SPEC CPU®2017 Integer Rate Result

Cisco Systems

Cisco UCS C225 M6 (AMD EPYC 7662)

$SPECrate^{®}2017\_int\_base = 663$

$SPECrate^{®}2017\_int\_peak = 740$

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Test Date: Oct-2022
Hardware Availability: Aug-2021
Software Availability: Dec-2021

Benchmark	Copies	base	peak
500.perlbench_r	256	552	
502.gcc_r	256	484	656
505.mcf_r	256	789	914
520.omnetpp_r	256	296	
523.xalancbmk_r	256	548	1030
525.x264_r	256	1530	
531.deepsjeng_r	256	619	623
541.leela_r	256	667	673
548.exchange2_r	256	1800	1810
557.xz_r	256	420	420

SPECrate®2017_int_base (663)
SPECrate®2017_int_peak (740)

Hardware

CPU Name: AMD EPYC 7662
Max MHz: 3300
Nominal: 2000
Enabled: 128 cores, 2 chips, 2 threads/core
Orderable: 1,2 chips
Cache L1: 32 KB I + 32 KB D on chip per core
 L2: 512 KB I+D on chip per core
 L3: 256 MB I+D on chip per chip, 16 MB shared / 4 cores
Other: None
Memory: 2 TB (16 x 128 GB 4Rx4 PC4-3200AA-L)
Storage: 1 x 960 GB M.2 SSD SATA
Other: None

Software

OS: SUSE Linux Enterprise Server 15 SP2 (x86_64) kernel version 5.3.18-22-default
Compiler: C/C++/Fortran: Version 3.2.0 of AOCC
Parallel: No
Firmware: Version 4.2.2b released May-2022
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-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

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

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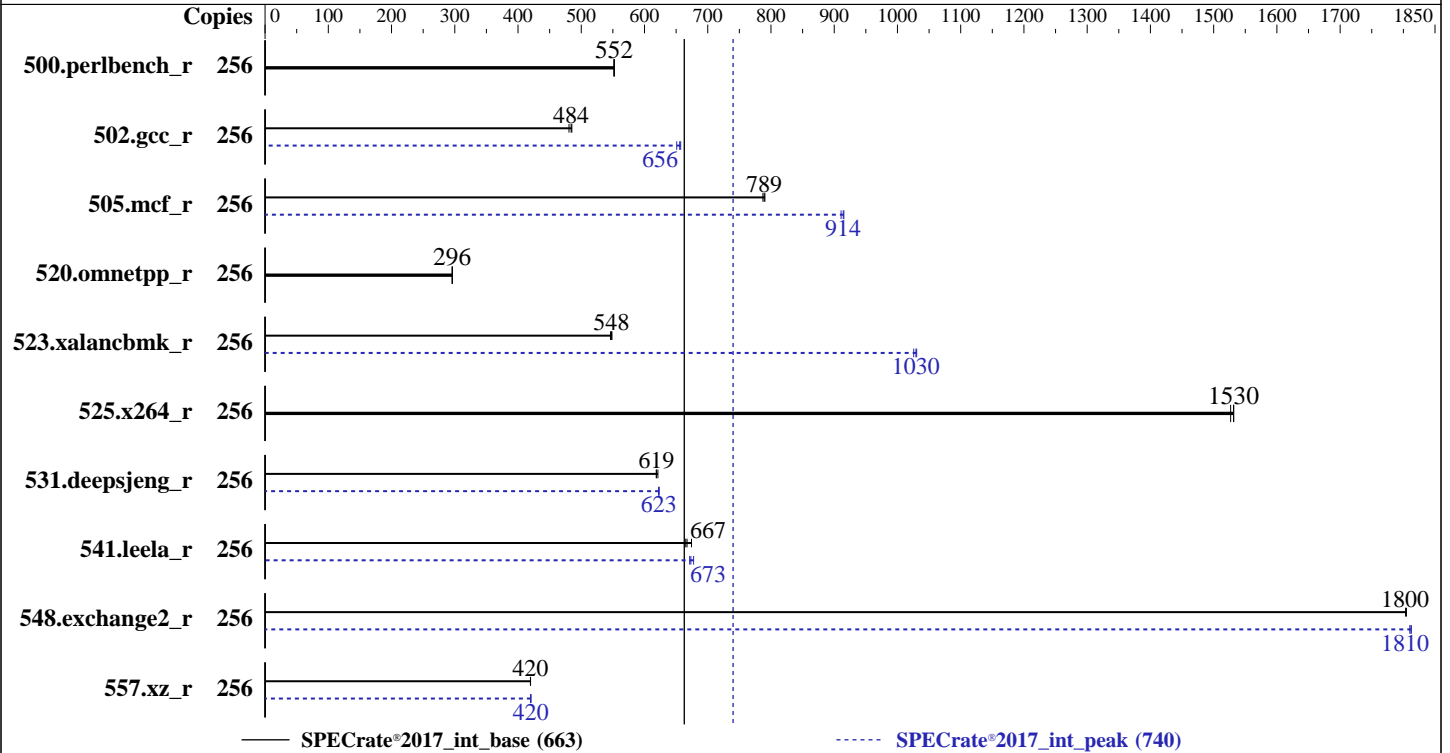**CPU2017 License:** 9019　　　　　　　　　　　　　　　　　**Test Date:** Oct-2022
Test Sponsor: Cisco Systems　　　　　　　　　　　**Hardware Availability:** Aug-2021
Tested by: Cisco Systems　　　　　　　　　　　　　**Software Availability:** Dec-2021

Results Table

Benchmark	Base						Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	256	739	552	**738**	**552**	738	552	256	739	552	**738**	**552**	738	552
502.gcc_r	256	**749**	**484**	747	485	754	481	256	552	657	557	651	**553**	**656**
505.mcf_r	256	523	790	525	787	**524**	**789**	256	452	915	**452**	**914**	454	911
520.omnetpp_r	256	**1135**	**296**	1134	296	1135	296	256	**1135**	**296**	1134	296	1135	296
523.xalancbmk_r	256	495	546	**493**	**548**	493	548	256	262	1030	264	1030	**263**	**1030**
525.x264_r	256	293	1530	**293**	**1530**	294	1530	256	293	1530	**293**	**1530**	294	1530
531.deepsjeng_r	256	472	621	474	619	**474**	**619**	256	**471**	**623**	471	622	471	623
541.leela_r	256	629	674	**635**	**667**	637	665	256	631	671	626	678	**630**	**673**
548.exchange2_r	256	372	1800	372	1800	**372**	**1800**	256	371	1810	370	1810	**370**	**1810**
557.xz_r	256	**659**	**420**	659	420	659	420	256	658	420	659	420	**658**	**420**

　　　　　　　SPECrate®2017_int_base = **663**

　　　　　　　SPECrate®2017_int_peak = **740**

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.
```

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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 =
     "/home/cpu2017/amd_rate_aocc320_milanx_A_lib/lib;/home/cpu2017/amd_rate_
     aocc320_milanx_A_lib/lib32:"
MALLOC_CONF = "retain:true"

Environment variables set by runcpu during the 523.xalancbmk_r peak run:
MALLOC_CONF = "thp:never"
```

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.

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
```

Platform Notes

```
BIOS Configuration
 SMT Mode set to Enabled
 NUMA nodes per socket set to NPS4
 ACPI SRAT L3 Cache As NUMA Domain set to Enabled
 DRAM Scrub Time set to Disabled
 Determinism Slider set to Power
 Memory Interleaving set to Disabledd
```

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Platform Notes (Continued)

```
APBDIS set to 1

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d
running on localhost Sun Oct  2 21:21:11 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 7662 64-Core Processor
      2  "physical id"s (chips)
      256 "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  : 128
      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
      physical 1: 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 2.33.1:
      Architecture:        x86_64
      CPU op-mode(s):      32-bit, 64-bit
      Byte Order:          Little Endian
      Address sizes:       43 bits physical, 48 bits virtual
      CPU(s):              256
      On-line CPU(s) list: 0-255
      Thread(s) per core:  2
      Core(s) per socket:  64
      Socket(s):           2
      NUMA node(s):        32
      Vendor ID:           AuthenticAMD
      CPU family:          23
      Model:               49
      Model name:          AMD EPYC 7662 64-Core Processor
      Stepping:            0
      CPU MHz:             2118.401
      CPU max MHz:         2000.0000
      CPU min MHz:         1500.0000
      BogoMIPS:            3992.74
      Virtualization:      AMD-V
      L1d cache:           32K
```

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Platform Notes (Continued)

```
        L1i cache:            32K
        L2 cache:             512K
        L3 cache:             16384K
        NUMA node0 CPU(s):    0-3,128-131
        NUMA node1 CPU(s):    4-7,132-135
        NUMA node2 CPU(s):    8-11,136-139
        NUMA node3 CPU(s):    12-15,140-143
        NUMA node4 CPU(s):    16-19,144-147
        NUMA node5 CPU(s):    20-23,148-151
        NUMA node6 CPU(s):    24-27,152-155
        NUMA node7 CPU(s):    28-31,156-159
        NUMA node8 CPU(s):    32-35,160-163
        NUMA node9 CPU(s):    36-39,164-167
        NUMA node10 CPU(s):   40-43,168-171
        NUMA node11 CPU(s):   44-47,172-175
        NUMA node12 CPU(s):   48-51,176-179
        NUMA node13 CPU(s):   52-55,180-183
        NUMA node14 CPU(s):   56-59,184-187
        NUMA node15 CPU(s):   60-63,188-191
        NUMA node16 CPU(s):   64-67,192-195
        NUMA node17 CPU(s):   68-71,196-199
        NUMA node18 CPU(s):   72-75,200-203
        NUMA node19 CPU(s):   76-79,204-207
        NUMA node20 CPU(s):   80-83,208-211
        NUMA node21 CPU(s):   84-87,212-215
        NUMA node22 CPU(s):   88-91,216-219
        NUMA node23 CPU(s):   92-95,220-223
        NUMA node24 CPU(s):   96-99,224-227
        NUMA node25 CPU(s):   100-103,228-231
        NUMA node26 CPU(s):   104-107,232-235
        NUMA node27 CPU(s):   108-111,236-239
        NUMA node28 CPU(s):   112-115,240-243
        NUMA node29 CPU(s):   116-119,244-247
        NUMA node30 CPU(s):   120-123,248-251
        NUMA node31 CPU(s):   124-127,252-255
        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 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 hw_pstate sme ssbd mba sev ibrs ibpb stibp vmmcall fsgsbase bmi1 avx2
        smep bmi2 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 arat npt lbrv svm_lock nrip_save tsc_scale vmcb_clean flushbyasid
        decodeassists pausefilter pfthreshold avic v_vmsave_vmload vgif umip rdpid
        overflow_recov succor smca
```

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Platform Notes (Continued)

```
 /proc/cpuinfo cache data
   cache size : 512 KB

 From numactl --hardware
 WARNING: a numactl 'node' might or might not correspond to a physical chip.
   available: 32 nodes (0-31)
   node 0 cpus: 0 1 2 3 128 129 130 131
   node 0 size: 64324 MB
   node 0 free: 63933 MB
   node 1 cpus: 4 5 6 7 132 133 134 135
   node 1 size: 64509 MB
   node 1 free: 64373 MB
   node 2 cpus: 8 9 10 11 136 137 138 139
   node 2 size: 64509 MB
   node 2 free: 64390 MB
   node 3 cpus: 12 13 14 15 140 141 142 143
   node 3 size: 64507 MB
   node 3 free: 64394 MB
   node 4 cpus: 16 17 18 19 144 145 146 147
   node 4 size: 64509 MB
   node 4 free: 64361 MB
   node 5 cpus: 20 21 22 23 148 149 150 151
   node 5 size: 64476 MB
   node 5 free: 64363 MB
   node 6 cpus: 24 25 26 27 152 153 154 155
   node 6 size: 64509 MB
   node 6 free: 64397 MB
   node 7 cpus: 28 29 30 31 156 157 158 159
   node 7 size: 64507 MB
   node 7 free: 64424 MB
   node 8 cpus: 32 33 34 35 160 161 162 163
   node 8 size: 64509 MB
   node 8 free: 64430 MB
   node 9 cpus: 36 37 38 39 164 165 166 167
   node 9 size: 64509 MB
   node 9 free: 64424 MB
   node 10 cpus: 40 41 42 43 168 169 170 171
   node 10 size: 64509 MB
   node 10 free: 64425 MB
   node 11 cpus: 44 45 46 47 172 173 174 175
   node 11 size: 64507 MB
   node 11 free: 64410 MB
   node 12 cpus: 48 49 50 51 176 177 178 179
   node 12 size: 64509 MB
   node 12 free: 64424 MB
   node 13 cpus: 52 53 54 55 180 181 182 183
```

(Continued on next page)

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Platform Notes (Continued)

```
      node 13 size: 64509 MB
      node 13 free: 64432 MB
      node 14 cpus: 56 57 58 59 184 185 186 187
      node 14 size: 64509 MB
      node 14 free: 64426 MB
      node 15 cpus: 60 61 62 63 188 189 190 191
      node 15 size: 64495 MB
      node 15 free: 64403 MB
      node 16 cpus: 64 65 66 67 192 193 194 195
      node 16 size: 64509 MB
      node 16 free: 64324 MB
      node 17 cpus: 68 69 70 71 196 197 198 199
      node 17 size: 64509 MB
      node 17 free: 64412 MB
      node 18 cpus: 72 73 74 75 200 201 202 203
      node 18 size: 64509 MB
      node 18 free: 64386 MB
      node 19 cpus: 76 77 78 79 204 205 206 207
      node 19 size: 64507 MB
      node 19 free: 64364 MB
      node 20 cpus: 80 81 82 83 208 209 210 211
      node 20 size: 64509 MB
      node 20 free: 64391 MB
      node 21 cpus: 84 85 86 87 212 213 214 215
      node 21 size: 64509 MB
      node 21 free: 64425 MB
      node 22 cpus: 88 89 90 91 216 217 218 219
      node 22 size: 64509 MB
      node 22 free: 64426 MB
      node 23 cpus: 92 93 94 95 220 221 222 223
      node 23 size: 64507 MB
      node 23 free: 64416 MB
      node 24 cpus: 96 97 98 99 224 225 226 227
      node 24 size: 64509 MB
      node 24 free: 64427 MB
      node 25 cpus: 100 101 102 103 228 229 230 231
      node 25 size: 64509 MB
      node 25 free: 64428 MB
      node 26 cpus: 104 105 106 107 232 233 234 235
      node 26 size: 64509 MB
      node 26 free: 64417 MB
      node 27 cpus: 108 109 110 111 236 237 238 239
      node 27 size: 64507 MB
      node 27 free: 64399 MB
      node 28 cpus: 112 113 114 115 240 241 242 243
      node 28 size: 64509 MB
      node 28 free: 64426 MB
```

(Continued on next page)

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Platform Notes (Continued)

```
    node 29 cpus: 116 117 118 119 244 245 246 247
    node 29 size: 64509 MB
    node 29 free: 64423 MB
    node 30 cpus: 120 121 122 123 248 249 250 251
    node 30 size: 64509 MB
    node 30 free: 64424 MB
    node 31 cpus: 124 125 126 127 252 253 254 255
    node 31 size: 64506 MB
    node 31 free: 64421 MB
    node distances:
    node   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
      0:  10  11  11  11  12  12  12  12  12  12  12  12  12  12  12  12  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
      1:  11  10  11  11  12  12  12  12  12  12  12  12  12  12  12  12  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
      2:  11  11  10  11  12  12  12  12  12  12  12  12  12  12  12  12  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
      3:  11  11  11  10  12  12  12  12  12  12  12  12  12  12  12  12  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
      4:  12  12  12  12  10  11  11  11  12  12  12  12  12  12  12  12  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
      5:  12  12  12  12  11  10  11  11  12  12  12  12  12  12  12  12  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
      6:  12  12  12  12  11  11  10  11  12  12  12  12  12  12  12  12  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
      7:  12  12  12  12  11  11  11  10  12  12  12  12  12  12  12  12  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
      8:  12  12  12  12  12  12  12  12  10  11  11  11  12  12  12  12  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
      9:  12  12  12  12  12  12  12  12  11  10  11  11  12  12  12  12  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
     10:  12  12  12  12  12  12  12  12  11  11  10  11  12  12  12  12  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
     11:  12  12  12  12  12  12  12  12  11  11  11  10  12  12  12  12  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
     12:  12  12  12  12  12  12  12  12  12  12  12  12  10  11  11  11  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
     13:  12  12  12  12  12  12  12  12  12  12  12  12  11  10  11  11  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
     14:  12  12  12  12  12  12  12  12  12  12  12  12  11  11  10  11  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
     15:  12  12  12  12  12  12  12  12  12  12  12  12  11  11  11  10  32  32  32  32
     32  32  32  32  32  32  32  32  32  32  32  32
     16:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  10  11  11  11
     12  12  12  12  12  12  12  12  12  12  12  12
     17:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  10  11  11
```

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Platform Notes (Continued)

```
   12  12  12  12  12  12  12  12  12  12  12  12
18:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  11  10  11
   12  12  12  12  12  12  12  12  12  12  12  12
19:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  11  11  11  10
   12  12  12  12  12  12  12  12  12  12  12  12
20:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12
   10  11  11  11  12  12  12  12  12  12  12  12
21:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12
   11  10  11  11  12  12  12  12  12  12  12  12
22:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12
   11  11  10  11  12  12  12  12  12  12  12  12
23:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12
   11  11  11  10  12  12  12  12  12  12  12  12
24:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12
   12  12  12  12  10  11  11  11  12  12  12  12
25:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12
   12  12  12  12  11  10  11  11  12  12  12  12
26:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12
   12  12  12  12  11  11  10  11  12  12  12  12
27:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12
   12  12  12  12  11  11  11  10  12  12  12  12
28:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12
   12  12  12  12  12  12  12  12  10  11  11  11
29:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12
   12  12  12  12  12  12  12  12  11  10  11  11
30:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12
   12  12  12  12  12  12  12  12  11  11  10  11
31:  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  12  12  12  12
   12  12  12  12  12  12  12  12  11  11  11  10

From /proc/meminfo
   MemTotal:       2113603944 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

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

From /etc/*release* /etc/*version*
   os-release:
      NAME="SLES"
      VERSION="15-SP2"
      VERSION_ID="15.2"
      PRETTY_NAME="SUSE Linux Enterprise Server 15 SP2"
      ID="sles"
      ID_LIKE="suse"
      ANSI_COLOR="0;32"
```

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SPEC CPU®2017 Integer Rate Result
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Cisco Systems

Cisco UCS C225 M6 (AMD EPYC 7662)

SPECrate®2017_int_base = 663

SPECrate®2017_int_peak = 740

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Test Date: Oct-2022
Hardware Availability: Aug-2021
Software Availability: Dec-2021

Platform Notes (Continued)

```
        CPE_NAME="cpe:/o:suse:sles:15:sp2"

uname -a:
   Linux localhost 5.3.18-22-default #1 SMP Wed Jun 3 12:16:43 UTC 2020 (720aeba) 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:
                                                      conditional, RSB filling
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort):              Not affected

run-level 3 Apr 17 06:13

SPEC is set to: /home/cpu2017
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sdb2      xfs   223G   11G  213G   5% /

From /sys/devices/virtual/dmi/id
    Vendor:         Cisco Systems Inc
    Product:        UCSC-C225-M6S
    Serial:         WZP252408JE

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
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:
    16x 0xCE00 M386AAG40AM3-CWE 128 GB 4 rank 3200
    16x Unknown Unknown

BIOS:
    BIOS Vendor:        Cisco Systems, Inc.
    BIOS Version:       C225M6.4.2.2b.0.0509222122
    BIOS Date:          05/09/2022
```

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Cisco Systems

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Software Availability: Dec-2021

Platform Notes (Continued)

```
     BIOS Revision:      5.14


  (End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
C        | 502.gcc_r(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: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/bin
------------------------------------------------------------------------------


==============================================================================
C        | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak)
         | 525.x264_r(base, peak) 557.xz_r(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        | 502.gcc_r(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: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/bin
------------------------------------------------------------------------------


==============================================================================
C        | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak)
         | 525.x264_r(base, peak) 557.xz_r(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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SPEC CPU®2017 Integer Rate Result
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Tested by: Cisco Systems

Test Date: Oct-2022
Hardware Availability: Aug-2021
Software Availability: Dec-2021

Compiler Version Notes (Continued)

```
--------------------------------------------------------------------------

==========================================================================
C++      | 523.xalancbmk_r(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: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/bin
--------------------------------------------------------------------------

==========================================================================
C++      | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base)
         | 531.deepsjeng_r(base, peak) 541.leela_r(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++      | 523.xalancbmk_r(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: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.2.0/bin
--------------------------------------------------------------------------

==========================================================================
C++      | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base)
         | 531.deepsjeng_r(base, peak) 541.leela_r(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 | 548.exchange2_r(base, peak)
--------------------------------------------------------------------------
```

(Continued on next page)

Cisco Systems

Cisco UCS C225 M6 (AMD EPYC 7662)

SPECrate®2017_int_base = 663

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CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Test Date: Oct-2022
Hardware Availability: Aug-2021
Software Availability: Dec-2021

Compiler Version Notes (Continued)

```
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
-----------------------------------------------------------------------
```

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 -Wl,-allow-multiple-definition -Wl,-mllvm -Wl,-enable-licm-vrp
-flto -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
-Wl,-mllvm -Wl,-enable-loop-fusion -O3 -march=znver3 -fveclib=AMDLIBM
-ffast-math -fstruct-layout=5 -mllvm -unroll-threshold=50
```

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Cisco Systems

Cisco UCS C225 M6 (AMD EPYC 7662)

SPECrate®2017_int_base = 663

SPECrate®2017_int_peak = 740

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Test Date: Oct-2022
Hardware Availability: Aug-2021
Software Availability: Dec-2021

Base Optimization Flags (Continued)

C benchmarks (continued):
```
-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 -enable-loop-fusion -z muldefs -lamdlibm -ljemalloc -lflang
```

C++ benchmarks:
```
-m64 -std=c++98 -flto -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
-Wl,-mllvm -Wl,-enable-loop-fusion -O3 -march=znver3 -fveclib=AMDLIBM
-ffast-math -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 -enable-loop-fusion -z muldefs -fvirtual-function-elimination
-fvisibility=hidden -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
-flto -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
-Wl,-mllvm -Wl,-enable-loop-fusion -O3 -march=znver3 -fveclib=AMDLIBM
-ffast-math -z muldefs -mllvm -unroll-aggressive
-mllvm -unroll-threshold=500 -lamdlibm -ljemalloc -lflang
```

Base Other Flags

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

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

SPEC CPU®2017 Integer Rate Result

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Cisco Systems

Cisco UCS C225 M6 (AMD EPYC 7662)

SPECrate®2017_int_base = 663

SPECrate®2017_int_peak = 740

Peak Compiler Invocation

C benchmarks:
```
clang
```

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

Fortran benchmarks:
```
flang
```

Peak Portability Flags

500.perlbench_r: `-DSPEC_LINUX_X64 -DSPEC_LP64`
502.gcc_r: `-D_FILE_OFFSET_BITS=64`
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`

Peak Optimization Flags

C benchmarks:

500.perlbench_r: `basepeak = yes`

502.gcc_r: `-m32 -Wl,-allow-multiple-definition`
`-Wl,-mllvm -Wl,-enable-licm-vrp -flto`
`-Wl,-mllvm -Wl,-function-specialize -Ofast -march=znver3`
`-fveclib=AMDLIBM -ffast-math -fstruct-layout=7`
`-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 -fgnu89-inline`
`-ljemalloc`

505.mcf_r: `-m64 -Wl,-allow-multiple-definition`
`-Wl,-mllvm -Wl,-enable-licm-vrp -flto`
`-Wl,-mllvm -Wl,-function-specialize`

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Cisco Systems

Cisco UCS C225 M6 (AMD EPYC 7662)

SPECrate®2017_int_base = 663

SPECrate®2017_int_peak = 740

Peak Optimization Flags (Continued)

505.mcf_r (continued):
```
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver3 -fveclib=AMDLIBM -ffast-math
-fstruct-layout=7 -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 -lamdlibm -ljemalloc
```

525.x264_r: basepeak = yes

557.xz_r: Same as 505.mcf_r

C++ benchmarks:

520.omnetpp_r: basepeak = yes

523.xalancbmk_r:
```
-m32 -Wl,-mllvm -Wl,-do-block-reorder=aggressive -flto
-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
-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
-ljemalloc
```

531.deepsjeng_r:
```
-m64 -std=c++98 -flto -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
-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
-fvirtual-function-elimination -fvisibility=hidden
-lamdlibm -ljemalloc
```

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Cisco Systems

Cisco UCS C225 M6 (AMD EPYC 7662)

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SPECrate®2017_int_peak = 740

CPU2017 License: 9019　　　　　　　　　　　**Test Date:**　　　　　　　　Oct-2022

Test Sponsor:　　Cisco Systems　　　　　　　**Hardware Availability:** Aug-2021

Tested by:　　　　Cisco Systems　　　　　　　**Software Availability:**　Dec-2021

Peak Optimization Flags (Continued)

541.leela_r: `Same as 531.deepsjeng_r`

Fortran benchmarks:
```
-m64 -Wl,-mllvm -Wl,-inline-recursion=4
-Wl,-mllvm -Wl,-lsr-in-nested-loop -Wl,-mllvm -Wl,-enable-iv-split
-flto -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 -mllvm -unroll-aggressive
-mllvm -unroll-threshold=500 -lamdlibm -ljemalloc -lflang
```

Peak Other Flags

C benchmarks (except as noted below):
```
-Wno-unused-command-line-argument
```

502.gcc_r: `-L/usr/lib -Wno-unused-command-line-argument`
`-L/sppo/bin/cpu2017v118-aocc3-milanX/amd_rate_aocc320_milanx_A_lib/lib32`

C++ benchmarks (except as noted below):
```
-Wno-unused-command-line-argument
```

523.xalancbmk_r: `-L/usr/lib -Wno-unused-command-line-argument`
`-L/sppo/bin/cpu2017v118-aocc3-milanX/amd_rate_aocc320_milanx_A_lib/lib32`

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/Cisco-Platform-Settings-AMD-v2-revD.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/Cisco-Platform-Settings-AMD-v2-revD.xml

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