# SPEC® CINT2006 Result

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
ProLiant DL360 Gen10  
(2.00 GHz, Intel Xeon Gold 6138)

<table>
<thead>
<tr>
<th>Test Date:</th>
<th>Nov-2017</th>
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<tbody>
<tr>
<td>Hardware Availability:</td>
<td>Oct-2017</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Sep-2017</td>
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### SPECint®_rate2006 = Not Run  
SPECint_rate_base2006 = 1790

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

<table>
<thead>
<tr>
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<tr>
<td>401.bzip2</td>
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<td>456.hmmer</td>
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<tr>
<td>483.xalancbmk</td>
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</table>

#### Hardware

- **CPU Name:** Intel Xeon Gold 6138  
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.70 GHz  
- **CPU MHz:** 2000  
- **FPU:** Integrated  
- **CPU(s) enabled:** 40 cores, 2 chips, 20 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  
- **L3 Cache:** 27.5 MB I+D on chip per chip  
- **Memory:** 192 GB (24 x 8 GB 2Rx8 PC4-2666V-R)  
- **Other Cache:** None  
- **Disk Subsystem:** 1 x 480 GB SATA SSD, RAID 0  
- **Other Hardware:** None

#### Software

- **Operating System:** SUSE Linux Enterprise Server 12 (x86_64) SP2  
  Kernel 4.4.21-69-default  
- **Compiler:** C/C++: Version 18.0.0.128 of Intel C/C++ Compiler for Linux  
- **Auto Parallel:** No  
- **File System:** xfs  
- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 32-bit  
- **Peak Pointers:** Not Applicable  
- **Other Software:** Microquill SmartHeap V10.2

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Standard Performance Evaluation Corporation  
info@spec.org  
http://www.spec.org/
## Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
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</table>

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 with "tuned-adm profile throughput-performance"
- 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
- Sysinfo program /cpu2006/config/sysinfo.rev6993

Continued on next page
Platform Notes (Continued)

Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on linux-0s5n Sun Nov 12 09:58:08 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 6138 CPU @ 2.00GHz
                2 "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 : 20
   siblings : 40
   physical 0: cores 0 1 2 3 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
   physical 1: cores 0 1 2 3 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
   cache size : 28160 KB

From /proc/meminfo
   MemTotal:       197547324 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"
      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-0s5n 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 10 20:28

SPEC is set to: /cpu2006
   Filesystem     Type Size Used Avail Use% Mounted on
   /dev/sdb3      xfs  407G  144G  263G  36% /home
Additional information from dmidecode:
   Continued on next page
**SPEC CINT2006 Result**

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**Test date:** Nov-2017  
**Hardware Availability:** Oct-2017  
**Software Availability:** Sep-2017

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**Platform Notes (Continued)**

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 U32 09/29/2017  
Memory:  
24x UNKNOWN NOT AVAILABLE 8 GB 2 rank 2666 MHz

(End of data from sysinfo program)

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**General Notes**

Environment variables set by `runcp` before the start of the run:  
LD_LIBRARY_PATH = "/cpu2006/libs/32:/cpu2006/libs/64:/cpu2006/sh10.2"

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

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**Base Compiler Invocation**

C benchmarks:  
`icc -m32 -L/opt/intel/compilers_and_libraries_2018.0.082/linux/lib/ia32`

C++ benchmarks:  
`icpc -m32 -L/opt/intel/compilers_and_libraries_2018.0.082/linux/lib/ia32`

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**Base Portability Flags**

400.perlbench: `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32`  
401.bzip2: `-D_FILE_OFFSET_BITS=64`  
403.gcc: `-D_FILE_OFFSET_BITS=64`  
429.mcf: `-D_FILE_OFFSET_BITS=64`  
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456.hmmer: `-D_FILE_OFFSET_BITS=64`  
458.sjeng: `-D_FILE_OFFSET_BITS=64`  
462.libquantum: `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX`  
464.h264ref: `-D_FILE_OFFSET_BITS=64`  
471.omnetpp: `-D_FILE_OFFSET_BITS=64`  
473.astar: `-D_FILE_OFFSET_BITS=64`  
483.xalancbmk: `-D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX`
Base Optimization Flags

C benchmarks:
  -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
  -qopt-mem-layout-trans=3

C++ benchmarks:
  -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
  -qopt-mem-layout-trans=3 -Wl,-z,muldefs -L/cpu2006/sh10.2 -lsmartheap

Base Other Flags

C benchmarks:
  403.gcc: -Dalloca=_alloca

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-revF.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-revF.xml

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