Cisco Systems
Cisco UCS X410c M7 (Intel Xeon Platinum 8444H, 2.90GHz)

**CPU2017 License:** 9019  
**Test Sponsor:** Cisco Systems  
**Tested by:** Cisco Systems  
**Hardware Availability:** Mar-2023  
**Software Availability:** Dec-2022

**Test Date:** Sep-2023  
**Software:**  
- OS: SUSE Linux Enterprise Server 15 SP4 5.14.21-150400.22-default  
- Compiler: C/C++: Version 2023.0 of Intel oneAPI DPC++/C++ Compiler for Linux;  
- Fortran: Version 2023.0 of Intel Fortran Compiler for Linux;  
- Parallel: No  
- Firmware: Version 5.1.1e released May-2023  
- File System: btrfs  
- System State: Run level 3 (multi-user)  
- Base Pointers: 64-bit  
- Peak Pointers: 32/64-bit  
- Other: jemalloc memory allocator V5.0.1  
- Power Management: BIOS set to prefer performance at the cost of additional power usage

**Hardware:**  
- **CPU Name:** Intel Xeon Platinum 8444H  
- **Max MHz:** 4000  
- **Nominal:** 2900  
- **Enabled:** 64 cores, 4 chips, 2 threads/core  
- **Orderable:** 1,2,3,4 Chips  
- **Cache L1:** 32 KB I + 48 KB D on chip per core  
- **L2:** 2 MB I+D on chip per core  
- **L3:** 45 MB I+D on chip per core  
- **Other:** None  
- **Memory:** 2 TB (32 x 64 GB 2Rx4 PC5-4800B-R)  
- **Storage:** 1 x 1.9 TB SSD SATA  
- **Other:** None

**Software**

**SPEC CPU®2017 Integer Rate Result**

**SPECrate®2017_int_base = 652**  
**SPECrate®2017_int_peak = 669**

<table>
<thead>
<tr>
<th>Software</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS</td>
<td>SUSE Linux Enterprise Server 15 SP4 5.14.21-150400.22-default</td>
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<tr>
<td>Compiler</td>
<td>C/C++: Version 2023.0 of Intel oneAPI DPC++/C++ Compiler for Linux; Fortran: Version 2023.0 of Intel Fortran Compiler for Linux;</td>
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<td>Parallel</td>
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<td>Firmware</td>
<td>Version 5.1.1e released May-2023</td>
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<td>File System</td>
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<td>System State</td>
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<tr>
<td>Base Pointers</td>
<td>64-bit</td>
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<tr>
<td>Peak Pointers</td>
<td>32/64-bit</td>
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<td>Other</td>
<td>jemalloc memory allocator V5.0.1</td>
</tr>
<tr>
<td>Power Management</td>
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Results Table

<table>
<thead>
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<td>557.xz_r</td>
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<td>469</td>
<td>295</td>
</tr>
</tbody>
</table>

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

Compiler Notes

SPEC has ruled that the compiler used for this result was performing a compilation that specifically improves the performance of the 523.xalancbmk_r / 623.xalanchbk_s benchmarks using a priori knowledge of the SPEC code and dataset to perform a transformation that has narrow applicability.

In order to encourage optimizations that have wide applicability (see rule 1.4 https://www.spec.org/cpu2017/Docs/runrules.html#rule_1.4), SPEC will no longer publish results using this optimization.

This result is left in the SPEC results database for historical reference.

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"

Environment Variables 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"
MALLOC_CONF = "retain:true"
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Copyright 2017-2024 Standard Performance Evaluation Corporation

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Tested by: Cisco Systems

Test Date: Sep-2023
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General Notes

Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM
memory using Red Hat Enterprise Linux 8.4
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.:
umactl --interleave=all runcpu <etc>
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.
cpupower frequency-set --g performance
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5

Platform Notes

BIOS Settings:
Adjacent Cache Line Prefetcher set to Enabled
DCU streamer Prefetch set to Enabled
Enhanced CPU Performance set to Auto
LLC Dead Line set to Disabled
ADDDC Sparing set to Disabled
Processor C6 Report set to Enabled

Sysinfo program /home/cpu2017/bin/sysinfo
Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
running on localhost Wed Sep 13 02:03:04 2023

SUT (System Under Test) info as seen by some common utilities.

Table of contents
-----------------------------------------------------------------
1. uname -a
2. w
3. Username
4. ulimit -a
5. sysinfo process ancestry
6. /proc/cpuinfo
7. lscpu
8. numactl --hardware
9. /proc/meminfo
10. who
11. Systemd service manager version: systemd 249 (249.11+suse.124.g2bc0b2c447)
12. Services, from systemctl list-unit-files
13. Linux kernel boot-time arguments, from /proc/cmdline
14. cpupower frequency-info
15. sysctl
16. /sys/kernel/mm/transparent_hugepage
17. /sys/kernel/mm/transparent_hugepage/klugepaged
18. OS release
19. Disk information
20. /sys/devices/virtual/dmi/id

(Continued on next page)
Platform Notes (Continued)

21. dmidecode
22. BIOS

------------------------------------------------------------
1. uname -a
   Linux localhost 5.14.21-150400.22-default #1 SMP PREEMPT_DYNAMIC Wed May 11 06:57:18 UTC 2022 (49db222)
x86_64 x86_64 x86_64 GNU/Linux

------------------------------------------------------------
2. w
   02:03:04 up 1 min, 1 user, load average: 6.56, 2.77, 1.01
   USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU   WHAT
   root     tty1     -                02:02   12.00s  1.55s  0.34s -bash

------------------------------------------------------------
3. Username
   From environment variable $USER: root

------------------------------------------------------------
4. ulimit -a
   core file size    (blocks, -c) unlimited
   data seg size     (kbytes, -d) unlimited
   scheduling priority (-e) 0
   file size         (blocks, -f) unlimited
   pending signals   (-l) 8255547
   max locked memory (kbytes, -l) 64
   max memory size   (kbytes, -m) unlimited
   open files        (-n) 1024
   pipe size         (512 bytes, -p) 8
   POSIX message queues (bytes, -q) 819200
   real-time priority (-r) 0
   stack size        (kbytes, -s) unlimited
   cpu time           (seconds, -t) unlimited
   max user processes (-u) 8255547
   virtual memory    (kbytes, -v) unlimited
   file locks         (-x) unlimited

------------------------------------------------------------
5. sysinfo process ancestry
   /usr/lib/systemd/systemd --switched-root --system --deserialize 30
   login -- root
   -bash
   -bash
   runcpu --nobuild --action validate --define default-platform-flags --define numcopies=128 --c
   ic2023.0-lin-sapphirerapids-rate-20221201.cfg --reportable --iterations 3 --define smt-on --define
   cores=64 --define physicalfirst --define invoke_with_interleave --define drop_caches --tune all_o all
   intrate
   runcpu --nobuild --action validate --define default-platform-flags --define numcopies=128 --configfile
   ic2023.0-lin-sapphirerapids-rate-20221201.cfg --reportable --iterations 3 --define smt-on --define
   cores=64 --define physicalfirst --define invoke_with_interleave --define drop_caches --tune all
   --output_format all --nopower --runmode rate --tune base:peak --size refrate intrate --nopreenv
   --note-preenv --logfile $SPEC/tmp/CPU2017.137/templogs/preenv.intrate.137.0.log --lognum 137.0
   --from_runcpu 2
   specperl $SPEC/bin/sysinfo
   $SPEC = /home/cpu2017

   -------------------------------------------------------------
6. /proc/cpuinfo
   model name : Intel(R) Xeon(R) Platinum 8444H

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Test Date: Sep-2023
Hardware Availability: Mar-2023
Software Availability: Dec-2022

Platform Notes (Continued)

vendor_id       : GenuineIntel
cpu family      : 6
model           : 143
stepping        : 8
microcode       : 0x2b000461
bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs
cpu cores       : 16
siblings        : 32
4 physical ids (chips)
128 processors (hardware threads)
physical id 0: core ids 0-15
physical id 1: core ids 0-15
physical id 2: core ids 0-15
physical id 3: core ids 0-15
physical id 0: apicids 0-31
physical id 1: apicids 128-159
physical id 2: apicids 256-287
physical id 3: apicids 384-415

Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for virtualized systems. Use the above data carefully.

---------------------------------------------------------------------------------------------------------------------------
7. lscpu

From lscpu from util-linux 2.37.2:
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Address sizes: 46 bits physical, 57 bits virtual
Byte Order: Little Endian
CPU(s): 128
On-line CPU(s) list: 0-127
Vendor ID: GenuineIntel
Model name: Intel(R) Xeon(R) Platinum 8444H
CPU family: 6
Model: 143
Thread(s) per core: 2
Core(s) per socket: 16
Socket(s): 4
Stepping: 8
CPU max MHz: 4000.000
CPU min MHz: 800.000
BogoMIPS: 5800.00

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 rdtscp
lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology
nonstop_tsc cpuid aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor
des cpl vmx smx est tm2 ssse3 sdbg fma cx16 pbfd pmclflush dts

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Platform Notes (Continued)

Virtualization: VT-x
L1d cache: 3 MiB (64 instances)
L1i cache: 2 MiB (64 instances)
L2 cache: 128 MiB (64 instances)
L3 cache: 180 MiB (4 instances)
NUMA node(s): 16

NUMA node0 CPU(s): 0-3, 64-67
NUMA node1 CPU(s): 4-7, 68-71
NUMA node2 CPU(s): 8-11, 72-75
NUMA node3 CPU(s): 12-15, 76-79
NUMA node4 CPU(s): 16-19, 80-83
NUMA node5 CPU(s): 20-23, 84-87
NUMA node6 CPU(s): 24-27, 88-91
NUMA node7 CPU(s): 28-31, 92-95
NUMA node8 CPU(s): 32-35, 96-99
NUMA node9 CPU(s): 36-39, 100-103
NUMA node10 CPU(s): 40-43, 104-107
NUMA node11 CPU(s): 44-47, 108-111
NUMA node12 CPU(s): 48-51, 112-115
NUMA node13 CPU(s): 52-55, 116-119
NUMA node14 CPU(s): 56-59, 120-123
NUMA node15 CPU(s): 60-63, 124-127

Vulnerability Itlb multihit: Not affected
Vulnerability L1tf: Not affected
Vulnerability Mds: Not affected
Vulnerability Meltdown: Not affected
Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl and seccomp
Vulnerability Spectre v1: Mitigation; usercopy/swapgs barriers and __user pointer sanitization
Vulnerability Spectre v2: Mitigation; Enhanced IBRS, IBPB conditional, RSB filling
Vulnerability Srbds: Not affected
Vulnerability Tsx async abort: Not affected

From lscpu --cache:

<table>
<thead>
<tr>
<th>NAME</th>
<th>ONE-SIZE</th>
<th>ALL-SIZE</th>
<th>WAYS</th>
<th>TYPE</th>
<th>LEVEL</th>
<th>SETS</th>
<th>PHY-LINE</th>
<th>COHERENCY-SIZE</th>
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<td>48K</td>
<td>3M</td>
<td>12</td>
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<tr>
<td>L1i</td>
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<td>2M</td>
<td>2</td>
<td>Instruction</td>
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<td>64</td>
<td>1</td>
<td>64</td>
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<tr>
<td>L2</td>
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<td>2048</td>
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<td>L3</td>
<td>45M</td>
<td>180M</td>
<td>15</td>
<td>Unified</td>
<td>3</td>
<td>49152</td>
<td>1</td>
<td>64</td>
</tr>
</tbody>
</table>

-----------------------------------------------
8. numactl --hardware

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

Available: 16 nodes (0-15)

node 0 cpus: 0-3, 64-67
node 0 size: 128665 MB
node 0 free: 127958 MB
node 1 cpus: 4-7, 68-71
node 1 size: 129021 MB
node 1 free: 128787 MB
node 2 cpus: 8-11, 72-75
node 2 size: 129021 MB
node 2 free: 128792 MB
node 3 cpus: 12-15, 76-79
node 3 size: 129021 MB
node 3 free: 128765 MB
node 4 cpus: 16-19, 80-83
node 4 size: 129021 MB
node 4 free: 128805 MB
node 5 cpus: 20-23, 84-87
node 5 size: 129021 MB

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Platform Notes (Continued)

node 5 free: 128791 MB
node 6 cpus: 24-27,88-91
node 6 size: 129021 MB
node 6 free: 128798 MB
node 7 cpus: 28-31,92-95
node 7 size: 128987 MB
node 7 free: 128755 MB
node 8 cpus: 32-35,96-99
node 8 size: 129021 MB
node 8 free: 128833 MB
node 9 cpus: 36-39,100-103
node 9 size: 129021 MB
node 9 free: 128846 MB
node 10 cpus: 40-43,104-107
node 10 size: 129021 MB
node 10 free: 128778 MB
node 11 cpus: 44-47,108-111
node 11 size: 129021 MB
node 11 free: 128764 MB
node 12 cpus: 48-51,112-115
node 12 size: 129021 MB
node 12 free: 128860 MB
node 13 cpus: 52-55,116-119
node 13 size: 129021 MB
node 13 free: 128863 MB
node 14 cpus: 56-59,120-123
node 14 size: 129021 MB
node 14 free: 128857 MB
node 15 cpus: 60-63,124-127
node 15 size: 129021 MB
node 15 free: 128894 MB

node distances:

node 0   1    2    3    4    5    6    7    8    9   10   11   12   13   14   15
0:  10  12  12  12  12  12  12  12  12  12  12  12  12  12  12  12
1:  12  12  12  12  12  12  12  12  12  12  12  12  12  12  12  12
2:  12  12  12  12  12  12  12  12  12  12  12  12  12  12  12  12
3:  12  12  12  12  12  12  12  12  12  12  12  12  12  12  12  12
4:  12  12  12  12  12  12  12  12  12  12  12  12  12  12  12  12
5:  12  12  12  12  12  12  12  12  12  12  12  12  12  12  12  12
6:  12  12  12  12  12  12  12  12  12  12  12  12  12  12  12  12
7:  12  12  12  12  12  12  12  12  12  12  12  12  12  12  12  12
8:  12  12  12  12  12  12  12  12  12  12  12  12  12  12  12  12
9:  12  12  12  12  12  12  12  12  12  12  12  12  12  12  12  12
10: 12  12  12  12  12  12  12  12  12  12  12  12  12  12  12  12
11: 12  12  12  12  12  12  12  12  12  12  12  12  12  12  12  12
12: 12  12  12  12  12  12  12  12  12  12  12  12  12  12  12  12
13: 12  12  12  12  12  12  12  12  12  12  12  12  12  12  12  12
14: 12  12  12  12  12  12  12  12  12  12  12  12  12  12  12  12
15: 12  12  12  12  12  12  12  12  12  12  12  12  12  12  12  12

9. /proc/meminfo
MemTotal: 2113444444 kB

10. who -r
run-level 3 Sep 13 02:02

11. Systemd service manager version: systemd 249 (249.11+suse.124.g2bc0b2c447)

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Platform Notes (Continued)

12. Services, from systemctl list-unit-files

<table>
<thead>
<tr>
<th>STATE</th>
<th>UNIT FILES</th>
</tr>
</thead>
<tbody>
<tr>
<td>enabled</td>
<td>YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron getty@ haveged irqbalance</td>
</tr>
<tr>
<td>issue-generator kbdsettings klog lvm2-monitor nscd postfix purge-kernels rollback rsyslog</td>
<td></td>
</tr>
<tr>
<td>smartd sshd wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny</td>
<td></td>
</tr>
<tr>
<td>enabled-runtime</td>
<td>systemd-remount-fs</td>
</tr>
<tr>
<td>indirect</td>
<td>wickedd</td>
</tr>
</tbody>
</table>

13. Linux kernel boot-time arguments, from /proc/cmdline

- BOOT_IMAGE=/boot/vmlinuz-5.14.21-150400.22-default
- root=UUID=e21e8d67-b30a-4ea7-8055-b0885f263ec2
- splash=silent
- mitigations=auto
- quiet
- security=apparmor

14. cpupower frequency-info

- analyzing CPU 0: current policy: frequency should be within 800 MHz and 4.00 GHz. The governor "performance" may decide which speed to use within this range.
- boost state support:
- Supported: yes
- Active: yes

15. sysctl

- kernel.numa_balancing 1
- kernel.randomize_va_space 2
- vm.compaction_proactiveness 20
- vm.dirty_background_bytes 0
- vm.dirty_background_ratio 10
- vm.dirty_bytes 0
- vm.dirty_expire_centisecs 3000
- vm.dirty_ratio 20
- vm.dirty_writeback_centisecs 500
- vm.dirtytime_expire_seconds 43200
- vm.extfrag_threshold 500
- vm.min_unmapped_ratio 1
- vm.nr_hugepages 0
- vm.nr_hugepages_mempolicy 0
- vm.overcommit_hugepages 0
- vm.swappiness 1
- vm.watermark_boost_factor 15000
- vm.watermark_scale_factor 10
- vm.zone_reclaim_mode 0

(Continued on next page)
### Cisco Systems
Cisco UCS X410c M7 (Intel Xeon Platinum 8444H, 2.90GHz)

<table>
<thead>
<tr>
<th>SPECrate®2017_int_base</th>
<th>SPECrate®2017_int_peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>652</td>
<td>669</td>
</tr>
</tbody>
</table>

**CPU2017 License:** 9019  
**Test Sponsor:** Cisco Systems  
**Test Date:** Sep-2023  
**Tested by:** Cisco Systems  
**Hardware Availability:** Mar-2023  
**Software Availability:** Dec-2022

---

#### Platform Notes (Continued)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>defrag</td>
<td>always defer defer+madvise madvise never</td>
</tr>
<tr>
<td>enabled</td>
<td>always madvise never</td>
</tr>
<tr>
<td>hpage_pmd_size</td>
<td>2097152</td>
</tr>
<tr>
<td>shmem_enabled</td>
<td>always within_size advise [never] deny force</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>alloc_sleep_millisecs</td>
<td>60000</td>
</tr>
<tr>
<td>defrag</td>
<td>1</td>
</tr>
<tr>
<td>max_ptes_none</td>
<td>511</td>
</tr>
<tr>
<td>max_ptes_shared</td>
<td>256</td>
</tr>
<tr>
<td>max_ptes_swap</td>
<td>64</td>
</tr>
<tr>
<td>pages_to_scan</td>
<td>4096</td>
</tr>
<tr>
<td>scan_sleep_millisecs</td>
<td>10000</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>os-release</td>
<td>SUSE Linux Enterprise Server 15 SP4</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filesystem</td>
<td>/dev/sda2</td>
</tr>
<tr>
<td>Type</td>
<td>btrfs</td>
</tr>
<tr>
<td>Size</td>
<td>222G</td>
</tr>
<tr>
<td>Used</td>
<td>13G</td>
</tr>
<tr>
<td>Avail</td>
<td>208G</td>
</tr>
<tr>
<td>Use%</td>
<td>6%</td>
</tr>
<tr>
<td>Mounted on</td>
<td>/home</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOS Vendor</td>
<td>Cisco Systems Inc</td>
</tr>
<tr>
<td>BIOS Product</td>
<td>UCSX-410C-M7</td>
</tr>
<tr>
<td>BIOS Serial</td>
<td>FCH264873NP</td>
</tr>
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---

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory</td>
<td>4x 0xAD00 HMCG94MEBRA121N 64 GB 2 rank 4800</td>
</tr>
<tr>
<td></td>
<td>28x 0xAD00 HMCG94MEBRA123N 64 GB 2 rank 4800</td>
</tr>
</tbody>
</table>

---

**Compiler Version Notes**

```
C | 502_gcc_r(peak)
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2023.0.0 Build 20221201
```

(Continued on next page)
Cisco Systems
Cisco UCS X410c M7 (Intel Xeon Platinum 8444H, 2.90GHz)

CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

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SPEC CPU®2017 Integer Rate Result

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Cisco Systems
Cisco UCS X410c M7 (Intel Xeon Platinum 8444H, 2.90GHz)

SPECrater®2017_int_base = 652
SPECrater®2017_int_peak = 669

CPU2017 License: 9019
Test Date: Sep-2023
Test Sponsor: Cisco Systems
Hardware Availability: Mar-2023
Tested by: Cisco Systems
Software Availability: Dec-2022

Compiler Version Notes (Continued)

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<table>
<thead>
<tr>
<th>C</th>
<th>500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak) 525.x264_r(base, peak) 557.xz_r(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201</td>
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<tr>
<th>C++</th>
<th>520.omnetpp_r(base, peak) 523.xalancbmk_r(base, peak) 531.deepsjeng_r(base, peak) 541.leela_r(base, peak)</th>
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</tbody>
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<tr>
<th>Fortran</th>
<th>548.exchange2_r(base, peak)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2023.0.0 Build 20221201</td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
</tbody>
</table>

Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifx
Cisco Systems
Cisco UCS X410c M7 (Intel Xeon Platinum 8444H, 2.90GHz)

SPECrater®2017_int_base = 652
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CPU2017 License: 9019
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Tested by: Cisco Systems

Test Date: Sep-2023
Hardware Availability: Mar-2023
Software Availability: Dec-2022

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:
-w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc

C++ benchmarks:
-w -std=c++14 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc

Fortran benchmarks:
-w -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc

Peak Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifx
Cisco Systems
Cisco UCS X410c M7 (Intel Xeon Platinum 8444H, 2.90GHz)

SPEC CPU®2017 Integer Rate Result
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SPECrate®2017_int_base = 652
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CPU2017 License: 9019
Test Sponsor: Cisco Systems
Tested by: Cisco Systems

Test Date: Sep-2023
Hardware Availability: Mar-2023
Software Availability: Dec-2022

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: -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

Peak Optimization Flags

C benchmarks:

500.perlbench_r: -w -std=c11 -m64 -Wl,-z,muldefs
-fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX2(pass 1)
-flto -Ofast -xCORE-AVX512 -ffast-math -mfpmath=sse
-funroll-loops -qopt-mem-layout-trans=4
-fno-strict-overflow
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc

502.gcc_r: -m32
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/ia32_lin
-std=gnu89 -Wl,-z,muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX2(pass 1)
-flto -Ofast -xCORE-AVX512 -ffast-math -mfpmath=sse
-funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/jemalloc32-5.0.1/lib -ljemalloc

505.mcf_r: basepeak = yes

525.x264_r: -w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -fno-alias
-L/usr/local/intel/compiler/2023.0.0/linux/compiler/lib/intel64_lin
-lqkmalloc

557.xz_r: basepeak = yes

C++ benchmarks:

(Continued on next page)
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Peak Optimization Flags (Continued)

520.omnetpp_r: basepeak = yes
523.xalancbmk_r: basepeak = yes
531.deepsjeng_r: basepeak = yes
541.leela_r: basepeak = yes

Fortran benchmarks:
548.exchange2_r: basepeak = yes

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2017/flags/Intel-ic2023-official-linux64.xml
http://www.spec.org/cpu2017/flags/Cisco-Platform-Settings-V1.0-SPR-revM.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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