Intel Xeon Gold 6148

Intel

SPECaccel_omp_peak = 5.61
SPECaccel_omp_base = 5.16

CPU Name: Intel Xeon Gold 6148
CPU Characteristics: Simultaneous multithreading (SMT) ON, Turbo ON
CPU MHz: 2400
CPU MHz Maximum: 3700
FPU: Integrated
CPU(s) enabled: 40 cores, 2 chips, 20 cores/chip, 2 threads/core
CPU(s) orderable: 1,2 chips
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 1 MB I+D on chip per core
L3 Cache: 27.5 MB I+D on chip per chip
Other Cache: None

Accelerator
Accel Model Name: Intel Xeon Gold 6148
Accel Vendor: Intel
Accel Name: Intel Xeon Gold 6148
Type of Accel: CPU
Accel Connection: N/A
Does Accel Use ECC: yes
Accel Description: 2 x Intel Xeon Gold 6148, 2.40 GHz, SMT ON, Turbo ON
Accel Driver: N/A

Hardware

Accelerator
**SPEC ACCEL OMP Result**

**Intel Xeon Gold 6148**

Intel Server System R2208WFTZS (2 x Intel Xeon Gold 6148, 2.40 GHz, SMT ON, Turbo ON) Endeavour Node

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**ACCEL license:** 13  
**Test sponsor:** Intel  
**Tested by:** Intel  

**Hardware (Continued)**

- **Memory:** 196 GB (12 x 16 GB 2Rx4 DDR4-2666 ECC Registered)  
- **Disk Subsystem:** 108 TB Panasas ActiveStor 14  
- **Other Hardware:** None

**Software**

- **Operating System:** Red Hat Enterprise Linux Server release 7.3 (Maipo) 3.10.0-514.6.2.0.1.el7.x86_64.knl1  
- **Compiler:** C/C++/Fortran: Version 18.0 of Intel Composer XE for Linux Build  
- **File System:** panfs  
- **System State:** Run level 3 (default)  
- **Other Software:** FFTW 3.3.6

---

### Results Table

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<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<td>32.2</td>
<td>24.2</td>
<td>32.9</td>
<td>23.7</td>
</tr>
</tbody>
</table>

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

---

**Platform Notes**

Sysinfo program  
/panfs/projects/inll/abobyr/specACCEL_OMP/kits/kit1.2_skx_18.0/Docs/sysinfo  
$Rev: 6965 $ $Date:: 2015-04-21 #$ c05a7f14b1b1765e3fe1df68447e8a35  
running on epb227 Tue Jul 18 06:09:41 2017

---

Standard Performance Evaluation Corporation  
info@spec.org  
http://www.spec.org/
Intel Xeon Gold 6148

Intel Server System R2208WFTZS (2 x Intel Xeon Gold 6148, 2.40 GHz, SMT ON, Turbo ON) Endeavour Node

<table>
<thead>
<tr>
<th>ACCEL license: 13</th>
<th>Test date: Jul-2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor: Intel</td>
<td>Hardware Availability: Jul-2017</td>
</tr>
<tr>
<td>Tested by: Intel</td>
<td>Software Availability: Oct-2017</td>
</tr>
</tbody>
</table>

**SPECaccel_omp_peak = 5.61**

**SPECaccel_omp_base = 5.16**

Platform Notes (Continued)

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/accel/Docs/config.html#sysinfo

From `/proc/cpuinfo`
- model name : Intel(R) Xeon(R) Gold 6148 CPU @ 2.40GHz
- 2 "physical id"s (chips)
- 80 "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 : 20
  - siblings : 40
- physical 0: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
- physical 1: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
- cache size : 28160 KB

From `/proc/meminfo`
- MemTotal: 196699188 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

From `/etc/*release*/etc/*version*`
- oracle-release: Oracle Linux Server release 7.3
- os-release:
  - NAME="Oracle Linux Server"
  - VERSION="7.3"
  - ID="ol"
  - VERSION_ID="7.3"
  - PRETTY_NAME="Oracle Linux Server 7.3"
  - ANSI_COLOR="0;31"
  - CPE_NAME=cpe:o:oracle:linux:7:3:server
- HOME_URL=https://linux.oracle.com/
- redhat-release: Red Hat Enterprise Linux Server release 7.3 (Maipo)
- system-release: Oracle Linux Server release 7.3

uname -a:
- Linux epb227 3.10.0-514.6.2.0.1.el7.x86_64.knl1 #1 SMP Thu Mar 2 10:19:17 MST 2017 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jul 17 12:09

SPEC is set to: /panfs/projects/innl/abobyr/specACCEL_OMP/kits/kit1.2_skx_18.0

Filesystem Type Size Used Avail Use% Mounted on
panfs://36.101.212.1/innl panfs 108T 41T 68T 38% /global/panfs02/innl

Additional information from dmidecode:

Continued on next page
SPEC ACCEL OMP Result

Intel

Intel Xeon Gold 6148

Intel Server System R2208WFTZS (2 x Intel Xeon Gold 6148, 2.40 GHz, SMT ON, Turbo ON) Endeavour Node

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ACCEL license: 13
Test sponsor: Intel
Tested by: Intel
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Platform Notes (Continued)

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.

(End of data from sysinfo program)

General Notes

Used Environment Variables:

ENV_KMP_AFFINITY=compact,0 - assign OpenMP Threads continously
ENV_OMP_NUM_THREADS=80 - limits number of Threads to be started
ENV_KMP_HW_SUBSET=2S,20C,2T - control Thread distribution accross sockets, cores and hw threads
ENV_OMP_BUFFERED=true - enables buffered I/O for Fortran
ENV_OMP_DYNAMIC=FALSE - disable the dynamic adjustment of the number of threads within a team
ENV_KMP_LIBRARY=turnaround - selects the OpenMP runtime library throughput
ENV_KMP_BLOCKTIME=infinite - sets the time, in milliseconds, that a thread should wait, after completing the execution of a parallel region, before sleeping.

Base Compiler Invocation

C benchmarks:

icc

Fortran benchmarks:

ifort

Benchmarks using both Fortran and C:

icc ifort

Base Portability Flags

503.postencil: -DSPEC_USE_INNER_SIMD
504.polbm: -DSPEC_USE_INNER_SIMD
514.pomriq: -DSPEC_USE_INNER_SIMD
550.pmd: -DSPEC_USE_INNER_SIMD -80
551.ppalm: -DSPEC_USE_INNER_SIMD
552.pep: -DSPEC_USE_INNER_SIMD
553.pclvrleaf: -DSPEC_USE_INNER_SIMD
554.pcg: -DSPEC_USE_INNER_SIMD
555.pseismic: -DSPEC_USE_INNER_SIMD
556.psp: -DSPEC_USE_INNER_SIMD
Intel
Intel Xeon Gold 6148

Intel Server System R2208WFTZS (2 x Intel Xeon Gold 6148, 2.40 GHz, SMT ON, Turbo ON) Endeavour Node

SPECaccel_omp_peak = 5.61
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ACCEL license: 13
Test sponsor: Intel
Test date: Jul-2017
Tested by: Intel
Hardware Availability: Jul-2017
Software Availability: Oct-2017

Base Portability Flags (Continued)

557.pcsp: -DSPEC_USE_INNER_SIMD
559.pmmiGhost: -DSPEC_USE_INNER_SIMD -nofor-main
560.pilbdc: -DSPEC_USE_INNER_SIMD
563.pswim: -DSPEC_USE_INNER_SIMD
570.pbt: -DSPEC_USE_INNER_SIMD

Base Optimization Flags

C benchmarks:
-03 -xCOMMON-AVX512 -qopenmp -qopenmp-offload=host

Fortran benchmarks:
-03 -xCOMMON-AVX512 -qopenmp -qopenmp-offload=host

Benchmarks using both Fortran and C:
-03 -xCOMMON-AVX512 -qopenmp -qopenmp-offload=host

Peak Compiler Invocation

C benchmarks:
icc

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
icc ifort

Peak Portability Flags

503.postencil: -DSPEC_USE_INNER_SIMD
504.polbm: -DSPEC_USE_INNER_SIMD
514.pomriq: -DSPEC_USE_INNER_SIMD
550.pmd: -DSPEC_USE_INNER_SIMD -80
551.ppalm: -DSPEC_USE_INNER_SIMD -DSPEC_HOST_FFTW3
552.pep: -DSPEC_USE_INNER_SIMD
553.pclvrleaf: -DSPEC_USE_INNER_SIMD
554.pcg: -DSPEC_USE_INNER_SIMD
555.pseismic: -DSPEC_USE_INNER_SIMD
556.psp: -DSPEC_USE_INNER_SIMD
557.pcsp: -DSPEC_USE_INNER_SIMD

Continued on next page
Intel
Intel Xeon Gold 6148

Intel Server System R2208WFTZS (2 x Intel Xeon Gold 6148, 2.40 GHz, SMT ON, Turbo ON) Endeavour Node

ACCEL license: 13
Test sponsor: Intel
Tested by: Intel

**SPECaccel_omp_peak = 5.61**

**SPECaccel_omp_base = 5.16**

**Peak Portability Flags (Continued)**

559.pnniGhost: -DSPEC_USE_INNER_SIMD -nofor-main
560.pilbdc: -DSPEC_USE_INNER_SIMD
563.pswim: -DSPEC_USE_INNER_SIMD
570.pbt: -DSPEC_USE_INNER_SIMD

**Peak Optimization Flags**

C benchmarks:

503.postencil: basepeak = yes
504.polbm: basepeak = yes
514.pomriq: basepeak = yes
552.pep: -O3 -xCOMMON-AVX512 -qopenmp -qopenmp-offload=host -qopt-streaming-stores always -fimf-precision=low
554.pcg: basepeak = yes
557.pcs: basepeak = yes
570.pbt: basepeak = yes

Fortran benchmarks:

550.pmd: -O3 -xCOMMON-AVX512 -qopenmp -qopenmp-offload=host -fimf-precision=low
551.ppalm: -O3 -xCOMMON-AVX512 -qopenmp -qopenmp-offload=host
-I/home/aboby/FFTW-3.3.6_SKL/include
-L/home/aboby/FFTW-3.3.6_SKL/lib
555.pseismic: -O3 -xCOMMON-AVX512 -qopenmp -qopenmp-offload=host
556.psp: basepeak = yes
560.pilbdc: -O3 -xCOMMON-AVX512 -qopenmp -qopenmp-offload=host -qopt-prefetch=5
563.pswim: Same as 555.pseismic

Benchmarks using both Fortran and C:

-03 -xCOMMON-AVX512 -qopenmp -qopenmp-offload=host -qopt-streaming-stores always
Intel Xeon Gold 6148

Intel Server System R2208WFTZS (2 x Intel Xeon Gold 6148, 2.40 GHz, SMT ON, Turbo ON) Endeavour Node

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| Test sponsor:  | Intel |
| Tested by:     | Intel |

| Test date:     | Jul-2017 |
| Hardware Availability: | Jul-2017 |
| Software Availability:  | Oct-2017 |

**SPECaccel_omp_peak** = 5.61  
**SPECaccel_omp_base** = 5.16

Peak Other Flags

Fortran benchmarks:

551/ppalm: -lfftw3

The flags file that was used to format this result can be browsed at https://www.spec.org/accel/flags/Intel-icc18.0-linux64.20170802.html

You can also download the XML flags source by saving the following link:  
https://www.spec.org/accel/flags/Intel-icc18.0-linux64.20170802.xml

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

Tested with SPEC ACCEL v1.2.
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