



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 784

PowerEdge MX760c (Intel Xeon Platinum 8460Y+)

SPECrate®2017_fp_peak = 828

CPU2017 License: 6573

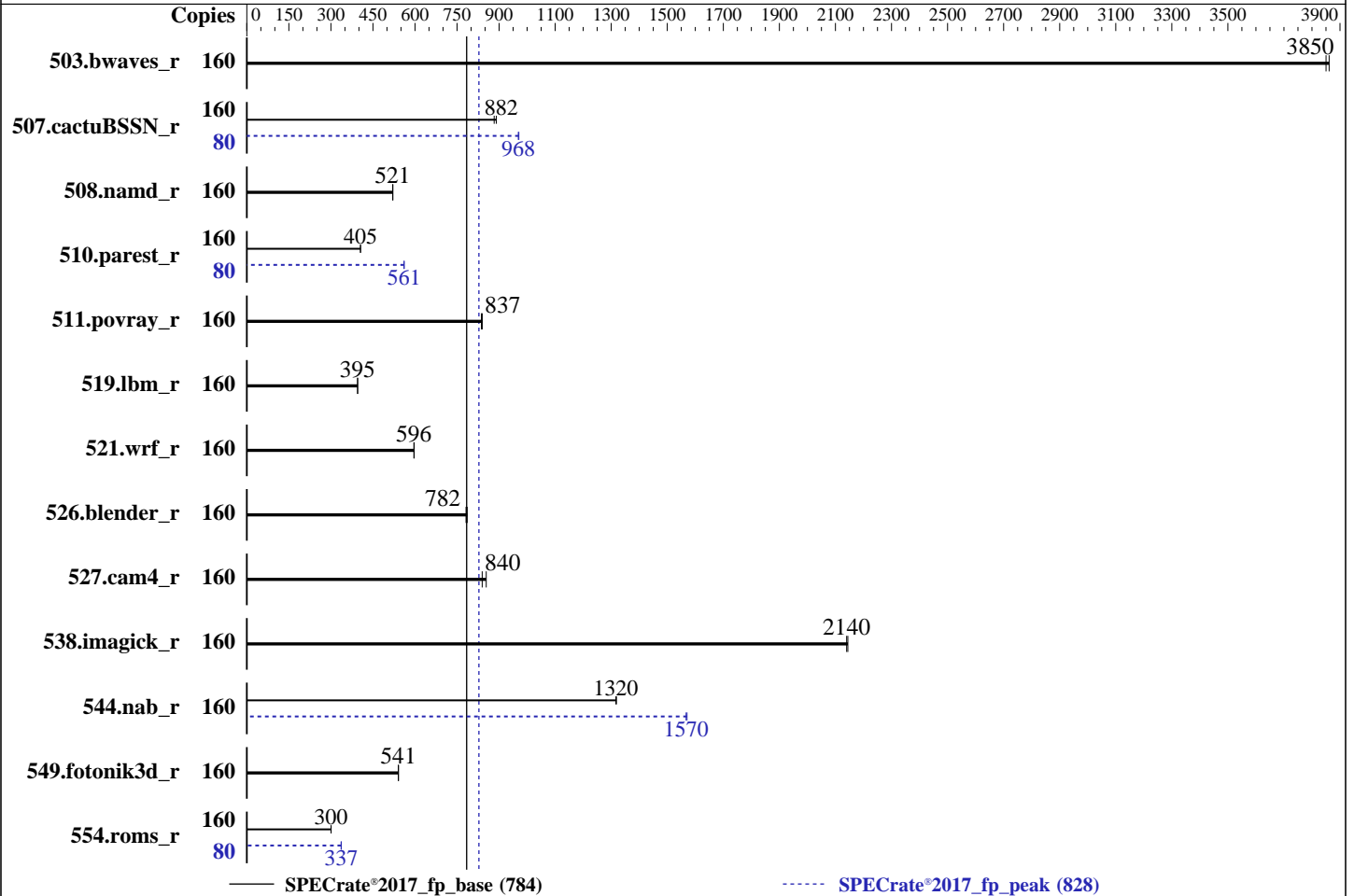
Test Date: Jan-2023

Test Sponsor: Dell Inc.

Hardware Availability: Feb-2023

Tested by: Dell Inc.

Software Availability: Jun-2022



Hardware

CPU Name: Intel Xeon Platinum 8460Y+
 Max MHz: 3700
 Nominal: 2000
 Enabled: 80 cores, 2 chips, 2 threads/core
 Orderable: 1,2 chips
 Cache L1: 32 KB I + 48 KB D on chip per core
 L2: 2 MB I+D on chip per core
 L3: 105 MB I+D on chip per chip
 Other: None
 Memory: 1 TB (16 x 64 GB 2Rx4 PC5-4800B-R)
 Storage: 125 GB on tmpfs
 Other: None

Software

OS: SUSE Linux Enterprise Server 15 SP4
 5.14.21-150400.22-default
 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 1.0.1 released Dec-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 = 784

PowerEdge MX760c (Intel Xeon Platinum 8460Y+)

SPECrate®2017_fp_peak = 828

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

Test Date: Jan-2023
Hardware Availability: Feb-2023
Software Availability: Jun-2022

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	160	416	3860	<u>417</u>	<u>3850</u>			160	416	3860	<u>417</u>	<u>3850</u>		
507.cactuBSSN_r	160	228	890	<u>230</u>	<u>882</u>			80	<u>105</u>	<u>968</u>	104	971		
508.namd_r	160	<u>292</u>	<u>521</u>	292	521			160	<u>292</u>	<u>521</u>	292	521		
510.parest_r	160	<u>1033</u>	<u>405</u>	1032	406			80	373	561	<u>373</u>	<u>561</u>		
511.povray_r	160	445	840	<u>446</u>	<u>837</u>			160	445	840	<u>446</u>	<u>837</u>		
519.lbm_r	160	<u>427</u>	<u>395</u>	426	395			160	<u>427</u>	<u>395</u>	426	395		
521.wrf_r	160	<u>601</u>	<u>596</u>	600	597			160	<u>601</u>	<u>596</u>	600	597		
526.blender_r	160	<u>312</u>	<u>782</u>	310	786			160	<u>312</u>	<u>782</u>	310	786		
527.cam4_r	160	328	854	<u>333</u>	<u>840</u>			160	328	854	<u>333</u>	<u>840</u>		
538.imagick_r	160	<u>186</u>	<u>2140</u>	186	2140			160	<u>186</u>	<u>2140</u>	186	2140		
544.nab_r	160	204	1320	<u>205</u>	<u>1320</u>			160	<u>172</u>	<u>1570</u>	171	1570		
549.fotonik3d_r	160	1153	541	<u>1153</u>	<u>541</u>			160	1153	541	<u>1153</u>	<u>541</u>		
554.roms_r	160	846	301	<u>846</u>	<u>300</u>			80	378	337	<u>378</u>	<u>337</u>		

SPECrate®2017_fp_base = **784**

SPECrate®2017_fp_peak = **828**

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 = 784

PowerEdge MX760c (Intel Xeon Platinum 8460Y+)

SPECrate®2017_fp_peak = 828

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Jan-2023

Hardware Availability: Feb-2023

Software Availability: Jun-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 Wed Jan 11 06:02:25 2023

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 = 784

PowerEdge MX760c (Intel Xeon Platinum 8460Y+)

SPECrate®2017_fp_peak = 828

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Jan-2023

Hardware Availability: Feb-2023

Software Availability: Jun-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 249 (249.11+suse.124.g2bc0b2c447)
12. Services, from systemctl list-unit-files
13. Linux kernel boot-time arguments, from /proc/cmdline
14. sysctl
15. /sys/kernel/mm/transparent_hugepage
16. /sys/kernel/mm/transparent_hugepage/khugepaged
17. OS release
18. Disk information
19. /sys/devices/virtual/dmi/id
20. dmidecode
21. 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)
x86_64 x86_64 x86_64 GNU/Linux
```

```
2. w
06:02:25 up 4:57, 1 user, load average: 115.11, 148.96, 155.07
USER      TTY      FROM          LOGIN@      IDLE        JCPU   PCPU   WHAT
root     tty1    -             01:06      4:27m  1.98s  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
```

```
4. ulimit -a
core file size          (blocks, -c) unlimited
data seg size          (kbytes, -d) unlimited
```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 784

PowerEdge MX760c (Intel Xeon Platinum 8460Y+)

SPECrate®2017_fp_peak = 828

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

Test Date: Jan-2023
Hardware Availability: Feb-2023
Software Availability: Jun-2022

Platform Notes (Continued)

```

scheduling priority      (-e) 0
file size                (blocks, -f) unlimited
pending signals          (-i) 4124453
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) 4124453
virtual memory          (kbytes, -v) unlimited
file locks              (-x) unlimited

```

5. sysinfo process ancestry

```

-----
/usr/lib/systemd/systemd --switched-root --system --deserialize 29
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=160 -c
  ic2022.1-lin-core-avx512-rate-20220316.cfg --define smt-on --define cores=80 --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=160 --configfile
  ic2022.1-lin-core-avx512-rate-20220316.cfg --define smt-on --define cores=80 --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/templogs/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 8460Y+
vendor_id      : GenuineIntel
cpu family     : 6
model         : 143
stepping      : 8

```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 784

PowerEdge MX760c (Intel Xeon Platinum 8460Y+)

SPECrate®2017_fp_peak = 828

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

Test Date: Jan-2023
Hardware Availability: Feb-2023
Software Availability: Jun-2022

Platform Notes (Continued)

microcode : 0x2b000161
bugs : spectre_v1 spectre_v2 spec_store_bypass swapgs
cpu cores : 40
siblings : 80
2 physical ids (chips)
160 processors (hardware threads)
physical id 0: core ids 0-39
physical id 1: core ids 0-39
physical id 0: apicids 0-79
physical id 1: apicids 128-207

Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for virtualized systems. Use the above data carefully.

7. lscpu

From lscpu from util-linux 2.37.2:

Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Address sizes: 46 bits physical, 57 bits virtual
Byte Order: Little Endian
CPU(s): 160
On-line CPU(s) list: 0-159
Vendor ID: GenuineIntel
Model name: Intel(R) Xeon(R) Platinum 8460Y+
CPU family: 6
Model: 143
Thread(s) per core: 2
Core(s) per socket: 40
Socket(s): 2
Stepping: 8
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 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 hle avx2 smep bmi2 erms invpcid rtm cqm rdt_a avx512f avx512dq rdseed adx smap avx512ifma clflushopt clwb intel_pt avx512cd sha_ni avx512bw avx512vl xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total cqm_mbm_local split_lock_detect avx_vnni avx512_bf16 wbnoinvd dtherm ida arat pln pts 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

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 784

PowerEdge MX760c (Intel Xeon Platinum 8460Y+)

SPECrate®2017_fp_peak = 828

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

Test Date: Jan-2023
Hardware Availability: Feb-2023
Software Availability: Jun-2022

Platform Notes (Continued)

tsxldtrk pconfig arch_lbr avx512_fp16 amx_tile flush_llid arch_capabilities

L1d cache: 3.8 MiB (80 instances)
 L1i cache: 2.5 MiB (80 instances)
 L2 cache: 160 MiB (80 instances)
 L3 cache: 210 MiB (2 instances)
 NUMA node(s): 8
 NUMA node0 CPU(s): 0,4,8,12,16,20,24,28,32,36,80,84,88,92,96,100,104,108,112,116
 NUMA node1 CPU(s): 40,44,48,52,56,60,64,68,72,76,120,124,128,132,136,140,144,148,152,156
 NUMA node2 CPU(s): 2,6,10,14,18,22,26,30,34,38,82,86,90,94,98,102,106,110,114,118
 NUMA node3 CPU(s): 42,46,50,54,58,62,66,70,74,78,122,126,130,134,138,142,146,150,154,158
 NUMA node4 CPU(s): 1,5,9,13,17,21,25,29,33,37,81,85,89,93,97,101,105,109,113,117
 NUMA node5 CPU(s): 41,45,49,53,57,61,65,69,73,77,121,125,129,133,137,141,145,149,153,157
 NUMA node6 CPU(s): 3,7,11,15,19,23,27,31,35,39,83,87,91,95,99,103,107,111,115,119
 NUMA node7 CPU(s): 43,47,51,55,59,63,67,71,75,79,123,127,131,135,139,143,147,151,155,159
 Vulnerability Itlb multihit: Not affected
 Vulnerability L1tf: Not affected
 Vulnerability Mds: Not affected
 Vulnerability Meltdown: Not affected
 Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl and seccomp
 Vulnerability Spectre v1: Mitigation; usercopy/swapgs barriers and __user pointer sanitization
 Vulnerability Spectre v2: Mitigation; Enhanced IBRS, IBPB conditional, RSB filling
 Vulnerability Srbds: Not affected
 Vulnerability Tsx async abort: Not affected

From lscpu --cache:

NAME	ONE-SIZE	ALL-SIZE	WAYS	TYPE	LEVEL	SETS	PHY-LINE	COHERENCY-SIZE
L1d	48K	3.8M	12	Data	1	64	1	64
L1i	32K	2.5M	8	Instruction	1	64	1	64
L2	2M	160M	16	Unified	2	2048	1	64
L3	105M	210M	15	Unified	3	114688	1	64

8. numactl --hardware

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

available: 8 nodes (0-7)
 node 0 cpus: 0,4,8,12,16,20,24,28,32,36,80,84,88,92,96,100,104,108,112,116
 node 0 size: 128398 MB
 node 0 free: 115511 MB
 node 1 cpus: 40,44,48,52,56,60,64,68,72,76,120,124,128,132,136,140,144,148,152,156
 node 1 size: 129018 MB
 node 1 free: 120971 MB
 node 2 cpus: 2,6,10,14,18,22,26,30,34,38,82,86,90,94,98,102,106,110,114,118
 node 2 size: 129018 MB
 node 2 free: 120954 MB
 node 3 cpus: 42,46,50,54,58,62,66,70,74,78,122,126,130,134,138,142,146,150,154,158
 node 3 size: 129018 MB
 node 3 free: 120956 MB

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 784

PowerEdge MX760c (Intel Xeon Platinum 8460Y+)

SPECrate®2017_fp_peak = 828

CPU2017 License: 6573

Test Date: Jan-2023

Test Sponsor: Dell Inc.

Hardware Availability: Feb-2023

Tested by: Dell Inc.

Software Availability: Jun-2022

Platform Notes (Continued)

```

node 4 cpus: 1,5,9,13,17,21,25,29,33,37,81,85,89,93,97,101,105,109,113,117
node 4 size: 128984 MB
node 4 free: 115711 MB
node 5 cpus: 41,45,49,53,57,61,65,69,73,77,121,125,129,133,137,141,145,149,153,157
node 5 size: 129018 MB
node 5 free: 120932 MB
node 6 cpus: 3,7,11,15,19,23,27,31,35,39,83,87,91,95,99,103,107,111,115,119
node 6 size: 129018 MB
node 6 free: 117184 MB
node 7 cpus: 43,47,51,55,59,63,67,71,75,79,123,127,131,135,139,143,147,151,155,159
node 7 size: 128657 MB
node 7 free: 120609 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:      1055882744 kB

```

```

-----
10. who -r
    run-level 3 Jan 11 01:05

```

```

-----
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 firewalld getty@ haveged irqbalance issue-generator kbdsettings kdump
                  kdump-early 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
                  ebttables grub2-once haveged-switch-root issue-add-ssh-keys kexec-load lunmask nfs
                  nfs-blkmap rpcbind rpmconfigcheck rsyncd serial-getty@ systemd-boot-check-no-failures
                  systemd-network-generator systemd-sysexec systemd-time-wait-sync systemd-timesyncd

```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 784

PowerEdge MX760c (Intel Xeon Platinum 8460Y+)

SPECrate®2017_fp_peak = 828

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Jan-2023

Hardware Availability: Feb-2023

Software Availability: Jun-2022

Platform Notes (Continued)

indirect wickedd

```

-----
13. Linux kernel boot-time arguments, from /proc/cmdline
BOOT_IMAGE=/boot/vmlinuz-5.14.21-150400.22-default
root=UUID=4068cb7a-41a3-4eea-ab49-bc6f15bea24c
splash=silent
mitigations=auto
quiet
security=apparmor
crashkernel=314M,high
crashkernel=72M,low

```

```

-----
14. 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                         60
vm.watermark_boost_factor            15000
vm.watermark_scale_factor            10
vm.zone_reclaim_mode                 0

```

```

-----
15. /sys/kernel/mm/transparent_hugepage
defrag                always defer defer+madvice [madvice] never
enabled               [always] madvice never
hpage_pmd_size       2097152
shmem_enabled        always within_size advise [never] deny force

```

```

-----
16. /sys/kernel/mm/transparent_hugepage/khugepaged
alloc_sleep_millisecs    60000
defrag                   1
max_ptes_none            511

```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 784

PowerEdge MX760c (Intel Xeon Platinum 8460Y+)

SPECrate®2017_fp_peak = 828

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

Test Date: Jan-2023
Hardware Availability: Feb-2023
Software Availability: Jun-2022

Platform Notes (Continued)

max_ptes_shared	256
max_ptes_swap	64
pages_to_scan	4096
scan_sleep_millisecs	10000

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

18. 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	66G	60G	53%	/mnt/ramdisk

19. /sys/devices/virtual/dmi/id

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

20. 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:

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

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

BIOS Vendor:	Dell Inc.
BIOS Version:	1.0.1
BIOS Date:	12/27/2022
BIOS Revision:	1.0



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 784

PowerEdge MX760c (Intel Xeon Platinum 8460Y+)

SPECrate®2017_fp_peak = 828

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Jan-2023

Hardware Availability: Feb-2023

Software Availability: Jun-2022

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)
=====
```

```
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
```

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 784

PowerEdge MX760c (Intel Xeon Platinum 8460Y+)

SPECrate®2017_fp_peak = 828

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

Test Date: Jan-2023
Hardware Availability: Feb-2023
Software Availability: Jun-2022

Compiler Version Notes (Continued)

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
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

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 784

PowerEdge MX760c (Intel Xeon Platinum 8460Y+)

SPECrate®2017_fp_peak = 828

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Jan-2023

Hardware Availability: Feb-2023

Software Availability: Jun-2022

Base Portability Flags (Continued)

```

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

```

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

```



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 784

PowerEdge MX760c (Intel Xeon Platinum 8460Y+)

SPECrate®2017_fp_peak = 828

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Jan-2023

Hardware Availability: Feb-2023

Software Availability: Jun-2022

Peak 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

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

(Continued on next page)



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 784

PowerEdge MX760c (Intel Xeon Platinum 8460Y+)

SPECrate®2017_fp_peak = 828

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Jan-2023

Hardware Availability: Feb-2023

Software Availability: Jun-2022

Peak Optimization Flags (Continued)

510.parest_r (continued):

```
-L/usr/local/jemalloc64-5.0.1/lib
```

Fortran benchmarks:

503.bwaves_r: basepeak = yes

549.fotonik3d_r: basepeak = yes

```
554.roms_r: -w -m64 -Wl,-z,muldefs -xCORE-AVX512 -Ofast -ffast-math  
-flto -mfpmath=sse -funroll-loops  
-gopt-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: basepeak = yes

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 -gopt-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-v1.3.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-v1.3.xml>



SPEC CPU®2017 Floating Point Rate Result

Copyright 2017-2023 Standard Performance Evaluation Corporation

Dell Inc.

SPECrate®2017_fp_base = 784

PowerEdge MX760c (Intel Xeon Platinum 8460Y+)

SPECrate®2017_fp_peak = 828

CPU2017 License: 6573

Test Sponsor: Dell Inc.

Tested by: Dell Inc.

Test Date: Jan-2023

Hardware Availability: Feb-2023

Software Availability: Jun-2022

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 2023-01-11 06:02:25-0500.

Report generated on 2023-02-01 18:29:47 by CPU2017 PDF formatter v6442.

Originally published on 2023-02-01.