SPEC CPU®2017 Integer Rate Result

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Inspur Corporation
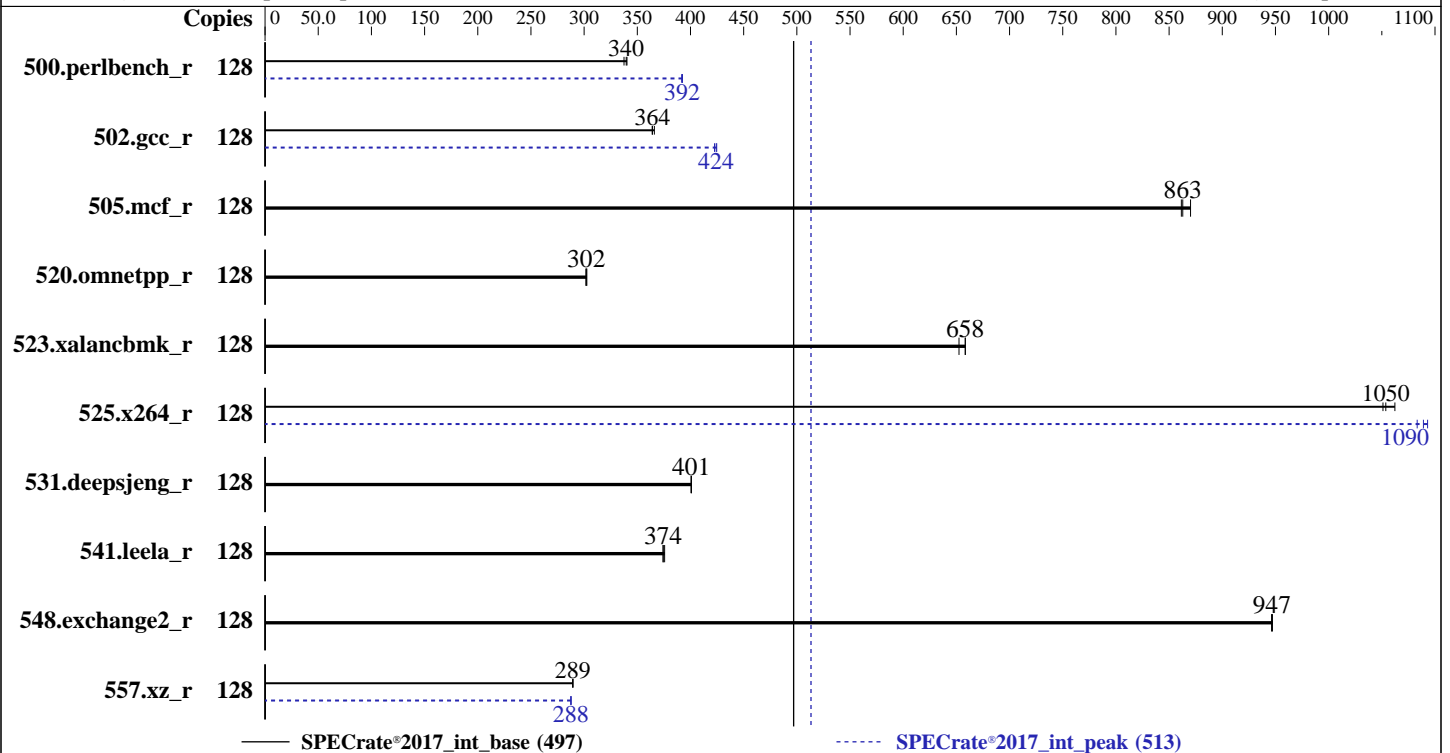
Inspur NF8480M6 (Intel Xeon Gold 6328HL)

SPECrate®2017_int_base = 497

$SPECrate^{®}2017\_int\_peak = 513$

CPU2017 License: 3358
Test Sponsor: Inspur Corporation
Tested by: Inspur Corporation

Test Date: Jul-2022
Hardware Availability: Sep-2020
Software Availability: Sep-2021

Copies		
500.perlbench_r	128	340 / 392
502.gcc_r	128	364 / 424
505.mcf_r	128	863
520.omnetpp_r	128	302
523.xalancbmk_r	128	658
525.x264_r	128	1050 / 1090
531.deepsjeng_r	128	401
541.leela_r	128	374
548.exchange2_r	128	947
557.xz_r	128	289 / 288

Scale: 0 50.0 100 150 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900 950 1000 1100

———— SPECrate®2017_int_base (497)   - - - - SPECrate®2017_int_peak (513)

Hardware

CPU Name: Intel Xeon Gold 6328HL
 Max MHz: 4300
 Nominal: 2800
Enabled: 64 cores, 4 chips, 2 threads/core
Orderable: 2,4 chips
Cache L1: 32 KB I + 32 KB D on chip per core
 L2: 1 MB I+D on chip per core
 L3: 22 MB I+D on chip per chip
 Other: None
Memory: 1536 GB (48 x 32 GB 2Rx8 PC4-3200AA-R, running at 2933)
Storage: 1 x 2 TB NVME SSD
Other: None

Software

OS: Red Hat Enterprise Linux release 8.3 (Ootpa)
 4.18.0-240.el8.x86_64
Compiler: C/C++: Version 2021.4.0 of Intel oneAPI DPC++/C++ Compiler Build 20210924 for Linux;
 Fortran: Version 2021.4.0 of Intel Fortran Compiler Classic Build 20210910 for Linux;
 C/C++: Version 2021.4.0 of Intel C/C++ Compiler Classic Build 20210910 for Linux;
Parallel: No
Firmware: Version 04.10.06 released Apr-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 and OS set to prefer performance at the cost of additional power usage.

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Results Table

Benchmark	Base Copies	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Copies	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
500.perlbench_r	128	604	338	**600**	**340**	599	340	128	519	392	520	392	**519**	**392**
502.gcc_r	128	495	366	**498**	**364**	498	364	128	**427**	**424**	429	423	427	425
505.mcf_r	128	238	870	**240**	**863**	240	862	128	238	870	**240**	**863**	240	862
520.omnetpp_r	128	555	303	**556**	**302**	557	302	128	555	303	**556**	**302**	557	302
523.xalancbmk_r	128	205	658	207	652	**205**	**658**	128	205	658	207	652	**205**	**658**
525.x264_r	128	211	1060	213	1050	**213**	**1050**	128	205	1090	207	1080	**206**	**1090**
531.deepsjeng_r	128	366	401	366	401	**366**	**401**	128	366	401	366	401	**366**	**401**
541.leela_r	128	564	376	**566**	**374**	566	374	128	564	376	**566**	**374**	566	374
548.exchange2_r	128	354	947	354	946	**354**	**947**	128	354	947	354	946	**354**	**947**
557.xz_r	128	**478**	**289**	478	289	477	290	128	**481**	**288**	481	288	480	288

SPECrate®2017_int_base = **497**

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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"

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"

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

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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.

jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5,
and the system compiler gcc 4.8.5;
sources available from jemalloc.net or
https://github.com/jemalloc/jemalloc/releases

Platform Notes

BIOS and OS configuration:
ENERGY_PERF_BIAS_CFG mode set to Performance
Hardware Prefetch set to Disable
VT Support set to Disable
Sub NUMA Cluster (SNC) set to Enable
Scaling_Governor set to Performance

Sysinfo program /home/CPU2017/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d
running on localhost.localdomain Mon Jul 11 06:16:10 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) Gold 6328HL CPU @ 2.80GHz
      4 "physical id"s (chips)
      128 "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 : 16
      siblings : 32
      physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
      physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
      physical 2: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
      physical 3: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

From lscpu from util-linux 2.32.1:
      Architecture: x86_64
      CPU op-mode(s):   32-bit, 64-bit

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Platform Notes (Continued)

```
        Byte Order:            Little Endian
        CPU(s):                128
        On-line CPU(s) list:   0-127
        Thread(s) per core:    2
        Core(s) per socket:    16
        Socket(s):             4
        NUMA node(s):          8
        Vendor ID:             GenuineIntel
        CPU family:            6
        Model:                 85
        Model name:            Intel(R) Xeon(R) Gold 6328HL CPU @ 2.80GHz
        Stepping:              11
        CPU MHz:               3700.000
        CPU max MHz:           4300.0000
        CPU min MHz:           1000.0000
        BogoMIPS:              5600.00
        Virtualization:        VT-x
        L1d cache:             32K
        L1i cache:             32K
        L2 cache:              1024K
        L3 cache:              22528K
        NUMA node0 CPU(s):     0-3,8-11,64-67,72-75
        NUMA node1 CPU(s):     4-7,12-15,68-71,76-79
        NUMA node2 CPU(s):     16-19,24-27,80-83,88-91
        NUMA node3 CPU(s):     20-23,28-31,84-87,92-95
        NUMA node4 CPU(s):     32-35,40-43,96-99,104-107
        NUMA node5 CPU(s):     36-39,44-47,100-103,108-111
        NUMA node6 CPU(s):     48-51,56-59,112-115,120-123
        NUMA node7 CPU(s):     52-55,60-63,116-119,124-127
        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 cpuid
    aperfmperf pni pclmulqdq dtes64 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 cpuid_fault epb cat_l3 cdp_l3 invpcid_single
    intel_ppin ssbd mba ibrs ibpb stibp ibrs_enhanced fsgsbase tsc_adjust bmi1 hle avx2
    smep bmi2 erms invpcid cqm mpx rdt_a avx512f avx512dq rdseed adx smap clflushopt
    clwb intel_pt avx512cd avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc
    cqm_occup_llc cqm_mbm_total cqm_mbm_local avx512_bf16 dtherm ida arat pln pts pku
    ospke avx512_vnni md_clear flush_l1d arch_capabilities

 /proc/cpuinfo cache data
    cache size : 22528 KB

 From numactl --hardware
 WARNING: a numactl 'node' might or might not correspond to a physical chip.
    available: 8 nodes (0-7)
```

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Platform Notes (Continued)

```
     node 0 cpus: 0 1 2 3 8 9 10 11 64 65 66 67 72 73 74 75
     node 0 size: 186811 MB
     node 0 free: 191815 MB
     node 1 cpus: 4 5 6 7 12 13 14 15 68 69 70 71 76 77 78 79
     node 1 size: 187992 MB
     node 1 free: 193305 MB
     node 2 cpus: 16 17 18 19 24 25 26 27 80 81 82 83 88 89 90 91
     node 2 size: 187707 MB
     node 2 free: 193351 MB
     node 3 cpus: 20 21 22 23 28 29 30 31 84 85 86 87 92 93 94 95
     node 3 size: 188346 MB
     node 3 free: 193322 MB
     node 4 cpus: 32 33 34 35 40 41 42 43 96 97 98 99 104 105 106 107
     node 4 size: 188360 MB
     node 4 free: 193349 MB
     node 5 cpus: 36 37 38 39 44 45 46 47 100 101 102 103 108 109 110 111
     node 5 size: 188171 MB
     node 5 free: 193331 MB
     node 6 cpus: 48 49 50 51 56 57 58 59 112 113 114 115 120 121 122 123
     node 6 size: 188387 MB
     node 6 free: 193384 MB
     node 7 cpus: 52 53 54 55 60 61 62 63 116 117 118 119 124 125 126 127
     node 7 size: 187309 MB
     node 7 free: 193360 MB
     node distances:
     node   0   1   2   3   4   5   6   7
       0:  10  11  20  20  20  20  20  20
       1:  11  10  20  20  20  20  20  20
       2:  20  20  10  11  20  20  20  20
       3:  20  20  11  10  20  20  20  20
       4:  20  20  20  20  10  11  20  20
       5:  20  20  20  20  11  10  20  20
       6:  20  20  20  20  20  20  10  11
       7:  20  20  20  20  20  20  11  10

  From /proc/meminfo
     MemTotal:       1583874192 kB
     HugePages_Total:        0
     Hugepagesize:        2048 kB

  /sbin/tuned-adm active
      Current active profile: throughput-performance

  /sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has
     performance

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

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Platform Notes (Continued)

```
   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
                                              Bypass disabled via prctl and
                                              seccomp
 CVE-2017-5753 (Spectre variant 1):           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

 run-level 3 Jul 11 06:15

 SPEC is set to: /home/CPU2017
    Filesystem              Type  Size  Used Avail Use% Mounted on
    /dev/mapper/rhel00-home xfs   1.7T  271G  1.5T  16% /home

 From /sys/devices/virtual/dmi/id
     Vendor:         Inspur
     Product:        NF8480M6
     Product Family: Family
     Serial:         379953176

 Additional information from dmidecode 3.2 follows.  WARNING: Use caution when you
```

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Platform Notes (Continued)

```
  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:
      48x Samsung M393A4K40DB3-CWE 32 GB 2 rank 3200, configured at 2933

  BIOS:
    BIOS Vendor:        American Megatrends Inc.
    BIOS Version:       04.10.06
    BIOS Date:          04/22/2021
    BIOS Revision:      5.19

  (End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
C        | 500.perlbench_r(peak) 557.xz_r(peak)
------------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R)
  64, Version 2021.4.0 Build 20210910_000000
Copyright (C) 1985-2021 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------


==============================================================================
C        | 502.gcc_r(peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version
  2021.4.0 Build 20210924
Copyright (C) 1985-2021 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)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
  Version 2021.4.0 Build 20210924
Copyright (C) 1985-2021 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
C        | 500.perlbench_r(peak) 557.xz_r(peak)
------------------------------------------------------------------------------
Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R)
  64, Version 2021.4.0 Build 20210910_000000
```

(Continued on next page)

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Compiler Version Notes (Continued)

```
Copyright (C) 1985-2021 Intel Corporation.  All rights reserved.
--------------------------------------------------------------------------


==========================================================================
C        | 502.gcc_r(peak)
--------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version
  2021.4.0 Build 20210924
Copyright (C) 1985-2021 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)
--------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
  Version 2021.4.0 Build 20210924
Copyright (C) 1985-2021 Intel Corporation. All rights reserved.
--------------------------------------------------------------------------


==========================================================================
C        | 500.perlbench_r(peak) 557.xz_r(peak)
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Intel(R) C Intel(R) 64 Compiler Classic for applications running on Intel(R)
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Copyright (C) 1985-2021 Intel Corporation.  All rights reserved.
--------------------------------------------------------------------------


==========================================================================
C        | 502.gcc_r(peak)
--------------------------------------------------------------------------
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  2021.4.0 Build 20210924
Copyright (C) 1985-2021 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)
--------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
  Version 2021.4.0 Build 20210924
Copyright (C) 1985-2021 Intel Corporation. All rights reserved.
--------------------------------------------------------------------------


==========================================================================
C++      | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base, peak)
```

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Compiler Version Notes (Continued)

```
       | 531.deepsjeng_r(base, peak) 541.leela_r(base, peak)
------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
  Version 2021.4.0 Build 20210924
Copyright (C) 1985-2021 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 2021.4.0 Build 20210910_000000
Copyright (C) 1985-2021 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`icx`

C++ benchmarks:
`icpx`

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`

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Base Optimization Flags

C benchmarks:
```
-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/usr/local/intel/compiler/2021.4.0/linux/compiler/lib/intel64_lin
-lqkmalloc
```

C++ benchmarks:
```
-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/usr/local/intel/compiler/2021.4.0/linux/compiler/lib/intel64_lin
-lqkmalloc
```

Fortran benchmarks:
```
-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/usr/local/intel/compiler/2021.4.0/linux/compiler/lib/intel64_lin
-lqkmalloc
```

Peak Compiler Invocation

C benchmarks (except as noted below):
```
icx
```

500.perlbench_r: `icc`

557.xz_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`

(Continued on next page)

Standard Performance Evaluation Corporation (info@spec.org)
https://www.spec.org/

Inspur Corporation

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Peak Portability Flags (Continued)

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/usr/local/intel/compiler/2021.4.0/linux/compiler/lib/intel64_lin`
`-lqkmalloc`

502.gcc_r: `-m32`
`-L/usr/local/intel/compiler/2021.4.0/linux/compiler/lib/ia32_lin`
`-std=gnu89 -Wl,-z,muldefs` -fprofile-generate(pass 1)
-fprofile-use=default.profdata(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`

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/usr/local/intel/compiler/2021.4.0/linux/compiler/lib/intel64_lin`
`-lqkmalloc`

557.xz_r: `-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div`
`-qopt-mem-layout-trans=4 -mbranches-within-32B-boundaries`
`-L/usr/local/intel/compiler/2021.4.0/linux/compiler/lib/intel64_lin`
`-lqkmalloc`

C++ benchmarks:

520.omnetpp_r: basepeak = yes

(Continued on next page)

Inspur Corporation

Inspur NF8480M6 (Intel Xeon Gold 6328HL)

SPECrate®2017_int_base = 497

SPECrate®2017_int_peak = 513

CPU2017 License: 3358
Test Sponsor: Inspur Corporation
Tested by: Inspur Corporation

Test Date: Jul-2022
Hardware Availability: Sep-2020
Software Availability: Sep-2021

Peak Optimization Flags (Continued)

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/Intel-ic2021-official-linux64_revA.html`
`http://www.spec.org/cpu2017/flags/Inspur-Platform-Settings-V2.5.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2017/flags/Intel-ic2021-official-linux64_revA.xml`
`http://www.spec.org/cpu2017/flags/Inspur-Platform-Settings-V2.5.xml`

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

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