# SPEC® CINT2006 Result

## HITACHI

BladeSymphony BS520X (Intel Xeon E7-8880 v3)

<table>
<thead>
<tr>
<th>Test date:</th>
<th>Aug-2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Availability:</td>
<td>Jun-2015</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Oct-2014</td>
</tr>
</tbody>
</table>

### SPECint_rate2006 = 5390

### SPECint_rate_base2006 = 5230

<table>
<thead>
<tr>
<th>Test sponsor:</th>
<th>HITACHI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tested by:</td>
<td>HITACHI</td>
</tr>
<tr>
<td>CPU2006 license:</td>
<td>35</td>
</tr>
<tr>
<td>CPU Name:</td>
<td>Intel Xeon E7-8880 v3</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>2300</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>144 cores, 8 chips, 18 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td>2,4,8 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>45 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache:</td>
<td>None</td>
</tr>
<tr>
<td>Memory:</td>
<td>2 TB (128 x 16 GB 2Rx4 PC4-2133P-R, running at 1600 MHz)</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>
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</tbody>
</table>

### Software

- Operating System: Red Hat Enterprise Linux Server release 6.6 (Santiago) 2.6.32-504.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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CPU2006 license: 35
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Results Table

<table>
<thead>
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</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:
C-State = Disable
Cl Enhanced Mode = Disable
EnergyEfficientTurbo = Disable
ProcessorPerformanceStates = Disable
UncoreFrequencyScaling = Disable
Platform Controlled Type = Maximum Performance
Memory Power Management = Disable
Patrol Scrub = Disable

Sysinfo program /home/speccpu2006/cpu2006/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on RHEL6.6 Tue Aug 4 23:09:17 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
Continued on next page
**Platform Notes (Continued)**

From /proc/cpuinfo

```
model name : Intel(R) Xeon(R) CPU E7-8880 v3 @ 2.30GHz
  8 "physical id"s (chips)
  288 "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 : 18
  siblings : 36
  physical 0: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 1: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 2: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 3: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 4: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
  physical 5: cores 0 1 2 3 4 8 9 10 11 16 17 18 19 20 24 25 26 27
183```

From /proc/meminfo

```
MemTotal:  2117096220 kB
HugePages_Total:       0
Hugepagesize:       2048 kB
```

```
/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.6 (Santiago)
```

From /etc/*release* /etc/*version*

```
redhat-release: Red Hat Enterprise Linux Server release 6.6 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.6 (Santiago)
```

```
uname -a:
Linux RHEL6.6 2.6.32-504.el6.x86_64 #1 SMP Tue Sep 16 01:56:35 EDT 2014
x86_64 x86_64 x86_64 GNU/Linux
```

```
run-level 3 Aug 4 15:47
```

```
SPEC is set to: /home/speccpu2006/cpu2006
```

```
Filesystem           Type  Size  Used Avail Use% Mounted on
/dev/mapper/vg_rhel6-lv_home
ext4  496G  7.6G  463G   2% /home
```

```
Additional information from dmidecode:
BIOS HITACHI 09-14 07/09/2015
Memory:
  64x NO DIMM Unknown
  1x Samsung M39.A2G40DB0-CPB 16 GB 1600 MHz 2 rank
  127x Samsung M393A2G40DB0-CPB 16 GB 1600 MHz 2 rank
```

(End of data from sysinfo program)
### General Notes

Environment variables set by runspec before the start of the run:

```bash
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:
  ```bash
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
```
- Filesystem page cache cleared with:
  ```bash
echo 1 > /proc/sys/vm/drop_caches
```
- runspec command invoked through numactl i.e.:
  ```bash
numactl --interleave=all runspec <etc>
```

BladeSymphony BS520X, BladeSymphony BS2500 and Hitachi Compute Blade 520X are electronically equivalent.
The results have been measured on a Hitachi Compute Blade 520X.

### 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`
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**Peak Compiler Invocation**

C benchmarks (except as noted below):

```
icc -m32
```

```
400.perlbench: icc -m64
```

```
401.bzip2: icc -m64
```

```
458.sjeng: icc -m64
```

C++ benchmarks:

```
icc -m32
```

**Peak Portability Flags**

```
400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -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)
   -o3(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)
   -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: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -prof-use(pass 2)
   -ansi-alias -opt-mem-layout-trans=3
```

```
456.hmmer: basepeak = yes
```

```
458.sjeng: -xCORE-AVX2(pass 2) -prof-gen(pass 1) -ipo(pass 2)
   -o3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2)
   -unroll4 -auto-ilp32
```

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Peak Optimization Flags (Continued)

462.libquantum: basepeak = yes
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.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/PlatformHitachi-V1.2.20150729.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/PlatformHitachi-V1.2.20150729.xml

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

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