Huawei

Huawei 5288 V5 (Intel Xeon Platinum 8153)

<table>
<thead>
<tr>
<th>Test Sponsor</th>
<th>Huawei</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tested by</td>
<td>Huawei</td>
</tr>
<tr>
<td>CPU2017 License</td>
<td>3175</td>
</tr>
<tr>
<td>Hardware Availability</td>
<td>Jan-2018</td>
</tr>
<tr>
<td>Software Availability</td>
<td>Jul-2017</td>
</tr>
<tr>
<td>Test Date</td>
<td>May-2018</td>
</tr>
<tr>
<td>Test Sponsor</td>
<td>Huawei</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CPU Name</th>
<th>Intel Xeon Platinum 8153</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max MHz:</td>
<td>2800</td>
</tr>
<tr>
<td>Nominal:</td>
<td>2000</td>
</tr>
<tr>
<td>Enabled:</td>
<td>32 cores, 2 chips, 2 threads/core</td>
</tr>
<tr>
<td>Orderable:</td>
<td>1,2 chips</td>
</tr>
<tr>
<td>Cache L1:</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>L2:</td>
<td>1 MB I+D on chip per core</td>
</tr>
<tr>
<td>L3:</td>
<td>22 MB I+D on chip per chip</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
<tr>
<td>Memory:</td>
<td>384 GB (24 x 16 GB 2Rx8 PC4-2666V-R)</td>
</tr>
<tr>
<td>Storage:</td>
<td>1 x 1200 GB SAS, 10000 RPM</td>
</tr>
<tr>
<td>Other:</td>
<td>None</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Copies</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
</tr>
<tr>
<td>502.gcc_r</td>
</tr>
<tr>
<td>505.mcf_r</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
</tr>
<tr>
<td>525.x264_r</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
</tr>
<tr>
<td>541.leela_r</td>
</tr>
<tr>
<td>548.exchange2_r</td>
</tr>
<tr>
<td>557.xz_r</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name</td>
</tr>
<tr>
<td>Max MHz:</td>
</tr>
<tr>
<td>Nominal:</td>
</tr>
<tr>
<td>Enabled:</td>
</tr>
<tr>
<td>Orderable:</td>
</tr>
<tr>
<td>Cache L1:</td>
</tr>
<tr>
<td>L2:</td>
</tr>
<tr>
<td>L3:</td>
</tr>
<tr>
<td>Other:</td>
</tr>
<tr>
<td>Memory:</td>
</tr>
<tr>
<td>Storage:</td>
</tr>
<tr>
<td>Other:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS: Red Hat Enterprise Linux Server release 7.4 (Maipo) 3.10.0-693.11.6.el7.x86_64</td>
</tr>
<tr>
<td>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</td>
</tr>
<tr>
<td>Parallel: No</td>
</tr>
<tr>
<td>Firmware: Version 0.62 Released Apr-2018</td>
</tr>
<tr>
<td>File System: ext4</td>
</tr>
<tr>
<td>System State: Run level 3 (multi-user)</td>
</tr>
<tr>
<td>Base Pointers: 64-bit</td>
</tr>
<tr>
<td>Peak Pointers: 32/64-bit</td>
</tr>
<tr>
<td>Other: jemalloc: jemalloc memory allocator library V5.0.1</td>
</tr>
</tbody>
</table>

SPECrate2017_int_base = 143
SPECrate2017_int_peak = 151
Huawei

Huawei 5288 V5 (Intel Xeon Platinum 8153)

CPU2017 License: 3175
Test Sponsor: Huawei
Tested by: Huawei
Hardware Availability: Jul-2017
Software Availability: Jan-2018

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.perlbench_r</td>
<td>64</td>
<td>954</td>
<td>107</td>
<td>971</td>
<td>105</td>
<td>974</td>
<td>105</td>
<td>971</td>
<td>105</td>
</tr>
<tr>
<td>502.gcc_r</td>
<td>64</td>
<td>681</td>
<td>133</td>
<td>681</td>
<td>133</td>
<td>685</td>
<td>132</td>
<td>690</td>
<td>133</td>
</tr>
<tr>
<td>505.mcf_r</td>
<td>64</td>
<td>573</td>
<td>180</td>
<td>585</td>
<td>177</td>
<td>585</td>
<td>177</td>
<td>585</td>
<td>177</td>
</tr>
<tr>
<td>520.omnetpp_r</td>
<td>64</td>
<td>829</td>
<td>101</td>
<td>815</td>
<td>103</td>
<td>817</td>
<td>103</td>
<td>817</td>
<td>103</td>
</tr>
<tr>
<td>523.xalancbmk_r</td>
<td>64</td>
<td>455</td>
<td>148</td>
<td>455</td>
<td>149</td>
<td>454</td>
<td>149</td>
<td>453</td>
<td>149</td>
</tr>
<tr>
<td>525.x264_r</td>
<td>64</td>
<td>423</td>
<td>265</td>
<td>423</td>
<td>265</td>
<td>424</td>
<td>264</td>
<td>424</td>
<td>264</td>
</tr>
<tr>
<td>531.deepsjeng_r</td>
<td>64</td>
<td>609</td>
<td>120</td>
<td>616</td>
<td>119</td>
<td>620</td>
<td>118</td>
<td>609</td>
<td>118</td>
</tr>
<tr>
<td>541.leela_r</td>
<td>64</td>
<td>963</td>
<td>110</td>
<td>965</td>
<td>110</td>
<td>964</td>
<td>110</td>
<td>958</td>
<td>111</td>
</tr>
<tr>
<td>548.exchange2_r</td>
<td>64</td>
<td>648</td>
<td>259</td>
<td>650</td>
<td>258</td>
<td>649</td>
<td>258</td>
<td>648</td>
<td>259</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>64</td>
<td>620</td>
<td>112</td>
<td>674</td>
<td>103</td>
<td>675</td>
<td>102</td>
<td>620</td>
<td>112</td>
</tr>
</tbody>
</table>

SPECrate2017_int_base = 143
SPECrate2017_int_peak = 151

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

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:

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
Filesysten 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

(Continued on next page)
Huawei
Huawei 5288 V5 (Intel Xeon Platinum 8153)

SPECrate2017_int_base = 143
SPECrate2017_int_peak = 151

CPU2017 License: 3175
Test Sponsor: Huawei
Test Date: May-2018
Hardware Availability: Jul-2017
Tested by: Huawei
Software Availability: Jan-2018

General Notes (Continued)

Yes: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
Yes: 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.
Yes: 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.

Platform Notes

BIOS configuration:
Power Policy Set to Performance
SNC Set to Enabled
IMC Interleaving Set to 1-way Interleave
XPT Prefetch Set to Enabled
Sysinfo program /spec2017/bin/sysinfo
Rev: r5797 of 2017-06-14 96c45e4568ad54c135fd618b5c99c0f
running on localhost.localdomain Tue May 22 17:38:11 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) Platinum 8153 CPU @ 2.00GHz
  2 "physical id"s (chips)
  64 "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 : 16
siblings : 32
physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 64
On-line CPU(s) list: 0-63
Thread(s) per core: 2
Core(s) per socket: 16
Socket(s): 2
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6
Huawei

Huawei 5288 V5 (Intel Xeon Platinum 8153)

SPECrate2017_int_base = 143

SPECrate2017_int_peak = 151

CPU2017 License: 3175
Test Sponsor: Huawei
Test Date: May-2018
Tested by: Huawei
Hardware Availability: Jul-2017
Software Availability: Jan-2018

Platform Notes (Continued)

/proc/cpuinfo cache data
  cache size : 22528 KB
  From numactl --hardware 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 8 9 10 11 32 33 34 35 40 41 42 43
    node 0 size: 96437 MB
    node 0 free: 93820 MB
    node 1 cpus: 4 5 6 7 12 13 14 15 36 37 38 39 44 45 46 47
    node 1 size: 98304 MB
    node 1 free: 95993 MB
    node 2 cpus: 16 17 18 19 24 25 26 27 48 49 50 51 56 57 58 59
    node 2 size: 98304 MB
    node 2 free: 96021 MB
    node 3 cpus: 20 21 22 23 28 29 30 31 52 53 54 55 60 61 62 63
    node 3 size: 98304 MB
    node 3 free: 95459 MB
    node distances:
    node 0 1 2 3
    0: 10 11 21 21
    1: 11 10 21 21

(Continued on next page)
Huawei

Huawei 5288 V5 (Intel Xeon Platinum 8153)

SPECrate2017_int_base = 143
SPECrate2017_int_peak = 151

Platform Notes (Continued)

2: 21 21 10 11
3: 21 21 11 10

From /proc/meminfo
MemTotal: 394174812 kB
HugePages_Total: 0
Hugepagesize: 2048 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 Server 7.4 (Maipo)"
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 3.10.0-693.11.6.el7.x86_64 #1 SMP Thu Dec 28 14:23:39 EST 2017 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 May 22 17:37

SPEC is set to: /spec2017
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 xfs 781G 32G 750G 5% /

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 INSYDE Corp. 0.62 04/03/2018
Memory:
24x Samsung M393A2K43BB1-CTD 16 GB 2 rank 2666

(End of data from sysinfo program)

Compiler Version Notes

==============================================================================
CC 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base, peak)

(Continued on next page)
Huawei

Huawei 5288 V5 (Intel Xeon Platinum 8153)

SPECrate2017_int_base = 143
SPECrate2017_int_peak = 151

CPU2017 License: 3175
Test Date: May-2018
Test Sponsor: Huawei
Hardware Availability: Jul-2017
Tested by: Huawei
Software Availability: Jan-2018

Compiler Version Notes (Continued)

```plaintext
525.x264_r(base, peak) 557.xz_r(base, peak)
```

```plaintext
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
```

```plaintext
CC 500.perlb基准_r(peak) 502.gcc_r(peak)
```

```plaintext
icc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
```

```plaintext
CXXC 520.omnetpp_r(base) 523.xalancbenchmk_r(base) 531.deepsjeng_r(base)
541.leela_r(base)
```

```plaintext
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
```

```plaintext
CXXC 520.omnetpp_r(peak) 523.xalancbenchmk_r(peak) 531.deepsjeng_r(peak)
541.leela_r(peak)
```

```plaintext
icpc (ICC) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
```

```plaintext
FC 548.exchange2_r(base, peak)
```

```plaintext
ifort (IFORT) 18.0.0 20170811
Copyright (C) 1985-2017 Intel Corporation. All rights reserved.
```

Base Compiler Invocation

C benchmarks:
icc

C++ benchmarks:
icpc

Fortran benchmarks:
ifort
# SPEC CPU2017 Integer Rate Result

## Huawei

<table>
<thead>
<tr>
<th>Huawei 5288 V5 (Intel Xeon Platinum 8153)</th>
<th>SPECrate2017_int_base = 143</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate2017_int_peak = 151</td>
<td></td>
</tr>
</tbody>
</table>

**CPU2017 License:** 3175  
**Test Sponsor:** Huawei  
**Tested by:** Huawei  
**Test Date:** May-2018  
**Hardware Availability:** Jul-2017  
**Software Availability:** Jan-2018

### 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-AVX512 -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-AVX512 -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-AVX512 -ipo -O3 -no-prec-div  
- -qopt-mem-layout-trans=3 -nostandard-realloc-lhs -align array32byte  
- -L/usr/local/je5.0.1-64/lib -ljemalloc

### Base Other Flags

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

**C++ benchmarks:**
- -m64

**Fortran benchmarks:**
- -m64
SPEC CPU2017 Integer Rate Result
Copyright 2017-2018 Standard Performance Evaluation Corporation

Huawei
Huawei 5288 V5 (Intel Xeon Platinum 8153)

SPECrate2017_int_base = 143
SPECrate2017_int_peak = 151

CPU2017 License: 3175
Test Sponsor: Huawei
Tested by: Huawei
Test Date: May-2018
Hardware Availability: Jul-2017
Software Availability: Jan-2018

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-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-fno-strict-overflow -L/usr/local/je5.0.1-64/lib
-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-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3
-L/usr/local/je5.0.1-32/lib -ljemalloc

505.mcf_r: basepeak = yes

525.x264_r: -Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=3 -fno-alias
-L/usr/local/je5.0.1-64/lib -ljemalloc

(Continued on next page)
Huawei

Huawei 5288 V5 (Intel Xeon Platinum 8153)

<table>
<thead>
<tr>
<th>SPECrate2017_int_base = 143</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECrate2017_int_peak = 151</td>
</tr>
</tbody>
</table>

CPU2017 License: 3175
Test Sponsor: Huawei
Tested by: Huawei

Peak Optimization Flags (Continued)

557.xz_r: basepeak = yes

C++ benchmarks:

520.omnetpp_r: basepeak = yes


531.deepsjeng_r: basepeak = yes

541.leela_r: -Wl,-z,muldefs -prof-gen(pass 1) -prof-use(pass 2) -ipo -xCORE-AVX512 -O3 -no-prec-div -qopt-mem-layout-trans=3 -L/usr/local/je5.0.1-64/lib -ljemalloc

Fortran benchmarks:

-Wl,-z,muldefs -xCORE-AVX512 -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

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

http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.html
Huawei

Huawei 5288 V5 (Intel Xeon Platinum 8153)

<table>
<thead>
<tr>
<th>SPECrate2017_int_base</th>
<th>SPECrate2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>143</td>
<td>151</td>
</tr>
</tbody>
</table>

CPU2017 License: 3175
Test Sponsor: Huawei
Tested by: Huawei

Test Date: May-2018
Hardware Availability: Jul-2017
Software Availability: Jan-2018

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

http://www.spec.org/cpu2017/flags/Intel-ic18.0-official-linux64.xml
http://www.spec.org/cpu2017/flags/Huawei-Platform-Settings-SKL-V1.9-revC.xml

SPEC is a registered trademark of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

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

Tested with SPEC CPU2017 v1.0.2 on 2018-05-22 17:38:10-0400.
Report generated on 2018-10-31 17:58:54 by CPU2017 PDF formatter v6067.
Originally published on 2018-06-12.