## SPEC CPU®2017 Floating Point Speed Result

**Supermicro**

A+ Server 2124BT-HNTR  
(H12DST-B, AMD EPYC 7702)

<table>
<thead>
<tr>
<th>SPECspeed®2017_fp_base = 199</th>
<th>SPECspeed®2017_fp_peak = 208</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: Supermicro</td>
<td>Tested by: Supermicro</td>
</tr>
<tr>
<td>Hardware Availability: Aug-2019</td>
<td>Software Availability: Sep-2021</td>
</tr>
</tbody>
</table>

### Test Details

<table>
<thead>
<tr>
<th>CPU2017 License: 001176</th>
<th>Test Date: Oct-2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Sponsor: Supermicro</td>
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</tr>
</tbody>
</table>

### Threads

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed®2017_fp_base</th>
<th>SPECspeed®2017_fp_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>603.bwaves_s</td>
<td>128</td>
<td>319</td>
<td>709</td>
</tr>
<tr>
<td>607.cactuBSSN_s</td>
<td>128</td>
<td>112</td>
<td>97.2</td>
</tr>
<tr>
<td>619.lbm_s</td>
<td>128</td>
<td>93.0</td>
<td>97.2</td>
</tr>
<tr>
<td>621.wrf_s</td>
<td>128</td>
<td>73.0</td>
<td>74.8</td>
</tr>
<tr>
<td>627.cam4_s</td>
<td>128</td>
<td>73.0</td>
<td>150</td>
</tr>
<tr>
<td>628.pop2_s</td>
<td>128</td>
<td>147</td>
<td>150</td>
</tr>
<tr>
<td>638.imagick_s</td>
<td>128</td>
<td>345</td>
<td>475</td>
</tr>
<tr>
<td>644.nab_s</td>
<td>128</td>
<td>475</td>
<td></td>
</tr>
<tr>
<td>649.fotonik3d_s</td>
<td>128</td>
<td>92.7</td>
<td></td>
</tr>
<tr>
<td>654.roms_s</td>
<td>128</td>
<td>251</td>
<td>360</td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** AMD EPYC 7702  
  - Max MHz: 3350  
  - 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:** 1 TB (16 x 64 GB 2Rx4 PC4-3200AA-R)  
- **Storage:** 1 x 200 GB SATA III SSD  
- **Other:** None

### Software

- **OS:** Ubuntu 20.04.3 LTS  
  - Kernel 5.4.0-88-generic  
- **Compiler:** C/C++/Fortran: Version 3.0.0 of AOCC  
- **Parallel:** Yes  
- **Firmware:** Version 2.2 released Aug-2021  
- **File System:** ext4  
- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** 64-bit  
- **Other:** jemalloc: jemalloc memory allocator library v5.1.0  
- **Power Management:** BIOS set to prefer performance at the cost of additional power usage.
### Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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<tbody>
<tr>
<td>603.bwaves_s</td>
<td>128</td>
<td>83.0</td>
<td>710</td>
<td>83.3</td>
<td>709</td>
<td>128</td>
<td>83.0</td>
<td>710</td>
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<tr>
<td>607.cactuBSSN_s</td>
<td>128</td>
<td>51.8</td>
<td>322</td>
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<td>619.lbm_s</td>
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<td>60.4</td>
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<td>60.3</td>
<td>147</td>
<td>128</td>
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<td>59.3</td>
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<td>128</td>
<td>163</td>
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<td>62.8</td>
<td>251</td>
<td>128</td>
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<td>362</td>
<td>43.8</td>
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<td></td>
<td></td>
<td></td>
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</tbody>
</table>

**SPECspeed®2017_fp_base = 199**

**SPECspeed®2017_fp_peak = 208**

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

### Compiler Notes

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

### Submit Notes

The config file option 'submit' was used. 'numactl' was used to bind copies to the cores. See the configuration file for details.

### Operating System Notes

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

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

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

(Continued on next page)
Operating System Notes (Continued)

'echo always > /sys/kernel/mm/transparent_hugepage/enabled' and
'echo always > /sys/kernel/mm/transparent_hugepage/defrag' run as root.
To enable THP only on request for peak runs of 628.pop2_s, and 638.imagick_s,
'echo madvise > /sys/kernel/mm/transparent_hugepage/enabled' run as root.
To disable THP for peak runs of 627.cam4_s, 644.nab_s, 649.fotonik3d_s, and 654.roms_s,
'echo never > /sys/kernel/mm/transparent_hugepage/enabled' run as root.

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
GOMP_CPU_AFFINITY = "0-255"
LD_LIBRARY_PATH = "/home/cpu2017/amd_speed_aocc300_milan_B_lib/lib;/home/cpu2017/amd_speed_aocc300_milan_B_lib/lib32:"
MALLOC_CONF = "retain:true"
OMP_DYNAMIC = "false"
OMP_SCHEDULE = "static"
OMP_STACKSIZE = "128M"
OMP_THREAD_LIMIT = "256"

Environment variables set by runcpu during the 621.wrf_s peak run:
GOMP_CPU_AFFINITY = "0-127"

Environment variables set by runcpu during the 627.cam4_s peak run:
GOMP_CPU_AFFINITY = "0-127"

Environment variables set by runcpu during the 628.pop2_s peak run:
GOMP_CPU_AFFINITY = "0-127"

Environment variables set by runcpu during the 654.roms_s peak run:
GOMP_CPU_AFFINITY = "0-127"

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)
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**Supermicro**

A+ Server 2124BT-HNTR  
(H12DST-B , AMD EPYC 7702)

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**General Notes (Continued)**

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 Settings:
Determinism Control = Manual  
Determinism Slider = Power  
cTDP Control = Manual  
cTDP = 200  
Package Power Limit Control = Manual  
Package Power Limit = 200  
APBDIS = 1  
NUMA Nodes Per Socket = NPS4

Sysinfo program /home/cpu2017/bin/sysinfo  
Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acaf64d  
running on h12dst-7702 Mon Oct 4 15:17:26 2021

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 7702 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 2.34:
  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

(Continued on next page)
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CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

Test Date: Oct-2021
Hardware Availability: Aug-2019
Software Availability: Sep-2021

Platform Notes (Continued)

Thread(s) per core: 2
Core(s) per socket: 64
Socket(s): 2
NUMA node(s): 4
Vendor ID: AuthenticAMD
CPU family: 23
Model: 49
Model name: AMD EPYC 7702 64-Core Processor
Stepping: 0
Frequency boost: enabled
CPU MHz: 3346.533
CPU max MHz: 2000.0000
CPU min MHz: 1500.0000
BogoMIPS: 3999.87
Virtualization: AMD-V
L1d cache: 4 MiB
L1i cache: 4 MiB
L2 cache: 64 MiB
L3 cache: 512 MiB
NUMA node0 CPU(s): 0-31,128-159
NUMA node1 CPU(s): 32-63,160-191
NUMA node2 CPU(s): 64-95,192-223
NUMA node3 CPU(s): 96-127,224-255
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 sanitation
Vulnerability Spectre v2: Mitigation; Full AMD retpoline, IBFB conditional, IBRS_FW, STIBP conditional, RSB filling
Vulnerability Srbds: Not affected
Vulnerability Txs async abort: Not affected
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 bptext perfctr_llc mwaitx cpb cat_l3 cdp_l3 hw_pstate sme ssbd mba sev ibpb stibp vmcall fsgsbase bmi1 avx2 smep bmi2 cqm rdt_a rdseed adx mva clflushopt clwb sha ni xsaveopt xsave xstate xcrstate cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local clzero irop xsaves xsaveprtr wbnoinvd arat npt lbv svm_lock nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter pfthreshold avic vmsave_vmload vgif umip rdpid overflow_recov succor smca

(Continued on next page)
Platform Notes (Continued)

From lscpu --cache:

<table>
<thead>
<tr>
<th>NAME</th>
<th>ONE-SIZE</th>
<th>ALL-SIZE</th>
<th>WAYS</th>
<th>TYPE</th>
<th>LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1d</td>
<td>32K</td>
<td>4M</td>
<td>8</td>
<td>Data</td>
<td>1</td>
</tr>
<tr>
<td>L1i</td>
<td>32K</td>
<td>4M</td>
<td>8</td>
<td>Instruction</td>
<td>1</td>
</tr>
<tr>
<td>L2</td>
<td>512K</td>
<td>64M</td>
<td>8</td>
<td>Unified</td>
<td>2</td>
</tr>
<tr>
<td>L3</td>
<td>16M</td>
<td>512M</td>
<td>16</td>
<td>Unified</td>
<td>3</td>
</tr>
</tbody>
</table>

/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: 4 nodes (0-3)

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 24 25 26 27
28 29 30 31 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146
147 148 149 150 151 152 153 154 155 156 157 158 159
node 0 size: 257881 MB
node 0 free: 256529 MB

node 1 cpus: 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 63 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175
176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191
node 1 size: 258019 MB
node 1 free: 256529 MB

node 2 cpus: 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 95 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207
208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223
node 2 size: 258031 MB
node 2 free: 257079 MB

node 3 cpus: 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114
115 116 117 118 119 120 121 122 123 124 125 126 127 224 225 226 227 228 229 230 231 232
233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254
255
node 3 size: 258029 MB
node 3 free: 256882 MB

distance:

node 0 1 2 3
0: 10 12 32 32
1: 10 12 32 32
2: 32 32 10 12
3: 32 32 12 10

From /proc/meminfo

MemTotal: 1056729836 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

(Continued on next page)
**Platform Notes (Continued)**

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

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

/usr/bin/lsb_release -d
Ubuntu 20.04.3 LTS

From /etc/*release* /etc/*version*

debian_version: bullseye/sid
os-release:
  NAME="Ubuntu"
  VERSION="20.04.3 LTS (Focal Fossa)"
  ID=ubuntu
  ID_LIKE=debian
  PRETTY_NAME="Ubuntu 20.04.3 LTS"
  VERSION_ID="20.04"
  HOME_URL="https://www.ubuntu.com/"
  SUPPORT_URL="https://help.ubuntu.com/"

uname -a:
Linux h12dst-7702 5.4.0-88-generic #99-Ubuntu SMP Thu Sep 23 17:29:00 UTC 2021 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/swaps barriers and __user pointer sanitation |
| 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 Oct 4 15:13

SPEC is set to: /home/cpu2017

**Filesystem** | **Type** | **Size** | **Used** | **Avail** | **Use%** | **Mounted on**
--- | --- | --- | --- | --- | --- | ---

(Continued on next page)
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Platform Notes (Continued)
/dev/sda3    ext4  178G  18G  152G  11% /

From /sys/devices/virtual/dmi/id
Vendor: Supermicro
Product: Super Server
Serial: 0123456789

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 SK Hynix HMAA8GR7AJR4N-XN 64 GB 2 rank 3200

BIOS:
BIOS Vendor: American Megatrends Inc.
BIOS Version: 2.2
BIOS Date: 08/31/2021
BIOS Revision: 5.14

(End of data from sysinfo program)

Compiler Version Notes

C                  | 619.lbm_s(base, peak) 638.imagick_s(base, peak) 644.nab_s(base, peak)

AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin

C++, C, Fortran | 607.cactuBSSN_s(base, peak)

AMD clang version 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /opt/AMD/aocc-compiler-3.0.0/bin

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**Hardware Availability:** Aug-2019  
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### Compiler Version Notes (Continued)

- **Thread model:** posix  
- **InstalledDir:** /opt/AMD/aocc-compiler-3.0.0/bin  
- **AMD clang version:** 12.0.0 (CLANG: AOCC_3.0.0-Build#78 2020_12_10) (based on LLVM Mirror.Version.12.0.0)  
- **Target:** x86_64-unknown-linux-gnu  
- **Thread model:** posix  
- **InstalledDir:** /opt/AMD/aocc-compiler-3.0.0/bin  

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### Base Compiler Invocation

- **C benchmarks:**  
  - clang

- **Fortran benchmarks:**  
  - flang

- **Benchmarks using both Fortran and C:**  
  - flang clang

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Base Compiler Invocation (Continued)

Benchmarks using Fortran, C, and C++:
```
clang++ clang flang
```

Base Portability Flags

```
603.bwaves_s: -DSPEC_LP64
607.cactuBSSN_s: -DSPEC_LP64
619.lbm_s: -DSPEC_LP64
621.wrf_s: -DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64
627.cam4_s: -DSPEC_CASE_FLAG -DSPEC_LP64
628.pop2_s: -DSPEC_CASE_FLAG -Mbyteswapio -DSPEC_LP64
638.imagick_s: -DSPEC_LP64
644.nab_s: -DSPEC_LP64
649.fotonik3d_s: -DSPEC_LP64
654.roms_s: -DSPEC_LP64
```

Base Optimization Flags

C benchmarks:
```
-m64 -mno-adx -mno-sse4a -Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -March=znver3
-fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=5
-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000
-fremap-arrays -mllvm -function-specialize -flv-function-specialization
-mllvm -enable-gvn-hoist -mllvm -global-vectorize-slp=true
-mllvm -enable-lcm-vrp -mllvm -reduce-array-computations=3 -z muldefs
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc
-lflang -lflangrti
```

Fortran benchmarks:
```
-m64 -mno-adx -mno-sse4a -Wl,-mllvm -Wl,-enable-X86-prefetching
-Wl,-mllvm -Wl,-enable-lcm-vrp -Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Hz,1,0x1 -O3
-march=znver3 -fveclib=AMDLIBM -ffast-math -Mrecursive
-mllvm -fuse-tile-inner-loop -funroll-loops
-mllvm -extra-vectorizer-passes -mllvm -lslr-in-nested-loop
```

(Continued on next page)
Base Optimization Flags (Continued)

Fortran benchmarks (continued):
-`-mllvm -enable-licm-vrp -mllvm -reduce-array-computations=3`
-`-mllvm -global-vectorize-slp=true -z muldefs -DSPEC_OPENMP -fopenmp`
-`-fopenmp=libomp -lomp -lmadlibm -ljemalloc -lflang -lflangrti`

Benchmarks using both Fortran and C:
-`-m64 -mno-adx -mno-sse4a -W1,-mllvm -W1,-enable-X86-prefetching`
-`-W1,-mllvm -W1,-enable-licm-vrp -W1,-mllvm -W1,-region-vectorize`
-`-W1,-mllvm -W1,-function-specialize`
-`-W1,-mllvm -W1,-align-all-nofallthru-blocks=6`
-`-W1,-mllvm -W1,-reduce-array-computations=3 -O3 -march=x86-64`
-`-fvecclib=AMDLIBM -ffast-math -flto -fstruct-layout=5`
-`-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000`
-`-fremap-arrays -mllvm -function-specialize -flv-function-specialization`
-`-mllvm -enable-gvn-hoist -mllvm -global-vectorize-slp=true`
-`-mllvm -enable-licm-vrp -mllvm -reduce-array-computations=3 -Hz,1,0x1`
-`-Mrecursive -mllvm -fuse-tile-inner-loop -funroll-loops`
-`-mllvm -extra-vectorizer-passes -mllvm -lsr-in-nested-loop -z muldefs`
-`-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lmadlibm -ljemalloc`
-`-lflang -lflangrti`

Benchmarks using Fortran, C, and C++:
-`-m64 -mno-adx -mno-sse4a -std=c++98`
-`-W1,-mllvm -W1,-x86-use-vzeroupper=false`
-`-W1,-mllvm -W1,-region-vectorize -W1,-mllvm -W1,-function-specialize`
-`-W1,-mllvm -W1,-align-all-nofallthru-blocks=6`
-`-W1,-mllvm -W1,-reduce-array-computations=3 -O3 -march=x86-64`
-`-fvecclib=AMDLIBM -ffast-math -flto -fstruct-layout=5`
-`-mllvm -unroll-threshold=50 -mllvm -inline-threshold=1000`
-`-fremap-arrays -mllvm -function-specialize -flv-function-specialization`
-`-mllvm -enable-gvn-hoist -mllvm -global-vectorize-slp=true`
-`-mllvm -enable-licm-vrp -mllvm -reduce-array-computations=3`
-`-mllvm -enable-partial-unswitch -mllvm -unroll-threshold=100`
-`-flto -mllvm -convert-pow-exp-to-int=false`
-`-Hz,1,0x1 -mrecursive -mllvm -fuse-tile-inner-loop -funroll-loops`
-`-mllvm -lsr-in-nested-loop -z muldefs -DSPEC_OPENMP -fopenmp`
-`-fopenmp=libomp -lomp -lmadlibm -ljemalloc -lflang -lflangrti`

Base Other Flags

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

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Supermicro
A+ Server 2124BT-HNTR (H12DST-B , AMD EPYC 7702)

SPECspeed®2017_fp_base = 199
SPECspeed®2017_fp_peak = 208

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

Test Date: Oct-2021
Hardware Availability: Aug-2019
Software Availability: Sep-2021

Base Other Flags (Continued)

Fortran benchmarks:
-Wno-unused-command-line-argument -Wno-return-type

Benchmarks using both Fortran and C:
-Wno-unused-command-line-argument -Wno-return-type

Benchmarks using Fortran, C, and C++:
-Wno-unused-command-line-argument -Wno-return-type

Peak Compiler Invocation

C benchmarks:
clang

Fortran benchmarks:
flang

Benchmarks using both Fortran and C:
flang clang

Benchmarks using Fortran, C, and C++:
clang++ clang flang

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
619.lbm_s: basepeak = yes
638.imagick_s: basepeak = yes
644.nab_s: basepeak = yes

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Peak Optimization Flags (Continued)

Fortran benchmarks:

603.bwaves_s: basepeak = yes

649.fotonik3d_s: basepeak = yes

654.roms_s: -m64 -mno-adx -mno-sse4a
-Wl,-mllvm -Wl,-enable-X86-prefetching
-Wl,-mllvm -Wl,-enable-licm-vrp
-Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver3 -fveclib=AMDLIBM -ffast-math -Mrecursive
-mllvm -reduce-array-computations=3
-mllvm -global-vectorize-slp=true -mllvm -enable-licm-vrp
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm
-ljemalloc -lflang

Benchmarks using both Fortran and C:

621.wrf_s: -m64 -mno-adx -mno-sse4a
-Wl,-mllvm -Wl,-enable-X86-prefetching
-Wl,-mllvm -Wl,-enable-licm-vrp
-Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver3 -fveclib=AMDLIBM -ffast-math -flto
-fstruct-layout=5 -mllvm -unroll-threshold=50
-fremap-arrays -flv-function-specialization
-mllvm -inline-threshold=1000 -mllvm -enable-gvn-hoist
-mllvm -global-vectorize-slp=true
-mllvm -function-specialize -mllvm -enable-licm-vrp
-mllvm -reduce-array-computations=3 -Hz,1,0x1 -O3
-Mrecursive -mllvm -fuse-tile-inner-loop -funroll-loops
-mllvm -extra-vectorizer-passes -mllvm -isr-in-nested-loop
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm
-ljemalloc -lflang

627.cam4_s: -m64 -mno-adx -mno-sse4a
-Wl,-mllvm -Wl,-enable-X86-prefetching
-Wl,-mllvm -Wl,-enable-licm-vrp
-Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver3 -fveclib=AMDLIBM -ffast-math -flto
-fstruct-layout=5 -mllvm -unroll-threshold=50
Supermicro
A+ Server 2124BT-HNTR
(H12DST-B, AMD EPYC 7702)

SPECspeed®2017_fp_base = 199
SPECspeed®2017_fp_peak = 208

Peak Optimization Flags (Continued)

627.cam4_s (continued):
-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
-M recursive
-DSPEC_OPENMP
-fopenmp
-fopenmp=libomp
-llomp
-lamdllibm
-ljemalloc
-lflang

628.pop2_s: Same as 627.cam4_s

Benchmarks using Fortran, C, and C++:
607.cactuBSSN_s: basepeak = yes

Peak Other Flags

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

Fortran benchmarks:
-Wno-unused-command-line-argument
-Wno-return-type

Benchmarks using both Fortran and C:
-Wno-unused-command-line-argument
-Wno-return-type

Benchmarks using Fortran, C, and C++:
-Wno-unused-command-line-argument
-Wno-return-type

The flags files that were used to format this result can be browsed at

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Supermicro-Platform-Settings-V1.2-Rome-revC.xml

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