



SPEC® CPU2017 Floating Point Rate Result

Copyright 2017-2018 Standard Performance Evaluation Corporation

Yadro

SPECrate2017_fp_base = 186

Yadro Vesnin (3.32 GHz, 32 cores, RHEL 7.2)

SPECrate2017_fp_peak = Not Run

CPU2017 License: 4813

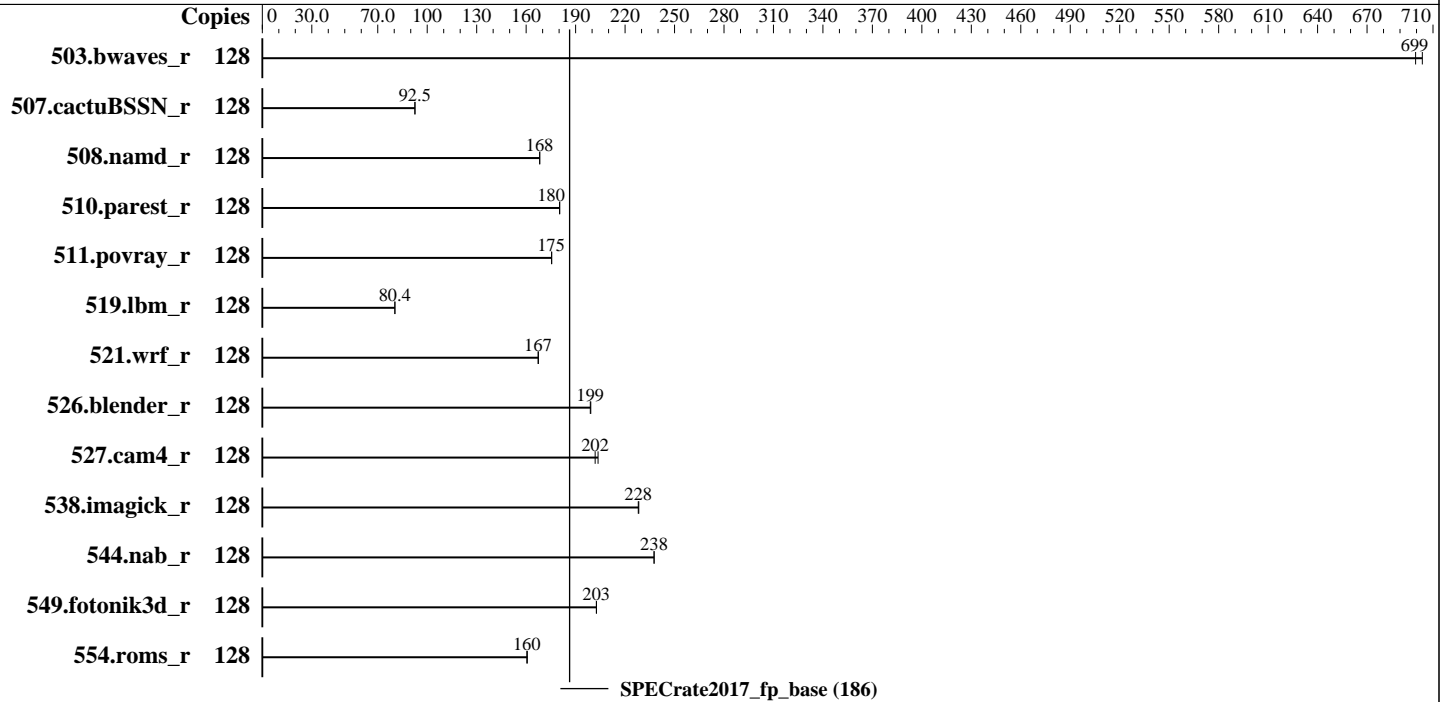
Test Sponsor: Yadro

Tested by: Yadro

Test Date: Dec-2017

Hardware Availability: Dec-2017

Software Availability: Dec-2016



Hardware

CPU Name: IBM POWER8
 Max MHz.: 3857
 Nominal: 3325
 Enabled: 32 cores, 4 chips, 4 threads/core
 Orderable: 1-4 chips
 Cache L1: 32 KB I + 64 KB D on chip per core
 L2: 512 KB I+D on chip per core
 L3: 8 MB I+D on chip per core
 Other: 16 MB I+D off chip per 8 DIMMs
 Memory: 8 TB (128 x 64 GB 4Rx4 PC4 - 2400T, running at 1600)
 Storage: 2 x 2.9 TB NVMe SSD
 Other: None

Software

OS: RHEL 7.2
 Red Hat Enterprise Linux Server release 7.2 (Maipo)
 3.10.0-327.el7.ppc64le
 Compiler: C/C++: Version 13.1.5 of IBM XL C/C++;
 Fortran: Version 15.1.5 of IBM XL Fortran
 Parallel: No
 Firmware: Version 1.19 of OpenPOWER Firmware. Released Nov-2017.
 File System: xfs
 System State: Run level 3 (multi-user)
 Base Pointers: 64-bit
 Peak Pointers: Not Applicable
 Other: None



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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
503.bwaves_r	128	1835	699	1824	704									
507.cactuBSSN_r	128	1752	92.5	1750	92.6									
508.namd_r	128	723	168	723	168									
510.parest_r	128	1858	180	1856	180									
511.povray_r	128	1703	175	1704	175									
519.lbm_r	128	1679	80.4	1677	80.4									
521.wrf_r	128	1714	167	1712	167									
526.blender_r	128	980	199	979	199									
527.cam4_r	128	1100	204	1109	202									
538.imagick_r	128	1394	228	1396	228									
544.nab_r	128	907	238	907	238									
549.fotonik3d_r	128	2462	203	2461	203									
554.roms_r	128	1266	161	1268	160									

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

General Notes

"ppc64_cpu --smt=4" used to set SMT4 mode (see flags file for details).

Binaries were compiled on a system with 4x POWER8 chips + 4 TB Memory using rhel 7.2

No: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.

No: 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.

No: 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. and software available as of the publication date.

This benchmark result is intended to provide perspective on past performance using the historical hardware and/or software described on this result page.

The system as described on this result page was formerly generally available. At the time of this publication, it may not be shipping, and/or may not be supported, and/or may fail to meet other tests of General Availability described in the SPEC OSG Policy document, <http://www.spec.org/osg/policy.html>

This measured result may not be representative of the result that would be measured were this benchmark run with hardware and software available as of the publication date.



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Platform Notes

sysinfo program /home/build/cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on localhost.localdomain Mon Dec 18 23:23:57 2017

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
'clock : ' reported by /proc/cpuinfo may not be reliable. Use with caution.
cpu : POWER8 (raw), altivec supported
clock : 3857.000000MHz
machine : PowerNV 0000000000000000
model : 0000000000000000
platform : PowerNV
revision : 2.0 (pvr 004d 0200)

Number of cores, from 'ppc64_cpu --cores-present' : 32

WARNING regarding the output of 'lscfg': this utility reports resources for the system, not the current partition. Therefore, for a partition that has a subset of the full system resources:

- (1) The tester may need to adjust the sysinfo-supplied 'hw_ncores'.
- (2) The tester may need to adjust the sysinfo-supplied 'hw_nchips'.

Processors, from lscfg -vp
Node: processor@0
Node: processor@8
Node: processor@10
Node: processor@18
128 "processors"

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a physical chip.
available: 4 nodes (0,8,16,24)
node 0 cpus: 0 1 2 3 8 9 10 11 16 17 18 19 24 25 26 27 32 33 34 35 40 41 42 43 48 49 50 51 56 57 58 59
node 0 size: 2097152 MB
node 0 free: 1994167 MB
node 8 cpus: 64 65 66 67 72 73 74 75 80 81 82 83 88 89 90 91 96 97 98 99 104 105 106 107 112 113 114 115 120 121 122 123
node 8 size: 2097152 MB
node 8 free: 2018117 MB
node 16 cpus: 128 129 130 131 136 137 138 139 144 145 146 147 152 153 154 155 160 161 162 163 168 169 170 171 176 177 178 179 184 185 186 187
node 16 size: 2097152 MB
node 16 free: 2017874 MB

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Platform Notes (Continued)

```

node 24 cpus: 192 193 194 195 200 201 202 203 208 209 210 211 216 217 218 219 224 225
226 227 232 233 234 235 240 241 242 243 248 249 250 251
node 24 size: 2097152 MB
node 24 free: 2009694 MB
node distances:
node    0    8   16   24
  0:   10   40   40   40
  8:   40   10   40   40
 16:   40   40   10   40
 24:   40   40   40   10

From /proc/meminfo
MemTotal:      8569843072 kB
HugePages_Total:    16000
Hugepagesize:    16384 kB

From /etc/*release* /etc/*version*
os-release:
NAME="Red Hat Enterprise Linux Server"
VERSION="7.2 (Maipo)"
ID="rhel"
ID_LIKE="fedora"
VERSION_ID="7.2"
PRETTY_NAME="Red Hat Enterprise Linux"
ANSI_COLOR="0;31"
CPE_NAME="cpe:/o:redhat:enterprise_linux:7.2:GA:server"
redhat-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.2 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.2:ga:server

uname -a:
Linux localhost.localdomain 3.10.0-327.el7.ppc64le #1 SMP Thu Oct 29 17:31:13 EDT 2015
ppc64le ppc64le ppc64le GNU/Linux

run-level 3 Dec 18 20:30

SPEC is set to: /home/build/cpu2017
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/mapper/rhel-home xfs   2.9T   19G  2.9T   1% /home

(End of data from sysinfo program)

```

Compiler Version Notes

=====
CXXC 508.namd_r(base) 510.parest_r(base)

(Continued on next page)



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Compiler Version Notes (Continued)

```
-----
IBM XL C/C++ for Linux, V13.1.5 (Community Edition)
Version: 13.01.0005.0001
Driver Version: 13.1.5(C/C++) Level: 161202 ID: _FJC-kLh6EeabvOJ9E16jqw
C/C++ Front End Version: 13.1.5(C/C++) Level: 161129 ID:
_XU1JoJsoEeabgOJ9E16jqw
High-Level Optimizer Version: 13.1.5(C/C++) and 15.1.5(Fortran) Level: 161201
ID: _LqhNgLg4EeabvOJ9E16jqw
Low-Level Optimizer Version: 13.1.5(C/C++) and 15.1.5(Fortran) Level: 161129
ID: _dlqc0afDEeabg-J9E16jqw
/opt/ibm/xlC/13.1.5/bin/.orig/xlC: note: XL C/C++ Community Edition is a
no-charge product and does not include official IBM support. You can
provide feedback at the XL on POWER C/C++ Community Edition forum
(http://ibm.biz/xlcpp-linux-ce). For information about a fully supported XL
C/C++ compiler, visit XL C/C++ for Linux (http://ibm.biz/xlcpp-linux).
-----
```

```
=====
CC 511.povray_r(base) 526.blender_r(base)
-----
```

```
IBM XL C/C++ for Linux, V13.1.5 (Community Edition)
Version: 13.01.0005.0001
Driver Version: 13.1.5(C/C++) Level: 161202 ID: _FJC-kLh6EeabvOJ9E16jqw
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ID: _LqhNgLg4EeabvOJ9E16jqw
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```

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Compiler Version Notes (Continued)

C/C++ compiler, visit XL C/C++ for Linux (<http://ibm.biz/xlcpp-linux>).

FC 507.cactuBSSN_r(base)

IBM XL C/C++ for Linux, V13.1.5 (Community Edition)
Version: 13.01.0005.0001

Driver Version: 13.1.5(C/C++) Level: 161202 ID: _FJC-kLh6EeabvOJ9E16jqw
C/C++ Front End Version: 13.1.5(C/C++) Level: 161129 ID:
_XU1JoJsoEeabgOJ9E16jqw

High-Level Optimizer Version: 13.1.5(C/C++) and 15.1.5(Fortran) Level: 161201
ID: _LqhNgLg4EeabvOJ9E16jqw

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IBM XL Fortran for Linux, V15.1.5 (Community Edition)
Version: 15.01.0005.0001

Driver Version: 15.1.5(Fortran) Level: 161202 ID: _FJC-kLh6EeabvOJ9E16jqw
Fortran Front End and Run Time Version: 15.1.5(Fortran) Level: 161202 ID:
_i9fBcbirEeabvOJ9E16jqw

Fortran Transformer Version: 15.1.5(Fortran) Level: 161129 ID:
_dYoGZafDEeabg-J9E16jqw

High-Level Optimizer Version: 13.1.5(C/C++) and 15.1.5(Fortran) Level: 161201
ID: _LqhNgLg4EeabvOJ9E16jqw

Low-Level Optimizer Version: 13.1.5(C/C++) and 15.1.5(Fortran) Level: 161129
ID: _dlqc0afDEeabg-J9E16jqw

/opt/ibm/xlf/15.1.5/bin/.orig/xlf95: 1501-303 (I) XL Fortran Community Edition is a no-charge product and does not include official IBM support.

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=====
CC 519.lbm_r(base) 538.imagick_r(base) 544.nab_r(base)
=====

IBM XL C/C++ for Linux, V13.1.5 (Community Edition)

Version: 13.01.0005.0001

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=====
FC 503.bwaves_r(base) 549.fotonik3d_r(base) 554.roms_r(base)
=====

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Fortran Transformer Version: 15.1.5(Fortran) Level: 161129 ID:

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/opt/ibm/xlf/15.1.5/bin/.orig/xlf95: 1501-303 (I) XL Fortran Community

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Compiler Version Notes (Continued)

=====
CC 521.wrf_r(base) 527.cam4_r(base)
=====

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Version: 15.01.0005.0001

Driver Version: 15.1.5(Fortran) Level: 161202 ID: _FJC-kLh6EeabvOJ9E16jqw

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Low-Level Optimizer Version: 13.1.5(C/C++) and 15.1.5(Fortran) Level: 161129

ID: _dlqc0afDEeabg-J9E16jqw

/opt/ibm/xlC/13.1.5/bin/.orig/xlc: note: XL C/C++ Community Edition is a

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C/C++ compiler, visit XL C/C++ for Linux (<http://ibm.biz/xlcpp-linux>).

Base Compiler Invocation

C benchmarks:

/opt/ibm/xlC/13.1.5/bin/xlc -qlanglvl=extc99

C++ benchmarks:

/opt/ibm/xlC/13.1.5/bin/xlc

Fortran benchmarks:

/opt/ibm/xlf/15.1.5/bin/xlf95

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Base Compiler Invocation (Continued)

Benchmarks using both Fortran and C:

```
/opt/ibm/xlf/15.1.5/bin/xlf95 /opt/ibm/xlc/13.1.5/bin/xlc  
-qlanglvl=extc99
```

Benchmarks using both C and C++:

```
/opt/ibm/xlc/13.1.5/bin/xlc /opt/ibm/xlc/13.1.5/bin/xlc  
-qlanglvl=extc99
```

Benchmarks using Fortran, C, and C++:

```
/opt/ibm/xlc/13.1.5/bin/xlc /opt/ibm/xlc/13.1.5/bin/xlc  
-qlanglvl=extc99 /opt/ibm/xlf/15.1.5/bin/xlf95
```

Base Portability Flags

```
503.bwaves_r: -qfixed -DSPEC_LP64  
507.cactuBSSN_r: -DSPEC_NO_UNDERSCORE -DSPEC_LP64  
508.namd_r: -DSPEC_LP64  
510.parest_r: -qnoxlcompatmacros -DSPEC_LP64  
511.povray_r: -DSPEC_LP64  
519.lbm_r: -DSPEC_LP64  
521.wrf_r: -DSPEC_NOUNDERSCORE -DSPEC_IBMXL -DSPEC_LP64 -qufmt=be  
526.blender_r: -qchars=unsigned -D__BOOL_DEFINED -DSPEC_LP64  
527.cam4_r: -DSPEC_NO_UNDERSCORE -DSPEC_LP64  
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:

```
-O5 -q64 -qinline=40 -qipa=threads -qsimd=noauto
```

C++ benchmarks:

```
-O5 -q64 -qinline=40 -qipa=threads -qsimd=noauto
```

Fortran benchmarks:

```
-O5 -q64 -qinline=40 -qipa=threads -qsimd=noauto  
-qsmallstack=dynlenonheap
```

(Continued on next page)



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Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:

-O5 -q64 -qinline=40 -qipa=threads -qsimd=noauto
-qsmallstack=dynlenonheap

Benchmarks using both C and C++:

-O5 -q64 -qinline=40 -qipa=threads -qsimd=noauto

Benchmarks using Fortran, C, and C++:

-O5 -q64 -qinline=40 -qipa=threads -qsimd=noauto
-qsmallstack=dynlenonheap

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

http://www.spec.org/cpu2017/flags/vesnin_xl-V1.2.html

http://www.spec.org/cpu2017/flags/vesnin_platform-V1.3.2018-03-09.html

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

http://www.spec.org/cpu2017/flags/vesnin_xl-V1.2.xml

http://www.spec.org/cpu2017/flags/vesnin_platform-V1.3.2018-03-09.xml

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For questions about this result, please contact the tester. For other inquiries, please contact info@spec.org.

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