Huawei

Huawei CH222 V3 (Intel Xeon E5-2637 v4)

SPECfp®_rate2006 = 456
SPECfp_rate_base2006 = 447

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

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, 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

Software

Operating System: SUSE Linux Enterprise Server 12 SP1
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: xfs
System State: Run level 3 (multi-user)
### SPEC CFP2006 Result

**Huawei**

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<table>
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<td>Mar-2016</td>
</tr>
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<td>Dec-2015</td>
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</tbody>
</table>

**L3 Cache:** 15 MB I+D on chip per chip

**Other Cache:** None

**Memory:** 512 GB (16 x 32 GB 2Rx4 PC4-2400T-R)

**Disk Subsystem:** 1 x 1000 GB SATA, 7200 RPM

**Other Hardware:** None

| Base Pointers: | 32/64-bit |
| Other Software: | None |

#### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<tr>
<td>410.bwaves</td>
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<td>481.wrf</td>
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<tr>
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<td>402</td>
<td>770</td>
<td>405</td>
<td>776</td>
<td>402</td>
</tr>
</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"

#### Platform Notes

BIOS configuration:
- Set Power Efficiency Mode to Performance
- Set Snoop Mode to ES mode

Continued on next page

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

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| SPECfp_rate2006 = | 456 |
| SPECfp_rate_base2006 = | 447 |

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

**Platform Notes (Continued)**

Set Patrol Scrub to Disable  
Baseboard Management Controller used to adjust the fan speed to 100%  
Sysinfo program /spec16/config/sysinfo.rev6914  
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1  
running on linux-4m6y Sat Nov 19 22:20:14 2016

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 E5-2637 v4 @ 3.50GHz  
2 "physical id"s (chips)  
16 "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 : 4  
siblings : 8  
physical 0: cores 0 1 2 3  
physical 1: cores 0 1 2 3  
cache size : 15360 KB

**From /proc/meminfo**

MemTotal: 528829580 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:
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:
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

Continued on next page
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Platform Notes (Continued)

run-level 3 Nov 18 18:34 last=5

SPEC is set to: /spec16
   Filesystem Type Size Used Avail Use% Mounted on
   /dev/sda2 xfs 456G 113G 343G 25% /

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. 3.32 09/14/2016
Memory:
  8x NO DIMM NO DIMM
  16x Samsung M393A4K40BB1-CRC 32 GB 2 rank 2400 MHz

(End of data from sysinfo program)

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
memory using RedHat EL 7.1
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.:
    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
SPEC CFP2006 Result

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Base Portability Flags

410.bwaves: -DSPEC_CPU_LP64
416.games: -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
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

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-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:
icpc -m64

Fortran benchmarks:
ifort -m64

Continued on next page
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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) -opt-mem-layout-trans=3(pass 2)
            -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) -opt-mem-layout-trans=3(pass 2)
            -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

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## Huawei

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### CPU2006 license: 3175  Test date: Nov-2016
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### Peak Optimization Flags (Continued)

<table>
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<td>basepeak = yes</td>
</tr>
<tr>
<td>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) -unroll4 -auto -inline-calloc -opt-malloc-options=3</td>
<td></td>
</tr>
<tr>
<td>Benchmarks using both Fortran and C:</td>
<td></td>
</tr>
<tr>
<td>435.gromacs: -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-prefetch -auto-ilp32</td>
<td></td>
</tr>
<tr>
<td>436.cactusADM: basepeak = yes</td>
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<td>454.calculix: basepeak = yes</td>
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<tr>
<td>481.wrf: basepeak = yes</td>
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The flags files that were used to format this result can be browsed at:
- [http://www.spec.org/cpu2006/flags/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:
- [http://www.spec.org/cpu2006/flags/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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