



SPEC CPU®2017 Floating Point Rate Result

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Fujitsu

PRIMERGY RX2540 M7, Intel Xeon Platinum 8480+,
2.00GHz

SPECrate®2017_fp_base = 932

SPECrate®2017_fp_energy_base = 904

SPECrate®2017_fp_peak = Not Run

SPECrate®2017_fp_energy_peak = Not Run

CPU2017 License: 19

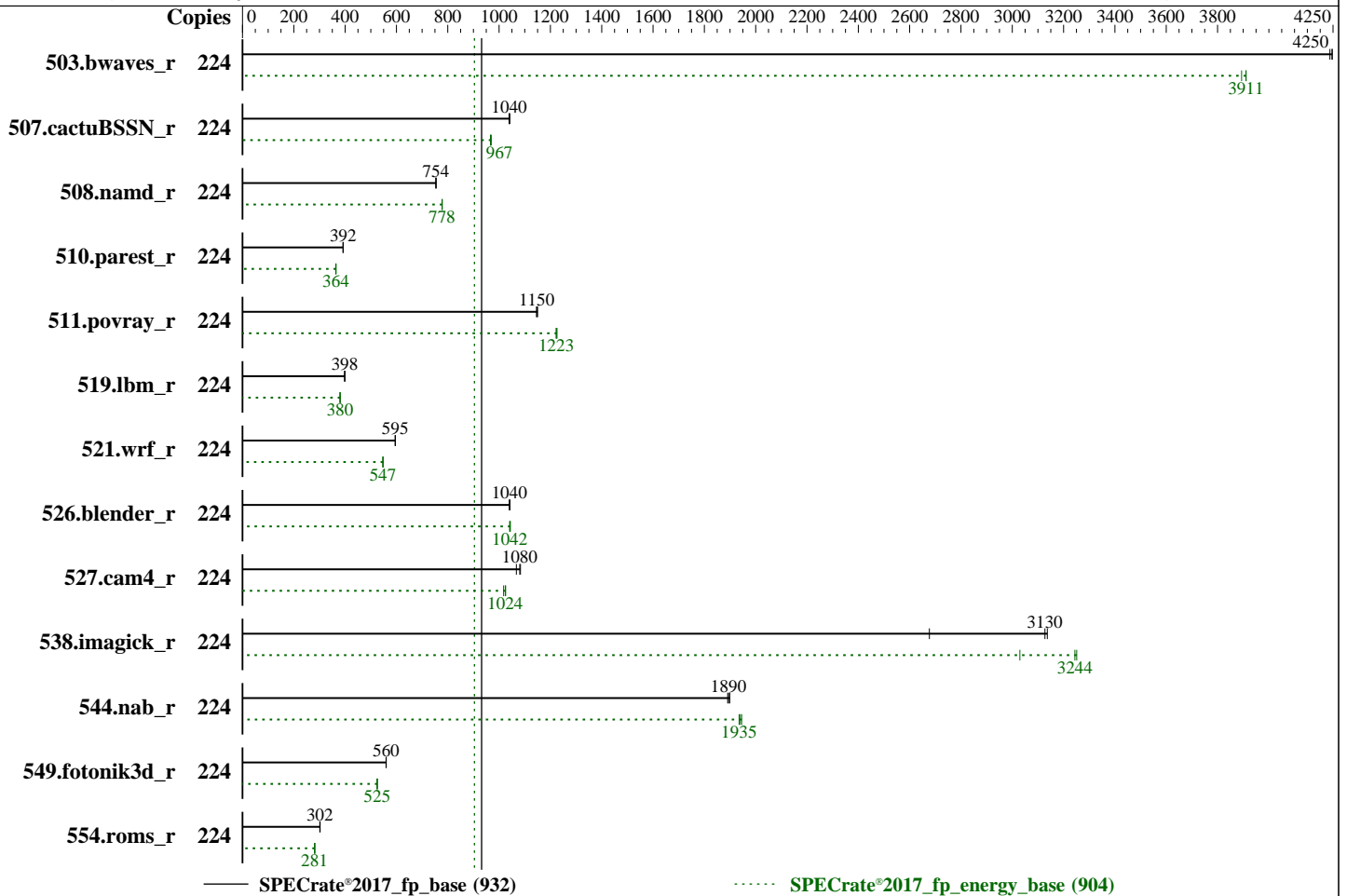
Test Sponsor: Fujitsu

Tested by: Fujitsu

Test Date: Dec-2022

Hardware Availability: Mar-2023

Software Availability: Jun-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: 1 x SATA SSD, 1.92TB
 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: Fujitsu BIOS Version V1.0.0.0 R1.10.0 for
 D3983-A1x. Released Mar-2023
 tested as V1.0.0.0 R0.22.1 for D3983-A1x Dec-2022
 File System: xfs
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit
 Peak Pointers: Not Applicable
 Other: jemalloc memory allocator V5.0.1
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Software (Continued)

Power Management: BIOS and OS set to balance power and performance

Power

Max. Power (W): 1246.5
Idle Power (W): 308.9
Min. Temperature (C): 25.44
Elevation (m): 11
Line Standard: 200 V / 50 Hz / 1 phase / 2 wires
Provisioning: Line-powered

Power Settings

Management FW: Version 2.00u for D3933-A1x of Fujitsu BMC
Firmware
Memory Mode: Normal

Power-Relevant Hardware

Power Supply: 1 x 2200 W (non-redundant)
Details: Standard power supply part of base unit
S26113-E646-V50-1
Backplane: 12 x 3.5inch HDD back plan
Other Storage: Embedded SATA Controller
Storage Model #: S26361-F5776-E192
NICs Installed: 1 x Intel I210-T1 @ 1 Gb
NICs Enabled (FW/OS): 1 / 1
NICs Connected/Speed: 1 @ 1 Gb
Other HW Model #: None

Power Analyzer

Power Analyzer: 10.26.120.180:8888
Hardware Vendor: Hioki
Model: Hioki PW3336:1-Channel
Serial Number: 170213562
Input Connection: USB via USB-Serial CH340
Metrology Institute: NICT
Calibration By: HIOKI E.E. CORPORATION
Calibration Label: H06400088
Calibration Date: 28-Jun-2022
PTDaemon® Version: 1.9.2 (3976349f; 2020-12-08)
Setup Description: Connected to PSU 1
Current Ranges Used: 10A
Voltage Range Used: 300V

Temperature Meter

Temperature Meter: 10.26.120.180:8889
Hardware Vendor: Digi International Inc.
Model: DigiWATCHPORT_H
Serial Number: W 640 45112
Input Connection: USB
PTDaemon Version: 1.9.2 (3976349f; 2020-12-08)
Setup Description: 5 mm in front of SUT main air intake

Base Results Table

Benchmark	Copies	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power
503.bwaves_r	224	529	4250	626	3910	1180	1230	529	4250	626	3910	1180	1250	530	4240	629	3890	1190	1240
507.cactuBSSN_r	224	273	1040	322	966	1180	1200	272	1040	321	969	1180	1200	273	1040	322	967	1180	1200
508.namd_r	224	282	754	298	778	1060	1130	282	754	298	779	1060	1130	282	754	298	778	1060	1130
510.parest_r	224	1492	393	1750	364	1170	1210	1494	392	1750	364	1170	1190	1497	392	1750	363	1170	1200
511.povray_r	224	456	1150	464	1220	1020	1080	455	1150	463	1230	1020	1080	456	1150	464	1220	1020	1080
519.lbm_r	224	593	398	706	380	1190	1240	592	399	704	381	1190	1220	593	398	705	380	1190	1250
521.wrf_r	224	843	595	1000	547	1190	1210	843	595	1000	548	1190	1220	843	595	1000	547	1190	1220

Table continues on next page. Results appear in the order in which they were run. Bold underlined text indicates a median measurement.



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Benchmark	Copies	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power	Seconds	Ratio	Energy (kJ)	Energy Ratio	Average Power	Maximum Power
526.blender_r	224	327	1040	354	1040	1080	1200	<u>328</u>	<u>1040</u>	<u>355</u>	<u>1040</u>	<u>1080</u>	<u>1190</u>	328	1040	355	1040	1080	1180
527.cam4_r	224	362	1080	416	1030	1150	1190	<u>363</u>	<u>1080</u>	<u>417</u>	<u>1020</u>	<u>1150</u>	<u>1190</u>	367	1070	419	1020	1140	1190
538.imagick_r	224	208	2680	199	3030	957	1180	178	3140	186	3250	1040	1180	<u>178</u>	<u>3130</u>	<u>186</u>	<u>3240</u>	<u>1040</u>	<u>1180</u>
544.nab_r	224	199	1890	210	1950	1050	1110	199	1900	211	1940	1060	1110	<u>199</u>	<u>1890</u>	<u>211</u>	<u>1940</u>	<u>1060</u>	<u>1110</u>
549.fotonik3d_r	224	1560	559	1850	525	1190	1240	<u>1560</u>	<u>560</u>	<u>1850</u>	<u>525</u>	<u>1190</u>	<u>1200</u>	1558	560	1850	524	1190	1200
554.roms_r	224	1180	302	1390	282	1180	1190	1176	303	1390	282	1180	1210	<u>1180</u>	<u>302</u>	<u>1400</u>	<u>281</u>	<u>1180</u>	<u>1190</u>

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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/Benchmark/speccpu-1.1.8/lib/intel64:/home/Benchmark/speccpu-1.1.8/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

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.

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General Notes (Continued)

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

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

Platform Notes

BIOS configuration:

Package C State limit = C0

CPU Performance Boost = Aggressive

SNC (Sub NUMA) = Enable SNC4

FAN Control = Full

Optimized Power Mode = Enable

Sysinfo program /home/Benchmark/speccpu-1.1.8/bin/sysinfo

Rev: r6622 of 2021-04-07 982a61ec0915b55891ef0e16acafc64d

running on localhost Sat Dec 3 06:02:23 2022

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

For more information on this section, see

<https://www.spec.org/cpu2017/Docs/config.html#sysinfo>

From /proc/cpuinfo

model name : Intel(R) Xeon(R) Platinum 8480+

2 "physical id"s (chips)

224 "processors"

cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)

cpu cores : 56

siblings : 112

physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52
53 54 55

physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52
53 54 55

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): 224

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Platform Notes (Continued)

```

On-line CPU(s) list:          0-223
Vendor ID:                    GenuineIntel
Model name:                   Intel(R) Xeon(R) Platinum 8480+
CPU family:                   6
Model:                        143
Thread(s) per core:          2
Core(s) per socket:          56
Socket(s):                    2
Stepping:                     8
CPU max MHz:                  3800.0000
CPU min MHz:                  800.0000
BogoMIPS:                     4000.00
Flags:                         fpu vme de pse tsc msr pae mce cx8 apic sep mtrr
pge mca cmov pat pse36 clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx
pdpelgb rdtscp lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology
nonstop_tsc cpuid aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor ds_cpl vmx
smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt
tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm abm 3dnowprefetch cpuid_fault
epb cat_l3 cat_l2 cdp_l3 invpcid_single intel_ppin cdp_l2 ssbd mba ibrs ibpb stibp
ibrs_enhanced tpr_shadow vnmi flexpriority ept vpid ept_ad fsgsbase tsc_adjust bml
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
xsaves 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 hwp
hwp_act_window hwp_epp hwp_pkg_req avx512vbmi umip pku ospke waitpkg avx512_vbmi2
gfni vaes vpclmulqdq avx512_vnni avx512_bitalg tme avx512_vpopcntdq la57 rdpid
bus_lock_detect cldemote movdiri movdir64b enqcmd fsrm md_clear serialize tsxldtrk
pconfig arch_lbr avx512_fp16 amx_tile flush_lld arch_capabilities
Virtualization:               VT-x
L1d cache:                    5.3 MiB (112 instances)
L1i cache:                    3.5 MiB (112 instances)
L2 cache:                     224 MiB (112 instances)
L3 cache:                     210 MiB (2 instances)
NUMA node(s):                 8
NUMA node0 CPU(s):            0-13,112-125
NUMA node1 CPU(s):            14-27,126-139
NUMA node2 CPU(s):            28-41,140-153
NUMA node3 CPU(s):            42-55,154-167
NUMA node4 CPU(s):            56-69,168-181
NUMA node5 CPU(s):            70-83,182-195
NUMA node6 CPU(s):            84-97,196-209
NUMA node7 CPU(s):            98-111,210-223
Vulnerability Itlb multihit:  Not affected
Vulnerability L1tf:           Not affected
Vulnerability Mds:            Not affected

```

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Platform Notes (Continued)

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	5.3M	12	Data	1	64	1	64
L1i	32K	3.5M	8	Instruction	1	64	1	64
L2	2M	224M	16	Unified	2	2048	1	64
L3	105M	210M	15	Unified	3	114688	1	64

/proc/cpuinfo cache data
cache size : 107520 KB

From numactl --hardware

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

available: 8 nodes (0-7)
 node 0 cpus: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 112 113 114 115 116 117 118 119 120 121 122 123 124 125
 node 0 size: 128597 MB
 node 0 free: 127653 MB
 node 1 cpus: 14 15 16 17 18 19 20 21 22 23 24 25 26 27 126 127 128 129 130 131 132 133 134 135 136 137 138 139
 node 1 size: 129016 MB
 node 1 free: 128404 MB
 node 2 cpus: 28 29 30 31 32 33 34 35 36 37 38 39 40 41 140 141 142 143 144 145 146 147 148 149 150 151 152 153
 node 2 size: 129016 MB
 node 2 free: 128509 MB
 node 3 cpus: 42 43 44 45 46 47 48 49 50 51 52 53 54 55 154 155 156 157 158 159 160 161 162 163 164 165 166 167
 node 3 size: 129016 MB
 node 3 free: 128570 MB
 node 4 cpus: 56 57 58 59 60 61 62 63 64 65 66 67 68 69 168 169 170 171 172 173 174 175 176 177 178 179 180 181
 node 4 size: 129016 MB
 node 4 free: 128600 MB
 node 5 cpus: 70 71 72 73 74 75 76 77 78 79 80 81 82 83 182 183 184 185 186 187 188 189 190 191 192 193 194 195

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Platform Notes (Continued)

```

node 5 size: 129016 MB
node 5 free: 128592 MB
node 6 cpus: 84 85 86 87 88 89 90 91 92 93 94 95 96 97 196 197 198 199 200 201 202 203
204 205 206 207 208 209
node 6 size: 128982 MB
node 6 free: 128559 MB
node 7 cpus: 98 99 100 101 102 103 104 105 106 107 108 109 110 111 210 211 212 213 214
215 216 217 218 219 220 221 222 223
node 7 size: 128647 MB
node 7 free: 128203 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

```

From /proc/meminfo

MemTotal: 1056063728 kB

HugePages_Total: 0

Hugepagesize: 2048 kB

/sys/devices/system/cpu/cpu*/cpufreq/scaling_governor has
powersave

From /etc/*release* /etc/*version*

os-release:

NAME="SLES"

VERSION="15-SP4"

VERSION_ID="15.4"

PRETTY_NAME="SUSE Linux Enterprise Server 15 SP4"

ID="sles"

ID_LIKE="suse"

ANSI_COLOR="0;32"

CPE_NAME="cpe:/o:suse:sles:15:sp4"

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

Kernel self-reported vulnerability status:

(Continued on next page)



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Platform Notes (Continued)

CVE-2018-12207 (iTLB Multihit):	Not affected
CVE-2018-3620 (L1 Terminal Fault):	Not affected
Microarchitectural Data Sampling:	Not affected
CVE-2017-5754 (Meltdown):	Not affected
CVE-2018-3639 (Speculative Store Bypass):	Mitigation: Speculative Store Bypass disabled via prctl and seccomp
CVE-2017-5753 (Spectre variant 1):	Mitigation: usercopy/swapgs barriers and __user pointer sanitization
CVE-2017-5715 (Spectre variant 2):	Mitigation: Enhanced IBRS, IBPB: conditional, RSB filling
CVE-2020-0543 (Special Register Buffer Data Sampling):	Not affected
CVE-2019-11135 (TSX Asynchronous Abort):	Not affected

run-level 3 Dec 3 04:45

```
SPEC is set to: /home/Benchmark/speccpu-1.1.8
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/sda2       xfs   1.8T   68G  1.7T   4% /
```

```
From /sys/devices/virtual/dmi/id
Vendor:          FUJITSU
Product:         PRIMERGY RX2540 M7
Product Family: SERVER
Serial:          EWCExxxxxx
```

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:
 10x Samsung M321R8GA0BB0-CQKDG 64 GB 2 rank 4800
  6x Samsung M321R8GA0BB0-CQKVG 64 GB 2 rank 4800
```

```
BIOS:
 BIOS Vendor:      FUJITSU
 BIOS Version:     V1.0.0.0 R0.22.1 for D3983-A1x
 BIOS Date:        12/01/2022
 BIOS Revision:    0.22
 Firmware Revision: 2.0
```

(End of data from sysinfo program)



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Compiler Version Notes

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

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) 510.parest_r(base)

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) 526.blender_r(base)

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)

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) 549.fotonik3d_r(base) 554.roms_r(base)

Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version

(Continued on next page)



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Compiler Version Notes (Continued)

2022.1.0 Build 20220316
Copyright (C) 1985-2022 Intel Corporation. All rights reserved.

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

Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version
2022.1.0 Build 20220316

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Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64,
Version 2022.1.0 Build 20220316

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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

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SPEC CPU®2017 Floating Point Rate Result

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Fujitsu

PRIMERGY RX2540 M7, Intel Xeon Platinum 8480+,
2.00GHz

SPECrate®2017_fp_base =	932
SPECrate®2017_fp_energy_base =	904
SPECrate®2017_fp_peak =	Not Run
SPECrate®2017_fp_energy_peak =	Not Run

CPU2017 License: 19

Test Sponsor: Fujitsu

Tested by: Fujitsu

Test Date: Dec-2022

Hardware Availability: Mar-2023

Software Availability: Jun-2022

Base Portability Flags (Continued)

```
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
```

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
```

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SPECrate®2017_fp_base = 932

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CPU2017 License: 19

Test Sponsor: Fujitsu

Tested by: Fujitsu

Test Date: Dec-2022

Hardware Availability: Mar-2023

Software Availability: Jun-2022

Base Optimization Flags (Continued)

Benchmarks using Fortran, C, and C++ (continued):

```
-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/Fujitsu-Platform-Settings-V1.0-SPR-RevA.html>

http://www.spec.org/cpu2017/flags/Intel-ic2022-official-linux64_revA.2023-01-10.html

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

<http://www.spec.org/cpu2017/flags/Fujitsu-Platform-Settings-V1.0-SPR-RevA.xml>

http://www.spec.org/cpu2017/flags/Intel-ic2022-official-linux64_revA.2023-01-10.xml

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