SPEC CPU®2017 Integer Speed Result

Copyright 2017-2024 Standard Performance Evaluation Corporation

Dell Inc.

$SPECspeed^{®}2017\_int\_base = 8.72$

PowerEdge R470 (Intel Xeon 6746E)

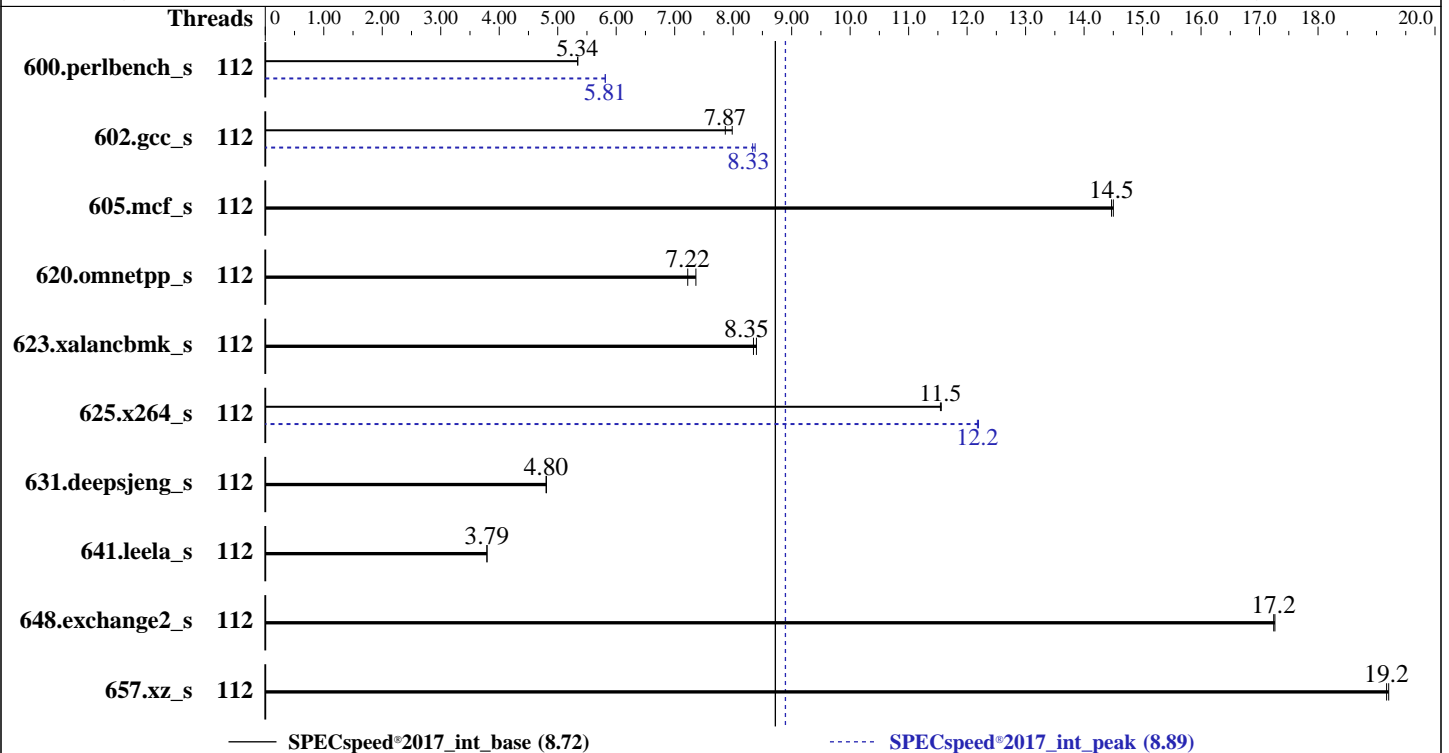$SPECspeed^{®}2017\_int\_peak = 8.89$

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Nov-2024

Hardware Availability: Dec-2024

Software Availability: Jun-2024

Benchmark	Threads	Base	Peak
600.perlbench_s	112	5.34	5.81
602.gcc_s	112	7.87	8.33
605.mcf_s	112	14.5	
620.omnetpp_s	112	7.22	
623.xalancbmk_s	112	8.35	
625.x264_s	112	11.5	12.2
631.deepsjeng_s	112	4.80	
641.leela_s	112	3.79	
648.exchange2_s	112	17.2	
657.xz_s	112	19.2	

SPECspeed®2017_int_base (8.72)   SPECspeed®2017_int_peak (8.89)

Hardware

CPU Name: Intel Xeon 6746E

 Max MHz: 2700

 Nominal: 2000

Enabled: 112 cores, 1 chip

Orderable: 1 chip

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: 256 GB (8 x 32 GB 2Rx8 PC5-6400B-R, running at 5600)

Storage: 80 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 1.1.1 released Oct-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	112	332	5.34	**332**	**5.34**			112	305	5.81	**305**	**5.81**		
602.gcc_s	112	**506**	**7.87**	499	7.98			112	**478**	**8.33**	475	8.38		
605.mcf_s	112	326	14.5	**326**	**14.5**			112	326	14.5	**326**	**14.5**		
620.omnetpp_s	112	**226**	**7.22**	222	7.36			112	**226**	**7.22**	222	7.36		
623.xalancbmk_s	112	**170**	**8.35**	169	8.40			112	**170**	**8.35**	169	8.40		
625.x264_s	112	**153**	**11.5**	153	11.6			112	145	12.2	**145**	**12.2**		
631.deepsjeng_s	112	298	4.81	**298**	**4.80**			112	298	4.81	**298**	**4.80**		
641.leela_s	112	**450**	**3.79**	450	3.79			112	**450**	**3.79**	450	3.79		
648.exchange2_s	112	**171**	**17.2**	170	17.3			112	**171**	**17.2**	170	17.3		
657.xz_s	112	**322**	**19.2**	322	19.2			112	**322**	**19.2**	322	19.2		
SPECspeed®2017_int_base =				**8.72**										
SPECspeed®2017_int_peak =				**8.89**										

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 80 GB ramdisk created with the cmd: "mount -t tmpfs -o size=80G tmpfs /mnt/ramdisk"
```

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Platform Notes

```
BIOS Settings:
                     Optimizer Mode : Enabled

                     System Profile : Custom
              CPU Power Management : Maximum Performance
            Energy Efficient Turbo : Disabled
                               C1E : Disabled
                          C-States : Autonomous
             Energy Efficient Policy : Performance
              CPU Interconnect Bus -
               Link Power Management : Disabled
  PCI ASPM L1 Link Power Management : Disabled
                  DIMM Self Healing -
       on Uncorrectable Memory Error : Disabled

Sysinfo program /mnt/ramdisk/cpu2017-1.1.9-ic2024.1/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on 1234567-R470 Fri Nov  8 08:42:01 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 1234567-R470 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
  08:42:01 up 17 min,  1 user,  load average: 1.19, 1.07, 0.79
  USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
  root     tty1     -                08:39   33.00s  1.44s  0.00s /bin/bash
  /home/DellFiles/bin/Intel/dell-run-speccpu.sh speed --define DL-VERS=6.0.2 --output_format html,pdf,txt
```

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Platform Notes (Continued)

```
    ----------------------------------------------------------
    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) 1029370
      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) 1029370
      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-VERS=6.0.2 --output_format
       html,pdf,txt
     /bin/bash /home/DellFiles/bin/Intel/dell-run-speccpu.sh speed --define DL-VERS=6.0.2 --output_format
       html,pdf,txt
     runcpu --nobuild --action validate --define default-platform-flags -c
       ic2024.1-lin-sierraforest-speed-20240308.cfg --define cores=112 --tune base,peak -o all --define
       intspeedaffinity --define smt-on --define drop_caches --iterations 2 --define DL-VERS=6.0.2
       --output_format html,pdf,txt intspeed
     runcpu --nobuild --action validate --define default-platform-flags --configfile
       ic2024.1-lin-sierraforest-speed-20240308.cfg --define cores=112 --tune base,peak --output_format all
       --define intspeedaffinity --define smt-on --define drop_caches --iterations 2 --define DL-VERS=6.0.2
       --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
        stepping        : 3
        microcode       : 0x30002c0
        bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs bhi
        cpu cores       : 112
        siblings        : 112
```

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Platform Notes (Continued)

```
    1 physical ids (chips)
    112 processors (hardware threads)
    physical id 0: 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
  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):                             112
  On-line CPU(s) list:                0-111
  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):                          1
  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
                                      serialize pconfig arch_lbr ibt flush_l1d arch_capabilities
  Virtualization:                     VT-x
  L1d cache:                          3.5 MiB (112 instances)
  L1i cache:                          7 MiB (112 instances)
  L2 cache:                           112 MiB (28 instances)
  L3 cache:                           96 MiB (1 instance)
  NUMA node(s):                       1
  NUMA node0 CPU(s):                  0-111
  Vulnerability Gather data sampling: Not affected
  Vulnerability Itlb multihit:        Not affected
  Vulnerability L1tf:                 Not affected
  Vulnerability Mds:                  Not affected
```

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Platform Notes (Continued)

```
  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     3.5M   8 Data            1     64     1            64
      L1i      64K      7M    8 Instruction     1    128     1            64
      L2        4M     112M  16 Unified         2   4096     1            64
      L3       96M      96M  12 Unified         3 131072     1            64


  ------------------------------------------------------------
  8. numactl --hardware
  NOTE: a numactl 'node' might or might not correspond to a physical chip.
    available: 1 nodes (0)
    node 0 cpus: 0-111
    node 0 size: 257371 MB
    node 0 free: 245245 MB
    node distances:
    node   0
     0:  10


  ------------------------------------------------------------
  9. /proc/meminfo
     MemTotal:       263548704 kB


  ------------------------------------------------------------
  10. who -r
    run-level 3 Nov 8 08:25


  ------------------------------------------------------------
  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 appstream-sync-cache auditd bluetooth cron
                    display-manager 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        accounts-daemon autofs autoyast-initscripts blk-availability bluetooth-mesh 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 hwloc-dump-hwdata ipmi ipmievd
                    issue-add-ssh-keys kexec-load lunmask man-db-create multipathd nfs nfs-blkmap nmb
                    ostree-remount rpcbind rpmconfigcheck rsyncd rtkit-daemon serial-getty@
                    smartd_generate_opts smb snmpd snmptrapd speech-dispatcherd systemd-boot-check-no-failures
                    systemd-confext systemd-network-generator systemd-sysext systemd-time-wait-sync
                    systemd-timesyncd udisks2 update-system-flatpaks upower vncserver@
    indirect        systemd-userdbd wickedd
```

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Platform Notes (Continued)

```
        ----------------------------------------------------------
        13. Linux kernel boot-time arguments, from /proc/cmdline
          BOOT_IMAGE=/boot/vmlinuz-6.4.0-150600.21-default
          root=UUID=85ac5619-9d4c-4ccf-ae8c-57a9b22badda
          splash=silent
          resume=/dev/disk/by-uuid/b3f79258-8fb5-4b36-b029-20c18943748c
          mitigations=auto
          quiet
          security=apparmor

        ----------------------------------------------------------
        14. cpupower frequency-info
          analyzing CPU 58:
            Unable to determine current policy
            boost state support:
              Supported: yes
              Active: yes

        ----------------------------------------------------------
        15. sysctl
          kernel.numa_balancing               0
          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
          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
```

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Platform Notes (Continued)

```
  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   80G  5.0G   76G   7% /mnt/ramdisk


  ----------------------------------------------------------
  20. /sys/devices/virtual/dmi/id
     Vendor:          Dell Inc.
     Product:         PowerEdge R470
     Product Family:  PowerEdge
     Serial:          1234567


  ----------------------------------------------------------
  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:
      8x 00AD042300AD HMCG88AHBRA471N 32 GB 2 rank 6400, configured at 5600


  ----------------------------------------------------------
  22. BIOS
  (This section combines info from /sys/devices and dmidecode.)
     BIOS Vendor:       Dell Inc.
     BIOS Version:      1.1.1
     BIOS Date:         10/17/2024
     BIOS Revision:     1.1
```

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.
------------------------------------------------------------------------------
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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`
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`

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

SPEC CPU®2017 Integer Speed Result

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Dell Inc.

PowerEdge R470 (Intel Xeon 6746E)

SPECspeed®2017_int_base = 8.72

SPECspeed®2017_int_peak = 8.89

CPU2017 License: 6573
Test Sponsor: Dell Inc.
Tested by: Dell Inc.

Test Date: Nov-2024
Hardware Availability: Dec-2024
Software Availability: Jun-2024

Peak Compiler Invocation

C benchmarks:
`icx`

C++ benchmarks:
`icpx`

Fortran benchmarks:
`ifx`

Peak Portability Flags

```
Same as Base Portability Flags
```

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`

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Dell Inc.

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Peak Optimization Flags (Continued)

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-v1.10.html`

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-v1.10.xml`

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

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