cpe:/o:neokylin:enterprise_linux:V7Update2:GA:server"
      system-release: NeoKylin Linux Advanced Server release V7Update2 (Potassium)
      system-release-cpe: cpe:/o:neokylin:enterprise_linux:v7update2:ga:server

   uname -a:
      Linux I840G25 3.10.0-327.el7.x86_64 #1 SMP Thu Nov 26 13:46:27 CST 2015
      x86_64 x86_64 x86_64 GNU/Linux

   run-level 3 May 19 13:29

   SPEC is set to: /cpu2006
      Filesystem     Type  Size  Used Avail Use% Mounted on
      /dev/sdb1      xfs   836G  5.1G  831G   1% /cpu2006
   Additional information from dmidecode:

      Warning: Use caution when you interpret this section. The 'dmidecode' program
      reads system data which is "intended to allow hardware to be accurately
      determined", but the intent may not be met, as there are frequent changes to
      hardware, firmware, and the "DMTF SMBIOS" standard.
```

Continued on next page

Platform Notes (Continued)

```
    BIOS American Megatrends Inc. 3.0 05/02/2016
    Memory:
     64x Hynix HMA42GR7MFR4N-TFTD 16 GB 2 rank 2133 MHz, configured at 1600 MHz
     32x NO DIMM NO DIMM

  (End of data from sysinfo program)
```

General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/cpu2006/libs/32:/cpu2006/libs/64:/cpu2006/sh"
OMP_NUM_THREADS = "96"

 Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB
 memory using RedHat EL 7.1
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/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:
`-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32`

C++ benchmarks:
`-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32`
`-Wl,-z,muldefs -L/sh -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 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin`

445.gobmk: `icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin`

C++ benchmarks (except as noted below):
`icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin`

473.astar: `icpc -m64`

Peak Portability Flags

400.perlbench: `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32`
401.bzip2: `-DSPEC_CPU_LP64`
403.gcc: `-DSPEC_CPU_LP64`
429.mcf: `-DSPEC_CPU_LP64`
445.gobmk: `-D_FILE_OFFSET_BITS=64`
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: `-D_FILE_OFFSET_BITS=64`
473.astar: `-DSPEC_CPU_LP64`
483.xalancbmk: `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX`

Peak Optimization Flags

C benchmarks:

400.perlbench: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1) -prof-use(pass 2) -opt-prefetch -ansi-alias

401.bzip2: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div -par-num-threads=1(pass 1) -prof-use(pass 2) -auto-ilp32 -opt-prefetch -ansi-alias

403.gcc: -xCORE-AVX2 -ipo -O3 -no-prec-div -inline-calloc -opt-malloc-options=3 -auto-ilp32

429.mcf: -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32

445.gobmk: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1) -prof-use(pass 2) -par-num-threads=1(pass 1) -ansi-alias

456.hmmer: basepeak = yes

458.sjeng: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1) -prof-use(pass 2) -unroll4

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

C++ benchmarks:

471.omnetpp: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -par-num-threads=1(pass 1) -prof-use(pass 2) -opt-ra-region-strategy=block -ansi-alias -Wl,-z,muldefs -L/sh -lsmartheap

473.astar: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -Wl,-z,muldefs -L/sh -lsmartheap64

483.xalancbmk: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias -Wl,-z,muldefs -L/sh -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-ic16.0-official-linux64.html`
`http://www.spec.org/cpu2006/flags/Sugon-Platform-Settings-V1.2-BDW-revB.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml`
`http://www.spec.org/cpu2006/flags/Sugon-Platform-Settings-V1.2-BDW-revB.xml`

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Tested with SPEC CPU2006 v1.2.
Report generated on Thu Nov 3 10:37:07 2016 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 2 November 2016.