**Hewlett-Packard Company**

ProLiant BL660c Gen8  
(2.40 GHz, Intel Xeon E5-4610)

**SPECint\_rate2006 = 888**  
**SPECint\_rate\_base2006 = 852**

<table>
<thead>
<tr>
<th>SPECint</th>
<th>Rate</th>
</tr>
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<tbody>
<tr>
<td>400.perlbench</td>
<td>48</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>48</td>
</tr>
<tr>
<td>403.gcc</td>
<td>48</td>
</tr>
<tr>
<td>429.mcf</td>
<td>48</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>48</td>
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<tr>
<td>456.hmmer</td>
<td>48</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>48</td>
</tr>
<tr>
<td>462.libquantum</td>
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</tr>
<tr>
<td>464.h264ref</td>
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<tr>
<td>471.omnetpp</td>
<td>48</td>
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<tr>
<td>473.astar</td>
<td>48</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>48</td>
</tr>
</tbody>
</table>

**CPU2006 license:** 3  
**Test date:** Jan-2013  
**Hardware Availability:** Oct-2012

**Test sponsor:** Hewlett-Packard Company  
**Tested by:** Hewlett-Packard Company  
**Software Availability:** Jul-2012

**CPU Name:** Intel Xeon E5-4610  
**Operating System:** Red Hat Enterprise Linux Server release 6.3, (Santiago)  
**Compiler:** C/C++: Version 12.1.2.273 of Intel C++ Studio XE for Linux

**CPU Characteristics:** Intel Turbo Boost Technology up to 2.90 GHz  
**FPU:** Integrated  
**Compiler(s) enabled:** 24 cores, 4 chips, 6 cores/chip, 2 threads/core  
**CPU(s) orderable:** 1.2,4 chips  
**Primary Cache:** 32 KB I + 32 KB D on chip per core  
**Secondary Cache:** 256 KB I+D on chip per core  
**L3 Cache:** 15 MB I+D on chip per chip  
**Base Pointers:** 32-bit  
**Other Cache:** None  
**Peak Pointers:** 32/64-bit  
**Memory:** 256 GB (32 x 8 GB 2Rx4 PC3-12800R-11, ECC)  
**Other Software:** Microquill SmartHeap V9.01

**Other Hardware:** 2 x 146 GB 15 K SAS, RAID 1  
**Base Pointers:** 32-bit

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Standard Performance Evaluation Corporation  
info@spec.org  
http://www.spec.org/
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(2.40 GHz, Intel Xeon E5-4610)

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Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Base</th>
<th>Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Copies</td>
<td>Seconds</td>
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<tr>
<td>400.perlbench</td>
<td>48</td>
<td>741</td>
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<tr>
<td>401.bzip2</td>
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<td>997</td>
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<tr>
<td>403.gcc</td>
<td>48</td>
<td>568</td>
</tr>
<tr>
<td>429.mcf</td>
<td>48</td>
<td>328</td>
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<tr>
<td>445.gobmk</td>
<td>48</td>
<td>799</td>
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<tr>
<td>456.hmmer</td>
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<td>423</td>
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<td>458.sjeng</td>
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<td>926</td>
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<td>462.libquant</td>
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<td>195</td>
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<tr>
<td>464.h264ref</td>
<td>48</td>
<td>1004</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>48</td>
<td>605</td>
</tr>
<tr>
<td>473.astar</td>
<td>48</td>
<td>662</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>48</td>
<td>361</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
runcspec command invoked through numactl i.e.:
numactl --interleave=all runcspec <etc>

Platform Notes
BIOS Configuration:
HP Power Profile set to Custom
Energy/Performance Bias is set to Maximum Performance
Thermal Configuration set to Maximum Cooling
Collaborative Power Control set to Disabled
Processor Power and Utilization Monitoring set to Disabled

Sysinfo program /cpu2006/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdfff5032aaa42e583f96b07f99d3
Continued on next page
Hewlett-Packard Company
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CPU2006 license: 3
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Platform Notes (Continued)

running on BL660Gen8 Thu Jan 31 12:24:51 2013

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 E5-4610 0 @ 2.40GHz
  4 "physical id"s (chips)
  48 "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 : 6
  siblings : 12
  physical 0: cores 0 1 2 3 4 5
  physical 1: cores 0 1 2 3 4 5
  physical 2: cores 0 1 2 3 4 5
  physical 3: cores 0 1 2 3 4 5
  cache size : 15360 KB

From /proc/meminfo
MemTotal:       264633760 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 BL660Gen8 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 Jan 31 10:19 last=5

SPEC is set to: /cpu2006
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 ext4 133G 12G 114G 10% /

Additional information from dmidecode:
BIOS HP I32 08/12/2012
Memory: 32x HP Not Specified 8 GB 1600 MHz 2 rank

(End of data from sysinfo program)
Hewlett-Packard Company
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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 SLES11SP2RC3

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
Peak Compiler Invocation (Continued)

400.perlbench: icc -m64
401.bzip2: icc -m64
456.hmmer: icc -m64
458.sjeng: icc -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
**SPEC CINT2006 Result**

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### Peak Optimization Flags (Continued)

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<tr>
<td>462.libquantum: basepeak = yes</td>
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<td>464.h264ref: basepeak = yes</td>
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<tr>
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</thead>
<tbody>
<tr>
<td>-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)</td>
</tr>
<tr>
<td>-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)</td>
</tr>
<tr>
<td>-ansi-alias -opt-ra-region-strategy=block -Wl,-z,muldefs</td>
</tr>
<tr>
<td>-L/spec/libs2/32 -lsmartheap</td>
</tr>
</tbody>
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### Peak Other Flags

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</table>

The flags files that were used to format this result can be browsed at:


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

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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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