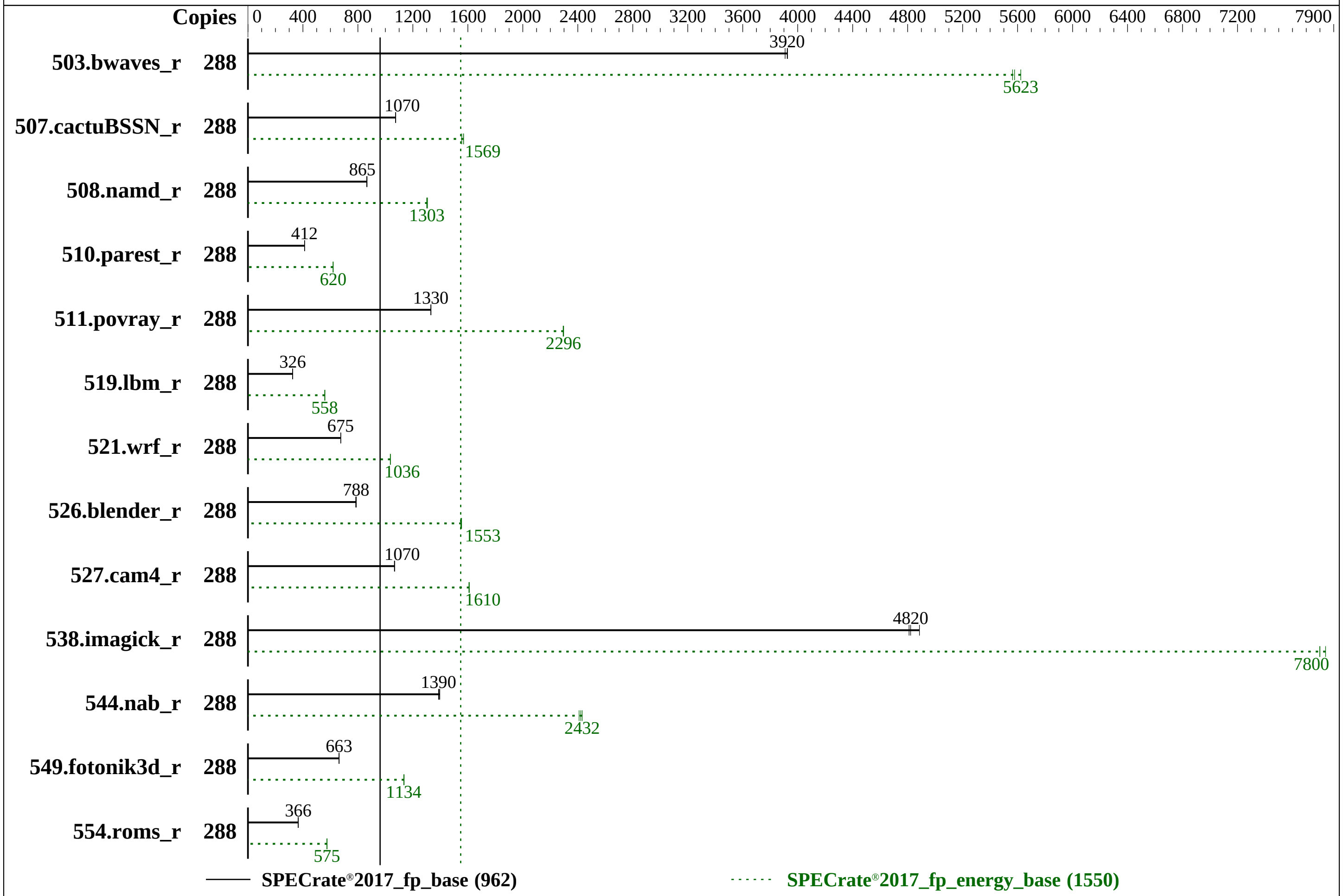
SPEC CPU®2017 Floating Point Rate Result

Lenovo Global Technology

ThinkSystem SR630 V4 (2.20 GHz, Intel Xeon 6780E)

SPECrate®2017_fp_base =	962
SPECrate®2017_fp_energy_base =	1550
SPECrate®2017_fp_peak =	Not Run
SPECrate®2017_fp_energy_peak =	Not Run

CPU2017 License:	9017	**Test Date:**	Sep-2024
Test Sponsor:	Lenovo Global Technology	**Hardware Availability:**	Nov-2024
Tested by:	Lenovo Global Technology	**Software Availability:**	Jun-2024



Hardware

CPU Name:	Intel Xeon 6780E
Max MHz:	3000
Nominal:	2200
Enabled:	288 cores, 2 chips
Orderable:	1,2 chips
Cache L1:	64 KB I + 32 KB D on chip per core
L2:	4 MB I+D on chip per core
L3:	108 MB I+D on chip per chip
Other:	None
Memory:	512 GB (16 x 32 GB 2Rx8 PC5-6400B-R)
Storage:	1 x 960GB NVMe SSD
Other:	CPU Cooling: Air

Software

OS:	SUSE Linux Enterprise Server 15 SP6 Kernel 6.4.0-150600.21-default
Compiler:	C/C++: Version 2024.1 of Intel oneAPI DPC++/C++ Compiler for Linux; Fortran: Version 2024.1 of Intel Fortran Compiler for Linux;
Parallel:	No
Firmware:	Lenovo BIOS Version IHE103O 0.20 released Aug-2024
File System:	xfs
System State:	Run level 3 (multi-user)
Base Pointers:	64-bit
Peak Pointers:	Not Applicable
Other:	jemalloc memory allocator V5.0.1
Power Management:	BIOS set to balance power and performance

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Power

Max. Power (W):	796.1
Idle Power (W):	174.44
Min. Temperature (C):	20.44
Elevation (m):	43
Line Standard:	220 V / 50 Hz / 1 phase / 3 wires
Provisioning:	Line-powered

Power Settings

Management FW:	Version 0.38 of IHX403L
Memory Mode:	Normal

Power-Relevant Hardware

Power Supply:	2 x 1300 W (redundant)
Details:	ThinkSystem V3 1300W 230V / 115V Titanium Power Supply 4P57A88621
Backplane:	10 x 2.5-inch HDD back plane
Other Storage:	None
Storage Model #s:	4XB7A93066
NICs Installed:	1 x ThinkSystem Ethernet 4-port Adaptor @ 10 / 25 Gb
NICs Enabled (FW/OS):	4 / 1
NICs Connected/Speed:	1 @ 10 Gb
Other HW Model #s:	4 x performance fan

Power Analyzer

Power Analyzer:	WIN:9888
Hardware Vendor:	YOKOGAWA, Inc.
Model:	YokogawaWT310E
Serial Number:	C3UG05013E
Input Connection:	Default
Metrology Institute:	CNAS
Calibration By:	GRG METROLOGY & TEST (BEIJING) CO., LTD.
Calibration Label:	J202308266858A-0004
Calibration Date:	16-Oct-2023
PTDaemon® Version:	1.10.0 (82175bac; 2022-08-17)
Setup Description:	Connected to PSU1
Current Ranges Used:	10A
Voltage Range Used:	300V

Temperature Meter

Temperature Meter:	WIN:9889
Hardware Vendor:	Digi International, Inc.
Model:	DigiWATCHPORT_H
Serial Number:	W63181846
Input Connection:	USB
PTDaemon Version:	1.10.0 (82175bac; 2022-08-17)
Setup Description:	50 mm in front of SUT main intake

Base Results Table

Benchmark	Copies	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power
503.bwaves_r	288	**736**	**3920**	**560**	**5620**	**761**	**788**	739	3910	566	5560	766	786	736	3930	564	5580	767	787
507.cactuBSSN_r	288	339	1080	258	1560	760	778	339	1070	255	1570	753	775	**339**	**1070**	**255**	**1570**	**753**	**770**
508.namd_r	288	317	864	229	1300	724	748	316	867	228	1310	723	746	**316**	**865**	**229**	**1300**	**724**	**748**
510.parest_r	288	1830	412	1320	619	723	796	**1830**	**412**	**1320**	**620**	**722**	**790**	1828	412	1320	620	723	793
511.povray_r	288	505	1330	318	2290	630	686	**505**	**1330**	**318**	**2300**	**629**	**687**	505	1330	318	2300	629	686
519.lbm_r	288	**932**	**326**	**618**	**558**	**663**	**683**	932	326	616	560	661	682	932	326	616	559	661	684
521.wrf_r	288	**956**	**675**	**680**	**1040**	**711**	**737**	956	675	680	1040	712	742	956	675	680	1040	711	740
526.blender_r	288	559	784	307	1550	549	749	**557**	**788**	**306**	**1550**	**549**	**749**	557	788	306	1550	549	752
527.cam4_r	288	473	1070	341	1610	722	782	**472**	**1070**	**341**	**1610**	**722**	**778**	472	1070	341	1610	722	777

Table continues on next page. Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

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Base Results Table (Continued)

Benchmark	Copies	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power
538.imagick_r	288	147	4890	98.9	7840	675	788	**149**	**4820**	**99.5**	**7800**	**669**	**787**	149	4810	99.5	7800	668	790
544.nab_r	288	350	1390	218	2410	624	685	347	1400	217	2420	625	688	**349**	**1390**	**216**	**2430**	**620**	**682**
549.fotonik3d_r	288	**1692**	**663**	**1100**	**1130**	**651**	**666**	1690	664	1100	1130	652	674	1693	663	1100	1140	650	669
554.roms_r	288	1247	367	876	576	702	719	1251	366	878	575	702	715	**1251**	**366**	**878**	**575**	**702**	**715**

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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"
```

Environment Variables Notes

```
Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2017-1.1.9-ic2024.1/lib/intel64:/home/cpu2017-1.1.9-ic2024.1/je5.0.1-64"
MALLOC_CONF = "retain:true"
```

General Notes

```
 Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM
 memory using Red Hat Enterprise Linux 8.4
 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>
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, a general purpose malloc implementation
 built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5
 sources available from jemalloc.net or https://github.com/jemalloc/jemalloc/releases
```

Platform Notes

```
BIOS configuration:
Workload Profile set to General Computing - Power Efficiency and then set it to Custom
Turbo Mode set to Disabled
```

(Continued on next page)

Platform Notes (Continued)

```
UPI Link Disable set to Minimum Number Of Links Enabled
UPI Prefetcher set to Disabled
DCU Streamer Prefetcher set to Disabled

 Sysinfo program /home/cpu2017-1.1.9-ic2024.1/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost Fri Sep  6 04:24:11 2024

 SUT (System Under Test) info as seen by some common utilities.

 ------------------------------------------------------------
 Table of contents
 ------------------------------------------------------------
  1. uname -a
  2. w
  3. Username
  4. ulimit -a
  5. sysinfo process ancestry
  6. /proc/cpuinfo
  7. lscpu
  8. numactl --hardware
  9. /proc/meminfo
 10. who -r
 11. Systemd service manager version: systemd 254 (254.10+suse.84.ge8d77af424)
 12. Services, from systemctl list-unit-files
 13. Linux kernel boot-time arguments, from /proc/cmdline
 14. cpupower frequency-info
 15. sysctl
 16. /sys/kernel/mm/transparent_hugepage
 17. /sys/kernel/mm/transparent_hugepage/khugepaged
 18. OS release
 19. Disk information
 20. /sys/devices/virtual/dmi/id
 21. dmidecode
 22. BIOS
 ------------------------------------------------------------

 ------------------------------------------------------------
 1. uname -a
   Linux localhost 6.4.0-150600.21-default #1 SMP PREEMPT_DYNAMIC Thu May 16 11:09:22 UTC 2024 (36c1e09)
   x86_64 x86_64 x86_64 GNU/Linux

 ------------------------------------------------------------
 2. w
    04:24:11 up  8:55,  1 user,  load average: 10.33, 144.78, 228.77
   USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
   root     pts/0    172.29.241.254   19:34    8:46m  2.73s  0.05s sh
   Run703-compliant-ic2024.1-lin-sierraforest-ratefp-base-20240308.sh

 ------------------------------------------------------------
 3. Username
   From environment variable $USER:  root

 ------------------------------------------------------------
 4. ulimit -a
   core file size          (blocks, -c) unlimited
   data seg size           (kbytes, -d) unlimited
```

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Platform Notes (Continued)

```
   scheduling priority             (-e) 0
   file size               (blocks, -f) unlimited
   pending signals                 (-i) 2062205
   max locked memory       (kbytes, -l) 8192
   max memory size         (kbytes, -m) unlimited
   open files                      (-n) 1024
   pipe size            (512 bytes, -p) 8
   POSIX message queues     (bytes, -q) 819200
   real-time priority              (-r) 0
   stack size              (kbytes, -s) unlimited
   cpu time               (seconds, -t) unlimited
   max user processes              (-u) 2062205
   virtual memory          (kbytes, -v) unlimited
   file locks                      (-x) unlimited

 ------------------------------------------------------------
 5. sysinfo process ancestry
  /usr/lib/systemd/systemd --switched-root --system --deserialize=42
  sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
  sshd: root [priv]
  sshd: root@pts/0
  -bash
  /bin/bash ./run_SR630V4.sh
  sh Run703-compliant-ic2024.1-lin-sierraforest-ratefp-base-20240308.sh
  runcpu --power --nobuild --action validate --define default-platform-flags --define numcopies=288 -c
    ic2024.1-lin-sierraforest-rate-20240308.cfg --define smt-on --define peakfpcopies=144 --define
    physicalfirst --define invoke_with_interleave --define drop_caches --reportable --tune base -o all fprate
  runcpu --power --nobuild --action validate --define default-platform-flags --define numcopies=288
    --configfile ic2024.1-lin-sierraforest-rate-20240308.cfg --define smt-on --define peakfpcopies=144
    --define physicalfirst --define invoke_with_interleave --define drop_caches --reportable --tune base
    --output_format all --runmode rate --tune base --size refrate fprate --nopreenv --note-preenv --logfile
    $SPEC/tmp/CPU2017.288/templogs/preenv.fprate.288.0.log --lognum 288.0 --from_runcpu 2
  specperl $SPEC/bin/sysinfo
 $SPEC = /home/cpu2017-1.1.9-ic2024.1

 ------------------------------------------------------------
 6. /proc/cpuinfo
     model name      : Intel(R) Xeon(R) 6780E
     vendor_id       : GenuineIntel
     cpu family      : 6
     model           : 175
     stepping        : 3
     microcode       : 0x3000211
     bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs bhi
     cpu cores       : 144
     siblings        : 144
     2 physical ids (chips)
     288 processors (hardware threads)
     physical id 0: core ids 0-143
     physical id 1: core ids 0-143
     physical id 0: apicids
     0,2,4,6,8,10,12,14,16,18,20,22,24,26,28,30,32,34,36,38,40,42,44,46,48,50,52,54,56,58,60,62,64,66,68,70,72
     ,74,76,78,80,82,84,86,88,90,92,94,96,98,100,102,104,106,108,110,112,114,116,118,120,122,124,126,128,130,1
     32,134,136,138,140,142,144,146,148,150,152,154,156,158,160,162,164,166,168,170,172,174,176,178,180,182,18
     4,186,188,190,192,194,196,198,200,202,204,206,208,210,212,214,216,218,220,222,224,226,228,230,232,234,236
     ,238,240,242,244,246,248,250,252,254,256,258,260,262,264,266,268,270,272,274,276,278,280,282,284,286
     physical id 1: apicids
```

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Platform Notes (Continued)

```
    512,514,516,518,520,522,524,526,528,530,532,534,536,538,540,542,544,546,548,550,552,554,556,558,560,562,5
    64,566,568,570,572,574,576,578,580,582,584,586,588,590,592,594,596,598,600,602,604,606,608,610,612,614,61
    6,618,620,622,624,626,628,630,632,634,636,638,640,642,644,646,648,650,652,654,656,658,660,662,664,666,668
    ,670,672,674,676,678,680,682,684,686,688,690,692,694,696,698,700,702,704,706,708,710,712,714,716,718,720,
    722,724,726,728,730,732,734,736,738,740,742,744,746,748,750,752,754,756,758,760,762,764,766,768,770,772,7
    74,776,778,780,782,784,786,788,790,792,794,796,798
  Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
  virtualized systems.  Use the above data carefully.

------------------------------------------------------------
7. lscpu

From lscpu from util-linux 2.39.3:
  Architecture:                       x86_64
  CPU op-mode(s):                     32-bit, 64-bit
  Address sizes:                      52 bits physical, 48 bits virtual
  Byte Order:                         Little Endian
  CPU(s):                             288
  On-line CPU(s) list:                0-287
  Vendor ID:                          GenuineIntel
  BIOS Vendor ID:                     Intel(R) Corporation
  Model name:                         Intel(R) Xeon(R) 6780E
  BIOS Model name:                    Intel(R) Xeon(R) 6780E UNKNOWN CPU @ 2.2GHz
  BIOS CPU family:                    179
  CPU family:                         6
  Model:                              175
  Thread(s) per core:                 1
  Core(s) per socket:                 144
  Socket(s):                          2
  Stepping:                           3
  BogoMIPS:                           4400.00
  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 cpuid aperfmperf tsc_known_freq 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 xsave avx f16c rdrand lahf_lm abm
                                      3dnowprefetch cpuid_fault epb cat_l3 cat_l2 cdp_l3 intel_ppin cdp_l2
                                      ssbd mba ibrs ibpb stibp ibrs_enhanced tpr_shadow flexpriority ept
                                      vpid ept_ad fsgsbase tsc_adjust bmi1 avx2 smep bmi2 erms invpcid cqm
                                      rdt_a rdseed adx smap clflushopt clwb intel_pt sha_ni xsaveopt xsavec
                                      xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local
                                      split_lock_detect user_shstk avx_vnni lam wbnoinvd dtherm arat pln
                                      pts vnmi umip pku ospke waitpkg gfni vaes vpclmulqdq tme rdpid
                                      bus_lock_detect cldemote movdiri movdir64b enqcmd fsrm md_clear
                                      serialize pconfig arch_lbr ibt flush_l1d arch_capabilities
  Virtualization:                     VT-x
  L1d cache:                          9 MiB (288 instances)
  L1i cache:                          18 MiB (288 instances)
  L2 cache:                           288 MiB (72 instances)
  L3 cache:                           216 MiB (2 instances)
  NUMA node(s):                       2
  NUMA node0 CPU(s):                  0-143
  NUMA node1 CPU(s):                  144-287
  Vulnerability Gather data sampling: Not affected
  Vulnerability Itlb multihit:        Not affected
```

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Platform Notes (Continued)

```
  Vulnerability L1tf:                   Not affected
  Vulnerability Mds:                    Not affected
  Vulnerability Meltdown:               Not affected
  Vulnerability Mmio stale data:        Not affected
  Vulnerability Reg file data sampling: Not affected
  Vulnerability Retbleed:               Not affected
  Vulnerability Spec rstack overflow:   Not affected
  Vulnerability Spec store bypass:      Mitigation; Speculative Store Bypass disabled via prctl
  Vulnerability Spectre v1:             Mitigation; usercopy/swapgs barriers and __user pointer sanitization
  Vulnerability Spectre v2:             Mitigation; Enhanced / Automatic IBRS; IBPB conditional; RSB filling;
                                        PBRSB-eIBRS Not affected; BHI BHI_DIS_S
  Vulnerability Srbds:                  Not affected
  Vulnerability Tsx async abort:        Not affected

From lscpu --cache:
     NAME ONE-SIZE ALL-SIZE WAYS TYPE        LEVEL   SETS PHY-LINE COHERENCY-SIZE
     L1d       32K       9M    8 Data            1     64        1             64
     L1i       64K      18M    8 Instruction     1    128        1             64
     L2         4M     288M   16 Unified         2   4096        1             64
     L3       108M     216M   12 Unified         3 147456        1             64

------------------------------------------------------------
8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
  available: 2 nodes (0-1)
  node 0 cpus: 0-143
  node 0 size: 257684 MB
  node 0 free: 256077 MB
  node 1 cpus: 144-287
  node 1 size: 257893 MB
  node 1 free: 255631 MB
  node distances:
  node   0   1
    0:  10  21
    1:  21  10

------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       527951740 kB

------------------------------------------------------------
10. who -r
  run-level 3 Sep 5 19:29

------------------------------------------------------------
11. Systemd service manager version: systemd 254 (254.10+suse.84.ge8d77af424)
  Default Target  Status
  multi-user      running

------------------------------------------------------------
12. Services, from systemctl list-unit-files
  STATE            UNIT FILES
  enabled          YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron getty@ irqbalance issue-generator
                   kbdsettings klog lvm2-monitor nscd nvmefc-boot-connections nvmf-autoconnect postfix
                   purge-kernels rollback rsyslog smartd sshd systemd-pstore wicked wickedd-auto4
                   wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny
  enabled-runtime  systemd-remount-fs
```

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Platform Notes (Continued)

```
  disabled         autofs autoyast-initscripts blk-availability boot-sysctl ca-certificates chrony-wait
                   chronyd console-getty cups cups-browsed debug-shell ebtables exchange-bmc-os-info
                   firewalld fsidd gpm grub2-once haveged ipmi ipmievd issue-add-ssh-keys kexec-load lunmask
                   man-db-create multipathd nfs nfs-blkmap rpcbind rpmconfigcheck rsyncd serial-getty@
                   smartd_generate_opts snmpd snmptrapd systemd-boot-check-no-failures systemd-confext
                   systemd-network-generator systemd-sysext systemd-time-wait-sync systemd-timesyncd
  generated        ntp_sync
  indirect         systemd-userdbd wickedd

------------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
  BOOT_IMAGE=/boot/vmlinuz-6.4.0-150600.21-default
  root=UUID=8c76b9eb-7cab-4e58-a0ba-c4f6030335e5
  splash=silent
  mitigations=auto
  quiet
  security=apparmor

------------------------------------------------------------
14. cpupower frequency-info
  analyzing CPU 139:
    Unable to determine current policy
    boost state support:
      Supported: no
      Active: no

------------------------------------------------------------
15. sysctl
  kernel.numa_balancing                1
  kernel.randomize_va_space            2
  vm.compaction_proactiveness         20
  vm.dirty_background_bytes            0
  vm.dirty_background_ratio           10
  vm.dirty_bytes                       0
  vm.dirty_expire_centisecs         3000
  vm.dirty_ratio                      20
  vm.dirty_writeback_centisecs       500
  vm.dirtytime_expire_seconds      43200
  vm.extfrag_threshold               500
  vm.min_unmapped_ratio                1
  vm.nr_hugepages                      0
  vm.nr_hugepages_mempolicy            0
  vm.nr_overcommit_hugepages           0
  vm.swappiness                       60
  vm.watermark_boost_factor        15000
  vm.watermark_scale_factor           10
  vm.zone_reclaim_mode                 0

------------------------------------------------------------
16. /sys/kernel/mm/transparent_hugepage
  defrag          always defer defer+madvise [madvise] never
  enabled         [always] madvise never
  hpage_pmd_size  2097152
  shmem_enabled   always within_size advise [never] deny force

------------------------------------------------------------
17. /sys/kernel/mm/transparent_hugepage/khugepaged
```

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Platform Notes (Continued)

```
    alloc_sleep_millisecs   60000
    defrag                      1
    max_ptes_none             511
    max_ptes_shared           256
    max_ptes_swap              64
    pages_to_scan            4096
    scan_sleep_millisecs    10000

  ------------------------------------------------------------
  18. OS release
    From /etc/*-release /etc/*-version
    os-release SUSE Linux Enterprise Server 15 SP6

  ------------------------------------------------------------
  19. Disk information
  SPEC is set to: /home/cpu2017-1.1.9-ic2024.1
    Filesystem     Type  Size  Used Avail Use% Mounted on
    /dev/nvme0n1p2 xfs   893G   76G  818G   9% /

  ------------------------------------------------------------
  20. /sys/devices/virtual/dmi/id
      Vendor:         Lenovo
      Product:        ThinkSystem SR630 V4
      Product Family: ThinkSystem
      Serial:         0987654321

  ------------------------------------------------------------
  21. dmidecode
    Additional information from dmidecode 3.4 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:
      11x Samsung M321R4GA3PB1-CCPPC 32 GB 2 rank 6400
      5x Samsung M321R4GA3PB1-CCPYC 32 GB 2 rank 6400


  ------------------------------------------------------------
  22. BIOS
  (This section combines info from /sys/devices and dmidecode.)
     BIOS Vendor:
     BIOS Version:      IHE103O-0.20
     BIOS Date:         08/01/2024
     BIOS Revision:     0.20
     Firmware Revision: 0.38
```

Compiler Version Notes

```
==============================================================================================================
C                | 519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)
--------------------------------------------------------------------------------------------------------------
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==============================================================================================================
```

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Compiler Version Notes (Continued)

```
C++             | 508.namd_r(base) 510.parest_r(base)
------------------------------------------------------------------------------------------------------------------
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------------------------------------------------------------------------------------------------------------------

==================================================================================================================
C++, C          | 511.povray_r(base) 526.blender_r(base)
------------------------------------------------------------------------------------------------------------------
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------------------------------------------------------------------------------------------------------------------

==================================================================================================================
C++, C, Fortran | 507.cactuBSSN_r(base)
------------------------------------------------------------------------------------------------------------------
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Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
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------------------------------------------------------------------------------------------------------------------

==================================================================================================================
Fortran         | 503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)
------------------------------------------------------------------------------------------------------------------
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------------------------------------------------------------------------------------------------------------------

==================================================================================================================
Fortran, C      | 521.wrf_r(base) 527.cam4_r(base)
------------------------------------------------------------------------------------------------------------------
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------------------------------------------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`icx`

C++ benchmarks:
`icpx`

Fortran benchmarks:
`ifx`

(Continued on next page)

Base Compiler Invocation (Continued)

Benchmarks using both Fortran and C:
`ifx icx`

Benchmarks using both C and C++:
`icpx icx`

Benchmarks using Fortran, C, and C++:
`icpx icx ifx`

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:
```
-w -std=c11 -m64 -Wl,-z,muldefs -xsierraforest -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-Wno-implicit-int -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib
```

C++ benchmarks:
```
-w -std=c++14 -m64 -Wl,-z,muldefs -xsierraforest -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

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Base Optimization Flags (Continued)

Fortran benchmarks:
-w -m64 -Wl,-z,muldefs -xsierraforest -Ofast -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib

Benchmarks using both Fortran and C:
-w -m64 -std=c11 -Wl,-z,muldefs -xsierraforest -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-Wno-implicit-int -nostandard-realloc-lhs -align array32byte -auto
-ljemalloc -L/usr/local/jemalloc64-5.0.1/lib

Benchmarks using both C and C++:
-w -std=c++14 -m64 -std=c11 -Wl,-z,muldefs -xsierraforest -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -Wno-implicit-int -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib

Benchmarks using Fortran, C, and C++:
-w -std=c++14 -m64 -std=c11 -Wl,-z,muldefs -xsierraforest -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -Wno-implicit-int -nostandard-realloc-lhs
-align array32byte -auto -ljemalloc -L/usr/local/jemalloc64-5.0.1/lib

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Birchstream-A.html
http://www.spec.org/cpu2017/flags/Intel-ic2024-official-linux64.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Lenovo-Platform-SPECcpu2017-Flags-V1.2-Birchstream-A.xml
http://www.spec.org/cpu2017/flags/Intel-ic2024-official-linux64.xml

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

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Report generated on 2024-09-25 09:18:38 by CPU2017 PS formatter v6716.
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