SPEC® CPU2017 Integer Rate Result

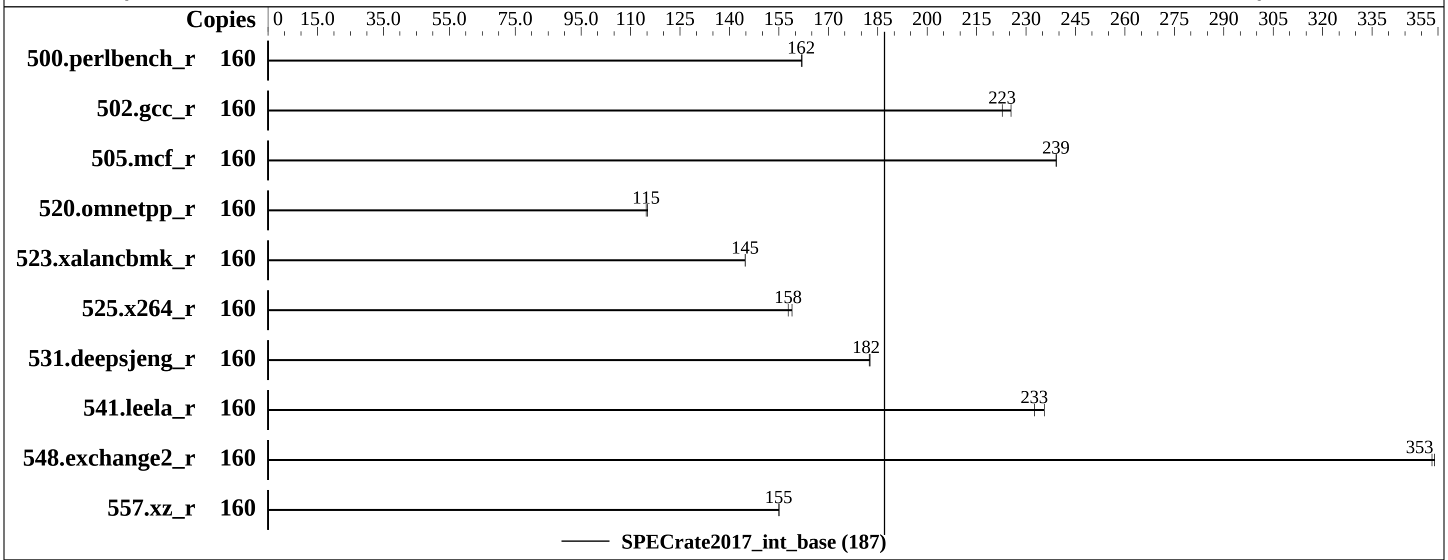
Yadro

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

SPECrate2017_int_base = 187

SPECrate2017_int_peak = Not Run

CPU2017 License:	4813	**Test Date:**	Dec-2017
Test Sponsor:	Yadro	**Hardware Availability:**	Dec-2017
Tested by:	Yadro	**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 7.4 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

	Base							Peak						
Benchmark	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	160	**1574**	**162**	1572	162									
502.gcc_r	160	**1017**	**223**	1005	225									
505.mcf_r	160	1081	239	**1081**	**239**									
520.omnetpp_r	160	**1830**	**115**	1823	115									
523.xalancbmk_r	160	1167	145	**1167**	**145**									
525.x264_r	160	1762	159	**1775**	**158**									
531.deepsjeng_r	160	**1005**	**182**	1004	183									
541.leela_r	160	**1139**	**233**	1125	236									
548.exchange2_r	160	**1187**	**353**	1184	354									
557.xz_r	160	1114	155	**1115**	**155**									

SPECrate2017_int_base = **187**

SPECrate2017_int_peak = **Not Run**

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.
```

Platform Notes

```
Sysinfo program /root/cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on localhost.localdomain Fri Dec 22 03:26:24 2017
```

(Continued on next page)

Platform Notes (Continued)

```
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: 972870 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: 974728 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: 977429 MB
  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
```

(Continued on next page)

Platform Notes (Continued)

```
   node 24 free: 971914 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 03:03

 SPEC is set to: /root/cpu2017
    Filesystem            Type  Size  Used Avail Use% Mounted on
    /dev/mapper/rhel-root xfs   110G   31G   79G  29% /

 (End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
 CXXC 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
      541.leela_r(base)
------------------------------------------------------------------------------
IBM XL C/C++ for Linux, V13.1.5 (Community Edition)
```

(Continued on next page)

Compiler Version Notes (Continued)

```
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:
  _XUlJoJsoEeabgOJ9E16jqw
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  500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base) 525.x264_r(base)
      557.xz_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:
  _XUlJoJsoEeabgOJ9E16jqw
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).
------------------------------------------------------------------------------

==============================================================================
 FC  548.exchange2_r(base)
------------------------------------------------------------------------------
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
```

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Compiler Version Notes (Continued)

```
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.
  You can provide feedback at the XL on POWER Fortran Community Edition forum
  (http://ibm.biz/xlfortran-linux-ce). For information about a fully
  supported XL Fortran compiler, visit XL Fortran for Linux
  (http://ibm.biz/xlfortran-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`

Base Portability Flags

500.perlbench_r: `-DSPEC_LINUX_PPC_LE -DSPEC_LP64`
502.gcc_r: `-DSPEC_LP64`
505.mcf_r: `-DSPEC_LP64`
520.omnetpp_r: `-DSPEC_LP64`
523.xalancbmk_r: `-DSPEC_LINUX -DSPEC_LP64`
525.x264_r: `-DSPEC_LP64`
531.deepsjeng_r: `-DSPEC_LP64`
541.leela_r: `-DSPEC_LP64`
548.exchange2_r: `-DSPEC_LP64`
557.xz_r: `-DSPEC_LP64`

Base Optimization Flags

C benchmarks:
`-Wl,-z,muldefs -O5 -q64 -qinline=40 -qipa=threads -qsimd=noauto -qalias=noansi`

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Base Optimization Flags (Continued)

C++ benchmarks:
-O5 -q64 -qinline=40 -qipa=threads -qsimd=noauto

Fortran benchmarks:
-O5 -q64 -qinline=40 -qipa=threads -qsimd=noauto

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.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.xml

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