### SPEC CPU®2017 Integer Speed Result

**Nettrix**

**R620 G30 (Intel Xeon Gold 6240R)**

<table>
<thead>
<tr>
<th>Test Sponsor</th>
<th>Nettrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tested by</td>
<td>Nettrix</td>
</tr>
<tr>
<td>Test Date</td>
<td>Aug-2020</td>
</tr>
<tr>
<td>Hardware Availability</td>
<td>May-2020</td>
</tr>
<tr>
<td>Software Availability</td>
<td>Apr-2020</td>
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</table>

#### SPECspeed®2017_int_base = 11.8

#### SPECspeed®2017_int_peak = 12.0

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<tr>
<th>Benchmark</th>
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<td>gcc_s</td>
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<td>mcf_s</td>
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<td>omnetpp_s</td>
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<tr>
<td>xalancbmk_s</td>
<td>14.4</td>
</tr>
<tr>
<td>x264_s</td>
<td>16.9</td>
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<tr>
<td>deepsjeng_s</td>
<td>6.03</td>
</tr>
<tr>
<td>leela_s</td>
<td>4.99</td>
</tr>
<tr>
<td>exchange2_s</td>
<td>17.5</td>
</tr>
<tr>
<td>xz_s</td>
<td>24.2</td>
</tr>
</tbody>
</table>

#### Hardware

- **CPU Name:** Intel Xeon Gold 6240R
- **Max MHz:** 4000
- **Nominal:** 2400
- **Enabled:** 48 cores, 2 chips
- **Orderable:** 1.2 Chips
- **Cache L1:** 32 KB I + 32 KB D on chip per core
- **L2:** 1 MB I+D on chip per core
- **L3:** 35.75 MB I+D on chip per chip
- **Other:** None
- **Memory:** 384 GB (24 x 16 GB 2Rx8 PC4-3200AA-R, running at 2933)
- **Storage:** 1x 960 GB SATA SSD
- **Other:** None

#### Software

- **OS:** Red Hat Enterprise Linux release 8.0 (Ootpa) 4.18.0-80.el8.x86_64
- **Compiler:** C/C++: Version 19.1.1.217 of Intel C/C++ Compiler for Linux Build 20200306; Fortran: Version 19.1.1.217 of Intel Fortran Compiler for Linux Build 20200306;
- **Parallel:** Yes
- **Firmware:** Nettrix BIOS Version NJGS041227 released May-2020
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** 64-bit
- **Other:** jemalloc memory allocator V5.0.1
- **Power Management:** BIOS set to prefer performance at the cost of additional power usage.
Nettrix

R620 G30 (Intel Xeon Gold 6240R)

SPEC CPU® 2017 Integer Speed Result

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Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<th>Ratio</th>
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<td>602.gcc_s</td>
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<td>368</td>
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<td>10.8</td>
<td>365</td>
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<td>605.mcf_s</td>
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<td>19.3</td>
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<td>16.9</td>
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<td>16.9</td>
<td>104</td>
<td>16.9</td>
<td>48</td>
<td>101</td>
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<tr>
<td>631.deepsjeng_s</td>
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<td>237</td>
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<td>238</td>
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<td>641.leea_s</td>
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<tr>
<td>648.exchange2_s</td>
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<td>17.5</td>
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<td>657.xz_s</td>
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<td>24.2</td>
<td>255</td>
<td>24.2</td>
<td>48</td>
<td>255</td>
</tr>
</tbody>
</table>

SPECspeed®2017_int_base = 11.8
SPECspeed®2017_int_peak = 12.0

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

Compiler Notes

The inconsistent Compiler version information under Compiler Version section is due to a discrepancy in Intel Compiler.
The correct version of C/C++ compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux
The correct version of Fortran compiler is: Version 19.1.1.217 Build 20200306 Compiler for Linux

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"
Tuning Kernel Parameters:
  sched_migration_cost_ns=600000
  sched_rt_runtime_us=950000
  sched_latency_ns=24000000
  sched_min_granularity_ns=8000000
  dirty_background_ratio=10
  dirty_ratio=20
  dirty_writeback_centisecs=400
  dirty_expire_centisecs=5000
  swappiness=10
  numa_balancing=0

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
MALLOCONF = "retain: true"

(Continued on next page)
Nettrix
R620 G30 (Intel Xeon Gold 6240R)

SPECspeed®2017_int_base = 11.8
SPECspeed®2017_int_peak = 12.0

CPU2017 License: 6138
Test Sponsor: Nettrix
Tested by: Nettrix
Test Date: Aug-2020
Hardware Availability: May-2020
Software Availability: Apr-2020

Environment Variables Notes (Continued)
OMP_STACKSIZE = "192M"

General Notes
Binaries compiled on a system with 1x Intel Core i9-7980XE CPU + 64GB RAM
memory using Redhat Enterprise Linux 8.0
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.
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
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

Platform Notes
Application Performance Profile Set to Computing Latency Mode
Hyper-Threading set to Disabled
MONITOR/MWAIT set to Enabled
Autonomous Core C-State set to Enabled
SNC set to Disabled
IMC set to Auto
XPT Prefetch set to Enabled
KTI Prefetch set to Disabled
Stale AtoS set to Enabled
Patrol Scrub set to Disabled
LLC Dead Line Allocation set to Disabled
BMC Settings:
  Cooling Policy set to Manual Mode
  Fan Duty set to 95
Sysinfo program /home/admin/benchmarks/cpu2017/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7ed1b1e6e46a485a0011
running on localhost.localdomain Mon Aug 10 14:27:54 2020

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

(Continued on next page)
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SPECspeed®2017_int_base = 11.8
SPECspeed®2017_int_peak = 12.0

Test Date: Aug-2020
Hardware Availability: May-2020
Software Availability: Apr-2020

Platform Notes (Continued)

From /proc/cpuinfo
model name : Intel(R) Xeon(R) Gold 6240R CPU @ 2.40GHz
  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 : 24
siblings : 24
physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 25 26 27 28 29
physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 16 17 18 19 20 21 25 26 27 28 29

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 48
On-line CPU(s) list: 0-47
Thread(s) per core: 1
Core(s) per socket: 24
Socket(s): 2
NUMA node(s): 2
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6240R CPU @ 2.40GHz
Stepping: 7
CPU MHz: 3356.679
CPU max MHz: 4000.0000
CPU min MHz: 1000.0000
BogoMIPS: 4800.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K
L3 cache: 36608K
NUMA node0 CPU(s): 0-23
NUMA node1 CPU(s): 24-47
Flags: fpu vme de pse tsc msr pae mce 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 cpuid aperfmperf 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 3nowprefetch cpuid_fault epb cat_l3 cdp_c3 cdp_c0

(Continued on next page)
Platform Notes (Continued)

cqm_mbm_local dtherm ida arat pln pts pku ospke avx512_vnni flush_l1d
arch_capabilities

/proc/cpuinto cache data
  cache size : 36608 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 12 13 14 15 16 17 18 19 20 21 22 23
  node 0 size: 192803 MB
  node 0 free: 188420 MB
  node 1 cpus: 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47
  node 1 size: 193506 MB
  node 1 free: 189138 MB
  node distances:
    node 0 1
    0:  10  21
    1:  21  10

From /proc/meminfo
  MemTotal:       395581552 kB
  HugePages_Total:       0
  Hugepagesize:       2048 kB

From /etc/*release* /etc/*version*
  os-release:
    NAME="Red Hat Enterprise Linux"
    VERSION="8.0 (Ootpa)"
    ID="rhel"
    ID_LIKE="fedora"
    VERSION_ID="8.0"
    PLATFORM_ID="platform:el8"
    PRETTY_NAME="Red Hat Enterprise Linux 8.0 (Ootpa)"
    ANSI_COLOR="0;31"
  redhat-release: Red Hat Enterprise Linux release 8.0 (Ootpa)
  system-release: Red Hat Enterprise Linux release 8.0 (Ootpa)
  system-release-cpe: cpe:/o:redhat:enterprise_linux:8.0:ga

uname -a:
  Linux localhost.localdomain 4.18.0-80.el8.x86_64 #1 SMP Wed Mar 13 12:02:46 UTC 2019
  x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-3620 (L1 Terminal Fault):      Not affected
Microarchitectural Data Sampling: No status reported

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

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Tested by: Nettrix

Test Date: Aug-2020
Hardware Availability: May-2020
Software Availability: Apr-2020

Platform Notes (Continued)

CVE-2017-5754 (Meltdown): Not affected
CVE-2018-3639 (Speculative Store Bypass): Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling

run-level 3 Aug 7 14:41

SPEC is set to: /home/admin/benchmarks/cpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda5 xfs 877G 147G 730G 17% /home

From /sys/devices/virtual/dmi/id
BIOS: American Megatrends Inc. NJGS041227 05/16/2020
Vendor: Nettrix
Product: R620 G30
Product Family: Rack
Serial: 302000666

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:
24x Samsung M393A2K43DB2-CWE 16 GB 2 rank 3200

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
C       | 600.perlbench_s(base) 602.gcc_s(base, peak) 605.mcf_s(base, peak)
        | 625.x264_s(base, peak) 657.xz_s(base, peak)
==============================================================================

Intel(R) C Compiler for applications running on Intel(R) 64, Version 2021.1
NextGen Build 20200304
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

==============================================================================
C       | 600.perlbench_s(peak)
==============================================================================

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
Version 19.1.1.217 Build 20200306
Copyright (C) 1985-2020 Intel Corporation. All rights reserved.

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## Compiler Version Notes (Continued)

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<th>Compiler</th>
<th>Compiler Invocation</th>
<th>Base Compiler Invocation</th>
</tr>
</thead>
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<tr>
<td>C</td>
<td>600.perlbench_s(base) 602.gcc_s(base, peak) 605.mcf_s(base, peak)</td>
<td>C benchmarks: icc</td>
</tr>
<tr>
<td></td>
<td>625.x264_s(base, peak) 657.xz_s(base, peak)</td>
<td>C++ benchmarks: icpc</td>
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<tr>
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<td>Intel(R) C Compiler for applications running on Intel(R) 64, Version 2021.1 NextGen Build 20200304</td>
<td>Fortran benchmarks: ifort</td>
</tr>
<tr>
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<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
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<tr>
<td>C</td>
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<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
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<tr>
<td>C++</td>
<td>620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak)</td>
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<tr>
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<td>631.deepsjeng_s(base, peak) 641.leela_s(base, peak)</td>
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<td>Copyright (C) 1985-2020 Intel Corporation. All rights reserved.</td>
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<td>Fortran</td>
<td>648.exchange2_s(base, peak)</td>
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Nettrix
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SPECspeed®2017_int_base = 11.8
SPECspeed®2017_int_peak = 12.0

CPU2017 License: 6138
Test Sponsor: Nettrix
Tested by: Nettrix

Test Date: Aug-2020
Hardware Availability: May-2020
Software Availability: Apr-2020

Base Portability Flags

600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -DSPEC_LP64 -DSPEC_LINUX
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-m64 -qnextgen -std=c11
-Will, -plugin-opt=-x86-branches-within-32B-boundaries -Wl,-z,muldefs
-xCORE-AVX512 -O3 -ffast-math -flto -mfpmath=sse -funroll-loops
-fuse-ld=gold -qopt-mem-layout-trans=4 -fopenmp -DSPEC_OPENMP
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

C++ benchmarks:
-m64 -qnextgen -Will, -plugin-opt=-x86-branches-within-32B-boundaries
-Will,-z,muldefs -xCORE-AVX512 -O3 -ffast-math -flto -mfpmath=sse
-funroll-loops -fuse-ld=gold -qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2020.1.217/linux/compiler/lib/intel64_lin
-lqkmalloc

Fortran benchmarks:
-m64 -Will, -plugin-opt=-x86-branches-within-32B-boundaries -xCORE-AVX512
-O3 -ipo -no-prec-div -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte
-mbranches-within-32B-boundaries

Peak Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

(Continued on next page)
Peak Compiler Invocation (Continued)

Fortran benchmarks:
ifort

Peak Portability Flags

600.perlbench_s: -DSPEC_LP64 -DSPEC_LINUX_X64
602.gcc_s: -DSPEC_LP64(*) -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -DSPEC_LP64 -DSPEC_LINUX
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64

(*) Indicates a portability flag that was found in a non-portability variable.

Peak Optimization Flags

C benchmarks:

600.perlbench_s: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2)
-xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -fnos-strict-overflow
-mbranches-within-32B-boundaries
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

602.gcc_s: -m64 -qnextgen -std=c11 -fuse-ld=gold
-Wl,-plugin-opt=-x86-branches-within-32B-boundaries
-Wl,-z,muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profdatsa(pass 2) -xCORE-AVX512 -flto
-Ofast(pass 1) -O3 -ffast-math -qopt-mem-layout-trans=4
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

605.mcf_s: basepeak = yes

625.x264_s: -m64 -qnextgen -std=c11
-Wl,-plugin-opt=-x86-branches-within-32B-boundaries
-Wl,-z,muldefs -xCORE-AVX512 -flto -O3 -ffast-math
-fuse-ld=gold -qopt-mem-layout-trans=4 -fno-alias
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc

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

### Nettrix

**R620 G30 (Intel Xeon Gold 6240R)**

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<tr>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
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<tbody>
<tr>
<td>11.8</td>
<td>12.0</td>
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### CPU2017 License:
6138

### Test Date:
Aug-2020

### Hardware Availability:
May-2020

### Test Sponsor:
Nettrix

### Tested by:
Nettrix

### Software Availability:
Apr-2020

---

### Peak Optimization Flags (Continued)

- **657.xz_s**: `basepeak = yes`
- **C++ benchmarks:**
  - **620.omnetpp_s**: `basepeak = yes`
  - **623.xalancbmk_s**: `basepeak = yes`
  - **631.deepsjeng_s**: `basepeak = yes`
  - **641.leela_s**: `basepeak = yes`
- **Fortran benchmarks:**
  - **648.exchange2_s**: `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:


---

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

Tested with SPEC CPU®2017 v1.1.0 on 2020-08-10 02:27:54-0400.


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