## SPEC® CINT2006 Result

**Hewlett-Packard Company**

ProLiant BL660c Gen8  
(2.60 GHz, Intel Xeon E5-4650L)

### SPECint® _rate2006 = 1200

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>SPECint_rate2006</th>
<th>SPECint_rate_base2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>1200</td>
<td>1150</td>
</tr>
<tr>
<td>401.bzip2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>403.gcc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>429.mcf</td>
<td></td>
<td></td>
</tr>
<tr>
<td>445.gobmk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>456.hmmer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>458.sjeng</td>
<td></td>
<td></td>
</tr>
<tr>
<td>462.libquantum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>464.h264ref</td>
<td></td>
<td></td>
</tr>
<tr>
<td>471.omnetpp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>473.astar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Hardware

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E5-4650L</td>
</tr>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 3.10 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>2600</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>32 cores, 4 chips, 8 cores/chip, 2 threads/core</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>20 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache</td>
<td>None</td>
</tr>
<tr>
<td>Memory</td>
<td>256 GB (32 x 8 GB 2Rx4 PC3-12800R-11, ECC)</td>
</tr>
<tr>
<td>Disk Subsystem</td>
<td>2 x 300 GB 10 K SAS, RAID 1</td>
</tr>
<tr>
<td>Other Hardware</td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System</td>
<td>Red Hat Enterprise Linux Server release 6.3, (Santiago)</td>
</tr>
<tr>
<td>Compiler</td>
<td>C/C++: Version 12.1.2.273 of Intel C++ Studio XE for Linux</td>
</tr>
<tr>
<td>Auto Parallel</td>
<td>No</td>
</tr>
<tr>
<td>File System</td>
<td>ext4</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>32/64-bit</td>
</tr>
<tr>
<td>Other Software</td>
<td>Microquill SmartHeap V9.01</td>
</tr>
<tr>
<td></td>
<td>HP Array Configuration Utility CLI 9.0-16.0</td>
</tr>
</tbody>
</table>
Hewlett-Packard Company
ProLiant BL660c Gen8
(2.60 GHz, Intel Xeon E5-4650L)

SPECint_rate2006 = 1200
SPECint_rate_base2006 = 1150

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>400.perlbench</td>
<td>64</td>
<td>720</td>
<td>868</td>
<td>718</td>
<td>871</td>
<td>715</td>
<td>874</td>
<td>64</td>
<td>608</td>
<td>1030</td>
<td>605</td>
<td>1030</td>
<td>606</td>
<td>1030</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>64</td>
<td>970</td>
<td>636</td>
<td>965</td>
<td>640</td>
<td>970</td>
<td>637</td>
<td>64</td>
<td>934</td>
<td>661</td>
<td>933</td>
<td>662</td>
<td>934</td>
<td>661</td>
</tr>
<tr>
<td>403.gcc</td>
<td>64</td>
<td>573</td>
<td>899</td>
<td>569</td>
<td>905</td>
<td>569</td>
<td>905</td>
<td>64</td>
<td>573</td>
<td>899</td>
<td>569</td>
<td>905</td>
<td>569</td>
<td>905</td>
</tr>
<tr>
<td>429.mcf</td>
<td>64</td>
<td>335</td>
<td>1740</td>
<td>334</td>
<td>1750</td>
<td>334</td>
<td>1750</td>
<td>64</td>
<td>335</td>
<td>1740</td>
<td>334</td>
<td>1750</td>
<td>334</td>
<td>1750</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>64</td>
<td>771</td>
<td>871</td>
<td>770</td>
<td>872</td>
<td>770</td>
<td>872</td>
<td>64</td>
<td>751</td>
<td>894</td>
<td>753</td>
<td>892</td>
<td>754</td>
<td>890</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>64</td>
<td>406</td>
<td>1470</td>
<td>406</td>
<td>1470</td>
<td>407</td>
<td>1470</td>
<td>64</td>
<td>342</td>
<td>1740</td>
<td>342</td>
<td>1740</td>
<td>344</td>
<td>1740</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>64</td>
<td>894</td>
<td>866</td>
<td>895</td>
<td>865</td>
<td>894</td>
<td>866</td>
<td>64</td>
<td>863</td>
<td>898</td>
<td>864</td>
<td>896</td>
<td>860</td>
<td>901</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>64</td>
<td>189</td>
<td>7010</td>
<td>189</td>
<td>7010</td>
<td>189</td>
<td>7010</td>
<td>64</td>
<td>189</td>
<td>7010</td>
<td>189</td>
<td>7010</td>
<td>189</td>
<td>7010</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>64</td>
<td>929</td>
<td>1520</td>
<td>935</td>
<td>1520</td>
<td>929</td>
<td>1520</td>
<td>64</td>
<td>922</td>
<td>1540</td>
<td>928</td>
<td>1530</td>
<td>920</td>
<td>1540</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>64</td>
<td>605</td>
<td>661</td>
<td>605</td>
<td>661</td>
<td>605</td>
<td>661</td>
<td>64</td>
<td>575</td>
<td>696</td>
<td>574</td>
<td>697</td>
<td>575</td>
<td>696</td>
</tr>
<tr>
<td>473.astar</td>
<td>64</td>
<td>669</td>
<td>672</td>
<td>667</td>
<td>674</td>
<td>667</td>
<td>673</td>
<td>64</td>
<td>669</td>
<td>672</td>
<td>667</td>
<td>674</td>
<td>667</td>
<td>673</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>64</td>
<td>385</td>
<td>1150</td>
<td>385</td>
<td>1150</td>
<td>385</td>
<td>1150</td>
<td>64</td>
<td>385</td>
<td>1150</td>
<td>385</td>
<td>1150</td>
<td>385</td>
<td>1150</td>
</tr>
</tbody>
</table>

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

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 with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled
Filesystem page cache cleared with:
echo 1 >       /proc/sys/vm/drop_caches
runspec command invoked through numactl i.e.:
numactl --localalloc runspec <etc>
Accelerator Ratio for Reads/Writes set to = 100% Read / 0% Write
in HP Array Configuration Utility, CLI version 9.0-16.0

Platform Notes

BIOS Configuration:
HP Power Profile set to Maximum Performance
Memory Power Savings Mode set to Maximum Performance
Thermal Configuration set to Maximum Cooling
Sysinfo program /cpu2006/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 $6f2ebdffe5032aa42e583f96b07f99d3
running on BL660c-GJ2 Sat Nov 3 22:04:10 2012

Continued on next page
Hewlett-Packard Company

ProLiant BL660c Gen8
(2.60 GHz, Intel Xeon E5-4650L)

SPECint_rate2006 = 1200
SPECint_rate_base2006 = 1150

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 E5-4650L 0 @ 2.60GHz
  4 "physical id"s (chips)
  64 "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 : 8
  siblings : 16
  physical 0: cores 0 1 2 3 4 5 6 7
  physical 1: cores 0 1 2 3 4 5 6 7
  physical 2: cores 0 1 2 3 4 5 6 7
  physical 3: cores 0 1 2 3 4 5 6 7
  cache size : 20480 KB

From /proc/meminfo
    MemTotal:       264485280 kB
    HugePages_Total:       0
    Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.3 (Santiago)

From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.3 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.3 (Santiago)
uname -a:
    Linux BL660c-GJ2 2.6.32-279.el6.x86_64 #1 SMP Wed Jun 13 18:24:36 EDT 2012
    x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Nov 3 21:57

SPEC is set to: /cpu2006

Filesystem    Type    Size  Used Avail Use% Mounted on
/dev/sda3     ext4    273G  14G  246G   6% /

Additional information from dmidecode:
BIOS HP I32 08/20/2012
Memory:
  32x HP Not Specified 8 GB 1600 MHz 2 rank

(End of data from sysinfo program)
Hewlett-Packard Company

ProLiant BL660c Gen8
(2.60 GHz, Intel Xeon E5-4650L)

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

SPECint_rate2006 = 1200
SPECint_rate_base2006 = 1150

Test date: Nov-2012
Hardware Availability: Oct-2012
Software Availability: Jun-2012

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,1,0"
LD_LIBRARY_PATH = "/cpu2006/libs2/32:/cpu2006/libs2/64"

Binaries compiled on a system with 2x Xeon E5-2677 CPU + 256GB memory using SLES11 SP2, RC3

Base Compiler Invocation

C benchmarks:
icc -m32

C++ benchmarks:
icpc -m32

Base Portability Flags

400.perlbench: -DSPEC_CPU_LINUX_IA32
462.libquantum: -DSPEC_CPU_LINUX
483.xalancbmk: -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3

C++ benchmarks:
-xSSE4.2 -ipo -O3 -no-prec-div -opt-prefetch -opt-mem-layout-trans=3
-Wl,-z,muldefs -L/spec/libs2/32 -lsmartheap

Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
icc -m32

Continued on next page
Hewlett-Packard Company

ProLiant BL660c Gen8
(2.60 GHz, Intel Xeon E5-4650L)

SPECint_rate2006 = 1200
SPECint_rate_base2006 = 1150

CPU2006 license: 3

Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Test date: Nov-2012
Hardware Availability: Oct-2012
Software Availability: Jun-2012

Peak Compiler Invocation (Continued)

400.perlbench: -m64
401.bzip2: -m64
456.hmmer: -m64
458.sjeng: -m64

C++ benchmarks:
icpc -m32

Peak Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LINUX
483.xalancbmk: -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:

400.perlbench: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-auto-ilp32

401.bzip2: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-opt-prefetch -auto-ilp32 -ansi-alias

403.gcc: basepeak = yes
429.mcf: basepeak = yes

445.gobmk: -xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
-ansi-alias -opt-mem-layout-trans=3

456.hmmer: -xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32

458.sjeng: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-unroll4 -auto-ilp32

Continued on next page
Hewlett-Packard Company
ProLiant BL660c Gen8
(2.60 GHz, Intel Xeon E5-4650L)

SPECint_rate2006 = 1200
SPECint_rate_base2006 = 1150

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

Peak Optimization Flags (Continued)

462.libquantum: basepeak = yes

464.h264ref:
- xSSE4.2 (pass 2) -prof-gen (pass 1) -ipo (pass 2)
- O3 (pass 2) -no-prec-div (pass 2) -prof-use (pass 2)
- unroll2 -ansi-alias

C++ benchmarks:

471.omnetpp:
- xSSE4.2 (pass 2) -prof-gen (pass 1) -ipo (pass 2)
- O3 (pass 2) -no-prec-div (pass 2) -prof-use (pass 2)
- ansi-alias -opt-ra-region-strategy=block -Wl,-z,muldefs
- /spec/libs2/32 -lsmartheap

473.astar: basepeak = yes

483.xalancbmk: basepeak = yes

Peak 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-ic12.1-official-linux64.20120425.html
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-A.20120829.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20120425.xml
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-A.20120829.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 November 2012.