Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant ML30 Gen9
(3.90 GHz, Intel Xeon E3-1280 v6)

SPECint\_rate2006 = Not Run
SPECint\_rate_base2006 = 272

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

<table>
<thead>
<tr>
<th>SPECint_rate_base2006</th>
<th>272</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name:</td>
<td>Intel Xeon E3-1280 v6</td>
</tr>
<tr>
<td>CPU Characteristics:</td>
<td>Intel Turbo Boost Technology up to 4.20 GHz</td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>3900</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>4 cores, 1 chip, 4 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td>1 chips</td>
</tr>
<tr>
<td>Primary Cache:</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache:</td>
<td>256 KB I+D on chip per core</td>
</tr>
<tr>
<td>L3 Cache:</td>
<td>8 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache:</td>
<td>None</td>
</tr>
<tr>
<td>Memory:</td>
<td>64 GB (4 x 16 GB 2Rx8 PC4-2400T-E)</td>
</tr>
<tr>
<td>Disk Subsystem:</td>
<td>1 x 1 TB SATA 7.2 K RPM, RAID 0</td>
</tr>
<tr>
<td>Other Hardware:</td>
<td>None</td>
</tr>
<tr>
<td>Operating System:</td>
<td>Red Hat Enterprise Linux Server 7.3</td>
</tr>
<tr>
<td>Compiler:</td>
<td>C/C++: Version 17.0.0.098 of Intel C/C++ Compiler for Linux</td>
</tr>
<tr>
<td>Auto Parallel:</td>
<td>No</td>
</tr>
<tr>
<td>File System:</td>
<td>xfs</td>
</tr>
<tr>
<td>System State:</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers:</td>
<td>32-bit</td>
</tr>
<tr>
<td>Peak Pointers:</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Other Software:</td>
<td>Microquill SmartHeap V10.2</td>
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</table>
## 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>
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<tbody>
<tr>
<td>400.perlbench</td>
<td>8</td>
<td>364</td>
<td>215</td>
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<td>363</td>
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<td>401.bzip2</td>
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<td>123</td>
<td>630</td>
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<td>626</td>
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<td>403.gcc</td>
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<td>222</td>
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<td>429.mcf</td>
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<td>330</td>
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<td>328</td>
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<td>445.gobmk</td>
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<td>180</td>
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<td>464</td>
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<td>456.hmmer</td>
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<td>444</td>
<td>169</td>
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<td>169</td>
<td>442</td>
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<td>458.sjeng</td>
<td>8</td>
<td>511</td>
<td>189</td>
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<td>189</td>
<td>511</td>
<td>189</td>
<td></td>
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<tr>
<td>462.libquantum</td>
<td>8</td>
<td>58.0</td>
<td>2860</td>
<td>58.2</td>
<td>2850</td>
<td>58.1</td>
<td>2800</td>
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<tr>
<td>464.h264ref</td>
<td>8</td>
<td>509</td>
<td>348</td>
<td>504</td>
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<tr>
<td>471.omnetpp</td>
<td>8</td>
<td>414</td>
<td>121</td>
<td>415</td>
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<td>414</td>
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<td>473.astar</td>
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<td>483.xalancbmk</td>
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<td>319</td>
<td>174</td>
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<td>174</td>
<td>318</td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

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

## Submit Notes

The taskset mechanism was used to bind copies to processors. The config file option 'submit' was used to generate taskset 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:
echo 1 > /proc/sys/vm/drop_caches
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>

## Platform Notes

BIOS Configuration:
- Power Profile set to Custom
- Minimum Processor Idle Power Core C-State set to C3 State
- Minimum Processor Idle Power Package C-State set to No Package State
- Energy/Performance Bias set to Maximum Performance
- Thermal Configuration set to Maximum Cooling
- Processor Power and Utilization Monitoring set to Disabled
- Memory Double Refresh Rate set to 1x Refresh
- NUMA Group Size Optimization set to Flat

Sysinfo program /hpe/cpu2006/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
SPEC CINT2006 Result

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ProLiant ML30 Gen9
(3.90 GHz, Intel Xeon E3-1280 v6)

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

Test date: Mar-2017
Hardware Availability: May-2017
Software Availability: Nov-2016

Platform Notes (Continued)

running on ML30-G9-RHEL7.3 Mon Mar 27 01:40:29 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) CPU E3-1280 v6 @ 3.90GHz
  1 "physical id"s (chips)
  8 "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 : 4
siblings : 8
physical 0: cores 0 1 2 3
cache size : 8192 KB

From /proc/meminfo
MemTotal: 65585572 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release*/etc/*version*
os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.3 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.3"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.3 (Maipo)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.3:GA:server"
redhat-release: Red Hat Enterprise Linux release 7.3 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)

uname -a:
Linux ML30-G9-RHEL7.3 3.10.0-514.el7.x86_64 #1 SMP Wed Oct 19 11:24:13 EDT 2016 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Mar 25 11:22

SPEC is set to: /hpe/cpu2006
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda5 xfs 500G 126G 375G 26% /

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.

Continued on next page
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Platform Notes (Continued)

BIOS HP U23 01/17/2017
Memory:
4x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2400 MHz

(End of data from sysinfo program)

General Notes

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

Binaries compiled on a system with 1x Intel Core i7-4790K 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
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-AVX2 -ipo -O3 -no-prec-div -no-prec-sqrt -static
   -qopt-prefetch -qopt-mem-layout-trans=3 -auto-ilp32
   -complex-limited-range -qopt-prefetch-issue-excl-hint -ansi-alias
   -unroll-aggressive -use-intel-optimized-headers -qopt-matmul
   -qopt-subscript-in-range -qopt-assume-safe-padding -qopt-calloc

Continued on next page
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Base Optimization Flags (Continued)

C benchmarks (continued):
- -inline-calloc
- -qopt-malloc-options=3

C++ benchmarks:
- -xCORE-AVX2
- -ipo
- -O3
- -no-prec-div
- -qopt-prefetch
- -qopt-mem-layout-trans=3
- -use-intel-optimized-headers
- -unroll-aggressive
- -qopt-calloc
- -inline-calloc
- -qopt-malloc-options=3
- -Wl,-z,muldefs
- -L/hpe/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/HPE-Compiler-Flags-Intel-V1.2-HSW-revI.html
http://www.spec.org/cpu2006/flags/HPE-Platform-Flags-Intel-V1.2-HSW-revG.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/HPE-Compiler-Flags-Intel-V1.2-HSW-revI.xml
http://www.spec.org/cpu2006/flags/HPE-Platform-Flags-Intel-V1.2-HSW-revG.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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