## SPEC® CFP2006 Result

**Huawei**

Huawei XH321 V3(Intel Xeon E5-2603 v4)

### SPECfp®2006 = 67.5

**SPECfp_base2006 = 65.8**

<table>
<thead>
<tr>
<th>CPU2006 license:</th>
<th>3175</th>
<th>Test date:</th>
<th>Oct-2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor:</td>
<td>Huawei</td>
<td>Hardware Availability:</td>
<td>Oct-2016</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Huawei</td>
<td>Software Availability:</td>
<td>Mar-2016</td>
</tr>
</tbody>
</table>

### Hardware

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>Intel Xeon E5-2603 v4</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU MHZ:</td>
<td>1700</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>12 cores, 2 chips, 6 cores/chip</td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td>1,2 chip</td>
</tr>
<tr>
<td>Primary Cache:</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache:</td>
<td>256 KB I+D on chip per core</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Operating System:</th>
<th>Red Hat Enterprise Linux Server release 7.2 (Maipo) 3.10.0-327.el7.x86_64</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler:</td>
<td>C90++: 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</td>
</tr>
<tr>
<td>Auto Parallel:</td>
<td>Yes</td>
</tr>
<tr>
<td>File System:</td>
<td>xfs</td>
</tr>
</tbody>
</table>

---

Continued on next page
SPEC CFP2006 Result

Huawei
Huawei XH321 V3(Intel Xeon E5-2603 v4) SPECfp2006 = 67.5
SPECfp_base2006 = 65.8

CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei
L3 Cache: 15 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2133T-R, running at 1866 MHz)
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

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>181</td>
<td>74.9</td>
<td>39.2</td>
<td>346</td>
<td>40.3</td>
<td>338</td>
<td>181</td>
<td>74.9</td>
<td>39.2</td>
<td>346</td>
<td>40.3</td>
</tr>
<tr>
<td>433.milc</td>
<td>200</td>
<td>45.9</td>
<td>199</td>
<td>46.0</td>
<td>199</td>
<td>46.0</td>
<td>200</td>
<td>45.9</td>
<td>199</td>
<td>46.0</td>
<td>199</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>64.4</td>
<td>141</td>
<td>64.5</td>
<td>141</td>
<td>64.3</td>
<td>141</td>
<td>64.4</td>
<td>141</td>
<td>64.3</td>
<td>141</td>
<td>64.3</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>233</td>
<td>30.7</td>
<td>233</td>
<td>30.6</td>
<td>232</td>
<td>30.7</td>
<td>233</td>
<td>30.7</td>
<td>232</td>
<td>30.6</td>
<td>232</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>26.7</td>
<td>448</td>
<td>26.6</td>
<td>450</td>
<td>26.6</td>
<td>449</td>
<td>26.7</td>
<td>448</td>
<td>26.6</td>
<td>450</td>
<td>26.6</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>56.7</td>
<td>166</td>
<td>56.2</td>
<td>167</td>
<td>57.3</td>
<td>164</td>
<td>56.7</td>
<td>166</td>
<td>56.2</td>
<td>167</td>
<td>57.3</td>
</tr>
<tr>
<td>444.namd</td>
<td>537</td>
<td>14.9</td>
<td>537</td>
<td>14.9</td>
<td>537</td>
<td>14.9</td>
<td>537</td>
<td>14.9</td>
<td>537</td>
<td>14.9</td>
<td>537</td>
</tr>
<tr>
<td>447.dealII</td>
<td>335</td>
<td>34.1</td>
<td>333</td>
<td>34.4</td>
<td>334</td>
<td>34.2</td>
<td>335</td>
<td>34.1</td>
<td>333</td>
<td>34.4</td>
<td>334</td>
</tr>
<tr>
<td>450.soplex</td>
<td>318</td>
<td>26.2</td>
<td>320</td>
<td>26.1</td>
<td>320</td>
<td>26.1</td>
<td>318</td>
<td>26.2</td>
<td>320</td>
<td>26.1</td>
<td>320</td>
</tr>
<tr>
<td>453.povray</td>
<td>177</td>
<td>30.1</td>
<td>176</td>
<td>30.1</td>
<td>176</td>
<td>30.1</td>
<td>177</td>
<td>30.1</td>
<td>176</td>
<td>30.1</td>
<td>176</td>
</tr>
<tr>
<td>454.calculix</td>
<td>260</td>
<td>31.8</td>
<td>260</td>
<td>31.8</td>
<td>260</td>
<td>31.7</td>
<td>256</td>
<td>32.3</td>
<td>256</td>
<td>32.3</td>
<td>256</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>65.5</td>
<td>162</td>
<td>69.9</td>
<td>152</td>
<td>65.7</td>
<td>162</td>
<td>57.8</td>
<td>183</td>
<td>58.6</td>
<td>181</td>
<td>59.1</td>
</tr>
<tr>
<td>465.tonto</td>
<td>364</td>
<td>27.0</td>
<td>365</td>
<td>27.0</td>
<td>364</td>
<td>27.0</td>
<td>333</td>
<td>29.6</td>
<td>333</td>
<td>29.6</td>
<td>332</td>
</tr>
<tr>
<td>470.lbm</td>
<td>31.3</td>
<td>440</td>
<td>31.2</td>
<td>440</td>
<td>31.8</td>
<td>431</td>
<td>31.3</td>
<td>440</td>
<td>31.2</td>
<td>440</td>
<td>31.8</td>
</tr>
<tr>
<td>481.wrf</td>
<td>180</td>
<td>62.1</td>
<td>177</td>
<td>63.0</td>
<td>177</td>
<td>63.1</td>
<td>180</td>
<td>62.1</td>
<td>177</td>
<td>63.0</td>
<td>177</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>393</td>
<td>49.6</td>
<td>392</td>
<td>49.8</td>
<td>394</td>
<td>49.4</td>
<td>393</td>
<td>49.6</td>
<td>392</td>
<td>49.8</td>
<td>394</td>
</tr>
</tbody>
</table>

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 Patrol Scrub to Disable

Sysinfo program /spec16/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on localhost.localdomain Wed Oct 26 06:37:26 2016

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

Continued on next page
Huawei

Huawei XH321 V3(Intel Xeon E5-2603 v4)

**SPEC CFP2006 Result**

<table>
<thead>
<tr>
<th>SPECfp2006</th>
<th>67.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_base2006</td>
<td>65.8</td>
</tr>
</tbody>
</table>

**CPU2006 license:** 3175  
**Test sponsor:** Huawei  
**Tested by:** Huawei  
**Test date:** Oct-2016  
**Hardware Availability:** Oct-2016  
**Software Availability:** Mar-2016

---

**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 E5-2603 v4 @ 1.70GHz
- 2 "physical id"s (chips)
- 12 "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 : 6
  - siblings : 6
  - physical 0: cores 0 1 2 3 4 5
  - physical 1: cores 0 1 2 3 4 5
- cache size : 15360 KB

From `/proc/meminfo`

- MemTotal: 263570484 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

From `/etc/*release*/` /etc/*version*

- 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)

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 Oct 26 06:21

SPEC is set to: /spec16

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 xfs 391G 9.9G 381G 3% /

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. 3.33 09/26/2016

Continued on next page
Huawei XH321 V3(Intel Xeon E5-2603 v4)

SPECfp2006 = 67.5
SPECfp_base2006 = 65.8

CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei
Test date: Oct-2016
Hardware Availability: Oct-2016
Software Availability: Mar-2016

Platform Notes (Continued)

Memory:
16x 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 = "/spec16/libs/32:/spec16/libs/64:/spec16/sh"
OMP_NUM_THREADS = "12"

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
runcsp command invoked through numactl i.e.:
umactl --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 -nofor_main
  435.gromacs: -DSPEC_CPU_LP64
  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
Huawei
Huawei XH321 V3(Intel Xeon E5-2603 v4)

SPECfp2006 = 67.5
SPECfp_base2006 = 65.8

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

Test date: Oct-2016
Hardware Availability: Oct-2016
Software Availability: Mar-2016

Base Portability Flags (Continued)

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
Huawei

Huawei XH321 V3 (Intel Xeon E5-2603 v4)

SPECfp2006 = 67.5
SPECfp_base2006 = 65.8

CPU2006 license: 3175
Test sponsor: Huawei
Test date: Oct-2016
Hardware Availability: Oct-2016
Tested by: Huawei
Software Availability: Mar-2016

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) -03 (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) -03 (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) -03 (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) -03 (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) -03 (pass 2) -no-prec-div (pass 2)
            -par-num-threads=1 (pass 1) -prof-use (pass 2) -inline-calloc
            -opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

Continued on next page
Huawei

Huawei XH321 V3(Intel Xeon E5-2603 v4)

<table>
<thead>
<tr>
<th>SPECfp2006</th>
<th>67.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_base2006</td>
<td>65.8</td>
</tr>
</tbody>
</table>

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

Test date: Oct-2016
Hardware Availability: Oct-2016
Software Availability: Mar-2016

Peak Optimization Flags (Continued)

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

SPEC and SPECfp are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.
Originally published on 15 November 2016.