# SPEC® CPU2017 Integer Speed Result

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## Sugon

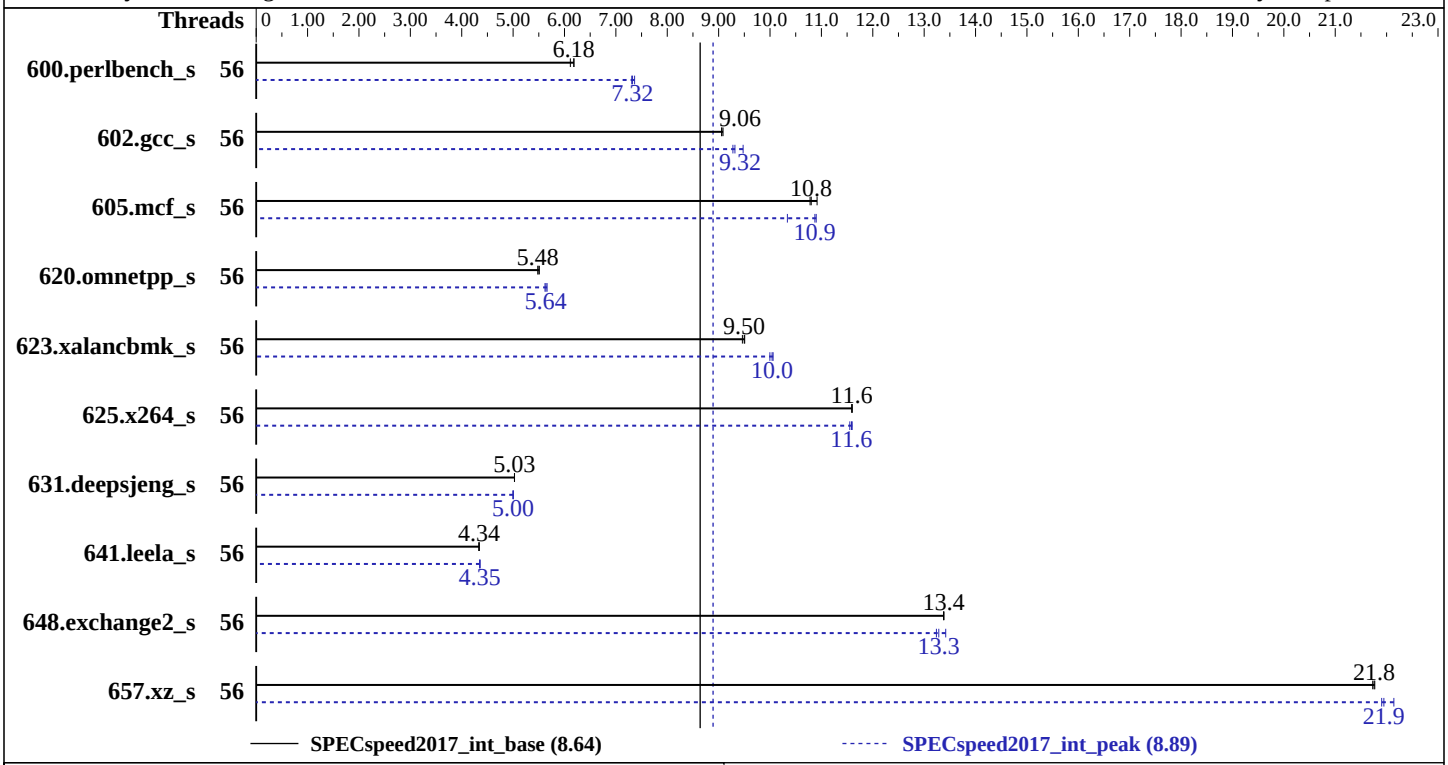
## TC4600E(CX50-G30, Intel Gold 6132)

SPECspeed2017_int_base = 8.64

SPECspeed2017_int_peak = 8.89

**CPU2017 License:** 9046
**Test Sponsor:** Sugon
**Tested by:** Sugon

**Test Date:** Dec-2017
**Hardware Availability:** Dec-2017
**Software Availability:** Sep-2017




### Hardware

| | |
|---|---|
| CPU Name: | Intel Xeon Gold 6132 |
| Max MHz.: | 3700 |
| Nominal: | 2600 |
| Enabled: | 28 cores, 2 chips, 2 threads/core |
| Orderable: | 1,2 chips |
| Cache L1: | 32 KB I + 32 KB D on chip per core |
| L2: | 1 MB I+D on chip per core |
| L3: | 19.25 MB I+D on chip per chip |
| Other: | None |
| Memory: | 384 GB (12 x 32 GB 2Rx8 PC4-2667V-R) |
| Storage: | 1 x 1.0 TB SATA, 7200 RPM |
| Other: | None |

### Software

| | |
|---|---|
| OS: | Red Hat Enterprise Linux Server release 7.3 (Maipo)<br>3.10.0-514.el7.x86_64 |
| Compiler: | C/C++: Version 18.0.0.128 of Intel C/C++ Compiler for Linux;<br>Fortran: Version 18.0.0.128 of Intel Fortran Compiler for Linux |
| Parallel: | Yes |
| Firmware: | American Megatrends Inc. BIOS Version 0JGST024 released Nov-2017 |
| File System: | xfs |
| System State: | Run level 3 (Multi User) |
| Base Pointers: | 64-bit |
| Peak Pointers: | 32/64-bit |
| Other: | jemalloc: jemalloc memory allocator library V5.0.1;<br>jemalloc: configured and built at default for 32bit (i686) and 64bit (x86_64) targets;<br>jemalloc: built with the RedHat Enterprise 7.4, and the system compiler gcc 4.8.5;<br>jemalloc: sources avilable from jemalloc.net or releases |

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## Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Threads | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Threads | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 600.perlbench_s | 56 | 290 | 6.11 | 287 | 6.18 | **287** | **6.18** | 56 | **242** | **7.32** | 243 | 7.31 | 241 | 7.36 |
| 602.gcc_s | 56 | 440 | 9.06 | **440** | **9.06** | 438 | 9.09 | 56 | 429 | 9.28 | **427** | **9.32** | 420 | 9.48 |
| 605.mcf_s | 56 | **437** | **10.8** | 438 | 10.8 | 432 | 10.9 | 56 | 433 | 10.9 | **434** | **10.9** | 457 | 10.3 |
| 620.omnetpp_s | 56 | **297** | **5.48** | 297 | 5.48 | 296 | 5.51 | 56 | **289** | **5.64** | 288 | 5.66 | 290 | 5.62 |
| 623.xalancbmk_s | 56 | 150 | 9.46 | 149 | 9.51 | **149** | **9.50** | 56 | 142 | 10.0 | **141** | **10.0** | 141 | 10.1 |
| 625.x264_s | 56 | **152** | **11.6** | 152 | 11.6 | 152 | 11.6 | 56 | 153 | 11.6 | **152** | **11.6** | 152 | 11.6 |
| 631.deepsjeng_s | 56 | 285 | 5.03 | 285 | 5.03 | **285** | **5.03** | 56 | 287 | 5.00 | 287 | 5.00 | **287** | **5.00** |
| 641.leela_s | 56 | **393** | **4.34** | 393 | 4.34 | 394 | 4.33 | 56 | 392 | 4.35 | 392 | 4.35 | **392** | **4.35** |
| 648.exchange2_s | 56 | **220** | **13.4** | 220 | 13.4 | 220 | 13.4 | 56 | 222 | 13.2 | 219 | 13.4 | **221** | **13.3** |
| 657.xz_s | 56 | 285 | 21.7 | **284** | **21.8** | 284 | 21.8 | 56 | 282 | 21.9 | 279 | 22.1 | **282** | **21.9** |

**SPECspeed2017_int_base = 8.64**

**SPECspeed2017_int_peak = 8.89**

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

## Operating System Notes

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

## General Notes

```
Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/home/tianywan/benchmarks/cpu2017/lib/ia32:/home/tianywan/benchmarks/cpu2017/lib/intel64:
/home/tianywan/benchmarks/cpu2017/je5.0.1-32:/home/tianywan/benchmarks/cpu2017/je5.0.1-64"
OMP_STACKSIZE = "192M"
 Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
 memory using Redhat Enterprise Linux 7.4
 Transparent Huge Pages enabled by default
 Prior to runcpu invocation
 Filesystem page cache synced and cleared with:
 sync; echo 3>       /proc/sys/vm/drop_caches
```

## Platform Notes

```
 Sysinfo program /home/tianywan/benchmarks/cpu2017/bin/sysinfo
 Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
 running on localhost Sat Dec  9 05:06:17 2017

 SUT (System Under Test) info as seen by some common utilities.
 For more information on this section, see
    https://www.spec.org/cpu2017/Docs/config.html#sysinfo

 From /proc/cpuinfo
```

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## Platform Notes (Continued)

```
    model name : Intel(R) Xeon(R) Gold 6132 CPU @ 2.60GHz
       2  "physical id"s (chips)
       56 "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 : 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

  From lscpu:
       Architecture:          x86_64
       CPU op-mode(s):        32-bit, 64-bit
       Byte Order:            Little Endian
       CPU(s):                56
       On-line CPU(s) list:   0-55
       Thread(s) per core:    2
       Core(s) per socket:    14
       Socket(s):             2
       NUMA node(s):          2
       Vendor ID:             GenuineIntel
       CPU family:            6
       Model:                 85
       Model name:            Intel(R) Xeon(R) Gold 6132 CPU @ 2.60GHz
       Stepping:              4
       CPU MHz:               2601.000
       BogoMIPS:              5205.14
       Virtualization:        VT-x
       L1d cache:             32K
       L1i cache:             32K
       L2 cache:              1024K
       L3 cache:              19712K
       NUMA node0 CPU(s):     0-13,28-41
       NUMA node1 CPU(s):     14-27,42-55

  /proc/cpuinfo cache data
     cache size : 19712 KB

  From numactl --hardware  WARNING: a numactl 'node' might or might not correspond to a
  physical chip.
    available: 2 nodes (0-1)
    node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 28 29 30 31 32 33 34 35 36 37 38 39 40 41
    node 0 size: 195245 MB
    node 0 free: 182957 MB
    node 1 cpus: 14 15 16 17 18 19 20 21 22 23 24 25 26 27 42 43 44 45 46 47 48 49 50 51 52
    53 54 55
    node 1 size: 196608 MB
```

**(Continued on next page)**

## Platform Notes (Continued)

```
    node 1 free: 188347 MB
    node distances:
    node   0   1
      0:  10  21
      1:  21  10

  From /proc/meminfo
     MemTotal:       394687848 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)
     system-release-cpe: cpe:/o:redhat:enterprise_linux:7.3:ga:server

  uname -a:
     Linux localhost 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 Dec 8 21:11

  SPEC is set to: /home/tianywan/benchmarks/cpu2017
     Filesystem            Type  Size  Used Avail Use% Mounted on
     /dev/mapper/rhel-home xfs   671G   36G  635G   6% /home

  Additional information from dmidecode follows.  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 American Megatrends Inc. 0JGST024 11/15/2017American Megatrends Inc. 0JGST024
    11/15/2017
    Memory:
     24x Micron 36ASF4G72PZ-2G6D1 32 GB 2 rank 2666
     24x NO DIMM NO DIMM

  (End of data from sysinfo program)
The dmidecode infomation displayed in sysinfo should have one line reading as:
```

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## Platform Notes (Continued)

```
12x Micron 36ASF4G72PZ-2G6D1 32 GB 2 rank 2666 MHz
```

## Compiler Version Notes

```
==============================================================================
 CC  600.perlbench_s(base) 602.gcc_s(base) 605.mcf_s(base) 625.x264_s(base,
      peak) 657.xz_s(base)
------------------------------------------------------------------------------
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------

==============================================================================
CC   600.perlbench_s(peak) 602.gcc_s(peak) 605.mcf_s(peak) 657.xz_s(peak)
------------------------------------------------------------------------------
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------

==============================================================================
 CXXC 620.omnetpp_s(base) 623.xalancbmk_s(base) 631.deepsjeng_s(base)
      641.leela_s(base)
------------------------------------------------------------------------------
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------

==============================================================================
CXXC 620.omnetpp_s(peak) 623.xalancbmk_s(peak) 631.deepsjeng_s(peak)
     641.leela_s(peak)
------------------------------------------------------------------------------
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------

==============================================================================
 FC  648.exchange2_s(base, peak)
------------------------------------------------------------------------------
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------
```

## Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

## Base Portability Flags

600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -DSPEC_LP64 -DSPEC_LINUX
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64

## Base Optimization Flags

C benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

C++ benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

Fortran benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte
-L/usr/local/je5.0.1-64/lib -ljemalloc

## Base Other Flags

C benchmarks:
`-m64 -std=c11`

C++ benchmarks:
`-m64`

Fortran benchmarks:
`-m64`

## Peak Compiler Invocation

C benchmarks:
`icc`

C++ benchmarks:
`icpc`

Fortran benchmarks:
`ifort`

## Peak Portability Flags

600.perlbench_s: `-DSPEC_LP64 -DSPEC_LINUX_X64`
602.gcc_s: `-DSPEC_LP64`
605.mcf_s: `-DSPEC_LP64`
620.omnetpp_s: `-DSPEC_LP64`
623.xalancbmk_s: `-D_FILE_OFFSET_BITS=64 -DSPEC_LINUX`
625.x264_s: `-DSPEC_LP64`
631.deepsjeng_s: `-DSPEC_LP64`
641.leela_s: `-DSPEC_LP64`
648.exchange2_s: `-DSPEC_LP64`
657.xz_s: `-DSPEC_LP64`

## Peak Optimization Flags

C benchmarks:

600.perlbench_s: `-Wl,-z,muldefs -prof-gen`(pass 1) `-prof-use`(pass 2) `-O2 -xCORE-AVX512 -qopt-mem-layout-trans=3 -ipo -O3 -no-prec-div -DSPEC_SUPPRESS_OPENMP -qopenmp`

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## Peak Optimization Flags (Continued)

600.perlbench_s (continued):
-DSPEC_OPENMP -fno-strict-overflow
-L/usr/local/je5.0.1-64/lib -ljemalloc

602.gcc_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -O2
-xCORE-AVX512 -qopt-mem-layout-trans=3 -ipo -O3
-no-prec-div -DSPEC_SUPPRESS_OPENMP -qopenmp
-DSPEC_OPENMP -L/usr/local/je5.0.1-64/lib -ljemalloc

605.mcf_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

625.x264_s: -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

657.xz_s: Same as 602.gcc_s

C++ benchmarks:

620.omnetpp_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-64/lib -ljemalloc

623.xalancbmk_s: -L/opt/intel/compilers_and_libraries_2018/linux/lib/ia32
-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
-xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-DSPEC_SUPPRESS_OPENMP -qopenmp -DSPEC_OPENMP
-L/usr/local/je5.0.1-32/lib -ljemalloc

631.deepsjeng_s: Same as 620.omnetpp_s

641.leela_s: Same as 620.omnetpp_s

Fortran benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte
-L/usr/local/je5.0.1-64/lib -ljemalloc

## Peak Other Flags

C benchmarks:
`-m64 -std=c11`

C++ benchmarks (except as noted below):
`-m64`

623.xalancbmk_s: `-m32`

Fortran benchmarks:
`-m64`

The flags files that were used to format this result can be browsed at
`http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.html`
`http://www.spec.org/cpu2017/flags/Sugon-Purley-Platform-Settings-revA-I.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.xml`
`http://www.spec.org/cpu2017/flags/Sugon-Purley-Platform-Settings-revA-I.xml`


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