## SPECint® CINT2006 Result

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
ProLiant DL560 Gen10  
(2.1 GHz, Intel Xeon Platinum 8176)

<table>
<thead>
<tr>
<th>Copy</th>
<th>SPECint_rate_base2006</th>
<th>224</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>3500</td>
<td>7000</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>2130</td>
<td>1</td>
</tr>
<tr>
<td>403.gcc</td>
<td>3350</td>
<td></td>
</tr>
<tr>
<td>429.mcf</td>
<td>5990</td>
<td></td>
</tr>
<tr>
<td>445.gobmk</td>
<td>2990</td>
<td></td>
</tr>
<tr>
<td>456.hmmer</td>
<td>6040</td>
<td></td>
</tr>
<tr>
<td>458.sjeng</td>
<td>3180</td>
<td></td>
</tr>
<tr>
<td>462.libquantum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>464.h264ref</td>
<td>5390</td>
<td></td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>2240</td>
<td></td>
</tr>
<tr>
<td>473.astar</td>
<td>2450</td>
<td></td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>4750</td>
<td></td>
</tr>
</tbody>
</table>

**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)  
Base Pointers: 32-bit  
Peak Pointers: Not Applicable  
Other Software: Microquill SmartHeap V10.2

**Hardware**  
CPU Name: Intel Xeon Platinum 8176  
CPU Characteristics: Intel Turbo Boost Technology up to 3.80 GHz  
CPU MHz: 2100  
FPU: Integrated  
CPU(s) enabled: 112 cores, 4 chips, 28 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  
L3 Cache: 38.5 MB I+D on chip per chip  
Other Cache: None  
Memory: 768 GB (48 x 16 GB 2Rx8 PC4-2666V-R)  
Disk Subsystem: 2 x 480 GB SATA SSD, RAID 0  
Other Hardware: None

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

---

Copyright 2006-2017 Standard Performance Evaluation Corporation

info@spec.org  
http://www.spec.org/
Hewlett Packard Enterprise  
(Test Sponsor: HPE)  
ProLiant DL560 Gen10  
(2.10 GHz, Intel Xeon Platinum 8176)  

SPEC CINT2006 Result  

SPECint_rate2006 = Not Run  
SPECint_rate_base2006 = 4600

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

Test date: Nov-2017  
Hardware Availability: Oct-2017  
Software Availability: Apr-2017

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>400.perlbench</td>
<td>224</td>
<td>625</td>
<td>3500</td>
<td>626</td>
<td>3500</td>
<td>625</td>
<td>3500</td>
<td>401.bzip2</td>
<td>224</td>
<td>1014</td>
<td>2130</td>
<td>1021</td>
<td>2120</td>
<td>1005</td>
</tr>
<tr>
<td>403.gcc</td>
<td>224</td>
<td>538</td>
<td>3350</td>
<td>537</td>
<td>3360</td>
<td>539</td>
<td>3350</td>
<td>429.mcf</td>
<td>224</td>
<td>340</td>
<td>6000</td>
<td>341</td>
<td>5990</td>
<td>343</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>224</td>
<td>787</td>
<td>2990</td>
<td>786</td>
<td>2990</td>
<td>786</td>
<td>2990</td>
<td>456.hmmer</td>
<td>224</td>
<td>346</td>
<td>6040</td>
<td>346</td>
<td>6040</td>
<td>347</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>224</td>
<td>855</td>
<td>3170</td>
<td>853</td>
<td>3180</td>
<td>853</td>
<td>3180</td>
<td>462.libquantum</td>
<td>224</td>
<td>61.6</td>
<td>75400</td>
<td>61.6</td>
<td>75300</td>
<td>61.7</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>224</td>
<td>920</td>
<td>5390</td>
<td>918</td>
<td>5400</td>
<td>923</td>
<td>5370</td>
<td>471.omnetpp</td>
<td>224</td>
<td>626</td>
<td>2240</td>
<td>626</td>
<td>2240</td>
<td>626</td>
</tr>
<tr>
<td>473.astar</td>
<td>224</td>
<td>641</td>
<td>2450</td>
<td>641</td>
<td>2450</td>
<td>641</td>
<td>2450</td>
<td>483.xalancbmk</td>
<td>224</td>
<td>326</td>
<td>4740</td>
<td>326</td>
<td>4750</td>
<td>325</td>
</tr>
</tbody>
</table>

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  
runcspec 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 /home/cpu2006/config/sysinfo.rev6993
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL560 Gen10
(2.10 GHz, Intel Xeon Platinum 8176)

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

SPECint_rate2006 = Not Run
SPECint_rate_base2006 = 4600

Platform Notes (Continued)

Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on linux-smfo Thu Nov 16 14:40:19 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 8176 CPU @ 2.10GHz
  4 "physical id"s (chips)
  224 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The
following excerpts from /proc/cpuinfo might not be reliable. Use with
cautions.)
cpu cores : 28
siblings : 56
physical 0: cores 0 1 2 3 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26
  27 28 29 30
physical 1: cores 0 1 2 3 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26
  27 28 29 30
physical 2: cores 0 1 2 3 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26
  27 28 29 30
physical 3: cores 0 1 2 3 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26
  27 28 29 30
cache size : 39424 KB

From /proc/meminfo
MemTotal:  792260908 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"
    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:
SPEC CINT2006 Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL560 Gen10
(2.10 GHz, Intel Xeon Platinum 8176)

SPECint\_rate2006 = Not Run
SPECint\_rate\_base2006 = 4600

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

Platform Notes (Continued)

Linux linux-smf0 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 16 14:31

SPEC is set to: /home/cpu2006
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 xfs 852G 165G 687G 20% /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 16 GB 2 rank 2666 MHz

(Base Compiler Invocation)

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 -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32

C++ benchmarks:
icpc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32

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
445.gobmk: -D\_FILE\_OFFSET\_BITS=64
456.hmmer: -D\_FILE\_OFFSET\_BITS=64
458.sjeng: -D\_FILE\_OFFSET\_BITS=64

Continued on next page
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL560 Gen10
(2.10 GHz, Intel Xeon Platinum 8176)

SPECint_rate2006 = Not Run
SPECint_rate_base2006 = 4600

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

Test date: Nov-2017
Hardware Availability: Oct-2017
Software Availability: Apr-2017

Base Portability Flags (Continued)
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/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-revG.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-revG.xml

SPEC and SPECint are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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 Dec 12 17:07:06 2017 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 12 December 2017.