



# SPEC® CPU2017 Floating Point Rate Result

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## Yadro

SPECrate2017\_fp\_base = 205

Yadro Vesnin (2.92 GHz, 40 cores, RHEL 7.4)

SPECrate2017\_fp\_peak = Not Run

CPU2017 License: 4813

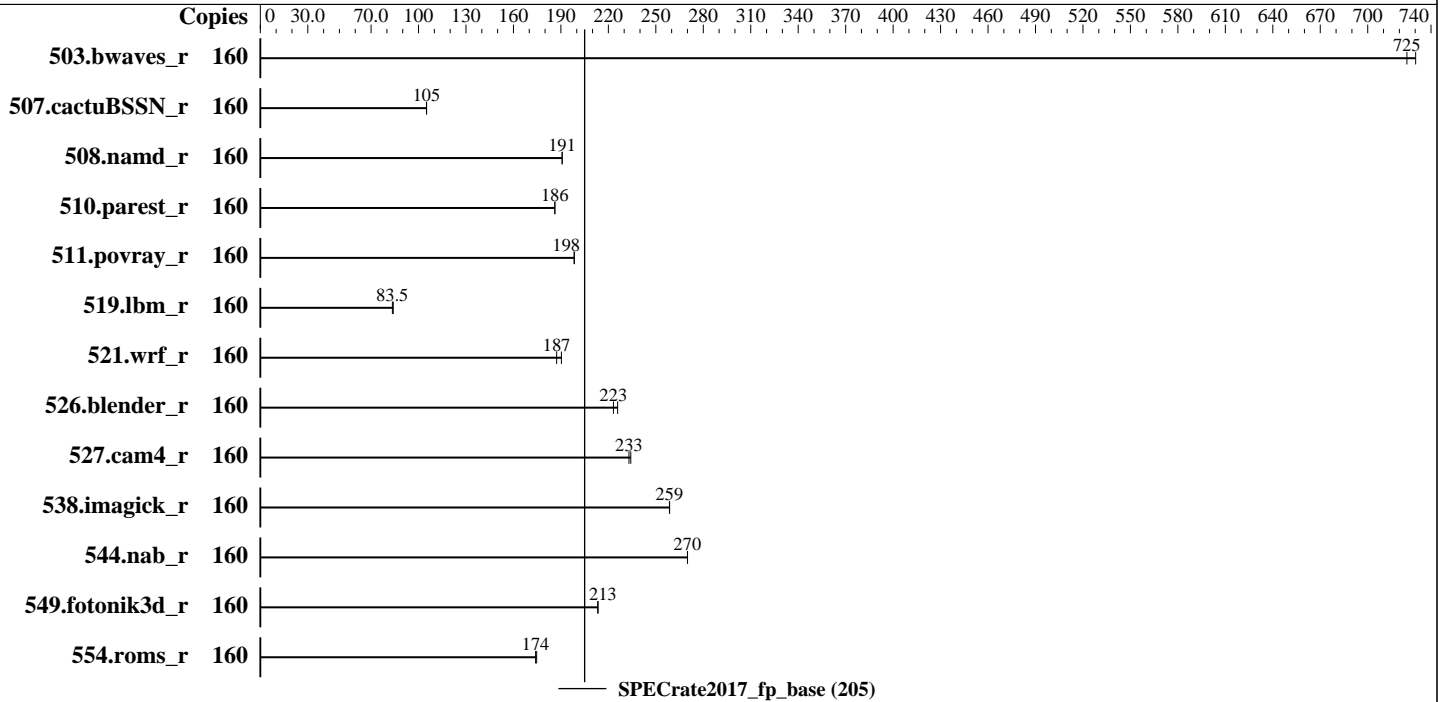
Test Sponsor: Yadro

Tested by: Yadro

Test Date: Dec-2017

Hardware Availability: Dec-2017

Software Availability: Dec-2016



### Hardware

CPU Name: IBM POWER8  
 Max MHz.: 3491  
 Nominal: 2926  
 Enabled: 40 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: 4 TB (128 x 32 GB 2Rx4 PC4 - 2400T, running at 1600)  
 Storage: 1 x 7.3 TB 7200 RPM SATA  
 Other: None

### Software

OS: RHEL 7.2  
 Red Hat Enterprise Linux Server release 7.4 (Maipo)  
 3.10.0-693.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	160	2197	730	<b><u>2214</u></b>	<b><u>725</u></b>									
507.cactuBSSN_r	160	<b><u>1929</u></b>	<b><u>105</u></b>	1927	105									
508.namd_r	160	<b><u>797</u></b>	<b><u>191</u></b>	797	191									
510.parest_r	160	2248	186	<b><u>2248</u></b>	<b><u>186</u></b>									
511.povray_r	160	1882	198	<b><u>1884</u></b>	<b><u>198</u></b>									
519.lbm_r	160	<b><u>2020</u></b>	<b><u>83.5</u></b>	2007	84.0									
521.wrf_r	160	<b><u>1913</u></b>	<b><u>187</u></b>	1883	190									
526.blender_r	160	<b><u>1092</u></b>	<b><u>223</u></b>	1079	226									
527.cam4_r	160	1195	234	<b><u>1201</u></b>	<b><u>233</u></b>									
538.imagick_r	160	<b><u>1539</u></b>	<b><u>259</u></b>	1538	259									
544.nab_r	160	<b><u>997</u></b>	<b><u>270</u></b>	997	270									
549.fotonik3d_r	160	2920	214	<b><u>2924</u></b>	<b><u>213</u></b>									
554.roms_r	160	1455	175	<b><u>1461</u></b>	<b><u>174</u></b>									

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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.

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 /root/cpu2017/bin/sysinfo  
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f  
running on localhost.localdomain Fri Dec 22 23:29:42 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 : 3491.000000MHz  
machine : PowerNV 0000000000000000  
model : 0000000000000000  
platform : PowerNV  
revision : 2.0 (pvr 004d 0200)

Number of cores, from 'ppc64\_cpu --cores-present' : 40

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@18  
Node: processor@10  
Node: processor@8  
Node: processor@0  
160 "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 64 65 66 67 72 73 74 75  
node 0 size: 1048576 MB  
node 0 free: 972590 MB  
node 8 cpus: 80 81 82 83 88 89 90 91 96 97 98 99 104 105 106 107 112 113 114 115 120 121 122 123 128 129 130 131 136 137 138 139 144 145 146 147 152 153 154 155  
node 8 size: 1048576 MB  
node 8 free: 976361 MB  
node 16 cpus: 160 161 162 163 168 169 170 171 176 177 178 179 184 185 186 187 192 193 194 195 200 201 202 203 208 209 210 211 216 217 218 219 224 225 226 227 232 233 234 235  
node 16 size: 1048576 MB  
node 16 free: 976455 MB

(Continued on next page)



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### Platform Notes (Continued)

```

node 24 cpus: 240 241 242 243 248 249 250 251 256 257 258 259 264 265 266 267 272 273
274 275 280 281 282 283 288 289 290 291 296 297 298 299 304 305 306 307 312 313 314 315
node 24 size: 1048576 MB
node 24 free: 972943 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:      4282726848 kB
HugePages_Total:    16000
Hugepagesize:    16384 kB

```

```

From /etc/*release* /etc/*version*
os-release:
  NAME="Red Hat Enterprise Linux Server"
  VERSION="7.4 (Maipo)"
  ID="rhel"
  ID_LIKE="fedora"
  VARIANT="Server"
  VARIANT_ID="server"
  VERSION_ID="7.4"
  PRETTY_NAME="Red Hat Enterprise Linux"
redhat-release: Red Hat Enterprise Linux Server release 7.4 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.4 (Maipo)
system-release-cpe: cpe:/o:redhat:enterprise_linux:7.4:ga:server

```

```

uname -a:
Linux localhost.localdomain 3.10.0-693.el7.ppc64le #1 SMP Thu Jul 6 19:59:44 EDT 2017
ppc64le ppc64le ppc64le GNU/Linux

```

run-level 3 2017-12-22 23:04

```

SPEC is set to: /root/cpu2017
Filesystem      Type  Size  Used Avail Use% Mounted on
/dev/mapper/rhel-root xfs  110G   57G   53G  53% /

```

(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)
-----
```

```
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Version: 13.01.0005.0001
Driver Version: 13.1.5(C/C++) Level: 161202 ID: _FJC-kLh6EeabvOJ9E16jqw
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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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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  
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/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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/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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Driver Version: 15.1.5(Fortran) Level: 161202 ID: \_FJC-kLh6EeabvOJ9E16jqw

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\_XU1JoJsoEeabgOJ9E16jqw

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ID: \_LqhNgLg4EeabvOJ9E16jqw

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### 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)



# SPEC CPU2017 Floating Point Rate Result

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## Yadro

SPECrate2017\_fp\_base = 205

Yadro Vesnin (2.92 GHz, 40 cores, RHEL 7.4)

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

## 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_xl-V1.2.html)

[http://www.spec.org/cpu2017/flags/vesnin\\_platform-V1.3.html](http://www.spec.org/cpu2017/flags/vesnin_platform-V1.3.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_xl-V1.2.xml)

[http://www.spec.org/cpu2017/flags/vesnin\\_platform-V1.3.xml](http://www.spec.org/cpu2017/flags/vesnin_platform-V1.3.xml)

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For questions about this result, please contact the tester. For other inquiries, please contact [info@spec.org](mailto:info@spec.org).

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