SPEC CPU®2017 Integer Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS700A-E12(K14PP-D24) Server System
2.40 GHz, AMD EPYC 9654

$SPECrate®2017\_int\_base = 1790$

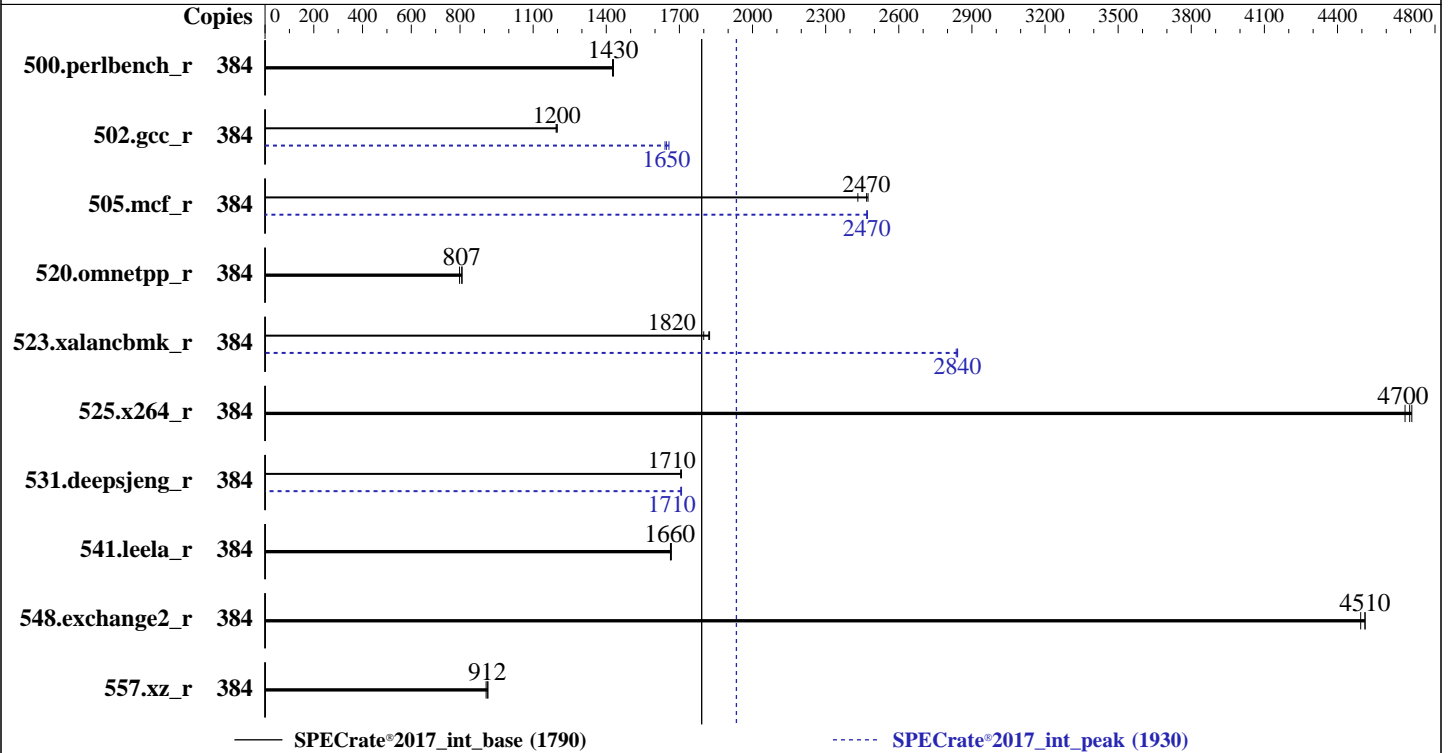$SPECrate®2017\_int\_peak = 1930$

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Oct-2022

Hardware Availability: Nov-2022

Software Availability: Nov-2022

Copies		
500.perlbench_r	384	1430
502.gcc_r	384	1200 / 1650
505.mcf_r	384	2470 / 2470
520.omnetpp_r	384	807
523.xalancbmk_r	384	1820 / 2840
525.x264_r	384	4700
531.deepsjeng_r	384	1710 / 1710
541.leela_r	384	1660
548.exchange2_r	384	4510
557.xz_r	384	912

SPECrate®2017_int_base (1790)   SPECrate®2017_int_peak (1930)

Hardware

CPU Name: AMD EPYC 9654
 Max MHz: 3700
 Nominal: 2400
Enabled: 192 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: 384 MB I+D on chip per chip,
 32 MB shared / 8 cores
 Other: None
Memory: 1536 GB (24 x 64 GB 2Rx4 PC5-4800B-R)
Storage: 1 x 1.6 TB PCIE NVME SSD
Other: None

Software

OS: SUSE Linux Enterprise Server 15 SP4 (x86_64)
 Kernel 5.14.21-150400.22-default
Compiler: C/C++/Fortran: Version 4.0.0 of AOCC
Parallel: No
Firmware: Version 0402 released Sep-2022
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other: None
Power Management: BIOS and OS set to prefer performance
 at the cost of additional power usage.

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS700A-E12(K14PP-D24) Server System
2.40 GHz, AMD EPYC 9654

SPECrate®2017_int_base = 1790

SPECrate®2017_int_peak = 1930

CPU2017 License: 9016	**Test Date:** Oct-2022
Test Sponsor: ASUSTeK Computer Inc.	**Hardware Availability:** Nov-2022
Tested by: ASUSTeK Computer Inc.	**Software Availability:** Nov-2022

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	384	429	1430	428	1430	**428**	**1430**	384	429	1430	428	1430	**428**	**1430**
502.gcc_r	384	455	1190	**454**	**1200**	454	1200	384	331	1640	**330**	**1650**	328	1660
505.mcf_r	384	255	2430	251	2470	**251**	**2470**	384	**251**	**2470**	251	2470	251	2470
520.omnetpp_r	384	623	808	**624**	**807**	631	798	384	623	808	**624**	**807**	631	798
523.xalancbmk_r	384	225	1800	222	1820	**223**	**1820**	384	143	2840	143	2840	**143**	**2840**
525.x264_r	384	**143**	**4700**	143	4700	144	4680	384	**143**	**4700**	143	4700	144	4680
531.deepsjeng_r	384	258	1710	**258**	**1710**	258	1710	384	258	1710	258	1710	**258**	**1710**
541.leela_r	384	382	1660	**382**	**1660**	381	1670	384	382	1660	**382**	**1660**	381	1670
548.exchange2_r	384	**223**	**4510**	223	4510	224	4500	384	**223**	**4510**	223	4510	224	4500
557.xz_r	384	457	907	453	915	**455**	**912**	384	457	907	453	915	**455**	**912**
SPECrate®2017_int_base =	1790													
SPECrate®2017_int_peak =	1930													

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
 OS set to performance mode via cpupower frequency-set -g performance
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)

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

ASUSTeK Computer Inc.

ASUS RS700A-E12(K14PP-D24) Server System
2.40 GHz, AMD EPYC 9654

$SPECrate^{®}2017\_int\_base = 1790$

$SPECrate^{®}2017\_int\_peak = 1930$

CPU2017 License:	9016	**Test Date:**	Oct-2022
Test Sponsor:	ASUSTeK Computer Inc.	**Hardware Availability:**	Nov-2022
Tested by:	ASUSTeK Computer Inc.	**Software Availability:**	Nov-2022

Operating System Notes (Continued)

```
To enable Transparent Hugepages (THP) for all allocations,
'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 =
      "/spec2017/amd_rate_aocc400_genoa_B_lib/lib:/spec2017/amd_rate_aocc400_g
      enoa_B_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 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.
```

Platform Notes

```
BIOS Configuration:
SR-IOV Support = Disabled
SVM Mode = Disabled
NUMA nodes per socket = NPS4
Determinism Control = Manual
Determinism Enable = Power
Engine Boost = Aggressive
TDP Control = Manual
TDP = 400
PPT Control = Manual
PPT = 400
BMC Configuration:
Fan mode = Full speed mode
```

(Continued on next page)

ASUSTeK Computer Inc.

ASUS RS700A-E12(K14PP-D24) Server System
2.40 GHz, AMD EPYC 9654

SPECrate®2017_int_base = 1790

SPECrate®2017_int_peak = 1930

CPU2017 License:	9016	**Test Date:**	Oct-2022
Test Sponsor:	ASUSTeK Computer Inc.	**Hardware Availability:**	Nov-2022
Tested by:	ASUSTeK Computer Inc.	**Software Availability:**	Nov-2022

Platform Notes (Continued)

```
Sysinfo program /spec2017/bin/sysinfo
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d
running on localhost Tue Oct 18 04:09:13 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 9654 96-Core Processor
      2  "physical id"s (chips)
      384 "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 : 96
      siblings  : 192
      physical 0: cores 0 1 2 3 4 5 6 7 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 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81
      82 83 84 85 86 87 88 89 90 91 92 93 94 95
      physical 1: cores 0 1 2 3 4 5 6 7 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 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81
      82 83 84 85 86 87 88 89 90 91 92 93 94 95

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):                    384
    On-line CPU(s) list:       0-383
    Vendor ID:                 AuthenticAMD
    Model name:                AMD EPYC 9654 96-Core Processor
    CPU family:                25
    Model:                     17
    Thread(s) per core:        2
    Core(s) per socket:        96
    Socket(s):                 2
    Stepping:                  1
    Frequency boost:           enabled
    CPU max MHz:               3707.8120
    CPU min MHz:               1500.0000
    BogoMIPS:                  4847.90
    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
```

(Continued on next page)

ASUSTeK Computer Inc.

ASUS RS700A-E12(K14PP-D24) Server System
2.40 GHz, AMD EPYC 9654

SPECrate®2017_int_base = 1790

SPECrate®2017_int_peak = 1930

CPU2017 License: 9016

Test Sponsor: ASUSTeK Computer Inc.

Tested by: ASUSTeK Computer Inc.

Test Date: Oct-2022

Hardware Availability: Nov-2022

Software Availability: Nov-2022

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 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:                     6 MiB (192 instances)
L1i cache:                     6 MiB (192 instances)
L2 cache:                      192 MiB (192 instances)
L3 cache:                      768 MiB (24 instances)
NUMA node(s):                  8
NUMA node0 CPU(s):             0-23,192-215
NUMA node1 CPU(s):             24-47,216-239
NUMA node2 CPU(s):             48-71,240-263
NUMA node3 CPU(s):             72-95,264-287
NUMA node4 CPU(s):             96-119,288-311
NUMA node5 CPU(s):             120-143,312-335
NUMA node6 CPU(s):             144-167,336-359
NUMA node7 CPU(s):             168-191,360-383
Vulnerability Itlb multihit:   Not affected
Vulnerability L1tf:            Not affected
Vulnerability Mds:             Not affected
Vulnerability Meltdown:        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
Vulnerability Tsx async abort: Not affected

From lscpu --cache:
   NAME ONE-SIZE ALL-SIZE WAYS TYPE        LEVEL   SETS PHY-LINE COHERENCY-SIZE
   L1d       32K       6M    8 Data            1     64        1             64
   L1i       32K       6M    8 Instruction     1     64        1             64
   L2         1M     192M    8 Unified         2   2048        1             64
   L3        32M     768M   16 Unified         3  32768        1             64

/proc/cpuinfo cache data
```

(Continued on next page)

ASUSTeK Computer Inc.

ASUS RS700A-E12(K14PP-D24) Server System
2.40 GHz, AMD EPYC 9654

SPECrate®2017_int_base = 1790

SPECrate®2017_int_peak = 1930

CPU2017 License:	9016	**Test Date:**	Oct-2022
Test Sponsor:	ASUSTeK Computer Inc.	**Hardware Availability:**	Nov-2022
Tested by:	ASUSTeK Computer Inc.	**Software Availability:**	Nov-2022

Platform Notes (Continued)

```
    cache size : 1024 KB

 From numactl --hardware
 WARNING: a numactl 'node' might or might not correspond to a physical chip.
   available: 8 nodes (0-7)
   node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 192 193 194
   195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215
   node 0 size: 193222 MB
   node 0 free: 189713 MB
   node 1 cpus: 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47
   216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237
   238 239
   node 1 size: 193519 MB
   node 1 free: 192014 MB
   node 2 cpus: 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71
   240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261
   262 263
   node 2 size: 193519 MB
   node 2 free: 191972 MB
   node 3 cpus: 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95
   264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285
   286 287
   node 3 size: 193519 MB
   node 3 free: 191935 MB
   node 4 cpus: 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114
   115 116 117 118 119 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304
   305 306 307 308 309 310 311
   node 4 size: 193519 MB
   node 4 free: 191952 MB
   node 5 cpus: 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137
   138 139 140 141 142 143 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327
   328 329 330 331 332 333 334 335
   node 5 size: 193317 MB
   node 5 free: 191843 MB
   node 6 cpus: 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161
   162 163 164 165 166 167 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351
   352 353 354 355 356 357 358 359
   node 6 size: 193519 MB
   node 6 free: 191975 MB
   node 7 cpus: 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185
   186 187 188 189 190 191 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375
   376 377 378 379 380 381 382 383
   node 7 size: 193519 MB
   node 7 free: 192039 MB
   node distances:
   node    0    1    2    3    4    5    6    7
     0:   10   12   12   12   32   32   32   32
```

(Continued on next page)

ASUSTeK Computer Inc.

ASUS RS700A-E12(K14PP-D24) Server System
2.40 GHz, AMD EPYC 9654

SPECrate®2017_int_base = 1790

SPECrate®2017_int_peak = 1930

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Oct-2022
Hardware Availability: Nov-2022
Software Availability: Nov-2022

Platform Notes (Continued)

```
       1:  12  10  12  12  32  32  32  32
       2:  12  12  10  12  32  32  32  32
       3:  12  12  12  10  32  32  32  32
       4:  32  32  32  32  10  12  12  12
       5:  32  32  32  32  12  10  12  12
       6:  32  32  32  32  12  12  10  12
       7:  32  32  32  32  12  12  12  10

  From /proc/meminfo
     MemTotal:       1584803448 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-SP4"
        VERSION_ID="15.4"
        PRETTY_NAME="SUSE Linux Enterprise Server 15 SP4"
        ID="sles"
        ID_LIKE="suse"
        ANSI_COLOR="0;32"
        CPE_NAME="cpe:/o:suse:sles:15:sp4"

  uname -a:
     Linux localhost 5.14.21-150400.22-default #1 SMP PREEMPT_DYNAMIC Wed May 11 06:57:18
     UTC 2022 (49db222) 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: Retpolines, IBPB:
                                                    conditional, IBRS_FW, STIBP:
                                                    always-on, RSB filling
  CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
```

(Continued on next page)

ASUSTeK Computer Inc.

ASUS RS700A-E12(K14PP-D24) Server System
2.40 GHz, AMD EPYC 9654

SPECrate®2017_int_base = 1790

SPECrate®2017_int_peak = 1930

CPU2017 License: 9016		**Test Date:** Oct-2022
Test Sponsor:	ASUSTeK Computer Inc.	**Hardware Availability:** Nov-2022
Tested by:	ASUSTeK Computer Inc.	**Software Availability:** Nov-2022

Platform Notes (Continued)

```
 CVE-2019-11135 (TSX Asynchronous Abort):              Not affected


 run-level 3 Oct 17 10:43

 SPEC is set to: /spec2017
    Filesystem      Type  Size  Used Avail Use% Mounted on
    /dev/nvme0n1p8 xfs   500G   22G  479G   5% /

 From /sys/devices/virtual/dmi/id
    Vendor:          ASUSTeK COMPUTER INC.
    Product:         RS700A-E12-RS12U
    Product Family: Server
    Serial:          123456789012


 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:
       24x Samsung M321R8GA0BB0-CQKDG 64 GB 2 rank 4800

 BIOS:
    BIOS Vendor:        American Megatrends Inc.
    BIOS Version:       0402
    BIOS Date:          09/26/2022
    BIOS Revision:      4.2

 (End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
C       | 502.gcc_r(peak)
------------------------------------------------------------------------------
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: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/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 14.0.6 (CLANG: AOCC_4.0.0-Build#389 2022_10_07) (based on
```

(Continued on next page)

ASUSTeK Computer Inc.

ASUS RS700A-E12(K14PP-D24) Server System
2.40 GHz, AMD EPYC 9654

SPECrate®2017_int_base = 1790

SPECrate®2017_int_peak = 1930

CPU2017 License: 9016	**Test Date:** Oct-2022
Test Sponsor: ASUSTeK Computer Inc.	**Hardware Availability:** Nov-2022
Tested by: ASUSTeK Computer Inc.	**Software Availability:** Nov-2022

Compiler Version Notes (Continued)

```
  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            | 502.gcc_r(peak)
------------------------------------------------------------------------------
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: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/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 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++          | 523.xalancbmk_r(peak)
------------------------------------------------------------------------------
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: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
--------------------------------------------------------------------


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

(Continued on next page)

ASUSTeK Computer Inc.

ASUS RS700A-E12(K14PP-D24) Server System
2.40 GHz, AMD EPYC 9654

SPECrate®2017_int_base = 1790

SPECrate®2017_int_peak = 1930

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Oct-2022
Hardware Availability: Nov-2022
Software Availability: Nov-2022

Compiler Version Notes (Continued)

```
==============================================================================
C++     | 523.xalancbmk_r(peak)
------------------------------------------------------------------------------
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: i386-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc/aocc-compiler-rel-4.0-3206-389/bin
------------------------------------------------------------------------------


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

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS700A-E12(K14PP-D24) Server System
2.40 GHz, AMD EPYC 9654

SPECrate®2017_int_base = 1790

SPECrate®2017_int_peak = 1930

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Oct-2022
Hardware Availability: Nov-2022
Software Availability: Nov-2022

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
-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
```

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

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

ASUSTeK Computer Inc.

ASUS RS700A-E12(K14PP-D24) Server System
2.40 GHz, AMD EPYC 9654

SPECrate®2017_int_base = 1790

SPECrate®2017_int_peak = 1930

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Oct-2022
Hardware Availability: Nov-2022
Software Availability: Nov-2022

Base Other Flags

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

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

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

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`

(Continued on next page)

ASUSTeK Computer Inc.

ASUS RS700A-E12(K14PP-D24) Server System
2.40 GHz, AMD EPYC 9654

SPECrate®2017_int_base = 1790

SPECrate®2017_int_peak = 1930

CPU2017 License: 9016	**Test Date:** Oct-2022
Test Sponsor: ASUSTeK Computer Inc.	**Hardware Availability:** Nov-2022
Tested by: ASUSTeK Computer Inc.	**Software Availability:** Nov-2022

Peak Optimization Flags (Continued)

502.gcc_r: `-m32 -flto -z muldefs -Ofast -march=znver4`
`-fveclib=AMDLIBM -ffast-math -fstruct-layout=7`
`-mllvm -unroll-threshold=50 -fremap-arrays -fstrip-mining`
`-mllvm -inline-threshold=1000`
`-mllvm -reduce-array-computations=3 -zopt -fgnu89-inline`
`-lamdalloc`

505.mcf_r: `-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6`
`-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast`
`-march=znver4 -fveclib=AMDLIBM -ffast-math`
`-fstruct-layout=7 -mllvm -unroll-threshold=50`
`-fremap-arrays -fstrip-mining`
`-mllvm -inline-threshold=1000`
`-mllvm -reduce-array-computations=3 -zopt -lamdlibm`
`-lflang -lamdalloc`

525.x264_r: basepeak = yes

557.xz_r: basepeak = yes

C++ benchmarks:

520.omnetpp_r: basepeak = yes

523.xalancbmk_r: `-m32 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6`
`-Wl,-mllvm -Wl,-reduce-array-computations=3`
`-Wl,-mllvm -Wl,-do-block-reorder=aggressive`
`-fno-loop-reroll -Ofast -march=znver4 -fveclib=AMDLIBM`
`-ffast-math -finline-aggressive`
`-mllvm -unroll-threshold=100`
`-mllvm -reduce-array-computations=3 -zopt`
`-mllvm -do-block-reorder=aggressive`
`-fvirtual-function-elimination -fvisibility=hidden`
`-lamdalloc-ext`

531.deepsjeng_r: `-m64 -flto -Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6`
`-Wl,-mllvm -Wl,-reduce-array-computations=3 -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 -lamdalloc-ext`

541.leela_r: basepeak = yes

(Continued on next page)

ASUSTeK Computer Inc.

ASUS RS700A-E12(K14PP-D24) Server System
2.40 GHz, AMD EPYC 9654

SPECrate®2017_int_base = 1790

SPECrate®2017_int_peak = 1930

CPU2017 License: 9016
Test Sponsor: ASUSTeK Computer Inc.
Tested by: ASUSTeK Computer Inc.

Test Date: Oct-2022
Hardware Availability: Nov-2022
Software Availability: Nov-2022

Peak Optimization Flags (Continued)

Fortran benchmarks:

548.exchange2_r: `basepeak = yes`

Peak Other Flags

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

502.gcc_r: `-L/usr/lib32 -Wno-unused-command-line-argument`
`-L/home/work/cpu2017/v118/aocc4/b1/rate/amd_rate_aocc400_genoa_B_lib/lib32`

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

523.xalancbmk_r: `-L/usr/lib32 -Wno-unused-command-line-argument`
`-L/home/work/cpu2017/v118/aocc4/b1/rate/amd_rate_aocc400_genoa_B_lib/lib32`

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/ASUSTekPlatform-Settings-AMD-K14-V1.0.html`
`http://www.spec.org/cpu2017/flags/aocc400-flags.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2017/flags/ASUSTekPlatform-Settings-AMD-K14-V1.0.xml`
`http://www.spec.org/cpu2017/flags/aocc400-flags.xml`

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

Tested with SPEC CPU®2017 v1.1.8 on 2022-10-17 16:09:12-0400.
Report generated on 2023-03-03 15:03:21 by CPU2017 PDF formatter v6442.
Originally published on 2022-11-11.