**Huawei**

**Huawei RH2288H V3 (Intel Xeon E5-2698 v4)**

| SPECfp®2006 = | NC |
|SPECfp_base2006 = | NC |

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

SPEC has determined that this result is not in compliance with the SPEC CPU2006 run and reporting rules. Specifically, the memory was not available as required by [SPEC CPU rule 1.3.2](http://spec.org/cpu2006/Docs/runrules.html#rule_1.3.2) and the SPEC Open Systems Group policy on general availability.

- 410.bwaves
- 416.gamess
- 433.milc
- 434.zeusmp
- 435.gromacs
- 436.cactusADM
- 437.leslie3d
- 444.namd
- 447.dealII
- 450.soplex
- 453.povray
- 454.calculix
- 459.GemsFDTD
- 465.tonto
- 481.wrf
- 482.sphinx3

Non-Compliant
Huawei RH2288H V3 (Intel Xeon E5-2698 v4) SPECfp2006 = NC
SPECfp_base2006 = NC

Huawei

CPU2006 license: 3175
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<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name: Intel Xeon E5-2698 v4</td>
<td>Operating System: Red Hat Enterprise Linux Server release 7.0 (Maipo) 3.10.0-123.el7.x86_64</td>
</tr>
<tr>
<td>CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz</td>
<td>Compiler: C/C++: 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>CPU MHz: 2200</td>
<td>Auto Parallel: Yes</td>
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<tr>
<td>CPU: Integrated</td>
<td>File System: xfs</td>
</tr>
<tr>
<td>CPU(s) enabled: 40 cores, 2 chips, 20 cores/chip</td>
<td>System State: Run level 3 (multi-user)</td>
</tr>
<tr>
<td>CPU(s) orderable: 1.2 chip</td>
<td>Base Pointers: 64-bit</td>
</tr>
<tr>
<td>Primary Cache: 32 KB I + 32 KB D on chip per core</td>
<td>Peak Pointers: 32/64-bit</td>
</tr>
<tr>
<td>Secondary Cache: 256 KB I+D on chip per core</td>
<td>Other Software: None</td>
</tr>
<tr>
<td>L3 Cache: 50 MB I+D on chip per chip</td>
<td>Other Hardware: None</td>
</tr>
<tr>
<td>Other Cache: None</td>
<td>Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2400T-R)</td>
</tr>
<tr>
<td>Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2400T-R)</td>
<td>Disk Subsystem: 1 x 600GB SAS, 10000 RPM</td>
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<tr>
<td>Disk Subsystem: 1 x 600GB SAS, 10000 RPM</td>
<td>Other Hardware: None</td>
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Huawei RH2288H V3 (Intel Xeon E5-2698 v4)

SPECfp2006 = NC
SPECfp_base2006 = NC

CPU2006 license: 3175
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Software Availability: Mar-2016

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Results Table

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<th>Benchmark</th>
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<th>Seconds</th>
<th>Ratio</th>
<th>Peak</th>
<th>Seconds</th>
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</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
Set Hyper-Threading to Disable
Sysinfo program /spec/spec16/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab881e28219e1
runtime on localhost.localdomain Tue Nov 18 02:05:33 2014
Continued on next page
Huawei RH2288H V3 (Intel Xeon E5-2698 v4)

SPECfp2006 = NC
SPECfp_base2006 = NC

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

Test date: Feb-2016
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SPEC has determined that this result is not in compliance with the SPEC CPU2006 run and reporting rules. Specifically, the memory was not available as required by SPEC CPU rule 1.3.2 and the SPEC Open Systems Group policy on general availability.

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 E5-2698 v4 @ 2.20GHz
2 "physical id"s (chips)
40 "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 : 20
siblings : 20
physical 0: cores 0 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
physical 1: cores 0 1 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
cache size : 51200 KB

From /proc/meminfo
MemTotal: 263568392 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)"

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 Nov 18 02:03
SPEC is set to: /spec/spec16

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SPEC CFP2006 Result

Huawei

Huawei RH2288H V3 (Intel Xeon E5-2698 v4)

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Platform Notes (Continued)

Filesysten  Type  Size  Used Avail Use% Mounted on
/dev/sda2      xfs   549G  12G  538G  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 where there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS Insyde Corp. 3.09 02/22/2016
Memory:
8x NO DIMM NO DIMM 3 rank
8x Samsung M393A2G40EB1-CRC 16 GB 1 rank 2400 MHz
8x Samsung M393A2G40EB1-CRC 16 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 = "/spec/spec16/libs/32:/spec/spec16/libs/64:/spec/spec16/sh"
OMP_NUM_THREADS = "40"

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>

Base Compiler Invocation

C benchmarks:
icc   -m64

C++ benchmarks:
icpc  -m64

Fortran benchmarks:
ifort -m64

Continued on next page
Huawei RH2288H V3 (Intel Xeon E5-2698 v4)

SPEC has determined that this result is not in compliance with the SPEC CPU2006 run and reporting rules. Specifically, the memory was not available as required by SPEC CPU rule 1.3.2 and the SPEC Open Systems Group policy on general availability.

Base Compiler Invocation (Continued)

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
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
Huawei
Huawei RH2288H V3 (Intel Xeon E5-2698 v4)

| SPECfp2006 = | NC |
| SPECfp_base2006 = | NC |

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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`: 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`

Continued on next page
## Huawei RH2288H V3 (Intel Xeon E5-2698 v4)

<table>
<thead>
<tr>
<th>SPECfp2006</th>
<th>SPECfp_base2006</th>
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**CPU2006 license:** 3175  
**Test date:** Feb-2016  
**Hardware Availability:** Mar-2016  
**Test sponsor:** Huawei  
**Tested by:** Huawei  
**Software Availability:** Mar-2016

**Peak Optimization Flags (Continued)**

- 453.povray (continued):  
  - ansi-alias

- Fortran benchmarks:
  - 410.bwaves: basepeak = yes
  - 416.games: -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 Spec-all options=3 -auto -unroll4

**Benchmarks using both Fortran and C:**

- 435.gromacs: 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/Huawei-Platform-Settings-BDW-V1.0.html
**SPEC CFP2006 Result**

Huawei RH2288H V3 (Intel Xeon E5-2698 v4)

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<th>SPECfp2006</th>
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You can also download the XML flags sources by saving the following links:

- [Intel-ic16.0-official-linux64.xml](http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml)
- [Huawei-Platform-Settings-BDW-V1.0.xml](http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-BDW-V1.0.xml)

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

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