SPEC® CPU2017 Integer Rate Result

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Inspur Corporation

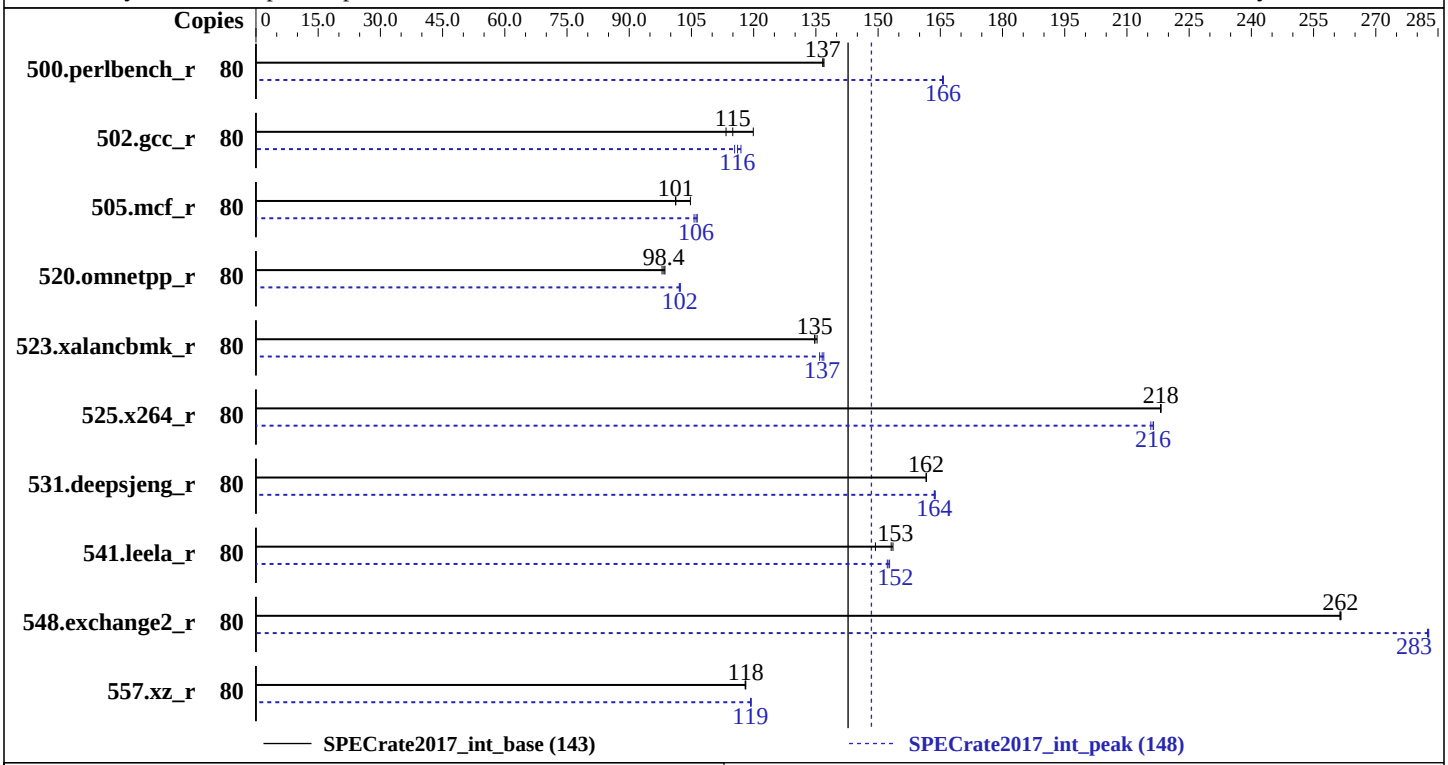
Inspur NF5280M4 (Intel Xeon E5-2698 v4)

SPECrate2017_int_base = 143

SPECrate2017_int_peak = 148

CPU2017 License: 3358
Test Sponsor: Inspur Corporation
Tested by: Inspur Corporation

Test Date: Dec-2016
Hardware Availability: Apr-2016
Software Availability: Nov-2016



Hardware

CPU Name:	Intel Xeon E5-2698 v4
Max MHz.:	3600
Nominal:	2200
Enabled:	40 cores, 2 chips, 2 threads/core
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:	50 MB I+D on chip per chip
Other:	None
Memory:	256 GB (16 x 16 GB 2Rx4 PC4-2400P-R)
Storage:	1 x SATA, 450 GB, SSD
Other:	None

Software

OS:	Red Hat Enterprise Linux Server release 7.2 (Maipo) 3.10.0-327.el7.x86_64
Compiler:	C/C++: Version 17.0.0.098 of Intel C/C++ Compiler for Linux; Fortran: Version 17.0.0.098 of Intel Fortran Compiler for Linux
Parallel:	No
Firmware:	American Megatrends Inc. Inspur 4.1.11
File System:	xfs
System State:	Run level 3 (multi-user)
Base Pointers:	32/64-bit
Peak Pointers:	Not Applicable
Other:	Microquill SmartHeap V10.2

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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
500.perlbench_r	80	930	137	**932**	**137**	932	137	80	769	166	**769**	**166**	768	166
502.gcc_r	80	945	120	999	113	**985**	**115**	80	**976**	**116**	982	115	969	117
505.mcf_r	80	**1277**	**101**	1234	105	1278	101	80	1224	106	1215	106	**1218**	**106**
520.omnetpp_r	80	**1067**	**98.4**	1064	98.6	1072	97.9	80	1026	102	**1027**	**102**	1028	102
523.xalancbmk_r	80	624	135	**627**	**135**	627	135	80	622	136	**619**	**137**	617	137
525.x264_r	80	642	218	642	218	**642**	**218**	80	649	216	**648**	**216**	647	216
531.deepsjeng_r	80	567	162	567	162	**567**	**162**	80	**560**	**164**	561	164	560	164
541.leela_r	80	887	149	**865**	**153**	863	154	80	870	152	867	153	**869**	**152**
548.exchange2_r	80	**801**	**262**	802	261	801	262	80	**742**	**283**	741	283	742	282
557.xz_r	80	**732**	**118**	732	118	733	118	80	**724**	**119**	725	119	723	119

SPECrate2017_int_base = 143

SPECrate2017_int_peak = 148

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

Submit Notes

```
The config file option 'submit' was used.
```

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/CPU2017RC4/lib/ia32:/home/CPU2017RC4/lib/intel64:/home/CPU2017RC4/sh10.2"

 Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
 memory using Redhat Enterprise Linux 7.2
 Transparent Huge Pages enabled by default
 Filesystem page cache cleared with:
 echo 1>       /proc/sys/vm/drop_caches
 runcpu command invoked through numactl i.e.:
 numactl --interleave=all runcpu <etc>
```

Platform Notes

```
 BIOS and OS configuration:
 SCALING_GOVERNOR set to Performance
 Hardware Prefetch set to Disable
 VT Support set to Disable
 C1E Support set to Disable
```

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Platform Notes (Continued)

```
Sysinfo program /home/CPU2017RC4/Docs/sysinfo
Rev: r5007 of 2016-11-15 fc8dc82f217779bedfed4d694d580ba9
running on localhost.localdomain Fri Dec  9 16:58:23 2016

This section contains SUT (System Under Test) info as seen by some common
utilities.
For more information on this section, see
http://www.spec.org/cpu2017/Docs/config.html#sysinfo

From /proc/cpuinfo
   model name : Intel(R) Xeon(R) CPU E5-2698 v4 @ 2.20GHz
      2 "physical id"s (chips)
      80 "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 : 20
      siblings  : 40
      physical 0: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
      physical 1: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
   cache size : 25600 KB

The view from numactl --hardware follows.  WARNING: a numactl 'node' might or
might not correspond to a physical chip.
  available: 4 nodes (0-3)
  node 0 cpus: 0 1 2 3 4 5 6 7 8 9 40 41 42 43 44 45 46 47 48 49
  node 0 size: 65414 MB
  node 0 free: 63628 MB
  node 1 cpus: 10 11 12 13 14 15 16 17 18 19 50 51 52 53 54 55 56 57 58 59
  node 1 size: 65536 MB
  node 1 free: 63994 MB
  node 2 cpus: 20 21 22 23 24 25 26 27 28 29 60 61 62 63 64 65 66 67 68 69
  node 2 size: 65536 MB
  node 2 free: 64044 MB
  node 3 cpus: 30 31 32 33 34 35 36 37 38 39 70 71 72 73 74 75 76 77 78 79
  node 3 size: 65536 MB
  node 3 free: 64009 MB
  node distances:
  node   0   1   2   3
    0:  10  11  21  21
    1:  11  10  21  21
    2:  21  21  10  11
    3:  21  21  11  10

From /proc/meminfo
   MemTotal:       263845272 kB
   HugePages_Total:       0
```

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Platform Notes (Continued)

```
    Hugepagesize:       2048 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 Server 7.2 (Maipo)"
       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.x86_64 #1 SMP Thu Oct 29 17:29:29
    EDT 2015 x86_64 x86_64 x86_64 GNU/Linux

  run-level 3 Dec 9 16:57

  SPEC is set to: /home/CPU2017RC4
    Filesystem            Type  Size  Used Avail Use% Mounted on
    /dev/mapper/rhel-home xfs   877G  5.8G  871G   1% /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. 4.1.8 06/12/2016
    Memory:
     16x Hynix HMA42GR7AFR4N-UH 16 GB 2 rank 2400 MHz
     8x NO DIMM NO DIMM

  (End of data from sysinfo program)
```

Compiler Version Notes

```
==============================================================================
CC   500.perlbench_r(base, peak) 502.gcc_r(base, peak) 505.mcf_r(base, peak)
     525.x264_r(base, peak) 557.xz_r(base, peak)
------------------------------------------------------------------------------
icc (ICC) 17.0.0 20160721
Copyright (C) 1985-2016 Intel Corporation.  All rights reserved.
```

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Compiler Version Notes (Continued)

```
------------------------------------------------------------------------------

==============================================================================
CXXC 520.omnetpp_r(base, peak) 523.xalancbmk_r(base, peak)
     531.deepsjeng_r(base, peak) 541.leela_r(base, peak)
------------------------------------------------------------------------------
icpc (ICC) 17.0.0 20160721
Copyright (C) 1985-2016 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------

==============================================================================
FC   548.exchange2_r(base, peak)
------------------------------------------------------------------------------
ifort (IFORT) 17.0.0 20160721
Copyright (C) 1985-2016 Intel Corporation.  All rights reserved.
------------------------------------------------------------------------------
```

Base Compiler Invocation

C benchmarks:
`icc -m64 -std=c11`

C++ benchmarks:
`icpc -m64`

Fortran benchmarks:
`ifort -m64`

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:
-xCORE-AVX2 -ipo -O3 -no-prec-div -auto-p32 -qopt-prefetch
-qopt-mem-layout-trans=3

C++ benchmarks:
-Wl,-z,muldefs -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-p32
-qopt-prefetch -qopt-mem-layout-trans=3 -L/sh10.2 -lsmartheap64

Fortran benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch
-qopt-mem-layout-trans=3 -nostandard-realloc-lhs

Peak Compiler Invocation

C benchmarks:
icc -m64 -std=c11

C++ benchmarks:
icpc -m64

Fortran benchmarks:
ifort -m64

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
-prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2 -ipo -O3
-no-prec-div -auto-p32 -qopt-prefetch -qopt-mem-layout-trans=3

C++ benchmarks:
-Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2 -ipo
-O3 -no-prec-div -auto-p32 -qopt-prefetch -qopt-mem-layout-trans=3
-L/sh10.2 -lsmartheap64

Fortran benchmarks:
-prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2 -ipo -O3

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Peak Optimization Flags (Continued)

Fortran benchmarks (continued):
-no-prec-div -qopt-prefetch -qopt-mem-layout-trans=3
-nostandard-realloc-lhs

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Intel-ic17.0-official-linux64-revD.html
http://www.spec.org/cpu2017/flags/Inspur-Platform-Settings-V1.0-HSW.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic17.0-official-linux64-revD.xml
http://www.spec.org/cpu2017/flags/Inspur-Platform-Settings-V1.0-HSW.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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