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](https://www.spec.org/osg/policy.html#AppendixC).

<table>
<thead>
<tr>
<th>Copies</th>
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<tr>
<td>410.bwaves</td>
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<tr>
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<tr>
<td>437.leslie3d</td>
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<td>447.dealII</td>
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<td>454.calculix</td>
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<td>481.wrf</td>
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Huawei

SPEC CFP2006 Result

Huawei XH622 V3 (Intel Xeon E5-2698 v4)

<table>
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<th>SPECfp_rate2006</th>
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<tr>
<td>SPECfp_rate_base2006</td>
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CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei

Test date: Mar-2016
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 and the SPEC Open Systems Group policy on general availability.

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
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<tbody>
<tr>
<td><strong>CPU Name:</strong> Intel Xeon E5-2698 v4</td>
<td><strong>Operating System:</strong> Red Hat Enterprise Linux Server release 7.0 (Maipo) 3.10.0-123.el7.x86_64</td>
</tr>
<tr>
<td><strong>CPU Characteristics:</strong> Intel Turbo Boost Technology up to 3.60 GHz</td>
<td><strong>Compiler:</strong> 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>
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<tr>
<td><strong>CPU MHz:</strong> 2200</td>
<td><strong>Auto Parallel:</strong> No</td>
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<tr>
<td><strong>FPU:</strong> Integrated</td>
<td><strong>File System:</strong> xfs</td>
</tr>
<tr>
<td><strong>CPU(s) enabled:</strong> 40 cores, 2 chips, 20 cores/chip, 2 threads/core</td>
<td><strong>System State:</strong> Run level 3 (multi-user)</td>
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<tr>
<td><strong>CPU(s) orderable:</strong> 1.2 chip</td>
<td><strong>Boot Pointers:</strong> 32/64-bit</td>
</tr>
<tr>
<td><strong>Primary Cache:</strong> 32 KB L1 + 32 KB D on chip per core</td>
<td><strong>Page Pointers:</strong> 32/64-bit</td>
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<tr>
<td><strong>Secondary Cache:</strong> 256 KB L1+D on chip per core</td>
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<td><strong>L3 Cache:</strong> 50 MB L1+D on chip per chip</td>
<td><strong>Other Hardware:</strong> None</td>
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<td><strong>Other Cache:</strong> None</td>
<td><strong>Memory:</strong> 256 GB (16 x 16 GB 2Rx4 PC4-2400T-R)</td>
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<td><strong>Disk Subsystem:</strong> 1 x 500GB SATA, 10000 RPM</td>
<td><strong>Other Hardware:</strong> None</td>
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</table>
Huawei

Huawei XH622 V3 (Intel Xeon E5-2698 v4)

SPECfp_rate2006 = NC
SPECfp_rate_base2006 = NC

Results Table

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</tbody>
</table>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

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.

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.
Huawei XH622 V3 (Intel Xeon E5-2698 v4)

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

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

BIOS configuration:
Set Power Efficiency Mode to Performance
Set Snoop Mode to COD mode
Set Patrol Scrub to Disable
Sysinfo program /spec16/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb661ea2855b2ceab81e28219e1
running on localhost.localdomain Thu Jan 2 11:16:43 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

From /proc/cpuinfo
model name : Intel(R) Xeon(R) CPU E5-2698 v4 @ 2.20GHz
  2 "physical id"s (chips)
  80 "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 : 10
siblings : 20
 physical 0: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
 physical 1: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
 cache size : 25600 KB

From /proc/meminfo
MemTotal: 63563248 kB
hugePages_Total: 0
hugepages_size: 2048 kB

From /etc/*release* /etc/*version*
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)"
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

Continued on next page
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)

uname -a:
  Linux localhost.localdomain 3.10.0-123.el7.x86_64 #1 SMP May 5 11:16:57 EDT 2014 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Dec 31 23:18

SPEC is set to: /spec16
  Filesystem Type Size Used Avail Use% Mounted on
  /dev/sda2      xfs   449G  146G  304G  33% /

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. 3.09 02/17/2016
Memory:
  8x Samsung M393A2G40EB1-CRC 16 GB 1 rank 2400 MHz
  8x Samsung M393A2G40EB1-CRC 16 GB 2 rank 2400 MHz

General Notes

Environment variables set by runspec before the start of the run:
  LD_LIBRARY_PATH = "/spec16/libs/32:/spec16/libs/64:/spec16/sh"

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
  Filesystem page cache cleared with:
    echo 1 > /proc/sys/vm/drop_caches
  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.
SPEC CFP2006 Result

Huawei

Huawei XH622 V3 (Intel Xeon E5-2698 v4)

SPECfp_rate2006 = NC
SPECfp_rate_base2006 = NC

CPU2006 license: 3175
Test date: Mar-2016
Test sponsor: Huawei
Hardware Availability: Mar-2016
Tested by: Huawei
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 and the SPEC Open Systems Group policy on general availability.

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
447.dealII: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64
455.povray: -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 -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3

Continued on next page
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 Optimization Flags (Continued)

- **C++ benchmarks:**
  - `-xCORE-AVX2`  
  - `-ipo`  
  - `-O3`  
  - `-no-prec-div`  
  - `-opt-prefetch`  
  - `-auto-p32`  
  - `-ansi-alias`  
  - `-opt-mem-layout-trans=3`

- **Fortran benchmarks:**
  - `-xCORE-AVX2`  
  - `-ipo`  
  - `-O3`  
  - `-no-prec-div`  
  - `-opt-prefetch`

- **Benchmarks using both Fortran and C:**
  - `-xCORE-AVX2`  
  - `-ipo`  
  - `-O3`  
  - `-no-prec-div`  
  - `-opt-prefetch`  
  - `-auto-p32`  
  - `-ansi-alias`  
  - `-opt-mem-layout-trans=3`

### Peak Compiler Invocation

- **C benchmarks:**
  - `icc -m64`

- **C++ benchmarks (except as noted below):**
  - `icpc -m64`

- **450.soplex:**
  - `icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin`

- **Fortran benchmarks:**
  - `ifort -m64`

- **Benchmarks using both Fortran and C:**
  - `icc -m64 ifort -m64`

### Peak Portability Flags

- `410.bwaves: -DSPEC_CPU_LP64`
- `416.tasss: -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`

Continued on next page
Huawei

Huawei XH622 V3 (Intel Xeon E5-2698 v4)

**SPECfp_rate2006 = NC**  
**SPECfp_rate_base2006 = NC**

CPU2006 license: 3175  
Test date: Mar-2016

Test sponsor: Huawei  
Hardware Availability: Mar-2016

Tested by: Huawei  
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](https://www.spec.org/osg/policy.html#AppendixC).

---

Peak Portability Flags (Continued)

- 450.soplex: -D_FILE_OFFSET_BITS=64
- 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

---

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) -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -fno-alias -auto-ilp32
- 447.dealII: basepeak = yes
- 450.soplex: -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) -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -opt-malloc-options=3
- 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) -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -unroll14 -ansi-alias

Fortran benchmarks:

Continued on next page.
Huawei

Huawei XH622 V3 (Intel Xeon E5-2698 v4)

CPU2006 license: 3175
Test sponsor: Huawei
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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.

Peak Optimization Flags (Continued)

410.bwaves: basepeak = yes
416.gamess: -xCORE-AVX2(pas 2) -prof-gen:threadsafepass 1
 -ipo(pas 2) -O3(pas 2) -no-prec-div(pas 2)
O-par-num-threads=1(pas 1) -prof-use(pas 2) -unroll12
-inline-level=0 -scalar-rep

434.zeusmp: basepeak = yes
435.gromacs: -xCORE-AVX2(pas 2) -prof-gen:threadsafe(pas 1)
 -ipo(pas 2) -O3(pas 2) -no-prec-div(pas 2)
O-par-num-threads=1(pas 1) -prof-use(pas 2) -unroll4 -auto
 -inline-calloc -opt-malloc-options=3

Benchmarks using both Fortran and C:
465.tonto: -xCORE-AVX2(pas 2) -prof-gen:threadsafe(pas 1)
 -ipo(pas 2) -O3(pas 2) -no-prec-div(pas 2)
O-par-num-threads=1(pas 1) -prof-use(pas 2) -unroll4 -auto
 -inline-calloc -opt-prefetch -auto-ilp32
436.cactusADM: basepeak = yes
454.calculix: basepeak = yes
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 CFP2006 Result
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Huawei XH622 V3 (Intel Xeon E5-2698 v4)

SPECfp_rate2006 = NC
SPECfp_rate_base2006 = NC
Huawei

Huawei XH622 V3 (Intel Xeon E5-2698 v4)

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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.
Report generated on Fri Oct 21 20:00:07 2016 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 19 April 2016.