SPEC CPU®2017 Integer Rate Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL110 Gen10 Plus
(2.20 GHz, Intel Xeon Gold 6330N)

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base = 183</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate®2017_int_peak = 190</td>
</tr>
</tbody>
</table>

CPU2017 License: 3
Test Sponsor: HPE
Test Date: Jun-2021
Tested by: HPE
Software Availability: Dec-2020

<table>
<thead>
<tr>
<th>Test Date:</th>
<th>Hardware Availability:</th>
<th>Software Availability:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jun-2021</td>
<td>Jun-2021</td>
<td>Dec-2020</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Copies</th>
<th>SPECrate®2017_int_base (183)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>20.0</td>
</tr>
<tr>
<td>500.perlbench_r</td>
<td>56</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>56</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>56</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>56</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>56</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>56</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>56</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>56</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>56</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>56</td>
</tr>
</tbody>
</table>

**Software**

OS: Red Hat Enterprise Linux 8.3 (Ootpa)
Kernel 4.18.0-240.el8.x86_64
Compiler: C/C++: Version 2021.1 of Intel oneAPI DPC++/C++ Compiler Build 20201113 for Linux;
Fortran: Version 2021.1 of Intel Fortran Compiler Classic Build 20201112 for Linux;
C/C++: Version 2021.1 of Intel C/C++ Compiler Classic Build 20201112 for Linux

Parallel: No
Firmware: HPE BIOS Version U56 v1.50 05/13/2021 released May-2021
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other: jemalloc memory allocator V5.0.1
Power Management: BIOS set to prefer performance at the cost of additional power usage

**Hardware**

CPU Name: Intel Xeon Gold 6330N
Max MHz: 3400
Nominal: 2200
Enabled: 28 cores, 1 chip, 2 threads/core
Orderable: 1 chip
Cache L1: 32 KB I + 48 KB D on chip per core
L2: 1.25 MB I+D on chip per core
L3: 42 MB I+D on chip per chip
Other: None
Memory: 512 GB (8 x 64 GB 2Rx4 PC4-3200AA-R, running at 2666)
Storage: 1 x 480 GB NVMe SSD, RAID 0
Other: None
SPEC CPU®2017 Integer Rate Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL110 Gen10 Plus
(2.20 GHz, Intel Xeon Gold 6330N)

Copyright 2017-2021 Standard Performance Evaluation Corporation

SPECrate®2017_int_base = 183
SPECrate®2017_int_peak = 190

Results Table

<table>
<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>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>56</td>
<td>716</td>
<td>124</td>
<td>716</td>
<td>124</td>
<td>714</td>
<td>125</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>56</td>
<td>541</td>
<td>147</td>
<td>537</td>
<td>148</td>
<td>541</td>
<td>147</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>56</td>
<td>292</td>
<td>309</td>
<td>293</td>
<td>309</td>
<td>292</td>
<td>310</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>56</td>
<td>604</td>
<td>122</td>
<td>604</td>
<td>122</td>
<td>605</td>
<td>122</td>
</tr>
<tr>
<td>523.xalanbmk_r</td>
<td>56</td>
<td>257</td>
<td>230</td>
<td>257</td>
<td>231</td>
<td>259</td>
<td>229</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>56</td>
<td>259</td>
<td>378</td>
<td>260</td>
<td>377</td>
<td>260</td>
<td>376</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>56</td>
<td>469</td>
<td>137</td>
<td>469</td>
<td>137</td>
<td>469</td>
<td>137</td>
</tr>
<tr>
<td>541.eleela_r</td>
<td>56</td>
<td>688</td>
<td>135</td>
<td>688</td>
<td>135</td>
<td>688</td>
<td>135</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>56</td>
<td>398</td>
<td>369</td>
<td>398</td>
<td>369</td>
<td>397</td>
<td>369</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>56</td>
<td>586</td>
<td>103</td>
<td>585</td>
<td>103</td>
<td>586</td>
<td>103</td>
</tr>
</tbody>
</table>

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

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

Environment Variables Notes

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

General Notes

Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM
memory using Red Hat Enterprise Linux 8.1
runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>

(Continued on next page)
SPEC CPU®2017 Integer Rate Result

Copyright 2017-2021 Standard Performance Evaluation Corporation

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL110 Gen10 Plus
(2.20 GHz, Intel Xeon Gold 6330N)

SPECrate®2017_int_base = 183
SPECrate®2017_int_peak = 190

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

General Notes (Continued)

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.

Submitted by: "Bhatnagar, Prateek" <prateek.bhatnagar@hpe.com>
Submitted: Mon Jul 5 08:00:46 EDT 2021
Submission: cpu2017-20210705-27725.sub

Platform Notes

The system ROM used for this result contains Intel microcode version 0xd0002a0 for the Intel Xeon Gold 6330N processor.

BIOS Configuration:
- Workload Profile set to General Throughput Compute
- Memory Patrol Scrubbing set to Disabled
- Advanced Memory Protection set to Advanced ECC
- XPT Remote Prefetcher set to Enabled
- Last Level Cache (LLC) Dead Line Allocation set to Disabled
- Enhanced Processor Performance set to Enabled
- Enhanced Processor Performance Profile set to Aggressive
- Thermal Configuration set to Maximum Cooling
- Workload Profile set to Custom
- DCU Stream Prefetcher set to Disabled
- Energy Efficient Turbo set to Enabled
- Adjacent Sector Prefetcher set to Disabled

Sysinfo program /cpu2017/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acaafc64d
running on localhost.localdomain Sat Jul 3 06:04:05 2021

SUT (System Under Test) info as seen by some common utilities.
For more information on this section, see https://www.spec.org/cpu2017/Docs/config.html#sysinfo

From /proc/cpuinfo
  model name : Intel(R) Xeon(R) Gold 6330N CPU @ 2.20GHz
  1 "physical id"s (chips)
  56 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)

(Continued on next page)
Platform Notes (Continued)

cpu cores : 28
siblings : 56
physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

From lscpu from util-linux 2.32.1:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 56
On-line CPU(s) list: 0-55
Thread(s) per core: 2
Core(s) per socket: 28
Socket(s): 1
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 106
Model name: Intel(R) Xeon(R) Gold 6330N CPU @ 2.20GHz
Stepping: 6
CPU MHz: 1940.572
BogoMIPS: 4400.00
Virtualization: VT-x
L1d cache: 48K
L1i cache: 32K
L2 cache: 1280K
L3 cache: 43008K
NUMA node0 CPU(s): 0-13, 28-41
NUMA node1 CPU(s): 14-27, 42-55
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 arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid
aperfmpref pni pclmulqdq dtes64 monitor ds_cpl vmx smx tm2 ssse3 sdbg fma cx16
xtrr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave
avx f16c rdrand lahf_lm abm 3nowprefetch cpuid_fault epb cat_1 invpcid_single ssbd
mba ibrs ibpb stibp ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid ept_ad
fskbased tsc_adjust bmi1 hle avx2 smep bmi2 erm3 invpcid cmq rdt_a avx512f avx512dq
rdseed adx smap avx512_ifma ciflushopt clwb intel_pt avx512cd sha ni avx512bw
avx512vl xsavesopt xsavec xgetbv1 xsave vsq性命 qm_128 qm_128_total
qm_mbb_local split_lock_detect wbnoinvd dbem ida arat pln pts avx512vbmi umip pk
ospe avx512_vmbi2 gfn vaes pclmulqdq avx512_vnni avx512_bitalg tme
avx512_vpopcntdq la57 rdpid md_clear pconfig flush_l1d arch_capabilities

From numactl --hardware

/proc/cpuinfo cache data
	cache size : 43008 KB
SPEC CPU®2017 Integer Rate Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL110 Gen10 Plus
(2.20 GHz, Intel Xeon Gold 6330N)

SPECrate®2017_int_base = 183
SPECrate®2017_int_peak = 190

CPU2017 License: 3
Test Sponsor: HPE
Tested by: HPE
Software Availability: Dec-2020

WARNING: a numactl 'node' might or might not correspond to a physical chip.

available: 2 nodes (0-1)
node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 28 29 30 31 32 33 34 35 36 37 38 39 40 41
node 0 size: 248291 MB
node 0 free: 257004 MB
node 1 cpus: 14 15 16 17 18 19 20 21 22 23 24 25 26 27 42 43 44 45 46 47 48 49 50 51 52
53 54 55
node 1 size: 248654 MB
node 1 free: 256765 MB
node distances:
node 0 1
0: 10 20
1: 20 10

From /proc/meminfo
MemTotal: 528046460 kB
HugePages_Total: 0
Hugepagesize: 2048 kB
/sbin/tuned-adm active
Current active profile: throughput-performance

From /etc/*release* /etc/*version*

os-release:
NAME="Red Hat Enterprise Linux"
VERSION="8.3 (Ootpa)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="8.3"
PLATFORM_ID="platform:el8"
PRETTY_NAME="Red Hat Enterprise Linux 8.3 (Ootpa)"
ANSI_COLOR="0;31"
redhat-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
system-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
system-release-cpe: cpe:/o:redhat:enterprise_linux:8.3:ga

uname -a:
Linux localhost.localdomain 4.18.0-240.el8.x86_64 #1 SMP Wed Sep 23 05:13:10 EDT 2020
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
CVE-2018-12207 (iTLB Multihit): Not affected
CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: Not affected
CVE-2017-5754 (Meltdown): Not affected
CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store

(Continued on next page)
SPEC CPU®2017 Integer Rate Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL110 Gen10 Plus
(2.20 GHz, Intel Xeon Gold 6330N)

SPECrate®2017_int_base = 183
SPECrate®2017_int_peak = 190

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

Platform Notes (Continued)

CVE-2017-5753 (Spectre variant 1):
- Bypass disabled via prctl and seccomp
- Mitigation: usercopy/swapgs barriers and __user pointer sanitization

CVE-2017-5715 (Spectre variant 2):
- Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling

CVE-2020-0543 (Special Register Buffer Data Sampling):
- Not affected

CVE-2019-11135 (TSX Asynchronous Abort):
- Not affected

SPEC is set to: /cpu2017

Filesystem  Type  Size  Used  Avail Use% Mounted on
/dev/nvme1n1p4  xfs  442G  146G  296G  33% /

From /sys/devices/virtual/dmi/id
- Vendor: HPE
- Product: ProLiant DL110 Gen10 Plus
- Product Family: ProLiant
- Serial: T912PP0032

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:
- 8x Micron 36ASF8G72PZ-3G2B2 64 GB 2 rank 3200, configured at 2666

BIOS:
- BIOS Vendor: HPE
- BIOS Version: U56
- BIOS Date: 05/13/2021
- BIOS Revision: 1.50
- Firmware Revision: 2.40

(End of data from sysinfo program)

Compiler Version Notes

================================================================================
C | 500.perlbench_r(peak)
================================================================================

Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

(Continued on next page)
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL110 Gen10 Plus
(2.20 GHz, Intel Xeon Gold 6330N)

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

SPECrater®2017_int_base = 183
dSPECrater®2017_int_peak = 190

Compiler Version Notes (Continued)

==============================================================================
C       | 502.gcc_r(peak)
==============================================================================
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
==============================================================================

==============================================================================
C       | 500.perlbench_r(base) 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 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
==============================================================================

==============================================================================
C       | 500.perlbench_r(peak)
==============================================================================
Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
==============================================================================

==============================================================================
C       | 502.gcc_r(peak)
==============================================================================
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
==============================================================================

==============================================================================
C       | 500.perlbench_r(base) 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 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.
==============================================================================

==============================================================================
C       | 500.perlbench_r(peak)
==============================================================================
Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R)
(Continued on next page)
Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL110 Gen10 Plus
(2.20 GHz, Intel Xeon Gold 6330N)

SPECraten®2017_int_base = 183
SPECraten®2017_int_peak = 190

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

Compiler Version Notes (Continued)

Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

-------------------------------------------------------------------

C       | 502.gcc_r(peak)
-------------------------------------------------------------------

Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

-------------------------------------------------------------------

C       | 500.perlbench_r(base) 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 2021.1 Build 20201113
Copyright (C) 1985-2020 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 2021.1 Build 20201113
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

-------------------------------------------------------------------

Fortran | 548.exchange2_r(base, peak)
-------------------------------------------------------------------

Intel(R) Fortran Intel(R) 64 Compiler Classic for applications running on Intel(R) 64, Version 2021.1 Build 20201112_000000
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

-------------------------------------------------------------------

Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

(Continued on next page)
## Base Compiler Invocation (Continued)

Fortran benchmarks:

```bash
ifort
```

## Base Portability Flags

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>perlbench_r</td>
<td>-DSPEC_LP64 -DSPEC_LINUX_X64</td>
</tr>
<tr>
<td>gcc_r</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>mcf_r</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>omnetpp_r</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>xalancbmk_r</td>
<td>-DSPEC_LP64 -DSPEC_LINUX</td>
</tr>
<tr>
<td>x264_r</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>deepsjeng_r</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>leela_r</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>exchange2_r</td>
<td>-DSPEC_LP64</td>
</tr>
<tr>
<td>xz_r</td>
<td>-DSPEC_LP64</td>
</tr>
</tbody>
</table>

## Base Optimization Flags

### C benchmarks:

```bash
-w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc
```

### C++ benchmarks:

```bash
-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc
```

### Fortran benchmarks:

```bash
-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -O3 -ipo -no-prec-div
-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte
-auto -mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc
```
SPEC CPU®2017 Integer Rate Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
ProLiant DL110 Gen10 Plus
(2.20 GHz, Intel Xeon Gold 6330N)

SPECrate®2017_int_base = 183
SPECrate®2017_int_peak = 190

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

Test Date: Jun-2021
Hardware Availability: Jun-2021
Software Availability: Dec-2020

Peak Compiler Invocation

C benchmarks (except as noted below):
icx
500.perlbench_r: icc

C++ benchmarks:
icpx

Fortran benchmarks:
ifort

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: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2)
-xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -fno-strict-overflow
-mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc

502.gcc_r: -m32
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/ia32_lin
-std=gnu89 -Wl,-z,muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profdta(pass 2) -xCORE-AVX512 -flto
-Ofast(pass 1) -O3 -ffast-math -qopt-mem-layout-trans=4
-mbranches-within-32B-boundaries
-L/usr/local/jemalloc32-5.0.1/lib -ljemalloc

(Continued on next page)
 Peak Optimization Flags (Continued)

505.mcf_r: basepeak = yes

525.x264_r: -w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -flto
-O3 -ffast-math -qopt-mem-layout-trans=4 -fno-alias
-mbranches-within-32B-boundaries
-L/opt/intel/oneapi/compiler/2021.1.1/linux/compiler/lib/intel64_lin
-lqkmalloc

557.xz_r: basepeak = yes

C++ benchmarks:

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-V1.0-ICX-revE.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.0-ICX-revE.xml
http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.xml