SPEC CPU®2017 Integer Rate Result

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Cisco Systems

Cisco UCS C240 M7 (Intel Xeon Platinum 8460Y+, 2.00GHz)

$SPECrate^{®}2017\_int\_base = 692$
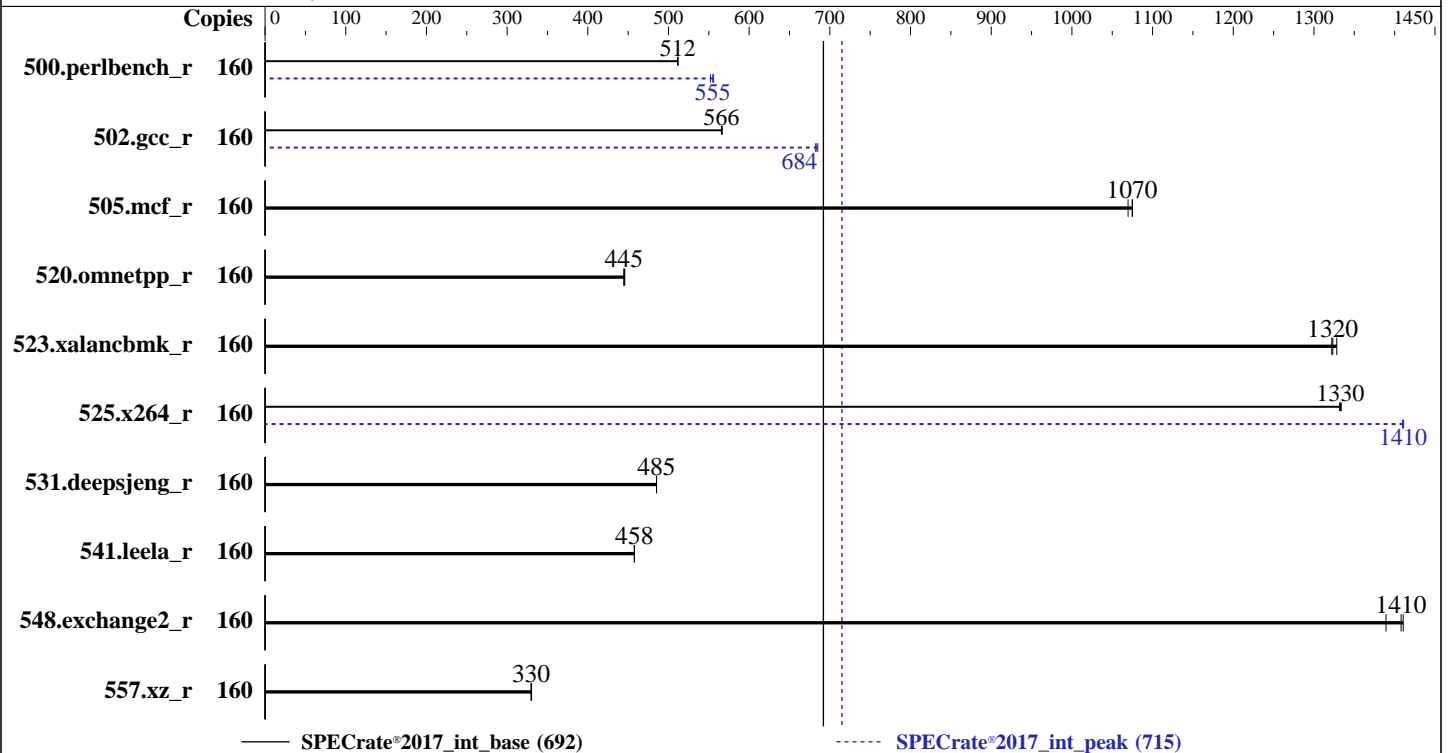
$SPECrate^{®}2017\_int\_peak = 715$

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Test Date: Apr-2023
Hardware Availability: Mar-2023
Software Availability: Dec-2022

Benchmark	Copies	base	peak
500.perlbench_r	160	512	555
502.gcc_r	160	566	684
505.mcf_r	160	1070	
520.omnetpp_r	160	445	
523.xalancbmk_r	160	1320	
525.x264_r	160	1330	1410
531.deepsjeng_r	160	485	
541.leela_r	160	458	
548.exchange2_r	160	1410	
557.xz_r	160	330	

SPECrate®2017_int_base (692)   SPECrate®2017_int_peak (715)

Hardware

CPU Name: Intel Xeon Platinum 8460Y+
 Max MHz: 3700
 Nominal: 2000
Enabled: 80 cores, 2 chips, 2 threads/core
Orderable: 1,2 Chips
Cache L1: 32 KB I + 48 KB D on chip per core
 L2: 2 MB I+D on chip per core
 L3: 105 MB I+D on chip per chip
 Other: None
Memory: 1 TB (16 x 64 GB 2Rx4 PC5-4800B-R)
Storage: 1 x 960 GB M.2 SSD SATA
Other: None

Software

OS: SUSE Linux Enterprise Server 15 SP4
 5.14.21-150400.22-default
Compiler: C/C++: Version 2023.0 of Intel oneAPI DPC++/C++ Compiler for Linux;
 Fortran: Version 2023.0 of Intel Fortran Compiler for Linux;
Parallel: No
Firmware: Version 4.3.1a released Feb-2023
File System: xfs
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

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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	160	498	512	**498**	**512**	498	512	160	461	552	**459**	**555**	458	556
502.gcc_r	160	**400**	**566**	400	567	401	566	160	332	682	**331**	**684**	331	685
505.mcf_r	160	242	1070	**241**	**1070**	241	1080	160	242	1070	**241**	**1070**	241	1080
520.omnetpp_r	160	**472**	**445**	471	446	472	445	160	**472**	**445**	471	446	472	445
523.xalancbmk_r	160	**128**	**1320**	128	1320	127	1330	160	**128**	**1320**	128	1320	127	1330
525.x264_r	160	**210**	**1330**	210	1330	210	1330	160	199	1410	**199**	**1410**	199	1410
531.deepsjeng_r	160	378	485	**378**	**485**	378	485	160	378	485	**378**	**485**	378	485
541.leela_r	160	579	458	**579**	**458**	579	458	160	579	458	**579**	**458**	579	458
548.exchange2_r	160	**298**	**1410**	297	1410	302	1390	160	**298**	**1410**	297	1410	302	1390
557.xz_r	160	524	330	523	330	**524**	**330**	160	524	330	523	330	**524**	**330**
SPECrate®2017_int_base =		**692**												
SPECrate®2017_int_peak =		**715**												

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

Compiler Notes

```
SPEC has ruled that the compiler used for this result was performing a compilation
that specifically improves the performance of the 523.xalancbmk_r / 623.xalancbmk_s
benchmarks using a priori knowledge of the SPEC code and dataset to perform a
transformation that has narrow applicability.

In order to encourage optimizations that have wide applicability (see rule 1.4
https://www.spec.org/cpu2017/Docs/runrules.html#rule_1.4), SPEC will no longer
publish results using this optimization.

This result is left in the SPEC results database for historical reference.
```

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/lib/intel64:/home/cpu2017/lib/ia32:/home/cpu2017/je5.0.1-32"
MALLOC_CONF = "retain:true"
```

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

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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 Settings:
Sub NUMA Clustering set to Enable SNC4
LLC Dead Line set to Disabled
ADDDC Sparing set to Disabled
Processor C6 Report set to Enabled
UPI Link Enablement 3
UPI Power Management Enabled

 Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on srv04 Thu Apr 20 00:00:04 2023

 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 249 (249.11+suse.124.g2bc0b2c447)
 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
```

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Platform Notes (Continued)

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

     ----------------------------------------------------------
     1. uname -a
       Linux srv04 5.14.21-150400.22-default #1 SMP PREEMPT_DYNAMIC Wed May 11 06:57:18 UTC 2022 (49db222) x86_64
       x86_64 x86_64 GNU/Linux

     ----------------------------------------------------------
     2. w
        00:00:04 up 14 min,  1 user,  load average: 0.11, 0.12, 0.19
       USER     TTY       FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
       root     tty1      -                23:46    9.00s  1.45s  0.27s -bash

     ----------------------------------------------------------
     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) 4126773
       max locked memory       (kbytes, -l) 64
       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) 4126773
       virtual memory          (kbytes, -v) unlimited
       file locks                      (-x) unlimited

     ----------------------------------------------------------
     5. sysinfo process ancestry
      /usr/lib/systemd/systemd --switched-root --system --deserialize 30
      login -- root
      -bash
      -bash
      runcpu --nobuild --action validate --define default-platform-flags --define numcopies=160 -c
        ic2023.0-lin-sapphirerapids-rate-20221201.cfg --reportable --iterations 3 --define smt-on --define
        cores=80 --define physicalfirst --define invoke_with_interleave --define drop_caches --tune all -o all
        intrate
      runcpu --nobuild --action validate --define default-platform-flags --define numcopies=160 --configfile
        ic2023.0-lin-sapphirerapids-rate-20221201.cfg --reportable --iterations 3 --define smt-on --define
        cores=80 --define physicalfirst --define invoke_with_interleave --define drop_caches --tune all
        --output_format all --nopower --runmode rate --tune base:peak --size refrate intrate --nopreenv
        --note-preenv --logfile $SPEC/tmp/CPU2017.233/templogs/preenv.intrate.233.0.log --lognum 233.0
        --from_runcpu 2
      specperl $SPEC/bin/sysinfo
     $SPEC = /home/cpu2017

     ----------------------------------------------------------
     6. /proc/cpuinfo
        model name      : Intel(R) Xeon(R) Platinum 8460Y+
        vendor_id       : GenuineIntel
        cpu family      : 6
```

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Platform Notes (Continued)

```
        model           : 143
        stepping        : 8
        microcode       : 0x2b000161
        bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs
        cpu cores       : 40
        siblings        : 80
        2 physical ids (chips)
        160 processors (hardware threads)
        physical id 0: core ids 0-39
        physical id 1: core ids 0-39
        physical id 0: apicids 0-79
        physical id 1: apicids 128-207
    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 2.37.2:
      Architecture:             x86_64
      CPU op-mode(s):           32-bit, 64-bit
      Address sizes:            46 bits physical, 57 bits virtual
      Byte Order:               Little Endian
      CPU(s):                   160
      On-line CPU(s) list:      0-159
      Vendor ID:                GenuineIntel
      Model name:               Intel(R) Xeon(R) Platinum 8460Y+
      CPU family:               6
      Model:                    143
      Thread(s) per core:       2
      Core(s) per socket:       40
      Socket(s):                2
      Stepping:                 8
      CPU max MHz:              3700.0000
      CPU min MHz:              800.0000
      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
                                invpcid_single intel_ppin cdp_l2 ssbd mba ibrs ibpb stibp ibrs_enhanced
                                tpr_shadow vnmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bmi1 hle
                                avx2 smep bmi2 erms invpcid rtm cqm rdt_a avx512f avx512dq rdseed adx smap
                                avx512ifma clflushopt clwb intel_pt avx512cd sha_ni avx512bw avx512vl
                                xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
                                cqm_mbm_local split_lock_detect avx_vnni avx512_bf16 wbnoinvd dtherm ida
                                arat pln pts hwp hwp_act_window hwp_epp hwp_pkg_req avx512vbmi umip pku
                                ospke waitpkg avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg
                                tme avx512_vpopcntdq la57 rdpid bus_lock_detect cldemote movdiri movdir64b
                                enqcmd fsrm md_clear serialize tsxldtrk pconfig arch_lbr avx512_fp16
                                amx_tile flush_l1d arch_capabilities
      Virtualization:           VT-x
      L1d cache:                3.8 MiB (80 instances)
      L1i cache:                2.5 MiB (80 instances)
      L2 cache:                 160 MiB (80 instances)
      L3 cache:                 210 MiB (2 instances)
      NUMA node(s):             16
```

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Platform Notes (Continued)

```
  NUMA node0 CPU(s):          0-4,80-84
  NUMA node1 CPU(s):          5-9,85-89
  NUMA node2 CPU(s):          10-13,90-93
  NUMA node3 CPU(s):          14-19,94-99
  NUMA node4 CPU(s):          20-24,100-104
  NUMA node5 CPU(s):          25-29,105-109
  NUMA node6 CPU(s):          30-34,110-114
  NUMA node7 CPU(s):          35-39,115-119
  NUMA node8 CPU(s):          40-43,120-123
  NUMA node9 CPU(s):          44-49,124-129
  NUMA node10 CPU(s):         50-54,130-134
  NUMA node11 CPU(s):         55-59,135-139
  NUMA node12 CPU(s):         60-64,140-144
  NUMA node13 CPU(s):         65-69,145-149
  NUMA node14 CPU(s):         70-74,150-154
  NUMA node15 CPU(s):         75-79,155-159
  Vulnerability Itlb multihit:    Not affected
  Vulnerability L1tf:             Not affected
  Vulnerability Mds:              Not affected
  Vulnerability Meltdown:         Not affected
  Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl and seccomp
  Vulnerability Spectre v1:       Mitigation; usercopy/swapgs barriers and __user pointer sanitization
  Vulnerability Spectre v2:       Mitigation; Enhanced IBRS, IBPB conditional, RSB filling
  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       48K     3.8M   12 Data           1      64        1             64
      L1i       32K     2.5M    8 Instruction    1      64        1             64
      L2         2M     160M   16 Unified        2    2048        1             64
      L3       105M     210M   15 Unified        3  114688        1             64

  ------------------------------------------------------------
  8. numactl --hardware
  NOTE: a numactl 'node' might or might not correspond to a physical chip.
    available: 16 nodes (0-15)
    node 0 cpus: 0-4,80-84
    node 0 size: 64508 MB
    node 0 free: 63813 MB
    node 1 cpus: 5-9,85-89
    node 1 size: 64159 MB
    node 1 free: 63854 MB
    node 2 cpus: 10-13,90-93
    node 2 size: 64509 MB
    node 2 free: 64315 MB
    node 3 cpus: 14-19,94-99
    node 3 size: 64508 MB
    node 3 free: 64018 MB
    node 4 cpus: 20-24,100-104
    node 4 size: 64509 MB
    node 4 free: 64261 MB
    node 5 cpus: 25-29,105-109
    node 5 size: 64509 MB
    node 5 free: 64274 MB
    node 6 cpus: 30-34,110-114
    node 6 size: 64509 MB
    node 6 free: 64274 MB
    node 7 cpus: 35-39,115-119
    node 7 size: 64509 MB
```

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Platform Notes (Continued)

```
  node 7 free: 64192 MB
  node 8 cpus: 40-43,120-123
  node 8 size: 64509 MB
  node 8 free: 64323 MB
  node 9 cpus: 44-49,124-129
  node 9 size: 64508 MB
  node 9 free: 64077 MB
  node 10 cpus: 50-54,130-134
  node 10 size: 64509 MB
  node 10 free: 64279 MB
  node 11 cpus: 55-59,135-139
  node 11 size: 64509 MB
  node 11 free: 64266 MB
  node 12 cpus: 60-64,140-144
  node 12 size: 64474 MB
  node 12 free: 64141 MB
  node 13 cpus: 65-69,145-149
  node 13 size: 64509 MB
  node 13 free: 64243 MB
  node 14 cpus: 70-74,150-154
  node 14 size: 64509 MB
  node 14 free: 64242 MB
  node 15 cpus: 75-79,155-159
  node 15 size: 64462 MB
  node 15 free: 64201 MB
  node distances:
  node   0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15
    0:  10  20  20  20  20  20  20  20  20  20  20  20  20  20  20  20
    1:  20  10  20  20  20  20  20  20  20  20  20  20  20  20  20  20
    2:  20  20  10  20  20  20  20  20  20  20  20  20  20  20  20  20
    3:  20  20  20  10  20  20  20  20  20  20  20  20  20  20  20  20
    4:  20  20  20  20  10  20  20  20  20  20  20  20  20  20  20  20
    5:  20  20  20  20  20  10  20  20  20  20  20  20  20  20  20  20
    6:  20  20  20  20  20  20  10  20  20  20  20  20  20  20  20  20
    7:  20  20  20  20  20  20  20  10  20  20  20  20  20  20  20  20
    8:  20  20  20  20  20  20  20  20  10  20  20  20  20  20  20  20
    9:  20  20  20  20  20  20  20  20  20  10  20  20  20  20  20  20
   10:  20  20  20  20  20  20  20  20  20  20  10  20  20  20  20  20
   11:  20  20  20  20  20  20  20  20  20  20  20  10  20  20  20  20
   12:  20  20  20  20  20  20  20  20  20  20  20  20  10  20  20  20
   13:  20  20  20  20  20  20  20  20  20  20  20  20  20  10  20  20
   14:  20  20  20  20  20  20  20  20  20  20  20  20  20  20  10  20
   15:  20  20  20  20  20  20  20  20  20  20  20  20  20  20  20  10


    ------------------------------------------------------------
  9. /proc/meminfo
    MemTotal:       1056478688 kB


    ------------------------------------------------------------
  10. who -r
    run-level 3 Apr 19 23:45


    ------------------------------------------------------------
  11. Systemd service manager version: systemd 249 (249.11+suse.124.g2bc0b2c447)
    Default Target  Status
    multi-user      running


    ------------------------------------------------------------
  12. Services, from systemctl list-unit-files
    STATE           UNIT FILES
```

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Platform Notes (Continued)

```
  enabled          apparmor auditd cron getty@ haveged irqbalance issue-generator kbdsettings klog
                   lvm2-monitor nscd postfix purge-kernels rollback rsyslog smartd sshd wicked wickedd-auto4
                   wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny
  enabled-runtime  systemd-remount-fs
  disabled         autofs blk-availability boot-sysctl ca-certificates chrony-wait chronyd console-getty cups
                   cups-browsed debug-shell ebtables exchange-bmc-os-info firewalld gpm grub2-once
                   haveged-switch-root ipmi ipmievd issue-add-ssh-keys kexec-load lunmask man-db-create
                   multipathd nfs nfs-blkmap rdisc rpcbind rpmconfigcheck rsyncd serial-getty@
                   smartd_generate_opts snmpd snmptrapd svnserve systemd-boot-check-no-failures
                   systemd-network-generator systemd-sysext systemd-time-wait-sync systemd-timesyncd
  indirect         wickedd

  ----------------------------------------------------------------
  13. Linux kernel boot-time arguments, from /proc/cmdline
    BOOT_IMAGE=/boot/vmlinuz-5.14.21-150400.22-default
    root=UUID=82136e43-7b14-445e-80c8-a54855d5e2c7
    splash=silent
    mitigations=auto
    quiet
    security=apparmor

  ----------------------------------------------------------------
  14. cpupower frequency-info
    analyzing CPU 0:
      current policy: frequency should be within 800 MHz and 3.70 GHz.
                      The governor "performance" may decide which speed to use
                      within this range.
      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
    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                   1
    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
```

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CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Test Date: Apr-2023
Hardware Availability: Mar-2023
Software Availability: Dec-2022

Platform Notes (Continued)

```
     ----------------------------------------------------------------
  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 SP4


     ----------------------------------------------------------------
  19. Disk information
  SPEC is set to: /home/cpu2017
    Filesystem     Type  Size  Used Avail Use% Mounted on
    /dev/sdb3      xfs   436G   14G  423G   4% /


     ----------------------------------------------------------------
  20. /sys/devices/virtual/dmi/id
     Vendor:        Cisco Systems Inc
     Product:       UCSC-C240-M7SX
     Serial:        WZP26360KC7


     ----------------------------------------------------------------
  21. dmidecode
    Additional information from dmidecode 3.2 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 0xCE00 M321R8GA0BB0-CQKDG 64 GB 2 rank 4800



     ----------------------------------------------------------------
  22. BIOS
  (This section combines info from /sys/devices and dmidecode.)
     BIOS Vendor:       Cisco Systems, Inc.
     BIOS Version:      C240M7.4.3.1a.0.0201231701
     BIOS Date:         02/01/2023
     BIOS Revision:     5.29
```

Compiler Version Notes

```
==============================================================================
C      | 502.gcc_r(peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 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 2023.0.0 Build 20221201
```

(Continued on next page)

Cisco Systems

Cisco UCS C240 M7 (Intel Xeon Platinum 8460Y+, 2.00GHz)

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Compiler Version Notes (Continued)

```
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
C        | 502.gcc_r(peak)
------------------------------------------------------------------------------
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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 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
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 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
Fortran | 548.exchange2_r(base, peak)
------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`icx`

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`

(Continued on next page)

Cisco Systems

Cisco UCS C240 M7 (Intel Xeon Platinum 8460Y+, 2.00GHz)

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Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Test Date: Apr-2023
Hardware Availability: Mar-2023
Software Availability: Dec-2022

Base Portability Flags (Continued)

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 -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc
```

C++ benchmarks:
```
-w -std=c++14 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc
```

Fortran benchmarks:
```
-w -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc
```

Peak Compiler Invocation

C benchmarks:
```
icx
```

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

Fortran benchmarks:
```
ifx
```

Cisco Systems

Cisco UCS C240 M7 (Intel Xeon Platinum 8460Y+, 2.00GHz)

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SPECrate®2017_int_peak = 715

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Test Date: Apr-2023
Hardware Availability: Mar-2023
Software Availability: Dec-2022

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`(pass 1)
`-flto -Ofast -xCORE-AVX512 -ffast-math -mfpmath=sse`
`-funroll-loops -qopt-mem-layout-trans=4`
`-fno-strict-overflow`
`-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin`
`-lqkmalloc`

502.gcc_r: `-m32`
`-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/ia32_lin`
`-std=gnu89 -Wl,-z,muldefs -fprofile-generate`(pass 1)
`-fprofile-use=default.profdata`(pass 2) `-xCORE-AVX2`(pass 1)
`-flto -Ofast -xCORE-AVX512 -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`

525.x264_r: `-w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast`
`-ffast-math -flto -mfpmath=sse -funroll-loops`
`-qopt-mem-layout-trans=4 -fno-alias`
`-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin`
`-lqkmalloc`

557.xz_r: `basepeak = yes`

C++ benchmarks:

(Continued on next page)

Cisco Systems

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Test Date: Apr-2023
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Software Availability: Dec-2022

Peak Optimization Flags (Continued)

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-ic2023-official-linux64.html`
`http://www.spec.org/cpu2017/flags/Cisco-Platform-Settings-V1.0-SPR-revG.html`

You can also download the XML flags sources by saving the following links:
`http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.xml`
`http://www.spec.org/cpu2017/flags/Cisco-Platform-Settings-V1.0-SPR-revG.xml`

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