SPEC® CFP2006 Result

Huawei

Huawei CH220 V3 (Intel Xeon E5-2623 v3)

$SPECfp^{®}2006 =$ 96.1
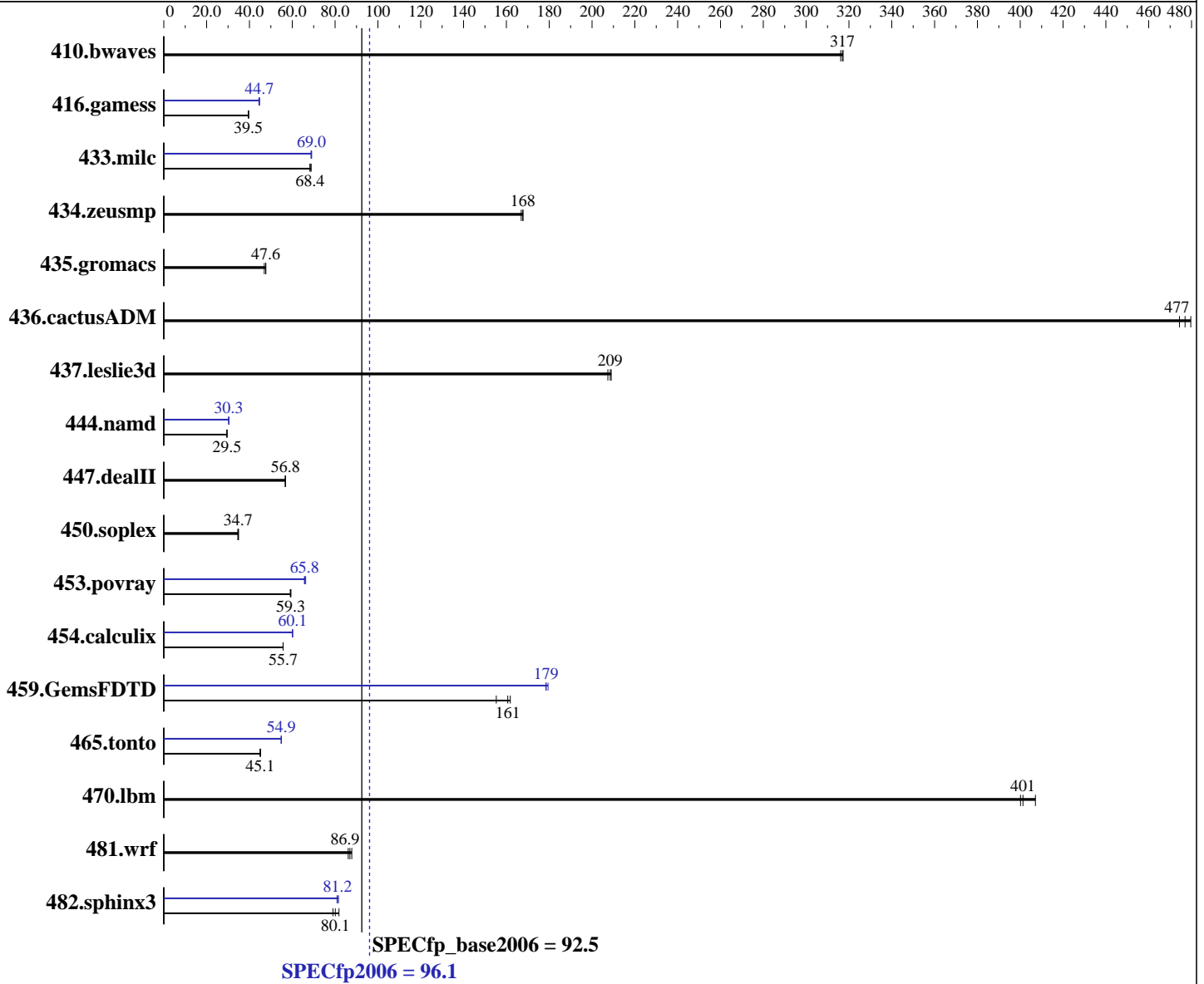
$SPECfp\_base2006 =$ 92.5

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

Test date: Mar-2015
Hardware Availability: Sep-2014
Software Availability: Sep-2014

Benchmark	Score
410.bwaves	317
416.gamess	44.7 / 39.5
433.milc	69.0 / 68.4
434.zeusmp	168
435.gromacs	47.6
436.cactusADM	477
437.leslie3d	209
444.namd	30.3 / 29.5
447.dealII	56.8
450.soplex	34.7
453.povray	65.8 / 59.3
454.calculix	60.1 / 55.7
459.GemsFDTD	179 / 161
465.tonto	54.9 / 45.1
470.lbm	401
481.wrf	86.9
482.sphinx3	81.2 / 80.1

SPECfp_base2006 = 92.5
SPECfp2006 = 96.1

Hardware

CPU Name: Intel Xeon E5-2623 v3
CPU Characteristics: Intel Turbo Boost Technology up to 3.50 GHz
CPU MHz: 3000
FPU: Integrated
CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip
CPU(s) orderable: 1,2 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: Red Hat Enterprise Linux Server release 7.0 (Maipo)
3.10.0-123.el7.x86_64
Compiler: C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux;
Fortran: Version 15.0.0.090 of Intel Fortran Studio XE for Linux
Auto Parallel: Yes
File System: ext4
Continued on next page

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L3 Cache:	10 MB I+D on chip per chip	System State:	Run level 3 (multi-user)
Other Cache:	None	Base Pointers:	64-bit
Memory:	256 GB (16 x 16 GB 2Rx4 PC4-2133P-R, running at 1866 MHz)	Peak Pointers:	32/64-bit
		Other Software:	None
Disk Subsystem:	1 x 500 GB SATA, 7200 RPM		
Other Hardware:	None		

Results Table

	Base						Peak					
Benchmark	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**
410.bwaves	**42.9**	**317**	42.8	317	43.0	316	**42.9**	**317**	42.8	317	43.0	316
416.gamess	**495**	**39.5**	494	39.7	496	39.4	441	44.4	**438**	**44.7**	438	44.7
433.milc	134	68.3	**134**	**68.4**	133	68.8	**133**	**69.0**	134	68.7	133	69.1
434.zeusmp	54.5	167	54.2	168	**54.3**	**168**	54.5	167	54.2	168	**54.3**	**168**
435.gromacs	150	47.6	152	46.9	**150**	**47.6**	150	47.6	152	46.9	**150**	**47.6**
436.cactusADM	**25.1**	**477**	24.9	480	25.2	474	**25.1**	**477**	24.9	480	25.2	474
437.leslie3d	**45.1**	**209**	45.0	209	45.3	207	**45.1**	**209**	45.0	209	45.3	207
444.namd	**272**	**29.5**	272	29.5	272	29.5	264	30.4	264	30.3	**264**	**30.3**
447.dealII	**201**	**56.8**	201	56.8	202	56.7	**201**	**56.8**	201	56.8	202	56.7
450.soplex	239	34.9	241	34.6	**240**	**34.7**	239	34.9	241	34.6	**240**	**34.7**
453.povray	89.7	59.3	**89.7**	**59.3**	90.1	59.1	**80.8**	**65.8**	80.3	66.3	81.0	65.7
454.calculix	148	55.7	**148**	**55.7**	148	55.7	137	60.1	**137**	**60.1**	137	60.1
459.GemsFDTD	65.6	162	**66.0**	**161**	68.3	155	**59.4**	**179**	59.1	179	59.5	178
465.tonto	219	45.0	**218**	**45.1**	218	45.2	179	54.8	179	54.9	**179**	**54.9**
470.lbm	**34.2**	**401**	33.8	407	34.3	400	**34.2**	**401**	33.8	407	34.3	400
481.wrf	130	86.1	127	87.8	**129**	**86.9**	130	86.1	127	87.8	**129**	**86.9**
482.sphinx3	247	79.0	238	81.8	**243**	**80.1**	241	80.9	239	81.6	**240**	**81.2**

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 Custom
Set Snoop Mode to HS mode
Set Intel Hyper-threading Technology to Disable
Sysinfo program /spec15/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on localhost.localdomain Mon Mar 23 12:47:27 2015

This section contains SUT (System Under Test) info as seen by
```

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Platform Notes (Continued)

```
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 E5-2623 v3 @ 3.00GHz
      2 "physical id"s (chips)
      8 "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 : 4
      siblings  : 4
      physical 0: cores 0 1 2 3
      physical 1: cores 0 1 2 3
   cache size : 10240 KB

From /proc/meminfo
   MemTotal:       263722416 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

From /etc/*release* /etc/*version*
   os-release:
      NAME="Red Hat Enterprise Linux Server"
      VERSION="7.0 (Maipo)"
      ID="rhel"
      ID_LIKE="fedora"
      VERSION_ID="7.0"
      PRETTY_NAME="Red Hat Enterprise Linux Server 7.0 (Maipo)"
      ANSI_COLOR="0;31"
      CPE_NAME="cpe:/o:redhat:enterprise_linux:7.0:GA:server"
   redhat-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
   system-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:7.0:ga:server

uname -a:
   Linux localhost.localdomain 3.10.0-123.el7.x86_64 #1 SMP Mon May 5 11:16:57
   EDT 2014 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Mar 23 05:38

SPEC is set to: /spec15
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda1       ext4  443G  165G  256G  40% /
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 Insyde Corp. 1.17 09/03/2014
```

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Platform Notes (Continued)

```
     Memory:
       8x Samsung M393A2G40DB0-CPB 16 GB 1 rank 2133 MHz, configured at 1867 MHz
       8x Samsung M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz, configured at 1867 MHz

    (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 = "/spec15/libs/32:/spec15/libs/64:/spec15/sh"
OMP_NUM_THREADS = "8"

 Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB
 memory using RedHat EL 7.0
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/transparent_hugepage/enabled
 runspec command invoked through numactl i.e.:
 numactl --interleave=all runspec <etc>
```

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
      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
```

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Base Portability Flags (Continued)

```
 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
```

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Software Availability: Sep-2014

Peak Optimization Flags

C benchmarks:

433.milc: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-auto-ilp32 -ansi-alias

470.lbm: basepeak = yes

482.sphinx3: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -ansi-alias
-parallel

C++ benchmarks:

444.namd: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-fno-alias -auto-ilp32

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll4
-ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -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(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2
-inline-level=0 -opt-prefetch -parallel

465.tonto: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-inline-calloc -opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

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Peak Optimization Flags (Continued)

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-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-HASWELL-V1.4.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-HASWELL-V1.4.xml

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