## SPEC CPU®2017 Integer Speed Result

**Dell Inc.**  
PowerEdge R6515 (AMD EPYC 7313P 16-Core Processor)

**SPECspeed®2017_int_base = 12.4**  
**SPECspeed®2017_int_peak = 12.4**

<table>
<thead>
<tr>
<th>Thread</th>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed®2017_int_base</th>
<th>SPECspeed®2017_int_peak</th>
</tr>
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<tbody>
<tr>
<td>16</td>
<td>perlbench_s</td>
<td>1</td>
<td>7.34</td>
<td>13.2</td>
</tr>
<tr>
<td>16</td>
<td>gcc_s</td>
<td>1</td>
<td>13.4</td>
<td>20.7</td>
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<tr>
<td>16</td>
<td>mcf_s</td>
<td>1</td>
<td>8.22</td>
<td>20.8</td>
</tr>
<tr>
<td>16</td>
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<td>1</td>
<td>8.20</td>
<td>14.4</td>
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<tr>
<td>16</td>
<td>xalancbmk_s</td>
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<td>17.3</td>
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<td>16</td>
<td>x264_s</td>
<td>1</td>
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<td>17.3</td>
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<tr>
<td>16</td>
<td>deepsjeng_s</td>
<td>1</td>
<td>6.33</td>
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<tr>
<td>16</td>
<td>leela_s</td>
<td>1</td>
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<td>23.6</td>
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<tr>
<td>16</td>
<td>exchange2_s</td>
<td>1</td>
<td>5.88</td>
<td>22.9</td>
</tr>
<tr>
<td>16</td>
<td>xz_s</td>
<td>1</td>
<td>22.9</td>
<td>29.9</td>
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</tbody>
</table>

### Hardware

- **CPU Name:** AMD EPYC 7313P  
- **Max MHz:** 3700  
- **Nominal:** 3000  
- **Enabled:** 16 cores, 1 chip  
- **Orderable:** 1 chip  
- **Cache L1:** 32 KB I + 32 KB D on chip per core  
- **L2:** 512 KB I+D on chip per core  
- **L3:** 128 MB I+D on chip per chip, 32 MB shared / 4 cores  
- **Other:** None  
- **Memory:** 1 TB (8 x 128 GB 4Rx4 PC4-32000AA-L)  
- **Storage:** 128 GB on tmpfs  
- **Other:** None

### Software

- **OS:** Red Hat Enterprise Linux 8.3 (Ootpa)  
- **Compiler:** C/C++/Fortran: Version 3.0.0 of AOCC  
- **Parallel:** Yes  
- **Firmware:** Version 2.2.4 released Apr-2021  
- **File System:** tmpfs  
- **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 and OS 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>Threads</th>
<th>Seconds</th>
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<th>Seconds</th>
<th>Ratio</th>
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<td>301</td>
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<td>620.omnetpp_s</td>
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<td>8.25</td>
<td>199</td>
<td>8.20</td>
<td>1</td>
<td>199</td>
<td>8.20</td>
<td>195</td>
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<td>623.xalancbmk_s</td>
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<td></td>
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<tr>
<td>648.exchange2_s</td>
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<td>23.7</td>
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<td>657.xz_s</td>
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<td>23.0</td>
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<td>22.9</td>
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<td>22.9</td>
<td>270</td>
<td>22.9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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>

'echo 8 > /proc/sys/vm/dirty_ratio' run as root to limit dirty cache to 8% of memory.
'echo 1 > /proc/sys/vm/swappiness' run as root to limit swap usage to minimum necessary.
'echo 1 > /proc/sys/vm/zone_reclaim_mode' run as root to free node-local memory and avoid remote memory usage.
'sync; echo 3 > /proc/sys/vm/drop_caches' run as root to reset filesystem caches.
'sysctl -w kernel.randomize_va_space=0' run as root to disable address space layout randomization (ASLR) to reduce run-to-run variability.

(Continued on next page)
### 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:
- GOMP_CPU_AFFINITY = "0-15"
- LD_LIBRARY_PATH = 
  
  
  "/mnt/ramdisk/cpu2017-1.1.7-aocc300/amd_speed_aocc300_milan_B_lib/64;/mnt/ramdisk/cpu2017-1.1.7-aocc300/amd_speed_aocc300_milan_B_lib/32;"
- MALLOC_CONF = "retain:true"
- OMP_DYNAMIC = "false"
- OMP_SCHEDULE = "static"
- OMP_STACKSIZE = "128M"
- OMP_THREAD_LIMIT = "16"

Environment variables set by runcpu during the 600.perlbench_s peak run:
- GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 602.gcc_s peak run:
- GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 605.mcf_s peak run:
- GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 620.omnetpp_s peak run:
- GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 623.xalancbmk_s peak run:
- GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 625.x264_s peak run:
- GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 631.deepsjeng_s peak run:
- GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 641.leela_s peak run:
- GOMP_CPU_AFFINITY = "0"

Environment variables set by runcpu during the 648.exchange2_s peak run:
- GOMP_CPU_AFFINITY = "0"

(Continued on next page)
SPEC CPU®2017 Integer Speed Result

Dell Inc.  
PowerEdge R6515 (AMD EPYC 7313P 16-Core Processor)  

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<tbody>
<tr>
<td>CPU2017 License: 55</td>
<td>Test Date: May-2021</td>
</tr>
<tr>
<td>Test Sponsor: Dell Inc.</td>
<td>Hardware Availability: Apr-2021</td>
</tr>
<tr>
<td>Tested by: Dell Inc.</td>
<td>Software Availability: Mar-2021</td>
</tr>
</tbody>
</table>

Environment Variables Notes (Continued)

Environment variables set by runcpu during the 657.xz_s peak run:
GOMP_CPU_AFFINITY = "0-15"

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

Benchmark run from a 128 GB ramdisk created with the cmd: "mount -t tmpfs -o size=128G tmpfs /mnt/ramdisk"

Platform Notes

BIOS settings:

- Logical processor : Disabled
- L3 Cache as NUMA Domain : Enabled
- Virtualization Technology : Disabled
- DRAM Refresh Delay : Performance
- System Profile : Custom
  - CPU Power Management : Maximum Performance
  - Memory Patrol Scrub : Disabled
  - PCI ASPM L1 Link
  - Power Management : Disabled

Sysinfo program /mnt/ramdisk/cpu2017-1.1.7-aocc300/bin/sysinfo
Rev: r6538 of 2020-09-24 e8664e66d2d7080afeaa89d4b38e2f1c
running on rhel-8-3-amd Wed May 12 05:24:32 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 7313P 16-Core Processor

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

```
1  "physical id"s (chips)
16 "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 : 16
siblings : 16
physical 0: cores 0 1 4 5 6 7 8 9 10 11 12 13 14 15
```

From lscpu:
```
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 16
On-line CPU(s) list: 0-15
Thread(s) per core: 1
Core(s) per socket: 16
Socket(s): 1
NUMA node(s): 4
Vendor ID: AuthenticAMD
CPU family: 25
Model: 1
Model name: AMD EPYC 7313P 16-Core Processor
Stepping: 1
CPU MHz: 1889.479
BogoMIPS: 5989.05
Virtualization: AMD-V
L1d cache: 32K
L1i cache: 32K
L2 cache: 512K
L3 cache: 32768K
NUMA node0 CPU(s): 0,4,8,12
NUMA node1 CPU(s): 1,5,9,13
NUMA node2 CPU(s): 2,6,10,14
NUMA node3 CPU(s): 3,7,11,15
Flags: fpu vme de pse tsc msr pae mce cmov pat pse36 clflush mmx xsave ssse3 sse2 ht syscall nx mmxext fxsr opt pdpe1gb rdtscp lm constant_tsc rep_good nopl nonstop_tsc cpuid extd_apicid aperfmpref 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 osfw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpxtest perfctr_llc mwaitx cpb cat_l3 cdp_l3 invpcid_single hw_pstate sme ssbd mba sev ibrs ibp bts mmmcall fbga24 mni x2apic movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch osfw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpxtest perfctr_llc mwaitx cpb cat_l3 cdp_l3 invpcid_single hw_pstate sme ssbd mba sev ibrs ibp bts mmmcall fbga24 mni x2apic movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch osfw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpxtest perfctr_llc mwaitx cpb cat_l3 cdp_l3 invpcid_single hw_pstate sme ssbd mba sev ibrs ibp bts mmmcall fbga24 mni x2apic movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch osfw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpxtest perfctr_llc mwaitx cpb cat_l3 cdp_l3 invpcid_single hw_pstate sme ssbd mba sev ibrs ibp bts mmmcall fbga24 mni x2apic movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch osfw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpxtest perfctr_llc mwaitx cpb cat_l3 cdp_l3 invpcid_single hw_pstate sme ssbd mba sev ibrs ibp bts mmmcall fbga24 mni x2apic movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch osfw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpxtest perfctr_llc mwaitx cpb cat_l3 cdp_l3 invpcid_single hw_pstate sme ssbd mba sev ibrs ibp bts mmmcall fbga24 mni x2apic movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch osfw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpxtest perfctr_llc mwaitx cpb cat_l3 cdp_l3 invpcid_single hw_pstate sme ssbd mba sev ibrs ibp bts mmmcall fbga24 mni x2apic movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch osfw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpxtest perfctr_llc mwaitx cpb cat_l3 cdp_l3 invpcid_single hw_pstate sme ssbd mba sev ibrs ibp bts mmmcall fbga24 mni x2apic movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch osfw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpxtest perfctr_llc mwaitx cpb cat_l3 cdp_l3 invpcid_single hw_pstate sme ssbd mba sev ibrs ibp bts mmmcall fbga24 mni x2apic movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch osfw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpxtest perfctr_llc mwaitx cpb cat_l3 cdp_l3 invpcid_single hw_pstate sme ssbd mba sev ibrs ibp bts mmmcall fbga24 mni x2apic movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch osfw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpxtest perfctr_llc mwaitx cpb cat_l3 cdp_l3 invpcid_single hw_pstate sme ssbd mba sev ibrs ibp bts mmmcall fbga24 mni x2apic movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch osfw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpxtest perfctr_llc mwaitx cpb cat_l3 cdp_l3 invpcid_single hw_pstate sme ssbd mba sev ibrs ibp bts mmmcall fbga24 mni x2apic movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch osfw ibs skinit wdt tce topoext perfctr_core perfctr_nb bpxtest perfctr_llc mwaitx cpb cat_l3 cdp_l3 invpcid_single hw_pstate sme ssbd mba sev ibrs ibp bts mmmcall fbga24 mni x2apic movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_leg...```

(Continued on next page)

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The platform notes continue with detailed specifications and characteristics of the hardware and software setup. The processor is identified as AMD EPYC 7313P 16-Core Processor, and various configurations and features are highlighted, including clock speeds, cache sizes, and architectural capabilities. The notes also provide insights into the system’s architecture and its components, such as cache levels (L1d, L1i, L2, L3) and NUMA nodes, which are crucial for performance optimization in multi-core systems.

The concluding part of the platform notes suggests a continuation on the next page, indicating that there is more information to be provided. This indicates an extensive report or documentation that goes beyond the scope of this page, offering detailed insights into the system’s performance capabilities and configurations.

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Page 5  
Standard Performance Evaluation Corporation (info@spec.org)  
https://www.spec.org/
Dell Inc.
PowerEdge R6515 (AMD EPYC 7313P 16-Core Processor)

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Copyright 2017-2021 Standard Performance Evaluation Corporation

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CPU2017 License: 55
Test Sponsor: Dell Inc.
Test Date: May-2021
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Software Availability: Mar-2021

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: 4 nodes (0-3)
  node 0 cpus: 0 4 8 12
  node 0 size: 257589 MB
  node 0 free: 253561 MB
  node 1 cpus: 1 5 9 13
  node 1 size: 258016 MB
  node 1 free: 257774 MB
  node 2 cpus: 2 6 10 14
  node 2 size: 258024 MB
  node 2 free: 257693 MB
  node 3 cpus: 3 7 11 15
  node 3 size: 245875 MB
  node 3 free: 245674 MB
  node distances:
    node 0 1 2 3
    0:  10 11 11 11
    1: 11 10 11 11
    2: 11 11 11 11
    3: 11 11 11 10

From /proc/meminfo
  MemTotal:       1044073156 kB
  HugePages_Total:       0
  Hugepagesize:       2048 kB

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

From /etc/*release* /etc/*version*
  os-release:
    NAME="Red Hat Enterprise Linux"
    VERSION="8.3 (Ootpa)"
    ID="rhel"
    ID_LIKE="fedora"
    VERSION_ID="8.3"
    PLATFORM_ID="platform:el8"
    PRETTY_NAME="Red Hat Enterprise Linux 8.3 (Ootpa)"
    ANSI_COLOR="0;31"
  redhat-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
  system-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
  system-release-cpe: cpe:/o:redhat:enterprise_linux:8.3:ga

(Continued on next page)
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---

Platform Notes (Continued)

uname -a:
Linux rhel-8-3-amd 4.18.0-240.el8.x86_64 #1 SMP Wed Sep 23 05:13:10 EDT 2020 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: disabled, RSB filling
CVE-2020-0543 (Special Register Buffer Data Sampling): Not affected
CVE-2019-11135 (TSX Asynchronous Abort): Not affected

run-level 3 May 12 05:08

SPEC is set to: /mnt/ramdisk/cpu2017-1.1.7-aocc300
Filesystem     Type      Size  Used  Avail Use% Mounted on
tmpfs          tmpfs     128G   3.7G  125G    3%  /mnt/ramdisk

From /sys/devices/virtual/dmi/id
Vendor: Dell Inc.
Product: PowerEdge R6515
Product Family: PowerEdge
Serial: HTDRG13

Additional information from dmidecode 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:
8x 802C8632802C 72ASS16G72LZ-3G2B3 128 GB 4 rank 3200
8x Not Specified Not Specified

BIOS:
BIOS Vendor: Dell Inc.
BIOS Version: 2.2.4
BIOS Date: 04/12/2021
BIOS Revision: 2.2

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

(End of data from sysinfo program)

---

### Compiler Version Notes

<table>
<thead>
<tr>
<th>Language</th>
<th>Base Benchmark(s)</th>
<th>Peak Benchmark(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>perlbench_s(base, peak)</td>
<td>gcc_s(base, peak)</td>
</tr>
<tr>
<td>C++</td>
<td>omnetpp_s(base, peak)</td>
<td>xalancbmk_s(base, peak)</td>
</tr>
<tr>
<td>Fortran</td>
<td>exchange2_s(base, peak)</td>
<td></td>
</tr>
</tbody>
</table>

**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

---

*Base Compiler Invocation*

**C benchmarks:**
- clang

**C++ benchmarks:**
- clang++
Dell Inc.

PowerEdge R6515 (AMD EPYC 7313P 16-Core Processor)

SPECspeed®2017_int_base = 12.4
SPECspeed®2017_int_peak = 12.4

Base Compiler Invocation (Continued)

Fortran benchmarks:
flang

Base Portability Flags

600.perlbench_s: -DSPEC_LINUX_X64 -DSPEC_LP64
602.gcc_s: -DSPEC_LP64
605.mcf_s: -DSPEC_LP64
620.omnetpp_s: -DSPEC_LP64
623.xalancbmk_s: -DSPEC_LINUX -DSPEC_LP64
625.x264_s: -DSPEC_LP64
631.deepsjeng_s: -DSPEC_LP64
641.leela_s: -DSPEC_LP64
648.exchange2_s: -DSPEC_LP64
657.xz_s: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-m64 -mno-adx -mno-sse4a -Wl,-allow-multiple-definition
-Wl,-mllvm -Wl,-enable-licm-vrp -Wl,-mllvm -Wl,-region-vectorize
-Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallback-thru-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-licm-vrp -mllvm -reduce-array-computations=3 -z muldefs
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdllibm -ljemalloc
-lflang -lflangrti

C++ benchmarks:
-m64 -std=c++98 -mno-adx -mno-sse4a
-Wl,-mllvm -Wl,-do-block-reorder=aggressive
-Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-function-specialize
-Wl,-mllvm -Wl,-align-all-nofallback-thru-blocks=6
-Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
-fveclib=AMDLIBM -ffast-math -flto -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

(Continued on next page)
**Dell Inc.**

**PowerEdge R6515 (AMD EPYC 7313P 16-Core Processor)**

**SPEC CPU®2017 Integer Speed Result**

| SPECspeed®2017_int_base = 12.4 | SPECspeed®2017_int_peak = 12.4 |

**CPU2017 License:** 55  
**Test Sponsor:** Dell Inc.  
**Test Date:** May-2021  
**Tested by:** Dell Inc.  
**Hardware Availability:** Apr-2021  
**Software Availability:** Mar-2021

### Base Optimization Flags (Continued)

C++ benchmarks (continued):

- `-mllvm -extra-vectorizer-passes`  
- `-mllvm -reduce-array-computations=3`  
- `-mllvm -global-vectorize-slp=true`  
- `-mllvm -convert-pow-exp-to-int=false`  
- `-z muldefs`  
- `-mllvm -do-block-reorder=aggressive`  
- `-fvirtual-function-elimination`  
- `-fvisibility=hidden`  
- `-DSPEC_OPENMP`  
- `-fopenmp`  
- `-fopenmp=libomp`  
- `-lomp`  
- `-lamdlibm`  
- `-ljemalloc`  
- `-lflang`  
- `-lflangrti`

Fortran benchmarks:

- `-m64`  
- `-mno-adx`  
- `-mno-sse4a`  
- `-Wl,-mllvm -W1,-mllvm -Wl,-inline-recursion=4`  
- `-Wl,-mllvm -Wl,-lsr-in-nested-loop -Wl,-mllvm -Wl,-enable-iv-split`  
- `-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`  
- `-fvecclib=AMDLIBM`  
- `-ffast-math`  
- `-flto`  
- `-z muldefs`  
- `-mllvm -unroll-aggressive`  
- `-mllvm -unroll-threshold=150`  
- `-DSPEC_OPENMP`  
- `-fopenmp`  
- `-fopenmp=libomp`  
- `-lomp`  
- `-lamdlibm`  
- `-ljemalloc`  
- `-lflang`  
- `-lflangrti`

### Base Other Flags

C benchmarks:

- `-Wno-unused-command-line-argument`  
- `-Wno-return-type`

C++ benchmarks:

- `-Wno-unused-command-line-argument`  
- `-Wno-return-type`

Fortran benchmarks:

- `-Wno-return-type`

### Peak Compiler Invocation

C benchmarks:

- `clang`

C++ benchmarks:

- `clang++`

Fortran benchmarks:

- `flang`
Dell Inc.

PowerEdge R6515 (AMD EPYC 7313P 16-Core Processor)

SPEC speed® 2017 Int Base = 12.4
SPEC speed® 2017 Int Peak = 12.4

CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: May-2021
Hardware Availability: Apr-2021
Software Availability: Mar-2021

Peak Portability Flags
Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
-m64 -mno-adx -mno-sse4a -Wl,-allow-multiple-definition
-Wl,-mlllvm -Wl,-enable-licm-vrp -Wl,-mlllvm -Wl,-function-specialize
-Wl,-mlllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mlllvm -Wl,-reduce-array-computations=3 -Ofast -march=znver3
-fveclib=AMDLIBM -ffast-math -flto -fstruct-layout=5
-mlllvm -unroll-threshold=50 -fremap-arrays -flv-function-specialization
-mlllvm -inline-threshold=1000 -mlllvm -enable-gvn-hoist
-mlllvm -global-vectorize-slp=true -mlllvm -function-specialize
-mlllvm -enable-licm-vrp -mlllvm -reduce-array-computations=3
-DSPEC_OPENMP -fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc
-llvm

C++ benchmarks:
-m64 -std=gnu++98 -mno-adx -mno-sse4a
-Wl,-mlllvm -Wl,-do-block-reorder-aggressive
-Wl,-mlllvm -Wl,-function-specialize
-Wl,-mlllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mlllvm -Wl,-reduce-array-computations=3 -Ofast -march=znver3
-fveclib=AMDLIBM -ffast-math -flto -finline-aggressive
-mlllvm -unroll-threshold=100 -flv-function-specialization
-mlllvm -enable-licm-vrp -mlllvm -reroll-loops
-mlllvm -aggressive-loop-unswith -mlllvm -reduce-array-computations=3
-mlllvm -global-vectorize-slp=true -mlllvm -do-block-reorder-aggressive
-fvirtual-function-elimination -fvisibility=hidden -DSPEC_OPENMP
-fopenmp -fopenmp=libomp -lomp -lamdlibm -ljemalloc -llvm

Fortran benchmarks:
-m64 -mno-adx -mno-sse4a -Wl,-mlllvm -Wl,-inline-recursion=4
-Wl,-mlllvm -Wl,-lsr-in-nested-loop -Wl,-mlllvm -Wl,-enable-iv-split
-Wl,-mlllvm -Wl,-function-specialize
-Wl,-mlllvm -Wl,-align-all-nofallthru-blocks=6
-Wl,-mlllvm -Wl,-reduce-array-computations=3 -O3 -march=znver3
-fveclib=AMDLIBM -ffast-math -flto -mlllvm -unroll-aggressive
-mlllvm -unroll-threshold=150 -DSPEC_OPENMP -fopenmp -fopenmp=libomp
-lomp -lamdlibm -ljemalloc -llvm
SPEC CPU®2017 Integer Speed Result

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Dell Inc.
PowerEdge R6515 (AMD EPYC 7313P 16-Core Processor)

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CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: May-2021
Hardware Availability: Apr-2021
Software Availability: Mar-2021

Peak Other Flags

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

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

Fortran benchmarks:
-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:

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Tested with SPEC CPU®2017 v1.1.7 on 2021-05-12 06:24:31-0400.
Originally published on 2021-06-08.