SPEC® CFP2006 Result
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Huawei

Huawei CH242 V3 (Intel Xeon E7-8891 v2)

$SPECfp®\_rate2006 = \quad 1490$

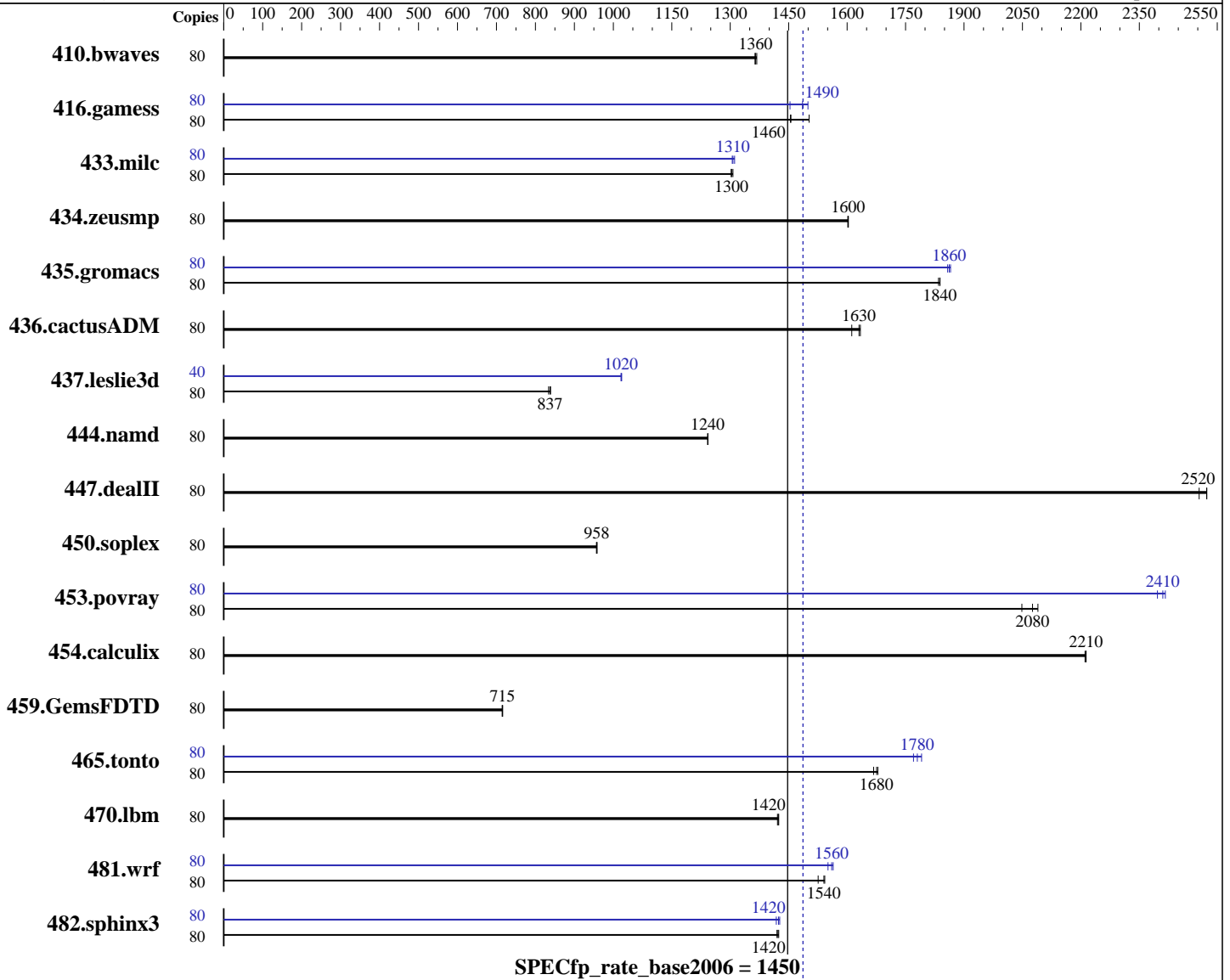$SPECfp\_rate\_base2006 = \quad 1450$

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

Test date: Jan-2015
Hardware Availability: Sep-2014
Software Availability: Sep-2014

SPECfp_rate_base2006 = 1450

SPECfp_rate2006 = 1490

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:	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 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:	No
File System:	xfs

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L3 Cache:	37.5 MB I+D on chip per chip
Other Cache:	None
Memory:	256 GB (32 x 8 GB 2Rx4 PC3-12800R-11, ECC, running at 1333 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	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Copies	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
410.bwaves	80	**797**	**1360**	795	1370	797	1360	80	**797**	**1360**	795	1370	797	1360
416.gamess	80	1043	1500	1077	1450	**1076**	**1460**	80	1078	1450	1045	1500	**1054**	**1490**
433.milc	80	564	1300	**563**	**1300**	562	1310	80	563	1310	**562**	**1310**	560	1310
434.zeusmp	80	454	1600	**454**	**1600**	454	1600	80	454	1600	**454**	**1600**	454	1600
435.gromacs	80	**311**	**1840**	311	1840	311	1830	80	**307**	**1860**	306	1870	307	1860
436.cactusADM	80	**586**	**1630**	585	1630	593	1610	80	**586**	**1630**	585	1630	593	1610
437.leslie3d	80	**898**	**837**	902	834	896	839	40	368	1020	369	1020	**369**	**1020**
444.namd	80	516	1240	**516**	**1240**	516	1240	80	516	1240	**516**	**1240**	516	1240
447.dealII	80	366	2500	363	2520	**363**	**2520**	80	366	2500	363	2520	**363**	**2520**
450.soplex	80	696	958	697	957	**697**	**958**	80	696	958	697	957	**697**	**958**
453.povray	80	208	2050	**205**	**2080**	204	2090	80	**177**	**2410**	178	2400	176	2420
454.calculix	80	**298**	**2210**	299	2210	298	2210	80	**298**	**2210**	299	2210	298	2210
459.GemsFDTD	80	**1187**	**715**	1188	715	1185	716	80	**1187**	**715**	1188	715	1185	716
465.tonto	80	472	1670	469	1680	**470**	**1680**	80	445	1770	439	1790	**442**	**1780**
470.lbm	80	772	1420	773	1420	**772**	**1420**	80	772	1420	773	1420	**772**	**1420**
481.wrf	80	586	1530	579	1540	**580**	**1540**	80	576	1550	571	1560	**573**	**1560**
482.sphinx3	80	**1096**	**1420**	1098	1420	1095	1420	80	**1095**	**1420**	1099	1420	1093	1430

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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Hardware Availability: Sep-2014
Software Availability: Sep-2014

Platform Notes

```
    BIOS configuration:
    Set Power Efficiency Mode to Custom
    Baseboard Management Controller used to adjust the fan speed to 100%
    Sysinfo program /spec/config/sysinfo.rev6914
    $Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
    running on localhost.localdomain Fri Jan 30 14:34:11 2015

    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
          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 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
       cache size : 38400 KB

    From /proc/meminfo
       MemTotal:       263797616 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 30 04:04

    SPEC is set to: /spec
```

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Platform Notes (Continued)

```
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sda2      xfs   445G  190G  255G  43% /
 Additional information from dmidecode:

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

  BIOS American Megatrends Inc. BLISV308 11/28/2014
  Memory:
   32x Micron 36KSF1G72PZ-1G6K1 8 GB 2 rank 1600 MHz, configured at 1333 MHz

 (End of data from sysinfo program)
```

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 i5-4670K CPU + 16GB
 memory using RedHat EL 7.0
 Transparent Huge Pages enabled with:
 echo always > /sys/kernel/mm/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

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Base 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
    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:
```
icpc  -m64
```

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

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Software Availability: Sep-2014

Peak Compiler Invocation (Continued)

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

Peak Portability Flags

```
Same as Base Portability Flags
```

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: -xAVX -prof-gen(pass 1) -ipo -O3 -no-prec-div
             -opt-mem-layout-trans=3 -prof-use(pass 2) -unroll2
```

C++ benchmarks:

```
   444.namd: basepeak = yes

  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) -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
```

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Peak Optimization Flags (Continued)

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-ic15.0-official-linux64.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-ic15.0-official-linux64.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.

Tested with SPEC CPU2006 v1.2.
Report generated on Tue Jun 2 13:45:04 2015 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 2 June 2015.