



SPEC CFP2006 Result

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Huawei

SPECfp2006 = 104

Huawei CH121 V3 (Intel Xeon E5-2658 v4)

SPECfp_base2006 = 100

CPU2006 license: 3175

Test sponsor: Huawei

Tested by: Huawei

Test date: Nov-2016

Hardware Availability: Mar-2016

Software Availability: Nov-2015

L3 Cache: 35 MB I+D on chip per chip
 Other Cache: None
 Memory: 512 GB (16 x 32 GB 2Rx4 PC4-2400T-R)
 Disk Subsystem: 1 x 1000 GB SATA, 7200 RPM
 Other Hardware: None

System State: Run level 3 (multi-user)
 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 | <u>25.4</u> | <u>536</u> | 25.6 | 532 | 24.8 | 548 | <u>25.4</u> | <u>536</u> | 25.6 | 532 | 24.8 | 548 |
| 416.gamess | <u>627</u> | <u>31.2</u> | 627 | 31.2 | 624 | 31.4 | 544 | 36.0 | <u>545</u> | <u>35.9</u> | 545 | 35.9 |
| 433.milc | 144 | 63.6 | <u>144</u> | <u>63.7</u> | 144 | 63.7 | 144 | 63.6 | <u>144</u> | <u>63.7</u> | 144 | 63.7 |
| 434.zeusmp | <u>45.4</u> | <u>200</u> | 45.3 | 201 | 45.5 | 200 | <u>45.4</u> | <u>200</u> | 45.3 | 201 | 45.5 | 200 |
| 435.gromacs | 165 | 43.3 | <u>165</u> | <u>43.3</u> | 164 | 43.4 | 165 | 43.3 | <u>165</u> | <u>43.3</u> | 164 | 43.4 |
| 436.cactusADM | 16.8 | 713 | 16.9 | 707 | <u>16.8</u> | <u>712</u> | 16.8 | 713 | 16.9 | 707 | <u>16.8</u> | <u>712</u> |
| 437.leslie3d | <u>24.8</u> | <u>379</u> | 24.5 | 384 | 24.8 | 379 | <u>24.8</u> | <u>379</u> | 24.5 | 384 | 24.8 | 379 |
| 444.namd | 326 | 24.6 | 326 | 24.6 | <u>326</u> | <u>24.6</u> | 323 | 24.8 | 316 | 25.4 | <u>317</u> | <u>25.3</u> |
| 447.dealII | 213 | 53.7 | 213 | 53.6 | <u>213</u> | <u>53.7</u> | 213 | 53.7 | 213 | 53.6 | <u>213</u> | <u>53.7</u> |
| 450.soplex | <u>200</u> | <u>41.7</u> | 201 | 41.5 | 200 | 41.8 | <u>200</u> | <u>41.7</u> | 201 | 41.5 | 200 | 41.8 |
| 453.povray | 112 | 47.4 | <u>111</u> | <u>47.7</u> | 109 | 48.7 | <u>97.9</u> | <u>54.3</u> | 97.7 | 54.4 | 98.1 | 54.2 |
| 454.calculix | <u>174</u> | <u>47.4</u> | 174 | 47.4 | 175 | 47.3 | 165 | 50.1 | 166 | 49.8 | <u>166</u> | <u>49.8</u> |
| 459.GemsFDTD | 49.0 | 216 | 47.2 | 225 | <u>48.7</u> | <u>218</u> | <u>39.5</u> | <u>269</u> | 40.3 | 263 | 39.5 | 269 |
| 465.tonto | <u>256</u> | <u>38.5</u> | 255 | 38.5 | 259 | 38.1 | <u>213</u> | <u>46.1</u> | 213 | 46.2 | 213 | 46.1 |
| 470.lbm | 19.9 | 689 | 21.1 | 652 | <u>20.2</u> | <u>681</u> | 19.9 | 689 | 21.1 | 652 | <u>20.2</u> | <u>681</u> |
| 481.wrf | <u>137</u> | <u>81.5</u> | 137 | 81.7 | 138 | 80.7 | <u>137</u> | <u>81.5</u> | 137 | 81.7 | 138 | 80.7 |
| 482.sphinx3 | 280 | 69.6 | 284 | 68.6 | <u>280</u> | <u>69.6</u> | 280 | 69.6 | 284 | 68.6 | <u>280</u> | <u>69.6</u> |

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 Snoop Mode to HS mode
 Set Patrol Scrub to Disable
 Set Hyper-Threading to Disable
 Baseboard Management Controller used to adjust the fan speed to 100%
 Sysinfo program /spec16/config/sysinfo.rev6914
 \$Rev: 6914 \$ \$Date:: 2014-06-25 #\$ e3fbb8667b5a285932ceab81e28219e1
 running on localhost.localdomain Tue Nov 29 08:36:22 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 E5-2658 v4@ 2.30GHz
 2 "physical id"s (chips)
 28 "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     : 14
  siblings      : 14
  physical 0:   cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
  physical 1:   cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
cache size     : 35840 KB

```

```

From /proc/meminfo
MemTotal:      527793112 kB
HugePages_Total: 0
Hugepagesize:  2048 kB

```

```

From /etc/*release* /etc/*version*
os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.2 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.2"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.2 (Maipo)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.2:GA:server"
redhat-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.2:ga:server

```

```

uname -a:
Linux localhost.localdomain 3.10.0-327.el7.x86_64 #1 SMP Thu Oct 29 17:29:29
EDT 2015 x86_64 x86_64 x86_64 GNU/Linux

```

run-level 3 Nov 29 08:33

```

SPEC is set to: /spec16
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda3       xfs   911G  154G  757G  17% /

```

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.

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Platform Notes (Continued)

BIOS Insyde Corp. 3.32 09/14/2016

Memory:

8x NO DIMM NO DIMM

16x Samsung M393A4K40BB1-CRC 32 GB 2 rank 2400 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 = "/spec16/libs/32:/spec16/libs/64:/spec16/sh"

OMP_NUM_THREADS = "28"

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

runspec command invoked through numactl i.e.:

numactl --interleave=all runspec <etc>

The Huawei CH121 V3 and Huawei CH222 V3

are electronically equivalent.

The results have been measured on a Huawei CH121 V3 model

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

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Base Portability Flags (Continued)

```

437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.deall: -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

```



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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

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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/Huawei-Platform-Settings-BDW-V1.0.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/Huawei-Platform-Settings-BDW-V1.0.xml>

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Tested with SPEC CPU2006 v1.2.

Report generated on Wed Dec 28 10:50:43 2016 by SPEC CPU2006 PS/PDF formatter v6932.

Originally published on 27 December 2016.

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