SPEC CPU®2017 Integer Rate Result

Dell Inc.

PowerEdge R7625 (AMD EPYC 9454 48-Core Processor)

$SPECrate^{®}2017\_int\_base =$ 1020

$SPECrate^{®}2017\_int\_peak =$ Not Run

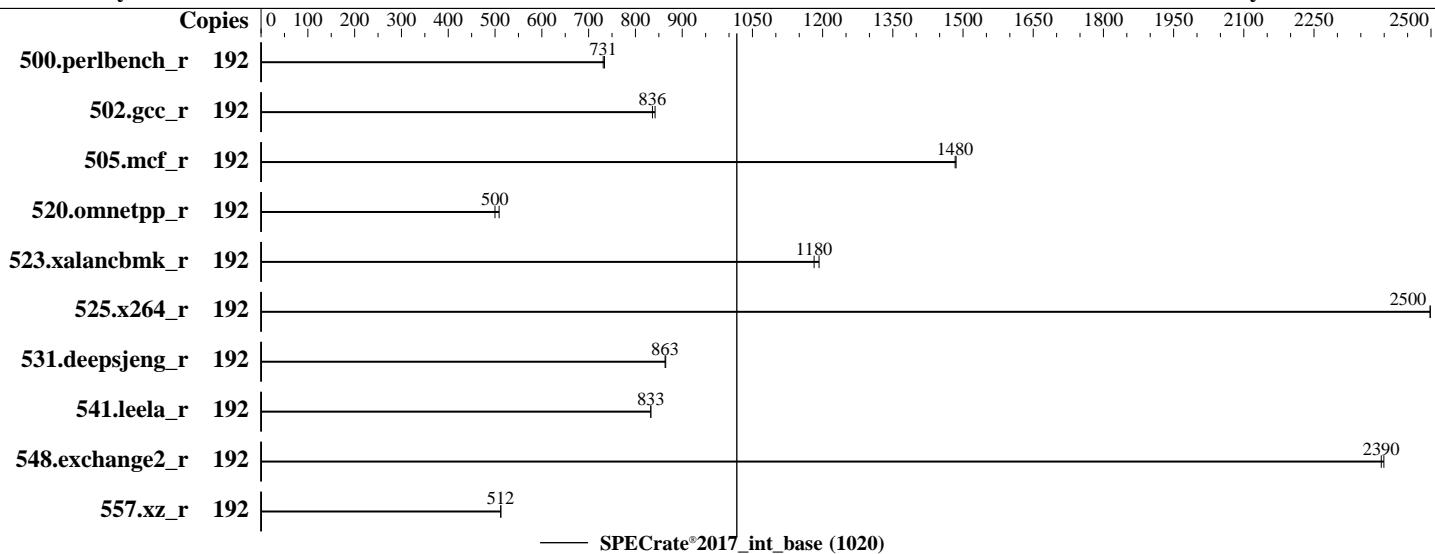**CPU2017 License:** 6573
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: Nov-2022
Hardware Availability: Feb-2023
Software Availability: Nov-2022

Benchmark	Copies	Result
500.perlbench_r	192	731
502.gcc_r	192	836
505.mcf_r	192	1480
520.omnetpp_r	192	500
523.xalancbmk_r	192	1180
525.x264_r	192	2500
531.deepsjeng_r	192	863
541.leela_r	192	833
548.exchange2_r	192	2390
557.xz_r	192	512

SPECrate®2017_int_base (1020)

Hardware

CPU Name: AMD EPYC 9454
 Max MHz: 3800
 Nominal: 2750
Enabled: 96 cores, 2 chips, 2 threads/core
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: 256 MB I+D on chip per chip, 32 MB shared / 6 cores
 Other: None
Memory: 1536 GB (24 x 64 GB 2Rx4 PC5-4800B-R)
Storage: 125 GB on tmpfs
Other: None

Software

OS: Ubuntu 22.04.1 LTS
 5.15.0-46-generic
Compiler: C/C++/Fortran: Version 4.0.0 of AOCC
Parallel: No
Firmware: Version 1.0.2 released Oct-2022
File System: tmpfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Other: None
Power Management: BIOS and OS set to prefer performance at the cost of additional power usage.

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

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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	192	**418**	**731**	416	734									
502.gcc_r	192	**325**	**836**	323	842									
505.mcf_r	192	**209**	**1480**	209	1490									
520.omnetpp_r	192	495	509	**504**	**500**									
523.xalancbmk_r	192	170	1190	**172**	**1180**									
525.x264_r	192	**135**	**2500**	135	2500									
531.deepsjeng_r	192	254	865	**255**	**863**									
541.leela_r	192	382	833	**382**	**833**									
548.exchange2_r	192	**210**	**2390**	210	2400									
557.xz_r	192	405	513	**405**	**512**									
SPECrate®2017_int_base =		1020												
SPECrate®2017_int_peak =		Not Run												

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.
```

(Continued on next page)

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Operating System Notes (Continued)

```
To enable Transparent Hugepages (THP) only on request for base runs,
'echo madvise > /sys/kernel/mm/transparent_hugepage/enabled' run as root.
To enable THP for all allocations for peak runs,
'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:
LD_LIBRARY_PATH =
    "/mnt/ramdisk/cpu2017-1.1.8-aocc400-B1b/amd_rate_aocc400_genoa_B_lib/lib
    :/mnt/ramdisk/cpu2017-1.1.8-aocc400-B1b/amd_rate_aocc400_genoa_B_lib/lib
    32:"
MALLOC_CONF = "retain:true"
```

General Notes

```
Binaries were compiled on a system with 2x AMD EPYC 9174F CPU + 1.5TiB Memory using RHEL 8.6

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.


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

Platform Notes

```
 BIOS settings:
             DRAM Refresh Delay : Performance
         DIMM Self Healing on
    Uncorrectable Memory Error : Disabled
     Virtualization Technology : Disabled
           NUMA Nodes per Socket : 4
       L3 Cache as NUMA Domain : Enabled

                System Profile : Custom
           Memory Patrol Scrub : Disabled
```

(Continued on next page)

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Platform Notes (Continued)

```
             PCI ASPM L1 Link
                 Power Management : Disabled
                 Determinism Slider : Power Determinism


 Sysinfo program /mnt/ramdisk/cpu2017-1.1.8-aocc400-B1b/bin/sysinfo
 Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d
 running on amd-sut Tue Nov 15 00:37:18 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 9454 48-Core Processor
       2  "physical id"s (chips)
       192 "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 : 48
       siblings  : 96
       physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26 27 28 29
       32 33 34 35 36 37 40 41 42 43 44 45 48 49 50 51 52 53 56 57 58 59 60 61
       physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13 16 17 18 19 20 21 24 25 26 27 28 29
        32 33 34 35 36 37 40 41 42 43 44 45 48 49 50 51 52 53 56 57 58 59 60 61


 From lscpu from util-linux 2.37.2:
     Architecture:            x86_64
     CPU op-mode(s):          32-bit, 64-bit
     Address sizes:           52 bits physical, 57 bits virtual
     Byte Order:              Little Endian
     CPU(s):                  192
     On-line CPU(s) list:     0-191
     Vendor ID:               AuthenticAMD
     Model name:              AMD EPYC 9454 48-Core Processor
     CPU family:              25
     Model:                   17
     Thread(s) per core:      2
     Core(s) per socket:      48
     Socket(s):               2
     Stepping:                1
     Frequency boost:         enabled
     CPU max MHz:             3812.0000
     CPU min MHz:             400.0000
     BogoMIPS:                5501.74
     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
```

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Platform Notes (Continued)

```
      aperfmperf rapl 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 ssbd mba ibrs
      ibpb stibp vmmcall fsgsbase bmi1 avx2 smep bmi2 erms invpcid cqm rdt_a avx512f
      avx512dq rdseed adx smap avx512ifma clflushopt clwb avx512cd sha_ni avx512bw
      avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
      cqm_mbm_local avx512_bf16 clzero irperf xsaveerptr rdpru wbnoinvd amd_ppin cppc arat
      npt lbrv svm_lock nrip_save tsc_scale vmcb_clean flushbyasid decodeassists
      pausefilter pfthreshold avic v_vmsave_vmload vgif v_spec_ctrl avx512vbmi umip pku
      ospke avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg avx512_vpopcntdq
      la57 rdpid overflow_recov succor smca fsrm flush_l1d
   Virtualization:                 AMD-V
   L1d cache:                      3 MiB (96 instances)
   L1i cache:                      3 MiB (96 instances)
   L2 cache:                       96 MiB (96 instances)
   L3 cache:                       512 MiB (16 instances)
   NUMA node(s):                   16
   NUMA node0 CPU(s):              0-5,96-101
   NUMA node1 CPU(s):              24-29,120-125
   NUMA node2 CPU(s):              12-17,108-113
   NUMA node3 CPU(s):              36-41,132-137
   NUMA node4 CPU(s):              18-23,114-119
   NUMA node5 CPU(s):              42-47,138-143
   NUMA node6 CPU(s):              6-11,102-107
   NUMA node7 CPU(s):              30-35,126-131
   NUMA node8 CPU(s):              48-53,144-149
   NUMA node9 CPU(s):              72-77,168-173
   NUMA node10 CPU(s):             60-65,156-161
   NUMA node11 CPU(s):             84-89,180-185
   NUMA node12 CPU(s):             66-71,162-167
   NUMA node13 CPU(s):             90-95,186-191
   NUMA node14 CPU(s):             54-59,150-155
   NUMA node15 CPU(s):             78-83,174-179
   Vulnerability Itlb multihit:    Not affected
   Vulnerability L1tf:             Not affected
   Vulnerability Mds:              Not affected
   Vulnerability Meltdown:         Not affected
   Vulnerability Mmio stale data:  Not affected
   Vulnerability Retbleed:         Not affected
   Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via
   prctl and seccomp
   Vulnerability Spectre v1:        Mitigation; usercopy/swapgs barriers and __user
   pointer sanitization
   Vulnerability Spectre v2:        Mitigation; Retpolines, IBPB conditional, IBRS_FW,
   STIBP always-on, RSB filling
   Vulnerability Srbds:            Not affected
```

(Continued on next page)

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Platform Notes (Continued)

```
      Vulnerability Tsx async abort:   Not affected

 From lscpu --cache:
      NAME ONE-SIZE ALL-SIZE WAYS TYPE        LEVEL   SETS PHY-LINE COHERENCY-SIZE
      L1d       32K       3M    8 Data          1     64       1               64
      L1i       32K       3M    8 Instruction   1     64       1               64
      L2         1M      96M    8 Unified       2   2048       1               64
      L3        32M     512M   16 Unified       3  32768       1               64

 /proc/cpuinfo cache data
    cache size : 1024 KB

 From numactl --hardware
 WARNING: a numactl 'node' might or might not correspond to a physical chip.
   available: 16 nodes (0-15)
   node 0 cpus: 0 1 2 3 4 5 96 97 98 99 100 101
   node 0 size: 96311 MB
   node 0 free: 95798 MB
   node 1 cpus: 24 25 26 27 28 29 120 121 122 123 124 125
   node 1 size: 96763 MB
   node 1 free: 92691 MB
   node 2 cpus: 12 13 14 15 16 17 108 109 110 111 112 113
   node 2 size: 96764 MB
   node 2 free: 96194 MB
   node 3 cpus: 36 37 38 39 40 41 132 133 134 135 136 137
   node 3 size: 96763 MB
   node 3 free: 96276 MB
   node 4 cpus: 18 19 20 21 22 23 114 115 116 117 118 119
   node 4 size: 96764 MB
   node 4 free: 96324 MB
   node 5 cpus: 42 43 44 45 46 47 138 139 140 141 142 143
   node 5 size: 96763 MB
   node 5 free: 96305 MB
   node 6 cpus: 6 7 8 9 10 11 102 103 104 105 106 107
   node 6 size: 96729 MB
   node 6 free: 96264 MB
   node 7 cpus: 30 31 32 33 34 35 126 127 128 129 130 131
   node 7 size: 96747 MB
   node 7 free: 96279 MB
   node 8 cpus: 48 49 50 51 52 53 144 145 146 147 148 149
   node 8 size: 96764 MB
   node 8 free: 96292 MB
   node 9 cpus: 72 73 74 75 76 77 168 169 170 171 172 173
   node 9 size: 96763 MB
   node 9 free: 96318 MB
   node 10 cpus: 60 61 62 63 64 65 156 157 158 159 160 161
   node 10 size: 96764 MB
```

(Continued on next page)

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Platform Notes (Continued)

```
   node 10 free: 96322 MB
   node 11 cpus: 84 85 86 87 88 89 180 181 182 183 184 185
   node 11 size: 96763 MB
   node 11 free: 96320 MB
   node 12 cpus: 66 67 68 69 70 71 162 163 164 165 166 167
   node 12 size: 96764 MB
   node 12 free: 96327 MB
   node 13 cpus: 90 91 92 93 94 95 186 187 188 189 190 191
   node 13 size: 96763 MB
   node 13 free: 96319 MB
   node 14 cpus: 54 55 56 57 58 59 150 151 152 153 154 155
   node 14 size: 96764 MB
   node 14 free: 96286 MB
   node 15 cpus: 78 79 80 81 82 83 174 175 176 177 178 179
   node 15 size: 96738 MB
   node 15 free: 96254 MB
   node distances:
   node   0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15
     0:  10  11  12  12  12  12  12  12  32  32  32  32  32  32  32  32
     1:  11  10  12  12  12  12  12  12  32  32  32  32  32  32  32  32
     2:  12  12  10  11  12  12  12  12  32  32  32  32  32  32  32  32
     3:  12  12  11  10  12  12  12  12  32  32  32  32  32  32  32  32
     4:  12  12  12  12  10  11  12  12  32  32  32  32  32  32  32  32
     5:  12  12  12  12  11  10  12  12  32  32  32  32  32  32  32  32
     6:  12  12  12  12  12  12  10  11  32  32  32  32  32  32  32  32
     7:  12  12  12  12  12  12  11  10  32  32  32  32  32  32  32  32
     8:  32  32  32  32  32  32  32  32  10  11  12  12  12  12  12  12
     9:  32  32  32  32  32  32  32  32  11  10  12  12  12  12  12  12
    10:  32  32  32  32  32  32  32  32  12  12  10  11  12  12  12  12
    11:  32  32  32  32  32  32  32  32  12  12  11  10  12  12  12  12
    12:  32  32  32  32  32  32  32  32  12  12  12  12  10  11  12  12
    13:  32  32  32  32  32  32  32  32  12  12  12  12  11  10  12  12
    14:  32  32  32  32  32  32  32  32  12  12  12  12  12  12  10  11
    15:  32  32  32  32  32  32  32  32  12  12  12  12  12  12  11  10


 From /proc/meminfo
   MemTotal:       1584845628 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

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

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

 /usr/bin/lsb_release -d
```

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Platform Notes (Continued)

```
    Ubuntu 22.04.1 LTS

 From /etc/*release* /etc/*version*
    debian_version: bookworm/sid
    os-release:
        PRETTY_NAME="Ubuntu 22.04.1 LTS"
        NAME="Ubuntu"
        VERSION_ID="22.04"
        VERSION="22.04.1 LTS (Jammy Jellyfish)"
        VERSION_CODENAME=jammy
        ID=ubuntu
        ID_LIKE=debian
        HOME_URL="https://www.ubuntu.com/"

 uname -a:
    Linux amd-sut 5.15.0-46-generic #49-Ubuntu SMP Thu Aug 4 18:03:25 UTC 2022 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
 mmio_stale_data:                                 Not affected
 retbleed:                                        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: Retpolines, IBPB:
                                                  conditional, IBRS_FW, STIBP:
                                                  always-on, RSB filling
 CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
 CVE-2019-11135 (TSX Asynchronous Abort):         Not affected

 run-level 3 Nov 10 22:28

 SPEC is set to: /mnt/ramdisk/cpu2017-1.1.8-aocc400-B1b
    Filesystem      Type   Size  Used Avail Use% Mounted on
    tmpfs           tmpfs  125G  3.4G  122G   3% /mnt/ramdisk

 From /sys/devices/virtual/dmi/id
     Vendor:         Dell Inc.
     Product:        PowerEdge R7625
```

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Platform Notes (Continued)

```
     Product Family: PowerEdge
     Serial:         BRZ5015

 Additional information from dmidecode 3.3 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:
     1x 802C0000802C MTC40F2046S1RC48BA1 64 GB 2 rank 4800
     23x 80AD000080AD HMCG94MEBRA109N 64 GB 2 rank 4800

 BIOS:
    BIOS Vendor:        Dell Inc.
    BIOS Version:       1.0.2
    BIOS Date:          10/17/2022
    BIOS Revision:      1.0

 (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)
--------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
--------------------------------------------------------------------------------


================================================================================
C++      | 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
         | 541.leela_r(base)
--------------------------------------------------------------------------------
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
--------------------------------------------------------------------------------


================================================================================
Fortran | 548.exchange2_r(base)
--------------------------------------------------------------------------------
```

(Continued on next page)

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Compiler Version Notes (Continued)

```
AMD clang version 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
  LLVM Mirror.Version.14.0.6)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
----------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`clang`

C++ benchmarks:
`clang++`

Fortran benchmarks:
`flang`

Base Portability Flags

500.perlbench_r: `-DSPEC_LINUX_X64 -DSPEC_LP64`
502.gcc_r: `-DSPEC_LP64`
505.mcf_r: `-DSPEC_LP64`
520.omnetpp_r: `-DSPEC_LP64`
523.xalancbmk_r: `-DSPEC_LINUX -DSPEC_LP64`
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 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-ldist-scalar-expand -fenable-aggressive-gather
-z muldefs -O3 -march=znver4 -fveclib=AMDLIBM -ffast-math
-fstruct-layout=7 -mllvm -unroll-threshold=50
-mllvm -inline-threshold=1000 -fremap-arrays -fstrip-mining
-mllvm -reduce-array-computations=3 -zopt -lamdlibm -lflang
```

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PowerEdge R7625 (AMD EPYC 9454 48-Core Processor)

SPECrate®2017_int_base =   1020

SPECrate®2017_int_peak = Not Run

CPU2017 License: 6573
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: Nov-2022
Hardware Availability: Feb-2023
Software Availability: Nov-2022

Base Optimization Flags (Continued)

C benchmarks (continued):
```
-lamdalloc
```

C++ benchmarks:
```
-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -z muldefs -O3
-march=znver4 -fveclib=AMDLIBM -ffast-math
-mllvm -unroll-threshold=100 -finline-aggressive
-mllvm -loop-unswitch-threshold=200000
-mllvm -reduce-array-computations=3 -zopt
-fvirtual-function-elimination -fvisibility=hidden -lamdlibm -lflang
-lamdalloc-ext
```

Fortran benchmarks:
```
-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3
-Wl,-mllvm -Wl,-inline-recursion=4 -Wl,-mllvm -Wl,-lsr-in-nested-loop
-Wl,-mllvm -Wl,-enable-iv-split -z muldefs -O3 -march=znver4
-fveclib=AMDLIBM -ffast-math -fepilog-vectorization-of-inductions
-mllvm -optimize-strided-mem-cost -floop-transform
-mllvm -unroll-aggressive -mllvm -unroll-threshold=500 -lamdlibm
-lflang -lamdalloc
```

Base Other Flags

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

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

Fortran benchmarks:
```
-Wno-unused-command-line-argument
```

The flags files that were used to format this result can be browsed at
```
http://www.spec.org/cpu2017/flags/aocc400-flags.html
http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-AMD-EPYC-v1.0.html
```

You can also download the XML flags sources by saving the following links:
```
http://www.spec.org/cpu2017/flags/aocc400-flags.xml
http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-AMD-EPYC-v1.0.xml
```

SPEC CPU®2017 Integer Rate Result

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