SPEC CPU®2017 Integer Rate Result

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Cisco Systems

Cisco UCS X210 M7
(Intel Xeon Platinum 8581V, 2.00 GHz)

$SPECrate®2017\_int\_base = 462$

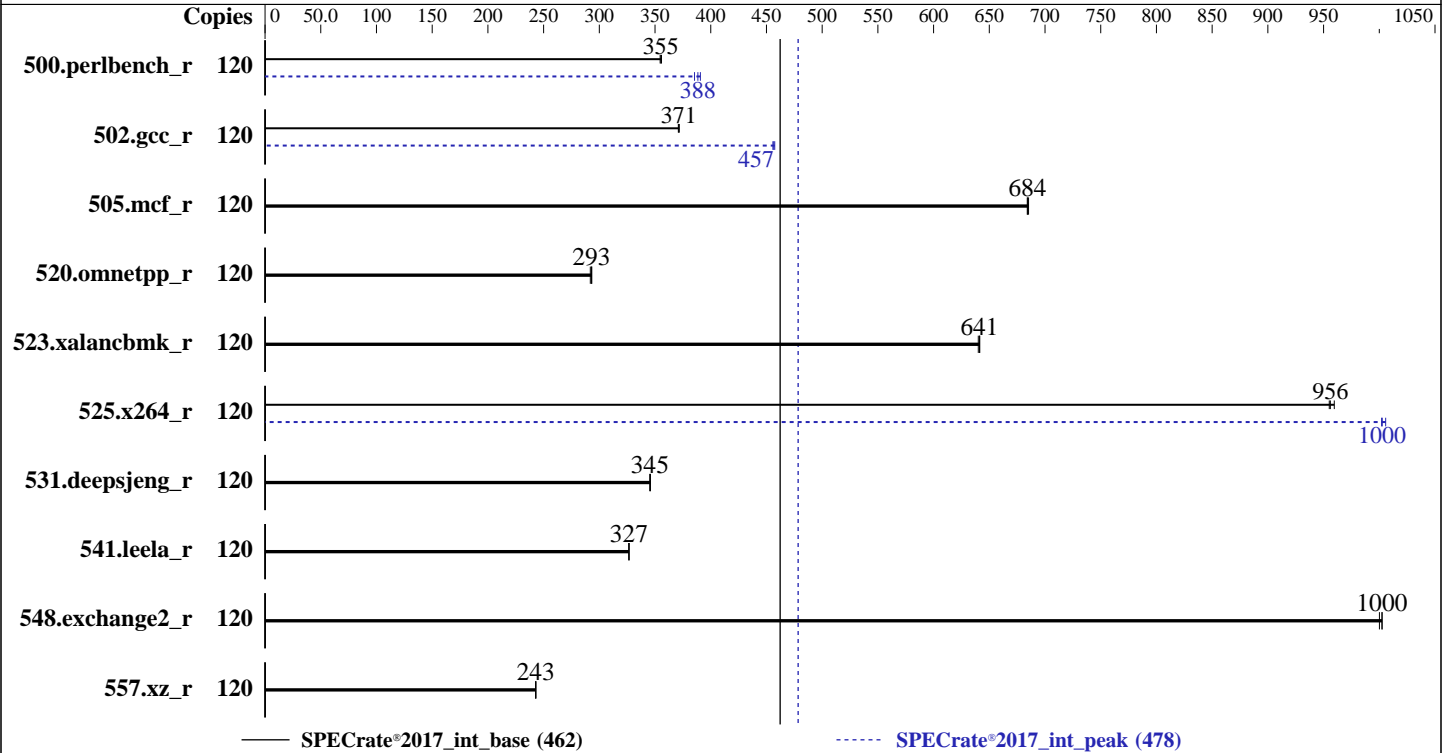$SPECrate®2017\_int\_peak = 478$

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

Test Date: Mar-2024
Hardware Availability: Feb-2024
Software Availability: Dec-2023

Benchmark	Copies	Base	Peak
500.perlbench_r	120	355	388
502.gcc_r	120	371	457
505.mcf_r	120	684	
520.omnetpp_r	120	293	
523.xalancbmk_r	120	641	
525.x264_r	120	956	1000
531.deepsjeng_r	120	345	
541.leela_r	120	327	
548.exchange2_r	120	1000	
557.xz_r	120	243	

SPECrate®2017_int_base (462)   SPECrate®2017_int_peak (478)

Hardware

CPU Name: Intel Xeon Platinum 8581V
Max MHz: 3900
Nominal: 2000
Enabled: 60 cores, 1 chip, 2 threads/core
Orderable: 1 chip
Cache L1: 32 KB I + 48 KB D on chip per core
L2: 2 MB I+D on chip per core
L3: 300 MB I+D on chip per chip
Other: None
Memory: 512 GB (8 x 64 GB 2Rx4 PC5-5600B-R, running at 4800)
Storage: 1 x 960 GB SATA SSD
Other: Cooling: Air

Software

OS: SUSE Linux Enterprise Server 15 SP4
Kernel 5.14.21-150400.22-default
Compiler: C/C++: Version 2023.2.3 of Intel oneAPI DPC++/C++ Compiler for Linux;
Fortran: Version 2023.2.3 of Intel Fortran Compiler for Linux;
Parallel: No
Firmware: Version 4.3.3a released Jan-2024
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 Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	120	537	356	539	355	**538**	**355**	120	**492**	**388**	496	385	489	391
502.gcc_r	120	**458**	**371**	458	371	457	372	120	371	457	**372**	**457**	373	456
505.mcf_r	120	283	685	283	684	**283**	**684**	120	283	685	283	684	**283**	**684**
520.omnetpp_r	120	**537**	**293**	537	293	539	292	120	**537**	**293**	537	293	539	292
523.xalancbmk_r	120	198	640	**198**	**641**	198	641	120	198	640	**198**	**641**	198	641
525.x264_r	120	**220**	**956**	220	955	219	960	120	**210**	**1000**	209	1010	210	1000
531.deepsjeng_r	120	398	346	398	345	**398**	**345**	120	398	346	398	345	**398**	**345**
541.leela_r	120	608	327	609	327	**608**	**327**	120	608	327	609	327	**608**	**327**
548.exchange2_r	120	314	1000	**314**	**1000**	314	1000	120	314	1000	**314**	**1000**	314	1000
557.xz_r	120	533	243	**533**	**243**	534	243	120	533	243	**533**	**243**	534	243
SPECrate®2017_int_base =		**462**												
SPECrate®2017_int_peak =		**478**												

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"
 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>
```

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"
```

General Notes

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

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General Notes (Continued)

```
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 SNC2(2-clusters)
DCU streamer prefetch set to Disabled
Enhanced CPU performance set to Auto
LLC Dead Line set to Disabled
Processor C6 Report set to Enabled
ADDDC Sparing set to Disabled


 Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on srv05 Tue Feb 27 23:59:54 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 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
 -------------------------------------------------------------


 -------------------------------------------------------------
 1. uname -a
   Linux srv05 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
    23:59:54 up 1 min,  1 user,  load average: 6.17, 2.83, 1.05
    USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
    root     tty1     -                23:59   10.00s  1.13s  0.14s -bash
```

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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) 2062457
  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) 2062457
  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
 sh runrate.ic2023.sh
 runcpu --action=build --action validate --define default-platform-flags --define numcopies=120 -c
   ic2023.2.3-lin-sapphirerapids-rate-20231121.cfg --reportable --iterations 3 --define smt-on --define
   cores=60 --define physicalfirst --define invoke_with_interleave --define drop_caches --tune all -o all
   intrate
 runcpu --action build --action validate --define default-platform-flags --define numcopies=120 --configfile
   ic2023.2.3-lin-sapphirerapids-rate-20231121.cfg --reportable --iterations 3 --define smt-on --define
   cores=60 --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/CPU2017.028/templogs/preenv.intrate.028.0.log --lognum 028.0
   --from_runcpu 2
 specperl $SPEC/bin/sysinfo
 $SPEC = /home/cpu2017


--------------------------------------------------------------
6. /proc/cpuinfo
   model name      : INTEL(R) XEON(R) PLATINUM 8581V
   vendor_id       : GenuineIntel
   cpu family      : 6
   model           : 207
   stepping        : 2
   microcode       : 0x21000200
   bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs
   cpu cores       : 60
   siblings        : 120
   1 physical ids (chips)
   120 processors (hardware threads)
   physical id 0: core ids 0-59
   physical id 0: apicids 0-119
  Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
  virtualized systems.  Use the above data carefully.
```

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Platform Notes (Continued)

```
          ----------------------------------------------------------
          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):                  120
            On-line CPU(s) list:     0-119
            Vendor ID:               GenuineIntel
            Model name:              INTEL(R) XEON(R) PLATINUM 8581V
            CPU family:              6
            Model:                   207
            Thread(s) per core:      2
            Core(s) per socket:      60
            Socket(s):               1
            Stepping:                2
            CPU max MHz:             3900.0000
            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 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 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:               2.8 MiB (60 instances)
            L1i cache:               1.9 MiB (60 instances)
            L2 cache:                120 MiB (60 instances)
            L3 cache:                300 MiB (1 instance)
            NUMA node(s):            2
            NUMA node0 CPU(s):       0-29,60-89
            NUMA node1 CPU(s):       30-59,90-119
            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     2.8M   12 Data            1     64        1             64
```

(Continued on next page)

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Platform Notes (Continued)

```
    L1i          32K     1.9M    8 Instruction   1     64        1        64
    L2            2M     120M   16 Unified        2   2048        1        64
    L3          300M     300M   20 Unified        3 245760        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: 0-29,60-89
  node 0 size: 257668 MB
  node 0 free: 256717 MB
  node 1 cpus: 30-59,90-119
  node 1 size: 257969 MB
  node 1 free: 257269 MB
  node distances:
  node   0   1
    0:  10  12
    1:  12  10


    --------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       528013472 kB


    --------------------------------------------------------------
10. who -r
   run-level 3 Feb 27 23:59


    --------------------------------------------------------------
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
   enabled          YaST2-Firstboot YaST2-Second-Stage auditd cron getty@ haveged irqbalance issue-generator
                    kbdsettings klog lvm2-monitor nscd nvmefc-boot-connections postfix purge-kernels rollback
                    rsyslog smartd sshd 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
                    firewalld gpm grub2-once haveged-switch-root ipmi ipmievd issue-add-ssh-keys kexec-load
                    lunmask man-db-create multipathd nfs nfs-blkmap nvmf-autoconnect 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 udisks2
   indirect         wickedd

    --------------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
   BOOT_IMAGE=/boot/vmlinuz-5.14.21-150400.22-default
   root=UUID=f1a623f5-7b90-429d-9d79-3670a3964cf8
   splash=silent
   mitigations=auto
   quiet
   security=

    --------------------------------------------------------------
14. cpupower frequency-info
   analyzing CPU 0:
```

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Platform Notes (Continued)

```
      current policy: frequency should be within 800 MHz and 3.90 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

    ----------------------------------------------------------------
    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/sdb2       xfs   893G   21G  872G   3% /

    ----------------------------------------------------------------
    20. /sys/devices/virtual/dmi/id
        Vendor:         Cisco Systems Inc
```

(Continued on next page)

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Platform Notes (Continued)

```
     Product:        UCSX-210C-M7
     Serial:         FCH270978F6


   ------------------------------------------------------------
 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:
     8x 0xCE00 M321R8GA0PB0-CWMCH 64 GB 2 rank 5600, configured at 4800


   ------------------------------------------------------------
 22. BIOS
 (This section combines info from /sys/devices and dmidecode.)
   BIOS Vendor:     Cisco Systems, Inc.
   BIOS Version:    X210M7.4.3.3a.0.0118241337
   BIOS Date:       01/18/2024
   BIOS Revision:   5.32
```

Compiler Version Notes

```
==================================================================================================
C       | 502.gcc_r(peak)
--------------------------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2023.2.3 Build x
Copyright (C) 1985-2023 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 2023.2.3 Build x
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
--------------------------------------------------------------------------------------------------


==================================================================================================
C       | 502.gcc_r(peak)
--------------------------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2023.2.3 Build x
Copyright (C) 1985-2023 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 2023.2.3 Build x
Copyright (C) 1985-2023 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 2023.2.3 Build x
Copyright (C) 1985-2023 Intel Corporation. All rights reserved.
```

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Compiler Version Notes (Continued)

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

================================================================================
Fortran | 548.exchange2_r(base, peak)
--------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
Copyright (C) 1985-2023 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`
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/home/specdev/new_compilers/ic2023.2.3/compiler/lib/intel64_lin`
`-lqkmalloc`

C++ benchmarks:
`-w -std=c++14 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math`

(Continued on next page)

SPEC CPU®2017 Integer Rate Result

Cisco Systems

Cisco UCS X210 M7
(Intel Xeon Platinum 8581V, 2.00 GHz)

SPECrate®2017_int_base = 462

SPECrate®2017_int_peak = 478

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

Test Date: Mar-2024
Hardware Availability: Feb-2024
Software Availability: Dec-2023

Base Optimization Flags (Continued)

C++ benchmarks (continued):
```
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/home/specdev/new_compilers/ic2023.2.3/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/home/specdev/new_compilers/ic2023.2.3/compiler/lib/intel64_lin
-lqkmalloc
```

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:

(Continued on next page)

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

SPEC CPU®2017 Integer Rate Result

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Peak Optimization Flags (Continued)

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/home/specdev/new_compilers/ic2023.2.3/compiler/lib/intel64_lin`
`-lqkmalloc`

502.gcc_r: `-m32`
`-L/home/specdev/new_compilers/ic2023.2.3/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/home/specdev/new_compilers/ic2023.2.3/compiler/lib/intel64_lin`
`-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-ic2023p2-official-linux64.html`
`http://www.spec.org/cpu2017/flags/Cisco-Platform-Settings-V1.0-EMR-revB.html`

SPEC CPU®2017 Integer Rate Result

Cisco Systems

Cisco UCS X210 M7
(Intel Xeon Platinum 8581V, 2.00 GHz)

$SPECrate^{®}2017\_int\_base = 462$

$SPECrate^{®}2017\_int\_peak = 478$

CPU2017 License: 9019		**Test Date:**	Mar-2024
Test Sponsor:	Cisco Systems	**Hardware Availability:**	Feb-2024
Tested by:	Cisco Systems	**Software Availability:**	Dec-2023

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic2023p2-official-linux64.xml
http://www.spec.org/cpu2017/flags/Cisco-Platform-Settings-V1.0-EMR-revB.xml

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

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