Huawei RH1288 V3 (Intel Xeon E5-2680 v3)

**SPECfp®_rate2006 = 808**

**SPECfp_rate_base2006 = 786**

**CPU2006 license:** 3175

**Test sponsor:** Huawei

**Tested by:** Huawei

**Test date:** Dec-2014

**Hardware Availability:** Sep-2014

**Test date:** Dec-2014

**Software Availability:** Jun-2014

---

**Hardware**

- **CPU Name:** Intel Xeon E5-2680 v3
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.30 GHz
- **CPU MHz:** 2500
- **FPU:** Integrated
- **CPU(s) enabled:** 24 cores, 2 chips, 12 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:** Red Hat Enterprise Linux Server release 7.0 (Maipo)
  3.10.0-123.el7.x86_64
- **Compiler:**
  C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux;
  Fortran: Version 15.0.0.090 of Intel Fortran Studio XE for Linux
- **Auto Parallel:** No
- **File System:** ext4

---

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

### Huawei

**Huawei RH1288 V3 (Intel Xeon E5-2680 v3)**

- **CPU2006 license:** 3175
- **Test sponsor:** Huawei
- **Tested by:** Huawei
- **L3 Cache:** 30 MB I+D on chip per chip
- **Other Cache:** None
- **Memory:** 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R)
- **Disk Subsystem:** 1 x 500 GB SATA, 7200 RPM
- **Other Hardware:** None
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 32/64-bit
- **Peak Pointers:** 32/64-bit
- **Other Software:** None
- **Test date:** Dec-2014
- **Hardware Availability:** Sep-2014
- **Software Availability:** Jun-2014

### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</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>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>48</td>
<td>1075</td>
<td>607</td>
<td>1076</td>
<td>0.606</td>
<td>1077</td>
<td>0.606</td>
<td>48</td>
<td>1075</td>
<td>607</td>
<td>1076</td>
</tr>
<tr>
<td>416.gamess</td>
<td>48</td>
<td>1008</td>
<td>932</td>
<td>1011</td>
<td>0.932</td>
<td>1010</td>
<td>0.930</td>
<td>48</td>
<td>979</td>
<td>960</td>
<td>967</td>
</tr>
<tr>
<td>433.milc</td>
<td>48</td>
<td>765</td>
<td>576</td>
<td>767</td>
<td>0.575</td>
<td>765</td>
<td>0.576</td>
<td>48</td>
<td>765</td>
<td>576</td>
<td>765</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>48</td>
<td>482</td>
<td>906</td>
<td>482</td>
<td>0.906</td>
<td>488</td>
<td>0.895</td>
<td>48</td>
<td>482</td>
<td>906</td>
<td>482</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>48</td>
<td>311</td>
<td>1100</td>
<td>318</td>
<td>1080</td>
<td>314</td>
<td>1076</td>
<td>48</td>
<td>309</td>
<td>1110</td>
<td>306</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>48</td>
<td>554</td>
<td>1040</td>
<td>554</td>
<td>1040</td>
<td>553</td>
<td>1040</td>
<td>48</td>
<td>554</td>
<td>1040</td>
<td>554</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>48</td>
<td>1065</td>
<td>424</td>
<td>1067</td>
<td>0.423</td>
<td>1064</td>
<td>0.424</td>
<td>48</td>
<td>503</td>
<td>449</td>
<td>504</td>
</tr>
<tr>
<td>444.namd</td>
<td>48</td>
<td>518</td>
<td>744</td>
<td>519</td>
<td>742</td>
<td>517</td>
<td>745</td>
<td>48</td>
<td>510</td>
<td>755</td>
<td>515</td>
</tr>
<tr>
<td>447.dealII</td>
<td>48</td>
<td>397</td>
<td>1380</td>
<td>398</td>
<td>1380</td>
<td>418</td>
<td>1310</td>
<td>48</td>
<td>397</td>
<td>1380</td>
<td>398</td>
</tr>
<tr>
<td>450.soplex</td>
<td>48</td>
<td>927</td>
<td>432</td>
<td>929</td>
<td>431</td>
<td>925</td>
<td>433</td>
<td>48</td>
<td>398</td>
<td>503</td>
<td>397</td>
</tr>
<tr>
<td>453.povray</td>
<td>48</td>
<td>200</td>
<td>1280</td>
<td>199</td>
<td>1280</td>
<td>200</td>
<td>1270</td>
<td>48</td>
<td>179</td>
<td>1430</td>
<td>179</td>
</tr>
<tr>
<td>454.calculix</td>
<td>48</td>
<td>277</td>
<td>1430</td>
<td>280</td>
<td>1410</td>
<td>282</td>
<td>1410</td>
<td>48</td>
<td>277</td>
<td>1430</td>
<td>280</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>48</td>
<td>1259</td>
<td>405</td>
<td>1256</td>
<td>406</td>
<td>1256</td>
<td>405</td>
<td>48</td>
<td>1259</td>
<td>405</td>
<td>1256</td>
</tr>
<tr>
<td>465.tonto</td>
<td>48</td>
<td>534</td>
<td>884</td>
<td>535</td>
<td>883</td>
<td>535</td>
<td>883</td>
<td>48</td>
<td>501</td>
<td>943</td>
<td>502</td>
</tr>
<tr>
<td>470.lbm</td>
<td>48</td>
<td>829</td>
<td>795</td>
<td>831</td>
<td>794</td>
<td>831</td>
<td>794</td>
<td>48</td>
<td>829</td>
<td>795</td>
<td>831</td>
</tr>
<tr>
<td>481.wrf</td>
<td>48</td>
<td>756</td>
<td>710</td>
<td>760</td>
<td>705</td>
<td>762</td>
<td>704</td>
<td>48</td>
<td>757</td>
<td>709</td>
<td>749</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>48</td>
<td>1267</td>
<td>738</td>
<td>1259</td>
<td>743</td>
<td>1256</td>
<td>745</td>
<td>48</td>
<td>1267</td>
<td>738</td>
<td>1259</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 Custom
  - Set Snoop Mode to COD

Continued on next page
Huawei
Huawei RH1288 V3 (Intel Xeon E5-2680 v3)

SPECfp_rate2006 = 808
SPECfp_rate_base2006 = 786

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

Test date: Dec-2014
Hardware Availability: Sep-2014
Software Availability: Jun-2014

Platform Notes (Continued)

Set Patrol Scrub to Disable
Baseboard Management Controller used to adjust the fan speed to 100%
Sysinfo program /spec15/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on localhost.localdomain Sun Dec 28 02:28:00 2014

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 E5-2680 v3 @ 2.50GHz
  2 "physical id"s (chips)
  48 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The
following excerpts from /proc/cpuinfo might not be reliable. Use with
cautions.)
  cpu cores : 6
  siblings : 12
  physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
  physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13
  cache size : 15360 KB

From /proc/meminfo
MemTotal:       263717272 kB
HugePages_Total:       0
Hugepagesize:       2048 kB

From /etc/*release*/etc/*version*
os-release:
  NAME="Red Hat Enterprise Linux Server"
  VERSION="7.0 (Maipo)"
  ID="rhel"
  ID_LIKE="fedora"
  VERSION_ID="7.0"
  PRETTY_NAME="Red Hat Enterprise Linux Server 7.0 (Maipo)"
  ANSI_COLOR="0;31"
  CPE_NAME="cpe:/o:redhat:enterprise_linux:7.0:GA:server"
redhat-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.0:ga:server

uname -a:
Linux localhost.localdomain 3.10.0-123.el7.x86_64 #1 SMP Mon May 5 11:16:57
EDT 2014 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Dec 26 17:41

SPEC is set to: /spec15
  Filesystem Type Size Used Avail Use% Mounted on
  /dev/mapper/rhel-root ext4 241G 114G 115G 50% /
Additional information from dmidecode:
Continued on next page
Huawei RH1288 V3 (Intel Xeon E5-2680 v3)

SPECfp_rate2006 = 808
SPECfp_rate_base2006 = 786

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

Test date: Dec-2014
Hardware Availability: Sep-2014
Software Availability: Jun-2014

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. 1.18 09/17/2014
Memory:
8x Samsung M393A2G40DB0-CPB 16 GB 1 rank 2133 MHz
8x Samsung M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/spec15/libs/32:/spec15/libs/64:/spec15/sh"

Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB memory using RedHat EL 7.0
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>

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

Continued on next page
Huawei RH1288 V3 (Intel Xeon E5-2680 v3)

SPECfp_rate2006 = 808
SPECfp_rate_base2006 = 786

CPU2006 license: 3175
Test date: Dec-2014
Test sponsor: Huawei
Hardware Availability: Sep-2014
Tested by: Huawei
Software Availability: Jun-2014

Base Portability Flags (Continued)

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 (except as noted below):
icpc -m64

450.soplex: icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

Fortran benchmarks:
ifort -m64

Continued on next page
Huawei RH1288 V3 (Intel Xeon E5-2680 v3)

| SPECfp_rate2006 | 808 |
| SPECfp_rate_base2006 | 786 |

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

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.lesle3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -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

Peak Optimization Flags

C benchmarks:

```
433.milc: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
    -03(pass 2) -no-prec-div(pass 2)
    -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)
    -auto-ilp32
```

```
470.lbm: basepeak = yes
```

```
482.sphinx3: basepeak = yes
```

C++ benchmarks:

```
444.namd: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
    -03(pass 2) -no-prec-div(pass 2)
    -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2) -fno-alias
    -auto-ilp32
```

```
447.dealII: basepeak = yes
```

```
450.soplex: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
    -03(pass 2) -no-prec-div(pass 2)
    -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)
```

Continued on next page
Huawei RH1288 V3 (Intel Xeon E5-2680 v3)

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

CPU2006 license: 3175
Test date: Dec-2014
Hardware Availability: Sep-2014
Software Availability: Jun-2014

**SPEC CFP2006 Result**

| SPECfp_rate2006 = 808 | SPECfp_rate_base2006 = 786 |

**Peak Optimization Flags (Continued)**

450.soplex (continued):
- `opt-malloc-options=3`

453.povray:
- `-xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)`
- `-O3(pass 2) -no-prec-div(pass 2)`
- `-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(pass 1) -ipo(pass 2)`
- `-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2`
- `-inline-level=0 -scalar-rep-`

434.zeusmp: `basepeak = yes`

437.leslie3d:
- `-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch`

459.GemsFDTD: `basepeak = yes`

465.tonto:
- `-xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)`
- `-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll4`
- `-auto -inline-calloc -opt-malloc-options=3`

Benchmarks using both Fortran and C:

435.gromacs:
- `-xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)`
- `-O3(pass 2) -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2) -prof-use(pass 2)`
- `-opt-prefetch -auto-ilp32`

436.cactusADM: `basepeak = yes`

454.calculix: `basepeak = yes`

481.wrf:
- `-xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32`

The flags files that were used to format this result can be browsed at

http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-HASWELL-V1.2.html

You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-HASWELL-V1.2.xml
Huawei

Huawei RH1288 V3 (Intel Xeon E5-2680 v3)

SPECfp_rate2006 = 808
SPECfp_rate_base2006 = 786

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

Test date: Dec-2014
Hardware Availability: Sep-2014
Software Availability: Jun-2014