SPEC CPU®2017 Integer Speed Result

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Dell Inc.

$SPECspeed^{®}2017\_int\_base = 8.75$

PowerEdge R770 (Intel Xeon 6746E)

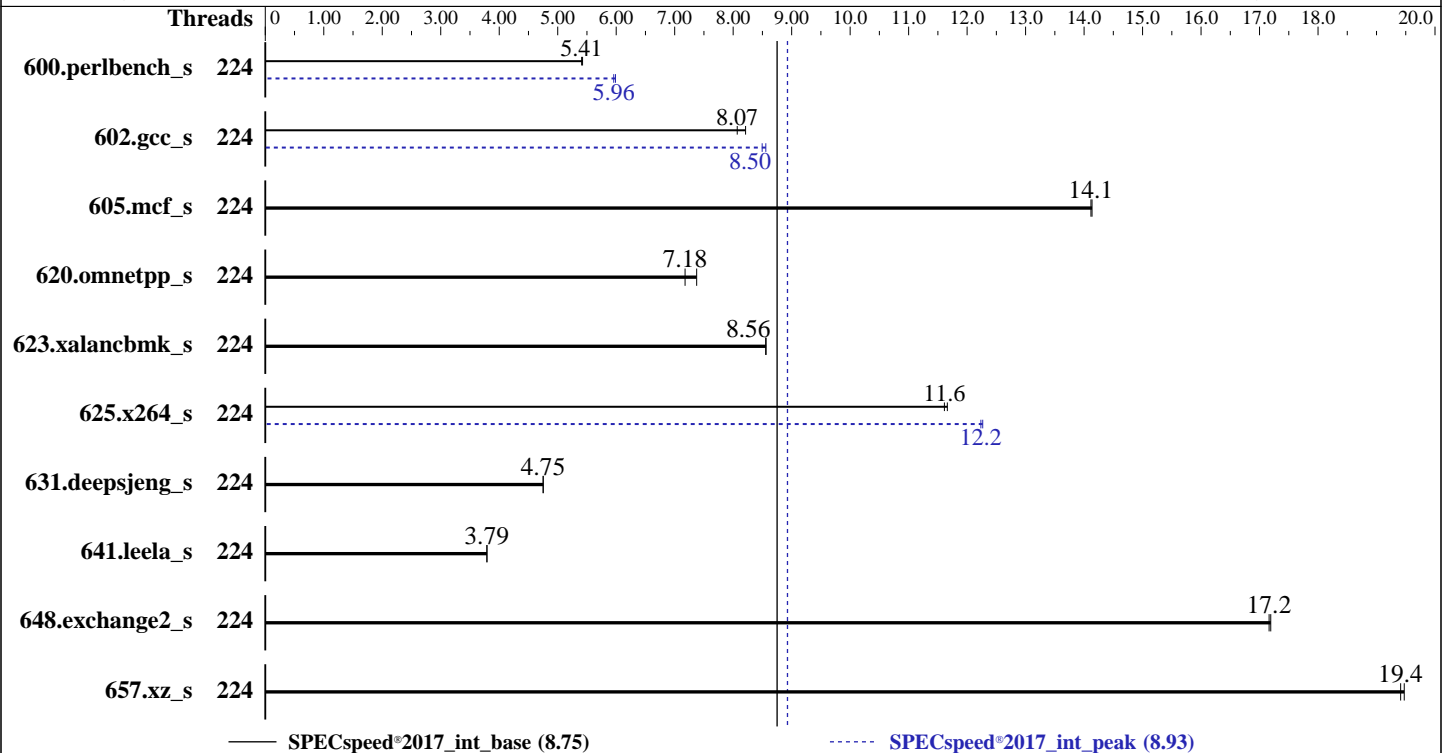$SPECspeed^{®}2017\_int\_peak = 8.93$

CPU2017 License: 6573   **Test Date:** Aug-2024
Test Sponsor: Dell Inc.   **Hardware Availability:** Jul-2024
Tested by: Dell Inc.   **Software Availability:** Jun-2024

Threads		Value
600.perlbench_s	224	base 5.41 / peak 5.96
602.gcc_s	224	base 8.07 / peak 8.50
605.mcf_s	224	14.1
620.omnetpp_s	224	7.18
623.xalancbmk_s	224	8.56
625.x264_s	224	base 11.6 / peak 12.2
631.deepsjeng_s	224	4.75
641.leela_s	224	3.79
648.exchange2_s	224	17.2
657.xz_s	224	19.4

SPECspeed®2017_int_base (8.75)   SPECspeed®2017_int_peak (8.93)

Hardware

CPU Name: Intel Xeon 6746E
  Max MHz: 2700
  Nominal: 2000
Enabled: 224 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: 96 MB I+D on chip per chip
  Other: None
Memory: 1 TB (16 x 64 GB 2Rx4 PC5-6400B-R, running at 5600)
Storage: 120 GB on tmpfs
Other: CPU Cooling: Air

Software

OS: SUSE Linux Enterprise Server 15 SP6 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: Yes
Firmware: Version 1.0.1 released Jun-2024
File System: tmpfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 64-bit
Other: jemalloc memory allocator V5.0.1
Power Management: BIOS set to prefer performance at the cost of additional power usage.

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Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
600.perlbench_s	224	327	5.42	**328**	**5.41**			224	296	5.99	**298**	**5.96**		
602.gcc_s	224	**493**	**8.07**	485	8.21			224	**469**	**8.50**	465	8.56		
605.mcf_s	224	334	14.1	**334**	**14.1**			224	334	14.1	**334**	**14.1**		
620.omnetpp_s	224	**227**	**7.18**	221	7.38			224	**227**	**7.18**	221	7.38		
623.xalancbmk_s	224	165	8.56	**166**	**8.56**			224	165	8.56	**166**	**8.56**		
625.x264_s	224	151	11.7	**152**	**11.6**			224	**144**	**12.2**	144	12.3		
631.deepsjeng_s	224	302	4.75	**302**	**4.75**			224	302	4.75	**302**	**4.75**		
641.leela_s	224	**450**	**3.79**	450	3.79			224	**450**	**3.79**	450	3.79		
648.exchange2_s	224	**171**	**17.2**	171	17.2			224	**171**	**17.2**	171	17.2		
657.xz_s	224	**318**	**19.4**	317	19.5			224	**318**	**19.4**	317	19.5		
SPECspeed®2017_int_base =			**8.75**											
SPECspeed®2017_int_peak =			**8.93**											

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

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:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH =
     "/mnt/ramdisk/cpu2017-1.1.9-ic2024.1/lib/intel64:/mnt/ramdisk/cpu2017-1.1.9-ic2024.1/je5.0.1-64"
MALLOC_CONF = "retain:true"
OMP_STACKSIZE = "192M"
```

General Notes

```
Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM
memory using Redhat Enterprise Linux 8.0
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
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

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.

Benchmark run from a 120 GB ramdisk created with the cmd: "mount -t tmpfs -o size=120G tmpfs /mnt/ramdisk"
```

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Platform Notes

```
BIOS settings:
                 ADDDC Setting : Disabled
       DIMM Self Healing on
   Uncorrectable Memory Error : Disabled

     DCU Streamer Prefetcher : Enabled

              System Profile : Custom
        CPU Power Management : Maximum Performance
      Energy Efficient Turbo : Disabled
                         C1E : Disabled
                    C States : Autonomous
    Energy Efficiency Policy : Performance
       CPU Interconnect Bus
        Link Power Management : Disabled
       PCI ASPM L1 Link
             Power Management : Disabled

Sysinfo program /mnt/ramdisk/cpu2017-1.1.9-ic2024.1/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on SLR7701-R770 Mon Aug 19 13:52:15 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 SLR7701-R770 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
   13:52:15 up 1 min,  1 user,  load average: 0.40, 0.22, 0.09
```

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Platform Notes (Continued)

```
   USER     TTY      FROM           LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1     -              13:51  31.00s  1.52s  0.00s /bin/bash
   /home/DellFiles/bin/Intel/dell-run-speccpu.sh speed --define DL-BIOSinc=Dell-BIOS_Xeon-7.inc --define
   DL-BIOS-adddcD=1 --define DL-VERS=5.3.3 --output_format html,pdf,txt

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

   ------------------------------------------------------------
   4. ulimit -a
     core file size          (blocks, -c) unlimited
     data seg size           (kbytes, -d) unlimited
     scheduling priority             (-e) 0
     file size               (blocks, -f) unlimited
     pending signals                 (-i) 4126499
     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) 4126499
     virtual memory          (kbytes, -v) unlimited
     file locks                      (-x) unlimited

   ------------------------------------------------------------
   5. sysinfo process ancestry
    /usr/lib/systemd/systemd --switched-root --system --deserialize=42
    login -- root
    -bash
    /bin/bash /home/DellFiles/bin/DELL_speed.sh
    /bin/bash /home/DellFiles/bin/dell-run-main.sh speed
    /bin/bash /home/DellFiles/bin/dell-run-main.sh speed
    /bin/bash /home/DellFiles/bin/Intel/dell-run-speccpu.sh speed --define DL-BIOSinc=Dell-BIOS_Xeon-7.inc
      --define DL-BIOS-adddcD=1 --define DL-VERS=5.3.3 --output_format html,pdf,txt
    /bin/bash /home/DellFiles/bin/Intel/dell-run-speccpu.sh speed --define DL-BIOSinc=Dell-BIOS_Xeon-7.inc
      --define DL-BIOS-adddcD=1 --define DL-VERS=5.3.3 --output_format html,pdf,txt
    runcpu --nobuild --action validate --define default-platform-flags -c
      ic2024.1-lin-sierraforest-speed-20240308.cfg --define cores=224 --tune base,peak -o all --define
      intspeedaffinity --define smt-on --define drop_caches --iterations 2 --define
      DL-BIOSinc=Dell-BIOS_Xeon-7.inc --define DL-BIOS-adddcD=1 --define DL-VERS=5.3.3 --output_format
      html,pdf,txt intspeed
    runcpu --nobuild --action validate --define default-platform-flags --configfile
      ic2024.1-lin-sierraforest-speed-20240308.cfg --define cores=224 --tune base,peak --output_format all
      --define intspeedaffinity --define smt-on --define drop_caches --iterations 2 --define
      DL-BIOSinc=Dell-BIOS_Xeon-7.inc --define DL-BIOS-adddcD=1 --define DL-VERS=5.3.3 --output_format
      html,pdf,txt --nopower --runmode speed --tune base:peak --size refspeed intspeed --nopreenv --note-preenv
      --logfile $SPEC/tmp/CPU2017.001/templogs/preenv.intspeed.001.0.log --lognum 001.0 --from_runcpu 2
    specperl $SPEC/bin/sysinfo
   $SPEC = /mnt/ramdisk/cpu2017-1.1.9-ic2024.1

   ------------------------------------------------------------
   6. /proc/cpuinfo
      model name      : Intel(R) Xeon(R) 6746E
      vendor_id       : GenuineIntel
      cpu family      : 6
      model           : 175
```

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Platform Notes (Continued)

```
      stepping        : 3
      microcode       : 0x30001b3
      bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs bhi
      cpu cores       : 112
      siblings        : 112
      2 physical ids (chips)
      224 processors (hardware threads)
      physical id 0: core ids 0-111
      physical id 1: core ids 0-111
      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
      physical id 1: apicids
      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
    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):                  224
      On-line CPU(s) list:     0-223
      Vendor ID:               GenuineIntel
      BIOS Vendor ID:          Intel
      Model name:              Intel(R) Xeon(R) 6746E
      BIOS Model name:         Intel(R) Xeon(R) 6746E  CPU @ 2.0GHz
      BIOS CPU family:         179
      CPU family:              6
      Model:                   175
      Thread(s) per core:      1
      Core(s) per socket:      112
      Socket(s):               2
      Stepping:                3
      BogoMIPS:                4000.00
      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 ida arat
                               pln pts vnmi umip pku ospke waitpkg gfni vaes vpclmulqdq tme rdpid
                               bus_lock_detect cldemote movdiri movdir64b enqcmd fsrm md_clear
```

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Platform Notes (Continued)

```
                              serialize pconfig arch_lbr ibt flush_l1d arch_capabilities
     Virtualization:          VT-x
     L1d cache:               7 MiB (224 instances)
     L1i cache:               14 MiB (224 instances)
     L2 cache:                224 MiB (56 instances)
     L3 cache:                192 MiB (2 instances)
     NUMA node(s):            2
     NUMA node0 CPU(s):       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
                              ,96,98,100,102,104,106,108,110,112,114,116,118,120,122,124,126,128,13
                              0,132,134,136,138,140,142,144,146,148,150,152,154,156,158,160,162,164
                              ,166,168,170,172,174,176,178,180,182,184,186,188,190,192,194,196,198,
                              200,202,204,206,208,210,212,214,216,218,220,222
     NUMA node1 CPU(s):       1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39,41,43,45,47,49
                              ,51,53,55,57,59,61,63,65,67,69,71,73,75,77,79,81,83,85,87,89,91,93,95
                              ,97,99,101,103,105,107,109,111,113,115,117,119,121,123,125,127,129,13
                              1,133,135,137,139,141,143,145,147,149,151,153,155,157,159,161,163,165
                              ,167,169,171,173,175,177,179,181,183,185,187,189,191,193,195,197,199,
                              201,203,205,207,209,211,213,215,217,219,221,223
     Vulnerability Gather data sampling:   Not affected
     Vulnerability Itlb multihit:          Not affected
     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       7M   8 Data              1      64        1              64
       L1i       64K      14M   8 Instruction       1     128        1              64
       L2         4M     224M  16 Unified           2    4096        1              64
       L3        96M     192M  12 Unified           3  131072        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:
     0,2,4,6,8,10,12,14,16,18,20,22,24,26,28,30,32,34,36,38,40,42,44,46,48,50,52,54,56,58,60,62,64,66,68,70,72,7
     4,76,78,80,82,84,86,88,90,92,94,96,98,100,102,104,106,108,110,112,114,116,118,120,122,124,126,128,130,132,1
     34,136,138,140,142,144,146,148,150,152,154,156,158,160,162,164,166,168,170,172,174,176,178,180,182,184,186,
     188,190,192,194,196,198,200,202,204,206,208,210,212,214,216,218,220,222
     node 0 size: 515661 MB
     node 0 free: 504046 MB
     node 1 cpus:
     1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39,41,43,45,47,49,51,53,55,57,59,61,63,65,67,69,71,73,7
     5,77,79,81,83,85,87,89,91,93,95,97,99,101,103,105,107,109,111,113,115,117,119,121,123,125,127,129,131,133,1
     35,137,139,141,143,145,147,149,151,153,155,157,159,161,163,165,167,169,171,173,175,177,179,181,183,185,187,
     189,191,193,195,197,199,201,203,205,207,209,211,213,215,217,219,221,223
     node 1 size: 515989 MB
     node 1 free: 514734 MB
```

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Platform Notes (Continued)

```
  node distances:
  node   0   1
    0:  10  21
    1:  21  10


  ------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       1056410848 kB


  ------------------------------------------------------------
10. who -r
   run-level 3 Aug 19 13:51


  ------------------------------------------------------------
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 display-manager firewalld 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
   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 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 udisks2 vncserver@
   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=0cea8829-6dd2-4356-b3f2-98e3b8b18a0d
   splash=silent
   mitigations=auto
   quiet
   security=apparmor


  ------------------------------------------------------------
14. cpupower frequency-info
   analyzing CPU 147:
     Unable to determine current policy
     boost state support:
       Supported: yes
       Active: yes


  ------------------------------------------------------------
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
```

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Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Aug-2024

Hardware Availability: Jul-2024

Software Availability: Jun-2024

Platform Notes (Continued)

```
   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
   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: /mnt/ramdisk/cpu2017-1.1.9-ic2024.1
   Filesystem      Type   Size  Used Avail Use% Mounted on
   tmpfs           tmpfs  120G  5.0G  116G   5% /mnt/ramdisk


   ---------------------------------------------------------------
20. /sys/devices/virtual/dmi/id
     Vendor:         Dell Inc.
     Product:        PowerEdge R770
     Product Family: PowerEdge
     Serial:         SLR7701


   ---------------------------------------------------------------
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:
     16x 00AD042300AD HMCG94AHBRA480N 64 GB 2 rank 6400, configured at 5600



   ---------------------------------------------------------------
22. BIOS
```

(Continued on next page)

SPEC CPU®2017 Integer Speed Result

Dell Inc.

SPECspeed®2017_int_base = 8.75

PowerEdge R770 (Intel Xeon 6746E)

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Platform Notes (Continued)

```
  (This section combines info from /sys/devices and dmidecode.)
    BIOS Vendor:        Dell Inc.
    BIOS Version:       1.0.1
    BIOS Date:          06/20/2024
    BIOS Revision:      1.0
```

Compiler Version Notes

```
==============================================================================
C        | 600.perlbench_s(base, peak) 602.gcc_s(base, peak) 605.mcf_s(base, peak) 625.x264_s(base, peak)
         | 657.xz_s(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
C++      | 620.omnetpp_s(base, peak) 623.xalancbmk_s(base, peak) 631.deepsjeng_s(base, peak)
         | 641.leela_s(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
Fortran | 648.exchange2_s(base, peak)
------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`icx`

C++ benchmarks:
`icpx`

Fortran benchmarks:
`ifx`

Base Portability Flags

600.perlbench_s: `-DSPEC_LP64 -DSPEC_LINUX_X64`
602.gcc_s: `-DSPEC_LP64`
605.mcf_s: `-DSPEC_LP64`
620.omnetpp_s: `-DSPEC_LP64`

(Continued on next page)

Standard Performance Evaluation Corporation (info@spec.org) https://www.spec.org/

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Base Portability Flags (Continued)

623.xalancbmk_s: `-DSPEC_LP64 -DSPEC_LINUX`
625.x264_s: `-DSPEC_LP64`
631.deepsjeng_s: `-DSPEC_LP64`
641.leela_s: `-DSPEC_LP64`
648.exchange2_s: `-DSPEC_LP64`
657.xz_s: `-DSPEC_LP64`

Base Optimization Flags

C benchmarks:
```
-w -std=c11 -m64 -Wl,-z,muldefs -xsierraforest -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -fiopenmp
-DSPEC_OPENMP -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

C++ benchmarks:
```
-w -std=c++14 -m64 -Wl,-z,muldefs -xsierraforest -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Fortran benchmarks:
```
-w -m64 -Wl,-z,muldefs -xsierraforest -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

Peak Compiler Invocation

C benchmarks:
```
icx
```

C++ benchmarks:
```
icpx
```

Fortran benchmarks:
```
ifx
```

Peak Portability Flags

```
Same as Base Portability Flags
```

SPEC CPU®2017 Integer Speed Result

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Peak Optimization Flags

C benchmarks:

```
600.perlbench_s: -w -m64 -std=c11 -Wl,-z,muldefs
-fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX2 -flto
-Ofast(pass 1) -O3 -ffast-math -mfpmath=sse
-funroll-loops -qopt-mem-layout-trans=4 -fiopenmp
-DSPEC_OPENMP -fno-strict-overflow
-L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

```
602.gcc_s: -w -m64 -std=c11 -Wl,-z,muldefs
-fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX2 -flto
-Ofast(pass 1) -O3 -ffast-math -mfpmath=sse
-funroll-loops -qopt-mem-layout-trans=4 -fiopenmp
-DSPEC_OPENMP -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

```
605.mcf_s: basepeak = yes
```

```
625.x264_s: -w -std=c11 -m64 -Wl,-z,muldefs -xsierraforest -O3
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -fiopenmp -DSPEC_OPENMP
-fno-alias -L/usr/local/jemalloc64-5.0.1/lib -ljemalloc
```

```
657.xz_s: basepeak = yes
```

C++ benchmarks:

```
620.omnetpp_s: basepeak = yes
```

```
623.xalancbmk_s: basepeak = yes
```

```
631.deepsjeng_s: basepeak = yes
```

```
641.leela_s: basepeak = yes
```

Fortran benchmarks:

```
648.exchange2_s: basepeak = yes
```

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Intel-ic2024-official-linux64.html
http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-Intel-Xeon-v1.9.html

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PowerEdge R770 (Intel Xeon 6746E)

SPECspeed®2017_int_base = 8.75

SPECspeed®2017_int_peak = 8.93

CPU2017 License:	6573	**Test Date:**	Aug-2024
Test Sponsor:	Dell Inc.	**Hardware Availability:**	Jul-2024
Tested by:	Dell Inc.	**Software Availability:**	Jun-2024

You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2017/flags/Intel-ic2024-official-linux64.xml
http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-Intel-Xeon-v1.9.xml

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