HITACHI

BladeSymphony BS520H (Intel Xeon E5-2697 v3)

**SPECint\_rate2006 = 1210**

**SPECint\_rate\_base2006 = 1170**

<table>
<thead>
<tr>
<th>SPECint_rate_base2006 = 1170</th>
</tr>
</thead>
</table>

**CPU2006 license:** 35  
**Test sponsor:** HITACHI  
**Tested by:** HITACHI

**Test date:** Jan-2015  
**Hardware Availability:** Dec-2014  
**Software Availability:** Nov-2013

### Hardware

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name:</td>
<td>Intel Xeon E5-2697 v3</td>
</tr>
<tr>
<td>CPU Characteristics:</td>
<td>Intel Turbo Boost Technology up to 3.60 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>28 cores, 2 chips, 14 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>35 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 (16 x 16 GB 2Rx4 PC4-2133P-R)</td>
</tr>
<tr>
<td>Disk Subsystem:</td>
<td>2 x 600 GB SAS, 10000 RPM, RAID1</td>
</tr>
<tr>
<td>Other Hardware:</td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System:</td>
<td>Red Hat Enterprise Linux Server release 6.5 (Santiago)</td>
</tr>
<tr>
<td>Compiler:</td>
<td>C/C++: Version 14.0.0.080 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 V10.0</td>
</tr>
</tbody>
</table>
HITACHI

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SPECint_rate2006 = 1210
SPECint_rate_base2006 = 1170

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>
</tr>
</thead>
<tbody>
<tr>
<td>400.perlbench</td>
<td>56</td>
<td>569</td>
<td>574</td>
<td>954</td>
<td>569</td>
<td>954</td>
<td>567</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>56</td>
<td>905</td>
<td>905</td>
<td>597</td>
<td>903</td>
<td>598</td>
<td>905</td>
</tr>
<tr>
<td>403.gcc</td>
<td>56</td>
<td>508</td>
<td>509</td>
<td>885</td>
<td>512</td>
<td>881</td>
<td>512</td>
</tr>
<tr>
<td>429.mcf</td>
<td>56</td>
<td>332</td>
<td>333</td>
<td>1540</td>
<td>332</td>
<td>1540</td>
<td>333</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>56</td>
<td>704</td>
<td>704</td>
<td>834</td>
<td>705</td>
<td>834</td>
<td>705</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>56</td>
<td>322</td>
<td>323</td>
<td>1620</td>
<td>323</td>
<td>1620</td>
<td>323</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>56</td>
<td>758</td>
<td>759</td>
<td>894</td>
<td>757</td>
<td>895</td>
<td>757</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>56</td>
<td>110</td>
<td>111</td>
<td>10500</td>
<td>111</td>
<td>10500</td>
<td>111</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>56</td>
<td>864</td>
<td>863</td>
<td>1440</td>
<td>840</td>
<td>1480</td>
<td>832</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>56</td>
<td>568</td>
<td>575</td>
<td>609</td>
<td>575</td>
<td>608</td>
<td>575</td>
</tr>
<tr>
<td>473.astar</td>
<td>56</td>
<td>624</td>
<td>622</td>
<td>630</td>
<td>626</td>
<td>628</td>
<td>626</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>56</td>
<td>328</td>
<td>327</td>
<td>1180</td>
<td>327</td>
<td>1180</td>
<td>327</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"

Platform Notes

BIOS configuration:
Patrol Scrub = Disable
Per Core P-state = Disable
COD Preferenc = Enable

Sysinfo program /home/speccpu2006/cpu2006/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 $$ e86d102572650a6e4d596a3cee98f191
running on 520Hx36564 Sun Jan 18 10:17:09 2015

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 E5-2697 v3 @ 2.60GHz
  2 "physical id"s (chips)
  56 "processors"

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CPU2006 license: 35
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Platform Notes (Continued)

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 : 14
  siblings : 28
  physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
  physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14
  cache size : 17920 KB

From /proc/meminfo
  MemTotal: 263987312 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
  Red Hat Enterprise Linux Server release 6.5 (Santiago)

From /etc/*release* /etc/*version*
  redhat-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)
  system-release: Red Hat Enterprise Linux Server release 6.5 (Santiago)

uname -a:
  Linux 520Hx36564 2.6.32-431.el6.x86_64 #1 SMP Sun Nov 10 22:19:54 EST 2013
  x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jan 16 19:12

SPEC is set to: /home/speccpu2006/cpu2006

Filesystem          Type     Size  Used Avail Use% Mounted on
/dev/mapper/vg_520hx36564-lv_home ext4 485G 56G 405G 13% /home

Additional information from dmidecode:
  BIOS HITACHI 08-20 01/06/2015
  Memory: 8x NO DIMM Unknown
           16x Samsung M393A2G40DB0-CPB 16 GB 2133 MHz 2 rank

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
  LD_LIBRARY_PATH = */home/speccpu2006/cpu2006/libs/32:/home/speccpu2006/cpu2006/libs/64:/home/speccpu2006/cpu2006/sh*

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

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General Notes (Continued)

runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>
BladeSymphony BS520H, Hitachi Compute Blade 520H and BladeSymphony BS2500 HCOA1 are electronically equivalent.
The results have been measured on a Hitachi Compute Blade 520H.

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:
   -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch
   -opt-mem-layout-trans=3

C++ benchmarks:
   -xCORE-AVX2 -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

400.perlbench: icc -m64

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SPEC CINT2006 Result

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Peak Compiler Invocation (Continued)

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: -xCORE-AVX2(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: -xCORE-AVX2(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: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
-ansi-alias -opt-mem-layout-trans=3

456.hmmer: -xCORE-AVX2 -ipo -03 -no-prec-div -unroll2 -auto-ilp32

458.sjeng: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
-03(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
-unroll4 -auto-ilp32

462.libquantum: basepeak = yes

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Peak Optimization Flags (Continued)

464.h264ref: -xCORE-AVX2(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: -xCORE-AVX2(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/sh -lsmartheap

473.astar: basepeak = yes
483.xalanchbm: 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/PlatformHitachi-V1.2.20150127.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/PlatformHitachi-V1.2.20150127.xml

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For other inquiries, please contact webmaster@spec.org.

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