Huawei
Huawei XH620 V3 (Intel Xeon E5-2670 v3) SPECfp®2006 = 106
SPECfp_base2006 = 101

CPU2006 license: 3175
Test date: May-2015
Test sponsor: Huawei
Hardware Availability: Sep-2014
Tested by: Huawei
Software Availability: Sep-2014

### Hardware

<table>
<thead>
<tr>
<th>Test</th>
<th>SPECfp2006</th>
<th>SPECfp_base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>37.5</td>
<td>33.6</td>
</tr>
<tr>
<td>416.gamess</td>
<td>43.5</td>
<td>48.7</td>
</tr>
<tr>
<td>433.milc</td>
<td>69.2</td>
<td>54.7</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>201</td>
<td>52.8</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>38.9</td>
<td>48.9</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>755</td>
<td>259</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>368</td>
<td>225</td>
</tr>
<tr>
<td>444.namd</td>
<td>26.9</td>
<td>26.2</td>
</tr>
<tr>
<td>447.dealII</td>
<td>51.2</td>
<td>51.2</td>
</tr>
<tr>
<td>450.soplex</td>
<td>43.5</td>
<td>43.5</td>
</tr>
<tr>
<td>453.povray</td>
<td>54.7</td>
<td>54.7</td>
</tr>
<tr>
<td>454.calculix</td>
<td>48.9</td>
<td>48.9</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>36.5</td>
<td>36.5</td>
</tr>
<tr>
<td>465.tonto</td>
<td>46.3</td>
<td>46.3</td>
</tr>
<tr>
<td>470.lbm</td>
<td>86.9</td>
<td>86.9</td>
</tr>
<tr>
<td>481.wrf</td>
<td>68.9</td>
<td>68.9</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>52.8</td>
<td>52.8</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Red Hat Enterprise Linux Server release 7.0 (Maipo) 3.10.0-123.el7.x86_64</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler</td>
<td>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</td>
</tr>
<tr>
<td>Auto Parallel</td>
<td>Yes</td>
</tr>
<tr>
<td>File System</td>
<td>ext4</td>
</tr>
</tbody>
</table>

Continued on next page
SPEC CFP2006 Result

Huawei

Huawei XH620 V3 (Intel Xeon E5-2670 v3)

SPECfp2006 = 106
SPECfp_base2006 = 101

CPU2006 license: 3175  Test date:  May-2015
Test sponsor:  Huawei
Hardware Availability:  Sep-2014
Tested by:  Huawei
Software Availability:  Sep-2014

L3 Cache:  30 MB I+D on chip per chip
Other Cache:  None
Memory:  256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)
Disk Subsystem:  1 x 500 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>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>26.1</td>
<td>521</td>
<td>25.4</td>
<td>535</td>
<td>24.4</td>
<td>557</td>
<td>26.1</td>
<td>521</td>
<td>25.4</td>
<td>535</td>
<td>24.4</td>
<td>557</td>
</tr>
<tr>
<td>416.gamess</td>
<td>583</td>
<td>33.6</td>
<td>584</td>
<td>33.5</td>
<td>583</td>
<td>33.6</td>
<td>520</td>
<td>37.6</td>
<td>522</td>
<td>37.5</td>
<td>523</td>
<td>37.5</td>
</tr>
<tr>
<td>433.milc</td>
<td>132</td>
<td>69.5</td>
<td>133</td>
<td>69.1</td>
<td>133</td>
<td>69.2</td>
<td>132</td>
<td>69.5</td>
<td>133</td>
<td>69.1</td>
<td>133</td>
<td>69.1</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>45.0</td>
<td>202</td>
<td>45.4</td>
<td>200</td>
<td>45.4</td>
<td>201</td>
<td>45.0</td>
<td>202</td>
<td>45.4</td>
<td>200</td>
<td>45.4</td>
<td>201</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>183</td>
<td>39.0</td>
<td>183</td>
<td>38.9</td>
<td>183</td>
<td>38.9</td>
<td>183</td>
<td>39.0</td>
<td>183</td>
<td>38.9</td>
<td>183</td>
<td>38.9</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>15.8</td>
<td>755</td>
<td>16.0</td>
<td>745</td>
<td>15.7</td>
<td>760</td>
<td>15.8</td>
<td>755</td>
<td>16.0</td>
<td>745</td>
<td>15.7</td>
<td>760</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>25.3</td>
<td>372</td>
<td>25.6</td>
<td>367</td>
<td>25.5</td>
<td>368</td>
<td>25.3</td>
<td>372</td>
<td>25.6</td>
<td>367</td>
<td>25.5</td>
<td>368</td>
</tr>
<tr>
<td>447.dealII</td>
<td>225</td>
<td>50.9</td>
<td>223</td>
<td>51.2</td>
<td>223</td>
<td>51.2</td>
<td>225</td>
<td>50.9</td>
<td>223</td>
<td>51.2</td>
<td>223</td>
<td>51.2</td>
</tr>
<tr>
<td>450.soplex</td>
<td>192</td>
<td>43.5</td>
<td>192</td>
<td>43.5</td>
<td>192</td>
<td>43.5</td>
<td>192</td>
<td>43.5</td>
<td>192</td>
<td>43.5</td>
<td>192</td>
<td>43.5</td>
</tr>
<tr>
<td>453.povray</td>
<td>109</td>
<td>49.0</td>
<td>110</td>
<td>48.3</td>
<td>109</td>
<td>48.7</td>
<td>97.8</td>
<td>54.4</td>
<td>97.3</td>
<td>54.7</td>
<td>96.5</td>
<td>55.1</td>
</tr>
<tr>
<td>454.calculix</td>
<td>169</td>
<td>48.8</td>
<td>169</td>
<td>48.9</td>
<td>169</td>
<td>48.9</td>
<td>156</td>
<td>52.9</td>
<td>156</td>
<td>52.8</td>
<td>156</td>
<td>52.8</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>47.6</td>
<td>223</td>
<td>46.3</td>
<td>229</td>
<td>47.1</td>
<td>225</td>
<td>40.7</td>
<td>261</td>
<td>41.5</td>
<td>256</td>
<td>41.0</td>
<td>259</td>
</tr>
<tr>
<td>465.tonto</td>
<td>270</td>
<td>36.5</td>
<td>269</td>
<td>36.5</td>
<td>270</td>
<td>36.4</td>
<td>212</td>
<td>46.3</td>
<td>212</td>
<td>46.4</td>
<td>213</td>
<td>46.2</td>
</tr>
<tr>
<td>470.lbm</td>
<td>20.2</td>
<td>681</td>
<td>20.0</td>
<td>689</td>
<td>20.1</td>
<td>682</td>
<td>20.2</td>
<td>681</td>
<td>20.0</td>
<td>689</td>
<td>20.1</td>
<td>682</td>
</tr>
<tr>
<td>481.wrf</td>
<td>129</td>
<td>86.9</td>
<td>129</td>
<td>86.6</td>
<td>128</td>
<td>87.0</td>
<td>129</td>
<td>86.9</td>
<td>129</td>
<td>86.6</td>
<td>129</td>
<td>87.0</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>283</td>
<td>68.9</td>
<td>284</td>
<td>68.7</td>
<td>282</td>
<td>69.0</td>
<td>283</td>
<td>68.9</td>
<td>284</td>
<td>68.7</td>
<td>282</td>
<td>69.0</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 ES mode
Set Patrol Scrub to Disable
Set Intel HT Technology to Disable
Sysinfo program /spec/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 $$ e3fbb8667b5a285932ceab81e28219e1
running on localhost.localdomain Wed May  6 05:22:05 2015

This section contains SUT (System Under Test) info as seen by
Continued on next page
<table>
<thead>
<tr>
<th>CPU2006 license:</th>
<th>Test date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3175</td>
<td>May-2015</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test sponsor:</th>
<th>Hardware Availability:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Huawei</td>
<td>Sep-2014</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tested by:</th>
<th>Software Availability:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Huawei</td>
<td>Sep-2014</td>
</tr>
</tbody>
</table>

## 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 E5-2670 v3 @ 2.30GHz
- 2 "physical id"s (chips)
- 24 "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: 12
- siblings: 12
- physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
- physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13
- cache size: 30720 KB

From /proc/meminfo
- MemTotal: 263578448 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="7.0.0"
  - 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 May 6 05:20

SPEC is set to: /spec

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sda1</td>
<td>ext4</td>
<td>385G</td>
<td>17G</td>
<td>349G</td>
<td>5%</td>
<td></td>
</tr>
</tbody>
</table>

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 Insysde Corp. 1.36 04/09/2015

Continued on next page
SPEC CFP2006 Result

Huawei
Huawei XH620 V3 (Intel Xeon E5-2670 v3)

| SPECfp2006 | 106 |
| SPECfp_base2006 | 101 |

CPU2006 license: 3175
Test sponsor: Huawei
Test date: May-2015
Tested by: Huawei
Hardware Availability: Sep-2014
Software Availability: Sep-2014

### Platform Notes (Continued)

Memory:
8x Micron 36ASF2G72PZ-2G1A2 16 GB 1 rank 2133 MHz
8x Micron 36ASF2G72PZ-2G1A2 16 GB 2 rank 2133 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 = "/spec/libs/32:/spec/libs/64:/spec/sh"
- OMP_NUM_THREADS = "24"

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>

The Huawei XH622 V3 and Huawei XH628 V3 and Huawei XH620 V3 are electronically equivalent.

The results have been measured on a Huawei XH620 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
- 437.leslie3d: -DSPEC_CPU_LP64

Continued on next page
Huawei

Huawei XH620 V3 (Intel Xeon E5-2670 v3)

SPECfp2006 = 106
SPECfp_base2006 = 101

CPU2006 license: 3175
Test date: May-2015
Test sponsor: Huawei
Hardware Availability: Sep-2014
Tested by: Huawei
Software Availability: Sep-2014

Base Portability Flags (Continued)

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
Huawei

Huawei XH620 V3 (Intel Xeon E5-2670 v3)

SPECfp2006 = 106
SPECfp_base2006 = 101

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

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

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(pass 1) -ipo(pass 2)
    -03(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)
    -03(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)
    -03(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)
    -03(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)
    -03(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:

Continued on next page
Huawei

Huawei XH620 V3 (Intel Xeon E5-2670 v3)

SPECfp2006 = 106
SPECfp_base2006 = 101

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

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

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-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

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 28 July 2015.