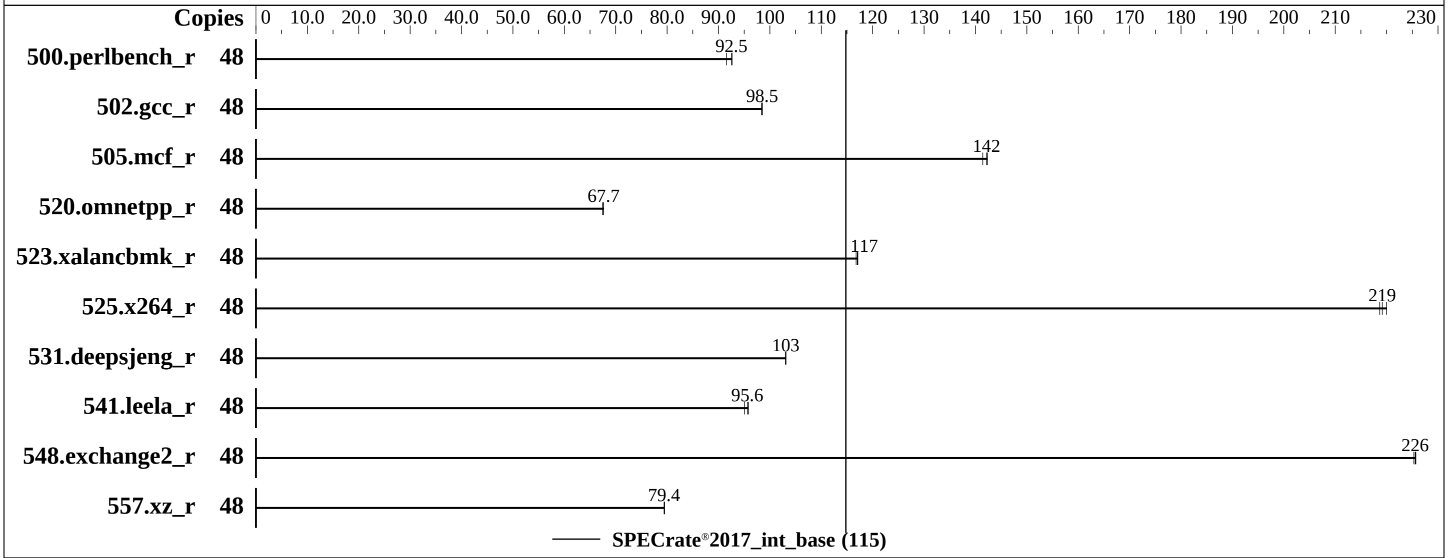
SPEC CPU®2017 Integer Rate Result

3Score
(Test Sponsor: Telecommunications Technology Association)
3Score SR285K2
(2.30 GHz, Intel Xeon Gold 5118)

SPECrate®2017_int_base = 115

SPECrate®2017_int_peak = Not Run

CPU2017 License:	A83	**Test Date:**	Oct-2019
Test Sponsor:	Telecommunications Technology Association	**Hardware Availability:**	Jul-2019
Tested by:	Telecommunications Technology Association	**Software Availability:**	Apr-2019



Hardware

CPU Name:	Intel Xeon Gold 5118
Max MHz:	3200
Nominal:	2300
Enabled:	24 cores, 2 chips, 2 threads/core
Orderable:	2 chip
Cache L1:	32 KB I + 32 KB D on chip per core
L2:	1 MB I+D on chip per core
L3:	16.5 MB I+D on chip per chip
Other:	None
Memory:	192 GB (12 x 16 GB 2Rx8 PC4-2666V-R, running at 2400)
Storage:	2 x 2 TB HDD SATA, 7200 RPM, RAID-0
Other:	None

Software

OS:	Red Hat Enterprise Linux Server release 7.6 (Maipo) Kernel 3.10.0-957.12.1.el7.x86_64
Compiler:	C/C++: Version 18.0.1.163 of Intel C/C++ Compiler for Linux; Fortran: Version 18.0.1.163 of Intel Fortran Compiler for Linux
Parallel:	No
Firmware:	Version KM-H620-10B1-SA2 released Jul-2018
File System:	ext4
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit
Peak Pointers:	Not Applicable
Other:	jemalloc: jemalloc memory allocator library V5.0.1
Power Management:	--

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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	48	825	92.6	**826**	**92.5**	835	91.5							
502.gcc_r	48	691	98.4	**690**	**98.5**	690	98.5							
505.mcf_r	48	**546**	**142**	545	142	548	141							
520.omnetpp_r	48	934	67.4	**931**	**67.7**	931	67.7							
523.xalancbmk_r	48	434	117	433	117	**433**	**117**							
525.x264_r	48	**384**	**219**	384	219	382	220							
531.deepsjeng_r	48	533	103	534	103	**534**	**103**							
541.leela_r	48	836	95.0	830	95.8	**831**	**95.6**							
548.exchange2_r	48	557	226	**558**	**226**	558	225							
557.xz_r	48	653	79.4	**653**	**79.4**	652	79.5							

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

Submit Notes

```
The config file option 'submit' was used.
'numactl' was used to bind copies to the cores.
See the configuration file for details.
```

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/spec/cpu2017/ia32:/home/spec/cpu2017/intel64:/home/spec/cpu2017/j
     e5.0.1-32:/home/spec/cpu2017/je5.0.1-64"
```

General Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/spec/cpu2017/ia32:/home/spec/cpu2017/intel64:
/home/spec/cpu2017/je5.0.1-32:/home/spec/cpu2017/je5.0.1-64"
Binaries compiled on a system with 1x Intel Xeon Gold 5118 CPU + 192GB RAM
memory using Redhat Enterprise Linux 7.6(Maipo)
Transparent Huge Pages enabled by default
Prior to runcpu invocation
Filesystem page cache synced and cleared with:
```

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General Notes (Continued)

```
sync; echo 3>       /proc/sys/vm/drop_caches
Yes: 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.
 Transparent Huge Pages disabled with:
 echo never  > /sys/kernel/mm/transparent_hugepage/enabled
 runcpu command invoked through numactl i.e.:
 numactl --interleave=all runcpu <etc>
jemalloc - a general purpose mallocimplementation
configured and built at default for 32bit(i686) and 64bit (x86_64) targets
with the RedHat Enterprise 7.4 and thesystem compiler gcc 4.8.5.
Sources available from jemalloc.net or https://github.com/jemalloc/jemalloc/releases
```

Platform Notes

```
 BIOS settings:
 Hyper-Threading = Enabled
 Sub NUMA Cluster = Enabled
 AES-NI = Disabled

 Sysinfo program /home/spec/cpu2017/bin/sysinfo
 Rev: r6365 of 2019-08-21 295195f888a3d7edb1e6e46a485a0011
 running on spec3 Thu Oct 10 10:58:17 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) Gold 5118 CPU @ 2.30GHz
       2  "physical id"s (chips)
       48 "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 : 12
       siblings  : 24
       physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13
       physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13

 From lscpu:
      Architecture:          x86_64
      CPU op-mode(s):        32-bit, 64-bit
      Byte Order:            Little Endian
```

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Platform Notes (Continued)

```
     CPU(s):                48
     On-line CPU(s) list:   0-47
     Thread(s) per core:    2
     Core(s) per socket:    12
     Socket(s):             2
     NUMA node(s):          2
     Vendor ID:             GenuineIntel
     CPU family:            6
     Model:                 85
     Model name:            Intel(R) Xeon(R) Gold 5118 CPU @ 2.30GHz
     Stepping:              4
     CPU MHz:               1000.073
     CPU max MHz:           3200.0000
     CPU min MHz:           1000.0000
     BogoMIPS:              4600.00
     Virtualization:        VT-x
     L1d cache:             32K
     L1i cache:             32K
     L2 cache:              1024K
     L3 cache:              16896K
     NUMA node0 CPU(s):     0-11,24-35
     NUMA node1 CPU(s):     12-23,36-47
     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 art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc
     aperfmperf eagerfpu pni 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 3dnowprefetch epb cat_l3 cdp_l3 intel_ppin
     intel_pt ssbd mba ibrs ibpb stibp tpr_shadow vnmi flexpriority ept vpid fsgsbase
     tsc_adjust bmi1 hle avx2 smep bmi2 erms invpcid rtm cqm mpx rdt_a avx512f avx512dq
     rdseed adx smap clflushopt clwb avx512cd avx512bw avx512vl xsaveopt xsavec xgetbv1
     cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local dtherm ida arat pln pts hwp
     hwp_act_window hwp_epp hwp_pkg_req pku ospke spec_ctrl intel_stibp flush_l1d

 /proc/cpuinfo cache data
    cache size : 16896 KB

 From numactl --hardware  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 24 25 26 27 28 29 30 31 32 33 34 35
   node 0 size: 96933 MB
   node 0 free: 63220 MB
   node 1 cpus: 12 13 14 15 16 17 18 19 20 21 22 23 36 37 38 39 40 41 42 43 44 45 46 47
   node 1 size: 98304 MB
   node 1 free: 70568 MB
   node distances:
```

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Platform Notes (Continued)

```
    node   0   1
      0:  10  21
      1:  21  10

  From /proc/meminfo
     MemTotal:       196681440 kB
     HugePages_Total:       0
     Hugepagesize:       2048 kB

  /usr/bin/lsb_release -d
     Red Hat Enterprise Linux Server release 7.6 (Maipo)

  From /etc/*release* /etc/*version*
     os-release:
        NAME="Red Hat Enterprise Linux Server"
        VERSION="7.6 (Maipo)"
        ID="rhel"
        ID_LIKE="fedora"
        VARIANT="Server"
        VARIANT_ID="server"
        VERSION_ID="7.6"
        PRETTY_NAME="Red Hat Enterprise Linux"
     redhat-release: Red Hat Enterprise Linux Server release 7.6 (Maipo)
     system-release: Red Hat Enterprise Linux Server release 7.6 (Maipo)
     system-release-cpe: cpe:/o:redhat:enterprise_linux:7.6:ga:server

  uname -a:
     Linux spec3 3.10.0-957.12.1.el7.x86_64 #1 SMP Wed Mar 20 11:34:37 UTC 2019 x86_64
     x86_64 x86_64 GNU/Linux

  Kernel self-reported vulnerability status:

  CVE-2018-3620 (L1 Terminal Fault):        Mitigation: PTE Inversion; VMX: SMT vulnerable,
                                             L1D conditional cache flushes
  Microarchitectural Data Sampling:          No status reported
  CVE-2017-5754 (Meltdown):                  Mitigation: PTI
  CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled
                                             via prctl and seccomp
  CVE-2017-5753 (Spectre variant 1):         Mitigation: Load fences, __user pointer
                                             sanitization
  CVE-2017-5715 (Spectre variant 2):         Mitigation: IBRS (kernel)

  run-level 3 2018-10-07 21:23

  SPEC is set to: /home/spec/cpu2017
     Filesystem     Type  Size  Used Avail Use% Mounted on
     /dev/sda3      ext4  3.6T  146G  3.3T   5% /
```

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Platform Notes (Continued)

```
From /sys/devices/virtual/dmi/id
    BIOS:    American Megatrends Inc. KM-H620-10B1-SA2 07/19/2018
    Vendor:  KTNF
    Product: KM-H620

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.
  Memory:
    12x NO DIMM NO DIMM
    12x Samsung M393A2K43BB1-CTD 16 GB 2 rank 2666, configured at 2400

(End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
C       | 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base)
        | 525.x264_r(base) 557.xz_r(base)
------------------------------------------------------------------------------
icc (ICC) 18.0.1 20171018
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------

==============================================================================
C++     | 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
        | 541.leela_r(base)
------------------------------------------------------------------------------
icpc (ICC) 18.0.1 20171018
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------

==============================================================================
Fortran | 548.exchange2_r(base)
------------------------------------------------------------------------------
ifort (IFORT) 18.0.1 20171018
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
icc

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Base Compiler Invocation (Continued)

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

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:
-m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

C++ benchmarks:
-m64 -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

Fortran benchmarks:
-m64 -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs
-L/usr/local/je5.0.1-64/lib -ljemalloc

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64-spec.html
http://www.spec.org/cpu2017/flags/3Score-Platform-Flags-Version-KM-H620-10B1-SA2.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64-spec.xml
http://www.spec.org/cpu2017/flags/3Score-Platform-Flags-Version-KM-H620-10B1-SA2.xml

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

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