SPEC CPU®2017 Integer Speed Result

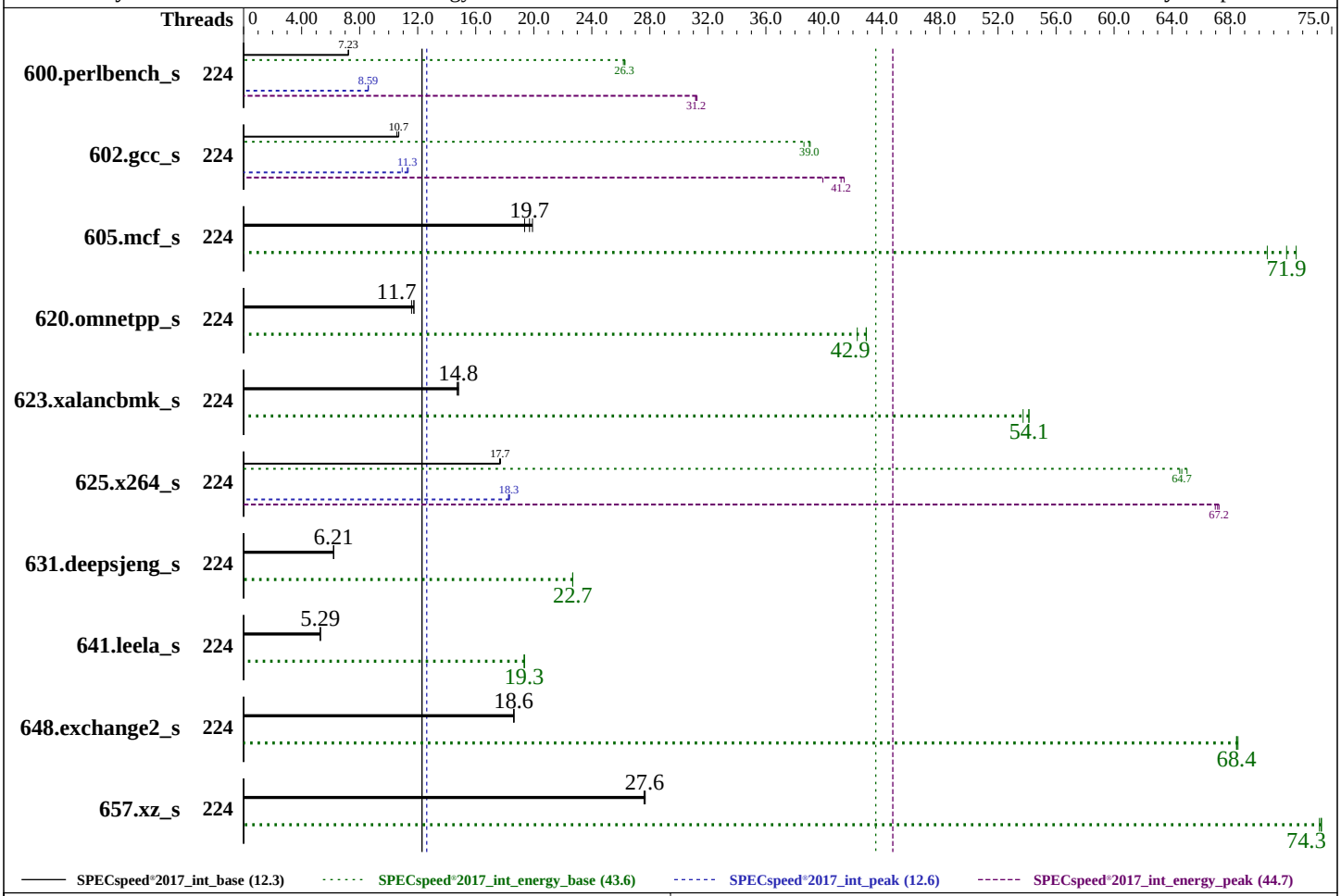
Lenovo Global Technology

ThinkSystem SR860 V2
(2.60 GHz, Intel Xeon Platinum 8376HL)

SPECspeed®2017_int_base =	12.3
SPECspeed®2017_int_energy_base =	43.6
SPECspeed®2017_int_peak =	12.6
SPECspeed®2017_int_energy_peak =	44.7

CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Test Date: Oct-2020
Hardware Availability: Nov-2020
Software Availability: Apr-2020



Hardware

CPU Name:	Intel Xeon Platinum 8376HL
Max MHz:	4300
Nominal:	2600
Enabled:	112 cores, 4 chips, 2 threads/core
Orderable:	2,4 chips
Cache L1:	32 KB I + 32 KB D on chip per core
L2:	1 MB I+D on chip per core
L3:	38.5 MB I+D on chip per chip
Other:	None
Memory:	384 GB (24 x 16 GB 2Rx8 PC4-3200AA-R)
Storage:	1 x 960 GB SATA SSD
Other:	None

Software

OS:	Red Hat Enterprise Linux release 8.2 (Ootpa) Kernel 4.18.0-193.el8.x86_64
Compiler:	C/C++: Version 19.1.1.217 of Intel C/C++ Compiler for Linux; Fortran: Version 19.1.1.217 of Intel Fortran Compiler for Linux
Parallel:	Yes
Firmware:	Lenovo BIOS Version M5E107D 1.00 released Sep-2020
File System:	xfs
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit
Peak Pointers:	64-bit

(Continued on next page)

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CPU2017 License: 9017
Test Sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Test Date: Oct-2020
Hardware Availability: Nov-2020
Software Availability: Apr-2020

Software (Continued)

Other: jemalloc memory allocator V5.0.1
Power Management: BIOS set to prefer performance at the cost of additional power usage

Power

Max. Power (W): 1322.9
Idle Power (W): 146.94
Min. Temperature (C): 22.88
Elevation (m): 43
Line Standard: 220 V / 50 Hz / 1 phase / 3 wires
Provisioning: Line-powered

Power Settings

Management FW: Version 1.00 of TGBT07M
Memory Mode: Normal

Power-Relevant Hardware

Power Supply: 1 x 1800 W (non-redundant)
Details: ThinkSystem 1800W Platinum Power Supply 4P57A26294
Backplane: 8 x 2.5-inch HDD back plane
Other Storage: None
Storage Model #s: 4XB7A17089
NICs Installed: 1 x ThinkSystem Ethernet 4-port Adaptor @ 1 Gb
NICs Enabled (FW/OS): 4 / 1
NICs Connected/Speed: 1 @ 1 Gb
Other HW Model #s: 1 x ThinkSystem SR860 V2 Performance Fan Upgrade Kit

Power Analyzer

Power Analyzer: WIN:9888
Hardware Vendor: YOKOGAWA, Inc.
Model: YokogawaWT310E
Serial Number: C3UD17023E
Input Connection: Default
Metrology Institute: CNAS
Calibration By: China CEPREI Laboratory
Calibration Label: J202009040176A-0001
Calibration Date: 25-Sep-2020
PTDaemon™ Version: 1.9.1 (a2d19f26; 2019-07-17)
Setup Description: Connected to PSU1
Current Ranges Used: 5A
Voltage Range Used: 300V

Temperature Meter

Temperature Meter: WIN:9889
Hardware Vendor: Digi International, Inc.
Model: DigiWATCHPORT_H
Serial Number: COM1
Input Connection: USB
PTDaemon Version: 1.9.1 (a2d19f26; 2019-07-17)
Setup Description: 50 mm in front of SUT main intake

Base Results Table

Benchmark	Threads	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power
600.perlbench_s	224	246	7.21	73.6	26.2	299	300	**246**	**7.23**	**73.4**	**26.3**	**299**	**300**	245	7.24	73.3	26.3	299	300
602.gcc_s	224	**373**	**10.7**	**111**	**39.0**	**298**	**311**	377	10.6	112	38.6	297	300	372	10.7	111	39.1	298	300
605.mcf_s	224	244	19.4	73.0	70.6	299	302	237	19.9	71.0	72.6	299	302	**240**	**19.7**	**71.6**	**71.9**	**299**	**302**
620.omnetpp_s	224	141	11.6	42.0	42.3	298	300	139	11.7	41.4	42.9	298	300	**139**	**11.7**	**41.3**	**42.9**	**298**	**299**
623.xalancbmk_s	224	96.3	14.7	28.6	53.7	298	302	95.7	14.8	28.4	54.1	297	301	**95.8**	**14.8**	**28.4**	**54.1**	**297**	**301**

Table continues on next page. Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Base Results Table (Continued)

Benchmark	Threads	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power
625.x264_s	224	100	17.6	29.7	64.5	298	299	**99.8**	**17.7**	**29.7**	**64.7**	**297**	**299**	99.6	17.7	29.5	65.0	296	299
631.deepsjeng_s	224	**231**	**6.21**	**68.7**	**22.7**	**297**	**299**	231	6.20	68.7	22.7	297	299	231	6.21	68.7	22.7	297	299
641.leela_s	224	**323**	**5.29**	**95.5**	**19.3**	**296**	**297**	323	5.29	95.5	19.4	296	309	323	5.29	95.4	19.4	296	297
648.exchange2_s	224	158	18.6	46.7	68.5	296	297	158	18.6	46.7	68.5	296	297	**158**	**18.6**	**46.7**	**68.4**	**296**	**297**
657.xz_s	224	223	27.7	90.7	74.3	406	1320	**224**	**27.6**	**90.6**	**74.3**	**405**	**1310**	224	27.6	90.8	74.1	405	1310
SPECspeed®2017_int_base =	**12.3**																		
SPECspeed®2017_int_energy_base =					**43.6**														

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

Peak Results Table

Benchmark	Threads	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power
600.perlbench_s	224	207	8.58	61.8	31.2	299	300	**207**	**8.59**	**61.7**	**31.2**	**299**	**300**	206	8.60	61.6	31.3	298	300
602.gcc_s	224	364	10.9	108	39.9	298	300	351	11.3	105	41.4	298	300	**353**	**11.3**	**105**	**41.2**	**298**	**311**
605.mcf_s	224	244	19.4	73.0	70.6	299	302	237	19.9	71.0	72.6	299	302	**240**	**19.7**	**71.6**	**71.9**	**299**	**302**
620.omnetpp_s	224	141	11.6	42.0	42.3	298	300	139	11.7	41.4	42.9	298	300	**139**	**11.7**	**41.3**	**42.9**	**298**	**299**
623.xalancbmk_s	224	96.3	14.7	28.6	53.7	298	302	95.7	14.8	28.4	54.1	297	301	**95.8**	**14.8**	**28.4**	**54.1**	**297**	**301**
625.x264_s	224	96.6	18.3	28.7	67.0	297	299	**96.4**	**18.3**	**28.5**	**67.2**	**296**	**299**	96.2	18.3	28.6	67.1	297	299
631.deepsjeng_s	224	**231**	**6.21**	**68.7**	**22.7**	**297**	**299**	231	6.20	68.7	22.7	297	299	231	6.21	68.7	22.7	297	299
641.leela_s	224	**323**	**5.29**	**95.5**	**19.3**	**296**	**297**	323	5.29	95.5	19.4	296	309	323	5.29	95.4	19.4	296	297
648.exchange2_s	224	158	18.6	46.7	68.5	296	297	158	18.6	46.7	68.5	296	297	**158**	**18.6**	**46.7**	**68.4**	**296**	**297**
657.xz_s	224	223	27.7	90.7	74.3	406	1320	**224**	**27.6**	**90.6**	**74.3**	**405**	**1310**	224	27.6	90.8	74.1	405	1310
SPECspeed®2017_int_peak =	**12.6**																		
SPECspeed®2017_int_energy_peak =					**44.7**														

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

Compiler Notes

```
The inconsistent Compiler version information under Compiler Version section is due to a discrepancy in Intel Compiler.
The correct version of C/C++ compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux
The correct version of Fortran compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux
```

Operating System Notes

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

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH =
     "/home/cpu2017-1.1.0-ic19.1.1/lib/intel64:/home/cpu2017-1.1.0-ic19.1.1/j
     e5.0.1-64"
MALLOC_CONF = "retain:true"
OMP_STACKSIZE = "192M"
```

General Notes

```
 Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM
 memory using Redhat Enterprise Linux 8.0
 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
NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2)
is mitigated in the system as tested and documented.
 jemalloc, a general purpose malloc implementation
 built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5
 sources available from jemalloc.net or https://github.com/jemalloc/jemalloc/releases
```

Platform Notes

```
 Sysinfo program /home/cpu2017-1.1.0-ic19.1.1/bin/sysinfo
 Rev: r6365 of 2019-08-21 295195f888a3d7edb1e6e46a485a0011
 running on localhost.localdomain Mon Oct 26 12:06:43 2020

 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
    model name : Intel(R) Xeon(R) Platinum 8376HL CPU @ 2.60GHz
       4  "physical id"s (chips)
       224 "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 : 28
       siblings  : 56
       physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
       28 29 30
       physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
       28 29 30
       physical 2: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
       28 29 30
       physical 3: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
       28 29 30
```

(Continued on next page)

Platform Notes (Continued)

```
From lscpu:
      Architecture:        x86_64
      CPU op-mode(s):      32-bit, 64-bit
      Byte Order:          Little Endian
      CPU(s):              224
      On-line CPU(s) list: 0-223
      Thread(s) per core:  2
      Core(s) per socket:  28
      Socket(s):           4
      NUMA node(s):        4
      Vendor ID:           GenuineIntel
      CPU family:          6
      Model:               85
      Model name:          Intel(R) Xeon(R) Platinum 8376HL CPU @ 2.60GHz
      Stepping:            11
      CPU MHz:             1000.030
      BogoMIPS:            5200.00
      Virtualization:      VT-x
      L1d cache:           32K
      L1i cache:           32K
      L2 cache:            1024K
      L3 cache:            39424K
      NUMA node0 CPU(s):   0-27,112-139
      NUMA node1 CPU(s):   28-55,140-167
      NUMA node2 CPU(s):   56-83,168-195
      NUMA node3 CPU(s):   84-111,196-223
      Flags:               fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
     pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp
     lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid
     aperfmperf pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16
     xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave
     avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault epb cat_l3 cdp_l3
     invpcid_single intel_ppin ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi
     flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm
     cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt clwb intel_pt avx512cd
     avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
     cqm_mbm_local avx512_bf16 dtherm ida arat pln pts hwp_epp pku ospke avx512_vnni
     md_clear flush_l1d arch_capabilities

/proc/cpuinfo cache data
   cache size : 39424 KB

From numactl --hardware  WARNING: a numactl 'node' might or might not correspond to a
physical chip.
  available: 4 nodes (0-3)
```

(Continued on next page)

Platform Notes (Continued)

```
  node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
  112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133
  134 135 136 137 138 139
  node 0 size: 96318 MB
  node 0 free: 95175 MB
  node 1 cpus: 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52
  53 54 55 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158
  159 160 161 162 163 164 165 166 167
  node 1 size: 96755 MB
  node 1 free: 96509 MB
  node 2 cpus: 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
  81 82 83 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186
  187 188 189 190 191 192 193 194 195
  node 2 size: 96755 MB
  node 2 free: 96542 MB
  node 3 cpus: 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105
  106 107 108 109 110 111 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211
  212 213 214 215 216 217 218 219 220 221 222 223
  node 3 size: 96753 MB
  node 3 free: 96083 MB
  node distances:
  node   0   1   2   3
    0:  10  20  20  20
    1:  20  10  20  20
    2:  20  20  10  20
    3:  20  20  20  10

From /proc/meminfo
   MemTotal:       395861564 kB
   HugePages_Total:       0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux release 8.2 (Ootpa)

From /etc/*release* /etc/*version*
   os-release:
      NAME="Red Hat Enterprise Linux"
      VERSION="8.2 (Ootpa)"
      ID="rhel"
      ID_LIKE="fedora"
      VERSION_ID="8.2"
      PLATFORM_ID="platform:el8"
      PRETTY_NAME="Red Hat Enterprise Linux 8.2 (Ootpa)"
      ANSI_COLOR="0;31"
```

(Continued on next page)

Platform Notes (Continued)

```
    redhat-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
    system-release: Red Hat Enterprise Linux release 8.2 (Ootpa)
    system-release-cpe: cpe:/o:redhat:enterprise_linux:8.2:ga

 uname -a:
    Linux localhost.localdomain 4.18.0-193.el8.x86_64 #1 SMP Fri Mar 27 14:35:58 UTC 2020
    x86_64 x86_64 x86_64 GNU/Linux

 Kernel self-reported vulnerability status:

 itlb_multihit:                           Not affected
 CVE-2018-3620 (L1 Terminal Fault):       Not affected
 Microarchitectural Data Sampling:        Not affected
 CVE-2017-5754 (Meltdown):                Not affected
 CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled
                                           via prctl and seccomp
 CVE-2017-5753 (Spectre variant 1):       Mitigation: usercopy/swapgs barriers and __user
                                           pointer sanitization
 CVE-2017-5715 (Spectre variant 2):       Mitigation: Enhanced IBRS, IBPB: conditional,
                                           RSB filling
 tsx_async_abort:                         Not affected

 run-level 3 Oct 26 08:10

 SPEC is set to: /home/cpu2017-1.1.0-ic19.1.1
    Filesystem     Type  Size  Used Avail Use% Mounted on
    /dev/sda3      xfs   892G   62G  831G   7% /

 From /sys/devices/virtual/dmi/id
     BIOS:    Lenovo M5E107D-1.00 09/16/2020
     Vendor:  Lenovo
     Product: ThinkSystem SR860 V2
     Product Family: ThinkSystem
     Serial:  none

 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.
   Memory:
     24x NO DIMM NO DIMM
     24x SK Hynix HMA82GR7CJR8N-XN 16 GB 2 rank 3200

 (End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
C       | 600.perlbench_s(base) 602.gcc_s(base, peak) 605.mcf_s(base, peak)
        | 625.x264_s(base, peak) 657.xz_s(base, peak)
------------------------------------------------------------------------------
Intel(R) C Compiler for applications running on Intel(R) 64, Version 2021.1
  NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
C       | 600.perlbench_s(peak)
------------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------

==============================================================================
C       | 600.perlbench_s(base) 602.gcc_s(base, peak) 605.mcf_s(base, peak)
        | 625.x264_s(base, peak) 657.xz_s(base, peak)
------------------------------------------------------------------------------
Intel(R) C Compiler for applications running on Intel(R) 64, Version 2021.1
  NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
C       | 600.perlbench_s(peak)
------------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
  Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------

==============================================================================
C++     | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak)
        | 631.deepsjeng_s(base, peak) 641.leela_s(base, peak)
------------------------------------------------------------------------------
Intel(R) C++ Compiler for applications running on Intel(R) 64, Version 2021.1
  NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------

==============================================================================
Fortran | 648.exchange2_s(base, peak)
```

(Continued on next page)

Compiler Version Notes (Continued)

```
------------------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
  64, Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 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:
-m64 -qnextgen -std=c11
-Wl,-plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs
-xCORE-AVX2 -O3 -ffast-math -flto -mfpmath=sse -funroll-loops
-fuse-ld=gold -qopt-mem-layout-trans=4 -fopenmp -DSPEC_OPENMP
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

(Continued on next page)

Base Optimization Flags (Continued)

C++ benchmarks:
-m64 -qnextgen -Wl,-plugin-opt=-x86-branches-within-32B-boundaries
-Wl,-z,muldefs -xCORE-AVX2 -O3 -ffast-math -flto -mfpmath=sse
-funroll-loops -fuse-ld=gold -qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64_lin
-lqkmalloc

Fortran benchmarks:
-m64 -Wl,-plugin-opt=-x86-branches-within-32B-boundaries -xCORE-AVX2
-O3 -ipo -no-prec-div -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte
-mbranches-within-32B-boundaries

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(*) -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

(*) Indicates a portability flag that was found in a non-portability variable.

Peak Optimization Flags

C benchmarks:

600.perlbench_s: `-Wl,-z,muldefs -prof-gen`(pass 1) `-prof-use`(pass 2)
`-xCORE-AVX2 -ipo -O3 -no-prec-div`
`-qopt-mem-layout-trans=4 -fno-strict-overflow`
`-mbranches-within-32B-boundaries`
`-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

602.gcc_s: `-m64 -qnextgen -std=c11 -fuse-ld=gold`
`-Wl,-plugin-opt=-x86-branches-within-32B-boundaries`
`-Wl,-z,muldefs -fprofile-generate`(pass 1)
`-fprofile-use=default.profdata`(pass 2) `-xCORE-AVX2 -flto`
`-Ofast`(pass 1) `-O3 -ffast-math -qopt-mem-layout-trans=4`
`-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

605.mcf_s: `basepeak = yes`

625.x264_s: `-m64 -qnextgen -std=c11`
`-Wl,-plugin-opt=-x86-branches-within-32B-boundaries`
`-Wl,-z,muldefs -xCORE-AVX2 -flto -O3 -ffast-math`
`-fuse-ld=gold -qopt-mem-layout-trans=4 -fno-alias`
`-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc`

657.xz_s: `basepeak = yes`

C++ benchmarks:

620.omnetpp_s: `basepeak = yes`

623.xalancbmk_s: `basepeak = yes`

631.deepsjeng_s: `basepeak = yes`

641.leela_s: `basepeak = yes`

Fortran benchmarks:

648.exchange2_s: `basepeak = yes`

The flags files that were used to format this result can be browsed at
`http://www.spec.org/cpu2017/flags/Intel-ic19.1u1-official-linux64_revA.html`
`http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Cooperlake-A.html`

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic19.1u1-official-linux64_revA.xml
http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Cooperlake-A.xml

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

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