SPEC CPU®2017 Integer Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise
(Test Sponsor: HPE)
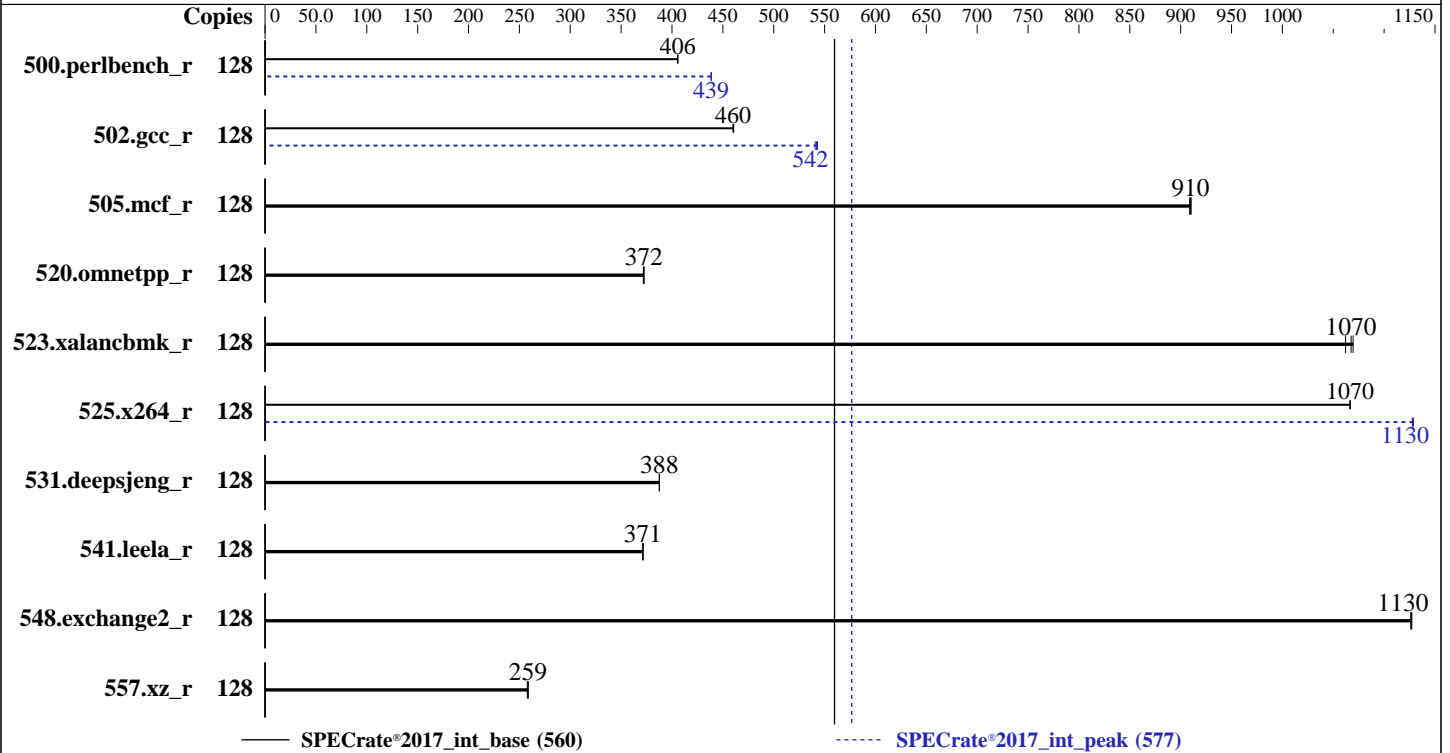
ProLiant DL360 Gen11
(2.00 GHz, Intel Xeon Gold 6438Y+)

$SPECrate^{®}2017\_int\_base = 560$

$SPECrate^{®}2017\_int\_peak = 577$

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: Jul-2023

Hardware Availability: May-2023

Software Availability: Jun-2022

Copies		value
500.perlbench_r	128	406 / 439
502.gcc_r	128	460 / 542
505.mcf_r	128	910
520.omnetpp_r	128	372
523.xalancbmk_r	128	1070
525.x264_r	128	1070 / 1130
531.deepsjeng_r	128	388
541.leela_r	128	371
548.exchange2_r	128	1130
557.xz_r	128	259

SPECrate®2017_int_base (560) ------- SPECrate®2017_int_peak (577)

Hardware

CPU Name: Intel Xeon Gold 6438Y+

Max MHz: 4000

Nominal: 2000

Enabled: 64 cores, 2 chips, 2 threads/core

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: 60 MB I+D on chip per chip

Other: None

Memory: 512 GB (16 x 32 GB 2Rx8 PC5-4800B-R)

Storage: 2 x 960 GB SATA SSD

Other: None

Software

OS: SUSE Linux Enterprise Server 15 SP4
Kernel 5.14.21-150400.22-default

Compiler: C/C++: Version 2023.0 of Intel oneAPI DPC++/C++ Compiler for Linux;
Fortran: Version 2023.0 of Intel Fortran Compiler for Linux;

Parallel: No

Firmware: HPE BIOS Version v1.40 05/18/2023 released May-2023

File System: xfs

System State: Run level 5 (multi-user)

Base Pointers: 64-bit

Peak Pointers: 32/64-bit

Other: jemalloc memory allocator V5.0.1

Power Management: BIOS and OS set to prefer performance at the cost of additional power usage

SPEC CPU®2017 Integer Rate Result
Copyright 2017-2024 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise
(Test Sponsor: HPE)

ProLiant DL360 Gen11
(2.00 GHz, Intel Xeon Gold 6438Y+)

SPECrate®2017_int_base = 560

SPECrate®2017_int_peak = 577

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

Results Table

Benchmark	Base						Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	128	502	406	**502**	**406**	502	406	128	465	439	**465**	**439**	465	439
502.gcc_r	128	**394**	**460**	393	461	394	460	128	335	541	**334**	**542**	334	543
505.mcf_r	128	228	909	227	910	**227**	**910**	128	228	909	227	910	**227**	**910**
520.omnetpp_r	128	**451**	**372**	452	372	451	373	128	**451**	**372**	452	372	451	373
523.xalancbmk_r	128	126	1070	**127**	**1070**	127	1060	128	126	1070	**127**	**1070**	127	1060
525.x264_r	128	210	1070	210	1070	**210**	**1070**	128	199	1130	199	1130	**199**	**1130**
531.deepsjeng_r	128	378	388	378	388	**378**	**388**	128	378	388	378	388	**378**	**388**
541.leela_r	128	571	371	571	371	**571**	**371**	128	571	371	571	371	**571**	**371**
548.exchange2_r	128	**298**	**1130**	298	1130	298	1130	128	**298**	**1130**	298	1130	298	1130
557.xz_r	128	**535**	**259**	536	258	535	259	128	**535**	**259**	536	258	535	259
SPECrate®2017_int_base =		**560**											
SPECrate®2017_int_peak =		**577**											

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>
IRQ balance service was stopped using "systemctl stop irqbalance.service"
tuned-adm profile was set to Accelerator-Performance using "tuned-adm profile accelerator-performance"
```

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL360 Gen11
(2.00 GHz, Intel Xeon Gold 6438Y+)

$SPECrate®2017\_int\_base = 560$

$SPECrate®2017\_int\_peak = 577$

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

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2017/lib/intel64:/home/cpu2017/lib/ia32:/home/cpu2017/je5.0.1-32"
MALLOC_CONF = "retain:true"
```

General Notes

```
 Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM
 memory using Red Hat Enterprise Linux 8.4
 runcpu command invoked through numactl i.e.:
 numactl --interleave=all runcpu <etc>
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 0x2b0004a1 for
the Intel Xeon Gold 6438Y+ processor.
BIOS Configuration
 Workload Profile set to General Throughput Compute
 Memory Patrol Scrubbing set to Disabled
 Last Level Cache (LLC) Dead Line Allocation set to Disabled
 Intel UPI Link Enablement set to Single Link
 Enhanced Processor Performance Profile set to Aggressive
 Thermal Configuration set to Maximum Cooling
 Workload Profile set to Custom
   Adjacent Sector Prefetch set to Disabled
   DCU Stream Prefetcher set to Disabled
   Intel UPI Link Power Management set to Enabled
   Minimum Processor Idle Power Package C-State set to Package C6 (non-retention) State

 Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost Fri Jul  7 08:38:14 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
 11. Systemd service manager version: systemd 249 (249.11+suse.124.g2bc0b2c447)
```

(Continued on next page)

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL360 Gen11
(2.00 GHz, Intel Xeon Gold 6438Y+)

SPECrate®2017_int_base = 560

SPECrate®2017_int_peak = 577

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

Test Date: Jul-2023
Hardware Availability: May-2023
Software Availability: Jun-2022

Platform Notes (Continued)

```
 12. Services, from systemctl list-unit-files
 13. Linux kernel boot-time arguments, from /proc/cmdline
 14. cpupower frequency-info
 15. sysctl
 16. /sys/kernel/mm/transparent_hugepage
 17. /sys/kernel/mm/transparent_hugepage/khugepaged
 18. OS release
 19. Disk information
 20. /sys/devices/virtual/dmi/id
 21. dmidecode
 22. BIOS
    ------------------------------------------------------------


    ------------------------------------------------------------
 1. uname -a
   Linux localhost 5.14.21-150400.22-default #1 SMP PREEMPT_DYNAMIC Wed May 11 06:57:18 UTC 2022 (49db222)
   x86_64 x86_64 x86_64 GNU/Linux


    ------------------------------------------------------------
 2. w
    08:38:14 up 15 min,  0 users,  load average: 0.07, 0.04, 0.06
   USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT


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


    ------------------------------------------------------------
 4. ulimit -a
   core file size          (blocks, -c) unlimited
   data seg size           (kbytes, -d) unlimited
   scheduling priority             (-e) 0
   file size               (blocks, -f) unlimited
   pending signals                 (-i) 2062606
   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) 2062606
   virtual memory          (kbytes, -v) unlimited
   file locks                      (-x) unlimited


    ------------------------------------------------------------
 5. sysinfo process ancestry
  /usr/lib/systemd/systemd --switched-root --system --deserialize 30
  sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
  sshd: root@notty
  bash -c cd $SPEC/ && $SPEC/intrate.sh
  runcpu --nobuild --action validate --define default-platform-flags --define numcopies=128 -c
    ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=64 --define physicalfirst
    --define invoke_with_interleave --define drop_caches --tune base,peak -o all intrate
  runcpu --nobuild --action validate --define default-platform-flags --define numcopies=128 --configfile
    ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=64 --define physicalfirst
    --define invoke_with_interleave --define drop_caches --tune base,peak --output_format all --nopower
    --runmode rate --tune base:peak --size refrate intrate --nopreenv --note-preenv --logfile
    $SPEC/tmp/CPU2017.001/templogs/preenv.intrate.001.0.log --lognum 001.0 --from_runcpu 2
```

(Continued on next page)

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL360 Gen11
(2.00 GHz, Intel Xeon Gold 6438Y+)

$SPECrate^{®}2017\_int\_base = 560$

$SPECrate^{®}2017\_int\_peak = 577$

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

Test Date: Jul-2023
Hardware Availability: May-2023
Software Availability: Jun-2022

Platform Notes (Continued)

```
  specperl $SPEC/bin/sysinfo
 $SPEC = /home/cpu2017


 -----------------------------------------------------------
 6. /proc/cpuinfo
    model name       : Intel(R) Xeon(R) Gold 6438Y+
    vendor_id        : GenuineIntel
    cpu family       : 6
    model            : 143
    stepping         : 7
    microcode        : 0x2b0004a1
    bugs             : spectre_v1 spectre_v2 spec_store_bypass swapgs
    cpu cores        : 32
    siblings         : 64
    2 physical ids (chips)
    128 processors (hardware threads)
    physical id 0: core ids 0-31
    physical id 1: core ids 0-31
    physical id 0: apicids 0-63
    physical id 1: apicids 128-191
  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 2.37.2:
  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):                  128
  On-line CPU(s) list:     0-127
  Vendor ID:               GenuineIntel
  Model name:              Intel(R) Xeon(R) Gold 6438Y+
  CPU family:              6
  Model:                   143
  Thread(s) per core:      2
  Core(s) per socket:      32
  Socket(s):               2
  Stepping:                7
  BogoMIPS:                4000.00
  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
                           vnmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 hle avx2 smep
                           bmi2 erms invpcid rtm 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
```

(Continued on next page)

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL360 Gen11
(2.00 GHz, Intel Xeon Gold 6438Y+)

$SPECrate^®2017\_int\_base = 560$

$SPECrate^®2017\_int\_peak = 577$

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

Platform Notes (Continued)

```
  L1d cache:                  3 MiB (64 instances)
  L1i cache:                  2 MiB (64 instances)
  L2 cache:                   128 MiB (64 instances)
  L3 cache:                   120 MiB (2 instances)
  NUMA node(s):               2
  NUMA node0 CPU(s):          0-31,64-95
  NUMA node1 CPU(s):          32-63,96-127
  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 and seccomp
  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       3M  12 Data          1    64      1            64
    L1i      32K       2M   8 Instruction   1    64      1            64
    L2        2M     128M  16 Unified       2  2048      1            64
    L3       60M     120M  15 Unified       3 65536      1            64

---------------------------------------------------------------
8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
  available: 2 nodes (0-1)
  node 0 cpus: 0-31,64-95
  node 0 size: 257725 MB
  node 0 free: 255622 MB
  node 1 cpus: 32-63,96-127
  node 1 size: 257950 MB
  node 1 free: 257371 MB
  node distances:
  node   0   1
    0:  10  20
    1:  20  10

---------------------------------------------------------------
9. /proc/meminfo
   MemTotal:      528052568 kB

---------------------------------------------------------------
10. who -r
  run-level 5 Jul 7 08:23

---------------------------------------------------------------
11. Systemd service manager version: systemd 249 (249.11+suse.124.g2bc0b2c447)
   Default Target  Status
   graphical       running

---------------------------------------------------------------
12. Services, from systemctl list-unit-files
   STATE            UNIT FILES
   enabled          ModemManager YaST2-Firstboot YaST2-Second-Stage apparmor auditd bluetooth cron
                    display-manager getty@ haveged irqbalance iscsi issue-generator kbdsettings klog
                    lvm2-monitor nscd postfix purge-kernels rollback rsyslog smartd sshd wicked wickedd-auto4
                    wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny wpa_supplicant
   enabled-runtime  systemd-remount-fs
```

(Continued on next page)

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL360 Gen11
(2.00 GHz, Intel Xeon Gold 6438Y+)

$SPECrate^®2017\_int\_base = 560$

$SPECrate^®2017\_int\_peak = 577$

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

Platform Notes (Continued)

```
  disabled          NetworkManager NetworkManager-dispatcher NetworkManager-wait-online accounts-daemon
                    appstream-sync-cache autofs autoyast-initscripts blk-availability bluetooth-mesh
                    boot-sysctl ca-certificates chrony-wait chronyd console-getty cups cups-browsed
                    debug-shell dnsmasq ebtables exchange-bmc-os-info firewalld gpm grub2-once
                    haveged-switch-root ipmi ipmievd iscsi-init iscsid iscsiuio issue-add-ssh-keys kexec-load
                    lunmask man-db-create multipathd nfs nfs-blkmap nm-cloud-setup nmb openvpn@ ostree-remount
                    pppoe pppoe-server rdisc rpcbind rpmconfigcheck rsyncd rtkit-daemon serial-getty@
                    smartd_generate_opts smb snmpd snmptrapd speech-dispatcherd systemd-boot-check-no-failures
                    systemd-network-generator systemd-sysext systemd-time-wait-sync systemd-timesyncd udisks2
                    upower wpa_supplicant@
  indirect          pcscd saned@ wickedd

    -------------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
    BOOT_IMAGE=/boot/vmlinuz-5.14.21-150400.22-default
    root=UUID=16038a66-0f95-499e-a756-89b7efc430ae
    splash=silent
    resume=/dev/disk/by-uuid/1ac00a3a-7fbb-40b6-8213-f8e2decaf1b0
    mitigations=auto
    quiet
    security=apparmor

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

    -------------------------------------------------------------
15. 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                   20
    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                    60
    vm.watermark_boost_factor     15000
    vm.watermark_scale_factor        10
    vm.zone_reclaim_mode              0

    -------------------------------------------------------------
16. /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

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

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL360 Gen11
(2.00 GHz, Intel Xeon Gold 6438Y+)

$SPECrate^{®}2017\_int\_base = 560$

$SPECrate^{®}2017\_int\_peak = 577$

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: Jul-2023

Hardware Availability: May-2023

Software Availability: Jun-2022

Platform Notes (Continued)

```
17. /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


   ----------------------------------------------------------
18. OS release
   From /etc/*-release /etc/*-version
   os-release SUSE Linux Enterprise Server 15 SP4


   ----------------------------------------------------------
19. Disk information
SPEC is set to: /home/cpu2017
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sdb4      xfs   349G  103G  247G  30% /home


   ----------------------------------------------------------
20. /sys/devices/virtual/dmi/id
   Vendor:         HPE
   Product:        ProLiant DL360 Gen11
   Product Family: ProLiant
   Serial:         CNX20800PZ


   ----------------------------------------------------------
21. dmidecode
   Additional information from dmidecode 3.2 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:
     1x Hynix HMCG88AEBRA168N 32 GB 2 rank 4800
     12x Hynix HMCG88MEBRA113N 32 GB 2 rank 4800
     3x Hynix HMCG88MEBRA115N 32 GB 2 rank 4800


   ----------------------------------------------------------
22. BIOS
(This section combines info from /sys/devices and dmidecode.)
   BIOS Vendor:      HPE
   BIOS Version:     1.40
   BIOS Date:        05/18/2023
   BIOS Revision:    1.40
   Firmware Revision: 1.30
```

Compiler Version Notes

```
==================================================================================================
C        | 502.gcc_r(peak)
--------------------------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
--------------------------------------------------------------------------------------------------


==================================================================================================
C        | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak) 525.x264_r(base, peak)
```

(Continued on next page)

Hewlett Packard Enterprise

(Test Sponsor: HPE)

ProLiant DL360 Gen11
(2.00 GHz, Intel Xeon Gold 6438Y+)

SPECrate®2017_int_base = 560

SPECrate®2017_int_peak = 577

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

Compiler Version Notes (Continued)

```
        | 557.xz_r(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       | 502.gcc_r(peak)
----------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
----------------------------------------------------------------------------------


==================================================================================
C       | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak) 525.x264_r(base, peak)
        | 557.xz_r(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++     | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base, peak) 531.deepsjeng_r(base, peak)
        | 541.leela_r(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 | 548.exchange2_r(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.
----------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
```
icx
```

C++ benchmarks:
```
icpx
```

Fortran benchmarks:
```
ifx
```

Base Portability Flags

```
  500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
```

(Continued on next page)

Hewlett Packard Enterprise
(Test Sponsor: HPE)

ProLiant DL360 Gen11
(2.00 GHz, Intel Xeon Gold 6438Y+)

SPECrate®2017_int_base = 560

SPECrate®2017_int_peak = 577

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

Test Date: Jul-2023
Hardware Availability: May-2023
Software Availability: Jun-2022

Base Portability Flags (Continued)

502.gcc_r: `-DSPEC_LP64`
505.mcf_r: `-DSPEC_LP64`
520.omnetpp_r: `-DSPEC_LP64`
523.xalancbmk_r: `-DSPEC_LP64 -DSPEC_LINUX`
525.x264_r: `-DSPEC_LP64`
531.deepsjeng_r: `-DSPEC_LP64`
541.leela_r: `-DSPEC_LP64`
548.exchange2_r: `-DSPEC_LP64`
557.xz_r: `-DSPEC_LP64`

Base Optimization Flags

C benchmarks:
```
-w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc
```

C++ benchmarks:
```
-w -std=c++14 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc
```

Fortran benchmarks:
```
-w -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc
```

Peak Compiler Invocation

C benchmarks:
```
icx
```

C++ benchmarks:
```
icpx
```

Fortran benchmarks:
```
ifx
```

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise
(Test Sponsor: HPE)

ProLiant DL360 Gen11
(2.00 GHz, Intel Xeon Gold 6438Y+)

$SPECrate^{®}2017\_int\_base = 560$

$SPECrate^{®}2017\_int\_peak = 577$

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

Peak Portability Flags

500.perlbench_r: `-DSPEC_LP64 -DSPEC_LINUX_X64`
502.gcc_r: `-D_FILE_OFFSET_BITS=64`
505.mcf_r: `-DSPEC_LP64`
520.omnetpp_r: `-DSPEC_LP64`
523.xalancbmk_r: `-DSPEC_LP64 -DSPEC_LINUX`
525.x264_r: `-DSPEC_LP64`
531.deepsjeng_r: `-DSPEC_LP64`
541.leela_r: `-DSPEC_LP64`
548.exchange2_r: `-DSPEC_LP64`
557.xz_r: `-DSPEC_LP64`

Peak Optimization Flags

C benchmarks:

500.perlbench_r: `-w -std=c11 -m64 -Wl,-z,muldefs`
`-fprofile-generate`(pass 1)
`-fprofile-use=default.profdata`(pass 2) `-xCORE-AVX2`(pass 1)
`-flto -Ofast -xCORE-AVX512 -ffast-math -mfpmath=sse`
`-funroll-loops -qopt-mem-layout-trans=4`
`-fno-strict-overflow`
`-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin`
`-lqkmalloc`

502.gcc_r: `-m32`
`-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/ia32_lin`
`-std=gnu89 -Wl,-z,muldefs -fprofile-generate`(pass 1)
`-fprofile-use=default.profdata`(pass 2) `-xCORE-AVX2`(pass 1)
`-flto -Ofast -xCORE-AVX512 -ffast-math -mfpmath=sse`
`-funroll-loops -qopt-mem-layout-trans=4`
`-L/usr/local/jemalloc32-5.0.1/lib -ljemalloc`

505.mcf_r: `basepeak = yes`

525.x264_r: `-w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast`
`-ffast-math -flto -mfpmath=sse -funroll-loops`
`-qopt-mem-layout-trans=4 -fno-alias`
`-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin`
`-lqkmalloc`

557.xz_r: `basepeak = yes`

C++ benchmarks:

(Continued on next page)

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

Hewlett Packard Enterprise
(Test Sponsor: HPE)

ProLiant DL360 Gen11
(2.00 GHz, Intel Xeon Gold 6438Y+)

SPECrate®2017_int_base = 560

SPECrate®2017_int_peak = 577

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

Peak Optimization Flags (Continued)

520.omnetpp_r: `basepeak = yes`

523.xalancbmk_r: `basepeak = yes`

531.deepsjeng_r: `basepeak = yes`

541.leela_r: `basepeak = yes`

Fortran benchmarks:

548.exchange2_r: `basepeak = yes`

The flags files that were used to format this result can be browsed at
`http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.html`
`http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-SPR-rev2.1.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.xml`
`http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-SPR-rev2.1.xml`

SPEC CPU and SPECrate are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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 2023-07-06 23:08:14-0400.
Report generated on 2024-01-29 18:11:02 by CPU2017 PDF formatter v6716.
Originally published on 2023-10-10.