## SPEC® CINT2006 Result

### Hewlett-Packard Company

**ProLiant BL660c Gen9**  
(2.90 GHz, Intel Xeon E5-4655 v3)

**SPEClnt®2006 = 61.8**  
**SPEClnt_base2006 = 59.4**

<table>
<thead>
<tr>
<th>Test date:</th>
<th>Apr-2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Availability:</td>
<td>Jun-2015</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Oct-2014</td>
</tr>
</tbody>
</table>

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<tr>
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<th>Hewlett-Packard Company</th>
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<td>Tested by:</td>
<td>Hewlett-Packard Company</td>
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</table>

<table>
<thead>
<tr>
<th>CPU2006 license:</th>
<th>3</th>
</tr>
</thead>
</table>

### Hardware

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>Intel Xeon E5-4655 v3</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Characteristics:</td>
<td>Intel Turbo Boost Technology up to 3.20 GHz</td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>2900</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>24 cores, 4 chips, 6 cores/chip</td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td>2,4 chip</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>30 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache:</td>
<td>None</td>
</tr>
<tr>
<td>Memory:</td>
<td>512 GB (32 x 16 GB 2Rx4 PC4-2133P-R)</td>
</tr>
<tr>
<td>Disk Subsystem:</td>
<td>1 x 400 GB SAS SSD, RAID 0</td>
</tr>
<tr>
<td>Other Hardware:</td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Operating System:</th>
<th>SUSE Linux Enterprise Server 12 (x86_64)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler:</td>
<td>C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux</td>
</tr>
<tr>
<td>Auto Parallel:</td>
<td>Yes</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>32/64-bit</td>
</tr>
<tr>
<td>Peak Pointers:</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Other Software:</td>
<td>Microquill SmartHeap V10.0</td>
</tr>
</tbody>
</table>
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ProLiant BL660c Gen9
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Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Base</td>
<td>Peak</td>
<td>Base</td>
<td>Peak</td>
<td>Base</td>
<td>Peak</td>
<td>Base</td>
<td>Peak</td>
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<tr>
<td>400.perlbench</td>
<td>260</td>
<td>37.5</td>
<td>260</td>
<td>37.5</td>
<td>261</td>
<td>37.4</td>
<td>228</td>
<td>42.8</td>
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<tr>
<td>401.bzip2</td>
<td>420</td>
<td>23.0</td>
<td>422</td>
<td>22.8</td>
<td>420</td>
<td>23.0</td>
<td>416</td>
<td>23.2</td>
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<tr>
<td>403.gcc</td>
<td>237</td>
<td>33.9</td>
<td>238</td>
<td>33.8</td>
<td>238</td>
<td>33.9</td>
<td>236</td>
<td>34.2</td>
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<tr>
<td>429.mcf</td>
<td>150</td>
<td>60.8</td>
<td>153</td>
<td>59.7</td>
<td>152</td>
<td>60.2</td>
<td>151</td>
<td>60.3</td>
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<tr>
<td>445.gobmk</td>
<td>389</td>
<td>27.0</td>
<td>389</td>
<td>27.0</td>
<td>389</td>
<td>27.0</td>
<td>389</td>
<td>27.0</td>
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<tr>
<td>456.hmmer</td>
<td>147</td>
<td>63.4</td>
<td>147</td>
<td>63.5</td>
<td>147</td>
<td>63.5</td>
<td>147</td>
<td>63.4</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>381</td>
<td>31.7</td>
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<td>31.8</td>
<td>38</td>
<td>31.8</td>
<td>380</td>
<td>31.8</td>
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<tr>
<td>462.libquantum</td>
<td>3.52</td>
<td>5890</td>
<td>3.55</td>
<td>5830</td>
<td>3.55</td>
<td>5840</td>
<td>3.52</td>
<td>5890</td>
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<tr>
<td>464.h264ref</td>
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<td>49.0</td>
<td>453</td>
<td>48.8</td>
<td>451</td>
<td>49.1</td>
<td>451</td>
<td>49.0</td>
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<tr>
<td>471.cghempp</td>
<td>172</td>
<td>36.4</td>
<td>177</td>
<td>35.3</td>
<td>171</td>
<td>36.6</td>
<td>125</td>
<td>50.0</td>
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<tr>
<td>473.astar</td>
<td>225</td>
<td>31.2</td>
<td>225</td>
<td>31.1</td>
<td>224</td>
<td>31.3</td>
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<td>31.2</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>111</td>
<td>62.2</td>
<td>111</td>
<td>62.4</td>
<td>110</td>
<td>62.9</td>
<td>111</td>
<td>62.2</td>
</tr>
</tbody>
</table>

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

Submit Notes
The config file option 'submit' was used.

Operating System Notes
Stack size set to unlimited using "ulimit -s unlimited"
Transparent Huge Pages enabled with:
  echo always > /sys/kernel/mm/transparent_hugepage/enabled

Platform Notes
BIOS Configuration:
  Intel Hyperthreading Options set to Disabled
  HP Power Profile set to Custom
  HP Power Regulator to HP Static High Performance Mode
  Minimum Processor Idle Power Core State set to C6 State
  Minimum Processor Idle Power Package State set to Package C6 (retention) State
  Energy/Performance Bias set to Maximum Performance
  Collaborative Power Control set to Disabled
  Thermal Configuration set to Maximum Cooling
  Processor Power and Utilization Monitoring set to Disabled
  Memory Refresh Rate set to 1x Refresh
Sysinfo program /home/cpu2006/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 $$ e3fbb8667b5a285932ceab81e28219e1
running on bl660cgen9sles12cpu Wed Apr 29 20:59:56 2015

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:
Continued on next page
Hewlett-Packard Company
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Platform Notes (Continued)

From /proc/cpuinfo
model name : Intel(R) Xeon(R) CPU E5-4655 v3 @ 2.90GHz
  4 "physical id"s (chips)
  24 "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 : 6
siblings : 6
  physical 0: cores 1 3 5 9 11 12
  physical 1: cores 1 3 5 9 11 12
  physical 2: cores 1 3 5 9 11 12
  physical 3: cores 1 3 5 9 11 12
cache size : 30720 KB

From /proc/meminfo
MemTotal: 529312952 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
SuSE-release:
  SUSE Linux Enterprise Server 12 (x86_64)
  VERSION = 12
  PATCHLEVEL = 0
  # 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"
  VERSION_ID="12"
  PRETTY_NAME="SUSE Linux Enterprise Server 12"
  ID="sles"
  ANSI_COLOR="0;32"
  CPE_NAME="cpe:/o:suse:sles:12"
uname -a:
  Linux bl660cgen9sles12cpu 3.12.28-4-default #1 SMP Thu Sep 25 17:02:34 UTC
  2014 (9879bd4) x86_64 x86_64 x86_64 GNU/Linux
run-level 3 Apr 29 16:00

Warning: Use caution when you interpret this section. The 'dmidecode' program
reads system data which is "intended to allow hardware to be accurately
Continued on next page
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Platform Notes (Continued)

determined”, but the intent may not be met, as there are frequent changes to
hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS HP I38 03/05/2015
Memory:
4x HP 752369-081 16 GB 2 rank 2133 MHz
28x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2133 MHz

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/home/cpu2006/libs/32:/home/cpu2006/libs/64:/home/cpu2006/sh"
OMP_NUM_THREADS = "24"

Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB
memory using RedHat EL 7.0

Base Compiler Invocation

C benchmarks:
icc -m64

C++ benchmarks:
icpc -m64

Base Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
403 gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
464.h264ref: -DSPEC_CPU_LP64
471.omnetpp: -DSPEC_CPU_LP64
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
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Base Optimization Flags

C benchmarks:
- -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32

C++ benchmarks:
- -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
- -Wl,-z,muldefs -L/sh -lsmartheap64

Base Other Flags

C benchmarks:
- 403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
- icc -m64

400.perlbench: icc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

C++ benchmarks (except as noted below):
- icpc -m64

471.omnetpp: icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

Peak Portability Flags

400.perlbench: -DSPEC_CPU_LINUX_IA32
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
464.h264ref: -DSPEC_CPU_LP64
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
# SPEC CINT2006 Result

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## Peak Optimization Flags

**C benchmarks:**

- `400.perlbench`: `-xCORE-AVX2`  
  - `pass 2`  
  - `prof-gen` `pass 1`  
  - `-ipo` `pass 2`  
  - `-O3` `pass 2`  
  - `-no-prec-div` `pass 2`  
  - `-prof-use` `pass 2`  
  - `-opt-prefetch` `-ansi-alias`

- `401.bzip2`: `-xCORE-AVX2`  
  - `pass 2`  
  - `prof-gen` `pass 1`  
  - `-ipo` `pass 2`  
  - `-O3` `pass 2`  
  - `-no-prec-div`  
  - `-prof-use` `pass 2`  
  - `-auto-1lp32`  
  - `-opt-prefetch` `-ansi-alias`

- `403gcc`: `-xCORE-AVX2`  
  - `-ipo` `-O3`  
  - `-no-prec-div`  
  - `-inline-calloc`  
  - `-opt-prefetch` `-auto-1lp32`  
  - `-opt-malloc-options=3`  
  - `-auto-1lp32`  

- `429.mcf`: `-xCORE-AVX2`  
  - `-ipo` `-O3`  
  - `-no-prec-div`  
  - `-parallel`  
  - `-opt-prefetch` `-auto-p32`

- `445.gobmk`: `basepeak = yes`

- `456.hmmer`: `basepeak = yes`

- `458.sjeng`: `-xCORE-AVX2`  
  - `pass 2`  
  - `prof-gen` `pass 1`  
  - `-ipo` `pass 2`  
  - `-O3` `pass 2`  
  - `-no-prec-div` `pass 2`  
  - `-prof-use` `pass 2`  
  - `-unroll4`

- `462.libquantum`: `basepeak = yes`

- `464.h264ref`: `basepeak = yes`

## Peak Other Flags

**C benchmarks:**

- `403gcc`: `-Dalloca=_alloca`

---

Standard Performance Evaluation Corporation  
info@spec.org  
http://www.spec.org/
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The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-HSW-revE.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-HSW-revE.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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