SPEC CPU®2017 Integer Speed Result

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Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL380 Gen11
(2.40 GHz, Intel Xeon Platinum 8468V)

$SPECspeed®2017\_int\_base = 14.5$
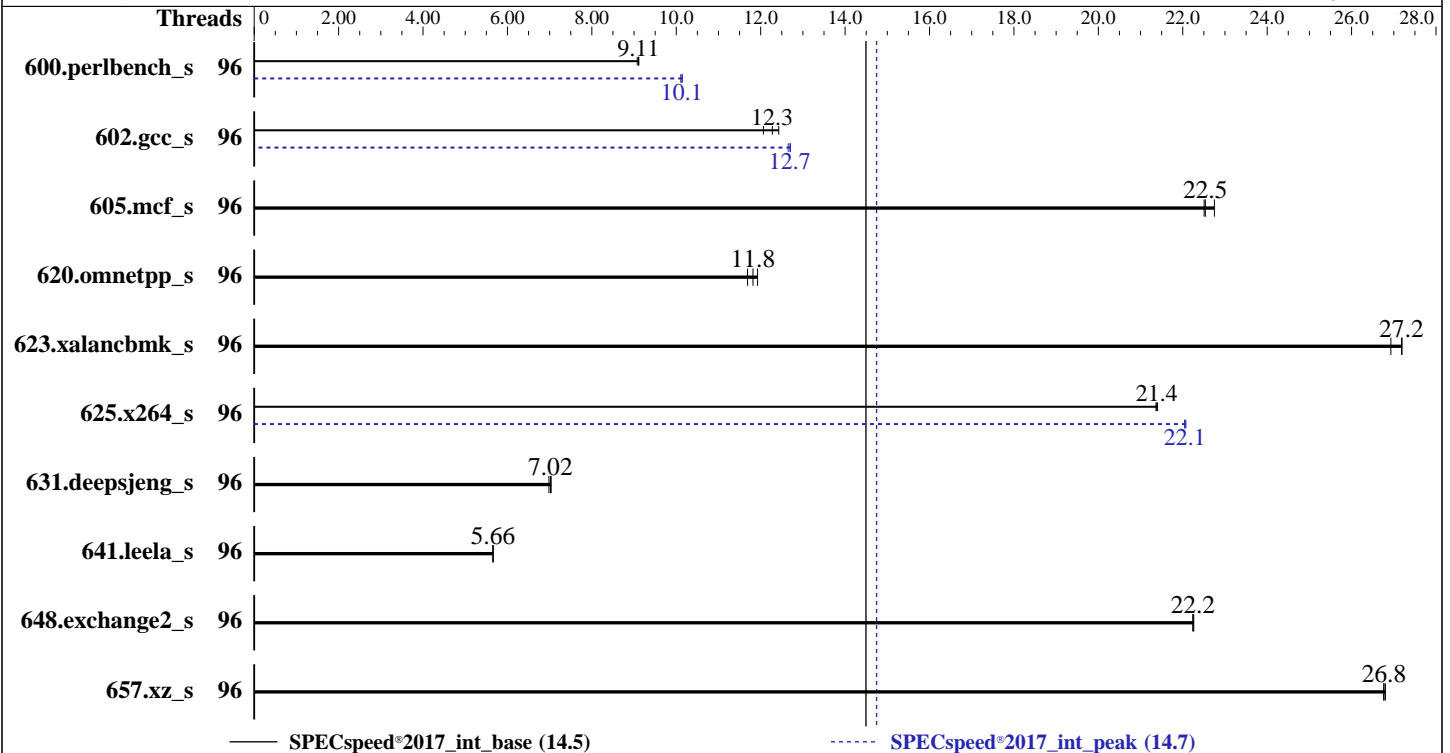
$SPECspeed®2017\_int\_peak = 14.7$

CPU2017 License: 3
Test Sponsor: HPE
Tested by: HPE

Test Date: Feb-2023
Hardware Availability: Jan-2023
Software Availability: May-2022

Threads

Benchmark	Threads	Value
600.perlbench_s	96	9.11 / 10.1
602.gcc_s	96	12.3 / 12.7
605.mcf_s	96	22.5
620.omnetpp_s	96	11.8
623.xalancbmk_s	96	27.2
625.x264_s	96	21.4 / 22.1
631.deepsjeng_s	96	7.02
641.leela_s	96	5.66
648.exchange2_s	96	22.2
657.xz_s	96	26.8

SPECspeed®2017_int_base (14.5) ----- SPECspeed®2017_int_peak (14.7)

Hardware

CPU Name: Intel Xeon Platinum 8468V
 Max MHz: 3800
 Nominal: 2400
Enabled: 96 cores, 2 chips
Orderable: 1, 2 chip(s)
Cache L1: 32 KB I + 48 KB D on chip per core
 L2: 2 MB I+D on chip per core
 L3: 97.5 MB I+D on chip per chip
 Other: None
Memory: 1 TB (16 x 64 GB 2Rx4 PC5-4800B-R)
Storage: 1 x 400 GB SATA SSD
Other: None

Software

OS: Red Hat Enterprise Linux release 9.0 (Plow)
 Kernel 5.14.0-70.13.1.el9_0.x86_64
Compiler: C/C++: Version 2022.1 of Intel oneAPI DPC++/C++
 Compiler for Linux;
 Fortran: Version 2022.1 of Intel Fortran Compiler
 for Linux
Parallel: Yes
Firmware: HPE BIOS Version v1.22 01/18/2023 released
 Jan-2023
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: jemalloc memory allocator V5.0.1
Power Management: BIOS and OS set to prefer performance at
 the cost of additional power usage

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CPU2017 License: 3		**Test Date:** Feb-2023
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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	96	**195**	**9.11**	195	9.11	196	9.07	96	176	10.1	175	10.1	**175**	**10.1**
602.gcc_s	96	320	12.4	**324**	**12.3**	330	12.1	96	**314**	**12.7**	315	12.7	313	12.7
605.mcf_s	96	208	22.7	**209**	**22.5**	210	22.5	96	208	22.7	**209**	**22.5**	210	22.5
620.omnetpp_s	96	140	11.7	137	11.9	**138**	**11.8**	96	140	11.7	137	11.9	**138**	**11.8**
623.xalancbmk_s	96	**52.1**	**27.2**	52.1	27.2	52.6	26.9	96	**52.1**	**27.2**	52.1	27.2	52.6	26.9
625.x264_s	96	82.4	21.4	**82.5**	**21.4**	82.6	21.4	96	80.0	22.0	79.9	22.1	**80.0**	**22.1**
631.deepsjeng_s	96	**204**	**7.02**	205	6.98	204	7.04	96	**204**	**7.02**	205	6.98	204	7.04
641.leela_s	96	301	5.66	301	5.66	**301**	**5.66**	96	301	5.66	301	5.66	**301**	**5.66**
648.exchange2_s	96	132	22.2	132	22.3	**132**	**22.2**	96	132	22.2	132	22.3	**132**	**22.2**
657.xz_s	96	**231**	**26.8**	231	26.8	231	26.8	96	**231**	**26.8**	231	26.8	231	26.8
SPECspeed®2017_int_base =		**14.5**												
SPECspeed®2017_int_peak =		**14.7**												

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

Compiler Notes

```
SPEC has ruled that the compiler used for this result was performing a compilation
that specifically improves the performance of the 523.xalancbmk_r / 623.xalancbmk_s
benchmarks using a priori knowledge of the SPEC code and dataset to perform a
transformation that has narrow applicability.

In order to encourage optimizations that have wide applicability (see rule 1.4
https://www.spec.org/cpu2017/Docs/runrules.html#rule_1.4), SPEC will no longer
publish results using this optimization.

This result is left in the SPEC results database for historical reference.
```

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"
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
runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>
```

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Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/home/cpu2017_19/lib/intel64:/home/cpu2017_19/je5.0.1-64"
MALLOC_CONF = "retain:true"
OMP_STACKSIZE = "192M"
```

General Notes

```
  Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM
 memory using Red Hat Enterprise Linux 8.4
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

```
The system ROM used for this result contains Intel microcode version 0x2b000161 for
the Intel Xeon Platinum 8468V processor.
BIOS Configuration:
 Workload Profile set to General Peak Frequency Compute
 Thermal Configuration set to Maximum Cooling
 Intel Hyper-Threading set to Disabled
 Memory Patrol Scrubbing set to Disabled
 Last Level Cache (LLC) Prefetch set to Enabled
 Last Level Cache (LLC) Dead Line Allocation set to Disabled
 Enhanced Processor Performance Profile set to Aggressive
 Dead Block Predictor set to Enabled
 Sub-NUMA Clustering set to Enabled SNC2(2-clusters)
 Workload Profile set to Custom
  Adjacent Sector Prefetch set to Disabled
  Minimum Processor Idle Power Package C-State set to No Package State

 Sysinfo program /home/cpu2017_19/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost.localdomain Fri Feb 10 01:24:59 2023

 SUT (System Under Test) info as seen by some common utilities.

 ------------------------------------------------------------
 Table of contents
 ------------------------------------------------------------
  1. uname -a
  2. w
  3. Username
  4. ulimit -a
  5. sysinfo process ancestry
  6. /proc/cpuinfo
  7. lscpu
  8. numactl --hardware
  9. /proc/meminfo
 10. who -r
```

(Continued on next page)

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Platform Notes (Continued)

```
 11. Systemd service manager version: systemd 250 (250-6.el9_0)
 12. Services, from systemctl list-unit-files
 13. Linux kernel boot-time arguments, from /proc/cmdline
 14. cpupower frequency-info
 15. tuned-adm active
 16. sysctl
 17. /sys/kernel/mm/transparent_hugepage
 18. /sys/kernel/mm/transparent_hugepage/khugepaged
 19. OS release
 20. Disk information
 21. /sys/devices/virtual/dmi/id
 22. dmidecode
 23. BIOS
    ------------------------------------------------------------

    ------------------------------------------------------------
 1. uname -a
   Linux localhost.localdomain 5.14.0-70.13.1.el9_0.x86_64 #1 SMP PREEMPT Thu Apr 14 12:42:38 EDT 2022 x86_64
   x86_64 x86_64 GNU/Linux

    ------------------------------------------------------------
 2. w
    01:24:59 up 0 min,  0 users,  load average: 0.37, 0.12, 0.04
   USER     TTY        LOGIN@   IDLE   JCPU   PCPU WHAT

    ------------------------------------------------------------
 3. Username
   From environment variable $USER:  root

    ------------------------------------------------------------
 4. ulimit -a
   real-time non-blocking time  (microseconds, -R) unlimited
   core file size            (blocks, -c) 0
   data seg size             (kbytes, -d) unlimited
   scheduling priority              (-e) 0
   file size                 (blocks, -f) unlimited
   pending signals                  (-i) 4127188
   max locked memory         (kbytes, -l) 64
   max memory size           (kbytes, -m) unlimited
   open files                       (-n) 1024
   pipe size              (512 bytes, -p) 8
   POSIX message queues       (bytes, -q) 819200
   real-time priority               (-r) 0
   stack size                (kbytes, -s) unlimited
   cpu time                 (seconds, -t) unlimited
   max user processes               (-u) 4127188
   virtual memory            (kbytes, -v) unlimited
   file locks                       (-x) unlimited

    ------------------------------------------------------------
 5. sysinfo process ancestry
  /usr/lib/systemd/systemd --switched-root --system --deserialize 18
  sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
  sshd: root [priv]
  sshd: root@notty
  bash -c cd $SPEC/ && $SPEC/intspeed.sh
  runcpu --nobuild --action validate --define default-platform-flags -c
    ic2022.1-lin-core-avx512-speed-20220316.cfg --define cores=96 --tune base,peak -o all --define
    intspeedaffinity --define drop_caches intspeed
  runcpu --nobuild --action validate --define default-platform-flags --configfile
```

(Continued on next page)

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Platform Notes (Continued)

```
    ic2022.1-lin-core-avx512-speed-20220316.cfg --define cores=96 --tune base,peak --output_format all
    --define intspeedaffinity --define drop_caches --nopower --runmode speed --tune base:peak --size refspeed
    intspeed --nopreenv --note-preenv --logfile $SPEC/tmp/CPU2017.001/templogs/preenv.intspeed.001.0.log
    --lognum 001.0 --from_runcpu 2
 specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2017_19


--------------------------------------------------------------
6. /proc/cpuinfo
    model name      : Intel(R) Xeon(R) Platinum 8468V
    vendor_id       : GenuineIntel
    cpu family      : 6
    model           : 143
    stepping        : 6
    microcode       : 0x2b000161
    bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs
    cpu cores       : 48
    siblings        : 48
    2 physical ids (chips)
    96 processors (hardware threads)
    physical id 0: core ids 0-47
    physical id 1: core ids 0-47
    physical id 0: apicids
    0,2,4,6,8,10,12,14,16,18,20,22,24,26,28,30,32,34,36,38,40,42,44,46,48,50,52,54,56,58,60,62,64,66,68,70,72
    ,74,76,78,80,82,84,86,88,90,92,94
    physical id 1: apicids
    128,130,132,134,136,138,140,142,144,146,148,150,152,154,156,158,160,162,164,166,168,170,172,174,176,178,1
    80,182,184,186,188,190,192,194,196,198,200,202,204,206,208,210,212,214,216,218,220,222
  Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
  virtualized systems.  Use the above data carefully.


--------------------------------------------------------------
7. lscpu

From lscpu from util-linux 2.37.4:
  Architecture:              x86_64
  CPU op-mode(s):            32-bit, 64-bit
  Address sizes:             46 bits physical, 57 bits virtual
  Byte Order:                Little Endian
  CPU(s):                    96
  On-line CPU(s) list:       0-95
  Vendor ID:                 GenuineIntel
  BIOS Vendor ID:            Intel(R) Corporation
  Model name:                Intel(R) Xeon(R) Platinum 8468V
  BIOS Model name:           Intel(R) Xeon(R) Platinum 8468V
  CPU family:                6
  Model:                     143
  Thread(s) per core:        1
  Core(s) per socket:        48
  Socket(s):                 2
  Stepping:                  6
  BogoMIPS:                  4800.00
  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 tsc_known_freq 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 cat_l2 cdp_l3
                             invpcid_single cdp_l2 ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow
```

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Platform Notes (Continued)

```
                   vnmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 avx2 smep bmi2
                   erms invpcid cqm rdt_a avx512f avx512dq rdseed adx smap avx512ifma
                   clflushopt clwb intel_pt avx512cd sha_ni avx512bw avx512vl xsaveopt xsavec
                   xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local
                   split_lock_detect avx_vnni avx512_bf16 wbnoinvd dtherm ida arat pln pts
                   avx512vbmi umip pku ospke waitpkg avx512_vbmi2 gfni vaes vpclmulqdq
                   avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdpid bus_lock_detect
                   cldemote movdiri movdir64b enqcmd fsrm md_clear serialize tsxldtrk pconfig
                   arch_lbr avx512_fp16 amx_tile flush_l1d arch_capabilities
  Virtualization:                  VT-x
  L1d cache:                       4.5 MiB (96 instances)
  L1i cache:                       3 MiB (96 instances)
  L2 cache:                        192 MiB (96 instances)
  L3 cache:                        195 MiB (2 instances)
  NUMA node(s):                    4
  NUMA node0 CPU(s):               0-11,48-59
  NUMA node1 CPU(s):               12-23,60-71
  NUMA node2 CPU(s):               24-35,72-83
  NUMA node3 CPU(s):               36-47,84-95
  Vulnerability Itlb multihit:     Not affected
  Vulnerability L1tf:              Not affected
  Vulnerability Mds:               Not affected
  Vulnerability Meltdown:          Not affected
  Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl
  Vulnerability Spectre v1:        Mitigation; usercopy/swapgs barriers and __user pointer sanitization
  Vulnerability Spectre v2:        Mitigation; Enhanced IBRS, IBPB conditional, RSB filling
  Vulnerability Srbds:             Not affected
  Vulnerability Tsx async abort:   Not affected

From lscpu --cache:
      NAME ONE-SIZE ALL-SIZE WAYS TYPE         LEVEL    SETS PHY-LINE COHERENCY-SIZE
      L1d       48K     4.5M   12 Data            1      64        1             64
      L1i       32K       3M    8 Instruction     1      64        1             64
      L2         2M     192M   16 Unified         2    2048        1             64
      L3      97.5M     195M   15 Unified         3  106496        1             64

  --------------------------------------------------------------
8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
  available: 4 nodes (0-3)
  node 0 cpus: 0-11,48-59
  node 0 size: 257755 MB
  node 0 free: 256505 MB
  node 1 cpus: 12-23,60-71
  node 1 size: 258006 MB
  node 1 free: 257402 MB
  node 2 cpus: 24-35,72-83
  node 2 size: 258042 MB
  node 2 free: 257506 MB
  node 3 cpus: 36-47,84-95
  node 3 size: 258031 MB
  node 3 free: 257488 MB
  node distances:
  node   0   1   2   3
    0:  10  20  30  30
    1:  20  10  30  30
    2:  30  30  10  20
    3:  30  30  20  10

  --------------------------------------------------------------
```

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Platform Notes (Continued)

```
  9. /proc/meminfo
     MemTotal:       1056600664 kB


   ----------------------------------------------------------
  10. who -r
    run-level 3 Feb 10 01:24


   ----------------------------------------------------------
  11. Systemd service manager version: systemd 250 (250-6.el9_0)
    Default Target  Status
    multi-user      running


   ----------------------------------------------------------
  12. Services, from systemctl list-unit-files
     STATE             UNIT FILES
     enabled           NetworkManager NetworkManager-dispatcher NetworkManager-wait-online auditd chronyd crond
                       dbus-broker firewalld getty@ irqbalance kdump lvm2-monitor mdmonitor microcode
                       nis-domainname rhsmcertd rsyslog selinux-autorelabel-mark sshd sssd
                       systemd-network-generator tuned udisks2 upower
     enabled-runtime   systemd-remount-fs
     disabled          blk-availability canberra-system-bootup canberra-system-shutdown
                       canberra-system-shutdown-reboot chrony-wait console-getty cpupower debug-shell
                       hwloc-dump-hwdata ipsec kvm_stat man-db-restart-cache-update nftables powertop rdisc rhsm
                       rhsm-facts rpmdb-rebuild serial-getty@ sshd-keygen@ systemd-boot-check-no-failures
                       systemd-pstore systemd-sysext
     indirect          sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo


   ----------------------------------------------------------
  13. Linux kernel boot-time arguments, from /proc/cmdline
     BOOT_IMAGE=(hd0,gpt2)/vmlinuz-5.14.0-70.13.1.el9_0.x86_64
     root=/dev/mapper/rhel-root
     ro
     resume=/dev/mapper/rhel-swap
     rd.lvm.lv=rhel/root
     rd.lvm.lv=rhel/swap


   ----------------------------------------------------------
  14. cpupower frequency-info
     analyzing CPU 0:
       Unable to determine current policy
     boost state support:
       Supported: yes
       Active: yes


   ----------------------------------------------------------
  15. tuned-adm active
     Current active profile: accelerator-performance


   ----------------------------------------------------------
  16. sysctl
     kernel.numa_balancing            1
     kernel.randomize_va_space        2
     vm.compaction_proactiveness     20
     vm.dirty_background_bytes        0
     vm.dirty_background_ratio       10
     vm.dirty_bytes                   0
     vm.dirty_expire_centisecs     3000
     vm.dirty_ratio                  40
     vm.dirty_writeback_centisecs   500
     vm.dirtytime_expire_seconds  43200
```

(Continued on next page)

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Platform Notes (Continued)

```
   vm.extfrag_threshold            500
   vm.min_unmapped_ratio             1
   vm.nr_hugepages                   0
   vm.nr_hugepages_mempolicy         0
   vm.nr_overcommit_hugepages        0
   vm.swappiness                    10
   vm.watermark_boost_factor     15000
   vm.watermark_scale_factor        10
   vm.zone_reclaim_mode              0


   ----------------------------------------------------------
17. /sys/kernel/mm/transparent_hugepage
   defrag          always defer defer+madvise [madvise] never
   enabled         [always] madvise never
   hpage_pmd_size  2097152
   shmem_enabled   always within_size advise [never] deny force


   ----------------------------------------------------------
18. /sys/kernel/mm/transparent_hugepage/khugepaged
   alloc_sleep_millisecs   60000
   defrag                      1
   max_ptes_none             511
   max_ptes_shared           256
   max_ptes_swap              64
   pages_to_scan            4096
   scan_sleep_millisecs    10000


   ----------------------------------------------------------
19. OS release
   From /etc/*-release /etc/*-version
   os-release     Red Hat Enterprise Linux 9.0 (Plow)
   redhat-release Red Hat Enterprise Linux release 9.0 (Plow)
   system-release Red Hat Enterprise Linux release 9.0 (Plow)


   ----------------------------------------------------------
20. Disk information
SPEC is set to: /home/cpu2017_19
   Filesystem              Type  Size  Used Avail Use% Mounted on
   /dev/mapper/rhel-home xfs   372G  361G   11G  98% /home


   ----------------------------------------------------------
21. /sys/devices/virtual/dmi/id
      Vendor:         HPE
      Product:        ProLiant DL380 Gen11
      Product Family: ProLiant
      Serial:         CNX21000G8


   ----------------------------------------------------------
22. dmidecode
   Additional information from dmidecode 3.3 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:
     16x Hynix HMCG94AEBRA103N 64 GB 2 rank 4800



   ----------------------------------------------------------
23. BIOS
   (This section combines info from /sys/devices and dmidecode.)
```

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Platform Notes (Continued)

```
    BIOS Vendor:       HPE
    BIOS Version:      1.22
    BIOS Date:         01/18/2023
    BIOS Revision:     1.22
    Firmware Revision: 1.10
```

Compiler Version Notes

```
==============================================================================
C        | 600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak)
         | 657.xz_s(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2022.1.0 Build 20220316
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------------------------------------------------------------------------------


==============================================================================
C++      | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak) 631.deepsjeng_s(base, peak)
         | 641.leela_s(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
Fortran | 648.exchange2_s(base, peak)
------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`icx`

C++ benchmarks:
`icpx`

Fortran benchmarks:
`ifx`

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`

(Continued on next page)

SPEC CPU®2017 Integer Speed Result

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Hewlett Packard Enterprise
(Test Sponsor: HPE)

ProLiant DL380 Gen11
(2.40 GHz, Intel Xeon Platinum 8468V)

$SPECspeed®2017\_int\_base = 14.5$

$SPECspeed®2017\_int\_peak = 14.7$

CPU2017 License: 3
Test Sponsor: HPE
Tested by: HPE

Test Date: Feb-2023
Hardware Availability: Jan-2023
Software Availability: May-2022

Base Portability Flags (Continued)

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 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -fiopenmp
-DSPEC_OPENMP -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

C++ benchmarks:
```
-m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Fortran benchmarks:
```
-m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Peak Compiler Invocation

C benchmarks:
`icx`

C++ benchmarks:
`icpx`

Fortran benchmarks:
`ifx`

Peak Portability Flags

`Same as Base Portability Flags`

SPEC CPU®2017 Integer Speed Result
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Hewlett Packard Enterprise
(Test Sponsor: HPE)

ProLiant DL380 Gen11
(2.40 GHz, Intel Xeon Platinum 8468V)

SPECspeed®2017_int_base = 14.5

SPECspeed®2017_int_peak = 14.7

CPU2017 License:	3	**Test Date:**	Feb-2023
Test Sponsor:	HPE	**Hardware Availability:**	Jan-2023
Tested by:	HPE	**Software Availability:**	May-2022

Peak Optimization Flags

C benchmarks:

600.perlbench_s: -m64 -std=c11 -Wl,-z,muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX512 -O3
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -fiopenmp -DSPEC_OPENMP
-fno-strict-overflow -L/usr/local/jemalloc64-5.0.1/lib
-ljemalloc

602.gcc_s: -m64 -std=c11 -Wl,-z,muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX512 -O3
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -fiopenmp -DSPEC_OPENMP
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

605.mcf_s: basepeak = yes

625.x264_s: -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -O3
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -fiopenmp -DSPEC_OPENMP
-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-ic2022-official-linux64_revA.html
  http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-SPR-rev1.1.html

You can also download the XML flags sources by saving the following links:
  http://www.spec.org/cpu2017/flags/Intel-ic2022-official-linux64_revA.xml
  http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-SPR-rev1.1.xml

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SPEC CPU®2017 Integer Speed Result

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Hewlett Packard Enterprise
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ProLiant DL380 Gen11
(2.40 GHz, Intel Xeon Platinum 8468V)

SPECspeed®2017_int_base = 14.5

SPECspeed®2017_int_peak = 14.7

CPU2017 License:	3	**Test Date:**	Feb-2023
Test Sponsor:	HPE	**Hardware Availability:**	Jan-2023
Tested by:	HPE	**Software Availability:**	May-2022

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

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