SPEC® CFP2006 Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)

Synergy 480 Gen10
(2.10 GHz, Intel Xeon Platinum 8170)

$SPECfp®\_rate2006 =$ Not Run
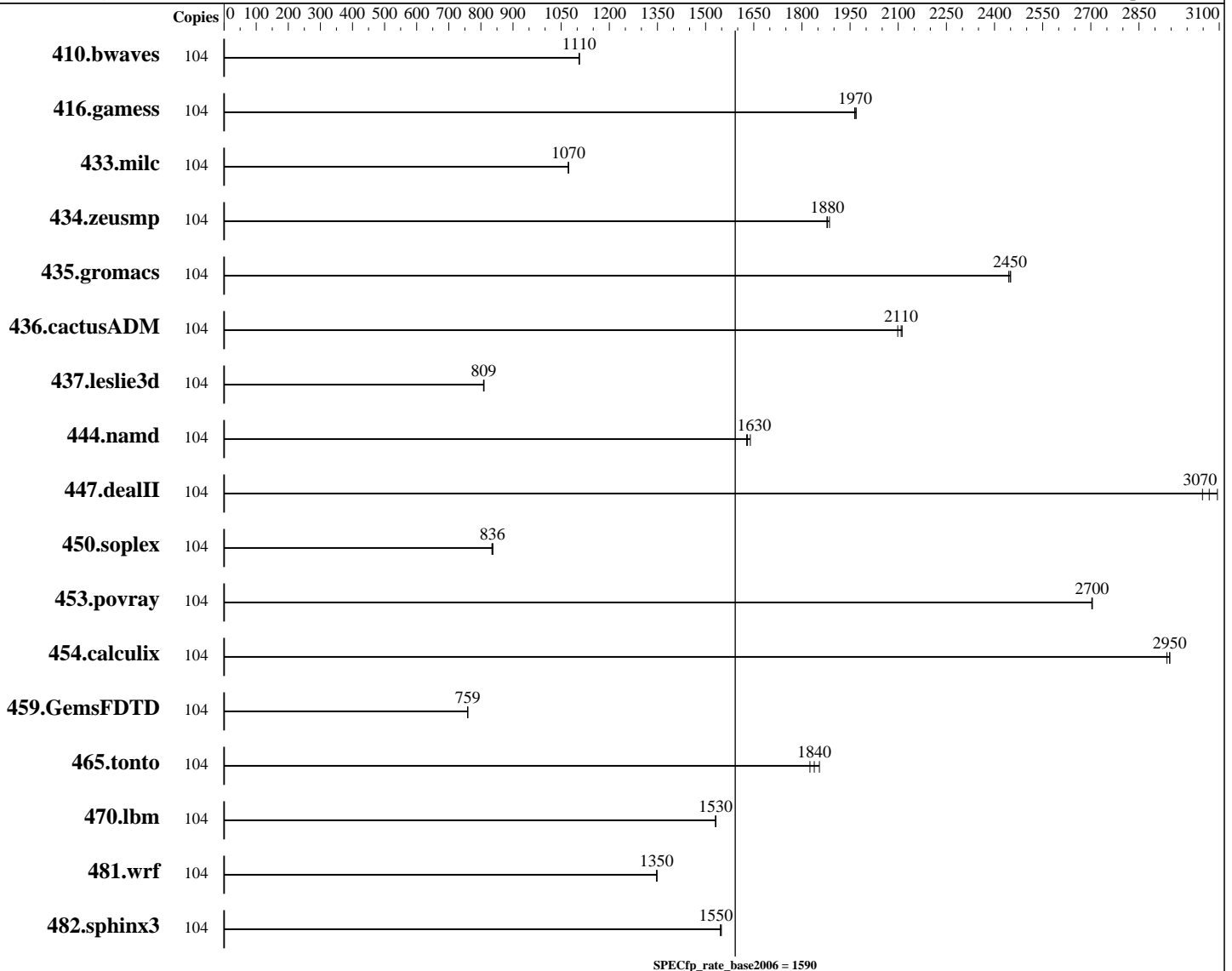
$SPECfp\_rate\_base2006 =$ 1590

CPU2006 license: 3	**Test date:** Nov-2017
Test sponsor: HPE	**Hardware Availability:** Nov-2017
Tested by: HPE	**Software Availability:** Apr-2017

Copies

Benchmark	Copies	Value
410.bwaves	104	1110
416.gamess	104	1970
433.milc	104	1070
434.zeusmp	104	1880
435.gromacs	104	2450
436.cactusADM	104	2110
437.leslie3d	104	809
444.namd	104	1630
447.dealII	104	3070
450.soplex	104	836
453.povray	104	2700
454.calculix	104	2950
459.GemsFDTD	104	759
465.tonto	104	1840
470.lbm	104	1530
481.wrf	104	1350
482.sphinx3	104	1550

SPECfp_rate_base2006 = 1590

Hardware

CPU Name:	Intel Xeon Platinum 8170
CPU Characteristics:	Intel Turbo Boost Technology up to 3.70 GHz
CPU MHz:	2100
FPU:	Integrated
CPU(s) enabled:	52 cores, 2 chips, 26 cores/chip, 2 threads/core
CPU(s) orderable:	1, 2 chip(s)
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	1 MB I+D on chip per core

Continued on next page

Software

Operating System:	SUSE Linux Enterprise Server 12 (x86_64) SP2 kernel 4.4.21-69-default
Compiler:	C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux; Fortran: Version 17.0.3.191 of Intel Fortran Compiler for Linux
Auto Parallel:	No
File System:	xfs
System State:	Run level 3 (multi-user)

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L3 Cache:	35.75 MB I+D on chip per chip	Base Pointers:	32/64-bit
Other Cache:	None	Peak Pointers:	Not Applicable
Memory:	384 GB (24 x 16 GB 2Rx8 PC4-2666V-R)	Other Software:	None
Disk Subsystem:	1 x 480 GB SATA SSD, RAID 0		
Other Hardware:	None		

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	104	**1277**	**1110**	1277	1110	1278	1110							
416.gamess	104	1034	1970	**1036**	**1970**	1037	1960							
433.milc	104	890	1070	**890**	**1070**	890	1070							
434.zeusmp	104	504	1880	502	1890	**504**	**1880**							
435.gromacs	104	**303**	**2450**	303	2450	304	2440							
436.cactusADM	104	592	2100	588	2110	**589**	**2110**							
437.leslie3d	104	1210	808	1207	810	**1209**	**809**							
444.namd	104	509	1640	**512**	**1630**	512	1630							
447.dealII	104	**388**	**3070**	390	3050	384	3090							
450.soplex	104	**1037**	**836**	1036	837	1040	834							
453.povray	104	205	2700	205	2710	**205**	**2700**							
454.calculix	104	291	2950	**291**	**2950**	292	2940							
459.GemsFDTD	104	1453	759	**1454**	**759**	1455	759							
465.tonto	104	561	1820	**557**	**1840**	552	1850							
470.lbm	104	933	1530	933	1530	**933**	**1530**							
481.wrf	104	862	1350	861	1350	**862**	**1350**							
482.sphinx3	104	**1311**	**1550**	1308	1550	1311	1550							

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"
Transparent Huge Pages enabled by default
Filesystem page cache cleared with:
 shell invocation of 'sync; echo 3 > /proc/sys/vm/drop_caches' prior to run
runspec command invoked through numactl i.e.:
 numactl --interleave=all runspec <etc>
irqbalance disabled with "service irqbalance stop"
tuned profile set wtih "tuned-adm profile throughput-performance"

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Hardware Availability: Nov-2017
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Operating System Notes (Continued)

```
VM Dirty ratio was set to 40 using "echo 40 > /proc/sys/vm/dirty_ratio"
Numa balancing was disabled using "echo 0 > /proc/sys/kernel/numa_balancing"
```

Platform Notes

```
BIOS Configuration:
 Thermal Configuration set to Maximum Cooling
 LLC Prefetch set to Enabled
 LLC Dead Line Allocation set to Disabled
 Memory Patrol Scrubbing set to Disabled
 Workload Profile set to General Throughput Compute
  Minimum Processor Idle Power Core C-State set to C1E State
 Sysinfo program /home/cpu2006/config/sysinfo.rev6993
 Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
 running on sy480_m3_sles Thu Nov 23 12:35:01 2017

 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) Platinum 8170 CPU @ 2.10GHz
       2 "physical id"s (chips)
       104 "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 : 26
       siblings  : 52
       physical 0: cores 0 1 2 3 8 9 10 11 12 13 16 17 18 19 20 21 22 24 25 26 27
       28 29
       physical 1: cores 0 1 2 3 8 9 10 11 12 13 16 17 18 19 20 21 22 24 25 26 27
       28 29
    cache size : 36608 KB

 From /proc/meminfo
    MemTotal:       395918216 kB
    HugePages_Total:        0
    Hugepagesize:        2048 kB

 From /etc/*release* /etc/*version*
    SuSE-release:
       SUSE Linux Enterprise Server 12 (x86_64)
       VERSION = 12
       PATCHLEVEL = 2
       # This file is deprecated and will be removed in a future service pack or
       release.
       # Please check /etc/os-release for details about this release.
    os-release:
       NAME="SLES"
       VERSION="12-SP2"
```

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Platform Notes (Continued)

```
        VERSION_ID="12.2"
        PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
        ID="sles"
        ANSI_COLOR="0;32"
        CPE_NAME="cpe:/o:suse:sles:12:sp2"

  uname -a:
     Linux sy480_m3_sles 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016
     (9464f67) x86_64 x86_64 x86_64 GNU/Linux

  run-level 3 Nov 23 12:32

  SPEC is set to: /home/cpu2006
     Filesystem      Type  Size  Used Avail Use% Mounted on
     /dev/sda4       xfs   405G   30G  376G   8% /home
  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 HPE I42 11/14/2017
    Memory:
    24x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2666 MHz

  (End of data from sysinfo program)
```

General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2006/lib/ia32:/home/cpu2006/lib/intel64:/home/cpu2006/sh10.2"

 Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
 memory using Redhat Enterprise Linux 7.2
```

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:

```
    -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
    -qopt-mem-layout-trans=3
```

C++ benchmarks:

```
    -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
    -qopt-mem-layout-trans=3
```

Fortran benchmarks:

```
    -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
```

Benchmarks using both Fortran and C:

```
    -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
    -qopt-mem-layout-trans=3
```

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.html
http://www.spec.org/cpu2006/flags/HPE-Platform-Flags-Intel-V1.2-SKX-revH.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.xml
http://www.spec.org/cpu2006/flags/HPE-Platform-Flags-Intel-V1.2-SKX-revH.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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