SPEC® CFP2006 Result
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Hewlett Packard Enterprise
(Test Sponsor: HPE)

Synergy 480 Gen10
(3.00 GHz, Intel Xeon Gold 6136)

$SPECfp^{®}\_rate2006 =$ Not Run

$SPECfp\_rate\_base2006 =$ 1200

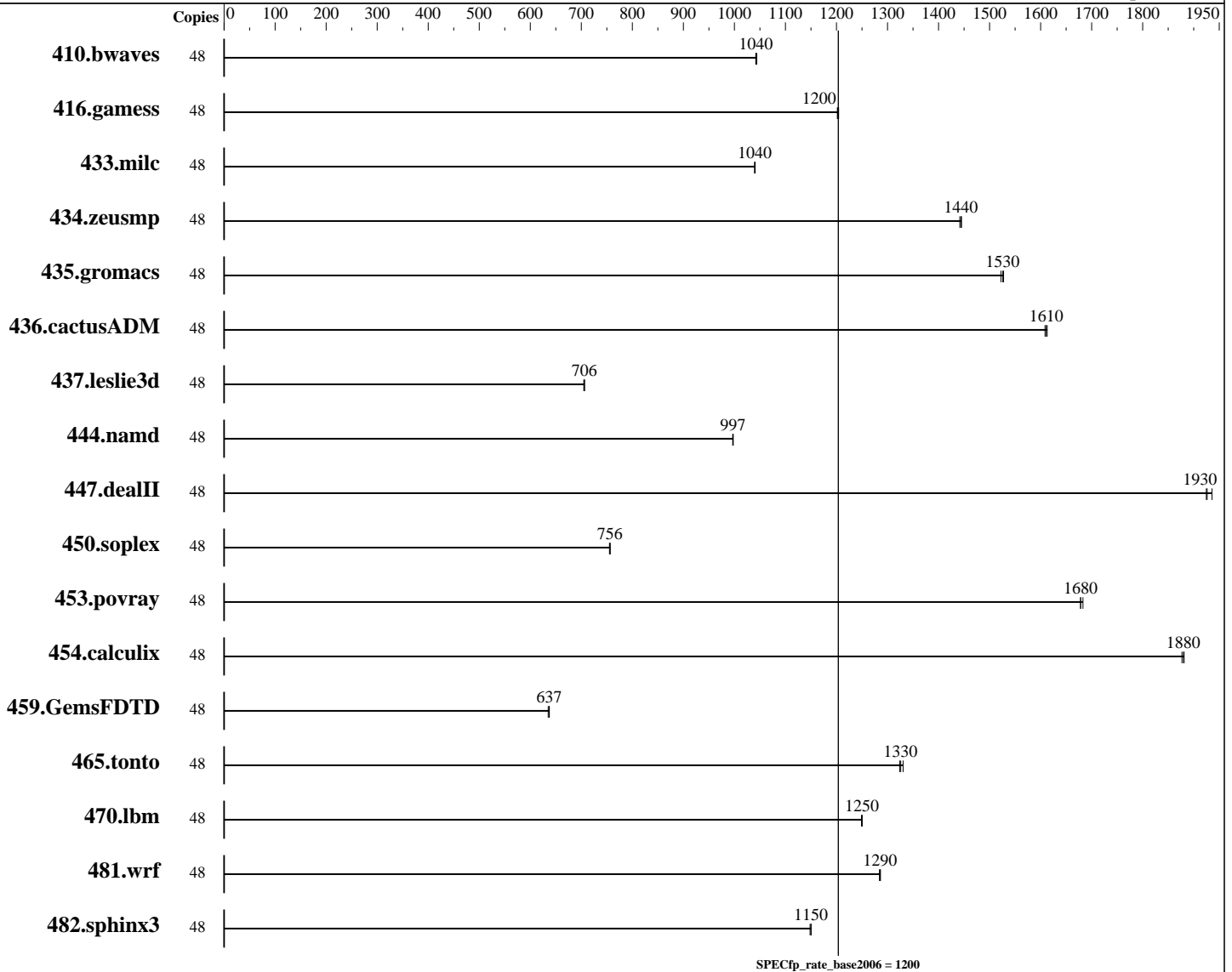|	
CPU2006 license: 3	**Test date:** Nov-2017
Test sponsor: HPE	**Hardware Availability:** Oct-2017
Tested by: HPE	**Software Availability:** Apr-2017

Copies

Benchmark	Copies	Result
410.bwaves	48	1040
416.gamess	48	1200
433.milc	48	1040
434.zeusmp	48	1440
435.gromacs	48	1530
436.cactusADM	48	1610
437.leslie3d	48	706
444.namd	48	997
447.dealII	48	1930
450.soplex	48	756
453.povray	48	1680
454.calculix	48	1880
459.GemsFDTD	48	637
465.tonto	48	1330
470.lbm	48	1250
481.wrf	48	1290
482.sphinx3	48	1150

SPECfp_rate_base2006 = 1200

Hardware
CPU Name: Intel Xeon Gold 6136
CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz
CPU MHz: 3000
FPU: Integrated
CPU(s) enabled: 24 cores, 2 chips, 12 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:	24.75 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 960 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	48	**_626_**	**_1040_**	625	1040	626	1040							
416.gamess	48	**_782_**	**_1200_**	780	1200	782	1200							
433.milc	48	424	1040	423	1040	**_424_**	**_1040_**							
434.zeusmp	48	303	1440	**_303_**	**_1440_**	302	1450							
435.gromacs	48	224	1530	**_225_**	**_1530_**	225	1520							
436.cactusADM	48	357	1610	**_356_**	**_1610_**	356	1610							
437.leslie3d	48	**_639_**	**_706_**	639	706	640	705							
444.namd	48	386	998	386	997	**_386_**	**_997_**							
447.dealII	48	284	1940	285	1920	**_285_**	**_1930_**							
450.soplex	48	530	755	529	757	**_530_**	**_756_**							
453.povray	48	152	1680	**_152_**	**_1680_**	152	1680							
454.calculix	48	**_211_**	**_1880_**	211	1880	211	1880							
459.GemsFDTD	48	**_799_**	**_637_**	802	635	799	637							
465.tonto	48	357	1320	355	1330	**_356_**	**_1330_**							
470.lbm	48	528	1250	**_528_**	**_1250_**	528	1250							
481.wrf	48	417	1290	418	1280	**_417_**	**_1290_**							
482.sphinx3	48	815	1150	**_813_**	**_1150_**	813	1150							

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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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 linux-vjuj Wed Nov 29 15:22:18 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) Gold 6136 CPU @ 3.00GHz
           2 "physical id"s (chips)
           48 "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 8 9 11 17 18 19 20
           physical 1: cores 0 1 2 3 4 9 10 16 18 19 25 26
        cache size : 25344 KB

     From /proc/meminfo
        MemTotal:       395926124 kB
        HugePages_Total:        0
        Hugepagesize:       2048 kB

     /usr/bin/lsb_release -d
        SUSE Linux Enterprise Server 12 SP2

     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"
```

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Platform Notes (Continued)

```
        VERSION="12-SP2"
        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 linux-vjuj 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 28 17:00

  SPEC is set to: /home/cpu2006
     Filesystem      Type  Size  Used Avail Use% Mounted on
     /dev/sda4       xfs   852G   27G  825G   4% /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 09/27/2017
     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

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Base Compiler Invocation (Continued)

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
         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

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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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