Huawei CH121 V5 (Intel Xeon Silver 4112)

**SPECint®2006 = 58.2**

**SPECint_base2006 = 55.9**

**Hardware**
- **CPU Name:** Intel Xeon Silver 4112
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.00 GHz
- **CPU MHz:** 2600
- **FPU:** Integrated
- **CPU(s) enabled:** 8 cores, 2 chips, 4 cores/chip
- **CPU(s) orderable:** 1.2 chip
- **Primary Cache:** 32 KB I + 32 KB D on chip per core
- **Secondary Cache:** 1 MB I+D on chip per core
- **L3 Cache:** 8.25 MB I+D on chip per chip
- **Memory:** 384 GB (24 x 16 GB 2Rx8 PC4-2666V-R, running at 2400 MHz)
- **Disk Subsystem:** 1 x 1200 GB SAS, 10000 RPM
- **Other Cache:** None

**Software**
- **Operating System:** Red Hat Enterprise Linux Server release 7.3 (Maipo) 3.10.0-514.el7.x86_64
- **Compiler:** C/C++: Version 17.0.0.098 of Intel C/C++ Compiler for Linux
- **Auto Parallel:** Yes
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 32/64-bit
- **Peak Pointers:** 32/64-bit
- **Other Software:** Microquill SmartHeap V10.2
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Results Table

<table>
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<th>Seconds Peak</th>
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<td>483.xalancbmk</td>
<td>111</td>
<td>61.9</td>
<td>112</td>
<td>61.8</td>
</tr>
</tbody>
</table>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Submit Notes

The config file option 'submit' was used.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

Platform Notes

BIOS configuration:
Set Power Efficiency Mode to Custom
Set Hyper-Threading to Disable
Sysinfo program /spec17/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on localhost.localdomain Thu Jul 27 11:43:27 2017

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) Silver 4112 CPU @ 2.60GHz
  2 "physical id"s (chips)
  8 "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 : 4

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CPU2006 license: 3/175
Test sponsor: Huawei
Tested by: Huawei

Platform Notes (Continued)

siblings : 4
physical 0: cores 0 1 4 5
physical 1: cores 0 2 3 4
cache size : 8448 KB

From /proc/meminfo
MemTotal: 394145204 kB
 HugePages_Total: 0
 Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
os-release:
 NAME="Red Hat Enterprise Linux Server"
 VERSION="7.3 (Maipo)"
 ID="rhel"
 ID_LIKE="fedora"
 VERSION_ID="7.3"
 PRETTY_NAME="Red Hat Enterprise Linux Server 7.3 (Maipo)"
 ANSI_COLOR="0;31"
 CPE_NAME=cpe:/o:redhat:enterprise_linux:7.3:GA:server

redhat-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)

uname -a:
 Linux localhost.localdomain 3.10.0-514.el7.x86_64 #1 SMP Wed Oct 19 11:24:13 EDT 2016 x86_64 x86_64 x86_64 GNU/Linux
 run-level 3 Jul 27 11:40

SPEC is set to: /spec17
 Filesystem Type Size Used Avail Use% Mounted on
 /dev/sda2 xfs 898G 17G 882G 2% /

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. 0.20 07/14/2017
Memory:
24x Samsung M393A2K43BB1-CTD 16 GB 2 rank 2666 MHz, configured at 2400 MHz

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact"
LD_LIBRARY_PATH = "/spec17/libs/32:/spec17/libs/64:/spec17/sh10.2"

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**SPEC CINT2006 Result**

| SPECint2006 = | 58.2 |
| SPECint_base2006 = | 55.9 |

**CPU2006 license:** 3175

| Test sponsor: | Huawei |
| Tested by: | Huawei |

**Test date:** Jul-2017

**Hardware Availability:** Sep-2017

**Software Availability:** Nov-2016

**General Notes (Continued)**

OMP_NUM_THREADS = "8"

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM memory using Redhat Enterprise Linux 7.2

Transparent Huge Pages enabled with:

echo always > /sys/kernel/mm/transparent_hugepage/enabled

runcpec command invoked through numactl i.e.:

numactl --interleave=all runcpec <etc>

**Base Compiler Invocation**

C benchmarks:

```plaintext
icc -m64
```

C++ benchmarks:

```plaintext
icpc -m64
```

**Base Portability Flags**

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

**Base Optimization Flags**

C benchmarks:

```plaintext
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch -auto-p32
```

C++ benchmarks:

```plaintext
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-Wl,-z,muldefs -L/sh10.2 -lsmartheap64
```
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Base Other Flags

C benchmarks:

403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):

icc -m64

400.perlbench: icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
445.gobmk: icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32

C++ benchmarks (except as noted below):

icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
473.astar: icpc -m64

Peak Portability Flags

400.perlbench: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX_IA32
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -D_FILE_OFFSET_BITS=64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
464.h264ref: -DSPEC_CPU_LP64
471.omnetpp: -D_FILE_OFFSET_BITS=64
473.astar: -DSPEC_CPU_LP64
483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:

400.perlbench: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -qopt-prefetch

401.bzip2: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div -auto-ilp32 -qopt-prefetch

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**Hardware Availability:** Sep-2017

**Tested by:** Huawei
**Software Availability:** Nov-2016

**Peak Optimization Flags (Continued)**

403.gcc: basepeak = yes
429.mcf: basepeak = yes

445.gobmk: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
- par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
- no-prec-div(pass 2)

456.hmmer: basepeak = yes

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

462.libquantum: basepeak = yes

464.h264ref: basepeak = yes

C++ benchmarks:

471.omnetpp: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
- par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
- no-prec-div(pass 2) -qopt-ra-region-strategy=block
- Wl,-z,muldefs -L/sh10.2 -lsmartheap

473.astar: basepeak = yes

483.xalancbmk: -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
- Wl,-z,muldefs -L/sh10.2 -lsmartheap

**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-ic17.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-SKL-V1.6.html

You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Huawei-Platform-Settings-SKL-V1.6.xml
## Huawei

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| SPECint_base2006 | 55.9 |

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