Hewlett-Packard Company

ProLiant BL460c Gen9
(2.30 GHz, Intel Xeon E5-2699 v3)

SPECint®2006 = 65.6
SPECint_base2006 = 64.0

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

CPU Name: Intel Xeon E5-2699 v3
CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz
CPU MHz: 2300
FPU: Integrated
CPU(s) enabled: 18 cores, 1 chip, 18 cores/chip
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 256 KB I+D on chip per core
L3 Cache: 45 MB I+D on chip per chip
Other Cache: None
Memory: 128 GB (4 x 32 GB 2Rx4 PC4-2133P-R)
Disk Subsystem: 1 x 400 GB SAS SSD, RAID 0
Other Hardware: None

Operating System: Red Hat Enterprise Linux Server release 7.0 (Maipo)
Compiler: C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux
Auto Parallel: Yes
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 32/64-bit
Peak Pointers: 32/64-bit
Other Software: Microquill SmartHeap V10.0
**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>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>236</td>
<td>41.4</td>
<td>238</td>
<td>41.1</td>
<td>237</td>
<td>41.3</td>
<td>204</td>
<td>47.9</td>
<td>204</td>
<td>47.9</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>385</td>
<td>25.1</td>
<td>386</td>
<td>25.0</td>
<td>392</td>
<td>24.6</td>
<td>385</td>
<td>25.1</td>
<td>386</td>
<td>25.0</td>
</tr>
<tr>
<td>403.gcc</td>
<td>227</td>
<td>35.5</td>
<td>227</td>
<td>35.4</td>
<td>227</td>
<td>35.4</td>
<td>225</td>
<td>35.8</td>
<td>224</td>
<td>35.9</td>
</tr>
<tr>
<td>429.mcf</td>
<td>151</td>
<td>60.5</td>
<td>152</td>
<td>60.0</td>
<td>151</td>
<td>60.4</td>
<td>152</td>
<td>60.1</td>
<td>150</td>
<td>60.8</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>359</td>
<td>29.3</td>
<td>358</td>
<td>29.3</td>
<td>357</td>
<td>29.4</td>
<td>357</td>
<td>29.4</td>
<td>357</td>
<td>29.3</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>132</td>
<td>70.8</td>
<td>132</td>
<td>70.9</td>
<td>132</td>
<td>70.7</td>
<td>132</td>
<td>70.8</td>
<td>132</td>
<td>70.9</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>341</td>
<td>35.5</td>
<td>341</td>
<td>35.5</td>
<td>341</td>
<td>35.4</td>
<td>339</td>
<td>35.7</td>
<td>339</td>
<td>35.7</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>3.45</td>
<td>6000</td>
<td>3.45</td>
<td>6000</td>
<td>3.45</td>
<td>6000</td>
<td>3.45</td>
<td>6000</td>
<td>3.45</td>
<td>6000</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>509</td>
<td>43.5</td>
<td>505</td>
<td>43.8</td>
<td>505</td>
<td>43.8</td>
<td>509</td>
<td>43.5</td>
<td>505</td>
<td>43.8</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>132</td>
<td>47.4</td>
<td>136</td>
<td>45.9</td>
<td>140</td>
<td>44.8</td>
<td>119</td>
<td>52.3</td>
<td>121</td>
<td>51.7</td>
</tr>
<tr>
<td>473.astar</td>
<td>208</td>
<td>33.7</td>
<td>208</td>
<td>33.8</td>
<td>211</td>
<td>33.2</td>
<td>210</td>
<td>33.4</td>
<td>211</td>
<td>33.2</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>98.1</td>
<td>70.4</td>
<td>95.5</td>
<td>72.3</td>
<td>96.1</td>
<td>71.8</td>
<td>98.1</td>
<td>70.4</td>
<td>95.5</td>
<td>72.3</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 set to HP Static High Performance Mode  
Minimum Processor Idle Power Core State set to C6 State  
Minimum Processor Idle Power Package State set to No Package State  
Energy/Performance Bias set to Maximum Performance  
Collaborative Power Control set to Disabled  
QPI Snoop Configuration set to Early Snoop  
Thermal Configuration set to Maximum Cooling  
Processor Power and Utilization Monitoring set to Disabled  
Memory Refresh Rate set to 1x Refresh

Sysinfo program /cpu2006/config/sysinfo.rev6914  
$Rev: 6914 $ $Date:: 2014-06-25 $$ e3fbb8667b5a285932ceab81e28219e1  
running on BL460c-Gen9-cpu2006 Thu Oct 1 12:23:40 2015

Continued on next page
Hewlett-Packard Company

ProLiant BL460c Gen9
(2.30 GHz, Intel Xeon E5-2699 v3)

SPECint2006 = 65.6
SPECint_base2006 = 64.0

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Platform Notes (Continued)
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 E5-2699 v3 @ 2.30GHz
1 "physical id"s (chips)
18 "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 : 18
siblings : 18
physical 0: cores 0 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
cache size : 46080 KB

From /proc/meminfo
MemTotal: 131734220 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release*/etc/*version*

os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.0 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.0"
PRETTY_NAME="Red Hat Enterprise Linux Server 7.0 (Maipo)"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.0:GA:server"
redhat-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.0 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.0:ga:server

uname -a:
Linux BL460c-Gen9-cpu2006 3.10.0-123.el7.x86_64 #1 SMP Mon May 5 11:16:57 EDT 2014 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Oct 1 12:22

SPEC is set to: /cpu2006
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda4 xfs 368G 70G 298G 20% /

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 HP I36 05/06/2015

Continued on next page
SPEC CINT2006 Result

Hewlett-Packard Company
ProLiant BL460c Gen9
(2.30 GHz, Intel Xeon E5-2699 v3)

SPECint2006 = 65.6
SPECint_base2006 = 64.0

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Test date: Oct-2015
Hardware Availability: May-2015
Software Availability: Sep-2014

Platform Notes (Continued)

Memory:
12x UNKNOWN NOT AVAILABLE
4x UNKNOWN NOT AVAILABLE 32 GB 2 rank 2133 MHz

(End of data from sysinfo program)

Regarding the sysinfo display about the memory installed, the correct amount of memory is 128 GB and the dmidecode description should have one line reading as:
4x UNKNOWN NOT AVAILABLE 32 GB 2 rank 2133 MHz

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/cpu2006/libs/32:/cpu2006/libs/64:/cpu2006/sh"
OMP_NUM_THREADS = "18"

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
Hewlett-Packard Company

ProLiant BL460c Gen9
(2.30 GHz, Intel Xeon E5-2699 v3)

SPECint2006 = 65.6
SPECint_base2006 = 64.0

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Test date: Oct-2015
Hardware Availability: May-2015
Software Availability: Sep-2014

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
   445.gobmk: 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
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

## Hewlett-Packard Company

ProLiant BL460c Gen9
(2.30 GHz, Intel Xeon E5-2699 v3)

| SPECint2006 | 65.6 |
| SPECint_base2006 | 64.0 |

- **CPU2006 license:** 3
- **Test sponsor:** Hewlett-Packard Company
- **Tested by:** Hewlett-Packard Company
- **Test date:** Oct-2015
- **Hardware Availability:** May-2015
- **Software Availability:** Sep-2014

### 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: `basepeak = yes`
- 403.gcc: `-xCORE-AVX2 -ipo -O3 -no-prec-div -inline-calloc -opt-malloc-options=3 -auto-ilp32`
- 429.mcf: `-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32`
- 445.gobmk: `-xCORE-AVX2(pass 2) -prof-gen(pass 1) -prof-use(pass 2) -ansi-alias`
- 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) -unroll14`
- 462.libquantum: `basepeak = yes`
- 464.h264ref: `basepeak = yes`

**C++ benchmarks:**

- 471.omnetpp: `-xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -opt-ra-region-strategy=block -ansi-alias -Wl,-z,muldefs -L/sh -lsmartheap`
- 473.astar: `-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32 -Wl,-z,muldefs -L/sh -lsmartheap64`
- 483.xalancbmk: `basepeak = yes`

### Peak Other Flags

**C benchmarks:**

- 403.gcc: `-Dalloca=_alloca`
## SPEC CINT2006 Result

### Hewlett-Packard Company

**ProLiant BL460c Gen9**  
(2.30 GHz, Intel Xeon E5-2699 v3)

<table>
<thead>
<tr>
<th>CPU2006 license: 3</th>
<th>Test date: Oct-2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor: Hewlett-Packard Company</td>
<td>Hardware Availability: May-2015</td>
</tr>
<tr>
<td>Tested by: Hewlett-Packard Company</td>
<td>Software Availability: Sep-2014</td>
</tr>
</tbody>
</table>

### SPECint2006 = 65.6
### SPECint_base2006 = 64.0

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/Intel-ic15.0-official-linux64.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/Intel-ic15.0-official-linux64.xml)
- [http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-HSW-revE.xml](http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-HSW-revE.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.  
Originally published on 20 October 2015.