Huawei

Huawei 1288H V5 (Intel Xeon Gold 5122)

**SPECfp®2006 = 124**

**SPECfp_base2006 = 121**

<table>
<thead>
<tr>
<th>Test date:</th>
<th>Test sponsor: Huawei</th>
<th>Huawei</th>
</tr>
</thead>
</table>

**CPU2006 license:** 3175
**Test date:** Jun-2017
**Hardware Availability:** Aug-2017

**Tested by:** Huawei
**Software Availability:** Nov-2016

### SPECfp2006 Results

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<td>410.bwaves</td>
<td>52.7</td>
<td>49.9</td>
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<tr>
<td>416.gamess</td>
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<td>433.milc</td>
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<td>434.zeusmp</td>
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<td>435.gromacs</td>
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<tr>
<td>436.cactusADM</td>
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<tr>
<td>437.leslie3d</td>
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<tr>
<td>444.namd</td>
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<tr>
<td>481.wrf</td>
<td>100</td>
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</tr>
<tr>
<td>482.sphinx3</td>
<td>93.0</td>
<td></td>
</tr>
</tbody>
</table>

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**Hardware**

- **CPU Name:** Intel Xeon Gold 5122
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.70 GHz
- **CPU MHz:** 3600
- **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:** 1 MB I+D on chip per core

---

**Software**

- **Operating System:** Red Hat Enterprise Linux Server release 7.3 (Maipo) 3.10.0-514.el7.x86_64
- **Compiler:** C/C++: Version 17.0.0.098 of Intel C/C++ Compiler for Linux;
  Fortran: Version 17.0.0.098 of Intel Fortran Compiler for Linux
- **Auto Parallel:** Yes
- **File System:** xfs
## SPEC CFP2006 Result

**Huawei**

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L3 Cache: 16.5 MB I+D on chip per chip

System State: Run level 3 (multi-user)

Other Cache: None

Base Pointers: 64-bit

Memory: 768 GB (24 x 32 GB 2Rx4 PC4-2666V-R)

Peak Pointers: 32/64-bit

Disk Subsystem: 1 x 1200 GB SAS, 10000 RPM

Other Software: None

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
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<td>93.5</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 Hyper-Threading to Disable
Sysinfo program /spec17/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on localhost.localdomain Tue Jun 13 01:54:00 2017

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

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Huawei 1288H V5 (Intel Xeon Gold 5122)  

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CPU2006 license: 3175  
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Hardware Availability: Aug-2017  
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Platform Notes (Continued)

From /proc/cpuinfo

- model name : Intel(R) Xeon(R) Gold 5122 CPU @ 3.60GHz  
- 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 caution.)  
  - cpu cores : 4  
  - siblings : 4  
  - physical 0: cores 1 5 9 13  
  - physical 1: cores 1 2 5 11  
- cache size : 16896 KB

From /proc/meminfo

- MemTotal:       790482140 kB  
- HugePages_Total:       0  
- Hugepagesize:       2048 kB

From /etc/*release*/etc/*version*

- NAME="Red Hat Enterprise Linux Server"  
- VERSION="7.3 (Maipo)"  
- ID="rhel"  
- ID_LIKE="fedora"  
- VERSION_ID="7.3"  
- PRETTY_NAME="Red Hat Enterprise Linux Server 7.3 (Maipo)"  
- ANSI_COLOR="0;31"  
- CPE_NAME="cpe:/o:redhat:enterprise_linux:7.3:GA:server"  
- redhat-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)  
- system-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)  

uname -a:

Linux localhost.localdomain 3.10.0-514.el7.x86_64 #1 SMP Wed Oct 19 11:24:13 EDT 2016 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jun 12 08:00

SPEC is set to: /spec17

Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sda2      xfs   898G  18G  881G   2% /

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. 0.13 04/11/2017  
Memory:  
- 24x Samsung M393A4K40BB2-CTD 32 GB 2 rank 2666 MHz  

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## SPEC CFP2006 Result

**Huawei**

### Huawei 1288H V5 (Intel Xeon Gold 5122)

<table>
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<tr>
<th>SPECfp2006</th>
<th>124</th>
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### Platform Notes (Continued)

(End of data from sysinfo program)

### General Notes

Environment variables set by runspec before the start of the run:
- `KMP_AFFINITY = "granularity=fine,compact"
- `LD_LIBRARY_PATH = "/spec17/libs/32:/spec17/libs/64:/spec17/sh10.2"
- `OMP_NUM_THREADS = "8"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM memory using Redhat Enterprise Linux 7.2  
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.game5s: -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`

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Base Portability Flags (Continued)

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 -qopt-prefetch

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch

Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch

Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch

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:

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Huawei

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Peak Optimization Flags (Continued)

433.milc: basepeak = yes

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -fno-alias -auto-ilp32

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -unroll2 -inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -unroll2 -inline-level=0
-qopt-prefetch -parallel

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -inline-call -qopt-malloc-options=3
-auto -unroll4

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

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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-ic17.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-SKL-V1.6.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-SKL-V1.6.xml

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

Tested with SPEC CPU2006 v1.2.