**SPEC CPU®2017 Integer Rate Result**

**Dell Inc.**

PowerEdge C6525 (AMD EPYC 7532, 2.40 GHz)

**CPU2017 License:** 55  
**Test Sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Test Date:** Nov-2019  
**Hardware Availability:** Feb-2020  
**Software Availability:** Aug-2019

**SPECrate®2017_int_base = 435**  
**SPECrate®2017_int_peak = 463**

### Hardware

- **CPU Name:** AMD EPYC 7532  
- **Max MHz:** 3300  
- **Nominal:** 2400  
- **Enabled:** 64 cores, 2 chips, 2 threads/core  
- **Orderable:** 1.2 chips  
- **Cache L1:** 32 KB I + 32 KB D on chip per core  
- **Cache L2:** 512 KB I+D on chip per core  
- **Cache L3:** 256 MB I+D on chip per chip, 16 MB shared / 2 cores  
- **Other:** None  
- **Memory:** 512 GB (16 x 32 GB 2Rx4 PC4-3200AA-R)  
- **Storage:** 1 x 480 GB SATA SSD  
- **Other:** None

### Software

- **OS:** SUSE Linux Enterprise Server 15 SP1  
  kernel 4.12.14-195-default  
- **Compiler:** C/C++/Fortran: Version 2.0.0 of AOCC  
- **Parallel:** No  
- **Firmware:** Version 1.2.2 released Nov-2019  
- **File System:** xfs  
- **System State:** Run level 3 (multi-user)  
- **Base Pointers:** 64-bit  
- **Peak Pointers:** 32/64-bit  
- **Other:** jemalloc: jemalloc memory allocator library v5.2.0  
- **Power Management:** BIOS set to prefer performance at the cost of additional power usage.

---

**Copies**

<table>
<thead>
<tr>
<th>Benchmark</th>
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</tr>
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<tbody>
<tr>
<td>500.perlbench_r</td>
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<td>525.x264_r</td>
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<tr>
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<tr>
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**SPECrate®2017_int_base (435)**  
**SPECrate®2017_int_peak (463)**
Dell Inc.  
PowerEdge C6525 (AMD EPYC 7532, 2.40 GHz)  

**Results Table**

<table>
<thead>
<tr>
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<td>557.xz_r</td>
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<td>128</td>
<td>503</td>
<td>275</td>
<td>503</td>
</tr>
</tbody>
</table>

**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  
'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>  

Set dirty_ratio=8 to limit dirty cache to 8% of memory  
Set swappiness=1 to swap only if necessary  
Set zone_reclaim_mode=1 to free local node memory and avoid remote memory  
sync then drop_caches=3 to reset caches before invoking runcpu  

dirty_ratio, swappiness, zone_reclaim_mode and drop_caches were all set using privileged echo (e.g. echo 1 > /proc/sys/vm/swappiness).

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

Transparent huge pages set to 'always' for this run (OS default)

Environment Variables Notes

Environment variables set by runcpu before the start of the run:

LD_LIBRARY_PATH =
"/root/cpu2017-1.1.0/amd_rate_aocc200_rome_C_lib/64;/root/cpu2017-1.1.0/
 amd_rate_aocc200_rome_C_lib/32:"" 

MALLOCONF = "retain: true"

General Notes

Binaries were compiled on a system with 2x AMD EPYC 7601 CPU + 512GB Memory using Fedora 26

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 v9.1.0 in Ubuntu 19.04 with -O3 -znver2 -flto
jemalloc 5.2.0 is available here:
https://github.com/jemalloc/jemalloc/releases/download/5.2.0/jemalloc-5.2.0.tar.bz2

Platform Notes

BIOS settings:
NUMA Nodes Per Socket set to 4
CCX as NUMA Domain set to Enabled
System Profile set to Custom
CPU Power Management set to Maximum Performance
Memory Frequency set to Maximum Performance
Turbo Boost Enabled
Cstates set to Enabled
Memory Patrol Scrub Disabled
Memory Refresh Rate set to 1x
PCI ASPM L1 Link Power Management Disabled
Determinism Slider set to Power Determinism
Efficiency Optimized Mode Disabled
Memory Interleaving set to Disabled

Sysinfo program /root/cpu2017-1.1.0/bin/sysinfo

(Continued on next page)
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Platform Notes (Continued)

Rev: r6365 of 2019-08-21 295195f888a3d7edbb1e6e46a485a0011
running on linux-g3ob Fri Dec 13 06:56:34 2019

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 7532 32-Core Processor
 2 "physical id"s (chips)
128 "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 : 32
siblings : 64
physical 0: cores 0 1 4 5 8 9 12 13 16 17 20 21 24 25 28 29 32 33 36 37 40 41 44 45
  48 49 52 53 56 57 60 61
physical 1: cores 0 1 4 5 8 9 12 13 16 17 20 21 24 25 28 29 32 33 36 37 40 41 44 45
  48 49 52 53 56 57 60 61

From lscpu:

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): 128
On-line CPU(s) list: 0-127
Thread(s) per core: 2
Core(s) per socket: 32
Socket(s): 2
NUMA node(s): 32
Vendor ID: AuthenticAMD
CPU family: 23
Model: 49
Model name: AMD EPYC 7532 32-Core Processor
Stepping: 0
CPU MHz: 2395.442
BogoMIPS: 4790.88
Virtualization: AMD-V
L1d cache: 32K
L1i cache: 32K
L2 cache: 512K
L3 cache: 16384K
NUMA node0 CPU(s): 0,1,64,65
NUMA node1 CPU(s): 2,3,66,67
NUMA node2 CPU(s): 4,5,68,69
NUMA node3 CPU(s): 6,7,70,71

(Continued on next page)
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Platform Notes (Continued)

NUMA node4 CPU(s): 8,9,72,73
NUMA node5 CPU(s): 10,11,74,75
NUMA node6 CPU(s): 12,13,76,77
NUMA node7 CPU(s): 14,15,78,79
NUMA node8 CPU(s): 16,17,80,81
NUMA node9 CPU(s): 18,19,82,83
NUMA node10 CPU(s): 20,21,84,85
NUMA node11 CPU(s): 22,23,86,87
NUMA node12 CPU(s): 24,25,88,89
NUMA node13 CPU(s): 26,27,90,91
NUMA node14 CPU(s): 28,29,92,93
NUMA node15 CPU(s): 30,31,94,95
NUMA node16 CPU(s): 32,33,96,97
NUMA node17 CPU(s): 34,35,98,99
NUMA node18 CPU(s): 36,37,100,101
NUMA node19 CPU(s): 38,39,102,103
NUMA node20 CPU(s): 40,41,104,105
NUMA node21 CPU(s): 42,43,106,107
NUMA node22 CPU(s): 44,45,108,109
NUMA node23 CPU(s): 46,47,110,111
NUMA node24 CPU(s): 48,49,112,113
NUMA node25 CPU(s): 50,51,114,115
NUMA node26 CPU(s): 52,53,116,117
NUMA node27 CPU(s): 54,55,118,119
NUMA node28 CPU(s): 56,57,120,121
NUMA node29 CPU(s): 58,59,122,123
NUMA node30 CPU(s): 60,61,124,125
NUMA node31 CPU(s): 62,63,126,127

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
counters tsc reitss nelp pae pse36 np gnu vme pae mce cx8 apic sep mtrr pge mca cmov

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

available: 32 nodes (0-31)
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Platform Notes (Continued)

node 0 cpus: 0 1 64 65
node 0 size: 15676 MB
node 0 free: 15599 MB
node 1 cpus: 2 3 66 67
node 1 size: 16127 MB
node 1 free: 16067 MB
node 2 cpus: 4 5 68 69
node 2 size: 16127 MB
node 2 free: 16066 MB
node 3 cpus: 6 7 70 71
node 3 size: 16126 MB
node 3 free: 16039 MB
node 4 cpus: 8 9 72 73
node 4 size: 16127 MB
node 4 free: 16066 MB
node 5 cpus: 10 11 74 75
node 5 size: 16127 MB
node 5 free: 16075 MB
node 6 cpus: 12 13 76 77
node 6 size: 16127 MB
node 6 free: 16073 MB
node 7 cpus: 14 15 78 79
node 7 size: 16127 MB
node 7 free: 16076 MB
node 8 cpus: 16 17 80 81
node 8 size: 16127 MB
node 8 free: 16045 MB
node 9 cpus: 18 19 82 83
node 9 size: 16127 MB
node 9 free: 16073 MB
node 10 cpus: 20 21 84 85
node 10 size: 16127 MB
node 10 free: 16066 MB
node 11 cpus: 22 23 86 87
node 11 size: 16126 MB
node 11 free: 16062 MB
node 12 cpus: 24 25 88 89
node 12 size: 16127 MB
node 12 free: 15792 MB
node 13 cpus: 26 27 90 91
node 13 size: 16127 MB
node 13 free: 16066 MB
node 14 cpus: 28 29 92 93
node 14 size: 16097 MB
node 14 free: 16025 MB
node 15 cpus: 30 31 94 95
node 15 size: 16114 MB

(Continued on next page)
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Platform Notes (Continued)

```
node 15 free: 16031 MB  
node 16 cpus: 32 33 96 97  
node 16 size: 16127 MB  
node 16 free: 16081 MB  
node 17 cpus: 34 35 98 99  
node 17 size: 16127 MB  
node 17 free: 16076 MB  
node 18 cpus: 36 37 100 101  
node 18 size: 16127 MB  
node 18 free: 16078 MB  
node 19 cpus: 38 39 102 103  
node 19 size: 16126 MB  
node 19 free: 16078 MB  
node 20 cpus: 40 41 104 105  
node 20 size: 16127 MB  
node 20 free: 16059 MB  
node 21 cpus: 42 43 106 107  
node 21 size: 16127 MB  
node 21 free: 16075 MB  
node 22 cpus: 44 45 108 109  
node 22 size: 16127 MB  
node 22 free: 16069 MB  
node 23 cpus: 46 47 110 111  
node 23 size: 16126 MB  
node 23 free: 16075 MB  
node 24 cpus: 48 49 112 113  
node 24 size: 16127 MB  
node 24 free: 16078 MB  
node 25 cpus: 50 51 114 115  
node 25 size: 16127 MB  
node 25 free: 16081 MB  
node 26 cpus: 52 53 116 117  
node 26 size: 16127 MB  
node 26 free: 16082 MB  
node 27 cpus: 54 55 118 119  
node 27 size: 16126 MB  
node 27 free: 16073 MB  
node 28 cpus: 56 57 120 121  
node 28 size: 16127 MB  
node 28 free: 16084 MB  
node 29 cpus: 58 59 122 123  
node 29 size: 16127 MB  
node 29 free: 16078 MB  
node 30 cpus: 60 61 124 125  
node 30 size: 16127 MB  
node 30 free: 16083 MB  
node 31 cpus: 62 63 126 127
```
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spec

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Platform Notes (Continued)

node 31 size: 16124 MB
node 31 free: 16076 MB
node distances:

node 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
20 21 22 23 24 25 26 27 28 29 30 31
0: 10 11 11 11 12 12 12 12 12 12 12 12 12 12 12 12 32 32 32 32
32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
1: 11 10 11 11 12 12 12 12 12 12 12 12 12 12 12 12 32 32 32 32
32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
2: 11 11 10 11 12 12 12 12 12 12 12 12 12 12 12 12 32 32 32 32
32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
3: 11 11 11 10 12 12 12 12 12 12 12 12 12 12 12 12 32 32 32 32
32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
4: 12 12 12 12 10 11 11 11 12 12 12 12 12 12 12 12 32 32 32 32
32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
5: 12 12 12 12 11 10 11 11 12 12 12 12 12 12 12 12 32 32 32 32
32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
6: 12 12 12 12 11 11 10 11 12 12 12 12 12 12 12 12 32 32 32 32
32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
7: 12 12 12 12 11 11 11 10 12 12 12 12 12 12 12 12 32 32 32 32
32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
8: 12 12 12 12 12 12 12 12 12 12 10 11 11 11 11 11 32 32 32 32
32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
9: 12 12 12 12 12 12 12 12 12 12 11 10 11 11 11 11 32 32 32 32
32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
10: 12 12 12 12 12 12 12 12 12 12 11 10 11 11 11 11 32 32 32 32
32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32
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| 21: | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 12 | 12 | 12 | 12 | 12 |
| 11: | 10 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 22: | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 11: | 11 | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 23: | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 11: | 11 | 11 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 24: | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 12: | 12 | 12 | 12 | 10 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 25: | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 12: | 12 | 12 | 12 | 12 | 11 | 10 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 26: | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 12: | 12 | 12 | 12 | 12 | 11 | 11 | 10 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 27: | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 12: | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 11 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| 28: | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 12: | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 10 | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| 29: | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 12: | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 10 | 11 | 11 | 11 | 11 | 11 | 11 |
| 30: | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 12: | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 10 | 11 | 11 | 11 | 11 | 11 |
| 31: | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 | 32 |
| 12: | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 11 | 10 | 11 | 11 | 11 | 10 |

From /proc/meminfo
MemTotal:       527939172 kB
HugePages_Total:       0
Hugepagesize:       2048 kB

From /etc/*release* /etc/*version*
os-release:
NAME="SLES"
VERSION="15-SP1"
VERSION_ID="15.1"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP1"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15:sp1"

uname -a:
Linux linux-g3ob 4.12.14-195-default #1 SMP Tue May 7 10:55:11 UTC 2019 (8fba516)
x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2018-3620 (L1 Terminal Fault): Not affected
Microarchitectural Data Sampling: Not affected

(Continued on next page)
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PowerEdge C6525 (AMD EPYC 7532, 2.40 GHz)

**SPEC CPU®2017 Integer Rate Result**

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

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base</th>
<th>435</th>
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<tbody>
<tr>
<td>SPECrate®2017_int_peak</td>
<td>463</td>
</tr>
</tbody>
</table>

**Test Date:** Nov-2019  
**Hardware Availability:** Feb-2020  
**Software Availability:** Aug-2019

**Platform Notes (Continued)**

- 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: __user pointer sanitization
- CVE-2017-5715 (Spectre variant 2): Mitigation: Full AMD retpoline, IBPB: conditional, IBRS_FW, STIBP: conditional, RSB filling

run-level 3 Dec 13 06:28

SPEC is set to: /root/cpu2017-1.1.0

<table>
<thead>
<tr>
<th>Filesystem</th>
<th>Type</th>
<th>Size</th>
<th>Used</th>
<th>Avail</th>
<th>Use%</th>
<th>Mounted on</th>
</tr>
</thead>
<tbody>
<tr>
<td>/dev/sdb2</td>
<td>xfs</td>
<td>440G</td>
<td>40G</td>
<td>401G</td>
<td>10%</td>
<td>/</td>
</tr>
</tbody>
</table>

From /sys/devices/virtual/dmi/id
- BIOS: Dell Inc. 1.2.2 11/13/2019
- Vendor: Dell Inc.
- Product: PowerEdge C6525
- Product Family: PowerEdge

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:
16x 80AD863280AD HMA84GR7CJR4N-XN 32 GB 2 rank 3200

(End of data from sysinfo program)

**Compiler Version Notes**

```
==============================================================================
C       | 502.gcc_r(peak)
==============================================================================
AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins  
AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)  
Target: i386–unknown-linux-gnu  
Thread model: posix  
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin
```

```
==============================================================================
C       | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak)  
| 525.x264_r(base, peak) 557.xz_r(base, peak)  
==============================================================================
AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins
```

(Continued on next page)
## Compiler Version Notes (Continued)

AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)  
Target: x86_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

---

C       | 502.gcc_r(peak)
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AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins  
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C       | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak)  
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AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)  
Target: x86_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

---

C++     | 523.xalancbmk_r(peak)
---

AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins  
AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)  
Target: i386-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

---

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

AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins  
AOCC_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)  
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(Continued on next page)
## Dell Inc.

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### Compiler Version Notes (Continued)

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<th>C++</th>
<th>523.xalancbmk_r(peak)</th>
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<tr>
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<tr>
<td></td>
<td>AOCCL_2_0_0-Build#191) (based on LLVM AOCC.LLVM.2.0.0.B191.2019_07_19)</td>
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<tr>
<td>Target: i386-unknown-linux-gnu</td>
<td></td>
</tr>
<tr>
<td>Thread model: posix</td>
<td></td>
</tr>
<tr>
<td>InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin</td>
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<td>----------------------------------------------------------------------</td>
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<th>520.omnetpp_r(base, peak) 523.xalancbmk_r(base)</th>
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<tr>
<td></td>
<td>531.deepsjeng_r(base, peak) 541.leela_r(base, peak)</td>
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<td>----------------------------------------------------------------------</td>
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<td>AOCC.LLVM.2.0.0.B191.2019_07_19 clang version 8.0.0 (CLANG: Jenkins</td>
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<tr>
<th>Fortran</th>
<th>548.exchange2_r(base, peak)</th>
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<td>----------------------------------------------------------------------</td>
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### Base Compiler Invocation

C benchmarks:
- clang

C++ benchmarks:
- clang++

Fortran benchmarks:
- flang
SPEC CPU®2017 Integer Rate Result

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CPU2017 License: 55
Test Sponsor: Dell Inc.
Tested by: Dell Inc.
Test Date: Nov-2019
Hardware Availability: Feb-2020
Software Availability: Aug-2019

Base Portability Flags

500.perlbench_r: -DSPEC_LINUX_X64 -DSPEC_LP64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.ommnetpp_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:
- flto -Wl,-mllvm -Wl,-function-specialize
- Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-vector-library=LIBMVEC
- Wl,-mllvm -Wl,-reduce-array-computations=3 -O3 -ffast-math
- march=znver2 -fstruct-layout=3 -mllvm -unroll-threshold=50
- fremap-arrays -mllvm -function-specialize -mllvm -enable-gvn-hoist
- mllvm -reduce-array-computations=3 -mllvm -global-vectorize-slp
- mllvm -vector-library=LIBMVEC -mllvm -inline-threshold=1000
- flv-function-specialization -z muldefs -lmvec -lamdlibm -ljemalloc
- lflang

C++ benchmarks:
- flto -Wl,-mllvm -Wl,-function-specialize
- Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-vector-library=LIBMVEC
- Wl,-mllvm -Wl,-reduce-array-computations=3
- Wl,-mllvm -Wl,-suppress-fmas -O3 -ffast-math -march=znver2
- mllvm -loop-unswitch-threshold=200000 -mllvm -vector-library=LIBMVEC
- mllvm -unroll-threshold=100 -flv-function-specialization
- mllvm -enable-partial-unswitch -z muldefs -lmvec -lamdlibm
- ljemalloc -lflang

Fortran benchmarks:
- flto -Wl,-mllvm -Wl,-function-specialize
- Wl,-mllvm -Wl,-region-vectorize -Wl,-mllvm -Wl,-vector-library=LIBMVEC
- Wl,-mllvm -Wl,-reduce-array-computations=3 -ffast-math
- Wl,-mllvm -Wl,-inline-recursion=4 -Wl,-mllvm -Wl,-lsr-in-nested-loop
- Wl,-mllvm -Wl,-enable-iv-split -O3 -march=znver2 -funroll-loops
- Mrecursive -mllvm -vector-library=LIBMVEC -z muldefs
- mllvm -disable-indvar-simplify -mllvm -unroll-aggressive
- mllvm -unroll-threshold=150 -lmvec -lamdlibm -ljemalloc -lflang
# SPEC CPU®2017 Integer Rate Result

## Dell Inc.

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### Peak Compiler Invocation

**C benchmarks:**
- clang

**C++ benchmarks:**
- clang++

**Fortran benchmarks:**
- flang

### Peak Portability Flags

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>perlbench</td>
<td><code>-DSPEC_LINUX_X64 -DSPEC_LP64</code></td>
</tr>
<tr>
<td>gcc</td>
<td><code>-D_FILE_OFFSET_BITS=64</code></td>
</tr>
<tr>
<td>mcf</td>
<td><code>-DSPEC_LP64</code></td>
</tr>
<tr>
<td>omnetpp</td>
<td><code>-DSPEC_LP64</code></td>
</tr>
<tr>
<td>xalancbmk</td>
<td><code>-DSPEC_LINUX -D_FILE_OFFSET_BITS=64</code></td>
</tr>
<tr>
<td>x264</td>
<td><code>-DSPEC_LP64</code></td>
</tr>
<tr>
<td>deepsjeng</td>
<td><code>-DSPEC_LP64</code></td>
</tr>
<tr>
<td>leela</td>
<td><code>-DSPEC_LP64</code></td>
</tr>
<tr>
<td>exchange2</td>
<td><code>-DSPEC_LP64</code></td>
</tr>
<tr>
<td>xz</td>
<td><code>-DSPEC_LP64</code></td>
</tr>
</tbody>
</table>

### Peak Optimization Flags

**C benchmarks:**
- `-flto -Wl,-mllvm -Wl,-function-specialize`  
- `-Wl,-mllvm -Wl,-region-vectorize`  
- `-Wl,-mllvm -Wl,-vector-library=LIBMVEC`  
- `-Wl,-mllvm -Wl,-reduce-array-computations=3`  
- `-fprofile-instr-generate(pass 1)`  
- `-fprofile-instr-use(pass 2) -Ofast -march=xnver2`  
- `-mno-sse4a -fstruct-layout=5`  
- `-mllvm -vectorize-memory-aggressively`  
- `-mllvm -function-specialize -mllvm -enable-gvn-hoist`  
- `-mllvm -unroll-threshold=50 -fremap-arrays`  
- `-mllvm -vector-library=LIBMVEC`  
- `-mllvm -reduce-array-computations=3`  
- `-mllvm -global-vectorize-slp -mllvm -inline-threshold=1000`  
- `-flv-function-specialization -lmvec -lamdlibm -1jemalloc`  
- `-lflang`  

*(Continued on next page)*
Dell Inc.

PowerEdge C6525 (AMD EPYC 7532, 2.40 GHz)

SPEC CPU®2017 Integer Rate Result

Copyright 2017-2020 Standard Performance Evaluation Corporation

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CPU2017 License: 55
Test Sponsor: Dell Inc.
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Test Date: Nov-2019
Hardware Availability: Feb-2020
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Peak Optimization Flags (Continued)

502.gcc_r: -m32 -flto -Wl,-mllvm -Wl,-function-specialize
-01,-mllvm -Wl,-region-vectorize
-01,-mllvm -Wl,-vector-library=LIBMVEC
-march=znver2 -mno-sse4a -fstruct-layout=5
-mllvm -vectorize-memory-aggressively
-mllvm -function-specialize -mllvm -enable-gvn-hoist
-mllvm -unroll-threshold=50 -fremap-arrays
-mllvm -vector-library=LIBMVEC
-mllvm -reduce-array-computations=3
-mllvm -global-vectorize-slp -mllvm -inline-threshold=1000
-flv-function-specialization -flvmf -inline -ljemalloc

505.mcf_r: -flto -Wl,-mllvm -Wl,-function-specialize
-01,-mllvm -Wl,-region-vectorize
-01,-mllvm -Wl,-vector-library=LIBMVEC
-march=znver2 -mno-sse4a -fstruct-layout=5
-mllvm -vectorize-memory-aggressively
-mllvm -function-specialize -mllvm -enable-gvn-hoist
-mllvm -unroll-threshold=50 -fremap-arrays
-mllvm -vector-library=LIBMVEC
-mllvm -reduce-array-computations=3
-mllvm -global-vectorize-slp -mllvm -inline-threshold=1000
-flv-function-specialization -flvmf -inline -ljemalloc

525.x264_r: Same as 500.perlbench_r

557.xz_r: basepeak = yes

C++ benchmarks:

520.omnetpp_r: basepeak = yes

523.xalancbmk_r: -m32 -flto -Wl,-mllvm -Wl,-function-specialize
-01,-mllvm -Wl,-region-vectorize
-01,-mllvm -Wl,-vector-library=LIBMVEC
-march=znver2 -flv-function-specialization
-mllvm -unroll-threshold=100
-mllvm -enable-partial-unswitch
-mllvm -loop-unswitch-threshold=200000
-mllvm -vector-library=LIBMVEC
-mllvm -inline-threshold=1000 -ljemalloc

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

531.deepsjeng_r: -flto -Wl,-mlllvm -Wl,-function-specialize
-Wl,-mlllvm -Wl,-region-vectorize
-Wl,-mlllvm -Wl,-vector-library=LIBMVEC
-Wl,-mlllvm -Wl,-reduce-array-computations=3 -Ofast
-march=znver2 -flv-function-specialization
-mlllvm -unroll-threshold=100
-mlllvm -enable-partial-unswitch
-mlllvm -loop-unswitch-threshold=200000
-mlllvm -vector-library=LIBMVEC
-mlllvm -inline-threshold=1000 -lmvec -lamdlibm -ljemalloc
-lflang

541.leela_r: basepeak = yes

Fortran benchmarks:

548.exchange2_r: basepeak = yes

Peak Other Flags

C benchmarks:

502.gcc_r: -L/sppo/dev/cpu2017/v110/amd_rate_aocc200_rome_C_lib/32

C++ benchmarks:

523.xalancbmk_r: -L/sppo/dev/cpu2017/v110/amd_rate_aocc200_rome_C_lib/32

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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