**SPEC® CINT2006 Result**

**Huawei**

Huawei CH220 V3 (Intel Xeon E5-2650 v4)

<table>
<thead>
<tr>
<th>SPECint_rate2006 = 1050</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_rate_base2006 = 1000</td>
</tr>
</tbody>
</table>

CPU2006 license: 3175  
Test sponsor: Huawei  
Tested by: Huawei  
Test date: Nov-2016  
Hardware Availability: Nov-2016  
Software Availability: Dec-2015  

<table>
<thead>
<tr>
<th>Tested</th>
<th>Software Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware</td>
<td></td>
</tr>
<tr>
<td>Software</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CPU Name</th>
<th>Operating System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel Xeon E5-2650 v4</td>
<td>SUSE Linux Enterprise Server 12 SP1 3.12.49-11-default</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CPU Characteristics</th>
<th>Compiler</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel Turbo Boost Technology up to 2.90 GHz</td>
<td>ICC++: Version 16.0.0.101 of Intel C++ Studio XE for Linux</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CPU MHz</th>
<th>Auto Parallel</th>
</tr>
</thead>
<tbody>
<tr>
<td>2200</td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FPU</th>
<th>File System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated</td>
<td>ext4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CPU(s) enabled</th>
<th>System State</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 cores, 2 chips, 12 cores/chip, 2 threads/core</td>
<td>Run level 3 (multi-user)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CPU(s) orderable</th>
<th>Peak Pointers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2 chip</td>
<td>32-bit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Primary Cache</th>
<th>Other Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 KB I + 32 KB D on chip per core</td>
<td>Microquill SmartHeap V10.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Secondary Cache</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>256 KB I+D on chip per core</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>L3 Cache</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>30 MB I+D on chip per chip</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other Cache</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Memory</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>256 GB (16 x 16 GB 2Rx8 PC4-2400T-R)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Disk Subsystem</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 x 300 GB SAS, 10000 RPM</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other Hardware</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>
Huawei

Huawei CH220 V3 (Intel Xeon E5-2650 v4)

SPECint_rate2006 = 1050

SPECint_rate_base2006 = 1000

CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei

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>
<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>48</td>
<td>663</td>
<td>708</td>
<td>661</td>
<td>710</td>
<td>664</td>
<td>707</td>
<td>48</td>
<td>534</td>
<td>879</td>
<td>535</td>
<td>877</td>
<td>533</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>48</td>
<td>962</td>
<td>482</td>
<td>965</td>
<td>480</td>
<td>959</td>
<td>483</td>
<td>48</td>
<td>930</td>
<td>498</td>
<td>930</td>
<td>498</td>
<td>930</td>
</tr>
<tr>
<td>403.gcc</td>
<td>48</td>
<td>511</td>
<td>756</td>
<td>507</td>
<td>762</td>
<td>506</td>
<td>763</td>
<td>48</td>
<td>511</td>
<td>756</td>
<td>507</td>
<td>762</td>
<td>506</td>
</tr>
<tr>
<td>429.mcf</td>
<td>48</td>
<td>311</td>
<td>1410</td>
<td>310</td>
<td>1410</td>
<td>314</td>
<td>1410</td>
<td>48</td>
<td>311</td>
<td>1410</td>
<td>310</td>
<td>1410</td>
<td>310</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>48</td>
<td>784</td>
<td>642</td>
<td>784</td>
<td>642</td>
<td>785</td>
<td>642</td>
<td>48</td>
<td>771</td>
<td>653</td>
<td>772</td>
<td>652</td>
<td>771</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>48</td>
<td>310</td>
<td>1450</td>
<td>310</td>
<td>1440</td>
<td>312</td>
<td>1430</td>
<td>48</td>
<td>272</td>
<td>1640</td>
<td>274</td>
<td>1640</td>
<td>273</td>
</tr>
<tr>
<td>458.sjeng</td>
<td>48</td>
<td>871</td>
<td>667</td>
<td>871</td>
<td>667</td>
<td>871</td>
<td>667</td>
<td>48</td>
<td>824</td>
<td>705</td>
<td>824</td>
<td>705</td>
<td>824</td>
</tr>
<tr>
<td>462.libquantum</td>
<td>48</td>
<td>101</td>
<td>9860</td>
<td>101</td>
<td>9870</td>
<td>101</td>
<td>9850</td>
<td>48</td>
<td>101</td>
<td>9860</td>
<td>101</td>
<td>9870</td>
<td>101</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>48</td>
<td>887</td>
<td>1200</td>
<td>891</td>
<td>1190</td>
<td>887</td>
<td>1200</td>
<td>48</td>
<td>874</td>
<td>1210</td>
<td>876</td>
<td>1210</td>
<td>871</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>48</td>
<td>543</td>
<td>552</td>
<td>542</td>
<td>554</td>
<td>541</td>
<td>554</td>
<td>48</td>
<td>509</td>
<td>589</td>
<td>510</td>
<td>588</td>
<td>509</td>
</tr>
<tr>
<td>473.astar</td>
<td>48</td>
<td>573</td>
<td>588</td>
<td>573</td>
<td>588</td>
<td>590</td>
<td>571</td>
<td>48</td>
<td>573</td>
<td>588</td>
<td>573</td>
<td>588</td>
<td>570</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>48</td>
<td>272</td>
<td>1220</td>
<td>272</td>
<td>1220</td>
<td>277</td>
<td>1200</td>
<td>48</td>
<td>272</td>
<td>1220</td>
<td>272</td>
<td>1220</td>
<td>277</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:
Set Power Efficiency Mode to Performance
Set Snoop Mode to COD mode
Set Patrol Scrub to Disable
Sysinfo program /spec16/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 $$ e3fbb8667b5a285932ceab81e28219e1
running on linux-t36i Tue Nov 29 03:38:18 2016

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 E5-2650 v4@ 2.20GHz
  2 "physical id"s (chips)
  48 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The
Continued on next page
SPEC CINT2006 Result

Huawei

Huawei CH220 V3 (Intel Xeon E5-2650 v4)

SPECint_rate2006 = 1050
SPECint_rate_base2006 = 1000

CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei

Test date: Nov-2016
Hardware Availability: Nov-2016
Software Availability: Dec-2015

Platform Notes (Continued)

following excerpts from /proc/cpuinfo might not be reliable. Use with caution.

- cpu cores : 12
- siblings : 24
- physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
- physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13
- cache size : 15360 KB

From /proc/meminfo

- MemTotal: 264268852 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

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

- SuSE-release:
  - SUSE Linux Enterprise Server 12 (x86_64)
  - VERSION = 12
  - PATCHLEVEL = 1
  # This file is deprecated and will be removed in a future service pack or release.
  # Please check /etc/os-release for details about this release.

- os-release:
  - NAME="SLES"
  - VERSION="12-SP1"
  - VERSION_ID="12.1"
  - PRETTY_NAME="SUSE Linux Enterprise Server 12 SP1"
  - ID="sles"
  - ANSI_COLOR="0;32"
  - CPE_NAME="cpe:/o:suse:sles:12:sp1"

uname -a:

- Linux linux-t36i 3.12.49-11-default #1 SMP Wed Nov 11 20:52:43 UTC 2015
  (8d714a0) x86_64 x86_64 x86_64 GNU/Linux

- run-level 3 Nov 29 03:32

- SPEC is set to: /spec16
  - Filesystem Type Size Used Avail Use% Mounted on
  - /dev/sda2 ext4 274G 110G 164G 41% /

Additional information from dmidecode:

- Warning: Use caution when you interpret this section. The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

- BIOS Insyde Corp. 3.31 08/22/2016
- Memory:
  - 16x Micron 18ASF2G72PDZ-2G3B1 16 GB 2 rank 2400 MHz

(End of data from sysinfo program)
Huawei
Huawei CH220 V3 (Intel Xeon E5-2650 v4)

<table>
<thead>
<tr>
<th>SPECint_rate2006</th>
<th>1050</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_rate_base2006</td>
<td>1000</td>
</tr>
</tbody>
</table>

CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei

Test date: Nov-2016
Hardware Availability: Nov-2016
Software Availability: Dec-2015

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/spec16/libs/32:/spec16/libs/64:/spec16/sh"

Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB memory using RedHat EL 7.1
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
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>

Base Compiler Invocation

C benchmarks:
icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

C++ benchmarks:
icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

Base Portability Flags

400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32
401.bzip2: -D_FILE_OFFSET_BITS=64
403.gcc: -D_FILE_OFFSET_BITS=64
429.mcf: -D_FILE_OFFSET_BITS=64
445.gobmk: -D_FILE_OFFSET_BITS=64
456.hmmer: -D_FILE_OFFSET_BITS=64
458.sjeng: -D_FILE_OFFSET_BITS=64
462.libquantum: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX
464.h264ref: -D_FILE_OFFSET_BITS=64
471.omnetpp: -D_FILE_OFFSET_BITS=64
473.astar: -D_FILE_OFFSET_BITS=64
483.xalancbmk: -D_FILE_OFFSET_BITS=64 -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
Huawei
Huawei CH220 V3 (Intel Xeon E5-2650 v4)

SPECint_rate2006 = 1050
SPECint_rate_base2006 = 1000

CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei

Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
icc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin
400.perlbench: icc -m64
401.bzip2: icc -m64
456.hmmer: icc -m64
458.sjeng: icc -m64

C++ benchmarks:
icpc -m32 -L/opt/intel/compilers_and_libraries_2016/linux/compiler/lib/ia32_lin

Peak Portability Flags

400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64
403.gcc: -D_FILE_OFFSET_BITS=64
429.mcf: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64
445.gobmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64
456.hmmer: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64
458.sjeng: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LP64
462.libquantum: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX
464.h264ref: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX
471.omnetpp: -D_FILE_OFFSET_BITS=64
473.astar: -D_FILE_OFFSET_BITS=64
483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:
400.perlbench: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
-par-num-threads=1(pass 1) -prof-use(pass 2) -auto-ilkp32
Huawei

Huawei CH220 V3 (Intel Xeon E5-2650 v4)

SPECint_rate2006 = 1050
SPECint_rate_base2006 = 1000

CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei

Test date: Nov-2016
Hardware Availability: Nov-2016
Software Availability: Dec-2015

Peak Optimization Flags (Continued)

401.bzip2: -xCORE-AVX2(pass 2) --prof-gen:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
-par-num-threads=1(pass 1) -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:threadsafe(pass 1)
-prof-use(pass 2) -par-num-threads=1(pass 1) -ansi-alias
-opt-mem-layout-trans=3

456.hmmer: -xCORE-AVX2 -ipo -O3 -no-prec-div -unroll2 -auto-ilp32

458.sjeng: -xCORE-AVX2(pass 2) --prof-gen:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
-par-num-threads=1(pass 1) -prof-use(pass 2) -unroll4
-auto-ilp32

462.libquantum: basepeak = yes

464.h264ref: -xCORE-AVX2(pass 2) --prof-gen:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
-par-num-threads=1(pass 1) -prof-use(pass 2) -unroll2
-ansi-alias

C++ benchmarks:

471.omnetpp: -xCORE-AVX2(pass 2) --prof-gen:threadsafe(pass 1)
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)
-par-num-threads=1(pass 1) -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
Huawei

Huawei CH220 V3 (Intel Xeon E5-2650 v4)

SPECint_rate2006 = 1050
SPECint_rate_base2006 = 1000

CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei

Test date: Nov-2016
Hardware Availability: Nov-2016
Software Availability: Dec-2015

The flags files that were used to format this result can be browsed at:
http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-BDW-V1.0.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-BDW-V1.0.xml

SPEC and SPECint are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.
Originally published on 27 December 2016.