SPEC® CFP2006 Result

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Sugon

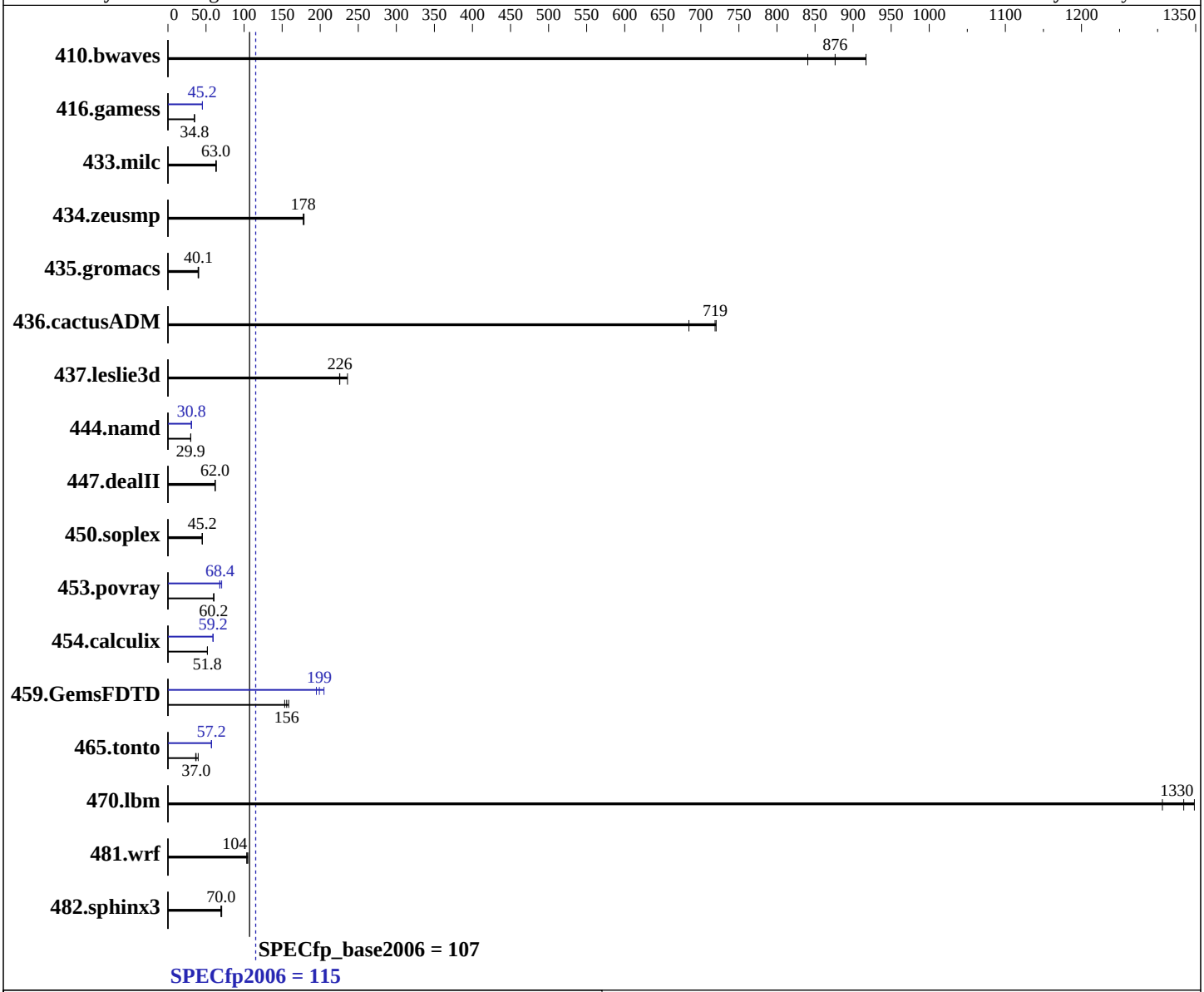
Sugon I840-G25 (Intel Xeon E7-8890 v4)

SPECfp®2006 = 115

SPECfp_base2006 = 107

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

Continued on next page

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; Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux
Auto Parallel:	Yes
File System:	xfs
System State:	Run level 3 (multi-user)

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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

Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	16.2	840	14.8	917	**15.5**	**876**	16.2	840	14.8	917	**15.5**	**876**
416.gamess	562	34.8	564	34.7	**563**	**34.8**	**433**	**45.2**	433	45.2	432	45.3
433.milc	144	63.6	146	63.0	**146**	**63.0**	144	63.6	146	63.0	**146**	**63.0**
434.zeusmp	51.2	178	**51.2**	**178**	50.9	179	51.2	178	**51.2**	**178**	50.9	179
435.gromacs	180	39.6	**178**	**40.1**	177	40.3	180	39.6	**178**	**40.1**	177	40.3
436.cactusADM	17.5	684	**16.6**	**719**	16.6	720	17.5	684	**16.6**	**719**	16.6	720
437.leslie3d	41.7	225	**41.6**	**226**	39.9	236	41.7	225	**41.6**	**226**	39.9	236
444.namd	268	29.9	**268**	**29.9**	268	30.0	**260**	**30.8**	260	30.8	260	30.8
447.dealII	**185**	**62.0**	184	62.0	185	62.0	**185**	**62.0**	184	62.0	185	62.0
450.soplex	**185**	**45.2**	184	45.3	186	44.9	**185**	**45.2**	184	45.3	186	44.9
453.povray	**88.3**	**60.2**	88.0	60.5	88.8	59.9	75.4	70.6	78.2	68.0	**77.8**	**68.4**
454.calculix	159	51.8	**159**	**51.8**	159	51.8	**139**	**59.2**	139	59.2	139	59.3
459.GemsFDTD	**68.0**	**156**	66.9	159	69.2	153	51.8	205	54.4	195	**53.3**	**199**
465.tonto	**266**	**37.0**	270	36.4	248	39.7	**172**	**57.2**	173	57.0	172	57.3
470.lbm	10.2	1350	10.5	1310	**10.3**	**1330**	10.2	1350	10.5	1310	**10.3**	**1330**
481.wrf	**107**	**104**	106	105	108	103	**107**	**104**	106	105	108	103
482.sphinx3	280	69.6	**278**	**70.0**	276	70.6	280	69.6	**278**	**70.0**	276	70.6

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 Settings:
ACPI T-States set as "Disable"
Package C State limit set as "C0/C1 state"
Enhanced Halt State (C1E) set as "Disable"
Energy Performance BIAS setting. set as "Performance"
 Sysinfo program /cpu2006/config/sysinfo.rev6914
 $Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
 running on I840G25 Fri May 20 00:17:02 2016
```

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Platform Notes (Continued)

```
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
   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
```

Continued on next page

Platform Notes (Continued)

```
SPEC is set to: /cpu2006
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sdb1      xfs   836G  6.8G  830G   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.

  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,compact,1,0"
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
```

Fortran benchmarks:
```
ifort -m64
```

Benchmarks using both Fortran and C:
```
icc   -m64 ifort -m64
```

Base Portability Flags

410.bwaves: `-DSPEC_CPU_LP64`

Continued on next page

Base Portability Flags (Continued)

416.gamess: -DSPEC_CPU_LP64
433.milc: -DSPEC_CPU_LP64
434.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch

Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias

Peak Compiler Invocation

C benchmarks:
icc -m64

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

Benchmarks using both Fortran and C:
icc -m64 ifort -m64

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -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) -fno-alias -auto-ilp32

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -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 -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -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) -unroll2 -inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -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) -unroll2 -inline-level=0 -opt-prefetch -parallel

465.tonto: -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) -inline-calloc

Continued on next page

Peak Optimization Flags (Continued)

465.tonto (continued):
`-opt-malloc-options=3 -auto -unroll4`

Benchmarks using both Fortran and C:

435.gromacs: `basepeak = yes`

436.cactusADM: `basepeak = yes`

454.calculix: `-xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias`

481.wrf: `basepeak = yes`

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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