## SPEC CPU®2017 Integer Rate Result

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
ProLiant DL320 Gen11  
(2.10 GHz, Intel Xeon Gold 5412U)  

**SPECrate®2017_int_base = 221**  
**SPECrate®2017_int_peak = 227**

<table>
<thead>
<tr>
<th>Test Date:</th>
<th>May-2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware Availability:</td>
<td>Apr-2023</td>
</tr>
<tr>
<td>Software Availability:</td>
<td>Dec-2022</td>
</tr>
</tbody>
</table>

### Hardware

<table>
<thead>
<tr>
<th>CPU Name:</th>
<th>Intel Xeon Gold 5412U</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max MHz:</td>
<td>3900</td>
</tr>
<tr>
<td>Nominal:</td>
<td>2100</td>
</tr>
<tr>
<td>Enabled:</td>
<td>24 cores, 1 chip, 2 threads/core</td>
</tr>
<tr>
<td>Orderable:</td>
<td>1 Chip</td>
</tr>
<tr>
<td>Cache L1:</td>
<td>32 KB I + 48 KB D on chip per core</td>
</tr>
<tr>
<td>L2:</td>
<td>2 MB I+D on chip per core</td>
</tr>
<tr>
<td>L3:</td>
<td>45 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
<tr>
<td>Memory:</td>
<td>256 GB (8 x 32 GB 2Rx8 PC5-4800B-R, running at 4400)</td>
</tr>
<tr>
<td>Storage:</td>
<td>1 x 480 GB SATA SSD</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>OS:</th>
<th>Red Hat Enterprise Linux 9.0 (Plow)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compiler:</td>
<td>C/C++, Version 2023.0 of Intel oneAPI DPC++/C++ Compiler for Linux; Fortran: Version 2023.0 of Intel Fortran Compiler for Linux;</td>
</tr>
<tr>
<td>Parallel:</td>
<td>No</td>
</tr>
<tr>
<td>Firmware:</td>
<td>HPE BIOS Version v1.30 03/01/2023 released Mar-2023</td>
</tr>
<tr>
<td>File System:</td>
<td>xfs</td>
</tr>
<tr>
<td>System State:</td>
<td>Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers:</td>
<td>64-bit</td>
</tr>
<tr>
<td>Peak Pointers:</td>
<td>32/64-bit</td>
</tr>
<tr>
<td>Other:</td>
<td>jemalloc memory allocator V5.0.1</td>
</tr>
<tr>
<td>Power Management:</td>
<td>BIOS and OS set to prefer performance at the cost of additional power usage</td>
</tr>
</tbody>
</table>

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![Graph of SPEC CPU®2017 Integer Rate Result](image-url)
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ProLiant DL320 Gen11
(2.10 GHz, Intel Xeon Gold 5412U)

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

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Results Table

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<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>48</td>
<td>486</td>
<td>157</td>
<td>486</td>
<td>157</td>
<td>486</td>
<td>157</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>48</td>
<td>373</td>
<td>182</td>
<td>373</td>
<td>182</td>
<td>372</td>
<td>183</td>
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<tr>
<td>505.mcfr</td>
<td>48</td>
<td>215</td>
<td>360</td>
<td>217</td>
<td>358</td>
<td>218</td>
<td>356</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>48</td>
<td>412</td>
<td>153</td>
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<td>153</td>
<td>412</td>
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</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>48</td>
<td>117</td>
<td>435</td>
<td>116</td>
<td>437</td>
<td>117</td>
<td>435</td>
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<tr>
<td>525.x264_r</td>
<td>48</td>
<td>202</td>
<td>416</td>
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<td>416</td>
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<tr>
<td>531.deepsjeng_r</td>
<td>48</td>
<td>363</td>
<td>152</td>
<td>363</td>
<td>152</td>
<td>363</td>
<td>152</td>
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<tr>
<td>541.leela_r</td>
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<tr>
<td>548.exchange2_r</td>
<td>48</td>
<td>285</td>
<td>441</td>
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<tr>
<td>557.xz_r</td>
<td>48</td>
<td>511</td>
<td>101</td>
<td>511</td>
<td>101</td>
<td>508</td>
<td>102</td>
</tr>
</tbody>
</table>

SPECrate®2017_int_base = 221
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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.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.

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 numaclt i.e.:
  numaclt --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"
perf-bias for all the CPUs is set using "cpupower set -b 0"
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<tr>
<th>CPU2017 License</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor</td>
<td>HPE</td>
</tr>
<tr>
<td>Tested by</td>
<td>HPE</td>
</tr>
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<td>Test Date</td>
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#### 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  
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  

#### Platform Notes

The system ROM used for this result contains Intel microcode version 0x2b0001b0 for the Intel Xeon Gold 5412U processor.  
BIOS Configuration:  
- Workload Profile set to General Throughput Compute  
- Thermal Configuration set to Maximum Cooling  
- Enhanced Processor Performance Profile set to Aggressive  
- Last Level Cache (LLC) Dead Line Allocation set to Disabled  
- Memory Patrol Scrubbing set to Disabled  
- Workload Profile set to Custom  
- DCU Stream Prefetcher set to Disabled  
- Adjacent Sector Prefetch set to Disabled  
- 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 fe91c89b7ed5c36e2c92cc097bec197  
runtime on localhost.localdomain Sun May 14 14:33:09 2023

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

---

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---

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8. `numactl --hardware`
9. `/proc/meminfo`
10. `who -r`
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12. `Services, from systemctl list-unit-files`
13. `Linux kernel boot-time arguments, from /proc/cmdline`
14. `cpupower frequency-info`
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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
14:33:09 up 6 min, 2 users, load average: 0.00, 0.01, 0.00
USER TTY LOGIN@ IDLE JCPU PCPU WHAT
root tty1 14:29 3:33 0.00s 0.00s -bash
root pts/0 14:30 11.00s 0.83s 0.01s -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) 1030656
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) 1030656
virtual memory (kbytes, -v) unlimited
file locks (-x) unlimited
-----------------------------
5. sysinfo process ancestry
/usr/lib/systemd/systemd --switched-root --system --deserialize 27
sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
sshd: root [priv]
sshd: root@pts/0
-runcpu --nobuild --action validate --define default-platform-flags --define numcopies=48 -c
ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=24 --define physicalfirst
--define invoke_with_interleave --define drop_caches --tune base,peak --no all intrate
-runcpu --nobuild --action validate --define default-platform-flags --define numcopies=48 --configfile
ic2023.0-lin-sapphirerapids-rate-20221201.cfg --define smt-on --define cores=24 --define physicalfirst
--define invoke_with_interleave --define drop_caches --tune base,peak --output_format all --nopower

(Continued on next page)
Platform Notes (Continued)

---runmode rate --tune base:peak --size refrate intrate --nopreenv --note preenv --logfile
$SPEC/tmp/CPU2017.033/templogs/preenv.intrate.033.0.log --lognum 033.0 --from runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /home/cpu2017

6. /proc/cpuinfo
   ---
   model name : Intel(R) Xeon(R) Gold 5412U
   vendor_id : GenuineIntel
   cpu family : 6
   model : 143
   stepping : 8
   microcode : 0x2b0001b0
   bugs : spectre_v1 spectre_v2 spec_store_bypass swapgs
   cpu cores : 24
   siblings : 48
   1 physical ids (chips)
   48 processors (hardware threads)
   physical id 0: core ids 0-23
   physical id 0: apicids 0-47
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):                          48
   On-line CPU(s) list:             0-47
   Vendor ID:                       GenuineIntel
   BIOS Vendor ID:                  Intel(R) Corporation
   Model name:                      Intel(R) Xeon(R) Gold 5412U
   BIOS Model name:                 Intel(R) Xeon(R) Gold 5412U
   CPU family:                      6
   Model:                           143
   Thread(s) per core:              2
   Core(s) per socket:              24
   Socket(s):                       1
   Stepping:                        8
   BogoMIPS:                        4200.00
   Flags:
   fpu vme de pse tsc msr pae mca cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtsscp lm constant tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop tsc cpuid aperfmperf tsc_knowledge fn pi 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 3dmowprefetch cpuid_fault epb cat _13 cat _12 cdp _13 invpcid_single cdp _12 ssbd mba ibrs ibpb ibrs _enhanced tpr _shadow vmmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 avx2 smep bmi2 erms invpcid cqm rdr _a avx512f avx512dq rdseed adx smap avx512sfma clflushopt clwb intel_pt avx512cd sha _ni avx512bw avx512vl xsavesopt xsavc xgetbv1 xsaves cqm _l1c cqm _l2c cqm _mbm _total cqm _mbm _local split_lock _detect avx _vnmi avx512 _bf16 wnorinv dtherm ida arat pln pts avx512vbmi umip pk uospke waitpkg avx512_vbmi2 gfni vaes vpcmui dqg avx512_vnmi avx512_bital gte avx512_vpopcnt dq 1a57 rdpid bus _lock _detect clemdete movmdri movdvr _64b enqcmd fasm md _clear serialize tsxldtrk pconfig
### Platform Notes (Continued)

<table>
<thead>
<tr>
<th>Virtualization:</th>
<th>arch_lbr avx512_fp16 amx_tile flush_l1d arch_capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1d cache:</td>
<td>1.1 MiB (24 instances)</td>
</tr>
<tr>
<td>L1i cache:</td>
<td>768 KiB (24 instances)</td>
</tr>
<tr>
<td>L2 cache:</td>
<td>48 MiB (24 instances)</td>
</tr>
<tr>
<td>L3 cache:</td>
<td>45 MiB (1 instance)</td>
</tr>
<tr>
<td>NUMA node(s):</td>
<td>2</td>
</tr>
<tr>
<td>NUMA node0 CPU(s):</td>
<td>0-11,24-35</td>
</tr>
<tr>
<td>NUMA node1 CPU(s):</td>
<td>12-23,36-47</td>
</tr>
<tr>
<td>Vulnerability Itlb multihit:</td>
<td>Not affected</td>
</tr>
<tr>
<td>Vulnerability L1tf:</td>
<td>Not affected</td>
</tr>
<tr>
<td>Vulnerability Mds:</td>
<td>Not affected</td>
</tr>
<tr>
<td>Vulnerability Meltdown:</td>
<td>Not affected</td>
</tr>
<tr>
<td>Vulnerability Spec store bypass:</td>
<td>Mitigation; Speculative Store Bypass disabled via prctl</td>
</tr>
<tr>
<td>Vulnerability Spectre v1:</td>
<td>Mitigation; usercopy/swapgs barriers and __user pointer sanitation</td>
</tr>
<tr>
<td>Vulnerability Spectre v2:</td>
<td>Mitigation; Enhanced IBRS, IBPB conditional, RSB filling</td>
</tr>
<tr>
<td>Vulnerability Srbds:</td>
<td>Not affected</td>
</tr>
<tr>
<td>Vulnerability Tsx async abort:</td>
<td>Not affected</td>
</tr>
</tbody>
</table>

From `lscpu --cache`:

```
NAME ONE-SIZE ALL-SIZE WAYS TYPE LEVEL SETS PHY-LINE COHERENCY-SIZE
L1d 48K 1.1M 12 Data 1 64 1  64
L1i 32K 768K 8 Instruction 1 64 1  64
L2 2M 48M 16 Unified 2 2048 1 64
L3 45M 45M 15 Unified 3 49152 1 64
```

8. numactl --hardware

```bash
available: 2 nodes (0-1)
node 0 cpus: 0-11,24-35
node 0 size: 128732 MB
node 0 free: 127907 MB
node 1 cpus: 12-23,36-47
node 1 size: 128971 MB
node 1 free: 128436 MB
node distances:
node 0 1
0: 10 20
1: 20 10
```

9. /proc/meminfo

MemTotal: 263888728 kB

10. who -r

run-level 3 May 14 14:27

11. systemd service manager version: systemd 250 (250-6.62.1-0)

Default Target Status
multi-user running

12. Services, from systemctl list-unit-files

STATE
enabled NetworkManager NetworkManager-dispatcher NetworkManager-wait-online auditd chronyd crond
dbus-broker firewall-getty8 irqbalance kgdb lvm2-monitor mdmonitor microcode
nis-domainname rsyslog serilog selinux-autorelabel-mark sshd sssd

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**CPU2017 License:** 3  
**Test Sponsor:** HPE  
**Tested by:** HPE  
**Platform Notes (Continued)**

```
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
   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
```

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Platform Notes (Continued)

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  128G  244G  35% /home

21. /sys/devices/virtual/dmi/id
Vendor:         HPE
Product:        ProLiant DL320 Gen11
Product Family: ProLiant
Serial:         CNX2210H28

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:
  4x Hynix HMCG88AEBA16B8N 32 GB 2 rank 4800, configured at 4400
  4x Hynix HMCG88MEBA113N 32 GB 2 rank 4800, configured at 4400

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       | 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)
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(Test Sponsor: HPE)  
ProLiant DL320 Gen11  
(2.10 GHz, Intel Xeon Gold 5412U)  

SPEC CPU®2017 Integer Rate Result  

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

SPECrate®2017_int_base = 221
SPECrate®2017_int_peak = 227

Compiler Version Notes (Continued)

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<table>
<thead>
<tr>
<th>C</th>
<th>502.gcc_r(peak)</th>
</tr>
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<tr>
<td>Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201</td>
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Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifx

Base Portability Flags

500.perlbench_r -DSPEC_LP64 -DSPEC_LINUX_X64  
502.gcc_r -DSPEC_LP64

(Continued on next page)
### Base Portability Flags (Continued)

- 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
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL320 Gen11
(2.10 GHz, Intel Xeon Gold 5412U)

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

SPECrater®2017_int_base = 221
SPECrater®2017_int_peak = 227

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:

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### SPEC CPU®2017 Integer Rate Result

**Hewlett Packard Enterprise**  
(Test Sponsor: HPE)  
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#### 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/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

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

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