



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 915

PowerEdge MX760c (Intel Xeon Platinum 8480+)

SPECrate®2017_fp_peak = 984

CPU2017 License: 6573

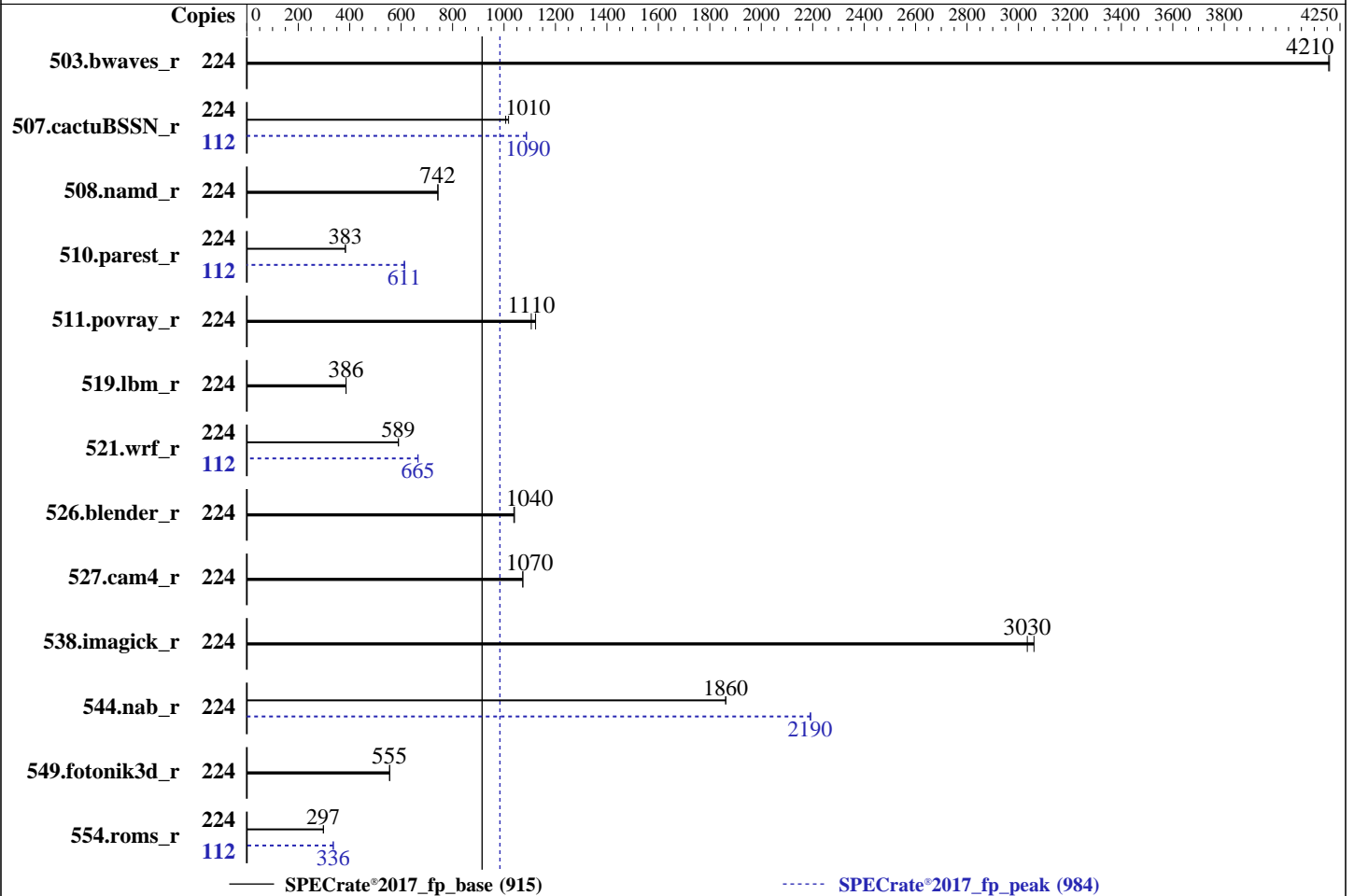
Test Date: Dec-2022

Test Sponsor: Dell Inc.

Hardware Availability: Feb-2023

Tested by: Dell Inc.

Software Availability: May-2022



Hardware

CPU Name: Intel Xeon Platinum 8480+
 Max MHz: 3800
 Nominal: 2000
 Enabled: 112 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: 125 GB on tmpfs
 Other: None

Software

OS: Red Hat Enterprise Linux 8.6 (Ootpa)
 4.18.0-372.9.1.el8.x86_64
 Compiler: C/C++: Version 2022.1 of Intel oneAPI DPC++/C++ Compiler for Linux;
 Fortran: Version 2022.1 of Intel Fortran Compiler for Linux;
 Parallel: No
 Firmware: Version 0.3.1 released Nov-2022
 File System: tmpfs
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit
 Peak Pointers: 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.



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 915

PowerEdge MX760c (Intel Xeon Platinum 8480+)

SPECrate®2017_fp_peak = 984

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

Test Date: Dec-2022
Hardware Availability: Feb-2023
Software Availability: May-2022

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	224	534	4210	<u>534</u>	<u>4210</u>			224	534	4210	<u>534</u>	<u>4210</u>		
507.cactuBSSN_r	224	279	1020	<u>282</u>	<u>1010</u>			112	130	1090	<u>131</u>	<u>1090</u>		
508.namd_r	224	<u>287</u>	<u>742</u>	286	743			224	<u>287</u>	<u>742</u>	286	743		
510.parest_r	224	1527	384	<u>1531</u>	<u>383</u>			112	477	614	<u>479</u>	<u>611</u>		
511.povray_r	224	<u>473</u>	<u>1110</u>	466	1120			224	<u>473</u>	<u>1110</u>	466	1120		
519.lbm_r	224	<u>612</u>	<u>386</u>	612	386			224	<u>612</u>	<u>386</u>	612	386		
521.wrf_r	224	<u>852</u>	<u>589</u>	851	590			112	377	666	<u>377</u>	<u>665</u>		
526.blender_r	224	328	1040	<u>329</u>	<u>1040</u>			224	328	1040	<u>329</u>	<u>1040</u>		
527.cam4_r	224	<u>365</u>	<u>1070</u>	365	1070			224	<u>365</u>	<u>1070</u>	365	1070		
538.imagick_r	224	<u>184</u>	<u>3030</u>	182	3060			224	<u>184</u>	<u>3030</u>	182	3060		
544.nab_r	224	<u>203</u>	<u>1860</u>	202	1860			224	172	2190	<u>172</u>	<u>2190</u>		
549.fotonik3d_r	224	1572	555	<u>1573</u>	<u>555</u>			224	1572	555	<u>1573</u>	<u>555</u>		
554.roms_r	224	1194	298	<u>1197</u>	<u>297</u>			112	<u>530</u>	<u>336</u>	529	336		

SPECrate®2017_fp_base = 915

SPECrate®2017_fp_peak = 984

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

Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit' was used to generate numactl commands to bind each copy to a specific processor. For details, please see the config file.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

Environment Variables Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH =
"/mnt/ramdisk/cpu2017-1.1.9-ic2022.1/lib/intel64:/mnt/ramdisk/cpu2017-1.1.9-ic2022.1/je5.0.1-64"
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

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 915

PowerEdge MX760c (Intel Xeon Platinum 8480+)

SPECrate®2017_fp_peak = 984

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

Test Date: Dec-2022
Hardware Availability: Feb-2023
Software Availability: May-2022

General Notes (Continued)

Prior to runcpu invocation
Filesystem page cache synced and cleared with:
sync; echo 3> /proc/sys/vm/drop_caches
runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5
sources available from jemalloc.net or <https://github.com/jemalloc/jemalloc/releases>

NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1) is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2) is mitigated in the system as tested and documented.

Benchmark run from a 125 GB ramdisk created with the cmd: "mount -t tmpfs -o size=125G tmpfs /mnt/ramdisk"

Platform Notes

BIOS settings:
 ADDDC Setting : Disabled
 DIMM Self Healing on
Uncorrectable Memory Error : Disabled
Virtualization Technology : Disabled
 Sub NUMA Cluster : 4-way Clustering
DCU Streamer Prefetcher : Disabled
 LLC Prefetch : Disabled
Dead Line LLC Alloc : Disabled
 Optimizer Mode : Enabled

 System Profile : Custom
CPU Power Management : Maximum Performance
 C1E : Disabled
 C States : Autonomous
Memory Patrol Scrub : Disabled
Energy Efficiency Policy : Performance
 PCI ASPM L1 Link
 Power Management : Disabled

Sysinfo program /mnt/ramdisk/cpu2017-1.1.9-ic2022.1/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost.localdomain Sat Dec 17 15:34:43 2022

SUT (System Under Test) info as seen by some common utilities.

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 915

PowerEdge MX760c (Intel Xeon Platinum 8480+)

SPECrate®2017_fp_peak = 984

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Dec-2022

Hardware Availability: Feb-2023

Software Availability: May-2022

Platform Notes (Continued)

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 239 (239-58.e18)
12. Failed units, from systemctl list-units --state=failed
13. Services, from systemctl list-unit-files
14. Linux kernel boot-time arguments, from /proc/cmdline
15. cpupower frequency-info
16. tuned-adm active
17. sysctl
18. /sys/kernel/mm/transparent_hugepage
19. /sys/kernel/mm/transparent_hugepage/khugepaged
20. OS release
21. Kernel self-reported vulnerability status, from /sys/devices/system/cpu/vulnerabilities
22. Disk information
23. /sys/devices/virtual/dmi/id
24. dmidecode
25. BIOS

1. uname -a

```
Linux localhost.localdomain 4.18.0-372.9.1.el8.x86_64 #1 SMP Fri Apr 15 22:12:19 EDT 2022 x86_64 x86_64 x86_64 GNU/Linux
```

2. w

```
15:34:43 up 7:20, 1 user, load average: 157.03, 207.39, 215.91
USER      TTY      FROM          LOGIN@      IDLE        JCPU   PCPU   WHAT
root     tty1      -             10:56      4:37m  1.97s  0.00s /bin/bash ./dell-norun-specrate.sh
--iterations 2 --output_format csv,html,pdf,txt --define Dell-BIOS-inc=Dell-BIOS_Xeon-4.inc
```

3. Username

From environment variable \$USER: root

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 915

PowerEdge MX760c (Intel Xeon Platinum 8480+)

SPECrate®2017_fp_peak = 984

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

Test Date: Dec-2022
Hardware Availability: Feb-2023
Software Availability: May-2022

Platform Notes (Continued)

```

4. ulimit -a
   core file size          (blocks, -c) 0
   data seg size          (kbytes, -d) unlimited
   scheduling priority     (-e) 0
   file size              (blocks, -f) unlimited
   pending signals        (-i) 4126004
   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) 4126004
   virtual memory         (kbytes, -v) unlimited
   file locks            (-x) unlimited

```

```

5. sysinfo process ancestry
/usr/lib/systemd/systemd --switched-root --system --deserialize 18
login -- root
-bash
/bin/bash ./DELL_rate.sh
/bin/bash ./dell-norun-main.sh rate
/bin/bash ./dell-norun-main.sh rate
/bin/bash ./dell-norun-specrate.sh --iterations 2 --output_format csv,html,pdf,txt --define
  Dell-BIOS-inc=Dell-BIOS_Xeon-4.inc
/bin/bash ./dell-norun-specrate.sh --iterations 2 --output_format csv,html,pdf,txt --define
  Dell-BIOS-inc=Dell-BIOS_Xeon-4.inc
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=224 -c
  ic2022.1-lin-core-avx512-rate-20220316.cfg --define smt-on --define cores=112 --define physicalfirst
  --define invoke_with_interleave --define drop_caches --tune base,peak -o all --iterations 2
  --output_format csv,html,pdf,txt --define Dell-BIOS-inc=Dell-BIOS_Xeon-4.inc fprate
runcpu --nobuild --action validate --define default-platform-flags --define numcopies=224 --configfile
  ic2022.1-lin-core-avx512-rate-20220316.cfg --define smt-on --define cores=112 --define physicalfirst
  --define invoke_with_interleave --define drop_caches --tune base,peak --output_format all --iterations 2
  --output_format csv,html,pdf,txt --define Dell-BIOS-inc=Dell-BIOS_Xeon-4.inc --nopower --runmode rate
  --tune base:peak --size refrate fprate --nopreenv --note-preenv --logfile
  $SPEC/tmp/CPU2017.002/temlogs/preenv.fprate.002.0.log --lognum 002.0 --from_runcpu 2
specperl $SPEC/bin/sysinfo
$SPEC = /mnt/ramdisk/cpu2017-1.1.9-ic2022.1

```

```

6. /proc/cpuinfo
   model name          : Intel(R) Xeon(R) Platinum 8480+

```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 915

PowerEdge MX760c (Intel Xeon Platinum 8480+)

SPECrate®2017_fp_peak = 984

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

Test Date: Dec-2022
Hardware Availability: Feb-2023
Software Availability: May-2022

Platform Notes (Continued)

```

vendor_id      : GenuineIntel
cpu family    : 6
model         : 143
stepping      : 6
microcode     : 0x2b000111
bugs          : spectre_v1 spectre_v2 spec_store_bypass swapgs
cpu cores     : 56
siblings      : 112
2 physical ids (chips)
224 processors (hardware threads)
physical id 0: core ids 0-55
physical id 1: core ids 0-55
physical id 0: apicids 0-111
physical id 1: apicids 128-239

```

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 2.32.1:

```

Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Byte Order:             Little Endian
CPU(s):                 224
On-line CPU(s) list:   0-223
Thread(s) per core:    2
Core(s) per socket:    56
Socket(s):              2
NUMA node(s):          8
Vendor ID:              GenuineIntel
BIOS Vendor ID:        Intel
CPU family:             6
Model:                  143
Model name:             Intel(R) Xeon(R) Platinum 8480+
BIOS Model name:        Intel(R) Xeon(R) Platinum 8480+
Stepping:               6
CPU MHz:                2000.000
BogoMIPS:               4000.00
L1d cache:              48K
L1i cache:              32K
L2 cache:               2048K
L3 cache:               107520K
NUMA node0 CPU(s):     0,4,8,12,16,20,24,28,32,36,40,44,48,52,112,116,120,124,128,132,136,140,144,148,152,156,160,164
NUMA node1 CPU(s):     56,60,64,68,72,76,80,84,88,92,96,100,104,108,168,172,176,180,184,188,192,196,200,204,208,212,216,220

```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 915

PowerEdge MX760c (Intel Xeon Platinum 8480+)

SPECrate®2017_fp_peak = 984

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

Test Date: Dec-2022
Hardware Availability: Feb-2023
Software Availability: May-2022

Platform Notes (Continued)

NUMA node2 CPU(s): 2,6,10,14,18,22,26,30,34,38,42,46,50,54,114,118,122,126,130,134,138,142,146,150,154,158,162,166

NUMA node3 CPU(s): 58,62,66,70,74,78,82,86,90,94,98,102,106,110,170,174,178,182,186,190,194,198,202,206,210,214,218,222

NUMA node4 CPU(s): 1,5,9,13,17,21,25,29,33,37,41,45,49,53,113,117,121,125,129,133,137,141,145,149,153,157,161,165

NUMA node5 CPU(s): 57,61,65,69,73,77,81,85,89,93,97,101,105,109,169,173,177,181,185,189,193,197,201,205,209,213,217,221

NUMA node6 CPU(s): 3,7,11,15,19,23,27,31,35,39,43,47,51,55,115,119,123,127,131,135,139,143,147,151,155,159,163,167

NUMA node7 CPU(s): 59,63,67,71,75,79,83,87,91,95,99,103,107,111,171,175,179,183,187,191,195,199,203,207,211,215,219,223

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 arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc cpuid aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor ds_cpl 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 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_lld arch_capabilities

8. numactl --hardware

NOTE: a numactl 'node' might or might not correspond to a physical chip.

available: 8 nodes (0-7)

node 0 cpus: 0,4,8,12,16,20,24,28,32,36,40,44,48,52,112,116,120,124,128,132,136,140,144,148,152,156,160,164
node 0 size: 128469 MB
node 0 free: 113085 MB
node 1 cpus:
56,60,64,68,72,76,80,84,88,92,96,100,104,108,168,172,176,180,184,188,192,196,200,204,208,212,216,220
node 1 size: 128976 MB
node 1 free: 118495 MB
node 2 cpus:
2,6,10,14,18,22,26,30,34,38,42,46,50,54,114,118,122,126,130,134,138,142,146,150,154,158,162,166
node 2 size: 129017 MB
node 2 free: 118305 MB
node 3 cpus:
58,62,66,70,74,78,82,86,90,94,98,102,106,110,170,174,178,182,186,190,194,198,202,206,210,214,218,222
node 3 size: 129017 MB
node 3 free: 117362 MB
node 4 cpus: 1,5,9,13,17,21,25,29,33,37,41,45,49,53,113,117,121,125,129,133,137,141,145,149,153,157,161,165

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 915

PowerEdge MX760c (Intel Xeon Platinum 8480+)

SPECrate®2017_fp_peak = 984

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

Test Date: Dec-2022
Hardware Availability: Feb-2023
Software Availability: May-2022

Platform Notes (Continued)

```

node 4 size: 129017 MB
node 4 free: 117089 MB
node 5 cpus:
57,61,65,69,73,77,81,85,89,93,97,101,105,109,169,173,177,181,185,189,193,197,201,205,209,213,217,221
node 5 size: 129017 MB
node 5 free: 118183 MB
node 6 cpus:
3,7,11,15,19,23,27,31,35,39,43,47,51,55,115,119,123,127,131,135,139,143,147,151,155,159,163,167
node 6 size: 129017 MB
node 6 free: 114864 MB
node 7 cpus:
59,63,67,71,75,79,83,87,91,95,99,103,107,111,171,175,179,183,187,191,195,199,203,207,211,215,219,223
node 7 size: 129005 MB
node 7 free: 117699 MB
node distances:
node  0  1  2  3  4  5  6  7
  0:  10 12 12 12 21 21 21 21
  1:  12 10 12 12 21 21 21 21
  2:  12 12 10 12 21 21 21 21
  3:  12 12 12 10 21 21 21 21
  4:  21 21 21 21 10 12 12 12
  5:  21 21 21 21 12 10 12 12
  6:  21 21 21 21 12 12 10 12
  7:  21 21 21 21 12 12 12 10

```

```

-----
9. /proc/meminfo
   MemTotal:      1056297432 kB

```

```

-----
10. who -r
    run-level 3 Dec 17 08:15

```

```

-----
11. Systemd service manager version: systemd 239 (239-58.el8)
    Default Target  Status
    multi-user      degraded

```

```

-----
12. Failed units, from systemctl list-units --state=failed
    UNIT                                LOAD  ACTIVE SUB    DESCRIPTION
    * dnf-makecache.service loaded failed failed dnf makecache

```

```

-----
13. Services, from systemctl list-unit-files
    STATE  UNIT FILES
    enabled NetworkManager NetworkManager-dispatcher NetworkManager-wait-online atd auditd autovt@ crond

```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 915

PowerEdge MX760c (Intel Xeon Platinum 8480+)

SPECrate®2017_fp_peak = 984

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Dec-2022

Hardware Availability: Feb-2023

Software Availability: May-2022

Platform Notes (Continued)

```

firewalld getty@ import-state insights-client-boot irqbalance iscsi iscsi-onboot kdump
libstoragemgmt loadmodules lvm2-monitor mcelog mdmonitor microcode multipathd nis-domainname
nvme-fc-boot-connections rhsmcertd rsyslog selinux-autorelabel-mark smartd sshd sssd syslog
timedatex tuned udisks2 vdo
disabled arp-ethers blk-availability chrony-wait chronyd cni-dhcp console-getty cpupower debug-shell
eatables hwloc-dump-hwdata iprdump iprprint iprupdate ipsec iscsid iscsiuiio kpatch kvm_stat ledmon
man-db-restart-cache-update nftables nvme-autoconnect oddjobd podman podman-auto-update
podman-restart psacct rdisc rhcd rhsm rhsm-facts serial-getty@ sshd-keygen@ systemd-resolved tcsh
indirect sssd-autofs sssd-kcm sssd-nss sssd-pac sssd-pam sssd-ssh sssd-sudo
masked systemd-timedated

```

```

-----
14. Linux kernel boot-time arguments, from /proc/cmdline
BOOT_IMAGE=(hd2,gpt2)/vmlinuz-4.18.0-372.9.1.el8.x86_64
root=/dev/mapper/rhel-root
ro
resume=/dev/mapper/rhel-swap
rd.lvm.lv=rhel/root
rd.lvm.lv=rhel/swap
rhgb
quiet

```

```

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

```

```

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

```

```

-----
17. sysctl
kernel.numa_balancing          1
kernel.randomize_va_space      2
vm.compaction_proactiveness     0
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

```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 915

PowerEdge MX760c (Intel Xeon Platinum 8480+)

SPECrate®2017_fp_peak = 984

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Dec-2022

Hardware Availability: Feb-2023

Software Availability: May-2022

Platform Notes (Continued)

```

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

```

```

-----
18. /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

```

```

-----
19. /sys/kernel/mm/transparent_hugepage/khugepaged
alloc_sleep_millisecs 60000
defrag                 1
max_ptes_none          511
max_ptes_swap          64
pages_to_scan          4096
scan_sleep_millisecs  10000

```

```

-----
20. OS release
From /etc/*-release /etc/*-version
os-release      Red Hat Enterprise Linux 8.6 (Ootpa)
redhat-release  Red Hat Enterprise Linux release 8.6 (Ootpa)
system-release  Red Hat Enterprise Linux release 8.6 (Ootpa)

```

```

-----
21. Kernel self-reported vulnerability status, from /sys/devices/system/cpu/vulnerabilities
itlb_multihit      Not affected
lltf                Not affected
mds                 Not affected
meltdown           Not affected
spec_store_bypass  Mitigation: Speculative Store Bypass disabled via prctl and seccomp
spectre_v1          Mitigation: usercopy/swapgs barriers and __user pointer sanitization
spectre_v2          Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
srbds               Not affected
tsx_async_abort     Not affected

```

For more information, see the Linux documentation on hardware vulnerabilities, for example <https://www.kernel.org/doc/html/latest/admin-guide/hw-vuln/index.html>

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 915

PowerEdge MX760c (Intel Xeon Platinum 8480+)

SPECrate®2017_fp_peak = 984

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

Test Date: Dec-2022
Hardware Availability: Feb-2023
Software Availability: May-2022

Platform Notes (Continued)

22. Disk information

SPEC is set to: /mnt/ramdisk/cpu2017-1.1.9-ic2022.1
Filesystem Type Size Used Avail Use% Mounted on
tmpfs tmpfs 125G 88G 38G 70% /mnt/ramdisk

23. /sys/devices/virtual/dmi/id

Vendor: Dell Inc.
Product: PowerEdge MX760c
Product Family: PowerEdge
Serial: SL6M701

24. 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:
12x 002C00B3002C MTC40F2046S1RC48BA1 64 GB 2 rank 4800
1x 002C0632002C MTC40F2046S1RC48BA1 64 GB 2 rank 4800
3x 002C069D002C MTC40F2046S1RC48BA1 64 GB 2 rank 4800

25. BIOS

(This section combines info from /sys/devices and dmidecode.)

BIOS Vendor: Dell Inc.
BIOS Version: 0.3.1
BIOS Date: 11/24/2022
BIOS Revision: 0.3

Compiler Version Notes

C | 519.lbm_r(base, peak) 538.imagick_r(base, peak)
| 544.nab_r(base, peak)

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Version 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

C++ | 508.namd_r(base, peak) 510.parest_r(base, peak)

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 915

PowerEdge MX760c (Intel Xeon Platinum 8480+)

SPECrate®2017_fp_peak = 984

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

Test Date: Dec-2022
Hardware Availability: Feb-2023
Software Availability: May-2022

Compiler Version Notes (Continued)

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Version 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

=====
C++, C | 511.povray_r(base, peak) 526.blender_r(base, peak)
=====

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Version 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Version 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

=====
C++, C, Fortran | 507.cactuBSSN_r(base, peak)
=====

Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Version 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Version 2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version
2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

=====
Fortran | 503.bwaves_r(base, peak) 549.fotonik3d_r(base, peak)
| 554.roms_r(base, peak)
=====

Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version
2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

=====
Fortran, C | 521.wrf_r(base, peak) 527.cam4_r(base, peak)
=====

Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version
2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Version 2022.1.0 Build 20220316

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 915

PowerEdge MX760c (Intel Xeon Platinum 8480+)

SPECrate®2017_fp_peak = 984

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Dec-2022

Hardware Availability: Feb-2023

Software Availability: May-2022

Compiler Version Notes (Continued)

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

Base Compiler Invocation

C benchmarks:

icx

C++ benchmarks:

icpx

Fortran benchmarks:

ifx

Benchmarks using both Fortran and C:

ifx icx

Benchmarks using both C and C++:

icpx icx

Benchmarks using Fortran, C, and C++:

icpx icx ifx

Base Portability Flags

503.bwaves_r: -DSPEC_LP64
507.cactuBSSN_r: -DSPEC_LP64
508.namd_r: -DSPEC_LP64
510.parest_r: -DSPEC_LP64
511.povray_r: -DSPEC_LP64
519.lbm_r: -DSPEC_LP64
521.wrf_r: -DSPEC_LP64 -DSPEC_CASE_FLAG -convert big_endian
526.blender_r: -DSPEC_LP64 -DSPEC_LINUX -funsigned-char
527.cam4_r: -DSPEC_LP64 -DSPEC_CASE_FLAG
538.imagick_r: -DSPEC_LP64
544.nab_r: -DSPEC_LP64
549.fotonik3d_r: -DSPEC_LP64
554.roms_r: -DSPEC_LP64



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 915

PowerEdge MX760c (Intel Xeon Platinum 8480+)

SPECrate®2017_fp_peak = 984

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

Test Date: Dec-2022
Hardware Availability: Feb-2023
Software Availability: May-2022

Base Optimization Flags

C benchmarks:

```
-w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

C++ benchmarks:

```
-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

Fortran benchmarks:

```
-w -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

Benchmarks using both Fortran and C:

```
-w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

Benchmarks using both C and C++:

```
-w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4 -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

Benchmarks using Fortran, C, and C++:

```
-w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

Peak Compiler Invocation

C benchmarks:

icx

C++ benchmarks:

icpx

Fortran benchmarks:

ifx

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 915

PowerEdge MX760c (Intel Xeon Platinum 8480+)

SPECrate®2017_fp_peak = 984

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Dec-2022

Hardware Availability: Feb-2023

Software Availability: May-2022

Peak Compiler Invocation (Continued)

Benchmarks using both Fortran and C:

ifx icx

Benchmarks using both C and C++:

icpx icx

Benchmarks using Fortran, C, and C++:

icpx icx ifx

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

519.lbm_r: basepeak = yes

538.imagick_r: basepeak = yes

544.nab_r: -w -std=c11 -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -qopt-zmm-usage=high -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib

C++ benchmarks:

508.namd_r: basepeak = yes

510.parest_r: -w -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib

Fortran benchmarks:

503.bwaves_r: basepeak = yes

549.fotonik3d_r: basepeak = yes

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 915

PowerEdge MX760c (Intel Xeon Platinum 8480+)

SPECrate®2017_fp_peak = 984

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Dec-2022

Hardware Availability: Feb-2023

Software Availability: May-2022

Peak Optimization Flags (Continued)

```
554.roms_r: -w -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -nostandard-realloc-lhs
-align array32byte -auto -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

Benchmarks using both Fortran and C:

```
521.wrf_r: -w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -nostandard-realloc-lhs
-align array32byte -auto -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

527.cam4_r: basepeak = yes

Benchmarks using both C and C++:

511.povray_r: basepeak = yes

526.blender_r: basepeak = yes

Benchmarks using Fortran, C, and C++:

```
-w -m64 -std=c11 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto -ljemalloc
-L/usr/local/jemalloc64-5.0.1/lib
```

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2017/flags/Intel-ic2022-official-linux64-revB.html>

<http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-Intel-Xeon-v1.2.html>

You can also download the XML flags sources by saving the following links:

<http://www.spec.org/cpu2017/flags/Intel-ic2022-official-linux64-revB.xml>

<http://www.spec.org/cpu2017/flags/Dell-Platform-Flags-PowerEdge-Intel-Xeon-v1.2.xml>

SPEC CPU and SPECrate are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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 2022-12-17 16:34:42-0500.

Report generated on 2023-01-17 18:39:15 by CPU2017 PDF formatter v6442.

Originally published on 2023-01-17.