### Huawei

**Huawei XH321 V3 (Intel Xeon E5-2637 v4)**

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<th>SPECfp®2006</th>
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<tr>
<td>SPECfp_base2006</td>
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</tbody>
</table>

**CPU2006 license:** 3175

**Test date:** Dec-2016

**Test sponsor:** Huawei

**Tested by:** Huawei

**Hardware**

- **CPU Name:** Intel Xeon E5-2637 v4
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.70 GHz
- **CPU MHz:** 3500
- **FPU:** Integrated
- **CPU(s) enabled:** 8 cores, 2 chips, 4 cores/chip
- **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

**Software**

- **Operating System:** Red Hat Enterprise Linux Server release 7.2 (Maipo) 3.10.0-327.el7.x86_64
- **Compiler:** 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:** Yes
- **File System:** ext4

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**SPECfp2006 = 110**
**Huawei XH321 V3 (Intel Xeon E5-2637 v4)**

**SPEC CFP2006 Result**

- **CPU2006 license:** 3175
- **Test sponsor:** Huawei
- **Tested by:** Huawei
- **L3 Cache:** 15 MB I+D on chip per chip
- **Other Cache:** None
- **Memory:** 64 GB (8 x 8 GB 2Rx8 PC4-2400T-R)
- **Disk Subsystem:** 1 x 200 GB SATA SSD
- **System State:** Run level 3 (multi-user)
- **Peak Pointers:** 32/64-bit
- **Base Pointers:** 64-bit

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<th>Benchmark</th>
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<th>Ratio</th>
<th>Base</th>
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<td>459.GemsFDTD</td>
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<td>92.9</td>
<td>211</td>
<td>92.4</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 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
    running on localhost.localdomain Thu Dec 29 05:52:22 2016

This section contains SUT (System Under Test) info as seen by

Continued on next page
Platform Notes (Continued)

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 E5-2637 v4 @ 3.50GHz
   2 "physical id"s (chips)
   8 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The
following excerpts from /proc/cpuinfo might not be reliable. Use with
cautions.)
   cpu cores : 4
   siblings : 4
   physical 0: cores 0 1 2 3
   physical 1: cores 0 1 2 3
   cache size : 15360 KB

From /proc/meminfo
   MemTotal:       65570444 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

From /etc/*release* /etc/*version*
   os-release:
      NAME="Red Hat Enterprise Linux Server"
      VERSION="7.2 (Maipo)"
      ID="rhel"
      ID_LIKE="fedora"
      VERSION_ID="7.2"
      PRETTY_NAME="Red Hat Enterprise Linux Server 7.2 (Maipo)"
      ANSI_COLOR="0;31"
      CPE_NAME="cpe:/o:redhat:enterprise_linux:7.2:GA:server"
      redhat-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)
      system-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)

   uname -a:
     Linux localhost.localdomain 3.10.0-327.el7.x86_64 #1 SMP Thu Oct 29 17:29:29
       EDT 2015 x86_64 x86_64 x86_64 GNU/Linux

   run-level 3 Dec 29 05:49

   SPEC is set to: /spec16
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda2      ext4  99G  5.5G 88G  6%  /

   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. 3.31 08/22/2016
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Huawei
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SPECfp2006 = 110
SPECfp_base2006 = 107

CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei
Test date: Dec-2016
Hardware Availability: Mar-2016
Software Availability: Nov-2015

Platform Notes (Continued)

Memory:
8x Hynix HMA41GR7AFR8N-UH 8 GB 2 rank 2400 MHz
8x NO DIMM NO DIMM

(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 = "8"

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

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

Base Portability Flags

410.bwaves: -DSPEC_CPU_LP64
416.gamess: -DSPEC_CPU_LP64
  -DSPEC_CPU_LP64
433.milc:  -DSPEC_CPU_LP64
434.reusmp: -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

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### Huawei

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### Base Portability Flags (Continued)

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- 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

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### Base Optimization Flags

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- **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

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### Peak Compiler Invocation

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

- **C++ benchmarks:**
  - icpc -m64

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

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

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### Peak Portability Flags

Same as Base Portability Flags

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Huawei

Huawei XH321 V3 (Intel Xeon E5-2637 v4)

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CPU2006 license: 3175
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Test sponsor: Huawei
Hardware Availability: Mar-2016
Tested by: Huawei
Software Availability: Nov-2015

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) -O3(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

Fortran benchmarks:

410.bwaves: basepeak = yes
416.gamess: -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

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 -scalar-rep-

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
           -opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

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Huawei XH321 V3 (Intel Xeon E5-2637 v4)  

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Software Availability: Nov-2015

Peak Optimization Flags (Continued)

435.gromacs: basepeak = yes
436.cactusADM: basepeak = yes
454.calculix: -xCORE-AVX2 -ipo -03 -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-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

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