SPEC CPU®2017 Integer Speed Result

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Hewlett Packard Enterprise

(Test Sponsor: HPE)

$SPECspeed^{®}2017\_int\_base = 14.8$

ProLiant DL560 Gen11
(2.10 GHz, Intel Xeon Platinum 8468H)

$SPECspeed^{®}2017\_int\_peak = 15.1$

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: Apr-2023

Hardware Availability: May-2023

Software Availability: Dec-2022

Threads	Result
600.perlbench_s 192	9.37 / 9.99
602.gcc_s 192	12.0 / 12.6
605.mcf_s 192	22.3
620.omnetpp_s 192	11.8
623.xalancbmk_s 192	28.5
625.x264_s 192	21.3 / 22.3
631.deepsjeng_s 192	6.99
641.leela_s 192	5.70
648.exchange2_s 192	25.3
657.xz_s 192	28.5

SPECspeed®2017_int_base (14.8)   SPECspeed®2017_int_peak (15.1)

Hardware

CPU Name: Intel Xeon Platinum 8468H
 Max MHz: 3800
 Nominal: 2100
Enabled: 192 cores, 4 chips
Orderable: 1, 2, 4 chip(s)
Cache L1: 32 KB I + 48 KB D on chip per core
 L2: 2 MB I+D on chip per core
 L3: 105 MB I+D on chip per chip
 Other: None
Memory: 1 TB (32 x 32 GB 2Rx8 PC5-4800B-R)
Storage: 1 x 480 GB SATA SSD
Other: None

Software

OS: Red Hat Enterprise Linux 9.0 (Plow)
 Kernel 5.14.0-70.13.1.el9_0.x86_64
Compiler: C/C++: Version 2023.0 of Intel oneAPI DPC++/C++ Compiler for Linux;
 Fortran: Version 2023.0 of Intel Fortran Compiler for Linux;
 C/C++: Version 2023.0 of Intel C/C++ Compiler for Linux
Parallel: Yes
Firmware: HPE BIOS Version v1.30 03/01/2023 released Mar-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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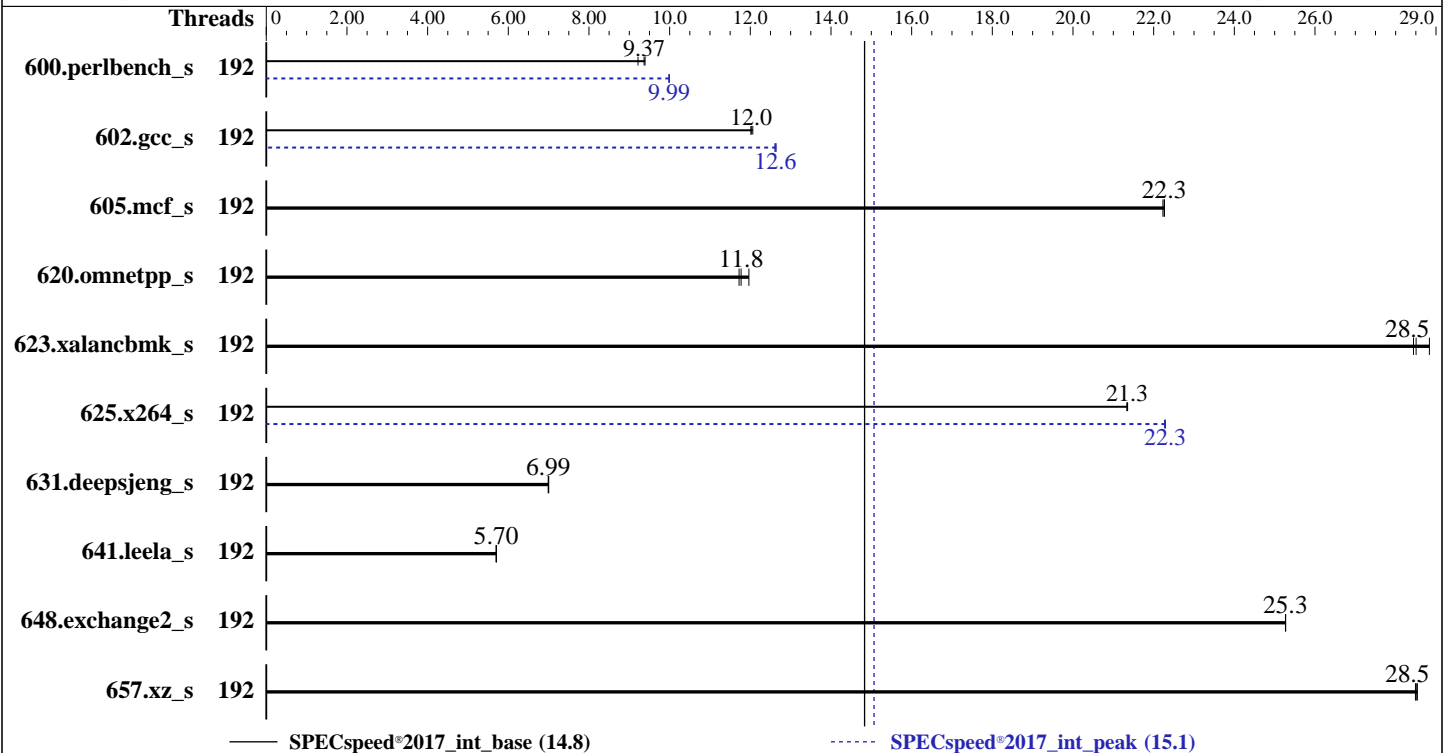(Test Sponsor: HPE)

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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	192	**190**	**9.37**	189	9.39	193	9.22	192	**178**	**9.99**	178	9.98	178	9.99
602.gcc_s	192	**331**	**12.0**	330	12.1	331	12.0	192	316	12.6	315	12.6	**315**	**12.6**
605.mcf_s	192	212	22.2	**212**	**22.3**	212	22.3	192	212	22.2	**212**	**22.3**	212	22.3
620.omnetpp_s	192	**139**	**11.8**	136	12.0	139	11.7	192	**139**	**11.8**	136	12.0	139	11.7
623.xalancbmk_s	192	49.1	28.8	49.8	28.4	**49.7**	**28.5**	192	49.1	28.8	49.8	28.4	**49.7**	**28.5**
625.x264_s	192	82.7	21.3	82.6	21.4	**82.7**	**21.3**	192	**79.1**	**22.3**	79.1	22.3	79.2	22.3
631.deepsjeng_s	192	205	7.00	**205**	**6.99**	205	6.99	192	205	7.00	**205**	**6.99**	205	6.99
641.leela_s	192	299	5.71	**299**	**5.70**	299	5.70	192	299	5.71	**299**	**5.70**	299	5.70
648.exchange2_s	192	116	25.3	116	25.3	**116**	**25.3**	192	116	25.3	116	25.3	**116**	**25.3**
657.xz_s	192	217	28.5	217	28.5	**217**	**28.5**	192	217	28.5	217	28.5	**217**	**28.5**
SPECspeed®2017_int_base =		**14.8**												
SPECspeed®2017_int_peak =		**15.1**												

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.
```

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
IRQ balance service was stopped using "systemctl stop irqbalance.service"
tuned-adm profile was set to Throughput-Performance using "tuned-adm profile throughput-performance"
perf-bias for all the CPUs is set using "cpupower set -b 0"
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-64"
MALLOC_CONF = "retain:true"
OMP_STACKSIZE = "192M"
```

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General Notes

```
 Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM
 memory using Redhat Enterprise Linux 8.0
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 0x2b0001b0 for
the Intel Xeon Platinum 8468H 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
 Workload Profile set to Custom
  Sub-NUMA Clustering (SNC) set to Enable SNC2(2-clusters)
  Adjacent Sector Prefetch set to Disabled
  Minimum Processor Idle Power Package C-State set to No Package State
The reported date by sysinfo is incorrect due to computer clock being not set correctly.
The correct test date is: Apr-2023

 Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost.localdomain Sat May 14 23:36:18 2022

 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
 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
```

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Standard Performance Evaluation Corporation (info@spec.org)
https://www.spec.org/

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Platform Notes (Continued)

```
 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
    23:36:18 up 4 min,  2 users,  load average: 0.30, 2.34, 1.39
   USER      TTY         LOGIN@   IDLE   JCPU   PCPU WHAT
   root      tty1        23:32    3:22   0.00s  0.00s -bash
   root      pts/0       23:33   10.00s  0.85s  0.00s -bash

   -----------------------------------------------------------
 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) 4126564
   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) 4126564
   virtual memory              (kbytes, -v) unlimited
   file locks                       (-x) unlimited

   -----------------------------------------------------------
 5. sysinfo process ancestry
  /usr/lib/systemd/systemd --switched-root --system --deserialize 28
  sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
  sshd: root [priv]
  sshd: root@pts/0
  -bash
  -bash
  runcpu --nobuild --action validate --define default-platform-flags -c
    ic2023.0-lin-sapphirerapids-speed-20221201.cfg --define cores=192 --tune base,peak -o all --define
    intspeedaffinity --define drop_caches intspeed
  runcpu --nobuild --action validate --define default-platform-flags --configfile
    ic2023.0-lin-sapphirerapids-speed-20221201.cfg --define cores=192 --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/CPU2017.011/templogs/preenv.intspeed.011.0.log
    --lognum 011.0 --from_runcpu 2
  specperl $SPEC/bin/sysinfo
```

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Platform Notes (Continued)

```
  $SPEC = /home/cpu2017


  -------------------------------------------------------------
6. /proc/cpuinfo
     model name      : Intel(R) Xeon(R) Platinum 8468H
     vendor_id       : GenuineIntel
     cpu family      : 6
     model           : 143
     stepping        : 6
     microcode       : 0x2b0001b0
     bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs
     cpu cores       : 48
     siblings        : 48
     4 physical ids (chips)
     192 processors (hardware threads)
     physical id 0: core ids 0-47
     physical id 1: core ids 0-47
     physical id 2: core ids 0-47
     physical id 3: 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
     physical id 2: apicids
     256,258,260,262,264,266,268,270,272,274,276,278,280,282,284,286,288,290,292,294,296,298,300,302,304,306,3
     08,310,312,314,316,318,320,322,324,326,328,330,332,334,336,338,340,342,344,346,348,350
     physical id 3: apicids
     384,386,388,390,392,394,396,398,400,402,404,406,408,410,412,414,416,418,420,422,424,426,428,430,432,434,4
     36,438,440,442,444,446,448,450,452,454,456,458,460,462,464,466,468,470,472,474,476,478
  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):                192
     On-line CPU(s) list:   0-191
     Vendor ID:             GenuineIntel
     BIOS Vendor ID:        Intel(R) Corporation
     Model name:            Intel(R) Xeon(R) Platinum 8468H
     BIOS Model name:       Intel(R) Xeon(R) Platinum 8468H
     CPU family:            6
     Model:                 143
     Thread(s) per core:    1
     Core(s) per socket:    48
     Socket(s):             4
     Stepping:              6
     BogoMIPS:              4200.00
     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
```

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Platform Notes (Continued)

```
                        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
                        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:            9 MiB (192 instances)
  L1i cache:            6 MiB (192 instances)
  L2 cache:            384 MiB (192 instances)
  L3 cache:            420 MiB (4 instances)
  NUMA node(s):        8
  NUMA node0 CPU(s):   0-11,96-107
  NUMA node1 CPU(s):   12-23,108-119
  NUMA node2 CPU(s):   24-35,120-131
  NUMA node3 CPU(s):   36-47,132-143
  NUMA node4 CPU(s):   48-59,144-155
  NUMA node5 CPU(s):   60-71,156-167
  NUMA node6 CPU(s):   72-83,168-179
  NUMA node7 CPU(s):   84-95,180-191
  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       9M   12 Data             1      64       1              64
      L1i      32K       6M    8 Instruction      1      64       1              64
      L2        2M     384M   16 Unified          2    2048       1              64
      L3      105M     420M   15 Unified          3  114688       1              64

  ------------------------------------------------------------
  8. numactl --hardware
  NOTE: a numactl 'node' might or might not correspond to a physical chip.
    available: 8 nodes (0-7)
    node 0 cpus: 0-11,96-107
    node 0 size: 128605 MB
    node 0 free: 128082 MB
    node 1 cpus: 12-23,108-119
    node 1 size: 129018 MB
    node 1 free: 128587 MB
    node 2 cpus: 24-35,120-131
    node 2 size: 129018 MB
    node 2 free: 128580 MB
    node 3 cpus: 36-47,132-143
    node 3 size: 129018 MB
    node 3 free: 127858 MB
    node 4 cpus: 48-59,144-155
```

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Platform Notes (Continued)

```
   node 4 size: 129018 MB
   node 4 free: 128651 MB
   node 5 cpus: 60-71,156-167
   node 5 size: 129018 MB
   node 5 free: 128666 MB
   node 6 cpus: 72-83,168-179
   node 6 size: 129018 MB
   node 6 free: 128514 MB
   node 7 cpus: 84-95,180-191
   node 7 size: 128962 MB
   node 7 free: 128477 MB
   node distances:
   node   0   1   2   3   4   5   6   7
     0:  10  20  30  30  30  30  30  30
     1:  20  10  30  30  30  30  30  30
     2:  30  30  10  20  30  30  30  30
     3:  30  30  20  10  30  30  30  30
     4:  30  30  30  30  10  20  30  30
     5:  30  30  30  30  20  10  30  30
     6:  30  30  30  30  30  30  10  20
     7:  30  30  30  30  30  30  20  10

  --------------------------------------------------------------
  9. /proc/meminfo
     MemTotal:       1056441136 kB

  --------------------------------------------------------------
  10. who -r
    run-level 3 May 14 23:31

  --------------------------------------------------------------
  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 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
    enabled-runtime    systemd-remount-fs
    disabled           blk-availability console-getty cpupower debug-shell hwloc-dump-hwdata 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:
```

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Platform Notes (Continued)

```
     Unable to determine current policy
     boost state support:
       Supported: yes
       Active: yes


    ----------------------------------------------------------
    15. tuned-adm active
      Current active profile: throughput-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
      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
      Filesystem            Type  Size  Used Avail Use% Mounted on
      /dev/mapper/rhel-home xfs   372G  358G   15G  97% /home
```

(Continued on next page)

SPEC CPU®2017 Integer Speed Result

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Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL560 Gen11
(2.10 GHz, Intel Xeon Platinum 8468H)

$SPECspeed^{®}2017\_int\_base = 14.8$

$SPECspeed^{®}2017\_int\_peak = 15.1$

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

Test Date: Apr-2023
Hardware Availability: May-2023
Software Availability: Dec-2022

Platform Notes (Continued)

```
   ----------------------------------------------------------------
   21. /sys/devices/virtual/dmi/id
       Vendor:        HPE
       Product:       ProLiant DL560 Gen11
       Product Family: ProLiant
       Serial:        CNX22605RZ


   ----------------------------------------------------------------
   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:
     28x Hynix HMCG88AEBRA168N 32 GB 2 rank 4800
      3x Hynix HMCG88MEBRA113N 32 GB 2 rank 4800
      1x Hynix HMCG88MEBRA115N 32 GB 2 rank 4800


   ----------------------------------------------------------------
   23. BIOS
   (This section combines info from /sys/devices and dmidecode.)
       BIOS Vendor:      HPE
       BIOS Version:     1.30
       BIOS Date:        03/01/2023
       BIOS Revision:    1.30
       Firmware Revision: 1.20
```

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 2023.0.0 Build 20221201
Copyright (C) 1985-2022 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) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
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 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
```

SPEC CPU®2017 Integer Speed Result

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ProLiant DL560 Gen11
(2.10 GHz, Intel Xeon Platinum 8468H)

$SPECspeed^{®}2017\_int\_base = 14.8$

$SPECspeed^{®}2017\_int\_peak = 15.1$

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

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`
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 -xsapphirerapids -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 -std=c++14 -Wl,-z,muldefs -xsapphirerapids -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 -xsapphirerapids -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`

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Hewlett Packard Enterprise

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SPECspeed®2017_int_base = 14.8

ProLiant DL560 Gen11
(2.10 GHz, Intel Xeon Platinum 8468H)

SPECspeed®2017_int_peak = 15.1

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

Peak Compiler Invocation

C benchmarks:
`icx`

C++ benchmarks:
`icpx`

Fortran benchmarks:
`ifx`

Peak Portability Flags

```
Same as Base Portability Flags
```

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-AVX2`(pass 1)
`-flto -Ofast`(pass 1) `-xCORE-AVX512 -O3 -ffast-math`
`-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-AVX2`(pass 1)
`-flto -Ofast`(pass 1) `-xCORE-AVX512 -O3 -ffast-math`
`-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 -xsapphirerapids -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:

(Continued on next page)

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Test Date: Apr-2023
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Peak Optimization Flags (Continued)

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/HPE-Platform-Flags-Intel-SPR-rev1.2.html`
`http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-SPR-rev1.2.xml`
`http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.xml`

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

Tested with SPEC CPU®2017 v1.1.9 on 2022-05-14 14:06:18-0400.
Report generated on 2024-01-29 17:44:16 by CPU2017 PDF formatter v6716.
Originally published on 2023-05-23.