SPEC® CFP2006 Result
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Huawei

Tecal RH5885 V2 (Intel Xeon E7-8867L)

$SPECfp®\_rate2006 = 657$
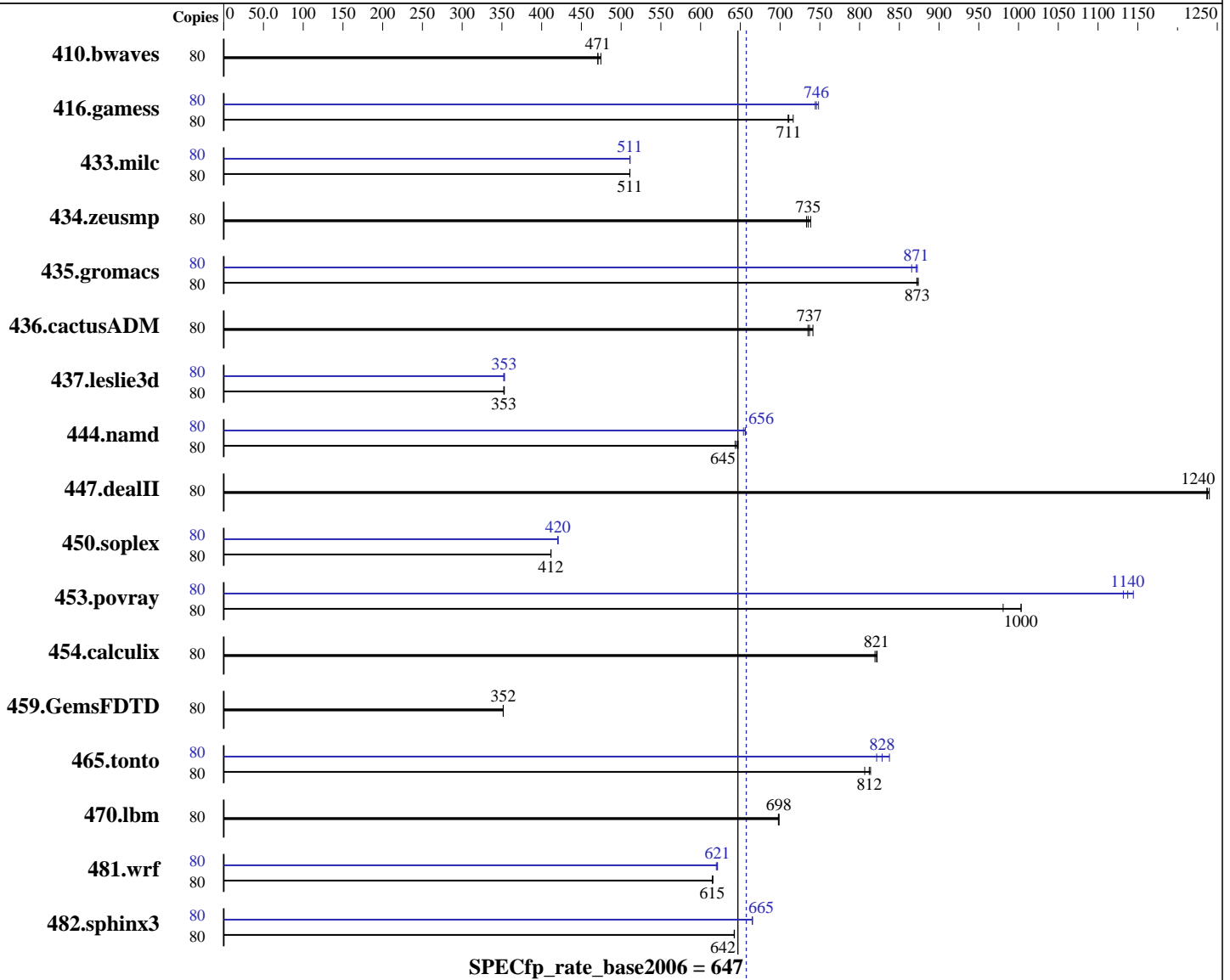
$SPECfp\_rate\_base2006 = 647$

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

Test date: Feb-2013
Hardware Availability: Oct-2012
Software Availability: Oct-2012

Benchmark	Copies	Result
410.bwaves	80	471
416.gamess	80 / 80	746 / 711
433.milc	80 / 80	511 / 511
434.zeusmp	80	735
435.gromacs	80 / 80	871 / 873
436.cactusADM	80	737
437.leslie3d	80 / 80	353 / 353
444.namd	80 / 80	656 / 645
447.dealII	80	1240
450.soplex	80 / 80	420 / 412
453.povray	80 / 80	1140 / 1000
454.calculix	80	821
459.GemsFDTD	80	352
465.tonto	80 / 80	828 / 812
470.lbm	80	698
481.wrf	80 / 80	621 / 615
482.sphinx3	80 / 80	665 / 642

SPECfp_rate_base2006 = 647

SPECfp_rate2006 = 657

Hardware

CPU Name: Intel Xeon E7-8867L
CPU Characteristics: Intel Turbo Boost Technology up to 2.53 GHz
CPU MHz: 2133
FPU: Integrated
CPU(s) enabled: 40 cores, 4 chips, 10 cores/chip, 2 threads/core
CPU(s) orderable: 2,4 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 6.2 (Santiago)
2.6.32-220.el6.x86_64
Compiler: C/C++: Version 13.0.0.079 of Intel C++ Studio XE for Linux;
Fortran: Version 13.0.0.079 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 (64 x 16 GB 4Rx4 PC3-10600R-9, ECC, running at 1066 MHz)
Disk Subsystem:	1 x 500 GB SATA, 7200 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	80	2291	475	**2309**	**471**	2310	471	80	2291	475	**2309**	**471**	2310	471
416.gamess	80	**2203**	**711**	2206	710	2186	716	80	**2101**	**746**	2105	744	2093	748
433.milc	80	1438	511	1437	511	**1437**	**511**	80	**1437**	**511**	1437	511	1437	511
434.zeusmp	80	993	733	**990**	**735**	986	738	80	993	733	**990**	**735**	986	738
435.gromacs	80	655	872	**655**	**873**	654	874	80	**656**	**871**	655	873	660	866
436.cactusADM	80	1301	735	**1297**	**737**	1290	741	80	1301	735	**1297**	**737**	1290	741
437.leslie3d	80	2133	352	**2133**	**353**	2130	353	80	**2133**	**353**	2134	352	2128	353
444.namd	80	991	647	997	643	**994**	**645**	80	981	654	**978**	**656**	978	656
447.dealII	80	740	1240	738	1240	**739**	**1240**	80	740	1240	738	1240	**739**	**1240**
450.soplex	80	1620	412	1621	412	**1621**	**412**	80	1587	420	**1587**	**420**	1586	421
453.povray	80	424	1000	434	981	**424**	**1000**	80	376	1130	372	1140	**374**	**1140**
454.calculix	80	805	819	**804**	**821**	803	822	80	805	819	**804**	**821**	803	822
459.GemsFDTD	80	2413	352	**2413**	**352**	2414	352	80	2413	352	**2413**	**352**	2414	352
465.tonto	80	967	814	976	806	**969**	**812**	80	940	838	**950**	**828**	958	821
470.lbm	80	1573	699	**1574**	**698**	1575	698	80	1573	699	**1574**	**698**	1575	698
481.wrf	80	1454	615	**1454**	**615**	1452	616	80	1442	620	1438	621	**1439**	**621**
482.sphinx3	80	**2427**	**642**	2427	643	2428	642	80	2345	665	**2345**	**665**	2344	665

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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Platform Notes

```
BIOS configuration:
Power Technology set to Custom, Performance/Watt set to Traditional
Sysinfo program /home/cpu2006/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
running on RH5885-24 Fri Feb  8 03:52:18 2013

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-L8867 @ 2.13GHz
      4 "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  : 20
      physical 0: cores 0 1 2 8 9 16 17 18 24 25
      physical 1: cores 0 1 2 8 9 16 17 18 24 25
      physical 2: cores 0 1 2 8 9 16 17 18 24 25
      physical 3: cores 0 1 2 8 9 16 17 18 24 25
   cache size : 30720 KB

From /proc/meminfo
   MemTotal:       1058803604 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux Server release 6.2 (Santiago)

From /etc/*release* /etc/*version*
   redhat-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
   system-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
   system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

uname -a:
   Linux RH5885-24 2.6.32-220.el6.x86_64 #1 SMP Wed Nov 9 08:03:13 EST 2011
   x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Feb 7 09:11

SPEC is set to: /home/cpu2006
   Filesystem     Type     Size  Used Avail Use% Mounted on
   /dev/mapper/vg_rh588524-lv_home
                  ext4     409G   86G  303G  22% /home

Additional information from dmidecode:
  Memory:
   64x Hyundai HMT42GR7BMR4C-H9 16 GB 1067 MHz 4 rank
```

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Platform Notes (Continued)

      (End of data from sysinfo program)

General Notes

    Environment variables set by runspec before the start of the run:
    LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64"

     Binaries compiled on a system with 4x Xeon E7-8870 CPU + 1024GB
     memory using RHEL6.2
     Transparent Huge Pages disabled with:
     echo never > /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
          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

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Base Portability Flags (Continued)

```
        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:
```
    -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
    -ansi-alias -opt-mem-layout-trans=3
```

C++ benchmarks:
```
    -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
    -ansi-alias -opt-mem-layout-trans=3
```

Fortran benchmarks:
```
    -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch
```

Benchmarks using both Fortran and C:
```
    -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
    -ansi-alias -opt-mem-layout-trans=3
```

Peak Compiler Invocation

C benchmarks (except as noted below):
```
    icc   -m64
```

```
    482.sphinx3: icc -m32
```

C++ benchmarks (except as noted below):
```
    icpc  -m64
```

```
     450.soplex: icpc -m32
```

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

Benchmarks using both Fortran and C:
```
    icc   -m64 ifort -m64
```

Peak Portability Flags

```
      410.bwaves: -DSPEC_CPU_LP64
```

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Software Availability: Oct-2012

Peak Portability Flags (Continued)

```
   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
```

Peak Optimization Flags

C benchmarks:

```
    433.milc: -xSSE4.2(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) -static -auto-ilp32

     470.lbm: basepeak = yes

  482.sphinx3: -xSSE4.2 -ipo -O3 -no-prec-div -opt-mem-layout-trans=3
              -unroll2
```

C++ benchmarks:

```
    444.namd: -xSSE4.2(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: -xSSE4.2(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: -xSSE4.2(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
```

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Tested by:	Huawei	**Software Availability:**	Oct-2012

Peak Optimization Flags (Continued)

416.gamess: -xSSE4.2(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: -xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch

459.GemsFDTD: basepeak = yes

465.tonto: -xSSE4.2(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: -xSSE4.2(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 -static -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: -xSSE4.2 -ipo -O3 -no-prec-div -static -auto-ilp32

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-revG.20130313.html

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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-revG.20130313.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 Thu Jul 24 14:42:18 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 12 March 2013.