**Hewlett-Packard Company**

ProLiant BL420c Gen8
(2.40 GHz, Intel Xeon E5-2470 v2)

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**SPECint_rate2006 = 376**

**SPECint_rate_base2006 = 364**

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**Hardware**

- CPU Name: Intel Xeon E5-2470 v2
- CPU Characteristics: Intel Turbo Boost Technology up to 3.20 GHz
- CPU MHz: 2400
- FPU: Integrated
- CPU(s) enabled: 10 cores, 1 chip, 10 cores/chip, 2 threads/core
- CPU(s) orderable: 1 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: 25 MB I+D on chip per chip
- Other Cache: None
- Memory: 48 GB (6 x 8 GB 2Rx4 PC3-12800R-11, ECC)
- Disk Subsystem: 2 x 300 GB 15 K SAS, RAID 0
- Other Hardware: None

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**Software**

- Operating System: Red Hat Enterprise Linux Server release 6.4, (Santiago)
- Kernel 2.6.32-358.el6.x86_64
- Compiler: C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux
- Auto Parallel: No
- File System: ext4
- System State: Run level 3 (multi-user)
- Base Pointers: 32-bit
- Peak Pointers: 32/64-bit
- Other Software: Microquill SmartHeap V10.0

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### Results Table

| Benchmark  | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Base  | Copies | Seconds | Ratio | Seconds | Ratio | Peak  | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
|------------|--------|---------|-------|---------|-------|---------|-------|-------|--------|---------|-------|---------|-------|-------|--------|---------|-------|---------|-------|---------|-------|---------|-------|
| 400.perlbench | 20     | 680     | 287   | 681     | 287   | 679     | 288   |       | 20     | 569     | 344   | 569     | 343   | 566   | 345   |
| 401.bzip2    | 20     | 891     | 217   | 890     | 217   | 893     | 216   |       | 20     | 872     | 221   | 873     | 221   | 870   | 222   |
| 403.gcc      | 20     | 569     | 283   | 570     | 283   | 571     | 282   |       | 20     | 569     | 283   | 570     | 283   | 571   | 282   |
| 429.mcf      | 20     | 362     | 504   | 361     | 505   | 363     | 502   |       | 20     | 362     | 504   | 361     | 505   | 363   | 502   |
| 445.gobmk    | 20     | 738     | 284   | 734     | 286   | 733     | 286   |       | 20     | 715     | 293   | 715     | 294   | 715   | 293   |
| 458.sjeng    | 20     | 836     | 289   | 836     | 289   | 837     | 289   |       | 20     | 801     | 302   | 801     | 302   | 802   | 302   |
| 462.libquantum | 20     | 173     | 2400  | 173     | 2390  | 173     | 2400  |       | 20     | 173     | 2400  | 173     | 2390  | 173   | 2400  |
| 464.h264ref  | 20     | 916     | 483   | 917     | 482   | 918     | 482   |       | 20     | 907     | 488   | 909     | 487   | 906   | 488   |
| 471.omnetpp  | 20     | 652     | 192   | 653     | 191   | 654     | 191   |       | 20     | 642     | 195   | 643     | 194   | 642   | 195   |
| 473.astar    | 20     | 697     | 202   | 696     | 202   | 695     | 202   |       | 20     | 697     | 202   | 696     | 202   | 695   | 202   |
| 483.xalancbmk | 20     | 387     | 356   | 387     | 357   | 387     | 357   |       | 20     | 387     | 356   | 387     | 357   | 387   | 357   |

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/redhat_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>
Disabled unused Linux services through "stop_services.sh" before running.

### Platform Notes

BIOS Configuration:
HP Power Profile set to Maximum Performance
Memory Power Savings Mode set to Maximum Performance
Collaborative Power Control set to Disabled
Dynamic Power Capping Functionality set to Disabled
Thermal Configuration set to Maximum Cooling
Processor Power and Utilization Monitoring set to Disabled
Memory Refresh Rate set to 1x

Sysinfo program /cpu2006/config/sysinfo.rev6818
Continued on next page
SPEC CINT2006 Result

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Platform Notes (Continued)

$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on BL420c-Gen8 Wed Dec 11 10:40:12 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 E5-2470 v2 @ 2.40GHz
 1 "physical id"s (chips)
 20 "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 : 10
siblings : 20
physical 0: cores 0 1 2 3 4 8 9 10 11 12
cache size : 25600 KB

From /proc/meminfo
MemTotal:       49520756 kB
HugePages_Total:       0
Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.4 (Santiago)

From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)

uname -a:
Linux BL420c-Gen8 2.6.32-358.el6.x86_64 #1 SMP Tue Jan 29 11:47:41 EST 2013
x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Dec 11 10:30

SPEC is set to: /cpu2006
Filesystem    Type    Size  Used Avail Use% Mounted on
/dev/sda3     ext4    273G  24G  236G  10% /

Additional information from dmidecode:
BIOS HP I30 01/20/2014
Memory:
6x HP 689911-071 8 GB 1600 MHz 2 rank
6x UNKNOWN NOT AVAILABLE

(End of data from sysinfo program)
Regarding the sysinfo display about the memory installed, the correct amount of
memory is 48 GB and the dmidecode description should have one line reading as:
6x HP 689911-071 8 GB 1600 MHz 2 rank
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CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Test date: Dec-2013
Hardware Availability: Jan-2014
Software Availability: Sep-2013

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/cpu2006/libs/32:/cpu2006/libs/64:/cpu2006/sh"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RedHat EL 6.4

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/sh -lsmartheap

Base Other Flags

C benchmarks:
    403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

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

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Hewlett-Packard Company

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Peak Compiler Invocation (Continued)

<table>
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<td>400.perlbench</td>
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<td>401.bzip2</td>
<td>icc -m64</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>icc -m64</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>icc -m64</td>
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C++ benchmarks:
- icpc -m32

Peak Portability Flags

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<td>-DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64</td>
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Peak Optimization Flags

C benchmarks:

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<td>-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</td>
</tr>
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<td>-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</td>
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<td>-xSSE4.2(pass 2) -prof-gen(pass 1) -prof-use(pass 2) -ansi-alias -opt-mem-layout-trans=3</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>-xSSE4.2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>-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</td>
</tr>
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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)
-03(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)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-ansi-alias -opt-ra-region-strategy=block -Wl,-z,muldefs
-L/sh -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/HP-Platform-Flags-Intel-V1.2-revB.html
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-revB.xml
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml

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