## Huawei

**Huawei CH121 V3 (Intel Xeon E5-2690 v4)**

### SPECfp®2006 = 115

### SPECfp_base2006 = 109

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

<table>
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<tr>
<td>482.sphinx3</td>
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<td></td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** Intel Xeon E5-2690 v4  
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.50 GHz  
- **CPU MHz:** 2600  
- **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  
  3.12.49-11-default  
- **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:** xfs  
- **System State:** Run level 3 (multi-user)

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For more information, visit [www.spec.org](http://www.spec.org/).
Huawei CH121 V3 (Intel Xeon E5-2690 v4)

SPECfp2006 = 115
SPECfp_base2006 = 109

CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei
L3 Cache: 35 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (16 x 16 GB 2Rx8 PC4-2400T-R)
Disk Subsystem: 1 x 500 GB SATA, 7200 RPM
Other Hardware: None
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

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</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 Performance
Set Snoop Mode to HS mode
Set Patrol Scrub to Disable
Set Hyper-Threading to Disable
Baseboard Management Controller used to adjust the fan speed to 100%
Sysinfo program /spec16/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on linux-4m6y Sat Oct 29 17:37:18 2016

Continued on next page
Huawei CH121 V3 (Intel Xeon E5-2690 v4) SPECfp2006 = 115
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Test date: Oct-2016
Hardware Availability: Mar-2016
Software Availability: Mar-2016

Platform Notes (Continued)

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 E5-2690 v4@ 2.60GHz
  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:       264063040 kB
HugePages_Total:       0
Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
SUSE Linux Enterprise Server 12 SP1

From /etc/*release* /etc/*version*
SuSE-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:
Linux linux-4m6y 3.12.49-11-default #1 SMP Wed Nov 11 20:52:43 UTC 2015
(8d714a0) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Oct 29 13:08 last=5

SPEC is set to: /spec16
  Filesystem Type Size Used Avail Use% Mounted on
  /dev/sda2 xfs 456G 113G 344G 25% /

Additional information from dmidecode: Continued on next page
Huawei CH121 V3 (Intel Xeon E5-2690 v4)

**SPECfp2006** = 115
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**Platform Notes (Continued)**

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. 3.32 09/14/2016
Memory:
- 8x NO DIMM NO DIMM
- 16x Ramaxel RMRA6351MB78HBF2400 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 CH121 V3 and Huawei CH222 V3 are electronically equivalent.
The results have been measured on a Huawei CH121 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
Huawei
Huawei CH121 V3 (Intel Xeon E5-2690 v4)

SPECfp2006 = 115
SPECfp_base2006 = 109

CPU2006 license: 3175
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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
447.dealII: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64
454.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -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

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
Huawei CH121 V3 (Intel Xeon E5-2690 v4)

**SPEC CFP2006 Result**

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

Peak Compiler Invocation (Continued)

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`
- `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`

- `453.povray`: `-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`

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)  -unroll2
  -inline-level=0  -scalar-rep-

- `434.zeusmp`: `basepeak = yes`
- `437.leslie3d`: `basepeak = yes`

Continued on next page
Huawei CH121 V3 (Intel Xeon E5-2690 v4)

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**Peak Optimization Flags (Continued)**

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 -opt-prefetch -parallel`

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:

435.gromacs: `basepeak = yes`

436.cactusADM: `basepeak = yes`

454.calculix: `-xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias
-parallel`

481.wrf: `basepeak = yes`

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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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For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.


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