SPEC® CFP2006 Result

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Huawei

Huawei RH8100 V3 (Intel Xeon E7-8850 v2)

$SPECfp^®\_rate2006 =$ 2440

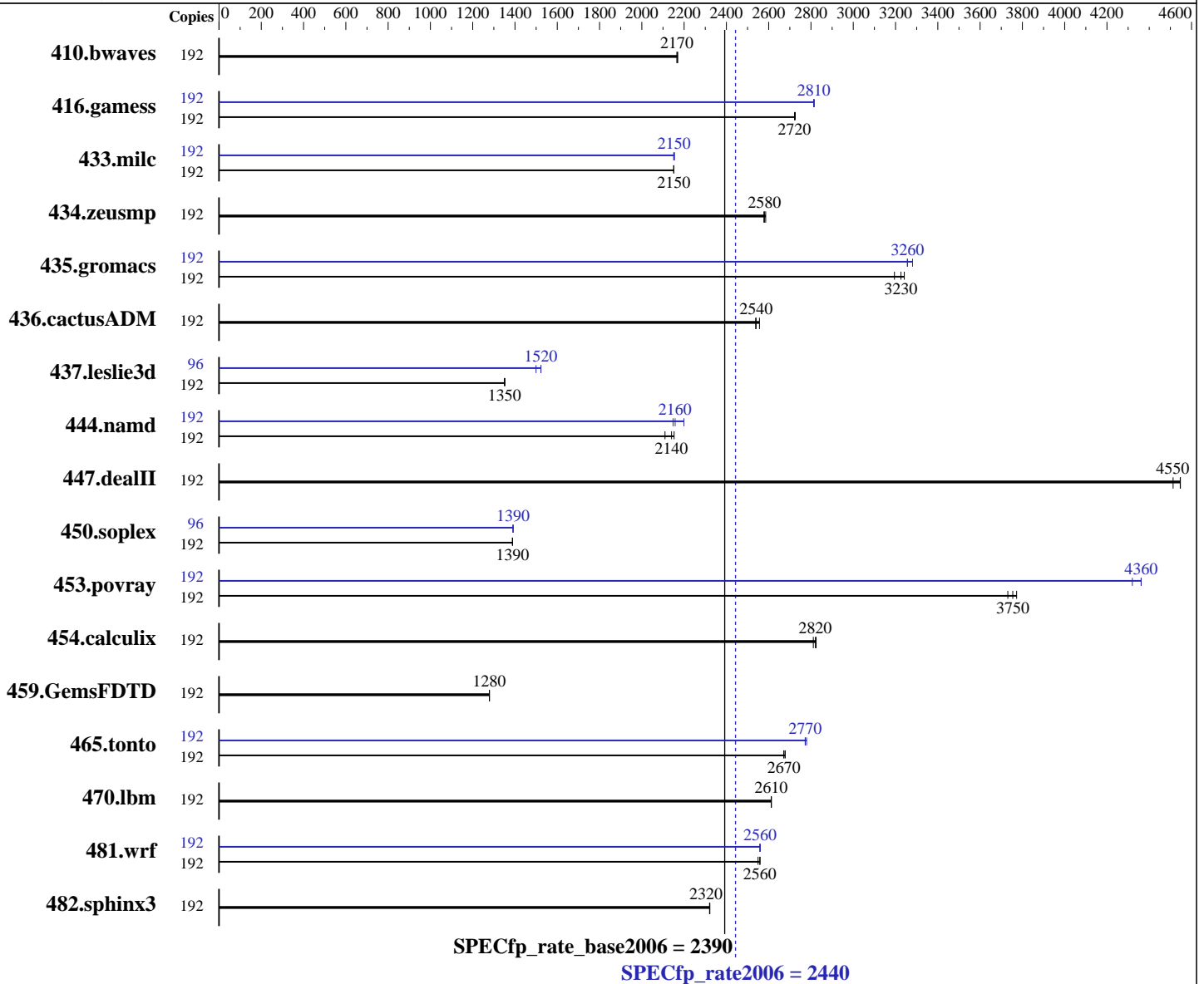$SPECfp\_rate\_base2006 =$ 2390

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

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

Benchmark	Copies	Result
410.bwaves	192	2170
416.gamess	192	2810
416.gamess	192	2720
433.milc	192	2150
433.milc	192	2150
434.zeusmp	192	2580
435.gromacs	192	3260
435.gromacs	192	3230
436.cactusADM	192	2540
437.leslie3d	96	1520
437.leslie3d	192	1350
444.namd	192	2160
444.namd	192	2140
447.dealII	192	4550
450.soplex	96	1390
450.soplex	192	1390
453.povray	192	4360
453.povray	192	3750
454.calculix	192	2820
459.GemsFDTD	192	1280
465.tonto	192	2770
465.tonto	192	2670
470.lbm	192	2610
481.wrf	192	2560
481.wrf	192	2560
482.sphinx3	192	2320

SPECfp_rate_base2006 = 2390
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Hardware

CPU Name: Intel Xeon E7-8850 v2
CPU Characteristics: Intel Turbo Boost Technology up to 2.80 GHz
CPU MHz: 2300
FPU: Integrated
CPU(s) enabled: 96 cores, 8 chips, 12 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
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 14.0.0.080 of Intel C++ Studio XE for Linux;
Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux
Auto Parallel: No
File System: ext4
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SPECfp_rate2006 =	2440
SPECfp_rate_base2006 =	2390

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L3 Cache:	24 MB I+D on chip per chip
Other Cache:	None
Memory:	1 TB (64 x 16 GB 2Rx4 PC3-12800R-11, ECC, running at 1066 MHz)
Disk Subsystem:	2 x 600 GB 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

Benchmark	Copies	Base Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Peak Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	192	1202	2170	1205	2170	**1204**	**2170**	192	1202	2170	1205	2170	**1204**	**2170**
416.gamess	192	1379	2730	**1381**	**2720**	1381	2720	192	**1336**	**2810**	1337	2810	1335	2820
433.milc	192	819	2150	819	2150	**819**	**2150**	192	820	2150	818	2150	**819**	**2150**
434.zeusmp	192	676	2590	**677**	**2580**	678	2580	192	676	2590	**677**	**2580**	678	2580
435.gromacs	192	423	3240	**425**	**3230**	429	3190	192	421	3260	**421**	**3260**	418	3280
436.cactusADM	192	**903**	**2540**	898	2560	904	2540	192	**903**	**2540**	898	2560	904	2540
437.leslie3d	192	1335	1350	**1336**	**1350**	1337	1350	96	593	1520	602	1500	**593**	**1520**
444.namd	192	**719**	**2140**	715	2150	730	2110	192	**714**	**2160**	700	2200	717	2150
447.dealII	192	**483**	**4550**	487	4510	483	4550	192	**483**	**4550**	487	4510	483	4550
450.soplex	192	1154	1390	**1153**	**1390**	1153	1390	96	**576**	**1390**	576	1390	576	1390
453.povray	192	**272**	**3750**	274	3730	271	3770	192	234	4360	**234**	**4360**	236	4320
454.calculix	192	563	2810	**561**	**2820**	561	2820	192	563	2810	**561**	**2820**	561	2820
459.GemsFDTD	192	1593	1280	**1593**	**1280**	1592	1280	192	1593	1280	**1593**	**1280**	1592	1280
465.tonto	192	705	2680	707	2670	**707**	**2670**	192	681	2770	**681**	**2770**	680	2780
470.lbm	192	1010	2610	1010	2610	**1010**	**2610**	192	1010	2610	1010	2610	**1010**	**2610**
481.wrf	192	**838**	**2560**	838	2560	841	2550	192	838	2560	838	2560	**838**	**2560**
482.sphinx3	192	**1612**	**2320**	1612	2320	1613	2320	192	**1612**	**2320**	1612	2320	1613	2320

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 Performance
Set Lock_step to disabled

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Platform Notes (Continued)

```
Baseboard Management Controller used to adjust the fan speed to 100%
Sysinfo program /spec/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on RH8100V3 Sat Jul 12 14:03:17 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 E7-8850 v2 @ 2.30GHz
      8 "physical id"s (chips)
      192 "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 : 12
      siblings  : 24
      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
      physical 2: cores 0 1 2 3 4 5 8 9 10 11 12 13
      physical 3: cores 0 1 2 3 4 5 8 9 10 11 12 13
      physical 4: cores 0 1 2 3 4 5 8 9 10 11 12 13
      physical 5: cores 0 1 2 3 4 5 8 9 10 11 12 13
      physical 6: cores 0 1 2 3 4 5 8 9 10 11 12 13
      physical 7: cores 0 1 2 3 4 5 8 9 10 11 12 13
   cache size : 24576 KB

From /proc/meminfo
   MemTotal:       1058585896 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 Jul 11 19:40

SPEC is set to: /spec
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda2       ext4  385G  171G  195G  47% /spec

Additional information from dmidecode:
```

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Platform Notes (Continued)

```
     BIOS American Megatrends Inc. BLHSV016 06/05/2014
     Memory:
      64x   16 GB
      62x Hynix HMT42GR7AFR4C-PB 16 GB 1066 MHz 2 rank
      2x Hynix HMT42GR7MFR4C-PB 16 GB 1066 MHz 2 rank
      128x NO DIMM NO DIMM

   (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:
      62x Hynix HMT42GR7AFR4C-PB 16 GB 1066 MHz 2 rank
      2x Hynix HMT42GR7MFR4C-PB 16 GB 1066 MHz 2 rank
```

General Notes

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

  Binaries compiled on a system with 1x Core i7-860 CPU + 8GB
  memory using RedHat EL 6.4
  Transparent Huge Pages enabled with:
  echo always > /sys/kernel/mm/redhat_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
```

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CPU2006 license: 3175	**Test date:** Jul-2014
Test sponsor: Huawei	**Hardware Availability:** Feb-2014
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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:

```
-xAVX -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -ansi-alias
-opt-mem-layout-trans=3
```

C++ benchmarks:

```
-xAVX -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -ansi-alias
-opt-mem-layout-trans=3
```

Fortran benchmarks:

```
-xAVX -ipo -O3 -no-prec-div -opt-prefetch
```

Benchmarks using both Fortran and C:

```
-xAVX -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
```

Fortran benchmarks:

```
ifort -m64
```

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Tested by: Huawei	**Software Availability:** Nov-2013

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.leslie3d: -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: -xAVX(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) -auto-ilp32

    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) -opt-mem-layout-trans=3(pass 2)
              -prof-use(pass 2) -fno-alias -auto-ilp32

    447.dealII: basepeak = yes

   450.soplex: -xAVX(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-malloc-options=3
```

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Peak Optimization Flags (Continued)

453.povray: -xAVX(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: -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-

434.zeusmp: basepeak = yes

437.leslie3d: -xAVX -ipo -O3 -no-prec-div -opt-prefetch

459.GemsFDTD: basepeak = yes

465.tonto: -xAVX(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: -xAVX(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: -xAVX -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-ic14.0-official-linux64-revC.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-ic14.0-official-linux64-revC.xml
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-V1.0-IVB-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.
Report generated on Wed Jul 30 10:53:40 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 29 July 2014.