SPEC CPU®2017 Integer Rate Result

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Hewlett Packard Enterprise

(Test Sponsor: HPE)
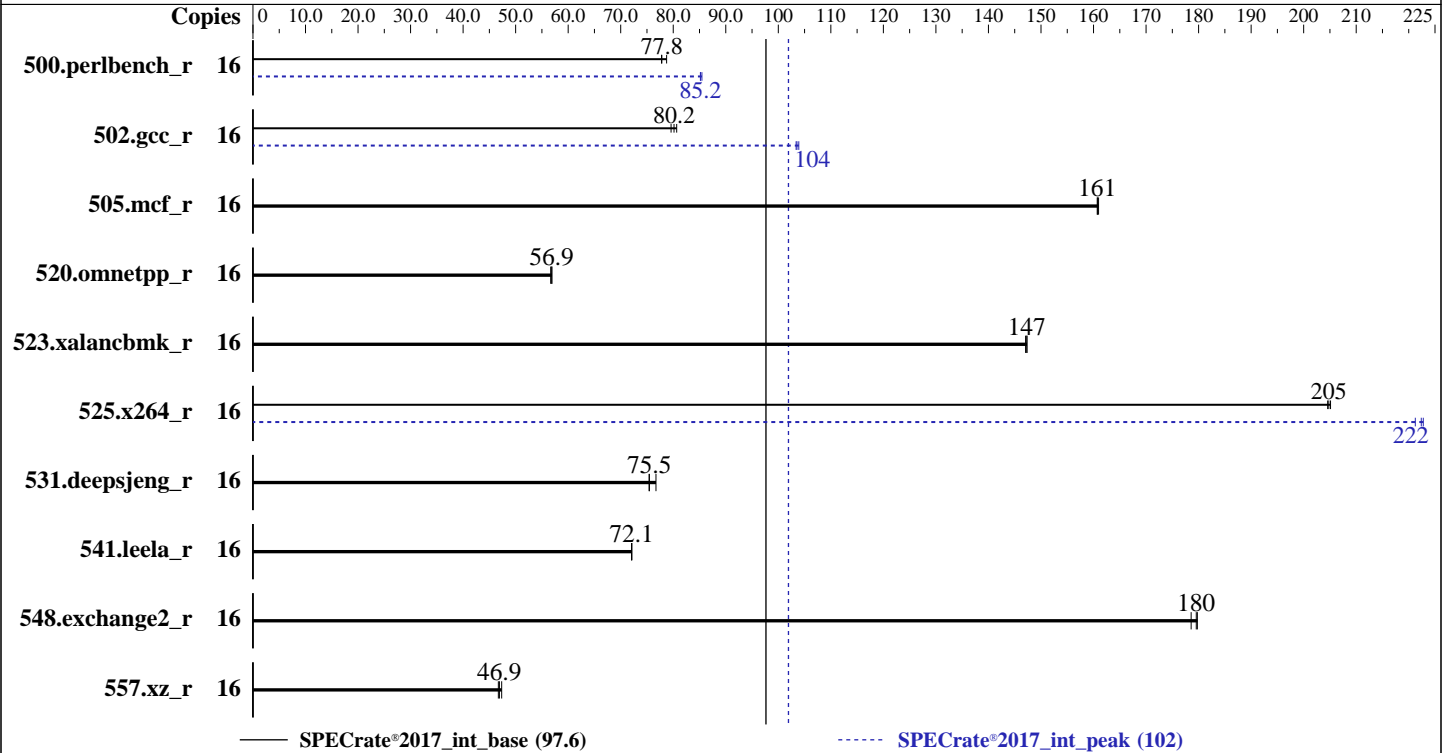
ProLiant DL20 Gen11
(2.80 GHz, Intel Xeon E-2478)

$SPECrate^{®}2017\_int\_base = 97.6$

$SPECrate^{®}2017\_int\_peak = 102$

CPU2017 License: 3

Test Sponsor: HPE

Tested by: HPE

Test Date: Jan-2024

Hardware Availability: Dec-2023

Software Availability: Dec-2023

Copies		
500.perlbench_r	16	77.8 / 85.2
502.gcc_r	16	80.2 / 104
505.mcf_r	16	161
520.omnetpp_r	16	56.9
523.xalancbmk_r	16	147
525.x264_r	16	205 / 222
531.deepsjeng_r	16	75.5
541.leela_r	16	72.1
548.exchange2_r	16	180
557.xz_r	16	46.9

—— SPECrate®2017_int_base (97.6)   ----- SPECrate®2017_int_peak (102)

Hardware

CPU Name: Intel Xeon E-2478
 Max MHz: 5200
 Nominal: 2800
Enabled: 8 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: 24 MB I+D on chip per chip
 Other: None
Memory: 64 GB (2 x 32 GB 2Rx8 PC5-5600B-E,
 running at 4400), orderable using
 HPE part# P64339-B21
Storage: 1 x 480 GB SATA SSD
Other: None

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: HPE BIOS Version v1.44 01/04/2024 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	16	323	78.7	**327**	**77.8**	328	77.8	16	299	85.2	**299**	**85.2**	298	85.5
502.gcc_r	16	285	79.6	**283**	**80.2**	281	80.7	16	**219**	**104**	219	103	218	104
505.mcf_r	16	**161**	**161**	161	161	161	161	16	**161**	**161**	161	161	161	161
520.omnetpp_r	16	370	56.7	**369**	**56.9**	369	56.9	16	370	56.7	**369**	**56.9**	369	56.9
523.xalancbmk_r	16	115	147	115	147	**115**	**147**	16	115	147	115	147	**115**	**147**
525.x264_r	16	137	205	**137**	**205**	137	205	16	126	223	**126**	**222**	127	221
531.deepsjeng_r	16	**243**	**75.5**	243	75.4	239	76.7	16	**243**	**75.5**	243	75.4	239	76.7
541.leela_r	16	**368**	**72.1**	368	72.1	367	72.1	16	**368**	**72.1**	368	72.1	367	72.1
548.exchange2_r	16	**233**	**180**	235	179	233	180	16	**233**	**180**	235	179	233	180
557.xz_r	16	**368**	**46.9**	365	47.3	370	46.7	16	**368**	**46.9**	365	47.3	370	46.7
SPECrate®2017_int_base =		**97.6**											
SPECrate®2017_int_peak =		**102**											

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
   tuned service was stopped using "systemctl stop tuned"
```

Environment Variables Notes

```
   Environment variables set by runcpu before the start of the run:
   LD_LIBRARY_PATH = "/home/cpu2017_new/lib/intel64:/home/cpu2017_new/lib/ia32:/home/cpu2017_new/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
   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
```

(Continued on next page)

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General Notes (Continued)

sources available from jemalloc.net or https://github.com/jemalloc/jemalloc/releases

Platform Notes

```
The system ROM used for this result contains Intel microcode version 0x121 for
the Intel Xeon E-2478 processor.
BIOS Configuration:

 Sysinfo program /home/cpu2017_new/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost Wed Jan 17 00:01:30 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. 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 5.14.21-150400.22-default #1 SMP PREEMPT_DYNAMIC Wed May 11 06:57:18 UTC 2022 (49db222/lp)
   x86_64 x86_64 x86_64 GNU/Linux


 ------------------------------------------------------------
 2. w
   00:01:30 up 2 min,  2 users,  load average: 0.02, 0.02, 0.00
   USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1     -                00:00    1:22   0.00s  0.00s -bash
   root     pts/0    172.16.0.100     00:00    9.00s  0.64s  0.00s -bash

 ------------------------------------------------------------
 3. Username
   From environment variable $USER:  root

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

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Platform Notes (Continued)

```
 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) 256720
   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) 256720
   virtual memory          (kbytes, -v) unlimited
   file locks                      (-x) unlimited

 ----------------------------------------------------------
 5. sysinfo process ancestry
 /usr/lib/systemd/systemd --switched-root --system --deserialize 29
 sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups
 sshd: root@pts/0
 -bash
 -bash
 runcpu --nobuild --action validate --define default-platform-flags --define numcopies=16 -c
   ic2023.2.3-lin-core-avx2-rate-20231121.cfg --define smt-on --define cores=8 --define physicalfirst
   --define no-numa --tune base,peak -o all --define drop_caches intrate
 runcpu --nobuild --action validate --define default-platform-flags --define numcopies=16 --configfile
   ic2023.2.3-lin-core-avx2-rate-20231121.cfg --define smt-on --define cores=8 --define physicalfirst
   --define no-numa --tune base,peak --output_format all --define drop_caches --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 = /home/cpu2017_new

 ----------------------------------------------------------
 6. /proc/cpuinfo
    model name      : Intel(R) Xeon(R) E E-2478
    vendor_id       : GenuineIntel
    cpu family      : 6
    model           : 183
    stepping        : 1
    microcode       : 0x121
    bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs
    cpu cores       : 8
    siblings        : 16
    1 physical ids (chips)
    16 processors (hardware threads)
    physical id 0: core ids 0-7
    physical id 0: apicids 0-15
   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
```

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Platform Notes (Continued)

```
  Address sizes:                 46 bits physical, 48 bits virtual
  Byte Order:                    Little Endian
  CPU(s):                        16
  On-line CPU(s) list:           0-15
  Vendor ID:                     GenuineIntel
  Model name:                    Intel(R) Xeon(R) E E-2478
  CPU family:                    6
  Model:                         183
  Thread(s) per core:            2
  Core(s) per socket:            8
  Socket(s):                     1
  Stepping:                      1
  BogoMIPS:                      5606.40
  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 sse4_1 sse4_2
                                 x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm
                                 abm 3dnowprefetch cpuid_fault epb invpcid_single ssbd ibrs ibpb stibp
                                 ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid ept_ad fsgsbase
                                 tsc_adjust bmi1 avx2 smep bmi2 erms invpcid rdseed adx smap clflushopt
                                 clwb intel_pt sha_ni xsaveopt xsavec xgetbv1 xsaves avx_vnni dtherm ida
                                 arat pln pts umip pku ospke waitpkg gfni vaes vpclmulqdq tme rdpid movdiri
                                 movdir64b fsrm md_clear serialize pconfig arch_lbr flush_l1d
                                 arch_capabilities
  Virtualization:                VT-x
  L1d cache:                     384 KiB (8 instances)
  L1i cache:                     256 KiB (8 instances)
  L2 cache:                      16 MiB (8 instances)
  L3 cache:                      24 MiB (1 instance)
  NUMA node(s):                  1
  NUMA node0 CPU(s):             0-15
  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     384K   12 Data           1    64      1           64
     L1i      32K     256K    8 Instruction    1    64      1           64
     L2        2M      16M   16 Unified        2  2048      1           64
     L3       24M      24M   12 Unified        3 32768      1           64

    ------------------------------------------------------------
 8. numactl --hardware
 NOTE: a numactl 'node' might or might not correspond to a physical chip.
   available: 1 nodes (0)
   node 0 cpus: 0-15
   node 0 size: 64202 MB
   node 0 free: 63603 MB
   node distances:
   node   0
     0:  10
```

(Continued on next page)

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Platform Notes (Continued)

```
  ----------------------------------------------------------
  9. /proc/meminfo
     MemTotal:       65743624 kB


  ----------------------------------------------------------
  10. who -r
    run-level 3 Jan 16 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          apparmor auditd cron getty@ haveged irqbalance issue-generator kbdsettings lvm2-monitor
                     postfix purge-kernels rollback sshd wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6
                     wickedd-nanny
    enabled-runtime  systemd-remount-fs
    disabled         blk-availability boot-sysctl ca-certificates chrony-wait chronyd console-getty debug-shell
                     grub2-once haveged-switch-root hwloc-dump-hwdata issue-add-ssh-keys kexec-load lunmask
                     rpmconfigcheck serial-getty@ systemd-boot-check-no-failures systemd-network-generator
                     systemd-sysext systemd-time-wait-sync systemd-timesyncd tuned
    indirect         pcscd wickedd


  ----------------------------------------------------------
  13. Linux kernel boot-time arguments, from /proc/cmdline
    BOOT_IMAGE=/boot/vmlinuz-5.14.21-150400.22-default
    root=UUID=0568eef9-b0ff-4cd5-adb9-1f8e14da628c
    splash=silent
    resume=/dev/disk/by-uuid/ffb9593d-577b-484e-83b9-b995375d44ca
    mitigations=auto
    quiet
    security=apparmor


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


  ----------------------------------------------------------
  15. tuned-adm active
    It seems that tuned daemon is not running, preset profile is not activated.
    Preset profile: throughput-performance


  ----------------------------------------------------------
  16. sysctl
    kernel.numa_balancing            0
    kernel.randomize_va_space        2
    vm.compaction_proactiveness      20
    vm.dirty_background_bytes        0
    vm.dirty_background_ratio        10
    vm.dirty_bytes                   0
    vm.dirty_expire_centisecs        3000
    vm.dirty_ratio                   20
```

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Platform Notes (Continued)

```
  vm.dirty_writeback_centisecs        500
  vm.dirtytime_expire_seconds       43200
  vm.extfrag_threshold                500
  vm.min_unmapped_ratio                 1
  vm.nr_hugepages                       0
  vm.nr_hugepages_mempolicy             0
  vm.nr_overcommit_hugepages            0
  vm.swappiness                        60
  vm.watermark_boost_factor         15000
  vm.watermark_scale_factor            10
  vm.zone_reclaim_mode                  0


----------------------------------------------------------
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
  From /etc/*-release /etc/*-version
  os-release SUSE Linux Enterprise Server 15 SP4


----------------------------------------------------------
20. Disk information
SPEC is set to: /home/cpu2017_new
  Filesystem      Type  Size  Used Avail Use% Mounted on
  /dev/sda3       xfs   344G   75G  270G  22% /home


----------------------------------------------------------
21. /sys/devices/virtual/dmi/id
    Vendor:        HPE
    Product:       ProLiant DL20 Gen11
    Product Family: ProLiant
    Serial:        DA2G93DK88


----------------------------------------------------------
22. 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:
    2x Hynix HMCG88AGBEA084N 32 GB 2 rank 5600, configured at 4400



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

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Platform Notes (Continued)

```
    BIOS Vendor:        HPE
    BIOS Version:       1.44
    BIOS Date:          01/04/2024
    BIOS Revision:      1.44
    Firmware Revision: 1.45
```

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.
------------------------------------------------------------------------------


==============================================================================
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.
------------------------------------------------------------------------------
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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 -xCORE-AVX2 -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 -xCORE-AVX2 -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 -xCORE-AVX2 -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`

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

SPEC CPU®2017 Integer Rate Result

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Hewlett Packard Enterprise
(Test Sponsor: HPE)

ProLiant DL20 Gen11
(2.80 GHz, Intel Xeon E-2478)

$SPECrate®2017\_int\_base = 97.6$

$SPECrate®2017\_int\_peak = 102$

CPU2017 License: 3	**Test Date:** Jan-2024
Test Sponsor: HPE	**Hardware Availability:** Dec-2023
Tested by: HPE	**Software Availability:** Dec-2023

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/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 -flto`
`-Ofast -ffast-math -mfpmath=sse -funroll-loops`
`-qopt-mem-layout-trans=4 -L/usr/local/jemalloc32-5.0.1/lib`
`-ljemalloc`

(Continued on next page)

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Peak Optimization Flags (Continued)

505.mcf_r: basepeak = yes

525.x264_r: -w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX2 -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/HPE-Platform-Flags-Intel-RPL-rev2.0.html
  http://www.spec.org/cpu2017/flags/Intel-ic2023p2-official-linux64.html

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You can also download the XML flags sources by saving the following links:
  http://www.spec.org/cpu2017/flags/HPE-Platform-Flags-Intel-RPL-rev2.0.xml
  http://www.spec.org/cpu2017/flags/Intel-ic2023p2-official-linux64.xml

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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 2024-01-16 13:31:30-0500.
Report generated on 2024-03-04 12:57:22 by CPU2017 PDF formatter v6716.
Originally published on 2024-02-27.