SPEC CPU®2017 Integer Speed Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant ML350 Gen11
(2.00 GHz, Intel Xeon Platinum 8460Y+)

SPECspeed®2017_int_base = 14.1
SPECspeed®2017_int_peak = 14.4

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

Test Date: Feb-2023
Hardware Availability: Jan-2023

Software
OS: Red Hat Enterprise Linux release 9.0 (Plow)
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

Hardware
CPU Name: Intel Xeon Platinum 8460Y+
Max MHz: 3700
Nominal: 2000
Enabled: 80 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: 105 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

Threads
<table>
<thead>
<tr>
<th>Software</th>
<th>Threads</th>
<th>SPECspeed®2017_int_base (14.1)</th>
<th>SPECspeed®2017_int_peak (14.4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>80</td>
<td>8.82</td>
<td>9.77</td>
</tr>
<tr>
<td>602.gcc_s</td>
<td>80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>620.omnetpp_s</td>
<td>80</td>
<td>11.6</td>
<td></td>
</tr>
<tr>
<td>623.xalanchmk_s</td>
<td>80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>625.x264_s</td>
<td>80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>80</td>
<td>6.84</td>
<td></td>
</tr>
<tr>
<td>641.leela_s</td>
<td>80</td>
<td>5.50</td>
<td></td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>657.xz_s</td>
<td>80</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

600.perlbench_s: 80 cores, 2 chips
602.gcc_s: 80 cores
605.mcf_s: 80 cores
620.omnetpp_s: 80 cores
623.xalanchmk_s: 80 cores
625.x264_s: 80 cores
631.deepsjeng_s: 80 cores
641.leela_s: 80 cores
648.exchange2_s: 80 cores
657.xz_s: 80 cores

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Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>80</td>
<td>202</td>
<td>8.79</td>
<td>200</td>
<td>8.87</td>
<td>201</td>
<td>8.82</td>
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<tr>
<td>602.gcc_s</td>
<td>80</td>
<td>334</td>
<td>11.9</td>
<td>331</td>
<td>12.0</td>
<td>331</td>
<td>12.0</td>
</tr>
<tr>
<td>605.mcf_s</td>
<td>80</td>
<td>215</td>
<td>22.0</td>
<td>213</td>
<td>22.1</td>
<td>213</td>
<td>22.1</td>
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<tr>
<td>620.omnetpp_s</td>
<td>80</td>
<td>141</td>
<td>11.6</td>
<td>140</td>
<td>11.6</td>
<td>140</td>
<td>11.6</td>
</tr>
<tr>
<td>623.xalanchmk_s</td>
<td>80</td>
<td>53.8</td>
<td>26.3</td>
<td>54.4</td>
<td>26.1</td>
<td>53.9</td>
<td>26.3</td>
</tr>
<tr>
<td>625.x264_s</td>
<td>80</td>
<td>84.9</td>
<td>20.8</td>
<td>84.8</td>
<td>20.8</td>
<td>84.7</td>
<td>20.8</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>80</td>
<td>209</td>
<td>6.84</td>
<td>210</td>
<td>6.84</td>
<td>210</td>
<td>6.84</td>
</tr>
<tr>
<td>641.leela_s</td>
<td>80</td>
<td>310</td>
<td>5.50</td>
<td>310</td>
<td>5.50</td>
<td>310</td>
<td>5.50</td>
</tr>
<tr>
<td>648.exchange2_s</td>
<td>80</td>
<td>136</td>
<td>21.6</td>
<td>136</td>
<td>21.7</td>
<td>136</td>
<td>21.7</td>
</tr>
<tr>
<td>657.xz_s</td>
<td>80</td>
<td>237</td>
<td>26.1</td>
<td>237</td>
<td>26.1</td>
<td>237</td>
<td>26.1</td>
</tr>
</tbody>
</table>

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.xalanchmk_r / 623.xalanchmk_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
runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>
IRQ balance service was stopped using "systemctl stop irqbalance.service"
perf-bias 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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**CPU2017 License:** 3

**Test Sponsor:** HPE

**Tested by:** HPE

**Test Date:** Feb-2023

**Hardware Availability:** Jan-2023

**Software Availability:** Nov-2022

---

### 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.


---

### Platform Notes

The system ROM used for this result contains Intel microcode version 0x2b000161 for the Intel Xeon Platinum 8460Y+ 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
- Minimum Processor Id/e Power Package C-State set to No Package State

**sysinfo program** /home/cpu2017/bin/sysinfo

Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197

running on localhost.localdomain Thu Feb 16 11:20:09 2023

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

---

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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. sysctl
16. /sys/kernel/mm/transparent_hugepage
17. /sys/kernel/mm/transparent_hugepage/ksm
18. OS release
19. Disk information
20. /sys/devices/virtual/dmi/id

(Continued on next page)
Platform Notes (Continued)

21. dmidecode
22. 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 GNU/Linux

------------------------------------------------------------
2. w
11:20:09 up 1 min, 0 users, load average: 0.40, 0.23, 0.09
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 (-j) 4127200
  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) 4127200
  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=80 --tune base,peak -o all --define
  intspeedaffinity --define drop_caches intspeed
runcpu --nobuild --action validate --define default-platform-flags --configfile
  ic2022.1-lin-core-avx512-speed-20220316.cfg --define cores=80 --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/CPUPROFILE.001/CPUPROFILE.001.0.log
  --lognum 001.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2017
$SPEC = /home/cpu2017

------------------------------------------------------------
6. /proc/cpuinfo
  model name       : Intel(R) Xeon(R) Platinum 8460Y+
  vendor_id        : GenuineIntel

(Continued on next page)
Platform Notes (Continued)

cpu family : 6
model : 143
stepping : 6
microcode : 0x2b000161
bugs : spectre_v1 spectre_v2 spec_store_bypass swapsq
cpu cores : 40
siblings : 40
2 physical ids (chips)
80 processors (hardware threads)
physical id 0: core ids 0-39
physical id 1: core ids 0-39
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
physical id 1: apicids
80,182,184,186,188,190,192,194,196,198,200,202,204,206
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): 80
On-line CPU(s) list: 0-79
Vendor ID: GenuineIntel
BIOS Vendor ID: Intel(R) Corporation
Model name: Intel(R) Xeon(R) Platinum 8460Y+
BIOS Model name: Intel(R) Xeon(R) Platinum 8460Y+
CPU family: 6
Model: 143
Thread(s) per core: 1
Core(s) per socket: 40
Socket(s): 2
Stepping: 6
BogoMIPS: 4000.00
Flags: fpu vme de pse tsc msr pae mce cmov pat pse36
clflush dtc acpi mmx fxsr sse sse2 asht tm pbe syscall nx pdaelgr rdtscp
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology
nonstop_tsc cpu id aperf perf tsc_known_freq pni pclmulqdq dtes64 monitor
des_cpl vmx smx est tm2 ssse3 sdbg fma cx16 xtpre pdcm pcid dca sse4_1
ssse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rredad
lahf_lm abm 3nowprefetch cpuid_fault epb cat_13 cat_12 cdp_13
invpcid_single cdp_12 ssbd mba ibrs ibpb stibp ibrs enhanced tpr_shadow
vnmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bm1 avx2 smep bmi2
erms invpcid cqm dcd_a avx512f avx512dq rdseed adx amx avx512fma
clflushopt clwb intel_pt avx512sd sha ni avx512bw avx512vl xsaveopt xsave
xgetbv xsave cqm_11c cqm_occup_11c cqm_msm_total cqm_msm_local
split_lock_detect avx_vnni avx512_bf16 wbinvd dtherm ida arat pin pt
avx512v bmi umpk pku ospke waiptk avx512_v bmi2 gfni vaes wpclmulqdq
avx512_vnni avx512_ltaig tme avx512_vpopcntdq isa7 rdpid bus_lock_detect
colomere movdir movdir64b enqcmd fasm md_clear serialize tsxtdt rbo pconfig
arch_1br avx512_fp16 amx_tile flush_l1d arch_capabilities

Virtualization: VT-x
Lld cache: 3.8 MiB (80 instances)
Platform Notes (Continued)

L1i cache: 2.5 MiB (80 instances)
L2 cache: 160 MiB (80 instances)
L3 cache: 210 MiB (2 instances)
NUMA node(s): 4
NUMA node0 CPU(s): 0-9,40-49
NUMA node1 CPU(s): 10-19,50-59
NUMA node2 CPU(s): 20-29,60-69
NUMA node3 CPU(s): 30-39,70-79
Vulnerability Itlb multihit: Not affected
Vulnerability Lttf: 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 3.8M 12 Data 1 64 1 64
L1i 32K 2.5M 8 Instruction 1 64 1 64
L2 2M 160M 16 Unified 2 2048 1 64
L3 105M 210M 15 Unified 3 114688 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: 0-9,40-49
node 0 size: 257756 MB
node 0 free: 256611 MB
node 1 cpus: 10-19,50-59
node 1 size: 258043 MB
node 1 free: 257505 MB
node 2 cpus: 20-29,60-69
node 2 size: 258007 MB
node 2 free: 257496 MB
node 3 cpus: 30-39,70-79
node 3 size: 258032 MB
node 3 free: 257540 MB
node distances:
node 0 1 2 3
0: 10 20 30 30
1: 10 10 30 30
2: 30 30 10 20
3: 30 30 20 10

9. /proc/meminfo
MemTotal: 1056604072 kB

10. who -r
run-level 3 Feb 16 11:19

11. Systemd service manager version: systemd 250 (250-6.e19_0)
Default Target Status
multi-user running

(Continued on next page)
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Test Date: Feb-2023
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Platform Notes (Continued)

12. Services, from systemctl list-unit-files

<table>
<thead>
<tr>
<th>STATE</th>
<th>UNIT FILES</th>
</tr>
</thead>
<tbody>
<tr>
<td>enabled</td>
<td>NetworkManager NetworkManager-dispatcher NetworkManager-wait-online auditd chronyd crond</td>
</tr>
<tr>
<td></td>
<td>dbus-broker firewalld getty@ irqbalance iscsi iscsi-onboot kdump libstoragemgmt</td>
</tr>
<tr>
<td></td>
<td>lvm2-monitor mdmonitor microcode multipathd nis-domainname rsh crond saslauthd</td>
</tr>
<tr>
<td></td>
<td>selinux-autorelabel-mark sshd sshd systemd-network-generator-udisks2 upower virtqemud</td>
</tr>
<tr>
<td>enabled-runtime</td>
<td>systemd-remount-fs</td>
</tr>
<tr>
<td>disabled</td>
<td>blk-availability britty canberra-system-bootup canberra-system-shutdown</td>
</tr>
<tr>
<td></td>
<td>canberra-system-shutdown-reboot chrony-wait console-getty cpupower debug-shell dnsmasq</td>
</tr>
<tr>
<td></td>
<td>gsproxy httpd httpd@ hwloc-dump-hwdata ipa-custodia iscsid iscsiuio kvm_stat</td>
</tr>
<tr>
<td></td>
<td>libvirt-guests libvirtd man-db-restart-cache-update ndctl-monitor nfs-bkmap nfs-server nftables</td>
</tr>
<tr>
<td></td>
<td>nmb numad pmcd pmfind pmie pmie_farm pmlogger pmlogger_farm pmproxy radiusd rrdisc</td>
</tr>
<tr>
<td></td>
<td>rham rham-facts rpmdb-rebuild saslauthd serial-getty@ saslauthd serial-getty@ smp speech-dispatcherd</td>
</tr>
<tr>
<td></td>
<td>sshd sssd systemd-network-generator udisks2 upower virtqemud</td>
</tr>
<tr>
<td></td>
<td>systemd-boot-check-no-failures systemd-nspawn@ systemd-pstore systemd-sysext virtnetworkd</td>
</tr>
<tr>
<td></td>
<td>virtproxyd virtsecretd virtstoraged</td>
</tr>
</tbody>
</table>

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. sysctl

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

(Continued on next page)
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**Platform Notes (Continued)**

```
defrag always defer defer+madvice [madvice] never
enabled [always] madvice never
hpage_pmd_size 2097152
shmem_enabled always within_size advise [never] deny force
```

---

**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     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)

---

**19. Disk information**

SPEC is set to: /home/cpu2017

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/mapper/rhel-home</td>
<td>xfs</td>
<td>372G</td>
<td>149G</td>
<td>224G</td>
<td>40%</td>
<td>/home</td>
</tr>
</tbody>
</table>

---

**20. /sys/devices/virtual/dmi/id**

Vendor:         HPE  
Product:        ProLiant ML350 Gen11  
Product Family: ProLiant  
Serial:         CNX20800P7

---

**21. 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 SMI BIOS" standard.

Memory:  
16x Hynix HMCG94EMBRA121N 64 GB 2 rank 4800

---

**22. BIOS**

(This section combines info from /sys/devices and dmidecode.)

| BIOS Vendor: | HPE |
| BIOS Version: | 1.22 |
| BIOS Date: | 01/18/2023 |
| BIOS Revision: | 1.22 |
| 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)
```

---

(Continued on next page)
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant ML350 Gen11
(2.00 GHz, Intel Xeon Platinum 8460Y+)

**SPEC CPU®2017 Integer Speed Result**

Copyright 2017-2024 Standard Performance Evaluation Corporation

**SPECspeed®2017_int_base = 14.1**

**SPECspeed®2017_int_peak = 14.4**

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**Compiler Version Notes (Continued)**

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.

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
SPEC CPU®2017 Integer Speed Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant ML350 Gen11
(2.00 GHz, Intel Xeon Platinum 8460Y+)

SPECspeed®2017_int_base = 14.1
SPECspeed®2017_int_peak = 14.4

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

Peak Optimization Flags

C benchmarks:
600.perlbench_s: -m64 -std=c11 -Wl,-z,muldefs -fprofile-generate(pass 1)
-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

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SPEC CPU®2017 Integer Speed Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant ML350 Gen11
(2.00 GHz, Intel Xeon Platinum 8460Y+)

SPECspeed®2017_int_base = 14.1
SPECspeed®2017_int_peaks = 14.4

Peak Optimization Flags (Continued)

600.perlbench_s (continued):
   -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 -ftlo -mfpmath=sse -funroll-loops
   -qopt-mem-layout-trans=4 -ftopenmp -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 -ftlo -mfpmath=sse -funroll-loops
   -qopt-mem-layout-trans=4 -ftopenmp -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/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/HPE-Platform-Flags-Intel-SPR-rev1.1.xml
## SPEC CPU®2017 Integer Speed Result

### Hewlett Packard Enterprise

(3rd-party tests)

ProLiant ML350 Gen11
(2.00 GHz, Intel Xeon Platinum 8460Y+)

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**CPU2017 License:** 3

**Test Sponsor:** HPE

**Tested by:** HPE

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### CPU2017 License and Software Availability

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

### Notes

- **Hardware Availability:** Jan-2023
- **Software Availability:** Nov-2022

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

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