Huawei CH226 V3 (Intel Xeon E5-2680 v4) SPECint\_rate2006 = 1330
SPECint\_rate\_base2006 = 1270

CPU2006 license: 3175
Test sponsor: Huawei
Tested by: Huawei
CPU Name: Intel Xeon E5-2680 v4
CPU Characteristics: Intel Turbo Boost Technology up to 3.30 GHz
CPU MHz: 2400
FPU: Integrated
CPU(s) enabled: 28 cores, 2 chips, 14 cores/chip, 2 threads/core
CPU(s) orderable: 1.2 chip
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 256 KB I+D on chip per core
L3 Cache: 35 MB I+D on chip per chip
Other Cache: None
Memory: 512 GB (16 x 32 GB 2Rx4 PC4-2400T-R)
Disk Subsystem: 1 x 500 GB SATA, 7200 RPM
Other Hardware: None

Operating System: SUSE Linux Enterprise Server 12 SP1 3.12.49-11-default
Compiler: C/C++: Version 16.0.0.101 of Intel C++ Studio XE for Linux
Auto Parallel: No
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 32-bit
Peak Pointers: 32/64-bit
Other Software: Microquill SmartHeap V10.2

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

Huawei CH226 V3 (Intel Xeon E5-2680 v4)

SPECint_rate2006 = 1330
SPECint_rate_base2006 = 1270

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

Results Table

<table>
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<tr>
<th>Benchmark</th>
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<th>Seconds</th>
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<th>Seconds</th>
<th>Ratio</th>
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<td>429.mcf</td>
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<td>456.hmmer</td>
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<td>88.5</td>
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<td>473.astar</td>
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<td>483.xalancbmk</td>
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<td>1440</td>
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<td>1440</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
Baseboard Management Controller used to adjust the fan speed to 100%
Sysinfo program /spec16/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on linux-4m6y Tue Nov 22 12:47:37 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 E5-2680 v4 @ 2.40GHz
2 "physical id"s (chips)
56 "processors"
Huawei
Huawei CH226 V3 (Intel Xeon E5-2680 v4)

SPECint_rate2006 = 1330
SPECint_rate_base2006 = 1270

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

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: 528824412 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
  SUSE Linux Enterprise Server 12 SP1

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-4m6y 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 22 12:46 last=5

SPEC is set to: /spec16

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 xfs 456G 113G 343G 25% /

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. 3.32 09/14/2016
Memory:

Continued on next page
Huawei

Huawei CH226 V3 (Intel Xeon E5-2680 v4)

**SPECint_rate2006 =** 1330  
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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

**Platform Notes (Continued)**

- 8x NO DIMM NO DIMM
- 16x Samsung M393A4K40BB1-CRC 32 GB 2 rank 2400 MHz

(End of data from sysinfo program)

**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

echo 1> /proc/sys/vm/drop_caches

runspec command invoked through numactl i.e.:

umactl --interleave=all runspec <etc>

The Huawei CH226 V3 and Huawei CH225 V3 are electronically equivalent.

The results have been measured on a Huawei CH226 V3 model

**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
Huawei
Huawei CH226 V3 (Intel Xeon E5-2680 v4)

SPECint_rate2006 = 1330
SPECint_rate_base2006 = 1270

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 -W1,-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 -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
445.gobmk: -D_FILE_OFFSET_BITS=64
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_LP64
464.h264ref: -D_FILE_OFFSET_BITS=64
471.omnetpp: -D_FILE_OFFSET_BITS=64
473.astar: -D_FILE_OFFSET_BITS=64

Continued on next page
Huawei

Huawei CH226 V3 (Intel Xeon E5-2680 v4)

\[
\text{SPECint_rate2006} = 1330 \\
\text{SPECint_rate_base2006} = 1270
\]

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

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

Peak Portability Flags (Continued)

483.xalancbmk: \(-D\_FILE\_OFFSET\_BITS=64\) \(-D\_SPEC\_CPU\_LINUX\)

Peak Optimization Flags

C benchmarks:

400.perbench: \(-x\text{CORE}-\text{AVX2}(\text{pass 2})\) \(-\text{prof-gen:threadsaf}(\text{pass 1})\) 
\(-\text{ipo}(\text{pass 2})\) \(-\text{O3}(\text{pass 2})\) \(-\text{no-prec-div}(\text{pass 2})\)
\(-\text{par-num-threads}=1(\text{pass 1})\) \(-\text{prof-use}(\text{pass 2})\) \(-\text{auto-ilp32}\)

401.bzip2: \(-x\text{CORE}-\text{AVX2}(\text{pass 2})\) \(-\text{prof-gen:threadsaf}(\text{pass 1})\) 
\(-\text{ipo}(\text{pass 2})\) \(-\text{O3}(\text{pass 2})\) \(-\text{no-prec-div}(\text{pass 2})\)
\(-\text{par-num-threads}=1(\text{pass 1})\) \(-\text{prof-use}(\text{pass 2})\) \(-\text{opt-prefetch}\)
\(-\text{auto-ilp32}\) \(-\text{ansi-alias}\)

403.gcc: \(-x\text{CORE}-\text{AVX2}\) \(-\text{ipo}\) \(-\text{O3}\) \(-\text{no-prec-div}\)

429.mcf: basepeak = yes

445.gobmk: \(-x\text{CORE}-\text{AVX2}(\text{pass 2})\) \(-\text{prof-gen:threadsaf}(\text{pass 1})\) 
\(-\text{opt-mem-layout-trans}=3\)

456.hmmer: \(-x\text{CORE}-\text{AVX2}\) \(-\text{ipo}\) \(-\text{O3}\) \(-\text{no-prec-div}\) \(-\text{unroll2}\) \(-\text{auto-ilp32}\)

458.sjeng: \(-x\text{CORE}-\text{AVX2}(\text{pass 2})\) \(-\text{prof-gen:threadsaf}(\text{pass 1})\) 
\(-\text{ipo}(\text{pass 2})\) \(-\text{O3}(\text{pass 2})\) \(-\text{no-prec-div}(\text{pass 2})\)
\(-\text{par-num-threads}=1(\text{pass 1})\) \(-\text{prof-use}(\text{pass 2})\) \(-\text{unroll4}\)
\(-\text{auto-ilp32}\)

462.libquantum: basepeak = yes

464.h264ref: \(-x\text{CORE}-\text{AVX2}(\text{pass 2})\) \(-\text{prof-gen:threadsaf}(\text{pass 1})\) 
\(-\text{ipo}(\text{pass 2})\) \(-\text{O3}(\text{pass 2})\) \(-\text{no-prec-div}(\text{pass 2})\)
\(-\text{par-num-threads}=1(\text{pass 1})\) \(-\text{prof-use}(\text{pass 2})\) \(-\text{unroll2}\)
\(-\text{ansi-alias}\)

C++ benchmarks:

471.omnetpp: \(-x\text{CORE}-\text{AVX2}(\text{pass 2})\) \(-\text{prof-gen:threadsaf}(\text{pass 1})\) 
\(-\text{ipo}(\text{pass 2})\) \(-\text{O3}(\text{pass 2})\) \(-\text{no-prec-div}(\text{pass 2})\)
\(-\text{par-num-threads}=1(\text{pass 1})\) \(-\text{prof-use}(\text{pass 2})\) \(-\text{ansi-alias}\)
\(-\text{opt-ra-region-strategy=block} \text{-Wl,-z,muldefs}\)
\(-\text{L/sh} \text{-lsmartheap}\)

473.astar: basepeak = yes

Continued on next page
Huawei CH226 V3 (Intel Xeon E5-2680 v4)

SPECint_rate2006 = 1330
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CPU2006 license: 3175
Test date: Nov-2016
Test sponsor: Huawei
Hardware Availability: Mar-2016
Tested by: Huawei
Software Availability: Dec-2015

Peak Optimization Flags (Continued)

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-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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