SPEC® CFP2006 Result
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Huawei

Huawei RH8100 V3 (Intel Xeon E7-8870 v2)

$SPECfp®\_rate2006 = 3110$

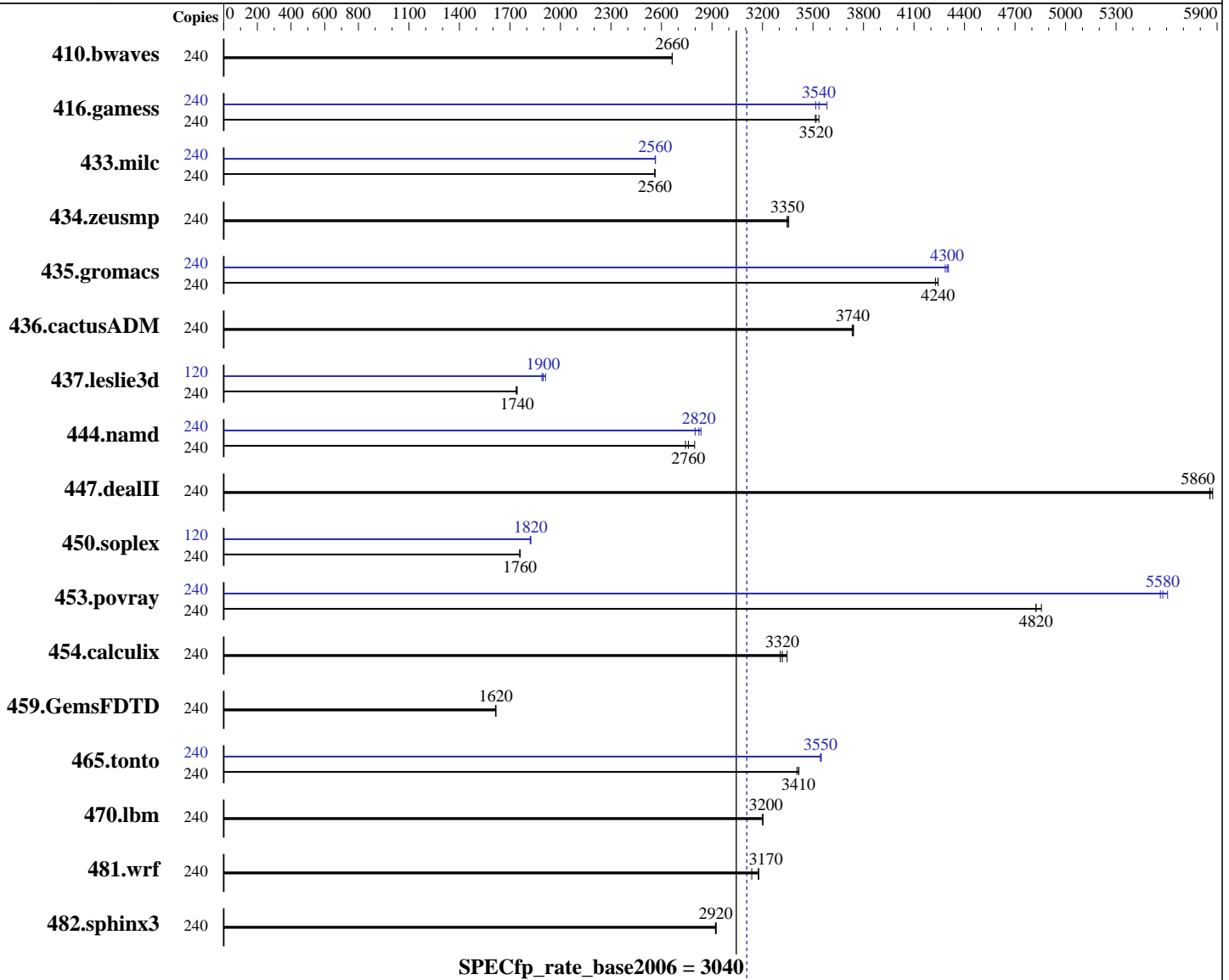$SPECfp\_rate\_base2006 = 3040$

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

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

SPECfp_rate_base2006 = 3040

SPECfp_rate2006 = 3110

Hardware

CPU Name:	Intel Xeon E7-8870 v2
CPU Characteristics:	Intel Turbo Boost Technology up to 2.90 GHz
CPU MHz:	2300
FPU:	Integrated
CPU(s) enabled:	120 cores, 8 chips, 15 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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L3 Cache:	30 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)
Disk Subsystem:	2 x 300 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	Base Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	240	**1224**	**2660**	1224	2660	1225	2660	240	**1224**	**2660**	1224	2660	1225	2660
416.gamess	240	1337	3510	**1336**	**3520**	1329	3540	240	1336	3520	1311	3580	**1329**	**3540**
433.milc	240	861	2560	**860**	**2560**	860	2560	240	859	2560	860	2560	**859**	**2560**
434.zeusmp	240	652	3350	651	3360	**652**	**3350**	240	652	3350	651	3360	**652**	**3350**
435.gromacs	240	404	4240	**404**	**4240**	405	4230	240	398	4300	**399**	**4300**	400	4290
436.cactusADM	240	767	3740	**767**	**3740**	768	3730	240	767	3740	**767**	**3740**	768	3730
437.leslie3d	240	1295	1740	**1295**	**1740**	1299	1740	120	597	1890	**594**	**1900**	590	1910
444.namd	240	688	2800	702	2740	**697**	**2760**	240	**682**	**2820**	679	2830	687	2800
447.dealII	240	**469**	**5860**	469	5860	467	5870	240	**469**	**5860**	469	5860	467	5870
450.soplex	240	1137	1760	**1138**	**1760**	1138	1760	120	**549**	**1820**	549	1820	550	1820
453.povray	240	263	4860	265	4820	**265**	**4820**	240	**229**	**5580**	230	5560	228	5610
454.calculix	240	592	3350	599	3310	**597**	**3320**	240	592	3350	599	3310	**597**	**3320**
459.GemsFDTD	240	1575	1620	1577	1610	**1575**	**1620**	240	1575	1620	1577	1610	**1575**	**1620**
465.tonto	240	694	3400	**692**	**3410**	691	3420	240	665	3550	**666**	**3550**	666	3540
470.lbm	240	**1030**	**3200**	1030	3200	1030	3200	240	**1030**	**3200**	1030	3200	1030	3200
481.wrf	240	**844**	**3170**	843	3180	855	3140	240	**844**	**3170**	843	3180	855	3140
482.sphinx3	240	1602	2920	**1600**	**2920**	1599	2920	240	1602	2920	**1600**	**2920**	1599	2920

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"

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SPECfp_rate_base2006 = 3040

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,C6 Enabled
Adjacent Sector Prefetch Enabled
Sysinfo program /spec/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on RH8100V3 Fri Oct 17 02:26:14 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 E7-8870 v2 @ 2.30GHz
      8 "physical id"s (chips)
      240 "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 : 15
      siblings  : 30
      physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
      physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
      physical 2: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
      physical 3: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
      physical 4: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
      physical 5: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
      physical 6: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
      physical 7: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
   cache size : 30720 KB

From /proc/meminfo
   MemTotal:       1058578916 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 16 11:51
```

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Huawei

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$SPECfp\_rate2006 = \quad 3110$

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Platform Notes (Continued)

```
SPEC is set to: /spec
  Filesystem      Type   Size  Used Avail Use% Mounted on
  /dev/sda3       ext4   533G  230G  276G  46% /

Additional information from dmidecode:
  BIOS American Megatrends Inc. BLHSV325 09/30/2014
  Memory:
   128x    8 GB
   128x Hynix HMT41GR7AFR8C-PB 8 GB 1333 MHz 2 rank
   64x 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 one line reading as:
   128x Hynix HMT41GR7AFR8C-PB 8 GB 1333 MHz 2 ran
```

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
```

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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
         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
```

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CPU2006 license: 3175		**Test date:**	Oct-2014
Test sponsor: Huawei		**Hardware Availability:**	Feb-2014
Tested by: Huawei		**Software Availability:**	Nov-2013

Peak Compiler Invocation (Continued)

Fortran benchmarks:
```
ifort -m64
```

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
```

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Peak Optimization Flags (Continued)

```
  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

  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: basepeak = yes
```

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.

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