SPEC CPU®2017 Integer Speed Result

Dell Inc.

SPECspeed®2017_int_base = 12.3

PowerEdge R7515 (AMD EPYC 7773X)

SPECspeed®2017_int_peak = 12.4

CPU2017 License: 55
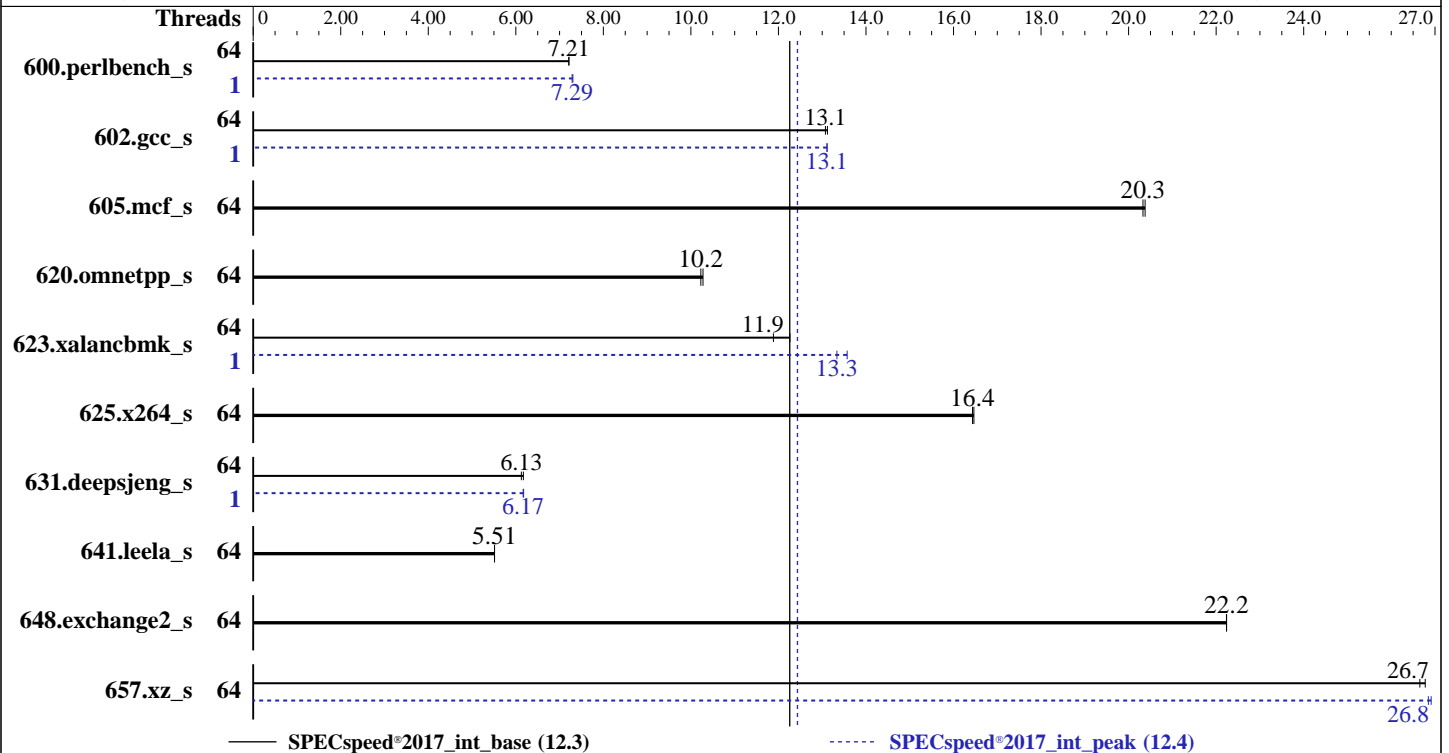**Test Sponsor:** Dell Inc.
Tested by: Dell Inc.

Test Date: Feb-2022
Hardware Availability: Mar-2022
Software Availability: Dec-2021

Threads — scale 0 to 27.0

Benchmark	Threads	Value
600.perlbench_s	64	7.21
600.perlbench_s	1	7.29
602.gcc_s	64	13.1
602.gcc_s	1	13.1
605.mcf_s	64	20.3
620.omnetpp_s	64	10.2
623.xalancbmk_s	64	11.9
623.xalancbmk_s	1	13.3
625.x264_s	64	16.4
631.deepsjeng_s	64	6.13
631.deepsjeng_s	1	6.17
641.leela_s	64	5.51
648.exchange2_s	64	22.2
657.xz_s	64	26.7
657.xz_s		26.8

—— SPECspeed®2017_int_base (12.3)   ----- SPECspeed®2017_int_peak (12.4)

Hardware

CPU Name: AMD EPYC 7773X
Max MHz: 3500
Nominal: 2200
Enabled: 64 cores, 1 chip
Orderable: 1 chip
Cache L1: 32 KB I + 32 KB D on chip per core
 L2: 512 KB I+D on chip per core
 L3: 768 MB I+D on chip per chip, 96 MB shared / 8 cores
Other: None
Memory: 1 TB (8 x 128 GB 4Rx4 PC4-3200AA-L)
Storage: 125 GB on tmpfs
Other: None

Software

OS: Red Hat Enterprise Linux 8.3 (Ootpa) 4.18.0-240.el8.x86_64
Compiler: C/C++/Fortran: Version 3.2.0 of AOCC
Parallel: Yes
Firmware: Version 2.6.5 released Dec-2021
File System: tmpfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: jemalloc: jemalloc memory allocator library v5.1.0
Power Management: BIOS and OS set to prefer performance at the cost of additional power usage.

SPEC CPU®2017 Integer Speed Result

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Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	64	246	7.21	**246**	**7.21**			1	**244**	**7.29**	243	7.30		
602.gcc_s	64	304	13.1	**305**	**13.1**			1	**304**	**13.1**	304	13.1		
605.mcf_s	64	232	20.4	**232**	**20.3**			64	232	20.4	**232**	**20.3**		
620.omnetpp_s	64	**159**	**10.2**	159	10.3			64	**159**	**10.2**	159	10.3		
623.xalancbmk_s	64	**119**	**11.9**	116	12.3			1	**106**	**13.3**	104	13.6		
625.x264_s	64	**107**	**16.4**	107	16.5			64	**107**	**16.4**	107	16.5		
631.deepsjeng_s	64	**234**	**6.13**	232	6.17			1	**232**	**6.17**	232	6.18		
641.leela_s	64	**309**	**5.51**	309	5.51			64	**309**	**5.51**	309	5.51		
648.exchange2_s	64	**132**	**22.2**	132	22.2			64	**132**	**22.2**	132	22.2		
657.xz_s	64	**232**	**26.7**	231	26.8			64	230	26.9	**230**	**26.8**		

SPECspeed®2017_int_base =	**12.3**
SPECspeed®2017_int_peak =	**12.4**

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

Compiler Notes

```
The AMD64 AOCC Compiler Suite is available at
http://developer.amd.com/amd-aocc/
```

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

```
'ulimit -s unlimited' was used to set environment stack size limit
'ulimit -l 2097152' was used to set environment locked pages in memory limit

runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>

To limit dirty cache to 8% of memory, 'sysctl -w vm.dirty_ratio=8' run as root.
To limit swap usage to minimum necessary, 'sysctl -w vm.swappiness=1' run as root.
To free node-local memory and avoid remote memory usage,
'sysctl -w vm.zone_reclaim_mode=1' run as root.
To clear filesystem caches, 'sync; sysctl -w vm.drop_caches=3' run as root.
To disable address space layout randomization (ASLR) to reduce run-to-run
variability, 'sysctl -w kernel.randomize_va_space=0' run as root.

To enable Transparent Hugepages (THP) for all allocations,
```

(Continued on next page)

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

Dell Inc.

PowerEdge R7515 (AMD EPYC 7773X)

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SPECspeed®2017_int_peak = 12.4

CPU2017 License: 55
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Test Date: Feb-2022
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Operating System Notes (Continued)

```
'echo always > /sys/kernel/mm/transparent_hugepage/enabled' and
'echo always > /sys/kernel/mm/transparent_hugepage/defrag' run as root.
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
GOMP_CPU_AFFINITY = "0-63"
LD_LIBRARY_PATH =
      "/mnt/ramdisk/cpu2017-1.1.8-aocc320-A1/amd_speed_aocc320_milanx_A_lib/li
      b;/mnt/ramdisk/cpu2017-1.1.8-aocc320-A1/amd_speed_aocc320_milanx_A_lib/l
      ib32:"
LIBOMP_NUM_HIDDEN_HELPER_THREADS = "0"
MALLOC_CONF = "retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "128M"
OMP_THREAD_LIMIT = "64"

Environment variables set by runcpu during the 600.perlbench_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 602.gcc_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 623.xalancbmk_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 631.deepsjeng_s peak run:
GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 657.xz_s peak run:
GOMP_CPU_AFFINITY = "0-63"
LIBOMP_NUM_HIDDEN_HELPER_THREADS = "0"
```

General Notes

```
Binaries were compiled on a system with 2x AMD EPYC 7742 CPU + 1TiB Memory using openSUSE 15.2

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.
```

(Continued on next page)

SPEC CPU®2017 Integer Speed Result

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CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

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Hardware Availability: Mar-2022
Software Availability: Dec-2021

General Notes (Continued)

```
jemalloc: configured and built with GCC v4.8.2 in RHEL 7.4 (No options specified)
jemalloc 5.1.0 is available here:
https://github.com/jemalloc/jemalloc/releases/download/5.1.0/jemalloc-5.1.0.tar.bz2


 Benchmark run from a 125 GB ramdisk created with the cmd: "mount -t tmpfs -o size=125G tmpfs /mnt/ramdisk"
```

Platform Notes

```
 BIOS settings:
          Logical Processor : Disabled
   L3 Cache as NUMA Domain : Enabled
 Virtualization Technology : Disabled
         DRAM Refresh Delay : Performance

             System Profile : Custom
       CPU Power Management : Maximum Performance
        Memory Patrol Scrub : Disabled
          PCI ASPM L1 Link
           Power Management : Disabled
   Algorithm Performance
      Boost Disable (ApbDis): Enabled

 Sysinfo program /mnt/ramdisk/cpu2017-1.1.8-aocc320-A1/bin/sysinfo
 Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d
 running on rhel-8-3-amd Thu Feb 24 07:50:05 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 : AMD EPYC 7773X 64-Core Processor
       1  "physical id"s (chips)
      64 "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 : 64
       siblings  : 64
       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 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52
         53 54 55 56 57 58 59 60 61 62 63

 From lscpu from util-linux 2.32.1:
```

(Continued on next page)

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CPU2017 License: 55
Test Sponsor: Dell Inc.
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Test Date: Feb-2022
Hardware Availability: Mar-2022
Software Availability: Dec-2021

Platform Notes (Continued)

```
        Architecture:          x86_64
        CPU op-mode(s):        32-bit, 64-bit
        Byte Order:            Little Endian
        CPU(s):                64
        On-line CPU(s) list:   0-63
        Thread(s) per core:    1
        Core(s) per socket:    64
        Socket(s):             1
        NUMA node(s):          8
        Vendor ID:             AuthenticAMD
        CPU family:            25
        Model:                 1
        Model name:            AMD EPYC 7773X 64-Core Processor
        Stepping:              2
        CPU MHz:               3627.625
        BogoMIPS:              4391.69
        Virtualization:        AMD-V
        L1d cache:             32K
        L1i cache:             32K
        L2 cache:              512K
        L3 cache:              98304K
        NUMA node0 CPU(s):     0-7
        NUMA node1 CPU(s):     8-15
        NUMA node2 CPU(s):     16-23
        NUMA node3 CPU(s):     24-31
        NUMA node4 CPU(s):     32-39
        NUMA node5 CPU(s):     40-47
        NUMA node6 CPU(s):     48-55
        NUMA node7 CPU(s):     56-63
        Flags:                 fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
    pat pse36 clflush mmx fxsr sse sse2 ht syscall nx mmxext fxsr_opt pdpe1gb rdtscp lm
    constant_tsc rep_good nopl nonstop_tsc cpuid extd_apicid aperfmperf pni pclmulqdq
    monitor ssse3 fma cx16 pcid sse4_1 sse4_2 x2apic movbe popcnt aes xsave avx f16c
    rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch
    osvw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpext perfctr_llc mwaitx cpb
    cat_l3 cdp_l3 invpcid_single hw_pstate sme ssbd mba sev ibrs ibpb stibp vmmcall
    fsgsbase bmi1 avx2 smep bmi2 invpcid cqm rdt_a rdseed adx smap clflushopt clwb
    sha_ni xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
    cqm_mbm_local clzero irperf xsaveerptr wbnoinvd amd_ppin arat npt lbrv svm_lock
    nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter pfthreshold
    v_vmsave_vmload vgif umip pku ospke vaes vpclmulqdq rdpid overflow_recov succor smca

 /proc/cpuinfo cache data
    cache size : 512 KB

 From numactl --hardware
 WARNING: a numactl 'node' might or might not correspond to a physical chip.
```

(Continued on next page)

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Dell Inc.

PowerEdge R7515 (AMD EPYC 7773X)

SPECspeed®2017_int_base = 12.3

SPECspeed®2017_int_peak = 12.4

CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: Feb-2022
Hardware Availability: Mar-2022
Software Availability: Dec-2021

Platform Notes (Continued)

```
   available: 8 nodes (0-7)
   node 0 cpus: 0 1 2 3 4 5 6 7
   node 0 size: 128547 MB
   node 0 free: 128369 MB
   node 1 cpus: 8 9 10 11 12 13 14 15
   node 1 size: 129019 MB
   node 1 free: 128912 MB
   node 2 cpus: 16 17 18 19 20 21 22 23
   node 2 size: 129021 MB
   node 2 free: 128889 MB
   node 3 cpus: 24 25 26 27 28 29 30 31
   node 3 size: 129021 MB
   node 3 free: 128876 MB
   node 4 cpus: 32 33 34 35 36 37 38 39
   node 4 size: 129021 MB
   node 4 free: 128595 MB
   node 5 cpus: 40 41 42 43 44 45 46 47
   node 5 size: 129021 MB
   node 5 free: 128880 MB
   node 6 cpus: 48 49 50 51 52 53 54 55
   node 6 size: 129019 MB
   node 6 free: 128869 MB
   node 7 cpus: 56 57 58 59 60 61 62 63
   node 7 size: 116906 MB
   node 7 free: 113377 MB
   node distances:
   node   0   1   2   3   4   5   6   7
     0:  10  11  11  11  11  11  11  11
     1:  11  10  11  11  11  11  11  11
     2:  11  11  10  11  11  11  11  11
     3:  11  11  11  10  11  11  11  11
     4:  11  11  11  11  10  11  11  11
     5:  11  11  11  11  11  10  11  11
     6:  11  11  11  11  11  11  10  11
     7:  11  11  11  11  11  11  11  10

 From /proc/meminfo
   MemTotal:       1044059292 kB
   HugePages_Total:         0
   Hugepagesize:         2048 kB

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

 From /etc/*release* /etc/*version*
   os-release:
     NAME="Red Hat Enterprise Linux"
```

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Platform Notes (Continued)

```
        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 rhel-8-3-amd 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: Full AMD retpoline,
                                            IBPB: conditional, IBRS_FW, STIBP:
                                               disabled, RSB filling
  CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
  CVE-2019-11135 (TSX Asynchronous Abort):      Not affected

  run-level 3 Feb 24 07:47

  SPEC is set to: /mnt/ramdisk/cpu2017-1.1.8-aocc320-A1
     Filesystem      Type   Size  Used Avail Use% Mounted on
     tmpfs           tmpfs  125G  3.3G  122G   3% /mnt/ramdisk

  From /sys/devices/virtual/dmi/id
      Vendor:          Dell Inc.
      Product:         PowerEdge R7515
      Product Family:  PowerEdge
      Serial:          1234567

  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
```

(Continued on next page)

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PowerEdge R7515 (AMD EPYC 7773X)

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SPECspeed®2017_int_peak = 12.4

CPU2017 License:	55	**Test Date:**	Feb-2022
Test Sponsor:	Dell Inc.	**Hardware Availability:**	Mar-2022
Tested by:	Dell Inc.	**Software Availability:**	Dec-2021

Platform Notes (Continued)

```
 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:
      8x 802C8632802C 72ASS16G72LZ-3G2B3 128 GB 4 rank 3200
      8x Not Specified Not Specified

  BIOS:
    BIOS Vendor:       Dell Inc.
    BIOS Version:      2.6.5
    BIOS Date:         12/28/2021
    BIOS Revision:     2.6

  (End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
C        | 600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base,
         | peak) 625.x264_s(base, peak) 657.xz_s(base, peak)
------------------------------------------------------------------------------
AMD clang version 13.0.0 (CLANG: AOCC_3.2.0-Build#128 2021_11_12) (based on
  LLVM Mirror.Version.13.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/bin
------------------------------------------------------------------------------


==============================================================================
C++      | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak)
         | 631.deepsjeng_s(base, peak) 641.leela_s(base, peak)
------------------------------------------------------------------------------
AMD clang version 13.0.0 (CLANG: AOCC_3.2.0-Build#128 2021_11_12) (based on
  LLVM Mirror.Version.13.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/bin
------------------------------------------------------------------------------


==============================================================================
Fortran  | 648.exchange2_s(base, peak)
------------------------------------------------------------------------------
AMD clang version 13.0.0 (CLANG: AOCC_3.2.0-Build#128 2021_11_12) (based on
  LLVM Mirror.Version.13.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/bin
```

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Software Availability: Dec-2021

Compiler Version Notes (Continued)

Base Compiler Invocation

C benchmarks:
`clang`

C++ benchmarks:
`clang++`

Fortran benchmarks:
`flang`

Base Portability Flags

600.perlbench_s: `-DSPEC_LINUX_X64 -DSPEC_LP64`
602.gcc_s: `-DSPEC_LP64`
605.mcf_s: `-DSPEC_LP64`
620.omnetpp_s: `-DSPEC_LP64`
623.xalancbmk_s: `-DSPEC_LINUX -DSPEC_LP64`
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 -Wl,-allow-multiple-definition -Wl,-mllvm -Wl,-enable-licm-vrp
-Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
-fveclib=AMDLIBM -ffast-math -fopenmp -flto -fstruct-layout=5
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -mllvm -function-specialize -flv-function-specialization
-mllvm -enable-gvn-hoist -mllvm -global-vectorize-slp=true
-mllvm -enable-licm-vrp -mllvm -reduce-array-computations=3 -z muldefs
-DSPEC_OPENMP -fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang
```

(Continued on next page)

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Software Availability: Dec-2021

Base Optimization Flags (Continued)

C++ benchmarks:
```
-m64 -Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
-fveclib=AMDLIBM -ffast-math -fopenmp -flto
-mllvm -enable-partial-unswitch -mllvm -unroll-threshold=100
-finline-aggressive -flv-function-specialization
-mllvm -loop-unswitch-threshold=200000 -mllvm -reroll-loops
-mllvm -aggressive-loop-unswitch -mllvm -extra-vectorizer-passes
-mllvm -reduce-array-computations=3 -mllvm -global-vectorize-slp=true
-mllvm -convert-pow-exp-to-int=false -z muldefs
-fvirtual-function-elimination -fvisibility=hidden -DSPEC_OPENMP
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang
```

Fortran benchmarks:
```
-m64 -Wl,-mllvm -Wl,-inline-recursion=4
-Wl,-mllvm -Wl,-lsr-in-nested-loop -Wl,-mllvm -Wl,-enable-iv-split
-Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
-fveclib=AMDLIBM -ffast-math -fopenmp -flto -z muldefs
-mllvm -unroll-aggressive -mllvm -unroll-threshold=150 -DSPEC_OPENMP
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang
```

Base Other Flags

C benchmarks:
```
-Wno-unused-command-line-argument -Wno-return-type
```

C++ benchmarks:
```
-Wno-unused-command-line-argument -Wno-return-type
```

Fortran benchmarks:
```
-Wno-return-type
```

Peak Compiler Invocation

C benchmarks:
```
clang
```

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Dell Inc.

PowerEdge R7515 (AMD EPYC 7773X)

SPECspeed®2017_int_base = 12.3

SPECspeed®2017_int_peak = 12.4

CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: Feb-2022
Hardware Availability: Mar-2022
Software Availability: Dec-2021

Peak Compiler Invocation (Continued)

C++ benchmarks:
```
clang++
```

Fortran benchmarks:
```
flang
```

Peak Portability Flags

```
Same as Base Portability Flags
```

Peak Optimization Flags

C benchmarks:

```
 600.perlbench_s: -m64 -Wl,-allow-multiple-definition
-Wl,-mllvm -Wl,-enable-licm-vrp
-Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver3 -fveclib=AMDLIBM -ffast-math -fopenmp
-flto -fstruct-layout=5 -mllvm -unroll-threshold=50
-fremap-arrays -flv-function-specialization
-mllvm -inline-threshold=1000 -mllvm -enable-gvn-hoist
-mllvm -global-vectorize-slp=true
-mllvm -function-specialize -mllvm -enable-licm-vrp
-mllvm -reduce-array-computations=3 -DSPEC_OPENMP
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang

 602.gcc_s: Same as 600.perlbench_s

 605.mcf_s: basepeak = yes

 625.x264_s: basepeak = yes

 657.xz_s: -m64 -Wl,-allow-multiple-definition
-Wl,-mllvm -Wl,-enable-licm-vrp
-Wl,-mllvm -Wl,-do-block-reorder=aggressive
-Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver3 -fveclib=AMDLIBM -ffast-math -fopenmp
```

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Peak Optimization Flags (Continued)

657.xz_s (continued):
```
-flto -fstruct-layout=5 -mllvm -unroll-threshold=50
-mllvm -inline-threshold=1000 -fremap-arrays
-mllvm -function-specialize -flv-function-specialization
-mllvm -enable-gvn-hoist -mllvm -global-vectorize-slp=true
-mllvm -enable-licm-vrp -mllvm -reduce-array-computations=3
-mllvm -do-block-reorder=aggressive -DSPEC_OPENMP
-fopenmp=libomp -lomp -lamdlibm -ljemalloc -lflang
```

C++ benchmarks:

620.omnetpp_s: `basepeak = yes`

623.xalancbmk_s:
```
-m64 -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-do-block-reorder=aggressive -Ofast
-march=znver3 -fveclib=AMDLIBM -ffast-math -fopenmp
-flto -finline-aggressive -mllvm -unroll-threshold=100
-flv-function-specialization -mllvm -enable-licm-vrp
-mllvm -reroll-loops -mllvm -aggressive-loop-unswitch
-mllvm -reduce-array-computations=3
-mllvm -global-vectorize-slp=true
-mllvm -do-block-reorder=aggressive
-fvirtual-function-elimination -fvisibility=hidden
-DSPEC_OPENMP -fopenmp=libomp -lomp -lamdlibm -ljemalloc
-lflang
```

631.deepsjeng_s:
```
-m64 -Wl,-mllvm -Wl,-do-block-reorder=aggressive
-Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3
-march=znver3 -fveclib=AMDLIBM -ffast-math -fopenmp
-flto -mllvm -enable-partial-unswitch
-mllvm -unroll-threshold=100 -finline-aggressive
-flv-function-specialization
-mllvm -loop-unswitch-threshold=200000 -mllvm -reroll-loops
-mllvm -aggressive-loop-unswitch
-mllvm -extra-vectorizer-passes
-mllvm -reduce-array-computations=3
-mllvm -global-vectorize-slp=true
-mllvm -convert-pow-exp-to-int=false
-mllvm -do-block-reorder=aggressive
-fvirtual-function-elimination -fvisibility=hidden
-DSPEC_OPENMP -fopenmp=libomp -lomp -lamdlibm -ljemalloc
```

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Dell Inc.

PowerEdge R7515 (AMD EPYC 7773X)

SPECspeed®2017_int_base = 12.3

SPECspeed®2017_int_peak = 12.4

CPU2017 License: 55		**Test Date:**	Feb-2022
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Tested by:	Dell Inc.	**Software Availability:**	Dec-2021

Peak Optimization Flags (Continued)

631.deepsjeng_s (continued):
```
-lflang
```

641.leela_s: `basepeak = yes`

Fortran benchmarks:

648.exchange2_s: `basepeak = yes`

Peak Other Flags

C benchmarks:
```
-Wno-unused-command-line-argument -Wno-return-type
```

C++ benchmarks:
```
-Wno-unused-command-line-argument -Wno-return-type
```

Fortran benchmarks:
```
-Wno-return-type
```

The flags files that were used to format this result can be browsed at
```
http://www.spec.org/cpu2017/flags/aocc320-flags-A1.html
http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-AMD-Milan-rev2.4.html
```

You can also download the XML flags sources by saving the following links:
```
http://www.spec.org/cpu2017/flags/aocc320-flags-A1.xml
http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-AMD-Milan-rev2.4.xml
```

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

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