Cisco Systems
Cisco UCS B200 M5 (Intel Xeon Gold 6246, 3.30GHz)  
SPECr2017_cpu_base = 182
SPECr2017_cpu_peak = Not Run

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems
Test Date: Aug-2019
Hardware Availability: Apr-2019
Software Availability: May-2019

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>SPECrate2017_cpu_base</th>
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<tr>
<td>perlbench_r</td>
<td>48</td>
<td>136</td>
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<tr>
<td>gcc_r</td>
<td>48</td>
<td>148</td>
</tr>
<tr>
<td>mcf_r</td>
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<tr>
<td>omnetpp_r</td>
<td>48</td>
<td>108</td>
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<tr>
<td>xalancbmk_r</td>
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<td>215</td>
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<tr>
<td>x264_r</td>
<td>48</td>
<td>379</td>
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<tr>
<td>deepsjeng_r</td>
<td>48</td>
<td>150</td>
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<tr>
<td>leela_r</td>
<td>48</td>
<td>143</td>
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<tr>
<td>exchange2_r</td>
<td>48</td>
<td>368</td>
</tr>
<tr>
<td>xz_r</td>
<td>48</td>
<td>114</td>
</tr>
</tbody>
</table>

Hardware
CPU Name: Intel Xeon Gold 6246
Max MHz: 4200
Nominal: 3300
Enabled: 24 cores, 2 chips, 2 threads/core
Orderable: 1.2 Chips
Cache L1: 32 KB I + 32 KB D on chip per core
L2: 1 MB I+D on chip per core
L3: 24.75 MB I+D on chip per chip
Other: None
Memory: 768 GB (24 x 32 GB 2Rx4 PC4-2933V-R)
Storage: 1 x 1.9 TB SSD SAS
Other: None

Software
OS: SUSE Linux Enterprise Desktop 15 (x86_64)
4.12.14-23-default
Compiler: C/C++: Version 19.0.4.227 of Intel C/C++ Compiler for Linux;
Fortran: Version 19.0.4.227 of Intel Fortran Compiler for Linux
Parallel: No
Firmware: Version 4.0.4g released Jul-2019
File System: xfs
System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: Not Applicable
Power Management: --
Cisco Systems

Cisco UCS B200 M5 (Intel Xeon Gold 6246, 3.30GHz)

SPECraten®2017_int_base = 182
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Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
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<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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<tr>
<td>531.deepsjeng_r</td>
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<td>150</td>
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<tr>
<td>541.leela_r</td>
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<td>548</td>
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<td>143</td>
<td>556</td>
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<td>548.exchange2_r</td>
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<td>368</td>
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<td>368</td>
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<td>369</td>
</tr>
<tr>
<td>557.xz_r</td>
<td>48</td>
<td>456</td>
<td>114</td>
<td>454</td>
<td>114</td>
<td>454</td>
<td>114</td>
</tr>
</tbody>
</table>

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

Binaries compiled on a system with 1x Intel Core i9-7900X CPU + 32GB RAM
memory using Redhat Enterprise Linux 7.5
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

NA: 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.
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Platform Notes

BIOS Settings:
Intel HyperThreading Technology set to Enabled
SNC set to Enabled
IMC Interleaving set to 1-way Interleave
Patrol Scrub set to Disabled
Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r5974 of 2018-05-19 9bcede8f2999c33d61f64985e45859ea9

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) Gold 6246 CPU @ 3.30GHz
  2 "physical id"s (chips)
  48 "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 : 12
siblings : 24
  physical 0: cores 0 2 4 8 10 17 18 19 20 24 25 27
  physical 1: cores 0 2 8 9 10 17 18 19 20 25 26 27

From lscpu:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
CPU(s): 48
On-line CPU(s) list: 0-47
Thread(s) per core: 2
Core(s) per socket: 12
Socket(s): 2
NUMA node(s): 4
Vendor ID: GenuineIntel
CPU family: 6
Model: 85
Model name: Intel(R) Xeon(R) Gold 6246 CPU @ 3.30GHz
Stepping: 7
CPU MHz: 3300.000
CPU max MHz: 4200.0000
CPU min MHz: 1200.0000
BogoMIPS: 6600.00
Virtualization: VT-x
L1d cache: 32K
L1i cache: 32K
L2 cache: 1024K

(Continued on next page)
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Platform Notes (Continued)

L3 cache: 25344K
NUMA node0 CPU(s): 0,1,3,5,9,10,24,25,27,29,33,34
NUMA node1 CPU(s): 12,15,17,21,36-39,41,45
NUMA node2 CPU(s): 16,18-20,22,23,40,42-44,46,47
NUMA node3 CPU(s): 2,4,6-8,11,26,28,30-32,35

Flags:

-cache size : 25344 KB

From numactl --hardware

Warning: a numactl 'node' might or might not correspond to a physical chip.

node 0 cpus: 0 1 3 5 9 10 24 25 27 29 33 34
node 0 size: 192063 MB
node 0 free: 191748 MB
node 1 cpus: 2 4 6 7 8 11 26 28 30 31 32 35
node 1 size: 193523 MB
node 1 free: 193259 MB
node 2 cpus: 12 13 14 15 17 21 36 37 38 39 41 45
node 2 size: 193523 MB
node 2 free: 193282 MB
node 3 cpus: 16 18 19 20 22 23 40 42 43 44 46 47
node 3 size: 193520 MB
node 3 free: 193262 MB
node distances:
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: 791173828 KB
HugePages_Total: 0
Hugepagesize: 2048 KB

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

From /etc/*release* /etc/*version*

```bash
from /etc/*release* /etc/*version*
    os-release:
        NAME="SLED"
        VERSION="15"
        VERSION_ID="15"
        PRETTY_NAME="SUSE Linux Enterprise Desktop 15"
        ID="sled"
        ID_LIKE="suse"
        ANSI_COLOR="0;32"
        CPE_NAME="cpe:/o:suse:sled:15"

uname -a:
    Linux linux-56kd 4.12.14-23-default #1 SMP Tue May 29 21:04:44 UTC 2018 (cd0437b)
    x86_64 x86_64 x86_64 GNU/Linux

Kernel self-reported vulnerability status:

CVE-2017-5754 (Meltdown): Not affected
CVE-2017-5753 (Spectre variant 1): Mitigation: __user pointer sanitization
CVE-2017-5715 (Spectre variant 2): Mitigation: Indirect Branch Restricted Speculation, IBPB, IBRS_FW

run-level 3 Aug 7 12:44

SPEC is set to: /home/cpu2017
    Filesystem Type Size Used Avail Use% Mounted on
    /dev/sda1 xfs 894G 22G 872G 3% /

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 SM BIOS" standard.

    BIOS Cisco Systems, Inc. B200M5.4.0.4g.0.0712190011 07/12/2019
    Memory:
        24x 0xCE00 M393A4K40CB2-CVF 32 GB 2 rank 2933, configured at 2934
```

(End of data from sysinfo program)

**Compiler Version Notes**

```
==============================================================================
C       | 500.perlbench_r(base) 502.gcc_r(base) 505.mcf_r(base)
        | 525.x264_r(base)  557.xz_r(base)
==============================================================================

Intel(R) C Intel(R) 64 Compiler for applications running on Intel(R) 64,
```

(Continued on next page)
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![Compiler Version Notes](Continued)

Version 19.0.4.227 Build 20190416  
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

------------------------------------------------------------------------------
<table>
<thead>
<tr>
<th>C++</th>
<th>520.omnetpp_r(base)</th>
<th>523.xalancbmk_r(base)</th>
<th>531.deepsjeng_r(base)</th>
<th>541.leela_r(base)</th>
</tr>
</thead>
</table>
------------------------------------------------------------------------------
Intel(R) C++ Intel(R) 64 Compiler for applications running on Intel(R) 64,  
Version 19.0.4.227 Build 20190416  
Copyright (C) 1985-2019 Intel Corporation. All rights reserved.

------------------------------------------------------------------------------
<table>
<thead>
<tr>
<th>Fortran</th>
<th>548.exchange2_r(base)</th>
</tr>
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------------------------------------------------------------------------------
Intel(R) Fortran Intel(R) 64 Compiler for applications running on Intel(R) 64,  
Version 19.0.4.227 Build 20190416  
Copyright (C) 1985-2019 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

(Continued on next page)
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### Base Portability Flags (Continued)

557.xz_r: -DSPEC_LP64

### Base Optimization Flags

C benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
-lqkmalloc

C++ benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
-lqkmalloc

Fortran benchmarks:
-Wl,-z,muldefs -xCORE-AVX512 -ipo -O3 -no-prec-div
-qopt-mem-layout-trans=4 -nostandard-realloc-lhs -align array32byte
-L/usr/local/IntelCompiler19/compilers_and_libraries_2019.4.227/linux/compiler/lib/intel64
-lqkmalloc

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:

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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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