## SPECint®_rate2006 = 665

### Hardware

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
<td>Intel Xeon E5-2680</td>
</tr>
<tr>
<td>CPU Characteristics</td>
<td>Intel Turbo Boost Technology up to 3.50 GHz</td>
</tr>
<tr>
<td>CPU MHz</td>
<td>2700</td>
</tr>
<tr>
<td>FPU</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled</td>
<td>16 cores, 2 chips, 8 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable</td>
<td>1.2 chips</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>128 GB (16 x 8 GB 2Rx4 PC3-12800R-11, ECC)</td>
</tr>
<tr>
<td>Disk Subsystem</td>
<td>2 x 146 GB 6G 15K SAS, RAID 1</td>
</tr>
<tr>
<td>Other Hardware</td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System</td>
<td>Red Hat Enterprise Linux Server release 6.2, Kernel 2.6.32-220.el6.x86_64</td>
</tr>
<tr>
<td>Compiler</td>
<td>C/C++: Version 12.1.0.225 of Intel Compiler XE Build 20110803</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 HP Array Configuration Utility, CLI version</td>
</tr>
</tbody>
</table>

---

SPECint_rate_base2006 = 640
## 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>
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<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>32</td>
<td>642</td>
<td>487</td>
<td>641</td>
<td>488</td>
<td>643</td>
<td>486</td>
<td>32</td>
<td>556</td>
<td>563</td>
<td>551</td>
<td>567</td>
<td>557</td>
<td>561</td>
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<tr>
<td>401.bzip2</td>
<td>32</td>
<td>881</td>
<td>350</td>
<td>879</td>
<td>351</td>
<td>878</td>
<td>352</td>
<td>32</td>
<td>852</td>
<td>362</td>
<td>853</td>
<td>362</td>
<td>856</td>
<td>361</td>
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<tr>
<td>403.gcc</td>
<td>32</td>
<td>503</td>
<td>513</td>
<td>503</td>
<td>512</td>
<td>503</td>
<td>512</td>
<td>32</td>
<td>503</td>
<td>513</td>
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<td>512</td>
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<tr>
<td>429.mcf</td>
<td>32</td>
<td>302</td>
<td>966</td>
<td>300</td>
<td>971</td>
<td>302</td>
<td>967</td>
<td>32</td>
<td>302</td>
<td>966</td>
<td>300</td>
<td>971</td>
<td>302</td>
<td>967</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>32</td>
<td>689</td>
<td>487</td>
<td>674</td>
<td>498</td>
<td>675</td>
<td>497</td>
<td>32</td>
<td>668</td>
<td>503</td>
<td>670</td>
<td>501</td>
<td>664</td>
<td>506</td>
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<tr>
<td>456.hmmer</td>
<td>32</td>
<td>367</td>
<td>814</td>
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<td>815</td>
<td>367</td>
<td>814</td>
<td>32</td>
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<td>964</td>
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<td>458.sjeng</td>
<td>32</td>
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<td>481</td>
<td>806</td>
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<td>807</td>
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<td>777</td>
<td>498</td>
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<td>498</td>
<td>773</td>
<td>501</td>
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<tr>
<td>462.libquantum</td>
<td>32</td>
<td>171</td>
<td>3880</td>
<td>171</td>
<td>3880</td>
<td>170</td>
<td>3890</td>
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<td>3880</td>
<td>171</td>
<td>3880</td>
<td>170</td>
<td>3890</td>
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<td>464.h264ref</td>
<td>32</td>
<td>844</td>
<td>840</td>
<td>861</td>
<td>823</td>
<td>865</td>
<td>819</td>
<td>32</td>
<td>845</td>
<td>838</td>
<td>851</td>
<td>832</td>
<td>837</td>
<td>846</td>
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<tr>
<td>471.omnetpp</td>
<td>32</td>
<td>555</td>
<td>360</td>
<td>556</td>
<td>360</td>
<td>556</td>
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<td>381</td>
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<tr>
<td>473.astar</td>
<td>32</td>
<td>606</td>
<td>371</td>
<td>603</td>
<td>372</td>
<td>605</td>
<td>372</td>
<td>32</td>
<td>606</td>
<td>371</td>
<td>603</td>
<td>372</td>
<td>605</td>
<td>372</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>32</td>
<td>330</td>
<td>657</td>
<td>329</td>
<td>671</td>
<td>331</td>
<td>668</td>
<td>32</td>
<td>330</td>
<td>668</td>
<td>329</td>
<td>671</td>
<td>331</td>
<td>668</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/redhat_transparent_hugepage/enabled
Filesystem page cache cleared with:
echo 1 > /proc/sys/vm/drop_caches
runcmd command invoked through numactl i.e.:
numactl --interleave=all runcmd <etc>
Drive Write Cache set to Enabled in HP Array Configuration Utility, CLI version
Accelerator Ratio for Reads/Writes set to = 100% Read / 0% Write in HP Array Configuration Utility, CLI version

## 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 $ $Date:: 2011-10-11 #$ 6f2ebdf5032aaa42e583f96b07f99d3
running on rh62 Wed Feb 8 22:07:04 2012
Continued on next page
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 E5-2680 0 @ 2.70GHz
  2 "physical id"s (chips)
  32 "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
  cache size : 20480 KB

From /proc/meminfo

MemTotal:       132120004 kB
HugePages_Total:       0
Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
  Red Hat Enterprise Linux Server release 6.2 (Santiago)

From /etc/*release* /etc/*version*
  redhat-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
  system-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)

uname -a:
  Linux rh62 2.6.32-220.el6.x86_64 #1 SMP Wed Nov 9 08:03:13 EST 2011 x86_64
  x86_64 x86_64 GNU/Linux

run-level 3 Feb 8 21:42

SPEC is set to: /cpu2006

Filesystem    Type      Size  Used Avail Use% Mounted on
/dev/mapper/vg_rh62-lv_root
  ext4      51.6G  33.6G  15.4G  69% /

Additional information from dmidecode:
  BIOS HP I31 02/13/2012
  Memory:
    16x Not Specified Not Specified 8 GB 1600 MHz 2 rank

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

ProLiant BL460c Gen8
(2.70 GHz, Intel Xeon E5-2680)

SPECint_rate2006 = 665
SPECint_rate_base2006 = 640

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

Test date: Mar-2012
Hardware Availability: Jun-2012
Software Availability: Mar-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/libs/32:/cpu2006/libs/64"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RHEL5.5

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

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Hewlett-Packard Company
ProLiant BL460c Gen8
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CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

SPECint_rate2006 = 665
SPECint_rate_base2006 = 640

Test date: Mar-2012
Hardware Availability: Jun-2012
Software Availability: Mar-2012

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)
-03(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)
-03(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 -03 -no-prec-div -unroll2 -auto-ilp32

458.sjeng: -xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-unroll4 -auto-ilp32

Continued on next page
Hewlett-Packard Company
ProLiant BL460c Gen8
(2.70 GHz, Intel Xeon E5-2680)

SPECint_rate2006 = 665
SPECint_rate_base2006 = 640

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Test date: Mar-2012
Tested by: Hewlett-Packard Company
Hardware Availability: Jun-2012
Software Availability: Mar-2012

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
-L/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-linux64.20111122.html
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-A.20120410.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.xml
http://www.spec.org/cpu2006/flags/HP-Platform-Flags-Intel-V1.2-A.20120410.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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