SPEC CPU®2017 Integer Rate Result

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xFusion

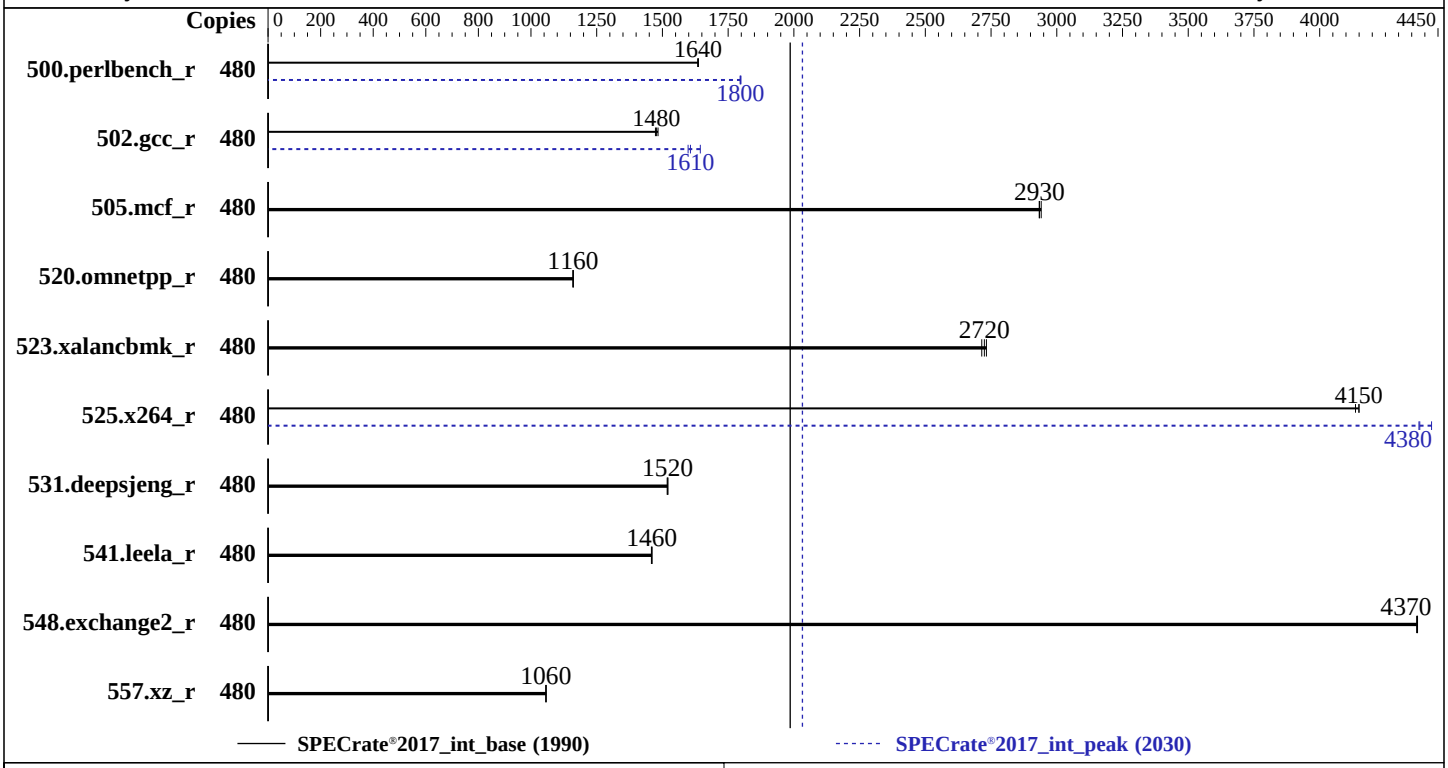
FusionServer 2488H V7 (Intel Xeon Platinum 8490H)

SPECrate®2017_int_base = 1990

SPECrate®2017_int_peak = 2030

CPU2017 License: 6488
Test Sponsor: xFusion
Tested by: xFusion

Test Date: Jan-2024
Hardware Availability: Jul-2023
Software Availability: Dec-2023



Hardware

CPU Name:	Intel Xeon Platinum 8490H
Max MHz:	3500
Nominal:	1900
Enabled:	240 cores, 4 chips, 2 threads/core
Orderable:	1,2,4 chips
Cache L1:	32 KB I + 48 KB D on chip per core
L2:	2 MB I+D on chip per core
L3:	112.5 MB I+D on chip per chip
Other:	None
Memory:	1 TB (32 x 32 GB 2Rx8 PC5-4800B-R)
Storage:	1 x 960 GB SATA SSD
Other:	None

Software

OS:	Red Hat Enterprise Linux 9.0 (Plow) 5.14.0-70.13.1.el9_0.x86_64
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 01.02.01.03 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 and OS 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	480	467	1640	468	1630	**467**	**1640**	480	425	1800	426	1800	**425**	**1800**
502.gcc_r	480	461	1470	**460**	**1480**	458	1480	480	425	1600	413	1640	**423**	**1610**
505.mcf_r	480	264	2930	**264**	**2930**	264	2940	480	264	2930	**264**	**2930**	264	2940
520.omnetpp_r	480	542	1160	543	1160	**543**	**1160**	480	542	1160	543	1160	**543**	**1160**
523.xalancbmk_r	480	**186**	**2720**	187	2710	186	2730	480	**186**	**2720**	187	2710	186	2730
525.x264_r	480	203	4140	203	4150	**203**	**4150**	480	190	4430	192	4380	**192**	**4380**
531.deepsjeng_r	480	362	1520	**362**	**1520**	362	1520	480	362	1520	**362**	**1520**	362	1520
541.leela_r	480	545	1460	**544**	**1460**	544	1460	480	545	1460	**544**	**1460**	544	1460
548.exchange2_r	480	**288**	**4370**	288	4370	288	4370	480	**288**	**4370**	288	4370	288	4370
557.xz_r	480	491	1060	490	1060	**490**	**1060**	480	491	1060	490	1060	**490**	**1060**

SPECrate®2017_int_base = 1990

SPECrate®2017_int_peak = 2030

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 =
     "/home/Uniautos/cpu2017/lib/intel64:/home/Uniautos/cpu2017/lib/ia32:/home/Uniautos/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 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)
```

(Continued on next page)

General Notes (Continued)

```
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 configuration:
Performance Profile Set to Performance
SNC Set to Enable SNC4 (4-clusters)

Sysinfo program /home/Uniautos/cpu2017/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost.localdomain Fri Jan 26 12:31:11 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 250 (250-6.el9_0)
12. Services, from systemctl list-unit-files
13. Linux kernel boot-time arguments, from /proc/cmdline
14. cpupower frequency-info
15. tuned-adm active
16. sysctl
17. /sys/kernel/mm/transparent_hugepage
18. /sys/kernel/mm/transparent_hugepage/khugepaged
19. OS release
20. Disk information
21. /sys/devices/virtual/dmi/id
22. dmidecode
23. BIOS
------------------------------------------------------------

------------------------------------------------------------
1. uname -a
  Linux localhost.localdomain 5.14.0-70.13.1.el9_0.x86_64 #1 SMP PREEMPT Thu Apr 14 12:42:38 EDT 2022 x86_64
  x86_64 x86_64 GNU/Linux

------------------------------------------------------------
2. w
   12:31:11 up 5 min,  2 users,  load average: 0.52, 5.23, 3.35
  USER     TTY        LOGIN@   IDLE   JCPU   PCPU WHAT
  root     tty1      12:27    3:51   0.00s  0.00s -bash
  root     pts/0     12:27    1:03   1.12s  0.00s -bash

------------------------------------------------------------
3. Username
```

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Platform Notes (Continued)

```
  From environment variable $USER:  root

------------------------------------------------------------
4. ulimit -a
  real-time non-blocking time  (microseconds, -R) unlimited
  core file size              (blocks, -c) 0
  data seg size               (kbytes, -d) unlimited
  scheduling priority                 (-e) 0
  file size                   (blocks, -f) unlimited
  pending signals                     (-i) 4124876
  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) 4124876
  virtual memory              (kbytes, -v) unlimited
  file locks                          (-x) unlimited

------------------------------------------------------------
5. sysinfo process ancestry
 /usr/lib/systemd/systemd --switched-root --system --deserialize 30
 sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
 sshd: root [priv]
 sshd: root@pts/0
 -bash
 /bin/sh ./test-rate-cpu2017.sh
 runcpu --define default-platform-flags --copies 480 -c ic2023.2.3-lin-sapphirerapids-rate-20231121.cfg
   --define smt-on --define cores=240 --define physicalfirst --define invoke_with_interleave --define
   drop_caches --tune base,peak -o all intrate
 runcpu --define default-platform-flags --copies 480 --configfile
   ic2023.2.3-lin-sapphirerapids-rate-20231121.cfg --define smt-on --define cores=240 --define physicalfirst
   --define invoke_with_interleave --define drop_caches --tune base,peak --output_format all --nopower
   --runmode rate --tune base:peak --size refrate intrate --nopreenv --note-preenv --logfile
   $SPEC/tmp/CPU2017.002/templogs/preenv.intrate.002.0.log --lognum 002.0 --from_runcpu 2
 specperl $SPEC/bin/sysinfo
$SPEC = /home/Uniautos/cpu2017

------------------------------------------------------------
6. /proc/cpuinfo
    model name      : Intel(R) Xeon(R) Platinum 8490H
    vendor_id       : GenuineIntel
    cpu family      : 6
    model           : 143
    stepping        : 6
    microcode       : 0x2b0004d0
    bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs
    cpu cores       : 60
    siblings        : 120
    4 physical ids (chips)
    480 processors (hardware threads)
    physical id 0: core ids 0-59
    physical id 1: core ids 0-59
    physical id 2: core ids 0-59
    physical id 3: core ids 0-59
    physical id 0: apicids 0-119
    physical id 1: apicids 128-247
```

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Platform Notes (Continued)

```
    physical id 2: apicids 256-375
    physical id 3: apicids 384-503
  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 2.37.4:
  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):                          480
  On-line CPU(s) list:             0-479
  Vendor ID:                       GenuineIntel
  BIOS Vendor ID:                  Intel(R) Corporation
  Model name:                      Intel(R) Xeon(R) Platinum 8490H
  BIOS Model name:                 Intel(R) Xeon(R) Platinum 8490H
  CPU family:                      6
  Model:                           143
  Thread(s) per core:              2
  Core(s) per socket:              60
  Socket(s):                       4
  Stepping:                        6
  BogoMIPS:                        3800.00
  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 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 avx2 smep bmi2 erms
                                   invpcid 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 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:                       11.3 MiB (240 instances)
  L1i cache:                       7.5 MiB (240 instances)
  L2 cache:                        480 MiB (240 instances)
  L3 cache:                        450 MiB (4 instances)
  NUMA node(s):                    16
  NUMA node0 CPU(s):               0-14,240-254
  NUMA node1 CPU(s):               15-29,255-269
  NUMA node2 CPU(s):               30-44,270-284
  NUMA node3 CPU(s):               45-59,285-299
  NUMA node4 CPU(s):               60-74,300-314
  NUMA node5 CPU(s):               75-89,315-329
  NUMA node6 CPU(s):               90-104,330-344
  NUMA node7 CPU(s):               105-119,345-359
  NUMA node8 CPU(s):               120-134,360-374
  NUMA node9 CPU(s):               135-149,375-389
  NUMA node10 CPU(s):              150-164,390-404
```

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Platform Notes (Continued)

```
  NUMA node11 CPU(s):              165-179,405-419
  NUMA node12 CPU(s):              180-194,420-434
  NUMA node13 CPU(s):              195-209,435-449
  NUMA node14 CPU(s):              210-224,450-464
  NUMA node15 CPU(s):              225-239,465-479
  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
  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    11.3M   12 Data            1     64        1             64
     L1i       32K     7.5M    8 Instruction     1     64        1             64
     L2         2M     480M   16 Unified         2   2048        1             64
     L3     112.5M     450M   15 Unified         3 122880        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: 0-14,240-254
  node 0 size: 63737 MB
  node 0 free: 63301 MB
  node 1 cpus: 15-29,255-269
  node 1 size: 64505 MB
  node 1 free: 64186 MB
  node 2 cpus: 30-44,270-284
  node 2 size: 64505 MB
  node 2 free: 64138 MB
  node 3 cpus: 45-59,285-299
  node 3 size: 64505 MB
  node 3 free: 63471 MB
  node 4 cpus: 60-74,300-314
  node 4 size: 64505 MB
  node 4 free: 64191 MB
  node 5 cpus: 75-89,315-329
  node 5 size: 64505 MB
  node 5 free: 64234 MB
  node 6 cpus: 90-104,330-344
  node 6 size: 64505 MB
  node 6 free: 64229 MB
  node 7 cpus: 105-119,345-359
  node 7 size: 64505 MB
  node 7 free: 64191 MB
  node 8 cpus: 120-134,360-374
  node 8 size: 64505 MB
  node 8 free: 64216 MB
  node 9 cpus: 135-149,375-389
  node 9 size: 64469 MB
  node 9 free: 63966 MB
  node 10 cpus: 150-164,390-404
  node 10 size: 64505 MB
  node 10 free: 64221 MB
  node 11 cpus: 165-179,405-419
```

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Platform Notes (Continued)

```
  node 11 size: 64505 MB
  node 11 free: 64208 MB
  node 12 cpus: 180-194,420-434
  node 12 size: 64505 MB
  node 12 free: 64215 MB
  node 13 cpus: 195-209,435-449
  node 13 size: 64505 MB
  node 13 free: 64222 MB
  node 14 cpus: 210-224,450-464
  node 14 size: 64505 MB
  node 14 free: 64223 MB
  node 15 cpus: 225-239,465-479
  node 15 size: 64476 MB
  node 15 free: 63219 MB
  node distances:
  node   0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15
    0:  10  12  12  12  21  21  21  21  21  21  21  21  21  21  21  21
    1:  12  10  12  12  21  21  21  21  21  21  21  21  21  21  21  21
    2:  12  12  10  12  21  21  21  21  21  21  21  21  21  21  21  21
    3:  12  12  12  10  21  21  21  21  21  21  21  21  21  21  21  21
    4:  21  21  21  21  10  12  12  12  21  21  21  21  21  21  21  21
    5:  21  21  21  21  12  10  12  12  21  21  21  21  21  21  21  21
    6:  21  21  21  21  12  12  10  12  21  21  21  21  21  21  21  21
    7:  21  21  21  21  12  12  12  10  21  21  21  21  21  21  21  21
    8:  21  21  21  21  21  21  21  21  10  12  12  12  21  21  21  21
    9:  21  21  21  21  21  21  21  21  12  10  12  12  21  21  21  21
   10:  21  21  21  21  21  21  21  21  12  12  10  12  21  21  21  21
   11:  21  21  21  21  21  21  21  21  12  12  12  10  21  21  21  21
   12:  21  21  21  21  21  21  21  21  21  21  21  21  10  12  12  12
   13:  21  21  21  21  21  21  21  21  21  21  21  21  12  10  12  12
   14:  21  21  21  21  21  21  21  21  21  21  21  21  12  12  10  12
   15:  21  21  21  21  21  21  21  21  21  21  21  21  12  12  12  10

------------------------------------------------------------
9. /proc/meminfo
   MemTotal:       1056006464 kB

------------------------------------------------------------
10. who -r
  run-level 3 Jan 26 12:25

------------------------------------------------------------
11. Systemd service manager version: systemd 250 (250-6.el9_0)
  Default Target  Status
  multi-user      running

------------------------------------------------------------
12. Services, from systemctl list-unit-files
  STATE            UNIT FILES
  enabled          NetworkManager NetworkManager-dispatcher NetworkManager-wait-online auditd crond
                   dbus-broker firewalld getty@ irqbalance kdump mdmonitor microcode nis-domainname rhsmcertd
                   rsyslog selinux-autorelabel-mark sshd sssd systemd-network-generator tuned udisks2
  enabled-runtime  systemd-remount-fs
  disabled         console-getty cpupower debug-shell kvm_stat man-db-restart-cache-update nftables rdisc
                   rhsm rhsm-facts rpmdb-rebuild serial-getty@ sshd-keygen@ systemd-boot-check-no-failures
                   systemd-pstore systemd-sysext
  indirect         sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo

------------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
```

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Platform Notes (Continued)

```
  BOOT_IMAGE=(hd2,gpt2)/vmlinuz-5.14.0-70.13.1.el9_0.x86_64
  root=UUID=fc5aaa98-7763-4e7f-8371-1b1810d17883
  ro
  crashkernel=1G-4G:192M,4G-64G:256M,64G-:512M
  resume=UUID=62bda881-0d36-43ce-826e-76cb2ea35911
  nohz_full=1-479

------------------------------------------------------------
14. cpupower frequency-info
  analyzing CPU 0:
    Unable to determine current policy
    boost state support:
      Supported: yes
      Active: yes

------------------------------------------------------------
15. tuned-adm active
  Current active profile: throughput-performance

------------------------------------------------------------
16. 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                    40
  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                     10
  vm.watermark_boost_factor      15000
  vm.watermark_scale_factor         10
  vm.zone_reclaim_mode               0

------------------------------------------------------------
17. /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

------------------------------------------------------------
18. /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

------------------------------------------------------------
19. OS release
```

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Platform Notes (Continued)

```
   From /etc/*-release /etc/*-version
   os-release     Red Hat Enterprise Linux 9.0 (Plow)
   redhat-release Red Hat Enterprise Linux release 9.0 (Plow)
   system-release Red Hat Enterprise Linux release 9.0 (Plow)

 ------------------------------------------------------------
 20. Disk information
 SPEC is set to: /home/Uniautos/cpu2017
   Filesystem     Type  Size  Used Avail Use% Mounted on
   /dev/sdc3      xfs   272G   95G  177G  35% /home

 ------------------------------------------------------------
 21. /sys/devices/virtual/dmi/id
     Vendor:          XFUSION
     Product:         2488H V7
     Product Family: EagleStream

 ------------------------------------------------------------
 22. dmidecode
   Additional information from dmidecode 3.3 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:
     18x Samsung M321R4GA3BB6-CQKDG 32 GB 2 rank 4800
     14x Samsung M321R4GA3BB6-CQKEG 32 GB 2 rank 4800


 ------------------------------------------------------------
 23. BIOS
 (This section combines info from /sys/devices and dmidecode.)
    BIOS Vendor:       XFUSION
    BIOS Version:      01.02.01.03
    BIOS Date:         01/01/2024
```

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

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Compiler Version Notes (Continued)

```
==============================================================================================================
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
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--------------------------------------------------------------------------------------------------------------

==============================================================================================================
Fortran | 548.exchange2_r(base, peak)
--------------------------------------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.2.3 Build x
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--------------------------------------------------------------------------------------------------------------
```

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
-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`

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Peak Portability Flags (Continued)

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/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

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Peak Optimization Flags (Continued)

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/xFusion-Platform-Settings-SPR-V1.1-revC.html`

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/xFusion-Platform-Settings-SPR-V1.1-revC.xml`

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