Hewlett Packard Enterprise

Synergy 480 Gen10
(2.70 GHz, Intel Xeon Platinum 8280M)

SPECrater2017_int_base = 334
SPECrater2017_int_peak = Not Run

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<td>557.xz_r</td>
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</table>

**Hardware**

- CPU Name: Intel Xeon Platinum 8280M
- Max MHz.: 4000
- Nominal: 2700
- Enabled: 56 cores, 2 chips, 2 threads/core
- Orderable: 1, 2 chip(s)
- Cache L1: 32 KB I + 32 KB D on chip per core
- L2: 1 MB I+D on chip per core
- L3: 38.5 MB I+D on chip per chip
- Other: None
- Memory: 384 GB (24 x 16 GB 2Rx8 PC4-2933Y-R)
- Storage: 1 x 400 GB SAS SSD, RAID 0
- Other: None

**Software**

- OS: SUSE Linux Enterprise Server 15 (x86_64)
- Kernel 4.12.14-23-default
- Compiler: C/C++: Version 19.0.2.187 of Intel C/C++
- Compiler Build 20190117 for Linux
- Fortran: Version 19.0.2.187 of Intel Fortran
- Compiler Build 20190117 for Linux
- Parallel: No
- Firmware: HPE BIOS Version I42 02/02/2019 released Apr-2019
- File System: btrfs
- System State: Run level 3 (multi-user)
- Base Pointers: 64-bit
- Peak Pointers: Not Applicable
- Other: None
SPEC CPU2017 Integer Rate Result

Hewlett Packard Enterprise
(Test Sponsor: HPE)
Synergy 480 Gen10
(2.70 GHz, Intel Xeon Platinum 8280M)

SPECrate2017_int_base = 334
SPECrate2017_int_peak = Not Run

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

Test Date: May-2019
Hardware Availability: Apr-2019
Software Availability: Feb-2019

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SPECrate2017_int_base = 334
SPECrate2017_int_peak = Not Run

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

runcpu command invoked through numactl i.e.:

    numactl --interleave=all runcpu <etc>

General Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2017_u2/lib/ia32:/home/cpu2017_u2/lib/intel64"

Binaries compiled on a system with 1x Intel Core i9-7900X CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.5
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)
### Platform Notes

- **BIOS Configuration:**
  - Thermal Configuration set to Maximum Cooling
  - Memory Patrol Scrubbing set to Disabled
  - LLC Prefetch set to Enabled
  - LLC Dead Line Allocation set to Disabled
  - Enhanced Processor Performance set to Enabled
  - Workload Profile set to General Throughput Compute
  - Workload Profile set to Custom
  - Energy/Performance Bias set to Balanced Performance

- **Sysinfo program**
  - /home/cpu2017_u2/bin/sysinfo
  - Rev: r5974 of 2018-05-19 9bcde8f2999c33d61f64985e45859ea9
  - running on sy480g10-2 Fri May 17 17:17:55 2019

- **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) Platinum 8280M CPU @ 2.70GHz
  - `2 "physical id"s (chips)`
  - `112 "processors"
  - `cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)`
  - `cpu cores`: 28
  - `siblings`: 56
  - `physical 0`: cores 0 1 2 3 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30
  - `physical 1`: cores 0 1 2 3 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27 28 29 30

- From lscpu:
  - `Architecture`: x86_64
  - `CPU op-mode(s)`: 32-bit, 64-bit
  - `Byte Order`: Little Endian
  - `CPU(s)`: 112
  - `On-line CPU(s) list`: 0-111
  - `Thread(s) per core`: 2
  - `Core(s) per socket`: 28
  - `Socket(s)`: 2
  - `NUMA node(s)`: 4
  - `Vendor ID`: GenuineIntel
  - `CPU family`: 6

(Continued on next page)
Hewlett Packard Enterprise
Synergy 480 Gen10
(2.70 GHz, Intel Xeon Platinum 8280M)

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SPECrate2017_int_peak = Not Run

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

Test Date: May-2019
Hardware Availability: Apr-2019
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Platform Notes (Continued)

Model: 85
Model name: Intel(R) Xeon(R) Platinum 8280M CPU @ 2.70GHz
Stepping: 6
CPU MHz: 2700.000
BogoMIPS: 5400.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 39424K
NUMA node0 CPU(s): 0-13,56-69
NUMA node1 CPU(s): 14-27,70-83
NUMA node2 CPU(s): 28-41,84-97
NUMA node3 CPU(s): 42-55,98-111
Flags: fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dt s acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pd cpl dtsc p
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid
aperfmpreff tsc_known_freq pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 sse3
sd bx c x 6 xd tm xtr pdcm p c1 d c a s e e 4 1 s e e 4 2 x a p ic m o v b e p o p c n t
thr deadli n e_t i m er aes xsave avx f16c rdrand l a h f _l m ab m 3 d n ow_ p r e f c h c p u i d f a u l t
eb cat_13 cpd_13 invpcid_single intel_ppin mba tpr_shadow vmmi flexpriority ept
vpid fsgsbase tsc_adjust bni hle avx2 smep bmi2 erms invpcid rdt cm q mp x r dt_a
avx512f avx512dq rdseed adx s m a p c l fl u sh o p t cl w b in t_e p avx512cd avx512bw avx512vl
xsav e opt xsave xcgetbv xsave c q m _l lc c q _o ccup _l lc c q _ m b m _t o t a l c q _ m b m _l o c a l
ib pb ibrs st i b d t h e r m i d a ar at pl n pts pku ospke avx512_vnni arch_capabilities ssbd

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a
physical chip.
available: 4 nodes (0-3)
node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 56 57 58 59 60 61 62 63 64 65 66 67 68 69
node 0 size: 96248 MB
node 0 free: 95813 MB
node 1 cpus: 14 15 16 17 18 19 20 21 22 23 24 25 26 27 70 71 72 73 74 75 76 77 78 79 80
81 82 83
node 1 size: 96762 MB
node 1 free: 96538 MB
node 2 cpus: 28 29 30 31 32 33 34 35 36 37 38 39 40 41 84 85 86 87 88 89 90 91 92 93 94
95 96 97
node 2 size: 96762 MB
node 2 free: 96616 MB
node 3 cpus: 42 43 44 45 46 47 48 49 50 51 52 53 54 55 98 99 100 101 102 103 104 105
106 107 108 109 110 111
node 3 size: 96564 MB
node 3 free: 96423 MB

(Continued on next page)
Hewlett Packard Enterprise
(Test Sponsor: HPE)
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Test Sponsor: HPE
Hardware Availability: Apr-2019
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**Platform Notes (Continued)**

node distances:
node 0 1 2 3
0: 10 21 31 31
1: 21 10 31 31
2: 31 31 10 21
3: 31 31 21 10

From /proc/meminfo
- MemTotal: 395609632 kB
- HugePages_Total: 0
- Hugepagesize: 2048 kB

From /etc/*release* /etc/*version*
- os-release:
  - NAME="SLES"
  - VERSION="15"
  - VERSION_ID="15"
  - PRETTY_NAME="SUSE Linux Enterprise Server 15"
  - ID="sles"
  - ID_LIKE="suse"
  - ANSI_COLOR="0;32"
  - CPE_NAME="cpe:/o:suse:sles:15"

uname -a:
- Linux sy480g10-2 4.12.14-23-default #1 SMP Tue May 29 21:04:44 UTC 2018 (cd0437b)
  - x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:
- CVE-2017-5754 (Meltdown): Not affected
- CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
- CVE-2017-5715 (Spectre variant 2): Mitigation: Indirect Branch Restricted Speculation, IBPB, IBRS_FW

run-level 3 May 17 17:15

SPEC is set to: /home/cpu2017_u2
- Filesystem Type Size Used Avail Use% Mounted on
  - /dev/sdb2 btrfs 371G 91G 280G 25% /home

Additional information from dmidecode 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.

- BIOS HPE I42 02/02/2019
- Memory:
  - 24x UNKNOWN NOT AVAILABLE 16 GB 2 rank 2933

(Continued on next page)
Hewlett Packard Enterprise
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Test Date: May-2019
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Platform Notes (Continued)
(End of data from sysinfo program)

Compiler Version Notes
==============================================================================
CC  500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base)
    557.xz_r(base)
==============================================================================
Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.2.187 Build 20190117
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
==============================================================================
CXXC 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
    541.leela_r(base)
==============================================================================
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.0.2.187 Build 20190117
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
==============================================================================
FC  548.exchange2_r(base)
==============================================================================
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R)
64, Version 19.0.2.187 Build 20190117
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.
==============================================================================

Base Compiler Invocation
C benchmarks:
icc -m64 -std=c11

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64
**SPEC CPU2017 Integer Rate Result**

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| SPECrate2017_int_base = 334 |
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CPU2017 License: 3
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**Base Portability Flags**

- 500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
- 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:
- `-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div`
- `-qopt-mem-layout-trans=4`
- `-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64`
- `-lqkmalloc`

C++ benchmarks:
- `-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div`
- `-qopt-mem-layout-trans=4`
- `-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64`
- `-lqkmalloc`

Fortran benchmarks:
- `-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div`
- `-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte`
- `-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.1.144/linux/compiler/lib/intel64`
- `-lqkmalloc`

The flags files that were used to format this result can be browsed at:

- [http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.2-CLX-revA.html](http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.2-CLX-revA.html)

You can also download the XML flags sources by saving the following links:

- [http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.2-CLX-revA.xml](http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-V1.2-CLX-revA.xml)
## SPEC CPU2017 Integer Rate Result

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

Tested with SPEC CPU2017 v1.0.5 on 2019-05-17 18:17:55-0400.  
Originally published on 2019-06-25.