Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL560 Gen10
(2.60 GHz, Intel Xeon Gold 6132)

CPU2006 license: 3
Test sponsor: HPE
Tested by: HPE

SPECfp\_rate2006 = Not Run
SPECfp\_rate\_base2006 = 2430

Test date:
Tested by:

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
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<tr>
<td>410.bwaves</td>
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<tr>
<td>482.sphinx3</td>
<td>112</td>
</tr>
</tbody>
</table>

Hardware

CPU Name: Intel Xeon Gold 6132
CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz
CPU MHZ: 2600
FPU: Integrated
CPU(s) enabled: 56 cores, 4 chips, 14 cores/chip, 2 threads/core
CPU(s) orderable: 1, 2, 4 chip(s)
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 1 MB I+D on chip per core

Software

Operating System: SUSE Linux Enterprise Server 12 (x86_64) SP2
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)
**SPEC CFP2006 Result**

**Hewlett Packard Enterprise**

(2.60 GHz, Intel Xeon Gold 6132)

**SPEC CFP2006 Result**

**Copyright 2006-2018 Standard Performance Evaluation Corporation**

**HPE**

**ProLiant DL560 Gen10**

**SPECfp_rate2006 = Not Run**

**SPECfp_rate_base2006 = 2430**

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**CPU2006 license:** 3

**Test sponsor:** HPE

**Tested by:** HPE

**Test date:** Dec-2017

**Hardware Availability:** Oct-2017

**Software Availability:** Apr-2017

**L3 Cache:** 19.25 MB I+D on chip per chip

**Other Cache:** None

**Memory:** 384 GB (48 x 8 GB 2Rx8 PC4-2666V-R)

**Disk Subsystem:** 1 x 960 GB SATA SSD, RAID 0

**Other Hardware:** None

---

**Base Pointers:** 32/64-bit

**Peak Pointers:** Not Applicable

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**Results Table**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
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</tbody>
</table>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

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**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
- numactl --interleave=all runspec <etc>
- irqbalance disabled with "service irqbalance stop"

tuned profile set with "tuned-adm profile throughput-performance"

Continued on next page
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SPECfp_rate_base2006 = 2430

CPU2006 license: 3
Test date: Dec-2017
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Software Availability: Apr-2017

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
Stale A to S set to Enabled
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)
runtime on linux-mcua Tue Dec 5 16:03:35 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 6132 CPU @ 2.60GHz
  4 "physical id"s (chips)
  112 "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 : 14
siblings : 28
physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
physical 2: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
physical 3: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
cache size : 19712 KB

From /proc/meminfo
MemTotal: 395915992 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"

Continued on next page
SPEC CFP2006 Result

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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-mcua 4.4.21-68-default #1 SMP Tue Oct 18 18:19:37 UTC 2016
(63cf368) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Dec 5 11:18
SPEC is set to: /home/cpu2006

Filesystem     Type  Size  Used Avail Use% Mounted on
/dev/sdb4      xfs   852G  122G  731G  15% /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 U34 09/29/2017
Memory:
48x UNKNOWN NOT AVAILABLE 8 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

Continued on next page
## SPEC CFP2006 Result

**Hewlett Packard Enterprise**  
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ProLiant DL560 Gen10  
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**CPU2006 license:** 3  
**Test date:** Dec-2017  
**Hardware Availability:** Oct-2017  
**Test sponsor:** HPE  
**Software Availability:** Apr-2017  
**Tested by:** HPE

### Base Compiler Invocation (Continued)

Benchmarks using both Fortran and C:

```bash
ingcc -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
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- 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/HPE-Platform-Flags-Intel-V1.2-SKX-revH.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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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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