Huawei RH8100 V3 (Intel Xeon E7-8890 v4)

**SPECfp**\_rate2006 = Not Run

**SPECfp\_rate\_base2006 = 4740**

<table>
<thead>
<tr>
<th>SPECfp_rate2006</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Not Run</td>
<td>4740</td>
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</table>

**CPU2006 license:** 3175

**Test date:** May-2016

**Hardware Availability:** Jun-2016

**Test sponsor:** Huawei

**Software Availability:** Oct-2015

**Tested by:** Huawei

### SOFTWARE

<table>
<thead>
<tr>
<th>Program</th>
<th>SPECfp_rate2006</th>
<th>SPECfp_rate_base2006</th>
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<tbody>
<tr>
<td>410.bwaves</td>
<td>384</td>
<td>3180</td>
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<tr>
<td>416.gamess</td>
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<td>6800</td>
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<td>436.cactusADM</td>
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<td>437.leslie3d</td>
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<tr>
<td>482.sphinx3</td>
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<td>4110</td>
</tr>
</tbody>
</table>

**Hardware**

- **CPU Name:** Intel Xeon E7-8890 v4
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.40 GHz
- **CPU MHz:** 2200
- **FPU:** Integrated
- **CPU(s) enabled:** 192 cores, 8 chips, 24 cores/chip, 2 threads/core
- **CPU(s) orderable:** 4,8 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; Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux
- **Auto Parallel:** No
- **File System:** tmpfs
Huawei RH8100 V3 (Intel Xeon E7-8890 v4)

SPECfp_rate2006 = Not Run
SPECfp_rate_base2006 = 4740

CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei
Test date: May-2016
Hardware Availability: Jun-2016
Software Availability: Oct-2015

L3 Cache: 60 MB I+D on chip per chip
Other Cache: None
Memory: 1 TB (64 x 16 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)
Disk Subsystem: 2 x 600GB SAS, 10K RPM
Other Hardware: None
System State: Run level 3 (multi-user)
Base Pointers: 32/64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
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<th>Base Seconds</th>
<th>Base Ratio</th>
<th>Base Seconds</th>
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</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"
Turbo mode set with:
cpupower -c all frequency-set -g performance
Tmpfs filesystem can be set with:
mkdir /home/shm
mount -t tmpfs -o size=2000g,rw tmpfs /home/shm
Process tuning setting:
Huawei RH8100 V3 (Intel Xeon E7-8890 v4)

**Operating System Notes (Continued)**

```bash
echo 50000 > /proc/sys/kernel/sched_cfs_bandwidth_slice_us
echo 240000000 > /proc/sys/kernel/sched_latency_ns
echo 5000000 > /proc/sys/kernel/sched_migration_cost_ns
echo 100000000 > /proc/sys/kernel/sched_min_granularity_ns
```

**Platform Notes**

BIOS configuration:
- Set Power Efficiency Mode to Performance
- Set Lock_step to disabled
- Baseboard Management Controller used to adjust the fan speed to 100%
- Set C-State to Co/C1

Sysinfo program /home/shm/spec/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 $$ e3fbb8667b5a285932ceab81e28219e1
running on localhost.localdomain Thu May 12 05:28:04 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 E7-8890 v4 @ 2.20GHz
  8 "physical id"s (chips)
  384 "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 : 24
  siblings : 48
  physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13 14 16 17 18 19 20 21 24 25 26 27 28 29
  physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13 14 16 17 18 19 20 21 24 25 26 27 28 29
  physical 2: cores 0 1 2 3 4 5 8 9 10 11 12 13 14 16 17 18 19 20 21 24 25 26 27 28 29
  physical 3: cores 0 1 2 3 4 5 8 9 10 11 12 13 14 16 17 18 19 20 21 24 25 26 27 28 29
  physical 4: cores 0 1 2 3 4 5 8 9 10 11 12 13 14 16 17 18 19 20 21 24 25 26 27 28 29
  physical 5: cores 0 1 2 3 4 5 8 9 10 11 12 13 14 16 17 18 19 20 21 24 25 26 27 28 29
  physical 6: cores 0 1 2 3 4 5 8 9 10 11 12 13 14 16 17 18 19 20 21 24 25 26 27 28 29
  physical 7: cores 0 1 2 3 4 5 8 9 10 11 12 13 14 16 17 18 19 20 21 24 25 26 27 28 29
   cache size : 61440 KB
```

From /proc/meminfo

```
MemTotal:        1056704636 kB
HugePages_Total:        0
```

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Huawei 

Huawei RH8100 V3 (Intel Xeon E7-8890 v4) 

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CPU2006 license: 3175  Test date: May-2016
Test sponsor: Huawei  Hardware Availability: Jun-2016
Tested by: Huawei  Software Availability: Oct-2015

Platform Notes (Continued)

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="7.2.2"
   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 May 10 23:35 

SPEC is set to: /home/shm/spec 

Filesystem Type Size Used Avail Use% Mounted on 
tmpfs tmpfs 2.0T 5.3G 2.0T 1% /home/shm

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 American Megatrends Inc. 5.11 02/05/2016
Memory:
   128x NO DIMM NO DIMM
   64x Samsung M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz, configured at 1600 MHz

(End of data from sysinfo program)
Regarding the sysinfo display about the memory installed, the correct amount of memory is 1 TB and the dmidecode description should have two lines reading as:
  128x NO DIMM NO DIMM
  64x Samsung M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz, configured at 1600 MHz

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/home/shm/spec/libs/32:/home/shm/spec/libs/64:/home/shm/spec/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:

Continued on next page
Huawei
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General Notes (Continued)

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
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  -nofor_main
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

Continued on next page
Huawei

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Base Optimization Flags (Continued)

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

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

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-V1.2-BDW-RevG.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.
Originally published on 6 June 2016.