SPEC® CFP2006 Result

Huawei

Huawei XH620 V3 (Intel Xeon E5-2680 v4)

SPECfp®2006 = NC
SPECfp_base2006 = NC

CPU2006 license: 3175
Test date: Apr-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 <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>.


Non-Compliant
Huawei XH620 V3 (Intel Xeon E5-2680 v4)

**SPECfp-base2006** = NC

**SPECfp2006** = NC

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name:</td>
<td>Operating System:</td>
</tr>
<tr>
<td>Intel Xeon E5-2680 v4</td>
<td>Red Hat Enterprise Linux Server release 7.0 (Maipo)</td>
</tr>
<tr>
<td>CPU Characteristics:</td>
<td>3.2.0-123.el7.x86_64</td>
</tr>
<tr>
<td>Intel Turbo Boost Technology up to 3.30 GHz</td>
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<tr>
<td>CPU MHz:</td>
<td>C/C++: Version 16.0.0.101 of Intel C++ Studio XE</td>
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<tr>
<td>2400</td>
<td>Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux</td>
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<tr>
<td>FPU:</td>
<td>Auto Parallel: Yes</td>
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<tr>
<td>Integrated</td>
<td>File System: ext4</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>System State: Run level 3 (multi-user)</td>
</tr>
<tr>
<td>28 cores, 2 chips, 14 cores/chip</td>
<td>Base Pointers: 64-bit</td>
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<tr>
<td>CPU(s) orderable:</td>
<td>Peak Pointers: 32/64-bit</td>
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<tr>
<td>1.2 chip</td>
<td>Other Cache: None</td>
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<tr>
<td>Primary Cache:</td>
<td>Other Software: None</td>
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<tr>
<td>32 KB I + 32 KB D on chip per core</td>
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<tr>
<td>Secondary Cache:</td>
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<td>256 KB I+D on chip per core</td>
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<tr>
<td>35 MB I+D on chip per chip</td>
<td>Other Hardware: None</td>
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</table>

**Non-Compliant**

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Huawei

Huawei XH620 V3 (Intel Xeon E5-2680 v4)

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CPU2006 license: 3175
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Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<tbody>
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<td>416.gamess</td>
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</tr>
</tbody>
</table>

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 /spec16/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1

Continued on next page

Non-Compliant
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Platform Notes (Continued)

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, set:
http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From /proc/cpuinfo
model name: Intel(R) Xeon(R) CPU E5-2680 v4 @ 2.40GHz
2 "physical id"s (chips)
28 "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: 14
siblings: 14
physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
physical 1: cores 0 1 3 4 5 7 8 9 10 11 12 13 14
cache size: 35840 KB

From /proc/meminfo
MemTotal: 263569788 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)"
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 Apr 6 13:15
SPEC is set to: /spec16

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Platform Notes (Continued)

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 ext4 913G 109G 758G 13% /

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 because there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS Insyde Corp. 3.09 02/22/2016
Memory:
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 = "/spec16/libs/32:/spec16/libs/64:/spec16/sh"
OMP_NUM_THREADS = "28"

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
runcmd 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

Base Compiler Invocation

C benchmarks:
icc -m64

C++ benchmarks:
icpc -m64
Huawei
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Base Compiler Invocation (Continued)

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 -nofor_main
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

Continued on next page
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Huawei

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<tr>
<th>SPECfp2006</th>
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</tr>
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<tr>
<td>SPECfp_base2006</td>
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CPU2006 license: 3175
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Base Optimization Flags (Continued)

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 |

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
-433.milc: basepeak = yes
-701.bbm: basepeak = yes
-482.sphinx3: basepeak = yes

C++ benchmarks:
-444.namd: -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) -fno-alias -auto-ilp32

Continued on next page
**SPEC CFP2006 Result**

**Huawei**

<table>
<thead>
<tr>
<th>Huawei XH620 V3 (Intel Xeon E5-2680 v4)</th>
<th>SPECfp2006 = NC</th>
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<td><strong>CPU2006 license:</strong> 3175</td>
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<td><strong>Test date:</strong> Apr-2016</td>
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<td><strong>Test sponsor:</strong> Huawei</td>
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**Peak Optimization Flags (Continued)**

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<th>Benchmark</th>
<th>Flags</th>
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<tbody>
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<td>447.dealII</td>
<td>basepeak = yes</td>
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<tr>
<td>450.soplex</td>
<td>basepeak = yes</td>
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<tr>
<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) -prof-use(pass 2) -unroll4 -ansi-alias</td>
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Fortran benchmarks:

<table>
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<th>Flags</th>
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</tr>
<tr>
<td>434.zeusmp</td>
<td>basepeak = yes</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>basepeak = yes</td>
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<tr>
<td>459.GemsFDTD</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) -prof-use(pass 2) -unroll2 -inline-level=0 -opt-prefetch -parallel</td>
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Benchmarks using both Fortran and C:

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<td>436.cactusADM</td>
<td>basepeak = yes</td>
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<tr>
<td>454.calculix</td>
<td>-xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias</td>
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Peak Optimization Flags (Continued)

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