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 <a href="http://spec.org/cpu2006/Docs/runrules.html#rule_1.3.2">SPEC CPU rule 1.3.2</a> and the SPEC Open Systems Group policy on <a href="https://www.spec.org/osg/policy.html#AppendixC">general availability</a>.

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Huawei

Huawei XH622 V3 (Intel Xeon E5-2650 v4)

<table>
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<th>SPECfp_rate2006</th>
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</table>

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

CPU Name: Intel Xeon E5-2650 v4
CPU Characteristics: Intel Turbo Boost Technology up to 2.90 GHz
CPU MHz: 2200
FPU: Integrated
CPU(s) enabled: 24 cores, 2 chips, 12 cores/chip, 2 threads/core
CPU(s) orderable: 1.2 chip
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 256 KB I+D on chip per core
L3 Cache: 30 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2400T-R)
Disk Subsystem: 1 x 1000 GB SATA, 7200rpm
Other Hardware: None

Operating System: Red Hat Enterprise Linux Server release 7.0 (Maipo) 3.10.0-123.el7.x86_64
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
Auto Parallel: No
File System: ext4
System State: Run level 3 (multi-user)
Base Pointers: 32/64-bit
Peak Pointers: 32/64-bit
Other Software: None

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).
**Huawei XH622 V3 (Intel Xeon E5-2650 v4)**

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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"
Huawei

Huawei XH622 V3 (Intel Xeon E5-2650 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

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Platform Notes

BIOS configuration:
Set Power Efficiency Mode to Performance
Set Snoop Mode to COD mode
Set Patrol Scrub to Disable
Baseboard Management Controller used to adjust the fan speed to 100%
Sysinfo program /spec16/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 ## e3fbb8667b1885932ceab81e28219e1 running on localhost.localdomain Wed Jan 15 06:24:06 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 E5-2650 v4@ 2.20GHz
  2 "physical id"s (chips)
  48 "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 : 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 : 15360 KB

From /proc/meminfo
MemTotal:       263566960 kB
HugePages_Total:       0
Hugepagesize:       2048 kB

Non-Compliant
Huawei XH622 V3 (Intel Xeon E5-2650 v4)

<table>
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CPU2006 license: 3175  
Test date: Mar-2016  
Hardware Availability: Mar-2016  
Software Availability: Mar-2016

**Platform Notes (Continued)**

```
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 Jan 10 20:18  
```

```
SPEC is set to: /spec16  
Filesystem      Type  Size  Used  Avail  Use%  Mounted on  
/dev/sda2      ext4   913G   91G  776G   11%  /  
```

**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  
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.:  
umactl --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 E5-2650 v4)

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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

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### 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
- 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 -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`  
- `-cc-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 -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.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`
Huawei XH622 V3 (Intel Xeon E5-2650 v4)

<table>
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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

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Peak Portability Flags (Continued)

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<td>459.GemsFDTD</td>
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<td>465.tonto</td>
<td>-DSPEC_CPU_LP64</td>
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<td>470.lbm</td>
<td>-DSPEC_CPU_LP64</td>
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<td>481.wrf</td>
<td>-DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX</td>
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Peak Optimization Flags

C benchmarks:

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<td>basepeak = yes</td>
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C++ benchmarks:

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<td>-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) -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -fno-alias -auto-llvm</td>
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<td>447.dealII</td>
<td>basepeak = yes</td>
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<td>-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) -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -opt-malloc-options=3</td>
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<td>453.povray</td>
<td>-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) -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias</td>
</tr>
</tbody>
</table>
Huawei

Huawei XH622 V3 (Intel Xeon E5-2650 v4)

SPECfp_rate2006 = NC
SPECfp_rate_base2006 = NC

CPU2006 license: 3175
Test sponsor: Huawei
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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.

Peak Optimization Flags (Continued)

410.bwaves: basepeak = yes
416.gamess: -xCORE-AVX2 (pass 2) -prof-gen:threadsafe (pass 1)
-ipc (pass 2) -O3 (pass 2) -no-prec-div (pass 2)
-par-num-threads=1 (pass 1) -prof-use (pass 2) -unroll12
-inline-level=0 -scalar-rep-
434.zeusmp: basepeak = yes
437.leslie3d: basepeak = yes
459.GemsFDTD: basepeak = yes
465.tonto: -xCORE-AVX2 (pass 2) -prof-gen:threadsafe (pass 1)
-ipc (pass 2) -O3 (pass 2) -no-prec-div (pass 2)
-par-num-threads=1 (pass 1) -prof-use (pass 2) -unroll14 -auto
-inline-calloc -opt-malloc-options=3

Benchmarks using both Fortran and C:

435.gromacs: -xCORE-AVX2 (pass 2) -prof-gen:threadsafe (pass 1)
-ipc (pass 2) -O3 (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-prefetch -auto-ilp32
436.cactusADM: basepeak = yes
437.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

Standard Performance Evaluation Corporation
info@spec.org
http://www.spec.org/
Huawei

Huawei XH622 V3 (Intel Xeon E5-2650 v4)

SPECfp_rate2006 = NC
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CPU2006 license: 3175
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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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