**Huawei CH242 V3 (Intel Xeon E7-4809 v4)**

**SPECfp₂₀₀₆ = 81.6**

**SPECfp_base₂₀₀₆ = 78.2**

<table>
<thead>
<tr>
<th>Test sponsor:</th>
<th>Huawei</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tested by:</td>
<td>Huawei</td>
</tr>
<tr>
<td>CPU₂₀₀₆ license:</td>
<td>3175</td>
</tr>
<tr>
<td>Test date:</td>
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</tr>
<tr>
<td>Hardware Availability:</td>
<td>Jun-2016</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Nov-2015</td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** Intel Xeon E7-4809 v4
- **CPU Characteristics:**
  - CPU MHz: 2100
  - FPU: Integrated
  - CPU(s) enabled: 32 cores, 4 chips, 8 cores/chip
  - CPU(s) orderable: 2,4 chips
  - 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)
- **Compiler:** C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux
- **Auto Parallel:** Yes
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 32-bit

---

**SPECfp₂₀₀₆ = 81.6**

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</table>

### Performance

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>28.0</td>
</tr>
<tr>
<td>416.gamess</td>
<td>25.6</td>
</tr>
<tr>
<td>433.milc</td>
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<tr>
<td>434.zeusmp</td>
<td>135</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>34.5</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>236</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>19.0</td>
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<td>444.namd</td>
<td>18.4</td>
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<tr>
<td>447.dealII</td>
<td>41.1</td>
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<tr>
<td>450.soplex</td>
<td>31.0</td>
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<td>453.povray</td>
<td>42.3</td>
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<td>454.calculix</td>
<td>37.3</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>37.0</td>
</tr>
<tr>
<td>465.tonto</td>
<td>36.4</td>
</tr>
<tr>
<td>470.lbm</td>
<td>30.0</td>
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<tr>
<td>481.wrf</td>
<td>54.4</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>57.7</td>
</tr>
</tbody>
</table>

---

**SPECfp_base₂₀₀₆ = 78.2**

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Continued on next page
Huawei

Huawei CH242 V3 (Intel Xeon E7-4809 v4)

SPECfp2006 = 81.6
SPECfp_base2006 = 78.2

CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei
L3 Cache: 20 MB I+D on chip per chip
Other Cache: None
Memory: 512 GB (32 x 16 GB 2Rx8 PC4-2400T-R, running at 1333 MHz)
Disk Subsystem: 1 x 480 GB SSD
Other Hardware: None
Peak Pointers: 32/64-bit
Other Software: None

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<tr>
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<td>339</td>
<td>57.5</td>
<td>338</td>
<td>57.7</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 Disabled
Set Lock_step to disabled
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 localhost.localdomain Mon Nov 21 12:36:43 2016

Continued on next page

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

Huawei CH242 V3 (Intel Xeon E7-4809 v4)

SPECfp2006 = 81.6
SPECfp_base2006 = 78.2

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

Test date: Nov-2016
Hardware Availability: Jun-2016
Software Availability: Nov-2015

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 E7-4809 v4 @ 2.10GHz
4 "physical id"s (chips)
32 "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 : 8
siblings : 8
physical 0: cores 0 1 2 3 4 5 6 7
physical 1: cores 0 1 2 3 4 5 6 7
physical 2: cores 0 1 2 3 4 5 6 7
physical 3: cores 0 1 2 3 4 5 6 7
cache size : 20480 KB

From /proc/meminfo

MemTotal: 528085820 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 Nov 21 04:22

SPEC is set to: /spec16

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda1 ext4 407G 12G 374G 3% /

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
Huawei CH242 V3 (Intel Xeon E7-4809 v4) SPECfp2006 = 81.6
SPECfp_base2006 = 78.2

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

Platform Notes (Continued)

BIOS American Megatrends Inc. BLISV778 09/22/2016
Memory:
  32x Hynix HMA82GR7AFR8N-UH 16 GB 2 rank 2400 MHz, configured at 1333 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 = "32"

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
433.milc: -DSPEC_CPU_LP64
434.zuesmp: -DSPEC_CPU_LP64 -nofor_main
435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
Huawei
Huawei CH242 V3 (Intel Xeon E7-4809 v4)

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CPU2006 license: 3175
Test sponsor: Huawei
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Software Availability: Nov-2015

Base Portability Flags (Continued)

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 -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

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

Peak Portability Flags

Same as Base Portability Flags
Huawei CH242 V3 (Intel Xeon E7-4809 v4)

**SPEC CFP2006 Result**

| SPECfp2006       | 81.6 |
| SPECfp_base2006  | 78.2 |

CPU2006 license: 3175  
Test sponsor: Huawei  
Tested by: Huawei  
Test date: Nov-2016  
Hardware Availability: Jun-2016  
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
- 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
- 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:

Continued on next page
Huawei

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CPU2006 license: 3175
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Peak Optimization Flags (Continued)

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
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 questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.
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