Hewlett-Packard Company
ProLiant BL460c Gen9
(2.60 GHz, Intel Xeon E5-2640 v3)

SPECint®2006 = 61.8
SPECint_base2006 = 59.1

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

CPU Name: Intel Xeon E5-2640 v3
CPU Characteristics: Intel Turbo Boost Technology up to 3.40 GHz
CPU MHZ: 2600
FPU: Integrated
CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip
CPU(s) orderable: 1.2 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: 20 MB I+D on chip per chip
Other Cache: None
Memory: 256 GB (16 x 16 GB 2Rx4 PC4-2133P-R, running at 1866 MHz)
Disk Subsystem: 1 x 400 GB SSD SAS, RAID 0
Other Hardware: None

Software
Operating System: Red Hat Enterprise Linux Server release 7.0 (Maipo) 3.10.0-123.el7.x86_64
Compiler: C/C++ Version 15.0.0.090 of Intel C++ Studio XE for Linux
Auto Parallel: Yes
File System: ext4
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>
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<th>Seconds</th>
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<tbody>
<tr>
<td>400.perlbench</td>
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<td>40.0</td>
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<td>39.6</td>
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<td>45.8</td>
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<td>45.8</td>
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<tr>
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<td>24.7</td>
<td>390</td>
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<td>24.7</td>
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<tr>
<td>403.mcf</td>
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<td>63.5</td>
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<td>62.4</td>
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<tr>
<td>445.gobmk</td>
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<td>27.8</td>
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<td>27.9</td>
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<td>28.2</td>
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<td>33.0</td>
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<tr>
<td>462.libquantum</td>
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<td>3.94</td>
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<td>5200</td>
<td>3.94</td>
<td>5250</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>483</td>
<td>45.8</td>
<td>482</td>
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<td>471.omnetpp</td>
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<td>27.1</td>
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<td>26.6</td>
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<td>38.5</td>
</tr>
<tr>
<td>473.astar</td>
<td>211</td>
<td>33.3</td>
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<td>32.9</td>
<td>211</td>
<td>33.3</td>
<td>214</td>
<td>32.9</td>
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<tr>
<td>483.xalancbmk</td>
<td>107</td>
<td>64.7</td>
<td>107</td>
<td>64.7</td>
<td>107</td>
<td>64.6</td>
<td>107</td>
<td>64.7</td>
<td>107</td>
<td>64.7</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:
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 No Package State
QPI Snoop Configuration set to Early Snoop
Thermal Configuration set to Maximum Cooling
Collaborative Power Control set to Disabled
Processor Power and Utilization Monitoring set to Disabled
Memory Double Refresh Rate set to 1x Refresh
Intel Hyperthreading Options set to Disabled
Syinfo program /cpu2006/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 $$ e3fbb8667b5a285932ceab81e28219e1
running on Y-BL460cGen9-VP2 Mon Nov 17 07:10:26 2014

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
SPEC CINT2006 Result

Hewlett-Packard Company

ProLiant BL460c Gen9
(2.60 GHz, Intel Xeon E5-2640 v3)

SPECint2006 = 61.8
SPECint_base2006 = 59.1

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

Platform Notes (Continued)

http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From /proc/cpuinfo

model name : Intel(R) Xeon(R) CPU E5-2640 v3 @ 2.60GHz
2 "physical id"s (chips)
16 "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 : 8
siblings : 8
physical 0: cores 0 1 2 3 4 5 6 7
physical 1: cores 0 1 2 3 4 5 6 7
cache size : 20480 KB

From /proc/meminfo

MemTotal: 263846220 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 Y-BL460cGen9-VP2 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 Nov 17 07:06

SPEC is set to: /cpu2006

Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/rhel-root ext4 310G 116G 179G 40% /

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 08/26/2014
Memory:
# SPEC CINT2006 Result

## Hewlett-Packard Company

**ProLiant BL460c Gen9**

(2.60 GHz, Intel Xeon E5-2640 v3)

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

### Platform Notes (Continued)

16x HP 752369-081 16 GB 2 rank 2133 MHz, configured at 1866 MHz

(End of data from sysinfo program)

Regarding the sysinfo display about the memory installed, the correct amount of memory is 256 GB and the dmidecode description should have one line reading as:

16x HP 752369-081 16 GB 2 rank 2133 MHz, configured at 1866 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 = "16"

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`

### Base Optimization Flags

**C benchmarks:**

- `-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch -auto-p32`

Continued on next page
Hewlett-Packard Company
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CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Base Optimization Flags (Continued)

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

Peak Optimization Flags

C benchmarks:

Continued on next page
SPEC CINT2006 Result

Hewlett-Packard Company
ProLiant BL460c Gen9
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Hewlett-Packard Company
CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company
Test date: Nov-2014
Hardware Availability: Sep-2014
Software Availability: Sep-2014

Peak Optimization Flags (Continued)

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-ilp32
-opt-prefetch -ansi-alias

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)
-unroll4

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: basepeak = yes

483.xalancbmk: basepeak = yes

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-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-HSW-revE.html
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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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