SPEC CPU®2017 Integer Rate Result

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Tyrone Systems
(Test Sponsor: Netweb Pte Ltd)

Tyrone Camarero SD1100A2G-424
(2.40 GHz, Intel Xeon Platinum 8368)

SPECrate®2017_int_base = 259
SPECrate®2017_int_peak = 236

CPU2017 License: 006042
Test Sponsor: Netweb Pte Ltd
Tested by: Tyrone Systems

Test Date: Oct-2022
Hardware Availability: Jun-2021
Software Availability: May-2022

500.perlbench_r 152
502.gcc_r 152
505.mcf_r 152
520.omnetpp_r 152
523.xalancbmk_r 152
525.x264_r 152
531.deepsjeng_r 152
541.leela_r 152
548.exchange2_r 152
557.xz_r 152

Hardware
CPU Name: Intel Xeon Platinum 8368
Max MHz: 3400
Nominal: 2400
Enabled: 76 cores, 2 chips, 2 threads/core
Orderable: 1,2 chips
Cache L1: 32 KB I + 48 KB D on chip per core
L2: 1.25 MB I+D on chip per core
L3: 57 MB I+D on chip per chip
Other: None
Memory: 1 TB (16 x 64 GB 2Rx4 PC4-3200AA-R)
Storage: 1 x 512 GB NVMe SSD
Other: None

Software
OS: Red Hat Enterprise Linux release 8.5 (Ootpa) 4.18.0-348.el8.x86_64
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: No
Firmware: Version 1.2b released Jun-2022
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 and OS set to prefer performance at the cost of additional power usage.
## 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This result is left in the SPEC results database for historical reference.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"

## 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"
```
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General Notes

Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM
memory using Red Hat Enterprise Linux 8.4
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.:
umaclt --interleave=all runcpu <etc>
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.
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.
NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) 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

BIOS Settings:
Power Technology = Custom
ENERGY_PERF_BIAS_CFG mode = Maximum Performance
SNC (Sub NUMA)= Enable
KTI Prefetch= Enable
LLC Dead Line Alloc = Disable
Hyper-Threading = Enabled

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acac64d
running on icelake2 Thu Sep 29 11:38:16 2022

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 8368 CPU @ 2.40GHz
  2 "physical id"s (chips)
  152 "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 : 38
siblings : 76
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 28 29 30 31 32 33 34 35 36 37
physical 1: 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 28 29 30 31 32 33 34 35 36 37

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):              152
On-line CPU(s) list: 0-151
Thread(s) per core:  2
Core(s) per socket:  38
Socket(s):           2
NUMA node(s):        2

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<tbody>
<tr>
<td>Test Sponsor:</td>
<td>Netweb Pte Ltd</td>
<td>Hardware Availability:</td>
<td>Jun-2021</td>
</tr>
<tr>
<td>Tested by:</td>
<td>Tyrone Systems</td>
<td>Software Availability:</td>
<td>May-2022</td>
</tr>
</tbody>
</table>

Platform Notes (Continued)

Vendor ID:          GenuineIntel
BIOS Vendor ID:     Intel(R) Corporation
CPU family:        6
Model:             Intel(R) Xeon(R) Platinum 8368 CPU @ 2.40GHz
Model name:        Intel(R) Xeon(R) Platinum 8368 CPU @ 2.40GHz
Stepping:          6
CPU MHz:           2401.000
CPU max MHz:       2401.0000
CPU min MHz:       800.0000
BogoMIPS:          4800.00
Virtualization:   VT-x
L1d cache:         48K
L1i cache:         32K
L2 cache:          1280K
L3 cache:          58368K
NUMA node0 CPU(s): 0-37,76-113
NUMA node1 CPU(s): 38-75,114-151
 Flags: fpu vme de pse tsc msr pae mce cmov pat pse36 cmov fat pfn vmx sfstors mmx fxsr mmxext ss sse sse2
 Nonmaskable interrupt: l2ti ms cmovpat cmov cl wp x87 fpu mtrr pge mca cmov pat pse36 cmov fat pfn vmx sfstors mmx fxsr mmxext sse sse2
 jbits
 Cache size: 58368 KB

/proc/cpuinfo cache data

cache size : 58368 KB

From numa --hardware

From /proc/meminfo
MemTotal: 1056300604 kB
HugePages_Total: 0
Hugepagesize: 2048 KB

From /proc/meminfo

/proc/tuned-adm active

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Platform Notes (Continued)

Current active profile: throughput-performance

From /etc/*release*/etc/*version*
NAME="Red Hat Enterprise Linux"
VERSION=\"8.5\" (Ootpa)"
ID\"=\"rhel"
ID\_LIKE\"=\"fedora"
VERSION_ID\"=\"8.5\"
PLATFORM_ID\"=\"platform:el8\"
PRETTY_NAME\"=\"Red Hat Enterprise Linux 8.5 (Ootpa)\"
ANSL\_COLOR\"=\"0;31\"
redhat\_release\: Red Hat Enterprise Linux release 8.5 (Ootpa)
system\_release\: Red Hat Enterprise Linux release 8.5 (Ootpa)
system\_release\_cpe\: cpe:/o:redhat:enterprise\_linux:8::baseos

uname -a:
Linux icelake2 4.18.0-348.el8.x86_64 #1 SMP Mon Oct 4 12:17:22 EDT 2021 x86_64 x86_64
x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-12207 (iTLB Multihit):
CVE-2018-3620 (L1 Terminal Fault):
Microarchitectural Data Sampling:
CVE-2017-5754 (Meltdown):
CVE-2018-3639 (Speculative Store Bypass):
CVE-2017-5753 (Spectre variant 1):
CVE-2017-5715 (Spectre variant 2):
CVE-2020-0543 (Special Register Buffer Data Sampling):
CVE-2019-11135 (TSX Asynchronous Abort):

run-level 3 Sep 26 12:10

SPEC is set to: /home/cpu2017

From /sys/devices/virtual/dmi/id
Vendor: Tyrone Systems
Product: Tyrone Camarero SDI100A2G-424
Product Family: SMC X12
Serial: 2XDEMO2209

BIOS:

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:
16x Samsung M393A8G40AB2-CWE 64 GB 2 rank 3200

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Platform Notes (Continued)

BIOS Vendor: American Megatrends International, LLC.
BIOS Version: 1.2b
BIOS Date: 06/01/2022
BIOS Revision: 5.22

(End of data from sysinfo program)

Compiler Version Notes

C       | 502.gcc_r(peak)
--------|-------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2022.1.0 Build 20220316
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 2022.1.0 Build 20220316
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C       | 502.gcc_r(peak)
--------|-------------------------------------------------------------
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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 2022.1.0 Build 20220316
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C++     | 520.omnetpp_r(base, peak) 523.xalanbmk_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 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

Fortran | 548.exchange2_r(base, peak)
--------|------------------------------------------------------------------------------------------------------------
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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
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 \(-m64\) \(-Wl,-z,muldefs\) \(-xCORE-AVX2\) \(-O3\) \(-ffast-math\) \(-flto\)
- \(-mfpmath=sse\) \(-funroll-loops\) \(-qopt-mem-layout-trans=4\)
- \(-L/usr/local/intel/compiler/2022.1.0/linux/compiler/lib/intel64_lin\)
- \(-lqkmalloc\)

C++ benchmarks:
- \(-w\) \(-m64\) \(-Wl,-z,muldefs\) \(-xCORE-AVX2\) \(-O3\) \(-ffast-math\) \(-flto\)
- \(-mfpmath=sse\) \(-funroll-loops\) \(-qopt-mem-layout-trans=4\)
- \(-L/usr/local/intel/compiler/2022.1.0/linux/compiler/lib/intel64_lin\)
- \(-lqkmalloc\)

Fortran benchmarks:
- \(-w\) \(-m64\) \(-Wl,-z,muldef\) \(-xCORE-AVX2\) \(-O3\) \(-ffast-math\) \(-flto\)
- \(-mfpmath=sse\) \(-funroll-loops\) \(-qopt-mem-layout-trans=4\)
- \(-nostandard-realloc-lhs\) \(-align array32byte\) \(-auto\)
- \(-L/usr/local/intel/compiler/2022.1.0/linux/compiler/lib/intel64_lin\)
- \(-lqkmalloc\)
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Peak Compiler Invocation

C benchmarks:
icx
C++ benchmarks:
icpx
Fortran benchmarks:
ifx

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 -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -fno-strict-overflow
-L/usr/local/intel/compiler/2022.1.0/linux/compiler/lib/intel64_lin
-lqkmalloc
502.gcc_r: -m32
-L/usr/local/intel/compiler/2022.1.0/linux/compiler/lib/ia32_lin
-std=gnu89 -Wl,-z,muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX2 -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -L/usr/local/jemalloc32-5.0.1/lib
-ljemalloc

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IEEE Windows Linux

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Peak Optimization Flags (Continued)

505.mcf_r: basepeak = yes
525.x264_r: -w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX2 -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -fno-alias
-L/usr/local/intel/compiler/2022.1.0/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

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Tyrone-Platform-Settings-V1.2-ICX-revA.xml

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