



# SPEC CPU®2017 Integer Rate Result

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## Supermicro

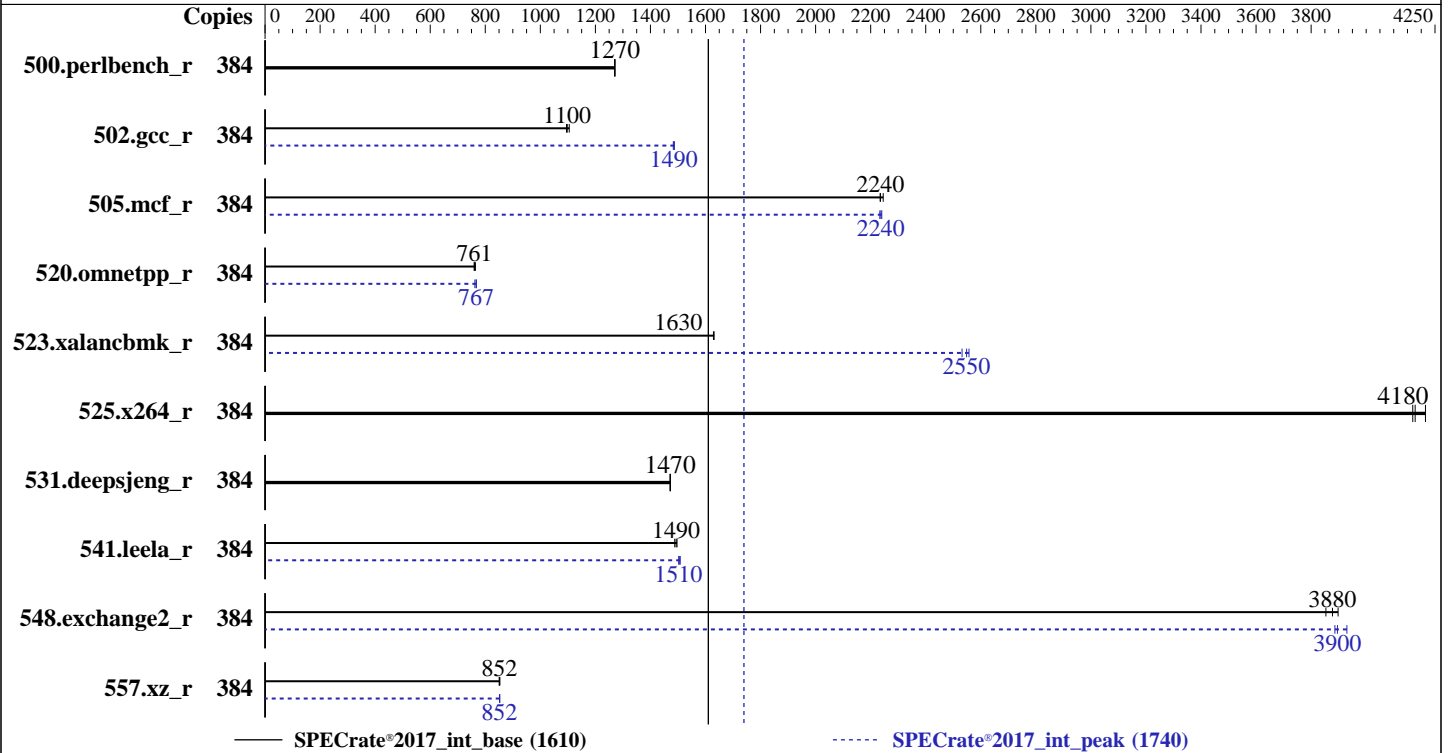
A+ Server 2025HS-TNR  
(H13DSH , AMD EPYC 9654)

SPECrate®2017\_int\_base = 1610

SPECrate®2017\_int\_peak = 1740

CPU2017 License: 001176  
Test Sponsor: Supermicro  
Tested by: Supermicro

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



### 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: 2304 GB (24 x 96 GB 2Rx4 PC5-4800B-R)  
Storage: 1.2 TB on tmpfs  
Other: H13DSH

### Software

OS: Ubuntu 22.04.1 LTS  
Kernel 5.15.0-52-generic  
Compiler: C/C++/Fortran: Version 4.0.0 of AOCC  
Parallel: No  
Firmware: Version 0.10 released Oct-2022  
File System: tmpfs  
System State: Run level 5 (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.



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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	384	<b>481</b>	<b>1270</b>	481	1270	481	1270	384	<b>481</b>	<b>1270</b>	481	1270	481	1270
502.gcc_r	384	<b>495</b>	<b>1100</b>	497	1100	492	1100	384	<b>366</b>	<b>1490</b>	367	1480	366	1490
505.mcf_r	384	276	2250	<b>278</b>	<b>2240</b>	278	2230	384	278	2230	<b>277</b>	<b>2240</b>	277	2240
520.omnetpp_r	384	659	764	<b>662</b>	<b>761</b>	663	760	384	661	762	<b>657</b>	<b>767</b>	656	768
523.xalancbmk_r	384	249	1630	<b>249</b>	<b>1630</b>	252	1610	384	160	2530	<b>159</b>	<b>2550</b>	159	2560
525.x264_r	384	160	4220	161	4170	<b>161</b>	<b>4180</b>	384	160	4220	161	4170	<b>161</b>	<b>4180</b>
531.deepsjeng_r	384	299	1470	299	1470	<b>299</b>	<b>1470</b>	384	299	1470	299	1470	<b>299</b>	<b>1470</b>
541.leela_r	384	425	1500	427	1490	<b>426</b>	<b>1490</b>	384	<b>422</b>	<b>1510</b>	423	1500	422	1510
548.exchange2_r	384	261	3850	258	3900	<b>259</b>	<b>3880</b>	384	259	3890	<b>258</b>	<b>3900</b>	256	3930
557.xz_r	384	486	853	488	851	<b>487</b>	<b>852</b>	384	487	852	487	852	<b>487</b>	<b>852</b>

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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 =  
"/dev/shm/amd\_rate\_aocc400\_genoa\_B\_lib/lib:/dev/shm/amd\_rate\_aocc400\_gen  
oa\_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 Settings:  
Determinism Control = Manual  
Determinism Enable = Disable Performance Determinism  
cTDP Control = Manual  
cTDP = 400  
Package Power Limit Control = Manual  
Package Power Limit = 400  
ACPI SRAT L3 cache As NUMA Domain = Enabled  
  
Sysinfo program /dev/shm/bin/sysinfo  
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d

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### Platform Notes (Continued)

running on sysv Sun Oct 23 17:36:04 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:           3709.0000
CPU min MHz:           400.0000
BogoMIPS:               4799.60
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
aperfperf 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

```

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### Platform Notes (Continued)

misalignsse 3dnowprefetch osvw ibs skinit wdt tce topoext perfctr\_core perfctr\_nb  
bpxext 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\_lld

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):

24

NUMA node0 CPU(s): 0-7,192-199  
NUMA node1 CPU(s): 8-15,200-207  
NUMA node2 CPU(s): 16-23,208-215  
NUMA node3 CPU(s): 24-31,216-223  
NUMA node4 CPU(s): 32-39,224-231  
NUMA node5 CPU(s): 40-47,232-239  
NUMA node6 CPU(s): 48-55,240-247  
NUMA node7 CPU(s): 56-63,248-255  
NUMA node8 CPU(s): 64-71,256-263  
NUMA node9 CPU(s): 72-79,264-271  
NUMA node10 CPU(s): 80-87,272-279  
NUMA node11 CPU(s): 88-95,280-287  
NUMA node12 CPU(s): 96-103,288-295  
NUMA node13 CPU(s): 104-111,296-303  
NUMA node14 CPU(s): 112-119,304-311  
NUMA node15 CPU(s): 120-127,312-319  
NUMA node16 CPU(s): 128-135,320-327  
NUMA node17 CPU(s): 136-143,328-335  
NUMA node18 CPU(s): 144-151,336-343  
NUMA node19 CPU(s): 152-159,344-351  
NUMA node20 CPU(s): 160-167,352-359  
NUMA node21 CPU(s): 168-175,360-367  
NUMA node22 CPU(s): 176-183,368-375  
NUMA node23 CPU(s): 184-191,376-383

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

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### Platform Notes (Continued)

prctl and seccomp  
Vulnerability Spectre v1: Mitigation; usercopy/swaps barriers and \_\_user pointer sanitization  
Vulnerability Spectre v2: Mitigation; Retpolines, IBPB conditional, IBRS\_FW, STIBP always-on, RSB filling, PBRSE-eIBRS Not affected  
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  
cache size : 1024 KB

From numactl --hardware

WARNING: a numactl 'node' might or might not correspond to a physical chip.

```

available: 24 nodes (0-23)
node 0 cpus: 0 1 2 3 4 5 6 7 192 193 194 195 196 197 198 199
node 0 size: 96498 MB
node 0 free: 91043 MB
node 1 cpus: 8 9 10 11 12 13 14 15 200 201 202 203 204 205 206 207
node 1 size: 96762 MB
node 1 free: 96349 MB
node 2 cpus: 16 17 18 19 20 21 22 23 208 209 210 211 212 213 214 215
node 2 size: 96762 MB
node 2 free: 96330 MB
node 3 cpus: 24 25 26 27 28 29 30 31 216 217 218 219 220 221 222 223
node 3 size: 96762 MB
node 3 free: 96220 MB
node 4 cpus: 32 33 34 35 36 37 38 39 224 225 226 227 228 229 230 231
node 4 size: 96762 MB
node 4 free: 96369 MB
node 5 cpus: 40 41 42 43 44 45 46 47 232 233 234 235 236 237 238 239
node 5 size: 96762 MB
node 5 free: 96376 MB
node 6 cpus: 48 49 50 51 52 53 54 55 240 241 242 243 244 245 246 247
node 6 size: 96762 MB
node 6 free: 96351 MB
node 7 cpus: 56 57 58 59 60 61 62 63 248 249 250 251 252 253 254 255
node 7 size: 96762 MB
node 7 free: 96279 MB
node 8 cpus: 64 65 66 67 68 69 70 71 256 257 258 259 260 261 262 263
node 8 size: 96762 MB

```

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### Platform Notes (Continued)

```

node 8 free: 96339 MB
node 9 cpus: 72 73 74 75 76 77 78 79 264 265 266 267 268 269 270 271
node 9 size: 96762 MB
node 9 free: 96361 MB
node 10 cpus: 80 81 82 83 84 85 86 87 272 273 274 275 276 277 278 279
node 10 size: 96762 MB
node 10 free: 96372 MB
node 11 cpus: 88 89 90 91 92 93 94 95 280 281 282 283 284 285 286 287
node 11 size: 96762 MB
node 11 free: 96368 MB
node 12 cpus: 96 97 98 99 100 101 102 103 288 289 290 291 292 293 294 295
node 12 size: 96762 MB
node 12 free: 96423 MB
node 13 cpus: 104 105 106 107 108 109 110 111 296 297 298 299 300 301 302 303
node 13 size: 96762 MB
node 13 free: 96434 MB
node 14 cpus: 112 113 114 115 116 117 118 119 304 305 306 307 308 309 310 311
node 14 size: 96762 MB
node 14 free: 96444 MB
node 15 cpus: 120 121 122 123 124 125 126 127 312 313 314 315 316 317 318 319
node 15 size: 96762 MB
node 15 free: 96428 MB
node 16 cpus: 128 129 130 131 132 133 134 135 320 321 322 323 324 325 326 327
node 16 size: 96762 MB
node 16 free: 96438 MB
node 17 cpus: 136 137 138 139 140 141 142 143 328 329 330 331 332 333 334 335
node 17 size: 96727 MB
node 17 free: 96373 MB
node 18 cpus: 144 145 146 147 148 149 150 151 336 337 338 339 340 341 342 343
node 18 size: 96762 MB
node 18 free: 96448 MB
node 19 cpus: 152 153 154 155 156 157 158 159 344 345 346 347 348 349 350 351
node 19 size: 96762 MB
node 19 free: 96432 MB
node 20 cpus: 160 161 162 163 164 165 166 167 352 353 354 355 356 357 358 359
node 20 size: 96695 MB
node 20 free: 96358 MB
node 21 cpus: 168 169 170 171 172 173 174 175 360 361 362 363 364 365 366 367
node 21 size: 96762 MB
node 21 free: 96401 MB
node 22 cpus: 176 177 178 179 180 181 182 183 368 369 370 371 372 373 374 375
node 22 size: 96762 MB
node 22 free: 96436 MB
node 23 cpus: 184 185 186 187 188 189 190 191 376 377 378 379 380 381 382 383
node 23 size: 96762 MB
node 23 free: 96421 MB
node distances:

```

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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																	
0:	10	11	11	11	11	11	11	11	11	11	11	11	32	32	32	32	32	32	32	32
	32	32	32	32																
1:	11	10	11	11	11	11	11	11	11	11	11	11	32	32	32	32	32	32	32	32
	32	32	32	32																
2:	11	11	10	11	11	11	11	11	11	11	11	11	32	32	32	32	32	32	32	32
	32	32	32	32																
3:	11	11	11	10	11	11	11	11	11	11	11	11	32	32	32	32	32	32	32	32
	32	32	32	32																
4:	11	11	11	11	10	11	11	11	11	11	11	11	32	32	32	32	32	32	32	32
	32	32	32	32																
5:	11	11	11	11	11	10	11	11	11	11	11	11	32	32	32	32	32	32	32	32
	32	32	32	32																
6:	11	11	11	11	11	11	10	11	11	11	11	11	32	32	32	32	32	32	32	32
	32	32	32	32																
7:	11	11	11	11	11	11	11	10	11	11	11	11	32	32	32	32	32	32	32	32
	32	32	32	32																
8:	11	11	11	11	11	11	11	11	10	11	11	11	32	32	32	32	32	32	32	32
	32	32	32	32																
9:	11	11	11	11	11	11	11	11	11	10	11	11	32	32	32	32	32	32	32	32
	32	32	32	32																
10:	11	11	11	11	11	11	11	11	11	11	10	11	32	32	32	32	32	32	32	32
	32	32	32	32																
11:	11	11	11	11	11	11	11	11	11	11	11	10	32	32	32	32	32	32	32	32
	32	32	32	32																
12:	32	32	32	32	32	32	32	32	32	32	32	32	10	11	11	11	11	11	11	11
	11	11	11	11																
13:	32	32	32	32	32	32	32	32	32	32	32	32	11	10	11	11	11	11	11	11
	11	11	11	11																
14:	32	32	32	32	32	32	32	32	32	32	32	32	11	11	10	11	11	11	11	11
	11	11	11	11																
15:	32	32	32	32	32	32	32	32	32	32	32	32	11	11	11	10	11	11	11	11
	11	11	11	11																
16:	32	32	32	32	32	32	32	32	32	32	32	32	11	11	11	11	10	11	11	11
	11	11	11	11																
17:	32	32	32	32	32	32	32	32	32	32	32	32	11	11	11	11	11	10	11	11
	11	11	11	11																
18:	32	32	32	32	32	32	32	32	32	32	32	32	11	11	11	11	11	11	10	11
	11	11	11	11																
19:	32	32	32	32	32	32	32	32	32	32	32	32	11	11	11	11	11	11	11	10
	11	11	11	11																
20:	32	32	32	32	32	32	32	32	32	32	32	32	11	11	11	11	11	11	11	11
	10	11	11	11																
21:	32	32	32	32	32	32	32	32	32	32	32	32	11	11	11	11	11	11	11	11
	11	10	11	11																
22:	32	32	32	32	32	32	32	32	32	32	32	32	11	11	11	11	11	11	11	11

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```
11 11 10 11
23: 32 32 32 32 32 32 32 32 32 32 32 32 32 11 11 11 11 11 11 11
11 11 11 10
```

```
From /proc/meminfo
MemTotal: 2377666456 kB
HugePages_Total: 0
Hugepagesize: 2048 kB
```

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

```
/usr/bin/lsb_release -d
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 sysv 5.15.0-52-generic #58-Ubuntu SMP Thu Oct 13 08:03:55 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/swaps barriers and __user pointer sanitization
CVE-2017-5715 (Spectre variant 2):	Mitigation: Retpolines, IBPB: conditional, IBRS_FW, STIBP:

(Continued on next page)



# SPEC CPU®2017 Integer Rate Result

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## Supermicro

A+ Server 2025HS-TNR  
(H13DSH , AMD EPYC 9654)

SPECrate®2017\_int\_base = 1610

SPECrate®2017\_int\_peak = 1740

**CPU2017 License:** 001176  
**Test Sponsor:** Supermicro  
**Tested by:** Supermicro

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

### Platform Notes (Continued)

always-on, RSB filling,  
PBRBS-eIBRS: Not affected

CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected

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

run-level 5 Oct 23 17:18

SPEC is set to: /dev/shm

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
tmpfs	tmpfs	1.2T	4.8G	1.2T	1%	/dev/shm

From /sys/devices/virtual/dmi/id

Vendor: Supermicro  
Product: Super Server  
Product Family: SMC H13  
Serial: 123456789

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:

7x SK Hynix HMCGM4MEBRB175N 96 GB 2 rank 4800  
17x SK Hynix HMCGM4MEBRB235N 96 GB 2 rank 4800

BIOS:

BIOS Vendor: American Megatrends International, LLC.  
BIOS Version: 0.10  
BIOS Date: 10/18/2022  
BIOS Revision: 5.27

(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
-----
=====

```

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### Compiler Version Notes (Continued)

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 | 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.xalanbmk\_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.xalanbmk\_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)

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## Supermicro

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

### Compiler Version Notes (Continued)

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

=====  
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



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## Supermicro

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**Test Sponsor:** Supermicro  
**Tested by:** Supermicro

**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
```



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**Tested by:** Supermicro

**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

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## 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: Same as 505.mcf\_r

C++ benchmarks:

```
520.omnetpp_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
-finline-aggressive -mllvm -unroll-threshold=100
-mllvm -reduce-array-computations=3 -zopt
-fvirtual-function-elimination -fvisibility=hidden
-lamdlibm -lamdalloc-ext
```

```
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: basepeak = yes

```
541.leela_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
```

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## Peak Optimization Flags (Continued)

541.leela\_r (continued):

```
-finline-aggressive -mllvm -unroll-threshold=100  
-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 -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
```

## 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/aocc400-flags.html>

<http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-Genoa-revB.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/Supermicro-Platform-Settings-V1.2-Genoa-revB.xml>





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