Dell Inc. PowerEdge R7515 (AMD EPYC 7232P, 3.10 GHz)

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

Threads

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Threads</th>
<th>SPECspeed\textsuperscript{2017_int_base}</th>
<th>SPECspeed\textsuperscript{2017_int_peak}</th>
</tr>
</thead>
<tbody>
<tr>
<td>perlbench_s</td>
<td>8</td>
<td>4.12</td>
<td>4.53</td>
</tr>
<tr>
<td>gcc_s</td>
<td>8</td>
<td>8.15</td>
<td>13.6</td>
</tr>
<tr>
<td>mcf_s</td>
<td>8</td>
<td>3.98</td>
<td>3.98</td>
</tr>
<tr>
<td>omnetpp_s</td>
<td>8</td>
<td>7.99</td>
<td>9.03</td>
</tr>
<tr>
<td>xalancbmk_s</td>
<td>8</td>
<td>4.54</td>
<td>4.63</td>
</tr>
<tr>
<td>x264_s</td>
<td>8</td>
<td>4.02</td>
<td>4.96</td>
</tr>
<tr>
<td>deepsjeng_s</td>
<td>8</td>
<td>11.8</td>
<td>11.9</td>
</tr>
<tr>
<td>leela_s</td>
<td>8</td>
<td>11.5</td>
<td>15.3</td>
</tr>
<tr>
<td>exchange2_s</td>
<td>8</td>
<td>15.4</td>
<td>15.8</td>
</tr>
<tr>
<td>xz_s</td>
<td>8</td>
<td>16.0</td>
<td>16.0</td>
</tr>
</tbody>
</table>

---

**SPEC\textsuperscript{2017\_int\_base} = 7.48**

**SPEC\textsuperscript{2017\_int\_peak} = 7.74**

---

**Hardware**

CPU Name: AMD EPYC 7232P
Max MHz: 3200
Nominal: 3100
Enabled: 8 cores, 1 chip, 2 threads/core
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: 32 MB I+D on chip per chip, 8 MB shared / 2 cores
Other: None
Memory: 256 GB (8 x 32 GB 2Rx4 PC4-3200AA-R)
Storage: 1 x 960 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: Yes
Firmware: Version 1.3.0 released Jan-2020
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 v5.1.0
Power Management: BIOS set to prefer performance at the cost of additional power usage.
Dell Inc.
PowerEdge R7515 (AMD EPYC 7232P, 3.10 GHz)

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

SPEC CPU®2017 Integer Speed Result

Test Date: Jan-2020
Hardware Availability: Apr-2020
Software Availability: Aug-2019

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>
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</thead>
<tbody>
<tr>
<td>600.perlbench_s</td>
<td>8</td>
<td>431</td>
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<td>4.12</td>
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<td>602.gcc_s</td>
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<td>490</td>
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<td>487</td>
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<td>605.mcf_s</td>
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<td>620.omnetpp_s</td>
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<td>400</td>
<td>4.08</td>
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<td>7.97</td>
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<td>8.01</td>
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<td>7.99</td>
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<tr>
<td>625.x264_s</td>
<td>8</td>
<td>150</td>
<td>11.8</td>
<td>149</td>
<td>11.8</td>
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<td>11.8</td>
</tr>
<tr>
<td>631.deepsjeng_s</td>
<td>8</td>
<td>317</td>
<td>4.53</td>
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<td>4.54</td>
<td>314</td>
<td>4.56</td>
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<tr>
<td>641.leela_s</td>
<td>8</td>
<td>426</td>
<td>4.01</td>
<td>424</td>
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<td>424</td>
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<tr>
<td>648.exchange2_s</td>
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<td>15.3</td>
<td>192</td>
<td>15.3</td>
<td>192</td>
<td>15.3</td>
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<tr>
<td>657.xz_s</td>
<td>8</td>
<td>539</td>
<td>11.5</td>
<td>539</td>
<td>11.5</td>
<td>539</td>
<td>11.5</td>
</tr>
</tbody>
</table>

**SPECspeed®2017_int_base = 7.48**
**SPECspeed®2017_int_peak = 7.74**

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
'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>

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).
Transparent huge pages set to 'always' for this run (OS default)
Dell Inc.  
PowerEdge R7515 (AMD EPYC 7232P, 3.10 GHz)  

| SPECspeed®2017_int_base | 7.48 |
| SPECspeed®2017_int_peak | 7.74 |

| CPU2017 License: 55 | Test Date: Jan-2020 |
| Test Sponsor: Dell Inc. | Hardware Availability: Apr-2020 |
| Tested by: Dell Inc. | Software Availability: Aug-2019 |

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
GOMP_CPU_AFFINITY = "0-15"
LD_LIBRARY_PATH =
"/root/cpu2017-1.1.0/amd_speed_aocc200_rome_C_lib/64;/root/cpu2017-1.1.0/amd_speed_aocc200_rome_C_lib/32:"
MALLOCONF = "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 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"
OMP_STACKSIZE = "128M"

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 648.exchange2_s peak run:
GOMP_CPU_AFFINITY = "0"

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

(Continued on next page)
SPEC CPU®2017 Integer Speed Result
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Dell Inc.
PowerEdge R7515 (AMD EPYC 7232P, 3.10 GHz)

SPECspeed®2017_int_base = 7.48
SPECspeed®2017_int_peak = 7.74

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

Test Date: Jan-2020
Hardware Availability: Apr-2020
Software Availability: Aug-2019

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:
NUMA Nodes Per Socket set to 1
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
Memory Freq set to 3200
Fan Speed = Maximum

Sysinfo program /root/cpu2017-1.1.0/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edbl6e46a485a0011
running on linux-g3ob Fri Jan 31 02:25:43 2020

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 7232P 8-Core Processor
    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 : 8
  siblings : 16
    physical 0: cores 0 1 4 5 8 9 12 13

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

(Continued on next page)
Dell Inc.  
PowerEdge R7515 (AMD EPYC 7232P, 3.10 GHz)  

CPU2017 License: 55  
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SPECspeed®2017_int_base = 7.48  
SPECspeed®2017_int_peak = 7.74

Platform Notes (Continued)

CPU(s): 16  
On-line CPU(s) list: 0-15  
Thread(s) per core: 2  
Core(s) per socket: 8  
Socket(s): 1  
NUMA node(s): 4  
Vendor ID: AuthenticAMD  
CPU family: 23  
Model: 49  
Model name: AMD EPYC 7232P 8-Core Processor  
Stepping: 0  
CPU MHz: 3094.379  
BogoMIPS: 6188.75  
Virtualization: AMD-V  
L1d cache: 32K  
L1i cache: 32K  
L2 cache: 512K  
L3 cache: 8192K  
NUMA node0 CPU(s): 0,1,8,9  
NUMA node1 CPU(s): 2,3,10,11  
NUMA node2 CPU(s): 4,5,12,13  
NUMA node3 CPU(s): 6,7,14,15  
Flags: fpu vme de pse tsc msr pae mce cmov cmov pat pse36 clflush mmx fxsr sse sse2 ht syscall nx mmxext fxsr opt pdpe1gb rdtscp lm constant_tsc rep_good nolock cf eight modrm sfmask tsc_adjust p Oprah pni pclmulqdq monitor x87_74 mmxext fxsr opt idapic movbe popcnt aes xsave avx f16c rdrand lahf_lm cmp_legacy svm extapic cr8_legacy abm sse4a misalignsse 3nowprefetch osvw ibs s31t wdt tce topoext perfct_core perfctr_nb bpext perfctr_l2 mwaitx cpb cat_l3 cdp_l3 hw_pstate sme ssbd sev iibp stibp vmmcall fsgrbase bml1 avx2 smep bml2 cm qm rdt_a rdseed adx smap clflushopt clwb sha ni xsavex86 xsavex87 xsave xsaveopt xsaves xmctc xsave cqm_llc cqm_occupa llc cqm_mmb total cqm_mmb_local clzero iperf xsave xsaveopt arat npt iibrv svm_lock nrrip_save tsc_scale vmsvc_clean flushbyassist decodeassists pausefilter pfthreshold avic v_vmsave_vmload vgfs umip rdpid overflow_recov succor smca

From numactl --hardware WARN: a numactl 'node' might or might not correspond to a physical chip.  
available: 4 nodes (0-3)  
    node 0 cpus: 0 1 8 9  
    node 0 size: 63903 MB  
    node 0 free: 63695 MB  
    node 1 cpus: 2 3 10 11  
    node 1 size: 64510 MB  
    node 1 free: 64312 MB

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

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Dell Inc. PowerEdge R7515 (AMD EPYC 7232P, 3.10 GHz)

SPECspeed®2017_int_base = 7.48
SPECspeed®2017_int_peak = 7.74

<table>
<thead>
<tr>
<th>CPU2017 License</th>
<th>Test Date:</th>
<th>Hardware Availability:</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>Jan-2020</td>
<td>Apr-2020</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Sponsor:</th>
<th>Tested by:</th>
<th>Software Availability:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dell Inc.</td>
<td>Dell Inc.</td>
<td>Aug-2019</td>
</tr>
</tbody>
</table>

Node 2 cpus: 4 5 12 13
Node 2 size: 64510 MB
Node 2 free: 64401 MB
Node 3 cpus: 6 7 14 15
Node 3 size: 64498 MB
Node 3 free: 64337 MB
Node distances:

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
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<tbody>
<tr>
<td>0</td>
<td>10</td>
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<td>11</td>
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</tr>
<tr>
<td>3</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>10</td>
</tr>
</tbody>
</table>

From /proc/meminfo
MemTotal: 263601312 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
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 Jan 30 07:34 last=5

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

Dell Inc.
PowerEdge R7515 (AMD EPYC 7232P, 3.10 GHz)

SPECspeed®2017_int_base = 7.48
SPECspeed®2017_int_peak = 7.74

CPU2017 License: 55
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Hardware Availability: Apr-2020
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Platform Notes (Continued)

SPEC is set to: /root/cpu2017-1.1.0
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 xfs 440G 37G 404G 9% /

From /sys/devices/virtual/dmi/id
BIOS: Dell Inc. 1.3.0 01/14/2020
Vendor: Dell Inc.
Product: PowerEdge R7515
Product Family: PowerEdge
Serial: 5MGPH13

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 80AD80B380AD HMA84GR7CJKR4N-XN 32 GB 2 rank 3200
8x Not Specified Not Specified

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
C       | 600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak) 657.xz_s(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)
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin
==============================================================================
C++     | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base)
==============================================================================
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++     | 623.xalancbmk_s(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
==============================================================================
(Continued on next page)
SPECCPU®2017 Integer Speed Result

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

Test Date: Jan-2020  
Hardware Availability: Apr-2020  
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Compiler Version Notes (Continued)

| 631.deepsjeng_s(base, peak) 641.leela_s(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)  
Target: x86_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

==============================================================================
C++ | 623.xalancbmk_s(peak) 620.omnetpp_s(base, peak) 623.xalancbmk_s(base)  
| 631.deepsjeng_s(base, peak) 641.leela_s(base, peak) 620.omnetpp_s(base, peak) 623.xalancbmk_s(base)  
---
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++ | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base)  
| 631.deepsjeng_s(base, peak) 641.leela_s(base, peak) 620.omnetpp_s(base, peak) 623.xalancbmk_s(base)  
---
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: x86_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

==============================================================================
Fortran | 648.exchange2_s(base, peak) 648.exchange2_s(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)  
Target: x86_64-unknown-linux-gnu  
Thread model: posix  
InstalledDir: /sppo/dev/compilers/aocc-compiler-2.0.0/bin

Base Compiler Invocation

C benchmarks:
clang

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

Dell Inc.

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SPECspeed®2017_int_base = 7.48
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Base Compiler Invocation (Continued)

C++ benchmarks:
clang++

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:
-ffast-math
-march=znver2
-fstruct-layout=3
-mllvm -unroll-threshold=50
-fregion-vectorize
-mllvm -function-specialize
-mllvm -enable-gvn-hoist
-mllvm -global-vectorize-slp
-mllvm -vector-library=LIBMVEC
-mllvm -inline-threshold=1000
-fv-function-specialization -z muldefs -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamlbilib -ljemalloc
-flflags

C++ benchmarks:
-ffast-math
-march=znver2
-fregion-vectorize
-mllvm -function-specialize
-mllvm -global-vectorize-slp
-mllvm -vector-library=LIBMVEC
-mllvm -unroll-threshold=100
-fv-function-specialization -z muldefs -DSPEC_OPENMP -fopenmp
-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamlbilib -ljemalloc

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

C++ benchmarks (continued):
- `lflang`

Fortran benchmarks:
- `-fto -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 -DSPEC_OPENMP -fopenmp -fopenmp=libomp`
- `-lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc -lflang`

## Base Other Flags

C benchmarks:
- `-Wno-return-type`

C++ benchmarks:
- `-Wno-return-type`

Fortran benchmarks:
- `-Wno-return-type`

## Peak Compiler Invocation

C benchmarks:
- `clang`

C++ benchmarks:
- `clang++`

Fortran benchmarks:
- `flang`

## Peak Portability Flags

600.perlbench.s: `-DSPEC_LINUX_X64 -DSPEC_LP64`
**SPEC CPU®2017 Integer Speed Result**

**Dell Inc.**

PowerEdge R7515 (AMD EPYC 7232P, 3.10 GHz)

- **SPECspeed®2017_int_base** = 7.48
- **SPECspeed®2017_int_peak** = 7.74

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

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**Peak Portability Flags (Continued)**

- 602.gcc_s: -DSPEC_LP64
- 605.mcf_s: -DSPEC_LP64
- 620.omnetpp_s: -DSPEC_LP64
- 623.xalancbmk_s: -DSPEC_LINUX -D_FILE_OFFSET_BITS=64
- 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

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**Peak Optimization Flags**

**C benchmarks:**


- 602.gcc_s: basepeak = yes


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**SPEC CPU®2017 Integer Speed Result**

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Tested by: Dell Inc.

Test Date: Jan-2020

Hardware Availability: Apr-2020

Software Availability: Aug-2019

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**Peak Optimization Flags (Continued)**

605.mcf_s (continued):
- `flv-function-specialization` `-DSPEC_OPENMP` `-fopenmp`
- `-lmvec -lamdlibm -fopenmp=libomp -lomp -lpthread -ldl`
- `-ljemalloc -lflang`

625.x264_s: Same as 600.perlbench_s

657.xz_s: `basepeak = yes`

C++ benchmarks:

620.omnetpp_s: `-flto -Wl,-mllvm -Wl,-function-specialize`
- `-Wl,-mllvm -Wl,-region-vectorize`
- `-Wl,-mllvm -Wl,-vector-library=LIBMVEC`
- `-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast`
- `-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 -DSPEC_OPENMP -fopenmp`
- `-fopenmp=libomp -lomp -lpthread -ldl -lmvec -lamdlibm`
- `-ljemalloc -lflang`

623.xalancbmk_s: `-m32 -flto -Wl,-mllvm -Wl,-function-specialize`
- `-Wl,-mllvm -Wl,-region-vectorize`
- `-Wl,-mllvm -Wl,-vector-library=LIBMVEC`
- `-Wl,-mllvm -Wl,-reduce-array-computations=3 -Ofast`
- `-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 -DSPEC_OPENMP -fopenmp`
- `-fopenmp=libomp -lomp -lpthread -ldl -ljemalloc`

631.deepsjeng_s: Same as 620.omnetpp_s

641.leela_s: `basepeak = yes`

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`

(Continued on next page)
Dell Inc.
PowerEdge R7515 (AMD EPYC 7232P, 3.10 GHz)

**SPECspeed®2017_int_base = 7.48**

<table>
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CPU2017 License: 55
Test Sponsor: Dell Inc.
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### Peak Optimization Flags (Continued)

Fortran benchmarks (continued):
- -Mrecursive -ml1vm -vector-library=LIBMVEC
- -ml1vm -disable-indvar-simplify -ml1vm -unroll-aggressive
- -ml1vm -unroll-threshold=150 -DSPEC_OPENMP -fopenmp -fopenmp=libomp
- -lomp -lpthread -ldl -lmvec -lamdlibm -ljemalloc -lflang

### Peak Other Flags

C benchmarks:
- -Wno-return-type

C++ benchmarks (except as noted below):
- -Wno-return-type

623.xalancbmk_s: -Wno-return-type
- -L/sspo/dev/cpu2017/v110/amd_speed_aocc200_rome_C_lib/32

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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