Huawei

Huawei 5288 V3 (Intel Xeon E5-2650L v4)

<table>
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<tr>
<th>SPECint®_rate2006</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECint_rate_base2006</td>
<td>954</td>
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CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei

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

<table>
<thead>
<tr>
<th>SPECint Rates</th>
<th>Rate</th>
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<tbody>
<tr>
<td>400.perlbench</td>
<td>56</td>
</tr>
<tr>
<td>401.bzip2</td>
<td>56</td>
</tr>
<tr>
<td>403.gcc</td>
<td>56</td>
</tr>
<tr>
<td>429.mcf</td>
<td>56</td>
</tr>
<tr>
<td>445.gobmk</td>
<td>56</td>
</tr>
<tr>
<td>456.hmmer</td>
<td>56</td>
</tr>
<tr>
<td>458.sjeng</td>
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</tr>
<tr>
<td>462.libquantum</td>
<td>56</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>56</td>
</tr>
<tr>
<td>471.omnetpp</td>
<td>56</td>
</tr>
<tr>
<td>473.astar</td>
<td>56</td>
</tr>
<tr>
<td>483.xalancbmk</td>
<td>56</td>
</tr>
</tbody>
</table>

**Hardware**

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>Intel Xeon E5-2650L v4</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Characteristics:</td>
<td>Intel Turbo Boost Technology up to 2.50 GHz</td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>1700</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 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>35 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache:</td>
<td>None</td>
</tr>
<tr>
<td>Memory:</td>
<td>512 GB (16 x 32 GB 2Rx4 PC4-2400T-R)</td>
</tr>
<tr>
<td>Disk Subsystem:</td>
<td>1 x 600 GB SAS, 10000 RPM</td>
</tr>
</tbody>
</table>

**Software**

<table>
<thead>
<tr>
<th>Operating System:</th>
<th>SUSE Linux Enterprise Server 12 SP1 3.12.49-11-default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler:</td>
<td>C/C++: Version 16.0.0.101 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 V10.2</td>
</tr>
</tbody>
</table>
**Huawei**

Huawei 5288 V3 (Intel Xeon E5-2650L v4)

**SPECint_rate2006 = 1000**

**SPECint_rate_base2006 = 954**

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<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Base Seconds</th>
<th>Ratio</th>
<th>Peak Seconds</th>
<th>Ratio</th>
<th>Base Seconds</th>
<th>Ratio</th>
<th>Peak Seconds</th>
<th>Ratio</th>
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<tr>
<td>400.perlbench</td>
<td>56</td>
<td>819</td>
<td>668</td>
<td>820</td>
<td>668</td>
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<td>666</td>
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<td>835</td>
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<td>401.bzip2</td>
<td>56</td>
<td>1141</td>
<td>744</td>
<td>1144</td>
<td>743</td>
<td>1149</td>
<td>752</td>
<td>56</td>
<td>753</td>
<td>597</td>
<td>755</td>
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<td>403.gcc</td>
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<td>603</td>
<td>748</td>
<td>602</td>
<td>749</td>
<td>600</td>
<td>752</td>
<td>56</td>
<td>599</td>
<td>700</td>
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<td>429.mcf</td>
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<td>445.gobmk</td>
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<td>500</td>
<td>1048</td>
<td>500</td>
<td>1046</td>
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<td>56</td>
<td>503</td>
<td>984</td>
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<td>456.hmmer</td>
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<td>464.h264ref</td>
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<td>471.omnetpp</td>
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<td>1180</td>
<td>56</td>
<td>1180</td>
<td>326</td>
<td>1180</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-sasi Tue Dec 15 02:03:32 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 E5-2650L v4@ 1.70GHz
  2 "physical id"s (chips)
  56 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The Continued on next page
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Huawei 5288 V3 (Intel Xeon E5-2650L v4)

SPECint_rate2006 = 1000
SPECint_rate_base2006 = 954

CPU2006 license: 3175
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Platform Notes (Continued)

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: 529033312 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:
    (8d714a0) x86_64 x86_64 x86_64 GNU/Linux

  run-level 3 Dec 14 22:13

  SPEC is set to: /spec16

  Filesystem Type Size Used Avail Use% Mounted on
  /dev/sda1 ext4 551G 105G 445G 19% /

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 Insysde Corp. 3.31 08/22/2016
  Memory:
    16x Micron 36ASF4G72PZ-2G3A1 32 GB 2 rank 2400 MHz

(End of data from sysinfo program)
SPEC CINT2006 Result

Huawei

Huawei 5288 V3 (Intel Xeon E5-2650L v4)

SPECint_rate2006 = 1000
SPECint_rate_base2006 = 954

CPU2006 license: 3175
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Test date: Nov-2016
Hardware Availability: Mar-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 5288 V3 (Intel Xeon E5-2650L v4)

SPECint\_rate\_2006 = 1000
SPECint\_rate\_base\_2006 = 954

**Base Other Flags**

C benchmarks:

403.gcc: -Dalloca=_alloca

**Peak Compiler Invocation**

C benchmarks (except as noted below):

```plaintext
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
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-ilp32
```

Continued on next page
Huawei 5288 V3 (Intel Xeon E5-2650L v4)

CPU2006 license: 3175
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SPECint_rate2006 = 1000
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Test date: Nov-2016
Hardware Availability: Mar-2016
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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


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


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 5288 V3 (Intel Xeon E5-2650L v4)

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CPU2006 license: 3175  
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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

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

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