### Huawei BH640 V2 (Intel Xeon E5-4607 v2)

**SPECfp®2006** = 68.6  
**SPECfp_base2006** = 66.9

<table>
<thead>
<tr>
<th>Tool</th>
<th>SPECfp%</th>
<th>SPECfp_base%</th>
</tr>
</thead>
<tbody>
<tr>
<td>bwaves</td>
<td>29.0</td>
<td></td>
</tr>
<tr>
<td>gamess</td>
<td>26.0</td>
<td></td>
</tr>
<tr>
<td>milc</td>
<td>50.7</td>
<td></td>
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<tr>
<td>zeusmp</td>
<td>112</td>
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<tr>
<td>gromacs</td>
<td>34.4</td>
<td></td>
</tr>
<tr>
<td>cactusADM</td>
<td>139</td>
<td></td>
</tr>
<tr>
<td>lesie3d</td>
<td>18.5</td>
<td></td>
</tr>
<tr>
<td>namd</td>
<td>45.8</td>
<td></td>
</tr>
<tr>
<td>dealII</td>
<td>33.9</td>
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</tr>
<tr>
<td>soplex</td>
<td>40.6</td>
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<tr>
<td>povray</td>
<td>34.4</td>
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<tr>
<td>calculix</td>
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<tr>
<td>GemsFDTD</td>
<td>118</td>
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</tr>
<tr>
<td>tonto</td>
<td>35.5</td>
<td></td>
</tr>
<tr>
<td>lbm</td>
<td>32.1</td>
<td></td>
</tr>
<tr>
<td>wrf</td>
<td>55.3</td>
<td></td>
</tr>
<tr>
<td>sphinx3</td>
<td>63.9</td>
<td></td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** Intel Xeon E5-4607 v2  
- **CPU Characteristics:** 
  - **CPU MHz:** 2600  
  - **FPU:** Integrated  
  - **CPU(s) enabled:** 24 cores, 4 chips, 6 cores/chip  
  - **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

### Software

- **Operating System:** Red Hat Enterprise Linux Server release 6.5 (Santiago)  
  - 2.6.32-431.el6.x86_64  
- **Compiler:**  
  - C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux;  
  - Fortran: Version 12.1.0.225 of Intel Fortran Studio XE for Linux  
- **Auto Parallel:** Yes  
- **File System:** ext4
Huawei BH640 V2 (Intel Xeon E5-4607 v2)

SPECfp2006 = 68.6
SPECfp_base2006 = 66.9

CPU2006 license: 3175
Test date: Sep-2014
Test sponsor: Huawei
Hardware Availability: Apr-2014
Tested by: Huawei
Software Availability: Nov-2013

L3 Cache: 15 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 PC3-12800R-11, ECC)
Peak Pointers: 32/64-bit
Disk Subsystem: 1 x 500 GB SATA, 7200 RPM
Other Hardware: None
Other Software: None

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base</th>
<th>Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Seconds</td>
<td>Ratio</td>
</tr>
<tr>
<td>410.bwaves</td>
<td>43.8</td>
<td>310</td>
</tr>
<tr>
<td>416.gamess</td>
<td>755</td>
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<td>433.milc</td>
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<td>434.zeusmp</td>
<td>81.1</td>
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<td>435.gromacs</td>
<td>207</td>
<td>34.4</td>
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<tr>
<td>436.cactusADM</td>
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</tr>
<tr>
<td>437.leslie3d</td>
<td>67.4</td>
<td>139</td>
</tr>
<tr>
<td>444.namd</td>
<td>441</td>
<td>18.2</td>
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<tr>
<td>447.dealII</td>
<td>250</td>
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<td>450.soplex</td>
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<td>33.9</td>
</tr>
<tr>
<td>453.povray</td>
<td>154</td>
<td>34.6</td>
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<tr>
<td>454.calculix</td>
<td>267</td>
<td>30.9</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>90.5</td>
<td>117</td>
</tr>
<tr>
<td>465.tonto</td>
<td>306</td>
<td>32.1</td>
</tr>
<tr>
<td>470.lbm</td>
<td>31.6</td>
<td>435</td>
</tr>
<tr>
<td>481.wrf</td>
<td>202</td>
<td>55.3</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>305</td>
<td>63.9</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 Hyper-Threading to Disabled
Sysinfo program /spec/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 $& 6f2ebdfff5032aaa42e583f96b07f99d3
running on localhost.localdomain Fri Sep  5 20:06:02 2014

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
Continued on next page
Huawei BH640 V2 (Intel Xeon E5-4607 v2)  

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Platform Notes (Continued)

From `/proc/cpuinfo`

- model name: Intel(R) Xeon(R) CPU E5-4607 v2 @ 2.60GHz
- 4 "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: 6
  - siblings: 6
  - physical 0: cores 0 1 2 3 4 5
  - physical 1: cores 0 1 2 3 4 5
  - physical 2: cores 0 1 2 3 4 5
  - physical 3: cores 0 1 2 3 4 5
- cache size: 15360 KB

From `/proc/meminfo`

- MemTotal: 264477564 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

From `/usr/bin/lsb_release -d`

- Red Hat Enterprise Linux Server release 6.5 (Santiago)

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

- redhat-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
- system-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)

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

- uname -a:

  Linux localhost.localdomain 2.6.32-431.el6.x86_64 #1 SMP Sun Nov 10 22:19:54 EST 2013 x86_64 x86_64 x86_64 GNU/Linux

- run-level 3 Sep 5 12:22

- SPEC is set to: `/spec`

- Filesystem Type Size Used Avail Use% Mounted on
  /dev/sda2 ext4 411G 126G 264G 33% /

- Additional information from dmidecode:
  - Memory:
    - 4x Hynix HMT42GR7AFR4C-PB 16 GB 1600 MHz 2 rank
    - 12x Hynix HMT42GR7MR4C-PB 16 GB 1600 MHz 2 rank

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:

- KMP_AFFINITY = "granularity=fine,compact,0,1"
- LD_LIBRARY_PATH = "/spec/libs/32:/spec/libs/64"

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Huawei BH640 V2 (Intel Xeon E5-4607 v2) SPECfp2006 = 68.6 SPECfp_base2006 = 66.9

CPU2006 license: 3175
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General Notes (Continued)

OMP_NUM_THREADS = "24"

Binaries compiled on a system with 2 x Xeon X5645 CPU + 16GB memory using RHEL 6.1
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/redhat_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
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  -nofor_main
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:
-xAVX  -ipo -O3  -no-prec-div -static -parallel -opt-prefetch
-ansi-alias

Continued on next page
Huawei

Huawei BH640 V2 (Intel Xeon E5-4607 v2)

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Base Optimization Flags (Continued)

C++ benchmarks:
- xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias

Fortran benchmarks:
- xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch

Benchmarks using both Fortran and C:
- xAVX -ipo -O3 -no-prec-div -static -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: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -03(pass 2)
- no-prec-div(pass 2) -prof-use(pass 2) -static -auto-ilp32
- ansi-alias

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:
444.namd: -xAVX(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

Continued on next page
Peak Optimization Flags (Continued)

447.dealII: basepeak = yes
450.soplex: basepeak = yes
453.povray: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
            -no-prec-div(pass 2) -prof-use(pass 2) -unroll14 -ansi-alias

Fortran benchmarks:
410.bwaves: basepeak = yes
416.gamess: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
            -no-prec-div(pass 2) -prof-use(pass 2) -unroll12
            -inline-level=0 -scalar-rep -static
434.zeusmp: basepeak = yes
437.leslie3d: basepeak = yes
459.GemsFDTD: basepeak = yes
465.tonto: -xAVX(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 -unroll14

Benchmarks using both Fortran and C:
435.gromacs: basepeak = yes
436.cactusADM: basepeak = yes
454.calculix: -xAVX -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-ic12.1-official-linux64.20120425.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20120425.xml
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-V1.0-IVB-RevG.xml
# Huawei

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For questions about this result, please contact the tester.

For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.


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