Huawei

Huawei RH2288H V3 (Intel Xeon E5-2630 v3)

SPECfp®2006 = 103
SPECfp_base2006 = 97.4

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

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

Hardware

CPU Name: Intel Xeon E5-2630 v3
CPU Characteristics: Intel Turbo Boost Technology up to 3.20 GHz
CPU MHz: 2400
FPU: Integrated
CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip
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: Yes
File System: ext4

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| L3 Cache: | 20 MB I+D on chip per chip  
| Other Cache: | None  
| Memory: | 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R, running at 1866 MHz)  
| Disk Subsystem: | 1 x 500 GB SATA, 7200 RPM  
| Other Hardware: | None  
| System State: | Run level 3 (multi-user)  
| Base Pointers: | 64-bit  
| Peak Pointers: | 32/64-bit  
| Other Software: | None

**Results Table**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base</th>
<th>Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Seconds</td>
<td>Ratio</td>
</tr>
<tr>
<td>410.bwaves</td>
<td>29.7</td>
<td>458</td>
</tr>
<tr>
<td>416.gamess</td>
<td>556</td>
<td></td>
</tr>
<tr>
<td>433.milc</td>
<td>134</td>
<td>68.6</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>47.7</td>
<td>191</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>182</td>
<td>39.2</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>18.6</td>
<td>643</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>35.4</td>
<td>266</td>
</tr>
<tr>
<td>444.namd</td>
<td>296</td>
<td>27.1</td>
</tr>
<tr>
<td>447.dealII</td>
<td>214</td>
<td>53.4</td>
</tr>
<tr>
<td>450.soplex</td>
<td>199</td>
<td>42.0</td>
</tr>
<tr>
<td>453.povray</td>
<td>97.6</td>
<td>54.5</td>
</tr>
<tr>
<td>454_calculix</td>
<td>163</td>
<td>50.8</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>51.6</td>
<td>206</td>
</tr>
<tr>
<td>465.tonto</td>
<td>265</td>
<td>37.1</td>
</tr>
<tr>
<td>470.lbm</td>
<td>23.6</td>
<td>582</td>
</tr>
<tr>
<td>481.wrf</td>
<td>128</td>
<td>87.5</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>274</td>
<td>71.0</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 Snoop Mode to HS  
- Set Hyper-Threading to Disabled  
- 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 Jan 5 10:01:12 2014
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**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 E5-2630 v3 @ 2.40GHz
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 : 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
cache size : 20480 KB
```

From /proc/meminfo

```
MemTotal:       263721484 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 Jan 5 05:00

SPEC is set to: /spec15

```
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-root ext4 439G 19G 398G 5% /
```

Additional information from dmesg:

```
Warning: Use caution when you interpret this section. The 'dmesg' 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.
```

Continued on next page
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Test date: Dec-2014
Hardware Availability: Sep-2014
Software Availability: Sep-2014

Platform Notes (Continued)

- BIOS Insyde Corp. 1.19 10/10/2014
- Memory: 8x NO DIMM NO DIMM 3 rank
- 8x Samsung M393A2G40DB0-CPB 16 GB 1 rank 2133 MHz, configured at 1867 MHz
- 8x Samsung M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz, configured at 1867 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 = "/spec15/libs/32:/spec15/libs/64:/spec15/sh"
- OMP_NUM_THREADS = "16"

- 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
- 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

Continued on next page
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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
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Software Availability: Sep-2014

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### Peak Optimization Flags

**C benchmarks:**

433.milc: 
-xCORE-AVX2(pass 2)  
-prof-gen(pass 1)  
-ipo(pass 2)  
-O3(pass 2)  
-no-prec-div(pass 2)  
-prof-use(pass 2)  
-auto-ilp32  
-ansi-alias

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes

**C++ benchmarks:**

444.namd: 
-xCORE-AVX2(pass 2)  
-prof-gen(pass 1)  
-ipo(pass 2)  
-O3(pass 2)  
-no-prec-div(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(pass 1)  
-ipo(pass 2)  
-O3(pass 2)  
-no-prec-div(pass 2)  
-prof-use(pass 2)  
-unroll14  
-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: basepeak = yes

459.GemsFDTD: 
-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  
-opt-prefetch  
-parallel

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)  
-inline-callloc  
-opt-malloc-options=3  
-auto  
-unroll14

**Benchmarks using both Fortran and C:**

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

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Continued on next page
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Peak Optimization Flags (Continued)

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-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-HASWELL-V1.1.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-V1.1.xml

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