



SPEC® CPU2017 Integer Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

Huawei

SPECrate2017_int_base = 867

KunLun 9016 (Intel Xeon E7-4850 v4)

SPECrate2017_int_peak = Not Run

CPU2017 License: 3175

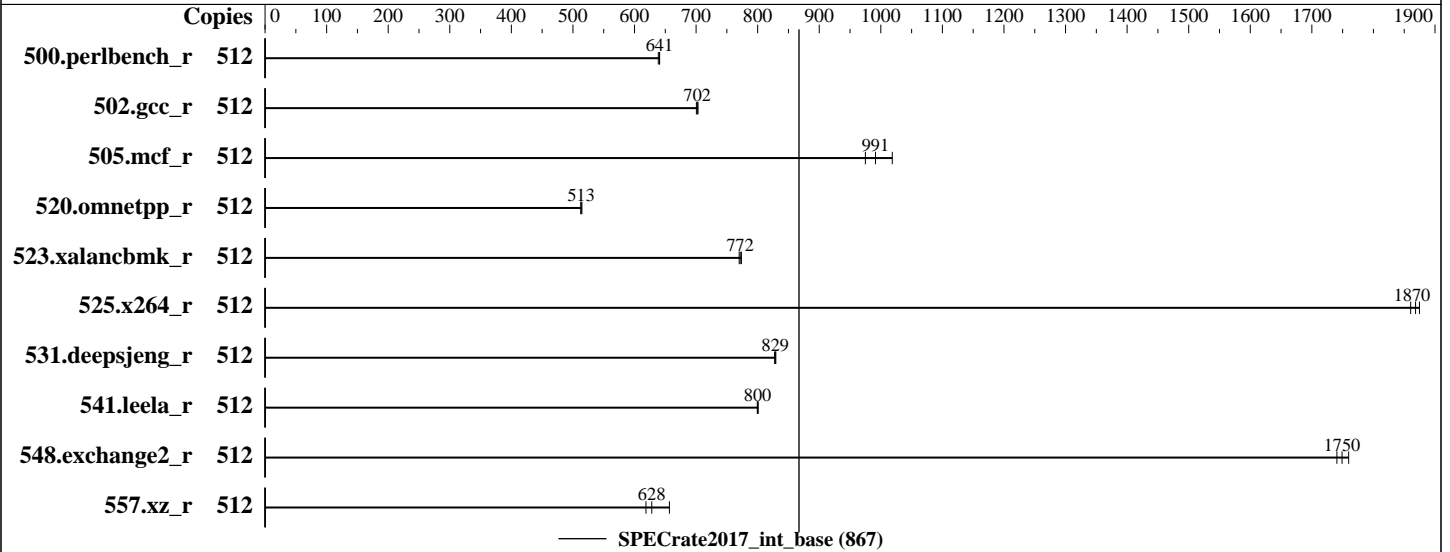
Test Date: May-2018

Test Sponsor: Huawei

Hardware Availability: Mar-2018

Tested by: Huawei

Software Availability: Mar-2018



Hardware

CPU Name: Intel Xeon E7-4850 v4
 Max MHz.: 2800
 Nominal: 2100
 Enabled: 256 cores, 16 chips, 2 threads/core
 Orderable: 4,8,16 chips
 Cache L1: 32 KB I + 32 KB D on chip per core
 L2: 256 KB I+D on chip per core
 L3: 40 MB I+D on chip per chip
 Other: None
 Memory: 4 TB (128 x 32 GB 2Rx4 PC4-2400T-R, running at 1333)
 Storage: 3 x 900 GB SAS HDD 10K RPM, RAID 0
 Other: None

Software

OS: SUSE Linux Enterprise Server 12 SP2
 4.4.120-92.70-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: Version BLXSV320 released Feb-2018
 File System: ext4
 System State: Run level 5 (multi-user)
 Base Pointers: 64-bit
 Peak Pointers: Not Applicable
 Other: jemalloc: jemalloc memory allocator library V5.0.1



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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	512	1276	639	<u>1272</u>	<u>641</u>	1272	641							
502.gcc_r	512	<u>1033</u>	<u>702</u>	1031	703	1035	701							
505.mcf_r	512	812	1020	<u>835</u>	<u>991</u>	849	975							
520.omnetpp_r	512	<u>1308</u>	<u>513</u>	1310	513	1305	515							
523.xalancbmk_r	512	699	774	<u>701</u>	<u>772</u>	702	770							
525.x264_r	512	478	1870	<u>480</u>	<u>1870</u>	482	1860							
531.deepsjeng_r	512	709	827	<u>708</u>	<u>829</u>	707	829							
541.leela_r	512	<u>1060</u>	<u>800</u>	1061	799	1059	801							
548.exchange2_r	512	762	1760	771	1740	<u>767</u>	<u>1750</u>							
557.xz_r	512	842	657	<u>880</u>	<u>628</u>	894	619							

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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"
Numa balancing was disabled using "echo 0 > /proc/sys/kernel/numa_balancing"

General Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2017/lib/ia32:/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-32:/home/cpu2017/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
Transparent Huge Pages enabled by default
Prior to runcpu invocation
Filesystem page cache synced and cleared with:
sync; echo 3> /proc/sys/vm/drop_caches
runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>

jemalloc: configured and built at default for
32bit (i686) and 64bit (x86_64) targets;
jemalloc: built with the RedHat Enterprise 7.4,

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General Notes (Continued)

and the system compiler gcc 4.8.5;
 jemalloc: sources available from jemalloc.net or
<https://github.com/jemalloc/jemalloc/releases>;
 Yes: 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.

Platform Notes

BIOS configuration:
 Set Power Efficiency Mode to Performance
 Memory Patrol Scrub set to Disable
 Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
 running on linux-i5c0 Mon Jul 2 16:35:27 2018

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) CPU E7-4850 v4 @ 2.10GHz
 16 "physical id"s (chips)
 512 "processors"
 cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
 cpu cores : 16
 siblings : 32
 physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
 physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
 physical 2: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
 physical 3: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
 physical 4: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
 physical 5: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
 physical 6: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
 physical 7: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
 physical 8: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
 physical 9: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
 physical 10: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
 physical 11: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
 physical 12: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
 physical 13: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
 physical 14: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

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Platform Notes (Continued)

physical 15: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

From lscpu:

```

Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Byte Order:             Little Endian
CPU(s):                 512
On-line CPU(s) list:   0-511
Thread(s) per core:    2
Core(s) per socket:    16
Socket(s):              16
NUMA node(s):          16
Vendor ID:              GenuineIntel
CPU family:              6
Model:                  79
Model name:             Intel(R) Xeon(R) CPU E7-4850 v4 @ 2.10GHz
Stepping:               1
CPU MHz:                2100.043
CPU max MHz:            2800.0000
CPU min MHz:            1200.0000
BogoMIPS:               4200.05
Virtualization:         VT-x
L1d cache:              32K
L1i cache:              32K
L2 cache:               256K
L3 cache:               40960K
NUMA node0 CPU(s):     0-15,256-271
NUMA node1 CPU(s):     16-31,272-287
NUMA node2 CPU(s):     32-47,288-303
NUMA node3 CPU(s):     48-63,304-319
NUMA node4 CPU(s):     64-79,320-335
NUMA node5 CPU(s):     80-95,336-351
NUMA node6 CPU(s):     96-111,352-367
NUMA node7 CPU(s):     112-127,368-383
NUMA node8 CPU(s):     128-143,384-399
NUMA node9 CPU(s):     144-159,400-415
NUMA node10 CPU(s):    160-175,416-431
NUMA node11 CPU(s):    176-191,432-447
NUMA node12 CPU(s):    192-207,448-463
NUMA node13 CPU(s):    208-223,464-479
NUMA node14 CPU(s):    224-239,480-495
NUMA node15 CPU(s):    240-255,496-511

```

```

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 arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc aperfmperf
eagerfpu mce_recovery pni pclmulqdq dtes64 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 fl6c rdrand lahf_lm abm 3dnowprefetch arat epb invpcid_single pln pts
dtherm intel_pt spec_ctrl stibp retpoline kaiser tpr_shadow vnmi flexpriority ept
vpid fsgsbase tsc_adjust bml hle avx2 smep bmi2 erms invpcid rtm cqm rdseed adx
smap xsaveopt cqm_llc cqm_occup_llc

/proc/cpuinfo cache data
cache size : 40960 KB

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

available: 16 nodes (0-15)

node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 256 257 258 259 260 261 262 263 264
265 266 267 268 269 270 271

node 0 size: 257423 MB

node 0 free: 257081 MB

node 1 cpus: 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 272 273 274 275 276 277
278 279 280 281 282 283 284 285 286 287

node 1 size: 258024 MB

node 1 free: 257755 MB

node 2 cpus: 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 288 289 290 291 292 293
294 295 296 297 298 299 300 301 302 303

node 2 size: 258024 MB

node 2 free: 257678 MB

node 3 cpus: 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 304 305 306 307 308 309
310 311 312 313 314 315 316 317 318 319

node 3 size: 258024 MB

node 3 free: 257784 MB

node 4 cpus: 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 320 321 322 323 324 325
326 327 328 329 330 331 332 333 334 335

node 4 size: 258024 MB

node 4 free: 257738 MB

node 5 cpus: 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 336 337 338 339 340 341
342 343 344 345 346 347 348 349 350 351

node 5 size: 258024 MB

node 5 free: 257797 MB

node 6 cpus: 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 352 353 354
355 356 357 358 359 360 361 362 363 364 365 366 367

node 6 size: 258024 MB

node 6 free: 257709 MB

node 7 cpus: 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 368 369
370 371 372 373 374 375 376 377 378 379 380 381 382 383

node 7 size: 258024 MB

node 7 free: 257706 MB

node 8 cpus: 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 384 385
386 387 388 389 390 391 392 393 394 395 396 397 398 399

node 8 size: 258024 MB

node 8 free: 257813 MB

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Platform Notes (Continued)

```

node 9 cpus: 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 400 401
402 403 404 405 406 407 408 409 410 411 412 413 414 415
node 9 size: 258024 MB
node 9 free: 257841 MB
node 10 cpus: 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 416 417
418 419 420 421 422 423 424 425 426 427 428 429 430 431
node 10 size: 258024 MB
node 10 free: 257811 MB
node 11 cpus: 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 432 433
434 435 436 437 438 439 440 441 442 443 444 445 446 447
node 11 size: 258024 MB
node 11 free: 257776 MB
node 12 cpus: 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 448 449
450 451 452 453 454 455 456 457 458 459 460 461 462 463
node 12 size: 258024 MB
node 12 free: 257840 MB
node 13 cpus: 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 464 465
466 467 468 469 470 471 472 473 474 475 476 477 478 479
node 13 size: 258024 MB
node 13 free: 257860 MB
node 14 cpus: 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 480 481
482 483 484 485 486 487 488 489 490 491 492 493 494 495
node 14 size: 258024 MB
node 14 free: 257860 MB
node 15 cpus: 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 496 497
498 499 500 501 502 503 504 505 506 507 508 509 510 511
node 15 size: 257856 MB
node 15 free: 257699 MB
node distances:
node  0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15
 0: 10 21 31 21 41 41 51 51 61 61 71 71 61 61 71 71
 1: 21 10 21 31 41 41 51 51 61 61 71 71 61 61 71 71
 2: 31 21 10 21 51 51 41 41 71 71 61 61 71 71 61 61
 3: 21 31 21 10 51 51 41 41 71 71 61 61 71 71 61 61
 4: 41 41 51 51 10 21 31 21 61 61 71 71 61 61 71 71
 5: 41 41 51 51 21 10 21 31 61 61 71 71 61 61 71 71
 6: 51 51 41 41 31 21 10 21 71 71 61 61 71 71 61 61
 7: 51 51 41 41 21 31 21 10 71 71 61 61 71 71 61 61
 8: 61 61 71 71 61 61 71 71 10 21 31 21 41 41 51 51
 9: 61 61 71 71 61 61 71 71 21 10 21 31 41 41 51 51
10: 71 71 61 61 71 71 61 61 31 21 10 21 51 51 41 41
11: 71 71 61 61 71 71 61 61 21 31 21 10 51 51 41 41
12: 61 61 71 71 61 61 71 71 41 41 51 51 10 21 31 21
13: 61 61 71 71 61 61 71 71 41 41 51 51 21 10 21 31
14: 71 71 61 61 71 71 61 61 51 51 41 41 31 21 10 21
15: 71 71 61 61 71 71 61 61 51 51 41 41 21 31 21 10

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Platform Notes (Continued)

From /proc/meminfo

MemTotal: 4226684040 kB

HugePages_Total: 0

Hugepagesize: 2048 kB

/usr/bin/lsb_release -d

SUSE Linux Enterprise Server 12 SP2

From /etc/*release* /etc/*version*

SuSE-release:

SUSE Linux Enterprise Server 12 (x86_64)

VERSION = 12

PATCHLEVEL = 2

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.

os-release:

NAME="SLES"

VERSION="12-SP2"

VERSION_ID="12.2"

PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"

ID="sles"

ANSI_COLOR="0;32"

CPE_NAME="cpe:/o:suse:sles:12:sp2"

uname -a:

Linux linux-i5c0 4.4.120-92.70-default #1 SMP Wed Mar 14 15:59:43 UTC 2018 (52a83de)

x86_64 x86_64 x86_64 GNU/Linux

run-level 5 Jul 2 16:29

SPEC is set to: /home/cpu2017

Filesystem	Type	Size	Used	Avail	Use%	Mounted on
/dev/sda4	btrfs	2.4T	208G	2.2T	9%	/home

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 American Megatrends Inc. BLXSV320 2/23/2018

Memory:

70x Hynix HMA84GR7MFR4N-UH 32 GB 2 rank 2400, configured at 1333

15x Micron 36ASF4G72PZ-2G3B1 32 GB 2 rank 2400, configured at 1333

256x NO DIMM NO DIMM

43x Samsung M393A4K40BB1-CRC 32 GB 2 rank 2400, configured at 1333

(End of data from sysinfo program)



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Compiler Version Notes

=====
CC 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base)
557.xz_r(base)

icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

=====
CXXC 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
541.leela_r(base)

icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

=====
FC 548.exchange2_r(base)

ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

Base Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64

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Base Portability Flags (Continued)

541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64

Base Optimization Flags

C benchmarks:

-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

C++ benchmarks:

-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

Fortran benchmarks:

-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte
-L/usr/local/je5.0.1-64/lib -ljemalloc

Base Other Flags

C benchmarks:

-m64 -std=c11

C++ benchmarks:

-m64

Fortran benchmarks:

-m64

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/Huawei-Platform-Settings-V1.2-BDW-RevG.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/Huawei-Platform-Settings-V1.2-BDW-RevG.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 2018-07-02 04:35:26-0400.

Report generated on 2018-10-31 17:25:47 by CPU2017 PDF formatter v6067.

Originally published on 2018-06-26.