## SPEC® CPU2017 Integer Rate Result

**Description**

Supermicro SuperServer 7048R-C1R4+

### SPECrate2017_int_base = 43.6

### SPECrate2017_int_peak = 45.7

**CPU2017 License:** 001176

**Test Date:** Feb-2018

**Test Sponsor:** Supermicro

**Hardware Availability:** Aug-2017

**Tested by:** Supermicro

**Software Availability:** Sep-2017

### Copies

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<thead>
<tr>
<th>Benchmark</th>
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</tr>
<tr>
<td>557.xz_r</td>
<td>16</td>
<td>30.2</td>
<td></td>
</tr>
</tbody>
</table>

### Hardware

- **CPU Name:** Intel Xeon E5-2609 v4
- **Max MHz.:**
  - Nominal: 1700
  - Enabled: 16 cores, 2 chips
  - Orderable: 1,2 chips
  - Cache L1: 32 KB I + 32 KB D on chip per core
  - L2: 256 KB I+D on chip per core
  - L3: 20 MB I+D on chip per chip
  - Other: None
- **Memory:** 256 GB (8 x 32 GB 2Rx4 PC4-2666V-R, running at 1866)
- **Storage:** 800 GB SATA III SSD
- **Other:** None

### Software

- **OS:** SUSE Linux Enterprise Server 12 SP2
- **Compiler:**
  - C/C++: Version 18.0.0.128 of Intel C/C++ Compiler for Linux;
  - Fortran: Version 18.0.0.128 of Intel Fortran Compiler for Linux
- **Parallel:** No
- **Firmware:** Supermicro BIOS version 2.0b released Aug-2017
- **File System:** xfs
- **System State:** Run level 3 (multi-user)
- **Base Pointers:** 64-bit
- **Peak Pointers:** 32/64-bit
- **Other:** jemalloc memory allocator library V5.0.1
### SPEC CPU2017 Integer Rate Result

**Supermicro**

**SuperServer 7048R-C1R4+**

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</table>

**SPECrate2017_int_base = 43.6**

**SPECrate2017_int_peak = 45.7**

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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"

### General Notes

Environment variables set by runcpu before the start of the run:

```
LD_LIBRARY_PATH = "/home/cpu2017/lib/ia32:/home/cpu2017/lib/intel64:/home/cpu2017/je5.0.1-32:/home/cpu2017/je5.0.1-64"
```

Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM memory using Redhat Enterprise Linux 7.4

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>
```

jemalloc: configured and built at default for 32bit (i686) and 64bit (x86_64) targets;
jemalloc: built with the Redhat Enterprise 7.4, and the system compiler gcc 4.8.5;
jemalloc: sources available from jemalloc.net or

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(Continued on next page)
SPEC CPU2017 Integer Rate Result

Supermicro
SuperServer 7048R-C1R4+

SPECrate2017_int_base = 43.6
SPECrate2017_int_peak = 45.7

CPU2017 License: 001176
Test Sponsor: Supermicro
Tested by: Supermicro

General Notes (Continued)


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

BIOS Settings:
Early Snoop = Disable

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618bcc091c0f
running on 198-240 Fri Feb 2 05:14:27 2018

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) CPU E5-2609 v4@ 1.70GHz
  2 "physical id"'s (chips)
  16 "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 : 8
siblings : 8
physical 0: cores 0 1 2 3 4 5 6 7
physical 1: cores 0 1 2 3 4 5 6 7

(Continued on next page)
## Platform Notes (Continued)

From lscpu:
```
Architecture:          x86_64
CPU op-mode(s):        32-bit, 64-bit
Byte Order:            Little Endian
CPU(s):                16
On-line CPU(s) list:   0-15
Thread(s) per core:    1
Core(s) per socket:    8
Socket(s):             2
NUMA node(s):          2
Vendor ID:             GenuineIntel
CPU family:            6
Model:                 79
Model name:            Intel(R) Xeon(R) CPU E5-2609 v4@ 1.70GHz
Stepping:              1
CPU MHz:               1515.631
CPU max MHz:           1700.0000
CPU min MHz:           1200.0000
BogoMIPS:              3400.02
Virtualization:        VT-x
L1d cache:             32K
L1i cache:             32K
L2 cache:              256K
L3 cache:              20480K
NUMA node0 CPU(s):     0-7
NUMA node1 CPU(s):     8-15
```

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 rdtsscp
lm constant_tsc arch_perfmon pebs bts rep_good nopl xtopology nonstop_tsc aperfmperf
eagerfpu pni pclmulqdq dtes64 monitor ds_cpl vmx smx est tm2 ssse3 sdbg fma cx16
xtrav pdcm pcid dca sse4_1 sse4_2 x2apic movbe popcnt tsc_deadline_timer aes xsave
avx f16c rdrand lahf_lm abm 3dnowprefetch arat epb pln pts dtherm intel_pt
tp_r_shadow vmx flexpriority ept vpid fsgsbase tsc_adjust bmi1 hle avx2 smep bmi2
ermv invpcid rtm rvdseed adx smap xsaveopt cqm_llc cqm_occup_llc
```

/proc/cpuinfo cache data
```
cache size : 20480 KB
```

From numactl --hardware WARNING: a numactl 'node' might or might not correspond to a
physical chip.
```
available: 2 nodes (0-1)
node 0 cpus: 0 1 2 3 4 5 6 7
node 0 size: 128758 MB
node 0 free: 128318 MB
node 1 cpus: 8 9 10 11 12 13 14 15
node 1 size: 128899 MB
```

(Continued on next page)
Platform Notes (Continued)

node 1 free: 128500 MB
node distances:
node  0  1
0:  10  21
1:  21  10

From /proc/meminfo
MemTotal:  263841724 kB
HugePages_Total:  0
Hugepagesize:  2048 kB

/usr/bin/lsb_release -d
SUSE Linux Enterprise Server 12 SP2

From /etc/*release* /etc/*version*
SuSE-release:
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 2
# This file is deprecated and will be removed in a future service pack or release.
# Please check /etc/os-release for details about this release.

os-release:
NAME="SLES"
VERSION="12-SP2"
VERSION_ID="12.2"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp2"

uname -a:
Linux 198-240 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016 (9464f67) x86_64
x86_64 x86_64 GNU/Linux

run-level 3 Feb 2 05:00
SPEC is set to: /home/cpu2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 703G 21G 683G 3% /home

Additional information from dmidecode 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.
BIOS American Megatrends Inc. 2.0b 08/18/2017
Memory:
16x NO DIMM NO DIMM

(Continued on next page)
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SuperServer 7048R-C1R4+

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Test Date: Feb-2018
Hardware Availability: Aug-2017
Software Availability: Sep-2017

Platform Notes (Continued)
8x Samsung M393A4K40BB2-CTD 32 GB 2 rank 2667, configured at 1866
(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
CC  500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base, peak)
    525.x264_r(base, peak) 557.xz_r(base, peak)
==============================================================================
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

==============================================================================
CC  500.perlbench_r(peak) 502.gcc_r(peak)
==============================================================================
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

==============================================================================
CXXC 520.omnetpp_r(base) 523.xalancbmk_r(base) 531.deepsjeng_r(base)
    541.leela_r(base)
==============================================================================
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

==============================================================================
CXXC 520.omnetpp_r(peak) 523.xalancbmk_r(peak) 531.deepsjeng_r(peak)
    541.leela_r(peak)
==============================================================================
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.

==============================================================================
FC  548.exchange2_r(base, peak)
==============================================================================
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
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SuperServer 7048R-C1R4+

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Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort

Base Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX
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 -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

C++ benchmarks:
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

Fortran benchmarks:
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte
-L/usr/local/je5.0.1-64/lib -ljemalloc
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### Base Other Flags

- **C benchmarks:**
  - -m64 -std=c11
- **C++ benchmarks:**
  - -m64
- **Fortran benchmarks:**
  - -m64

### Peak Compiler Invocation

- **C benchmarks:**
  - icc
- **C++ benchmarks:**
  - icpc
- **Fortran benchmarks:**
  - ifort

### Peak Portability Flags

- 500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
- 502.gcc_r: -D_FILE_OFFSET_BITS=64
- 505.mcf_r: -DSPEC_LP64
- 520.omnetpp_r: -DSPEC_LP64
- 523.xalancbmk_r: -D_FILE_OFFSET_BITS=64 -DSPEC_LINUX
- 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

### Peak Optimization Flags

- **C benchmarks:**
  - 500.perlbench_r: -Wl,-z,muldefs -prof-gen(pass=1) -prof-use(pass=2) -ipo
  - -xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=3
  - -fno-strict-overflow -L/usr/local/je5.0.1-64/lib

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SuperServer 7048R-C1R4+

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</table>

### Peak Optimization Flags (Continued)

500.perlbench_r (continued):
- -ljemalloc

502.gcc_r: -L/opt/intel/compilers_and_libraries_2018/linux/lib/ia32
- -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
- -xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=3
- -L/usr/local/je5.0.1-32/lib -ljemalloc

505.mcf_r: -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
- -qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib
- -ljemalloc

525.x264_r: -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
- -qopt-mem-layout-trans=3 -fno-alias
- -L/usr/local/je5.0.1-64/lib -ljemalloc

557.xz_r: Same as 505.mcf_r

### C++ benchmarks:

520.omnetpp_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
- -xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=3
- -L/usr/local/je5.0.1-64/lib -ljemalloc

523.xalancbmk_r: -L/opt/intel/compilers_and_libraries_2018/linux/lib/ia32
- -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo
- -xCORE-AVX2 -O3 -no-prec-div -qopt-mem-layout-trans=3
- -L/usr/local/je5.0.1-32/lib -ljemalloc

531.deepsjeng_r: Same as 520.omnetpp_r

541.leela_r: Same as 520.omnetpp_r

### Fortran benchmarks:

- -Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div
- -qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte
- -L/usr/local/je5.0.1-64/lib -ljemalloc

### Peak Other Flags

C benchmarks (except as noted below):
- -m64 -std=c11

(Continued on next page)
**Peak Other Flags (Continued)**

- 502.gcc_r: -m32 -std=c11
- C++ benchmarks (except as noted below): 
  -m64
- 523.xalancbmk_r: -m32
- Fortran benchmarks: 
  -m64

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


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