SPEC CPU®2017 Integer Rate Result

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ScaleMP

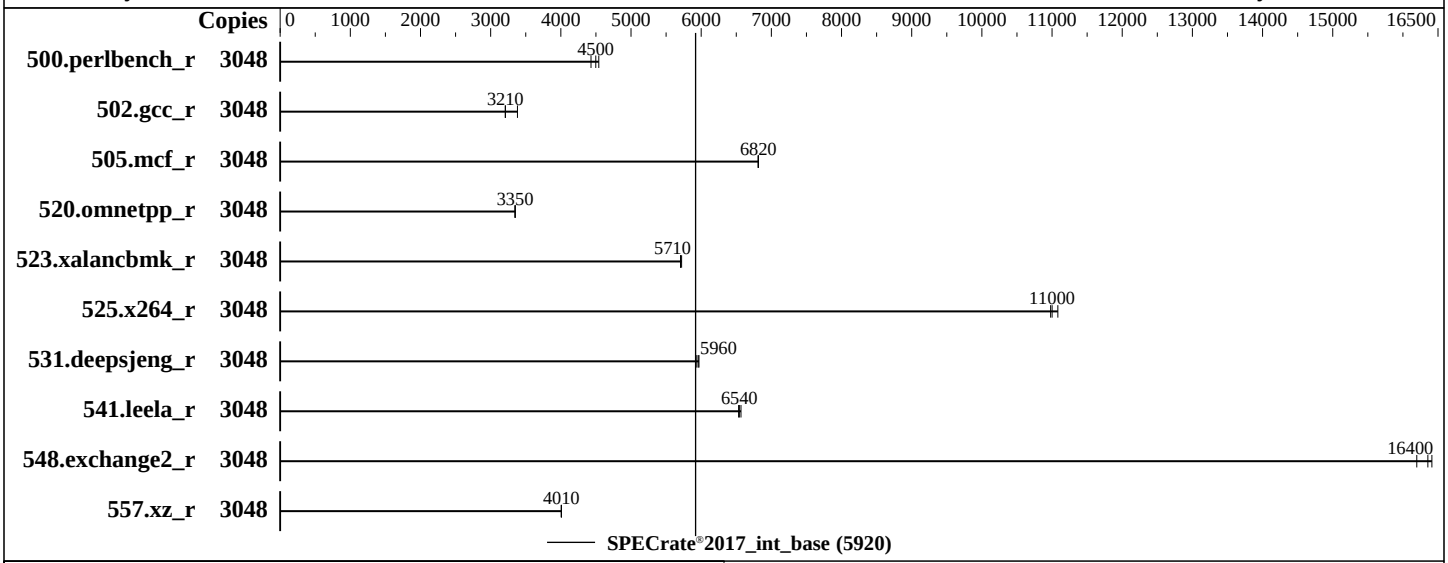
vSMP ServerONE
Supermicro A+ Server 2123BT-HNC0R (AMD EPYC 7702)

SPECrate®2017_int_base = 5920

SPECrate®2017_int_peak = Not Run

CPU2017 License: 2929
Test Sponsor: ScaleMP
Tested by: ScaleMP

Test Date: Dec-2019
Hardware Availability: Nov-2019
Software Availability: Nov-2019



Hardware

CPU Name:	AMD EPYC 7702
Max MHz:	3350
Nominal:	2000
Enabled:	1536 cores, 24 chips, 2 threads/core
Orderable:	1-24 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:	6 TB (192 x 32 GB 2Rx4 PC4-2667V-L)
Storage:	6 TB ramfs
Other:	ScaleMP vSMP Foundation aggregates multiple servers into one shared-memory system. Hardware Details: vSMP System was aggregated using 12 units of Supermicro A+ Server 2123BT-HNC0R. The servers were connected using Mellanox InfiniBand EDR fabric.

Software

OS:	SUSE Linux Enterprise Server 15 SP1, kernel version 4.12.14-197.21.1.vSMP.2-default
Compiler:	C/C++/Fortran: Version 2.0.0 of AOCC
Parallel:	No
Firmware:	ScaleMP vSMP Foundation version 9.5.195.18 released Dec-2019
File System:	ramfs
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit
Peak Pointers:	Not Applicable
Other:	jemalloc: jemalloc memory allocator library v5.2.1
Power Management:	--

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Software Availability: Nov-2019

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	3048	1069	4540	1095	4430	**1079**	**4500**							
502.gcc_r	3048	1276	3380	**1344**	**3210**	1345	3210							
505.mcf_r	3048	**723**	**6820**	723	6810	723	6820							
520.omnetpp_r	3048	**1194**	**3350**	1194	3350	1195	3350							
523.xalancbmk_r	3048	563	5720	564	5710	**564**	**5710**							
525.x264_r	3048	482	11100	486	11000	**485**	**11000**							
531.deepsjeng_r	3048	588	5940	585	5970	**586**	**5960**							
541.leela_r	3048	769	6570	773	6530	**771**	**6540**							
548.exchange2_r	3048	**488**	**16400**	493	16200	487	16400							
557.xz_r	3048	822	4000	821	4010	**821**	**4010**							

SPECrate®2017_int_base = 5920

SPECrate®2017_int_peak = Not Run

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>

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
Set numa_stat=0 to improve page allocation performance
Set stat_interval=60 to reduce OS jitter

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

(Continued on next page)

Operating System Notes (Continued)

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

Kernel Boot Parameter set with : nohz_full=!0
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
     "/dev/shm/amd_rate_aocc200_rome_C_lib/64;/dev/shm/amd_rate_aocc200_rome_
     C_lib/32:/usr/local/lib:/usr/lib:/usr/lib64:/mnt/aocc-compiler-2.0.0/lib
     :/mnt/aocc-compiler-2.0.0/lib32:"
MALLOC_CONF = "retain:true,metadata_thp:always,thp:always,dirty_decay_ms:-1"
```

General Notes

```
Environment variables set by runcpu before the start of the run:
 LD_LIBRARY_PATH=/usr/local/lib:$LD_LIBRARY_PATH
 LIBRARY_PATH=/usr/local/lib:$LIBRARY_PATH
 MALLOC_TOP_PAD_=$((16777216))
 MALLOC_TRIM_THRESHOLD_=$((16777216))

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 AMD64 AOCC v2.0.0 on this system with -Ofast -march=znver2
jemalloc 5.2.1 is available here:
https://github.com/jemalloc/jemalloc/releases/download/5.2.1/jemalloc-5.2.1.tar.bz2
```

Platform Notes

```
BIOS settings:
 Determinism Control = Manual
 Determinism Slider = Power
 cTDP Control = Manual
 cTDP = 180
 Package Power Limit Control = Manual
 Package Power Limit = 180
 IOMMU = Enabled
```

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Platform Notes (Continued)

```
APBDIS = 1
NUMA Nodes Per Socket = NPS4

Sysinfo program /dev/shm/bin/sysinfo
Rev: r6365 of 2019-08-21 295195f888a3d7edb1e6e46a485a0011
running on 13d Sun Dec 22 19:56:02 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 7702 64-Core Processor
      24  "physical id"s (chips)
      3072 "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
      physical 2: 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 3: 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 4: 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 5: 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 6: 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 7: 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 8: 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 9: 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
```

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Platform Notes (Continued)

```
      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 10: 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 11: 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 12: 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 13: 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 14: 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 15: 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 16: 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 17: 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 18: 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 19: 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 20: 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 21: 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 22: 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 23: 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:
       Architecture:        x86_64
```

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Platform Notes (Continued)

```
CPU op-mode(s):      32-bit, 64-bit
Byte Order:          Little Endian
Address sizes:       47 bits physical, 48 bits virtual
CPU(s):              3072
On-line CPU(s) list: 0-3071
Thread(s) per core:  2
Core(s) per socket:  64
Socket(s):           24
NUMA node(s):        96
Vendor ID:           AuthenticAMD
CPU family:          23
Model:               49
Model name:          AMD EPYC 7702 64-Core Processor
Stepping:            0
CPU MHz:             2000.000
CPU max MHz:         2000.0000
CPU min MHz:         1800.0000
BogoMIPS:            3999.65
L1d cache:           32K
L1i cache:           32K
L2 cache:            512K
L3 cache:            16384K
NUMA node0 CPU(s):   0-15,1536-1551
NUMA node1 CPU(s):   16-31,1552-1567
NUMA node2 CPU(s):   32-47,1568-1583
NUMA node3 CPU(s):   48-63,1584-1599
NUMA node4 CPU(s):   64-79,1600-1615
NUMA node5 CPU(s):   80-95,1616-1631
NUMA node6 CPU(s):   96-111,1632-1647
NUMA node7 CPU(s):   112-127,1648-1663
NUMA node8 CPU(s):   128-143,1664-1679
NUMA node9 CPU(s):   144-159,1680-1695
NUMA node10 CPU(s):  160-175,1696-1711
NUMA node11 CPU(s):  176-191,1712-1727
NUMA node12 CPU(s):  192-207,1728-1743
NUMA node13 CPU(s):  208-223,1744-1759
NUMA node14 CPU(s):  224-239,1760-1775
NUMA node15 CPU(s):  240-255,1776-1791
NUMA node16 CPU(s):  256-271,1792-1807
NUMA node17 CPU(s):  272-287,1808-1823
NUMA node18 CPU(s):  288-303,1824-1839
NUMA node19 CPU(s):  304-319,1840-1855
NUMA node20 CPU(s):  320-335,1856-1871
NUMA node21 CPU(s):  336-351,1872-1887
NUMA node22 CPU(s):  352-367,1888-1903
NUMA node23 CPU(s):  368-383,1904-1919
NUMA node24 CPU(s):  384-399,1920-1935
```

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Platform Notes (Continued)

```
NUMA node25 CPU(s):   400-415,1936-1951
NUMA node26 CPU(s):   416-431,1952-1967
NUMA node27 CPU(s):   432-447,1968-1983
NUMA node28 CPU(s):   448-463,1984-1999
NUMA node29 CPU(s):   464-479,2000-2015
NUMA node30 CPU(s):   480-495,2016-2031
NUMA node31 CPU(s):   496-511,2032-2047
NUMA node32 CPU(s):   512-527,2048-2063
NUMA node33 CPU(s):   528-543,2064-2079
NUMA node34 CPU(s):   544-559,2080-2095
NUMA node35 CPU(s):   560-575,2096-2111
NUMA node36 CPU(s):   576-591,2112-2127
NUMA node37 CPU(s):   592-607,2128-2143
NUMA node38 CPU(s):   608-623,2144-2159
NUMA node39 CPU(s):   624-639,2160-2175
NUMA node40 CPU(s):   640-655,2176-2191
NUMA node41 CPU(s):   656-671,2192-2207
NUMA node42 CPU(s):   672-687,2208-2223
NUMA node43 CPU(s):   688-703,2224-2239
NUMA node44 CPU(s):   704-719,2240-2255
NUMA node45 CPU(s):   720-735,2256-2271
NUMA node46 CPU(s):   736-751,2272-2287
NUMA node47 CPU(s):   752-767,2288-2303
NUMA node48 CPU(s):   768-783,2304-2319
NUMA node49 CPU(s):   784-799,2320-2335
NUMA node50 CPU(s):   800-815,2336-2351
NUMA node51 CPU(s):   816-831,2352-2367
NUMA node52 CPU(s):   832-847,2368-2383
NUMA node53 CPU(s):   848-863,2384-2399
NUMA node54 CPU(s):   864-879,2400-2415
NUMA node55 CPU(s):   880-895,2416-2431
NUMA node56 CPU(s):   896-911,2432-2447
NUMA node57 CPU(s):   912-927,2448-2463
NUMA node58 CPU(s):   928-943,2464-2479
NUMA node59 CPU(s):   944-959,2480-2495
NUMA node60 CPU(s):   960-975,2496-2511
NUMA node61 CPU(s):   976-991,2512-2527
NUMA node62 CPU(s):   992-1007,2528-2543
NUMA node63 CPU(s):   1008-1023,2544-2559
NUMA node64 CPU(s):   1024-1039,2560-2575
NUMA node65 CPU(s):   1040-1055,2576-2591
NUMA node66 CPU(s):   1056-1071,2592-2607
NUMA node67 CPU(s):   1072-1087,2608-2623
NUMA node68 CPU(s):   1088-1103,2624-2639
NUMA node69 CPU(s):   1104-1119,2640-2655
NUMA node70 CPU(s):   1120-1135,2656-2671
NUMA node71 CPU(s):   1136-1151,2672-2687
```

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Platform Notes (Continued)

```
      NUMA node72 CPU(s):  1152-1167,2688-2703
      NUMA node73 CPU(s):  1168-1183,2704-2719
      NUMA node74 CPU(s):  1184-1199,2720-2735
      NUMA node75 CPU(s):  1200-1215,2736-2751
      NUMA node76 CPU(s):  1216-1231,2752-2767
      NUMA node77 CPU(s):  1232-1247,2768-2783
      NUMA node78 CPU(s):  1248-1263,2784-2799
      NUMA node79 CPU(s):  1264-1279,2800-2815
      NUMA node80 CPU(s):  1280-1295,2816-2831
      NUMA node81 CPU(s):  1296-1311,2832-2847
      NUMA node82 CPU(s):  1312-1327,2848-2863
      NUMA node83 CPU(s):  1328-1343,2864-2879
      NUMA node84 CPU(s):  1344-1359,2880-2895
      NUMA node85 CPU(s):  1360-1375,2896-2911
      NUMA node86 CPU(s):  1376-1391,2912-2927
      NUMA node87 CPU(s):  1392-1407,2928-2943
      NUMA node88 CPU(s):  1408-1423,2944-2959
      NUMA node89 CPU(s):  1424-1439,2960-2975
      NUMA node90 CPU(s):  1440-1455,2976-2991
      NUMA node91 CPU(s):  1456-1471,2992-3007
      NUMA node92 CPU(s):  1472-1487,3008-3023
      NUMA node93 CPU(s):  1488-1503,3024-3039
      NUMA node94 CPU(s):  1504-1519,3040-3055
      NUMA node95 CPU(s):  1520-1535,3056-3071
      Flags:               fpu vme de pse tsc msr pae 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
      ssse3 fma cx16 sse4_1 sse4_2 x2apic movbe popcnt aes xsave avx f16c rdrand lahf_lm
      cmp_legacy extapic cr8_legacy abm sse4a misalignsse 3dnowprefetch osvw skinit wdt
      tce topoext perfctr_core perfctr_nb bpext perfctr_l2 mwaitx cpb cat_l3 cdp_l3
      hw_pstate ssbd ibrs ibpb stibp vmmcall fsgsbase bmi1 avx2 smep bmi2 cqm rdt_a rdseed
      adx smap clflushopt clwb sha_ni xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc
      cqm_mbm_total cqm_mbm_local clzero irperf xsaveerptr arat npt lbrv svm_lock
      nrip_save tsc_scale vmcb_clean flushbyasid decodeassists pausefilter pfthreshold
      avic v_vmsave_vmload vgif umip rdpid overflow_recov succor smca

  /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: 96 nodes (0-95)
    node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 1536 1537 1538 1539 1540 1541 1542
    1543 1544 1545 1546 1547 1548 1549 1550 1551
    node 0 size: 42584 MB
    node 0 free: 39094 MB
    node 1 cpus: 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 1552 1553 1554 1555 1556
```

(Continued on next page)

Platform Notes (Continued)

```
1557 1558 1559 1560 1561 1562 1563 1564 1565 1566 1567
node 1 size: 59461 MB
node 1 free: 59278 MB
node 2 cpus: 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 1568 1569 1570 1571 1572
1573 1574 1575 1576 1577 1578 1579 1580 1581 1582 1583
node 2 size: 59461 MB
node 2 free: 59313 MB
node 3 cpus: 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 1584 1585 1586 1587 1588
1589 1590 1591 1592 1593 1594 1595 1596 1597 1598 1599
node 3 size: 59461 MB
node 3 free: 59190 MB
node 4 cpus: 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 1600 1601 1602 1603 1604
1605 1606 1607 1608 1609 1610 1611 1612 1613 1614 1615
node 4 size: 59461 MB
node 4 free: 59330 MB
node 5 cpus: 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 1616 1617 1618 1619 1620
1621 1622 1623 1624 1625 1626 1627 1628 1629 1630 1631
node 5 size: 59461 MB
node 5 free: 59331 MB
node 6 cpus: 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 1632 1633 1634
1635 1636 1637 1638 1639 1640 1641 1642 1643 1644 1645 1646 1647
node 6 size: 59461 MB
node 6 free: 59334 MB
node 7 cpus: 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 1648 1649
1650 1651 1652 1653 1654 1655 1656 1657 1658 1659 1660 1661 1662 1663
node 7 size: 59461 MB
node 7 free: 59340 MB
node 8 cpus: 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 1664 1665
1666 1667 1668 1669 1670 1671 1672 1673 1674 1675 1676 1677 1678 1679
node 8 size: 43081 MB
node 8 free: 43013 MB
node 9 cpus: 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 1680 1681
1682 1683 1684 1685 1686 1687 1688 1689 1690 1691 1692 1693 1694 1695
node 9 size: 59461 MB
node 9 free: 59405 MB
node 10 cpus: 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 1696 1697
1698 1699 1700 1701 1702 1703 1704 1705 1706 1707 1708 1709 1710 1711
node 10 size: 59461 MB
node 10 free: 59405 MB
node 11 cpus: 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 1712 1713
1714 1715 1716 1717 1718 1719 1720 1721 1722 1723 1724 1725 1726 1727
node 11 size: 59461 MB
node 11 free: 59404 MB
node 12 cpus: 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 1728 1729
1730 1731 1732 1733 1734 1735 1736 1737 1738 1739 1740 1741 1742 1743
node 12 size: 59461 MB
node 12 free: 59405 MB
```

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Platform Notes (Continued)

```
node 13 cpus: 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 1744 1745
1746 1747 1748 1749 1750 1751 1752 1753 1754 1755 1756 1757 1758 1759
node 13 size: 59461 MB
node 13 free: 59404 MB
node 14 cpus: 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 1760 1761
1762 1763 1764 1765 1766 1767 1768 1769 1770 1771 1772 1773 1774 1775
node 14 size: 59461 MB
node 14 free: 59405 MB
node 15 cpus: 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 1776 1777
1778 1779 1780 1781 1782 1783 1784 1785 1786 1787 1788 1789 1790 1791
node 15 size: 59461 MB
node 15 free: 59405 MB
node 16 cpus: 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 1792 1793
1794 1795 1796 1797 1798 1799 1800 1801 1802 1803 1804 1805 1806 1807
node 16 size: 43081 MB
node 16 free: 43025 MB
node 17 cpus: 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 1808 1809
1810 1811 1812 1813 1814 1815 1816 1817 1818 1819 1820 1821 1822 1823
node 17 size: 59673 MB
node 17 free: 59617 MB
node 18 cpus: 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 1824 1825
1826 1827 1828 1829 1830 1831 1832 1833 1834 1835 1836 1837 1838 1839
node 18 size: 59461 MB
node 18 free: 59404 MB
node 19 cpus: 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 1840 1841
1842 1843 1844 1845 1846 1847 1848 1849 1850 1851 1852 1853 1854 1855
node 19 size: 59461 MB
node 19 free: 59404 MB
node 20 cpus: 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 1856 1857
1858 1859 1860 1861 1862 1863 1864 1865 1866 1867 1868 1869 1870 1871
node 20 size: 59461 MB
node 20 free: 59405 MB
node 21 cpus: 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 1872 1873
1874 1875 1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886 1887
node 21 size: 59461 MB
node 21 free: 59404 MB
node 22 cpus: 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 1888 1889
1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903
node 22 size: 59461 MB
node 22 free: 59404 MB
node 23 cpus: 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 1904 1905
1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919
node 23 size: 59461 MB
node 23 free: 59404 MB
node 24 cpus: 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 1920 1921
1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935
node 24 size: 43081 MB
```

(Continued on next page)

Platform Notes (Continued)

```
node 24 free: 43025 MB
node 25 cpus: 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 1936 1937
1938 1939 1940 1941 1942 1943 1944 1945 1946 1947 1948 1949 1950 1951
node 25 size: 59461 MB
node 25 free: 59404 MB
node 26 cpus: 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 1952 1953
1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967
node 26 size: 59461 MB
node 26 free: 59405 MB
node 27 cpus: 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 1968 1969
1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983
node 27 size: 59461 MB
node 27 free: 59404 MB
node 28 cpus: 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 1984 1985
1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999
node 28 size: 59461 MB
node 28 free: 59404 MB
node 29 cpus: 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 2000 2001
2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015
node 29 size: 59461 MB
node 29 free: 59404 MB
node 30 cpus: 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 2016 2017
2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031
node 30 size: 59461 MB
node 30 free: 59404 MB
node 31 cpus: 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 2032 2033
2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047
node 31 size: 59461 MB
node 31 free: 59404 MB
node 32 cpus: 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 2048 2049
2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063
node 32 size: 43081 MB
node 32 free: 43025 MB
node 33 cpus: 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 2064 2065
2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079
node 33 size: 59461 MB
node 33 free: 59405 MB
node 34 cpus: 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 2080 2081
2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095
node 34 size: 59461 MB
node 34 free: 59404 MB
node 35 cpus: 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 2096 2097
2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111
node 35 size: 59461 MB
node 35 free: 59404 MB
node 36 cpus: 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 2112 2113
2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127
```

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Platform Notes (Continued)

```
node 36 size: 59461 MB
node 36 free: 59404 MB
node 37 cpus: 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 2128 2129
2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143
node 37 size: 59461 MB
node 37 free: 59404 MB
node 38 cpus: 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 2144 2145
2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159
node 38 size: 59461 MB
node 38 free: 59405 MB
node 39 cpus: 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 2160 2161
2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175
node 39 size: 59461 MB
node 39 free: 59404 MB
node 40 cpus: 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 2176 2177
2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191
node 40 size: 43081 MB
node 40 free: 43025 MB
node 41 cpus: 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 2192 2193
2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207
node 41 size: 59461 MB
node 41 free: 59404 MB
node 42 cpus: 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 2208 2209
2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223
node 42 size: 59461 MB
node 42 free: 59405 MB
node 43 cpus: 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 2224 2225
2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239
node 43 size: 59461 MB
node 43 free: 59404 MB
node 44 cpus: 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 2240 2241
2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255
node 44 size: 59461 MB
node 44 free: 59405 MB
node 45 cpus: 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 2256 2257
2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271
node 45 size: 59461 MB
node 45 free: 59404 MB
node 46 cpus: 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 2272 2273
2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287
node 46 size: 59461 MB
node 46 free: 59405 MB
node 47 cpus: 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 2288 2289
2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303
node 47 size: 59461 MB
node 47 free: 59404 MB
node 48 cpus: 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 2304 2305
```

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Platform Notes (Continued)

```
2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319
node 48 size: 43081 MB
node 48 free: 43017 MB
node 49 cpus: 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 2320 2321
2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335
node 49 size: 59461 MB
node 49 free: 59405 MB
node 50 cpus: 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 2336 2337
2338 2339 2340 2341 2342 2343 2344 2345 2346 2347 2348 2349 2350 2351
node 50 size: 59461 MB
node 50 free: 59405 MB
node 51 cpus: 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 2352 2353
2354 2355 2356 2357 2358 2359 2360 2361 2362 2363 2364 2365 2366 2367
node 51 size: 59461 MB
node 51 free: 59404 MB
node 52 cpus: 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 2368 2369
2370 2371 2372 2373 2374 2375 2376 2377 2378 2379 2380 2381 2382 2383
node 52 size: 59461 MB
node 52 free: 59405 MB
node 53 cpus: 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 2384 2385
2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396 2397 2398 2399
node 53 size: 59461 MB
node 53 free: 59405 MB
node 54 cpus: 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 2400 2401
2402 2403 2404 2405 2406 2407 2408 2409 2410 2411 2412 2413 2414 2415
node 54 size: 59461 MB
node 54 free: 59405 MB
node 55 cpus: 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 2416 2417
2418 2419 2420 2421 2422 2423 2424 2425 2426 2427 2428 2429 2430 2431
node 55 size: 59461 MB
node 55 free: 59404 MB
node 56 cpus: 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 2432 2433
2434 2435 2436 2437 2438 2439 2440 2441 2442 2443 2444 2445 2446 2447
node 56 size: 43081 MB
node 56 free: 43025 MB
node 57 cpus: 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 2448 2449
2450 2451 2452 2453 2454 2455 2456 2457 2458 2459 2460 2461 2462 2463
node 57 size: 59461 MB
node 57 free: 59404 MB
node 58 cpus: 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 2464 2465
2466 2467 2468 2469 2470 2471 2472 2473 2474 2475 2476 2477 2478 2479
node 58 size: 59461 MB
node 58 free: 59405 MB
node 59 cpus: 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 2480 2481
2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495
node 59 size: 59461 MB
node 59 free: 59404 MB
```

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Platform Notes (Continued)

```
node 60 cpus: 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 2496 2497
2498 2499 2500 2501 2502 2503 2504 2505 2506 2507 2508 2509 2510 2511
node 60 size: 59461 MB
node 60 free: 59405 MB
node 61 cpus: 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 2512 2513
2514 2515 2516 2517 2518 2519 2520 2521 2522 2523 2524 2525 2526 2527
node 61 size: 59461 MB
node 61 free: 59405 MB
node 62 cpus: 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007
2528 2529 2530 2531 2532 2533 2534 2535 2536 2537 2538 2539 2540 2541 2542 2543
node 62 size: 59461 MB
node 62 free: 59405 MB
node 63 cpus: 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021
1022 1023 2544 2545 2546 2547 2548 2549 2550 2551 2552 2553 2554 2555 2556 2557 2558
2559
node 63 size: 59461 MB
node 63 free: 59405 MB
node 64 cpus: 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037
1038 1039 2560 2561 2562 2563 2564 2565 2566 2567 2568 2569 2570 2571 2572 2573 2574
2575
node 64 size: 43081 MB
node 64 free: 43025 MB
node 65 cpus: 1040 1041 1042 1043 1044 1045 1046 1047 1048 1049 1050 1051 1052 1053
1054 1055 2576 2577 2578 2579 2580 2581 2582 2583 2584 2585 2586 2587 2588 2589 2590
2591
node 65 size: 59461 MB
node 65 free: 59405 MB
node 66 cpus: 1056 1057 1058 1059 1060 1061 1062 1063 1064 1065 1066 1067 1068 1069
1070 1071 2592 2593 2594 2595 2596 2597 2598 2599 2600 2601 2602 2603 2604 2605 2606
2607
node 66 size: 59461 MB
node 66 free: 59405 MB
node 67 cpus: 1072 1073 1074 1075 1076 1077 1078 1079 1080 1081 1082 1083 1084 1085
1086 1087 2608 2609 2610 2611 2612 2613 2614 2615 2616 2617 2618 2619 2620 2621 2622
2623
node 67 size: 59461 MB
node 67 free: 59404 MB
node 68 cpus: 1088 1089 1090 1091 1092 1093 1094 1095 1096 1097 1098 1099 1100 1101
1102 1103 2624 2625 2626 2627 2628 2629 2630 2631 2632 2633 2634 2635 2636 2637 2638
2639
node 68 size: 59461 MB
node 68 free: 59404 MB
node 69 cpus: 1104 1105 1106 1107 1108 1109 1110 1111 1112 1113 1114 1115 1116 1117
1118 1119 2640 2641 2642 2643 2644 2645 2646 2647 2648 2649 2650 2651 2652 2653 2654
2655
node 69 size: 59461 MB
node 69 free: 59404 MB
```

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Platform Notes (Continued)

```
node 70 cpus: 1120 1121 1122 1123 1124 1125 1126 1127 1128 1129 1130 1131 1132 1133
1134 1135 2656 2657 2658 2659 2660 2661 2662 2663 2664 2665 2666 2667 2668 2669 2670
2671
node 70 size: 59461 MB
node 70 free: 59404 MB
node 71 cpus: 1136 1137 1138 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149
1150 1151 2672 2673 2674 2675 2676 2677 2678 2679 2680 2681 2682 2683 2684 2685 2686
2687
node 71 size: 59461 MB
node 71 free: 59404 MB
node 72 cpus: 1152 1153 1154 1155 1156 1157 1158 1159 1160 1161 1162 1163 1164 1165
1166 1167 2688 2689 2690 2691 2692 2693 2694 2695 2696 2697 2698 2699 2700 2701 2702
2703
node 72 size: 43081 MB
node 72 free: 43025 MB
node 73 cpus: 1168 1169 1170 1171 1172 1173 1174 1175 1176 1177 1178 1179 1180 1181
1182 1183 2704 2705 2706 2707 2708 2709 2710 2711 2712 2713 2714 2715 2716 2717 2718
2719
node 73 size: 59461 MB
node 73 free: 59404 MB
node 74 cpus: 1184 1185 1186 1187 1188 1189 1190 1191 1192 1193 1194 1195 1196 1197
1198 1199 2720 2721 2722 2723 2724 2725 2726 2727 2728 2729 2730 2731 2732 2733 2734
2735
node 74 size: 59461 MB
node 74 free: 59405 MB
node 75 cpus: 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212 1213
1214 1215 2736 2737 2738 2739 2740 2741 2742 2743 2744 2745 2746 2747 2748 2749 2750
2751
node 75 size: 59461 MB
node 75 free: 59405 MB
node 76 cpus: 1216 1217 1218 1219 1220 1221 1222 1223 1224 1225 1226 1227 1228 1229
1230 1231 2752 2753 2754 2755 2756 2757 2758 2759 2760 2761 2762 2763 2764 2765 2766
2767
node 76 size: 59209 MB
node 76 free: 59152 MB
node 77 cpus: 1232 1233 1234 1235 1236 1237 1238 1239 1240 1241 1242 1243 1244 1245
1246 1247 2768 2769 2770 2771 2772 2773 2774 2775 2776 2777 2778 2779 2780 2781 2782
2783
node 77 size: 59209 MB
node 77 free: 59152 MB
node 78 cpus: 1248 1249 1250 1251 1252 1253 1254 1255 1256 1257 1258 1259 1260 1261
1262 1263 2784 2785 2786 2787 2788 2789 2790 2791 2792 2793 2794 2795 2796 2797 2798
2799
node 78 size: 59209 MB
node 78 free: 59153 MB
node 79 cpus: 1264 1265 1266 1267 1268 1269 1270 1271 1272 1273 1274 1275 1276 1277
1278 1279 2800 2801 2802 2803 2804 2805 2806 2807 2808 2809 2810 2811 2812 2813 2814
```

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Platform Notes (Continued)

```
2815
node 79 size: 59209 MB
node 79 free: 59152 MB
node 80 cpus: 1280 1281 1282 1283 1284 1285 1286 1287 1288 1289 1290 1291 1292 1293
1294 1295 2816 2817 2818 2819 2820 2821 2822 2823 2824 2825 2826 2827 2828 2829 2830
2831
node 80 size: 42829 MB
node 80 free: 42773 MB
node 81 cpus: 1296 1297 1298 1299 1300 1301 1302 1303 1304 1305 1306 1307 1308 1309
1310 1311 2832 2833 2834 2835 2836 2837 2838 2839 2840 2841 2842 2843 2844 2845 2846
2847
node 81 size: 59209 MB
node 81 free: 59152 MB
node 82 cpus: 1312 1313 1314 1315 1316 1317 1318 1319 1320 1321 1322 1323 1324 1325
1326 1327 2848 2849 2850 2851 2852 2853 2854 2855 2856 2857 2858 2859 2860 2861 2862
2863
node 82 size: 59209 MB
node 82 free: 59152 MB
node 83 cpus: 1328 1329 1330 1331 1332 1333 1334 1335 1336 1337 1338 1339 1340 1341
1342 1343 2864 2865 2866 2867 2868 2869 2870 2871 2872 2873 2874 2875 2876 2877 2878
2879
node 83 size: 59209 MB
node 83 free: 59152 MB
node 84 cpus: 1344 1345 1346 1347 1348 1349 1350 1351 1352 1353 1354 1355 1356 1357
1358 1359 2880 2881 2882 2883 2884 2885 2886 2887 2888 2889 2890 2891 2892 2893 2894
2895
node 84 size: 59209 MB
node 84 free: 59153 MB
node 85 cpus: 1360 1361 1362 1363 1364 1365 1366 1367 1368 1369 1370 1371 1372 1373
1374 1375 2896 2897 2898 2899 2900 2901 2902 2903 2904 2905 2906 2907 2908 2909 2910
2911
node 85 size: 59209 MB
node 85 free: 59152 MB
node 86 cpus: 1376 1377 1378 1379 1380 1381 1382 1383 1384 1385 1386 1387 1388 1389
1390 1391 2912 2913 2914 2915 2916 2917 2918 2919 2920 2921 2922 2923 2924 2925 2926
2927
node 86 size: 59209 MB
node 86 free: 59153 MB
node 87 cpus: 1392 1393 1394 1395 1396 1397 1398 1399 1400 1401 1402 1403 1404 1405
1406 1407 2928 2929 2930 2931 2932 2933 2934 2935 2936 2937 2938 2939 2940 2941 2942
2943
node 87 size: 59209 MB
node 87 free: 59152 MB
node 88 cpus: 1408 1409 1410 1411 1412 1413 1414 1415 1416 1417 1418 1419 1420 1421
1422 1423 2944 2945 2946 2947 2948 2949 2950 2951 2952 2953 2954 2955 2956 2957 2958
2959
node 88 size: 42829 MB
```

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Platform Notes (Continued)

```
node 88 free: 42716 MB
node 89 cpus: 1424 1425 1426 1427 1428 1429 1430 1431 1432 1433 1434 1435 1436 1437
1438 1439 2960 2961 2962 2963 2964 2965 2966 2967 2968 2969 2970 2971 2972 2973 2974
2975
node 89 size: 59209 MB
node 89 free: 59152 MB
node 90 cpus: 1440 1441 1442 1443 1444 1445 1446 1447 1448 1449 1450 1451 1452 1453
1454 1455 2976 2977 2978 2979 2980 2981 2982 2983 2984 2985 2986 2987 2988 2989 2990
2991
node 90 size: 59209 MB
node 90 free: 59153 MB
node 91 cpus: 1456 1457 1458 1459 1460 1461 1462 1463 1464 1465 1466 1467 1468 1469
1470 1471 2992 2993 2994 2995 2996 2997 2998 2999 3000 3001 3002 3003 3004 3005 3006
3007
node 91 size: 59209 MB
node 91 free: 59152 MB
node 92 cpus: 1472 1473 1474 1475 1476 1477 1478 1479 1480 1481 1482 1483 1484 1485
1486 1487 3008 3009 3010 3011 3012 3013 3014 3015 3016 3017 3018 3019 3020 3021 3022
3023
node 92 size: 59209 MB
node 92 free: 59153 MB
node 93 cpus: 1488 1489 1490 1491 1492 1493 1494 1495 1496 1497 1498 1499 1500 1501
1502 1503 3024 3025 3026 3027 3028 3029 3030 3031 3032 3033 3034 3035 3036 3037 3038
3039
node 93 size: 59209 MB
node 93 free: 59152 MB
node 94 cpus: 1504 1505 1506 1507 1508 1509 1510 1511 1512 1513 1514 1515 1516 1517
1518 1519 3040 3041 3042 3043 3044 3045 3046 3047 3048 3049 3050 3051 3052 3053 3054
3055
node 94 size: 59209 MB
node 94 free: 59152 MB
node 95 cpus: 1520 1521 1522 1523 1524 1525 1526 1527 1528 1529 1530 1531 1532 1533
1534 1535 3056 3057 3058 3059 3060 3061 3062 3063 3064 3065 3066 3067 3068 3069 3070
3071
node 95 size: 58939 MB
node 95 free: 58882 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  32  33  34  35  36  37  38  39  40  41
42  43  44  45  46  47  48  49  50  51  52  53  54  55  56  57  58  59  60  61  62  63
64  65  66  67  68  69  70  71  72  73  74  75  76  77  78  79  80  81  82  83  84  85
86  87  88  89  90  91  92  93  94  95
  0:  10  12  12  12  32  32  32  32 254 254 254 254 254 254 254 254 254 254
 254 254 254 254 254 254 254 254 254 254 254 254 254 254 254 254 254 254
 254 254 254 254 254 254 254 254 254 254 254 254 254 254 254 254 254 254
 254 254 254 254 254 254 254 254 254 254 254 254 254 254 254 254 254 254
 254 254 254 254 254 254 254 254 254 254 254 254 254 254 254 254 254 254
```

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Platform Notes (Continued)

```
 254  254  254  254  254  254  254  254  254  254
1:  12  10  12  12  32  32  32  32  254  254  254  254  254  254  254  254  254  254
254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
254  254  254  254  254  254  254  254  254  254
2:  12  12  10  12  32  32  32  32  254  254  254  254  254  254  254  254  254  254
254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
254  254  254  254  254  254  254  254  254  254
3:  12  12  12  10  32  32  32  32  254  254  254  254  254  254  254  254  254  254
254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
254  254  254  254  254  254  254  254  254  254
4:  32  32  32  32  10  12  12  12  254  254  254  254  254  254  254  254  254  254
254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
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Platform Notes (Continued)

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Platform Notes (Continued)

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Platform Notes (Continued)

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Platform Notes (Continued)

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Platform Notes (Continued)

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Platform Notes (Continued)

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Platform Notes (Continued)

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Platform Notes (Continued)

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      32  32  32  254  254  254  254  254  254  254  254
      82:  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
      254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
      254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
      254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
      254  254  254  254  254  254  254  254  254  254  254  254  254  12  12  10  12  32
      32  32  32  254  254  254  254  254  254  254  254
      83:  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
      254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
      254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
      254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
      254  254  254  254  254  254  254  254  254  254  254  254  254  12  12  12  10  32
      32  32  32  254  254  254  254  254  254  254  254
      84:  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
      254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
      254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
      254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
      254  254  254  254  254  254  254  254  254  254  254  254  254  32  32  32  32  10
      12  12  12  254  254  254  254  254  254  254  254
      85:  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
      254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
      254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
      254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
      254  254  254  254  254  254  254  254  254  254  254  254  254  32  32  32  32  12
      10  12  12  254  254  254  254  254  254  254  254
      86:  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
      254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
      254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
      254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
      254  254  254  254  254  254  254  254  254  254  254  254  254  32  32  32  32  12
      12  10  12  254  254  254  254  254  254  254  254
```

(Continued on next page)

Platform Notes (Continued)

```
 87:  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  32   32   32   32   12
 12   12   10   254  254  254  254  254  254  254  254  254
 88:  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  10   12   12   12   32   32   32   32
 89:  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  12   10   12   12   32   32   32   32
 90:  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  12   12   10   12   32   32   32   32
 91:  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
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 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  12   12   12   10   32   32   32   32
 92:  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  32   32   32   32   10   12   12   12
 93:  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  32   32   32   32   12   10   12   12
 94:  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
 254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
```

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Platform Notes (Continued)

```
    254  254  254  254  32  32  32  32  12  12  10  12
    95:  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
    254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
    254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
    254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
    254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254  254
    254  254  254  254  32  32  32  32  12  12  12  10

  From /proc/meminfo
     MemTotal:       5638270132 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 13d 4.12.14-197.21.1.vSMP.2-default #1 SMP Mon Oct 7 08:41:58 EDT 2019 (8ef2efd)
     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: usercopy/swapgs barriers and __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 22 19:31

  SPEC is set to: /dev/shm
     Filesystem     Type   Size  Used Avail Use% Mounted on
     ramfs          ramfs     0     0     0    - /dev/shm
```

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Platform Notes (Continued)

```
 From /sys/devices/virtual/dmi/id
     BIOS:    ScaleMP 9.5.195.18 12/19/2019
     Vendor:  ScaleMP
     Product: vSMP Foundation
     Serial:  1122334

 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 Micron Technology 36ASF4G72PZ-2G6D1 32 kB 2 rank 2667
     32x Micron Technology 36ASF4G72PZ-2G6E1 32 kB 2 rank 2667
     144x SK Hynix HMA84GR7AFR4N-VK 32 kB 2 rank 2667

 (End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
C       | 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base)
        | 525.x264_r(base) 557.xz_r(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: /mnt/aocc-compiler-2.0.0/bin
------------------------------------------------------------------------------

==============================================================================
C++     | 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
        | 541.leela_r(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: /mnt/aocc-compiler-2.0.0/bin
------------------------------------------------------------------------------

==============================================================================
Fortran | 548.exchange2_r(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)
```

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Compiler Version Notes (Continued)

```
Target: x86_64-unknown-linux-gnu
Thread model: posix
InstalledDir: /mnt/aocc-compiler-2.0.0/bin
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
clang

C++ benchmarks:
clang++

Fortran benchmarks:
flang

Base Portability Flags

500.perlbench_r: -DSPEC_LINUX_X64 -DSPEC_LP64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LINUX -DSPEC_LP64
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-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

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Base Optimization Flags (Continued)

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

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/aocc200-flags-B1.html
http://www.spec.org/cpu2017/flags/ScaleMP-Supermicro-Platform-Settings-V1.2-Rome-revB.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/aocc200-flags-B1.xml
http://www.spec.org/cpu2017/flags/ScaleMP-Supermicro-Platform-Settings-V1.2-Rome-revB.xml

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For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

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