SPEC CPU®2017 Integer Rate Result

Dell Inc.

SPECrate®2017_int_base = 1300

PowerEdge R670 (Intel Xeon 6780E)

SPECrate®2017_int_peak = 1350

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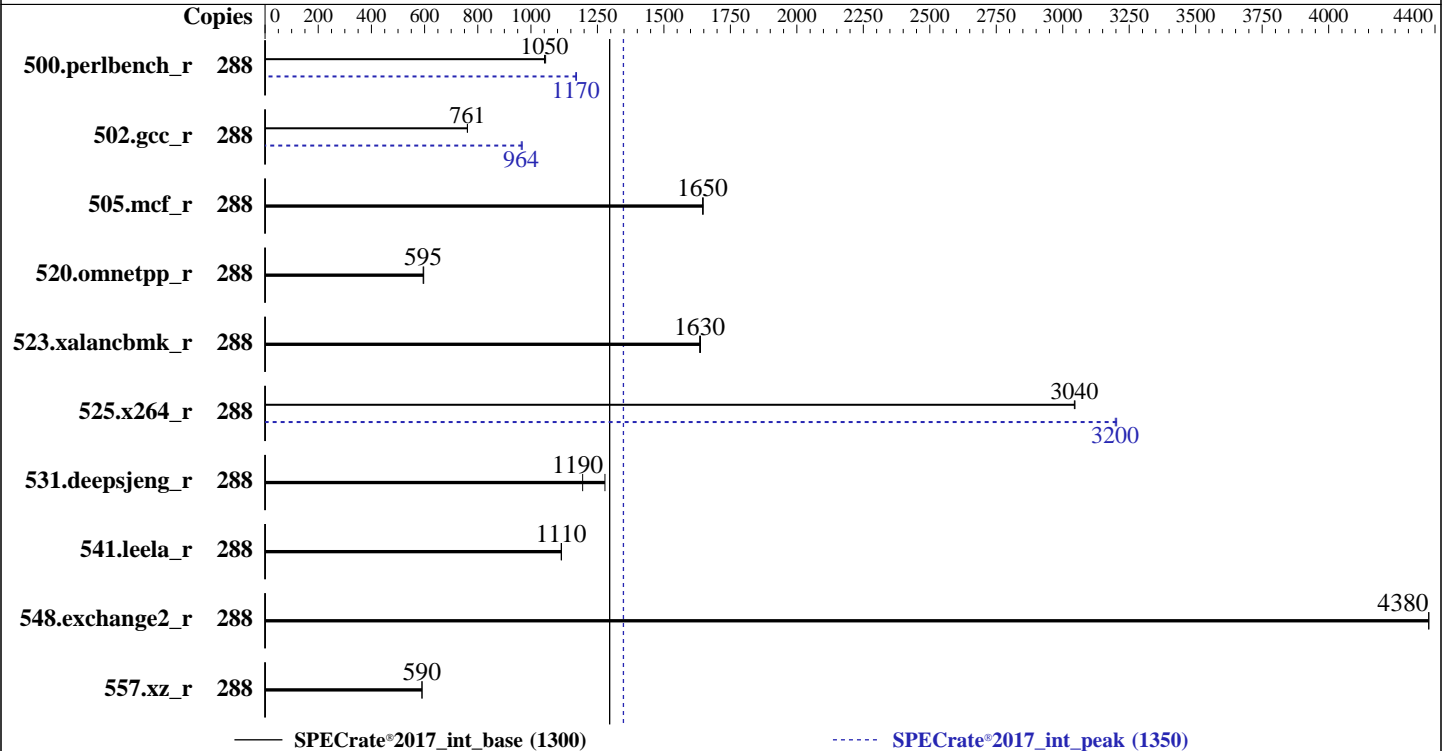**Test Sponsor:** Dell Inc.
Tested by: Dell Inc.

Test Date: Apr-2024
Hardware Availability: Jul-2024
Software Availability: Jun-2024

Benchmark	Copies	Base	Peak
500.perlbench_r	288	1050	1170
502.gcc_r	288	761	964
505.mcf_r	288	1650	
520.omnetpp_r	288	595	
523.xalancbmk_r	288	1630	
525.x264_r	288	3040	3200
531.deepsjeng_r	288	1190	
541.leela_r	288	1110	
548.exchange2_r	288	4380	
557.xz_r	288	590	

SPECrate®2017_int_base (1300)   SPECrate®2017_int_peak (1350)

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: 1 TB (16 x 64 GB 2Rx4 PC5-6400B-R)
Storage: 150 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: No
Firmware: Version 1.0.1 released Jun-2024
File System: tmpfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other: jemalloc memory allocator V5.0.1
Power Management: BIOS set to prefer performance at the cost of
 additional power usage.

SPEC CPU®2017 Integer Rate Result

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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	288	435	1060	**436**	**1050**			288	**392**	**1170**	391	1170		
502.gcc_r	288	536	761	**536**	**761**			288	**423**	**964**	422	967		
505.mcf_r	288	282	1650	**283**	**1650**			288	282	1650	**283**	**1650**		
520.omnetpp_r	288	633	597	**635**	**595**			288	633	597	**635**	**595**		
523.xalancbmk_r	288	186	1640	**186**	**1630**			288	186	1640	**186**	**1630**		
525.x264_r	288	166	3050	**166**	**3040**			288	**158**	**3200**	157	3200		
531.deepsjeng_r	288	**276**	**1190**	258	1280			288	**276**	**1190**	258	1280		
541.leela_r	288	428	1110	**428**	**1110**			288	428	1110	**428**	**1110**		
548.exchange2_r	288	172	4380	**172**	**4380**			288	172	4380	**172**	**4380**		
557.xz_r	288	527	590	**527**	**590**			288	527	590	**527**	**590**		

SPECrate®2017_int_base = **1300**

SPECrate®2017_int_peak = **1350**

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"

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
    "/mnt/ramdisk/cpu2017-1.1.9-ic2024.1/lib/intel64:/mnt/ramdisk/cpu2017-1.1.9-ic2024.1/lib/ia32:/mnt/ram
    disk/cpu2017-1.1.9-ic2024.1/je5.0.1-32"
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>
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

(Continued on next page)

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General Notes (Continued)

```
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 150 GB ramdisk created with the cmd: "mount -t tmpfs -o size=150G tmpfs /mnt/ramdisk"
```

Platform Notes

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

       MADT Core Enumeration : Linear
                LLC Prefetch : Disabled

              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 DN01113-R670 Mon Apr 22 08:05:31 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
```

(Continued on next page)

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

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Test Date: Apr-2024

Hardware Availability: Jul-2024

Software Availability: Jun-2024

Platform Notes (Continued)

```
  20. /sys/devices/virtual/dmi/id
  21. dmidecode
  22. BIOS
  -----------------------------------------------------------

  -----------------------------------------------------------
  1. uname -a
    Linux DN01113-R670 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
     08:05:31 up 5 min,  1 user,  load average: 0.12, 0.13, 0.08
    USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
    root     tty1     -                08:04   27.00s  1.66s  0.01s /bin/bash
    /home/DellFiles/bin/Intel/dell-run-speccpu.sh rate --define DL-BIOSinc=Dell-BIOS_Xeon-7.inc --define
    DL-BIOS-adddcD=1 --define DL-VERS=5.3.2 --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) 4126034
    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) 4126034
    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_rate.sh
   /bin/bash /home/DellFiles/bin/dell-run-main.sh rate
   /bin/bash /home/DellFiles/bin/dell-run-main.sh rate
   /bin/bash /home/DellFiles/bin/Intel/dell-run-speccpu.sh rate --define DL-BIOSinc=Dell-BIOS_Xeon-7.inc
     --define DL-BIOS-adddcD=1 --define DL-VERS=5.3.2 --output_format html,pdf,txt
   /bin/bash /home/DellFiles/bin/Intel/dell-run-speccpu.sh rate --define DL-BIOSinc=Dell-BIOS_Xeon-7.inc
     --define DL-BIOS-adddcD=1 --define DL-VERS=5.3.2 --output_format html,pdf,txt
   runcpu --nobuild --action validate --define default-platform-flags --define numcopies=288 -c
     ic2024.1-lin-sierraforest-rate-20240308.cfg --define smt-on --define cores=288 --define physicalfirst
     --define invoke_with_interleave --define drop_caches --reportable --tune base,peak -o all --iterations 2
     --define DL-BIOSinc=Dell-BIOS_Xeon-7.inc --define DL-BIOS-adddcD=1 --define DL-VERS=5.3.2 --output_format
     html,pdf,txt intrate
   runcpu --nobuild --action validate --define default-platform-flags --define numcopies=288 --configfile
     ic2024.1-lin-sierraforest-rate-20240308.cfg --define smt-on --define cores=288 --define physicalfirst
```

(Continued on next page)

Dell Inc.

PowerEdge R670 (Intel Xeon 6780E)

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Test Date: Apr-2024
Hardware Availability: Jul-2024
Software Availability: Jun-2024

Platform Notes (Continued)

```
    --define invoke_with_interleave --define drop_caches --reportable --tune base,peak --output_format all
    --iterations 2 --define DL-BIOSinc=Dell-BIOS_Xeon-7.inc --define DL-BIOS-adddcD=1 --define DL-VERS=5.3.2
    --output_format html,pdf,txt --nopower --runmode rate --tune base:peak --size refrate intrate --nopreenv
    --note-preenv --logfile $SPEC/tmp/CPU2017.001/templogs/preenv.intrate.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) 6780E
    vendor_id       : GenuineIntel
    cpu family      : 6
    model           : 175
    stepping        : 3
    microcode       : 0x30001b3
    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
    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
  Model name:                Intel(R) Xeon(R) 6780E
  BIOS Model name:           Intel(R) Xeon(R) 6780E  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
```

(Continued on next page)

Dell Inc.

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

Platform Notes (Continued)

```
   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 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:                         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
   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: 515552 MB
   node 0 free: 503964 MB
   node 1 cpus: 144-287
   node 1 size: 515982 MB
   node 1 free: 514718 MB
   node distances:
   node   0   1
```

(Continued on next page)

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Platform Notes (Continued)

```
     0:  10  21
     1:  21  10


   -----------------------------------------------------------
9. /proc/meminfo
   MemTotal:       1056291832 kB


   -----------------------------------------------------------
10. who -r
   run-level 3 Apr 22 08:00


   -----------------------------------------------------------
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=d32ddd38-63e7-4330-9fb9-7ea689b670ad
   splash=silent
   mitigations=auto
   quiet
   security=apparmor


   -----------------------------------------------------------
14. cpupower frequency-info
   analyzing CPU 120:
     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
   vm.dirty_ratio                   20
   vm.dirty_writeback_centisecs    500
```

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Platform Notes (Continued)

```
      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  150G  5.0G  146G   4% /mnt/ramdisk


   ----------------------------------------------------------
   20. /sys/devices/virtual/dmi/id
         Vendor:         Dell Inc.
         Product:        PowerEdge R670
         Product Family: PowerEdge
         Serial:         DN01113


   ----------------------------------------------------------
   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:
        9x 002C069D002C MTC40F2046S1RC64BD1 USFF 64 GB 2 rank 6400
        7x 00AD063200AD HMCG94AHBRA277N 64 GB 2 rank 6400



   ----------------------------------------------------------
   22. BIOS
   (This section combines info from /sys/devices and dmidecode.)
```

Dell Inc.

PowerEdge R670 (Intel Xeon 6780E)

SPECrate®2017_int_base = 1300

SPECrate®2017_int_peak = 1350

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

Test Date: Apr-2024
Hardware Availability: Jul-2024
Software Availability: Jun-2024

Platform Notes (Continued)

```
     BIOS Vendor:      Dell Inc.
     BIOS Version:     1.0.1
     BIOS Date:        06/20/2024
     BIOS Revision:    1.0
```

Compiler Version Notes

```
==============================================================================
C        | 502.gcc_r(peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
C        | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak) 525.x264_r(base, peak)
         | 557.xz_r(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        | 502.gcc_r(peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2024.1.0 Build 20240308
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------------------------------------------------------------------------------


==============================================================================
C        | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak) 525.x264_r(base, peak)
         | 557.xz_r(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
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------------------------------------------------------------------------------


==============================================================================
C++      | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base, peak) 531.deepsjeng_r(base, peak)
         | 541.leela_r(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
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------------------------------------------------------------------------------


==============================================================================
Fortran  | 548.exchange2_r(base, peak)
------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
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------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:

icx

(Continued on next page)

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Base Compiler Invocation (Continued)

C++ benchmarks:
`icpx`

Fortran benchmarks:
`ifx`

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`
541.leela_r: `-DSPEC_LP64`
548.exchange2_r: `-DSPEC_LP64`
557.xz_r: `-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`
`-L/opt/intel/oneapi/compiler/2024.1/lib -lqkmalloc`

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/opt/intel/oneapi/compiler/2024.1/lib -lqkmalloc`

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 -auto`
`-L/opt/intel/oneapi/compiler/2024.1/lib -lqkmalloc`

SPEC CPU®2017 Integer Rate Result

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Dell Inc.

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SPECrate®2017_int_peak = 1350

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Peak Compiler Invocation

C benchmarks:
`icx`

C++ benchmarks:
`icpx`

Fortran benchmarks:
`ifx`

Peak Portability Flags

500.perlbench_r: `-DSPEC_LP64 -DSPEC_LINUX_X64`
502.gcc_r: `-D_FILE_OFFSET_BITS=64`
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`
541.leela_r: `-DSPEC_LP64`
548.exchange2_r: `-DSPEC_LP64`
557.xz_r: `-DSPEC_LP64`

Peak Optimization Flags

C benchmarks:

500.perlbench_r: `-w -std=c11 -m64 -Wl,-z,muldefs`
`-fprofile-generate`(pass 1)
`-fprofile-use=default.profdata`(pass 2) `-xCORE-AVX2 -flto`
`-Ofast -ffast-math -mfpmath=sse -funroll-loops`
`-qopt-mem-layout-trans=4 -fno-strict-overflow`
`-L/opt/intel/oneapi/compiler/2024.1/lib -lqkmalloc`

502.gcc_r: `-m32 -L/opt/intel/oneapi/compiler/2024.1/lib32 -std=gnu89`
`-Wl,-z,muldefs -fprofile-generate`(pass 1)
`-fprofile-use=default.profdata`(pass 2) `-xCORE-AVX2 -flto`
`-Ofast -ffast-math -mfpmath=sse -funroll-loops`
`-qopt-mem-layout-trans=4 -L/usr/local/jemalloc32-5.0.1/lib`
`-ljemalloc`

505.mcf_r: `basepeak = yes`

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Dell Inc.

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Peak Optimization Flags (Continued)

525.x264_r: `-w -std=c11 -m64 -Wl,-z,muldefs -xsierraforest -Ofast -ffast-math -flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -fno-alias -L/opt/intel/oneapi/compiler/2024.1/lib -lqkmalloc`

557.xz_r: `basepeak = yes`

C++ benchmarks:

520.omnetpp_r: `basepeak = yes`

523.xalancbmk_r: `basepeak = yes`

531.deepsjeng_r: `basepeak = yes`

541.leela_r: `basepeak = yes`

Fortran benchmarks:

548.exchange2_r: `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`

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`

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

Tested with SPEC CPU®2017 v1.1.9 on 2024-04-22 08:05:30-0400.
Report generated on 2024-07-30 19:30:06 by CPU2017 PDF formatter v6716.
Originally published on 2024-07-30.