SPEC® CPU2017 Floating Point Rate Result

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Hewlett Packard Enterprise

(Test Sponsor: HPE)

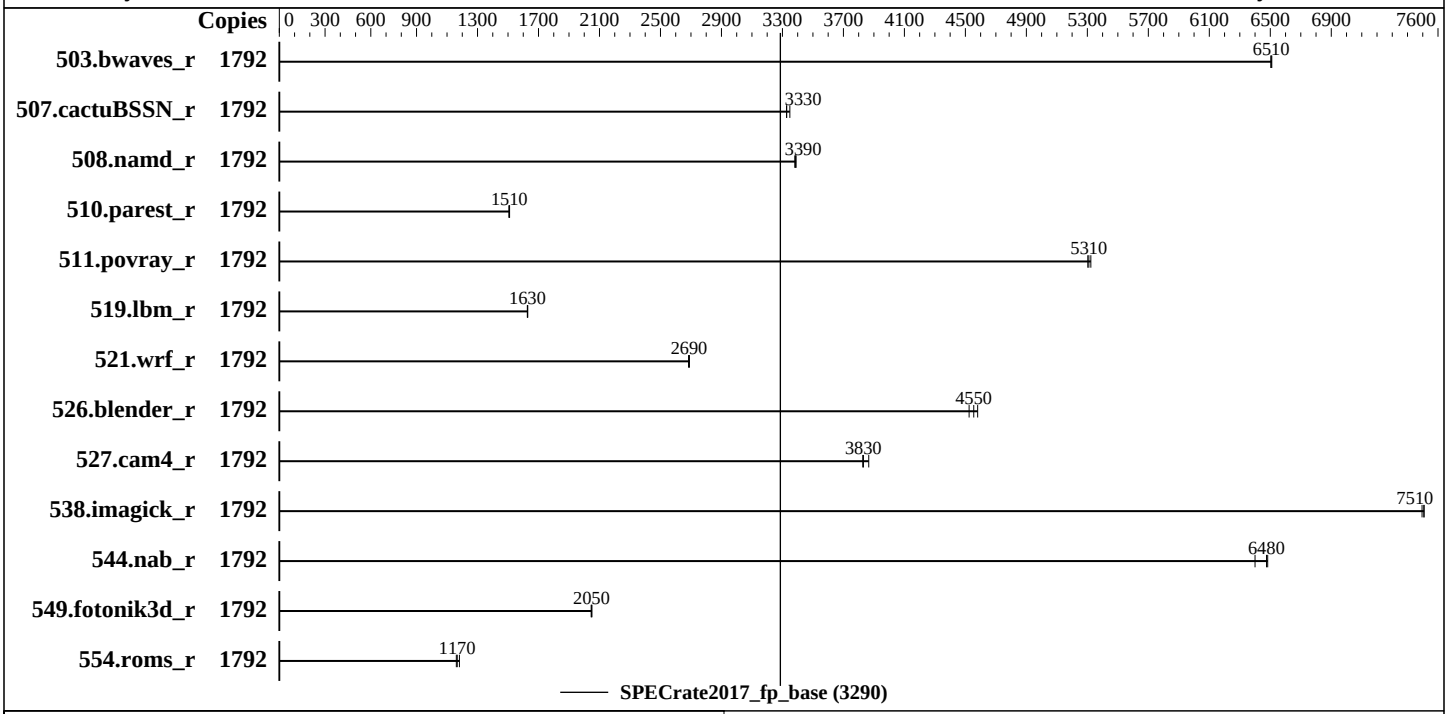
Superdome Flex
(2.50 GHz, Intel Xeon Platinum 8180)

SPECrate2017_fp_base = 3290

SPECrate2017_fp_peak = Not Run

CPU2017 License: 3
Test Sponsor: HPE
Tested by: HPE

Test Date: Dec-2017
Hardware Availability: Mar-2018
Software Availability: Mar-2018



Hardware

CPU Name:	Intel Xeon Platinum 8180
Max MHz.:	3800
Nominal:	2500
Enabled:	896 cores, 32 chips, 2 threads/core
Orderable:	4 to 32 chips
Cache L1:	32 KB I + 32 KB D on chip per core
L2:	1 MB I+D on chip per core
L3:	38.5 MB I+D on chip per chip
Other:	None
Memory:	24 TB (384 x 64 GB 4Rx4 PC4-2666V-L)
Storage:	24 TB tmpfs
Other:	None

Software

OS:	SUSE Linux Enterprise Server 12 (x86_64) SP3, Kernel 4.4.92-6.18-default
Compiler:	C/C++: Version 18.0.0.128 of Intel C/C++ Compiler for Linux; Fortran: Version 18.0.0.128 of Intel Fortran Compiler for Linux
Parallel:	No
Firmware:	HPE Firmware Bundle Version 2.3.110 released Dec-2017
File System:	tmpfs
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit
Peak Pointers:	Not Applicable
Other:	HPE Foundation Software 1.0, Build 717a130.sles12sp3-1710052000

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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	1792	2760	6510	2763	6500	**2762**	**6510**							
507.cactuBSSN_r	1792	682	3330	**682**	**3330**	677	3350							
508.namd_r	1792	**503**	**3390**	502	3390	504	3380							
510.parest_r	1792	3114	1510	3104	1510	**3106**	**1510**							
511.povray_r	1792	789	5300	786	5320	**788**	**5310**							
519.lbm_r	1792	1159	1630	**1160**	**1630**	1161	1630							
521.wrf_r	1792	1495	2680	**1494**	**2690**	1492	2690							
526.blender_r	1792	596	4580	603	4520	**599**	**4550**							
527.cam4_r	1792	**818**	**3830**	811	3870	819	3830							
538.imagick_r	1792	595	7500	**594**	**7510**	594	7510							
544.nab_r	1792	465	6480	**466**	**6480**	471	6400							
549.fotonik3d_r	1792	3406	2050	**3409**	**2050**	3414	2050							
554.roms_r	1792	**2440**	**1170**	2453	1160	2410	1180							

SPECrate2017_fp_base = 3290

SPECrate2017_fp_peak = Not Run

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

Submit Notes

```
The numactl mechanism was used to bind copies to processors. The config file option 'submit'
was used to generate numactl commands to bind each copy to a specific processor.
For details, please see the config file.
```

Operating System Notes

```
Stack size set to unlimited using "ulimit -s unlimited"
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/transparent_hugepage/enabled
Prior to runcpu invocation
Filesystem page cache synced and cleared with:
sync; echo 3>       /proc/sys/vm/drop_caches
The tmpfs filesystem was set up with:
   mkdir -p /dev/shm/cpu2017-32S
   mount -t tmpfs -o size=24576G,rw tmpfs /dev/shm/cpu2017-32S
```

General Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/dev/shm/cpu2017-32S/lib/ia32:/dev/shm/cpu2017-32S/lib/intel64"
LD_LIBRARY_PATH = "$LD_LIBRARY_PATH:/dev/shm/cpu2017-32S/je5.0.1-32:/dev/shm/cpu2017-32S/je5.0.1-64"
 Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
 memory using Redhat Enterprise Linux 7.4
```

Platform Notes

```
Rack Management Controller setting:
   modify npar pnum=0 ras=hpc

Sysinfo program /dev/shm/cpu2017-32S/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on uv4test33-sys Wed Dec 20 19:10:46 2017

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 : Intel(R) Xeon(R) Platinum 8180 CPU @ 2.50GHz
      32  "physical id"s (chips)
      1792 "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 : 28
      siblings  : 56
      physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
      28 29 30
      physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
      28 29 30
      physical 2: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
      28 29 30
      physical 3: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
      28 29 30
      physical 4: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
      28 29 30
      physical 5: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
      28 29 30
      physical 6: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
      28 29 30
      physical 7: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
      28 29 30
      physical 8: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
      28 29 30
      physical 9: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26 27
      28 29 30
      physical 10: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26
      27 28 29 30
      physical 11: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26
      27 28 29 30
      physical 12: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26
      27 28 29 30
      physical 13: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24 25 26
      27 28 29 30
```

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Platform Notes (Continued)

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

 From lscpu:
      Architecture:          x86_64
      CPU op-mode(s):        32-bit, 64-bit
      Byte Order:            Little Endian
      CPU(s):                1792
      On-line CPU(s) list:   0-1791
      Thread(s) per core:    2
      Core(s) per socket:    28
      Socket(s):             32
      NUMA node(s):          32
```

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Platform Notes (Continued)

```
Vendor ID:             GenuineIntel
CPU family:            6
Model:                 85
Model name:            Intel(R) Xeon(R) Platinum 8180 CPU @ 2.50GHz
Stepping:              4
CPU MHz:               3800.000
CPU max MHz:           3800.0000
CPU min MHz:           1000.0000
BogoMIPS:              5000.43
Virtualization:        VT-x
NUMA node0 CPU(s):     0-27,896-923
NUMA node1 CPU(s):     28-55,924-951
NUMA node2 CPU(s):     56-83,952-979
NUMA node3 CPU(s):     84-111,980-1007
NUMA node4 CPU(s):     112-139,1008-1035
NUMA node5 CPU(s):     140-167,1036-1063
NUMA node6 CPU(s):     168-195,1064-1091
NUMA node7 CPU(s):     196-223,1092-1119
NUMA node8 CPU(s):     224-251,1120-1147
NUMA node9 CPU(s):     252-279,1148-1175
NUMA node10 CPU(s):    280-307,1176-1203
NUMA node11 CPU(s):    308-335,1204-1231
NUMA node12 CPU(s):    336-363,1232-1259
NUMA node13 CPU(s):    364-391,1260-1287
NUMA node14 CPU(s):    392-419,1288-1315
NUMA node15 CPU(s):    420-447,1316-1343
NUMA node16 CPU(s):    448-475,1344-1371
NUMA node17 CPU(s):    476-503,1372-1399
NUMA node18 CPU(s):    504-531,1400-1427
NUMA node19 CPU(s):    532-559,1428-1455
NUMA node20 CPU(s):    560-587,1456-1483
NUMA node21 CPU(s):    588-615,1484-1511
NUMA node22 CPU(s):    616-643,1512-1539
NUMA node23 CPU(s):    644-671,1540-1567
NUMA node24 CPU(s):    672-699,1568-1595
NUMA node25 CPU(s):    700-727,1596-1623
NUMA node26 CPU(s):    728-755,1624-1651
NUMA node27 CPU(s):    756-783,1652-1679
NUMA node28 CPU(s):    784-811,1680-1707
NUMA node29 CPU(s):    812-839,1708-1735
NUMA node30 CPU(s):    840-867,1736-1763
NUMA node31 CPU(s):    868-895,1764-1791
Flags:                 fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov
pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc
aperfmperf eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg
fma cx16 xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes
```

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Platform Notes (Continued)

```
      xsave avx f16c rdrand lahf_lm abm 3dnowprefetch ida arat epb pln pts dtherm intel_pt
      tpr_shadow vnmi flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2
      erms invpcid rtm cqm mpx avx512f avx512dq rdseed adx smap clflushopt clwb avx512cd
      avx512bw avx512vl xsaveopt xsavec xgetbv1 cqm_llc cqm_occup_llc pku ospke

 /proc/cpuinfo cache data
    cache size : 39424 KB

 From numactl --hardware  WARNING: a numactl 'node' might or might not correspond to a
 physical chip.
   available: 32 nodes (0-31)
   node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
   896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917
   918 919 920 921 922 923
   node 0 size: 747232 MB
   node 0 free: 735123 MB
   node 1 cpus: 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 55 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942
   943 944 945 946 947 948 949 950 951
   node 1 size: 750604 MB
   node 1 free: 740107 MB
   node 2 cpus: 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 83 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970
   971 972 973 974 975 976 977 978 979
   node 2 size: 750604 MB
   node 2 free: 740260 MB
   node 3 cpus: 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105
   106 107 108 109 110 111 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995
   996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007
   node 3 size: 750604 MB
   node 3 free: 740253 MB
   node 4 cpus: 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129
   130 131 132 133 134 135 136 137 138 139 1008 1009 1010 1011 1012 1013 1014 1015 1016
   1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033
   1034 1035
   node 4 size: 750604 MB
   node 4 free: 740307 MB
   node 5 cpus: 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157
   158 159 160 161 162 163 164 165 166 167 1036 1037 1038 1039 1040 1041 1042 1043 1044
   1045 1046 1047 1048 1049 1050 1051 1052 1053 1054 1055 1056 1057 1058 1059 1060 1061
   1062 1063
   node 5 size: 750604 MB
   node 5 free: 740305 MB
   node 6 cpus: 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185
   186 187 188 189 190 191 192 193 194 195 1064 1065 1066 1067 1068 1069 1070 1071 1072
   1073 1074 1075 1076 1077 1078 1079 1080 1081 1082 1083 1084 1085 1086 1087 1088 1089
   1090 1091
```

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Platform Notes (Continued)

```
node 6 size: 750604 MB
node 6 free: 740297 MB
node 7 cpus: 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213
214 215 216 217 218 219 220 221 222 223 1092 1093 1094 1095 1096 1097 1098 1099 1100
1101 1102 1103 1104 1105 1106 1107 1108 1109 1110 1111 1112 1113 1114 1115 1116 1117
1118 1119
node 7 size: 750604 MB
node 7 free: 740290 MB
node 8 cpus: 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241
242 243 244 245 246 247 248 249 250 251 1120 1121 1122 1123 1124 1125 1126 1127 1128
1129 1130 1131 1132 1133 1134 1135 1136 1137 1138 1139 1140 1141 1142 1143 1144 1145
1146 1147
node 8 size: 750604 MB
node 8 free: 740308 MB
node 9 cpus: 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269
270 271 272 273 274 275 276 277 278 279 1148 1149 1150 1151 1152 1153 1154 1155 1156
1157 1158 1159 1160 1161 1162 1163 1164 1165 1166 1167 1168 1169 1170 1171 1172 1173
1174 1175
node 9 size: 750604 MB
node 9 free: 740299 MB
node 10 cpus: 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297
298 299 300 301 302 303 304 305 306 307 1176 1177 1178 1179 1180 1181 1182 1183 1184
1185 1186 1187 1188 1189 1190 1191 1192 1193 1194 1195 1196 1197 1198 1199 1200 1201
1202 1203
node 10 size: 750604 MB
node 10 free: 740306 MB
node 11 cpus: 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325
326 327 328 329 330 331 332 333 334 335 1204 1205 1206 1207 1208 1209 1210 1211 1212
1213 1214 1215 1216 1217 1218 1219 1220 1221 1222 1223 1224 1225 1226 1227 1228 1229
1230 1231
node 11 size: 750604 MB
node 11 free: 740302 MB
node 12 cpus: 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353
354 355 356 357 358 359 360 361 362 363 1232 1233 1234 1235 1236 1237 1238 1239 1240
1241 1242 1243 1244 1245 1246 1247 1248 1249 1250 1251 1252 1253 1254 1255 1256 1257
1258 1259
node 12 size: 750604 MB
node 12 free: 740292 MB
node 13 cpus: 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381
382 383 384 385 386 387 388 389 390 391 1260 1261 1262 1263 1264 1265 1266 1267 1268
1269 1270 1271 1272 1273 1274 1275 1276 1277 1278 1279 1280 1281 1282 1283 1284 1285
1286 1287
node 13 size: 750604 MB
node 13 free: 740295 MB
node 14 cpus: 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409
410 411 412 413 414 415 416 417 418 419 1288 1289 1290 1291 1292 1293 1294 1295 1296
1297 1298 1299 1300 1301 1302 1303 1304 1305 1306 1307 1308 1309 1310 1311 1312 1313
```

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Platform Notes (Continued)

```
1314 1315
node 14 size: 750604 MB
node 14 free: 740292 MB
node 15 cpus: 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437
438 439 440 441 442 443 444 445 446 447 1316 1317 1318 1319 1320 1321 1322 1323 1324
1325 1326 1327 1328 1329 1330 1331 1332 1333 1334 1335 1336 1337 1338 1339 1340 1341
1342 1343
node 15 size: 750604 MB
node 15 free: 740298 MB
node 16 cpus: 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465
466 467 468 469 470 471 472 473 474 475 1344 1345 1346 1347 1348 1349 1350 1351 1352
1353 1354 1355 1356 1357 1358 1359 1360 1361 1362 1363 1364 1365 1366 1367 1368 1369
1370 1371
node 16 size: 750604 MB
node 16 free: 740278 MB
node 17 cpus: 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493
494 495 496 497 498 499 500 501 502 503 1372 1373 1374 1375 1376 1377 1378 1379 1380
1381 1382 1383 1384 1385 1386 1387 1388 1389 1390 1391 1392 1393 1394 1395 1396 1397
1398 1399
node 17 size: 750604 MB
node 17 free: 740280 MB
node 18 cpus: 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521
522 523 524 525 526 527 528 529 530 531 1400 1401 1402 1403 1404 1405 1406 1407 1408
1409 1410 1411 1412 1413 1414 1415 1416 1417 1418 1419 1420 1421 1422 1423 1424 1425
1426 1427
node 18 size: 750604 MB
node 18 free: 740301 MB
node 19 cpus: 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549
550 551 552 553 554 555 556 557 558 559 1428 1429 1430 1431 1432 1433 1434 1435 1436
1437 1438 1439 1440 1441 1442 1443 1444 1445 1446 1447 1448 1449 1450 1451 1452 1453
1454 1455
node 19 size: 750604 MB
node 19 free: 740283 MB
node 20 cpus: 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577
578 579 580 581 582 583 584 585 586 587 1456 1457 1458 1459 1460 1461 1462 1463 1464
1465 1466 1467 1468 1469 1470 1471 1472 1473 1474 1475 1476 1477 1478 1479 1480 1481
1482 1483
node 20 size: 750604 MB
node 20 free: 740291 MB
node 21 cpus: 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605
606 607 608 609 610 611 612 613 614 615 1484 1485 1486 1487 1488 1489 1490 1491 1492
1493 1494 1495 1496 1497 1498 1499 1500 1501 1502 1503 1504 1505 1506 1507 1508 1509
1510 1511
node 21 size: 750604 MB
node 21 free: 740286 MB
node 22 cpus: 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633
634 635 636 637 638 639 640 641 642 643 1512 1513 1514 1515 1516 1517 1518 1519 1520
```

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Platform Notes (Continued)

```
1521 1522 1523 1524 1525 1526 1527 1528 1529 1530 1531 1532 1533 1534 1535 1536 1537
1538 1539
node 22 size: 750604 MB
node 22 free: 740292 MB
node 23 cpus: 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661
662 663 664 665 666 667 668 669 670 671 1540 1541 1542 1543 1544 1545 1546 1547 1548
1549 1550 1551 1552 1553 1554 1555 1556 1557 1558 1559 1560 1561 1562 1563 1564 1565
1566 1567
node 23 size: 750604 MB
node 23 free: 740286 MB
node 24 cpus: 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689
690 691 692 693 694 695 696 697 698 699 1568 1569 1570 1571 1572 1573 1574 1575 1576
1577 1578 1579 1580 1581 1582 1583 1584 1585 1586 1587 1588 1589 1590 1591 1592 1593
1594 1595
node 24 size: 750604 MB
node 24 free: 739906 MB
node 25 cpus: 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717
718 719 720 721 722 723 724 725 726 727 1596 1597 1598 1599 1600 1601 1602 1603 1604
1605 1606 1607 1608 1609 1610 1611 1612 1613 1614 1615 1616 1617 1618 1619 1620 1621
1622 1623
node 25 size: 750604 MB
node 25 free: 739814 MB
node 26 cpus: 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745
746 747 748 749 750 751 752 753 754 755 1624 1625 1626 1627 1628 1629 1630 1631 1632
1633 1634 1635 1636 1637 1638 1639 1640 1641 1642 1643 1644 1645 1646 1647 1648 1649
1650 1651
node 26 size: 750604 MB
node 26 free: 740087 MB
node 27 cpus: 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773
774 775 776 777 778 779 780 781 782 783 1652 1653 1654 1655 1656 1657 1658 1659 1660
1661 1662 1663 1664 1665 1666 1667 1668 1669 1670 1671 1672 1673 1674 1675 1676 1677
1678 1679
node 27 size: 750604 MB
node 27 free: 739271 MB
node 28 cpus: 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801
802 803 804 805 806 807 808 809 810 811 1680 1681 1682 1683 1684 1685 1686 1687 1688
1689 1690 1691 1692 1693 1694 1695 1696 1697 1698 1699 1700 1701 1702 1703 1704 1705
1706 1707
node 28 size: 750604 MB
node 28 free: 740193 MB
node 29 cpus: 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829
830 831 832 833 834 835 836 837 838 839 1708 1709 1710 1711 1712 1713 1714 1715 1716
1717 1718 1719 1720 1721 1722 1723 1724 1725 1726 1727 1728 1729 1730 1731 1732 1733
1734 1735
node 29 size: 750604 MB
node 29 free: 740150 MB
node 30 cpus: 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857
```

(Continued on next page)

Platform Notes (Continued)

```
858 859 860 861 862 863 864 865 866 867 1736 1737 1738 1739 1740 1741 1742 1743 1744
1745 1746 1747 1748 1749 1750 1751 1752 1753 1754 1755 1756 1757 1758 1759 1760 1761
1762 1763
node 30 size: 750604 MB
node 30 free: 740175 MB
node 31 cpus: 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885
886 887 888 889 890 891 892 893 894 895 1764 1765 1766 1767 1768 1769 1770 1771 1772
1773 1774 1775 1776 1777 1778 1779 1780 1781 1782 1783 1784 1785 1786 1787 1788 1789
1790 1791
node 31 size: 750595 MB
node 31 free: 740061 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  16  16  24  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43
  43  43  43  43  43  43  43  43  43  43  43  43
  1:  16  10  24  16  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43
  43  43  43  43  43  43  43  43  43  43  43  43
  2:  16  24  10  16  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43
  43  43  43  43  43  43  43  43  43  43  43  43
  3:  24  16  16  10  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43
  43  43  43  43  43  43  43  43  43  43  43  43
  4:  43  43  43  43  10  16  16  24  43  43  43  43  43  43  43  43  43  43  43  43
  43  43  43  43  43  43  43  43  43  43  43  43
  5:  43  43  43  43  16  10  24  16  43  43  43  43  43  43  43  43  43  43  43  43
  43  43  43  43  43  43  43  43  43  43  43  43
  6:  43  43  43  43  16  24  10  16  43  43  43  43  43  43  43  43  43  43  43  43
  43  43  43  43  43  43  43  43  43  43  43  43
  7:  43  43  43  43  24  16  16  10  43  43  43  43  43  43  43  43  43  43  43  43
  43  43  43  43  43  43  43  43  43  43  43  43
  8:  43  43  43  43  43  43  43  43  10  16  16  24  43  43  43  43  43  43  43  43
  43  43  43  43  43  43  43  43  43  43  43  43
  9:  43  43  43  43  43  43  43  43  16  10  24  16  43  43  43  43  43  43  43  43
  43  43  43  43  43  43  43  43  43  43  43  43
 10:  43  43  43  43  43  43  43  43  43  16  24  10  16  43  43  43  43  43  43  43
 43  43  43  43  43  43  43  43  43  43  43  43
 11:  43  43  43  43  43  43  43  43  43  24  16  16  10  43  43  43  43  43  43  43
 43  43  43  43  43  43  43  43  43  43  43  43
 12:  43  43  43  43  43  43  43  43  43  43  43  43  43  10  16  16  24  43  43  43
 43  43  43  43  43  43  43  43  43  43  43  43
 13:  43  43  43  43  43  43  43  43  43  43  43  43  43  16  10  24  16  43  43  43
 43  43  43  43  43  43  43  43  43  43  43  43
 14:  43  43  43  43  43  43  43  43  43  43  43  43  43  16  24  10  16  43  43  43
 43  43  43  43  43  43  43  43  43  43  43  43
 15:  43  43  43  43  43  43  43  43  43  43  43  43  43  24  16  16  10  43  43  43
 43  43  43  43  43  43  43  43  43  43  43  43
 16:  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  10  16  16  24
```

(Continued on next page)

Platform Notes (Continued)

```
    43  43  43  43  43  43  43  43  43  43  43  43
    17:  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  16  10  24  16
    43  43  43  43  43  43  43  43  43  43  43  43
    18:  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  16  24  10  16
    43  43  43  43  43  43  43  43  43  43  43  43
    19:  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  24  16  16  10
    43  43  43  43  43  43  43  43  43  43  43  43
    20:  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43
    10  16  16  24  43  43  43  43  43  43  43  43
    21:  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43
    16  10  24  16  43  43  43  43  43  43  43  43
    22:  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43
    16  24  10  16  43  43  43  43  43  43  43  43
    23:  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43
    24  16  16  10  43  43  43  43  43  43  43  43
    24:  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43
    43  43  43  43  10  16  16  24  43  43  43  43
    25:  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43
    43  43  43  43  16  10  24  16  43  43  43  43
    26:  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43
    43  43  43  43  16  24  10  16  43  43  43  43
    27:  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43
    43  43  43  43  24  16  16  10  43  43  43  43
    28:  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43
    43  43  43  43  43  43  43  43  10  16  16  24
    29:  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43
    43  43  43  43  43  43  43  43  16  10  24  16
    30:  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43
    43  43  43  43  43  43  43  43  16  24  10  16
    31:  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43
    43  43  43  43  43  43  43  43  24  16  16  10

  From /proc/meminfo
     MemTotal:       24592336740 kB
     HugePages_Total:       0
     Hugepagesize:       2048 kB

  /usr/bin/lsb_release -d
     SUSE Linux Enterprise Server 12 SP3

  From /etc/*release* /etc/*version*
     SuSE-release:
        SUSE Linux Enterprise Server 12 (x86_64)
        VERSION = 12
        PATCHLEVEL = 3
        # This file is deprecated and will be removed in a future service pack or release.
        # Please check /etc/os-release for details about this release.
```


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Platform Notes (Continued)

```
    hpe-foundation-release: HPE Foundation Software 1.0, Build
    717a130.sles12sp3-1710052000
    os-release:
       NAME="SLES"
       VERSION="12-SP3"
       VERSION_ID="12.3"
       PRETTY_NAME="SUSE Linux Enterprise Server 12 SP3"
       ID="sles"
       ANSI_COLOR="0;32"
       CPE_NAME="cpe:/o:suse:sles:12:sp3"

 uname -a:
    Linux uv4test33-sys 4.4.92-6.18-default #1 SMP Fri Oct 20 18:58:48 UTC 2017 (a69df70)
    x86_64 x86_64 x86_64 GNU/Linux

 run-level 3 Dec 20 12:08

 SPEC is set to: /dev/shm/cpu2017-32S
    Filesystem     Type   Size  Used Avail Use% Mounted on
    tmpfs          tmpfs   24T  319G   24T   2% /dev/shm/cpu2017-32S

 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.
   BIOS HPE IP147.006.000.143.000.1712051837 12/05/2017
   Memory:
    384x Samsung M386A8K40BM2-CTD 64 GB 4 rank 2666

 (End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
 CC  519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)
------------------------------------------------------------------------------
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------

==============================================================================
 CXXC 508.namd_r(base) 510.parest_r(base)
------------------------------------------------------------------------------
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------
```

(Continued on next page)

Compiler Version Notes (Continued)

```
==============================================================================
 CC  511.povray_r(base) 526.blender_r(base)
------------------------------------------------------------------------------
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------

==============================================================================
 FC  507.cactuBSSN_r(base)
------------------------------------------------------------------------------
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------

==============================================================================
 FC  503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)
------------------------------------------------------------------------------
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------

==============================================================================
 CC  521.wrf_r(base) 527.cam4_r(base)
------------------------------------------------------------------------------
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

(Continued on next page)

Base Compiler Invocation (Continued)

Fortran benchmarks:
ifort

Benchmarks using both Fortran and C:
ifort icc

Benchmarks using both C and C++:
icpc icc

Benchmarks using Fortran, C, and C++:
icpc icc ifort

Base Portability Flags

503.bwaves_r: -DSPEC_LP64
507.cactuBSSN_r: -DSPEC_LP64
508.namd_r: -DSPEC_LP64
510.parest_r: -DSPEC_LP64
511.povray_r: -DSPEC_LP64
519.lbm_r: -DSPEC_LP64
521.wrf_r: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
526.blender_r: -DSPEC_LP64 -DSPEC_LINUX -funsigned-char
527.cam4_r: -DSPEC_LP64 -DSPEC_CASE_FLAG
538.imagick_r: -DSPEC_LP64
544.nab_r: -DSPEC_LP64
549.fotonik3d_r: -DSPEC_LP64
554.roms_r: -DSPEC_LP64

Base Optimization Flags

C benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3

Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte

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Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:
`-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte`

Benchmarks using both C and C++:
`-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3`

Benchmarks using Fortran, C, and C++:
`-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch -ffinite-math-only -qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte`

Base Other Flags

C benchmarks:
`-m64 -std=c11`

C++ benchmarks:
`-m64`

Fortran benchmarks:
`-m64`

Benchmarks using both Fortran and C:
`-m64 -std=c11`

Benchmarks using both C and C++:
`-m64 -std=c11`

Benchmarks using Fortran, C, and C++:
`-m64 -std=c11`

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.html
http://www.spec.org/cpu2017/flags/HPE-Superdome_Flex-RevA.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.xml
http://www.spec.org/cpu2017/flags/HPE-Superdome_Flex-RevA.xml

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

Tested with SPEC CPU2017 v1.0.2 on 2017-12-20 20:10:45-0500.
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