Huawei

Huawei XH620 V3 (Intel Xeon E5-2658 v4)

<table>
<thead>
<tr>
<th>SPECfp®2006</th>
<th>104</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECfp_base2006</td>
<td>100</td>
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</table>

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

<table>
<thead>
<tr>
<th>Benchmark</th>
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<td></td>
</tr>
<tr>
<td>482.sphinx3</td>
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</tr>
</tbody>
</table>

**Hardware**

- **CPU Name:** Intel Xeon E5-2658 v4  
- **CPU Characteristics:** Intel Turbo Boost Technology up to 2.80 GHz  
- **CPU MHz:** 2300  
- **FPU:** Integrated  
- **CPU(s) enabled:** 28 cores, 2 chips, 14 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:** SUSE Linux Enterprise Server 12 SP1 (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:** Yes  
- **File System:** ext4  
- **System State:** Run level 3 (multi-user)

---

Standard Performance Evaluation Corporation  
info@spec.org  
http://www.spec.org/
## SPEC CFP2006 Result

### Huawei

**Huawei XH620 V3 (Intel Xeon E5-2658 v4)**

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</table>

**L3 Cache:** 35 MB I+D on chip per chip

**Base Pointers:** 64-bit

**Peak Pointers:** 32/64-bit

**Other Cache:** None

**Memory:** 256 GB (16 x 16 GB 2Rx8 PC4-2400T-R)

**Other Hardware:** None

**Other Software:** None

---

## Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base Seconds</th>
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**Peak Seconds | Peak Ratio | Peak Seconds | Peak Ratio | Peak Seconds | Peak Ratio |
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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

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

---

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

Huawei XH620 V3 (Intel Xeon E5-2658 v4)

SPECfp2006 = 104
SPECfp_base2006 = 100

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

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 E5-2658 v4@ 2.30GHz
  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 2 3 4 5 6 8 9 10 11 12 13 14
  cache size : 35840 KB

From /proc/meminfo
MemTotal:       264271944 kB
HugePages_Total:       0
Hugepagesize:       2048 kB

From /etc/*release* /etc/*version*
SuSE-release:
  SUSE Linux Enterprise Server 12 (x86_64)
  VERSION = 12
  PATCHLEVEL = 1
  # This file is deprecated and will be removed in a future service pack or
  release.
  # Please check /etc/os-release for details about this release.
  os-release:
    NAME="SLES"
    VERSION="12-SP1"
    VERSION_ID="12.1"
    PRETTY_NAME="SUSE Linux Enterprise Server 12 SP1"
    ID="sles"
    ANSI_COLOR="0;32"
    CPE_NAME="cpe:/o:suse:sles:12:sp1"

uname -a:
    (8d714a0) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Nov 22 18:45

SPEC is set to: /spec16
Filesystem Type  Size Used Avail Use% Mounted on
/dev/sda1 ext4 1.8T 165G 1.7T 10% /

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
Continued on next page
Huawei

**Huawei XH620 V3 (Intel Xeon E5-2658 v4)**

| SPECf2006 = | 104 |
| SPECfp_base2006 = | 100 |

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

### Platform Notes (Continued)

- hardware, firmware, and the "DMTF SMBIOS" standard.
- BIOS Insyde Corp. 3.31 08/22/2016
- Memory: 16x Micron 18ASF2G72PDZ-2G3B1 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`
- `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

### 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`

(Continued on next page)
Huawei

Huawei XH620 V3 (Intel Xeon E5-2658 v4)

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**SPECfp_base2006** = **100**

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### Base Portability Flags (Continued)

- 436.cactusADM: \(-\text{DSPEC\_CPU\_LP64}\) \(-\text{nofor\_main}\)
- 437.leslie3d: \(-\text{DSPEC\_CPU\_LP64}\)
- 444.namd: \(-\text{DSPEC\_CPU\_LP64}\)
- 447.dealII: \(-\text{DSPEC\_CPU\_LP64}\)
- 450.soplex: \(-\text{DSPEC\_CPU\_LP64}\)
- 453.povray: \(-\text{DSPEC\_CPU\_LP64}\)
- 454.calculix: \(-\text{DSPEC\_CPU\_LP64}\) \(-\text{nofor\_main}\)
- 459.GemsFDTD: \(-\text{DSPEC\_CPU\_LP64}\)
- 465.tonto: \(-\text{DSPEC\_CPU\_LP64}\)
- 470.lbm: \(-\text{DSPEC\_CPU\_LP64}\)
- 481.wrf: \(-\text{DSPEC\_CPU\_LP64}\) \(-\text{DSPEC\_CPU\_CASE\_FLAG}\) \(-\text{DSPEC\_CPU\_LINUX}\)
- 482.sphinx3: \(-\text{DSPEC\_CPU\_LP64}\)

---

### Base Optimization Flags

**C benchmarks:**
- \(-\text{xCORE-AVX2}\)
- \(-\text{ipo}\)
- \(-\text{O3}\)
- \(-\text{no-prec-div}\)
- \(-\text{parallel}\)
- \(-\text{opt-prefetch}\)
- \(-\text{ansi-alias}\)

**C++ benchmarks:**
- \(-\text{xCORE-AVX2}\)
- \(-\text{ipo}\)
- \(-\text{O3}\)
- \(-\text{no-prec-div}\)
- \(-\text{opt-prefetch}\)
- \(-\text{ansi-alias}\)

**Fortran benchmarks:**
- \(-\text{xCORE-AVX2}\)
- \(-\text{ipo}\)
- \(-\text{O3}\)
- \(-\text{no-prec-div}\)
- \(-\text{parallel}\)
- \(-\text{opt-prefetch}\)

**Benchmarks using both Fortran and C:**
- \(-\text{xCORE-AVX2}\)
- \(-\text{ipo}\)
- \(-\text{O3}\)
- \(-\text{no-prec-div}\)
- \(-\text{parallel}\)
- \(-\text{opt-prefetch}\)
- \(-\text{ansi-alias}\)

---

### Peak Compiler Invocation

**C benchmarks:**
- `icc` \(-\text{-m64}\)

**C++ benchmarks:**
- `icpc` \(-\text{-m64}\)

**Fortran benchmarks:**
- `ifort` \(-\text{-m64}\)

**Benchmarks using both Fortran and C:**
- `icc` \(-\text{-m64}\) `ifort` \(-\text{-m64}\)
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Huawei XH620 V3 (Intel Xeon E5-2658 v4)

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Hardware Availability: Mar-2016
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Software Availability: Dec-2015

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:threadsafepass 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
453.povray: -xCORE-AVX2(pass 2) -prof-gen:threadsafepass 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

Fortran benchmarks:
410.bwaves: basepeak = yes
416.gamess: -xCORE-AVX2(pass 2) -prof-gen:threadsafepass 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:threadsafepass 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:threadsafepass 1
            -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
            -par-num-threads=1(pass 1) -prof-use(pass 2) -inline-calloc

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## Huawei XH620 V3 (Intel Xeon E5-2658 v4)

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### Peak Optimization Flags (Continued)

465.tonto (continued): 
- `--opt-malloc-options=3`  
- `--auto`  
- `--unroll4`

Benchmarks using both Fortran and C:

- 435.gromacs: `basepeak = yes`
- 436.cactusADM: `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:

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

- [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 other inquiries, please contact webmaster@spec.org.

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