SPEC® CFP2006 Result
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Huawei

Huawei RH8100 V3 (Intel Xeon E7-8891 v2)

$SPECfp^{®}2006 =$ 105
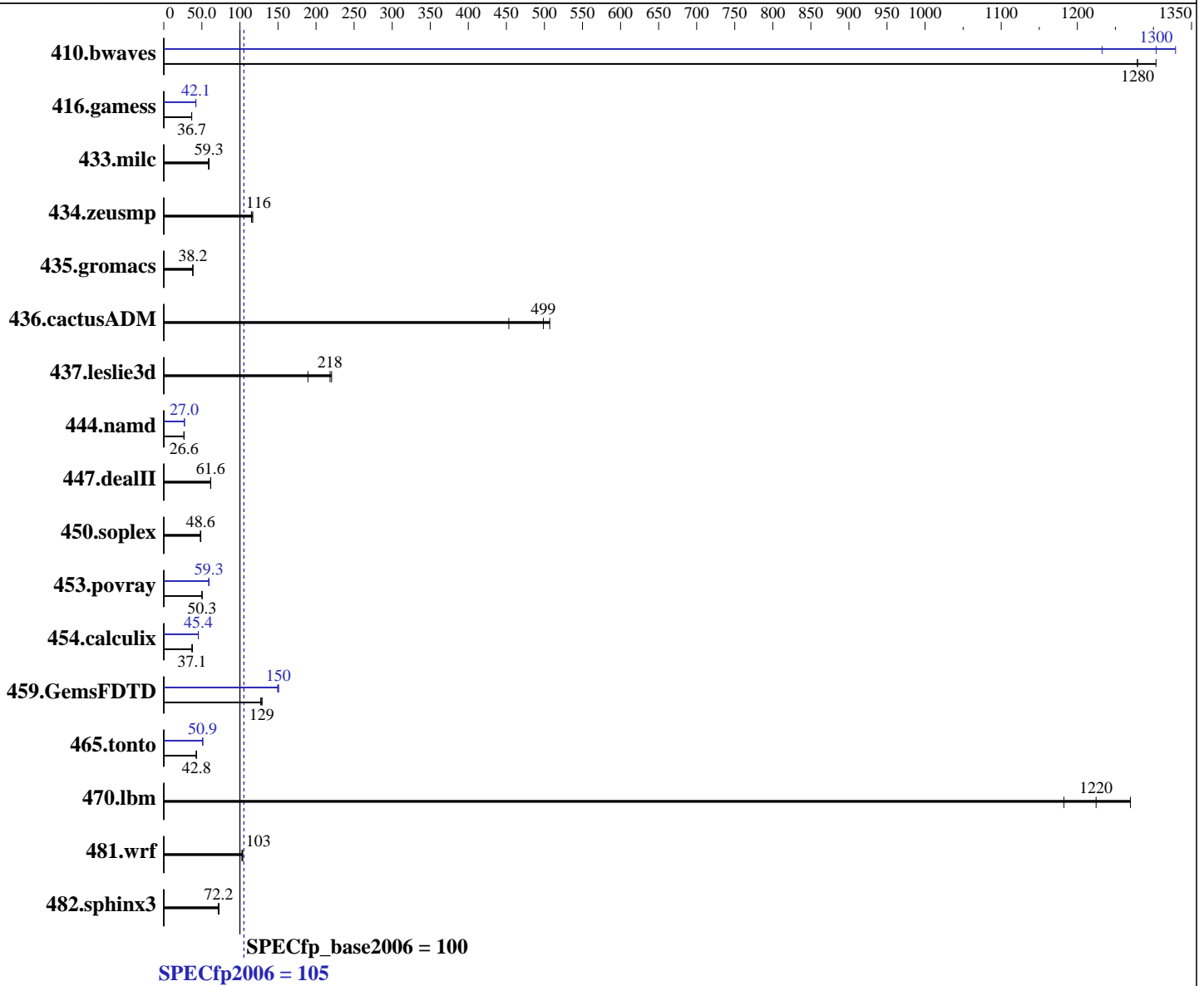
$SPECfp\_base2006 =$ 100

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

Test date: Oct-2014
Hardware Availability: Feb-2014
Software Availability: Nov-2013

Benchmark	Value
410.bwaves	1300 / 1280
416.gamess	42.1 / 36.7
433.milc	59.3
434.zeusmp	116
435.gromacs	38.2
436.cactusADM	499
437.leslie3d	218
444.namd	27.0 / 26.6
447.dealII	61.6
450.soplex	48.6
453.povray	59.3 / 50.3
454.calculix	45.4 / 37.1
459.GemsFDTD	150 / 129
465.tonto	50.9 / 42.8
470.lbm	1220
481.wrf	103
482.sphinx3	72.2

SPECfp_base2006 = 100

SPECfp2006 = 105

Hardware

CPU Name: Intel Xeon E7-8891 v2
CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz
CPU MHz: 3200
FPU: Integrated
CPU(s) enabled: 80 cores, 8 chips, 10 cores/chip
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
Continued on next page

Software

Operating System: Red Hat Enterprise Linux Server release 6.5 (Santiago)
2.6.32-431.el6.x86_64
Compiler: C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux;
Fortran: Version 12.1.0.225 of Intel Fortran Studio XE for Linux
Auto Parallel: Yes
File System: ext4
Continued on next page

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L3 Cache:	37.5 MB I+D on chip per chip
Other Cache:	None
Memory:	1 TB (128 x 8 GB 2Rx8 PC3-12800R-11, ECC, running at 1333 MHz and CL9)
Disk Subsystem:	1 x 600 GB SAS, 10K 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

Benchmark	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
410.bwaves	10.4	1300	10.6	1280	**10.6**	**1280**	10.2	1330	**10.4**	**1300**	11.0	1230
416.gamess	**534**	**36.7**	535	36.6	534	36.7	465	42.1	465	42.1	**465**	**42.1**
433.milc	154	59.5	**155**	**59.3**	156	58.7	154	59.5	**155**	**59.3**	156	58.7
434.zeusmp	**78.7**	**116**	77.9	117	79.1	115	**78.7**	**116**	77.9	117	79.1	115
435.gromacs	187	38.2	187	38.2	**187**	**38.2**	187	38.2	187	38.2	**187**	**38.2**
436.cactusADM	23.6	507	**24.0**	**499**	26.4	453	23.6	507	**24.0**	**499**	26.4	453
437.leslie3d	49.6	189	**43.0**	**218**	42.6	220	49.6	189	**43.0**	**218**	42.6	220
444.namd	302	26.6	**302**	**26.6**	302	26.6	297	27.0	297	27.0	**297**	**27.0**
447.dealII	186	61.6	185	61.7	**186**	**61.6**	186	61.6	185	61.7	**186**	**61.6**
450.soplex	174	47.9	171	48.7	**172**	**48.6**	174	47.9	171	48.7	**172**	**48.6**
453.povray	**106**	**50.3**	106	50.0	106	50.4	**89.7**	**59.3**	89.5	59.4	90.2	59.0
454.calculix	219	37.6	223	37.0	**223**	**37.1**	182	45.4	182	45.4	**182**	**45.4**
459.GemsFDTD	82.2	129	83.4	127	**82.4**	**129**	**70.5**	**150**	70.3	151	70.9	150
465.tonto	230	42.8	**230**	**42.8**	231	42.6	193	50.9	**193**	**50.9**	192	51.3
470.lbm	11.6	1180	**11.2**	**1220**	10.8	1270	11.6	1180	**11.2**	**1220**	10.8	1270
481.wrf	109	103	**108**	**103**	108	104	109	103	**108**	**103**	108	104
482.sphinx3	269	72.4	**270**	**72.2**	273	71.5	269	72.4	**270**	**72.2**	273	71.5

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 Performance
Set Lock_step to disabled
Baseboard Management Controller used to adjust the fan speed to 100%
C-State disabled
Set Intel Hyper Threading to disabled
Sysinfo program /spec/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
running on RH8100V3 Wed Oct 22 11:37:04 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 E7-8891 v2 @ 3.20GHz
      8 "physical id"s (chips)
      80 "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 : 10
      siblings  : 10
      physical 0: cores 2 3 4 5 6 7 8 10 11 12
      physical 1: cores 2 3 4 5 6 7 8 10 11 12
      physical 2: cores 2 3 4 5 6 7 8 10 11 12
      physical 3: cores 2 3 4 5 6 7 8 10 11 12
      physical 4: cores 2 3 4 5 6 7 8 10 11 12
      physical 5: cores 2 3 4 5 6 7 8 10 11 12
      physical 6: cores 2 3 4 5 6 7 8 10 11 12
      physical 7: cores 2 3 4 5 6 7 8 10 11 12
   cache size : 38400 KB

From /proc/meminfo
   MemTotal:       1058598780 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux Server release 6.5 (Santiago)

From /etc/*release* /etc/*version*
   redhat-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
   system-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

uname -a:
   Linux RH8100V3 2.6.32-431.el6.x86_64 #1 SMP Sun Nov 10 22:19:54 EST 2013
   x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Oct 22 06:28

SPEC is set to: /spec
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda3       ext4  533G   30G  477G   6% /

Additional information from dmidecode:
  Memory:
   128x Hynix HMT41GR7AFR8C-PB 8 GB 1600 MHz 2 rank

(End of data from sysinfo program)
```

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Platform Notes (Continued)

```
  memory is 1 TB and the dmidecode description should have one line reading as:
    128x Hynix HMT41GR7AFR8C-PB 8 GB 1600 MHz 2 rank
  Dmidecode mistakenly believes the memory was running at 1600 MHz, when it
  should only run at 1333 MHz
  This benchmark result is intended to provide perspective on past
  performance using the historical software described on this result page.
  The system as described on this result page was formerly generally available(Oct-2014).
  But at the time of this publication (November 2014), the compiler specified
  (Intel Compiler 12) was not listed as supported per
   https://software.intel.com/en-us/articles/intel-compilers-supported-compiler-versions
  This measured result may not be representative of the result that would be measured
  were this benchmark run with hardware and software available as of the publication date.
```

General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,0,1"
LD_LIBRARY_PATH = "/spec/libs/32:/spec/libs/64"
OMP_NUM_THREADS = "80"

 Binaries compiled on a system with 2 x Xeon X5645 CPU + 16GB memory
 using RHEL 6.1
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
```

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
```

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Base Portability Flags (Continued)

```
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:
```
-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
-ansi-alias
```

C++ benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias
```

Fortran benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
```

Benchmarks using both Fortran and C:
```
-xAVX -ipo -O3 -no-prec-div -static -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
```

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Software Availability: Nov-2013

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

        433.milc: basepeak = yes

        470.lbm: basepeak = yes

        482.sphinx3: basepeak = yes

C++ benchmarks:

        444.namd: -xAVX(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: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
                -no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

        410.bwaves: -xAVX -ipo -O3 -no-prec-div -opt-prefetch -parallel
                -static

        416.gamess: -xAVX(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- -static

        434.zeusmp: basepeak = yes

        437.leslie3d: basepeak = yes

  459.GemsFDTD: -xAVX(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: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
                -no-prec-div(pass 2) -prof-use(pass 2) -inline-calloc
                -opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

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Peak Optimization Flags (Continued)

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xAVX -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-ic12.1-official-linux64.20111122.html
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-V1.0-IVB-RevG.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.xml
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-V1.0-IVB-RevG.xml

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

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