Cisco Systems
Cisco UCS C240 M5 (Intel Xeon Platinum 8180M, 2.50GHz)

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CPU2006 license: 9019
Test sponsor: Cisco Systems
Tested by: Cisco Systems

Hardware

| CPU Name: | Intel Xeon Platinum 8180M |
| CPU Characteristics: | Intel Turbo Boost Technology up to 3.80 GHz |
| CPU MHz: | 2500 |
| FPU: | Integrated |
| CPU(s) enabled: | 56 cores, 2 chips, 28 cores/chip, 2 threads/core |
| CPU(s) orderable: | 1,2 chips |
| Primary Cache: | 32 KB I + 32 KB D on chip per core |
| Secondary Cache: | 1 MB I+D on chip per core |
| L3 Cache: | 38.5 MB I+D on chip per chip |
| Other Cache: | None |
| Memory: | 384 GB (24 x 16 GB 2Rx4 PC4-2666V-R) |
| Disk Subsystem: | 1 x 240 GB M.2 SATA SSD |
| Other Hardware: | None |

Software

| Operating System: | SUSE Linux Enterprise Server 12 SP2 (x86_64) |
| Compiler: | C/C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux |
| Auto Parallel: | Yes |
| File System: | xfs |
| System State: | Run level 3 (multi-user) |
| Base Pointers: | 32-bit |
| Peak Pointers: | 32/64-bit |
| Other Software: | Microquill SmartHeap V10.2 |
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Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Seconds Base</th>
<th>Seconds Ratio</th>
<th>Seconds Peak</th>
<th>Seconds</th>
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<tr>
<td>400.perlbench</td>
<td>112</td>
<td>494 2210</td>
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<td>112</td>
<td>404 2710</td>
<td>405 2700</td>
<td>402 2720</td>
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<tr>
<td>401.bzip2</td>
<td>112</td>
<td>850 1270</td>
<td>851 1270</td>
<td>847 1280</td>
<td>112</td>
<td>818 1320</td>
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<td>474 1900</td>
<td>470 1920</td>
<td>471 1910</td>
<td>112</td>
<td>472 1910</td>
<td>468 1930</td>
<td>471 1910</td>
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<tr>
<td>429.mcf</td>
<td>112</td>
<td>300 3400</td>
<td>301 3390</td>
<td>301 3400</td>
<td>112</td>
<td>300 3400</td>
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<td>674 1740</td>
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<td>282 3710</td>
<td>271 3850</td>
<td>272 3840</td>
<td>112</td>
<td>242 4320</td>
<td>243 4310</td>
<td>241 4340</td>
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<td>112</td>
<td>725 1870</td>
<td>724 1870</td>
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<td>112</td>
<td>673 2010</td>
<td>673 2010</td>
<td>674 2010</td>
</tr>
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<td>462.libquantum</td>
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<td>50.9 45600</td>
<td>50.7 45800</td>
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<td>50.5 45900</td>
</tr>
<tr>
<td>464.h264ref</td>
<td>112</td>
<td>781 3170</td>
<td>779 3180</td>
<td>783 3160</td>
<td>112</td>
<td>756 3280</td>
<td>745 3330</td>
<td>743 3340</td>
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<tr>
<td>471.omnetpp</td>
<td>112</td>
<td>586 1190</td>
<td>585 1200</td>
<td>585 1200</td>
<td>112</td>
<td>568 1230</td>
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<td>473.astar</td>
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<td>112</td>
<td>278 2780</td>
<td>277 2790</td>
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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"

Platform Notes

BIOS Settings:
Intel HyperThreading Technology set to Enabled
CPU performance set to Enterprise
Power Performance Tuning set to OS
SNC set to Enabled
IMC Interleaving set to 1-way Interleave
Patrol Scrub set to Disabled
Sysinfo program /home/cpu2006-1.2/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on linux-omrt Thu Sep 7 23:45:49 2017

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:
http://www.spec.org/cpu2006/Docs/config.html#sysinfo
From /proc/cpuinfo
    model name : Intel(R) Xeon(R) Platinum 8180M CPU @ 2.50GHz
Continued on next page
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Hardware Availability: Aug-2017
Software Availability: Apr-2017

Platform Notes (Continued)

2 "physical id"s (chips)
112 "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 : 28
siblings : 56
physical 0: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24
25 26 27 28 29 30
physical 1: cores 0 1 2 3 4 5 6 8 9 10 11 12 13 14 16 17 18 19 20 21 22 24
25 26 27 28 29 30
cache size : 39424 KB

From /proc/meminfo
MemTotal: 394863508 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:
(9464f67) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Sep 7 23:43

SPEC is set to: /home/cpu2006-1.2

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda3 xfs 182G 19G 163G 11% /home

Additional information from dmidecode:

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
## SPEC CINT2006 Result

### Cisco Systems

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### Platform Notes (Continued)

hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS Cisco Systems, Inc. C240M5.3.1.1d.0.0615170707 06/15/2017  
Memory:  
24x 0xCE00 M393A2G40EB2-CTD 16 GB 2 rank 2666 MHz

(End of data from sysinfo program)

### General Notes

Environment variables set by runspec before the start of the run:
```plaintext
LD_LIBRARY_PATH = "~/home/cpu2006-1.2/lib/ia32:/home/cpu2006-1.2/lib/intel64:/home/cpu2006-1.2/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 with:
```plaintext
echo always > /sys/kernel/mm/transparent_hugepage/enabled
```

Filesystem page cache cleared with:
```plaintext
shell invocation of 'sync; echo 3 > /proc/sys/vm/drop_caches' prior to run
runcspec command invoked through numactl i.e.:
numactl --interleave=all runcspec <etc>
```

### Base Compiler Invocation

C benchmarks:
```plaintext
icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
```

C++ benchmarks:
```plaintext
icpc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
```

### Base Portability Flags

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Base Optimization Flags

C benchmarks:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-qopt-mem-layout-trans=3

C++ benchmarks:
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
-qopt-mem-layout-trans=3 -Wl,-z,muldefs -L/sh10.2 -lsmartheap

Base Other Flags

C benchmarks:
403.gcc: -Dalloca=_alloca

Peak Compiler Invocation

C benchmarks (except as noted below):
icc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32

400.perlbench: icc -m64
401.bzip2: icc -m64
456.hmmer: icc -m64
458.sjeng: icc -m64

C++ benchmarks:
icpc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32

Peak Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -D_FILE_OFFSET_BITS=64
429.mcf: -D_FILE_OFFSET_BITS=64
445.gobmk: -D_FILE_OFFSET_BITS=64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX
464.h264ref: -D_FILE_OFFSET_BITS=64
471.omnetpp: -D_FILE_OFFSET_BITS=64
473.astar: -D_FILE OFFSET BITS=64
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Peak Portability Flags (Continued)

483.xalancbmk: -D_FILE_OFFSET_BITS=64 -DSPEC_CPU_LINUX

Peak Optimization Flags

C benchmarks:

400.perlbench: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2) -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -auto-ilp32 -qopt-mem-layout-trans=3

401.bzip2: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2) -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -qopt-prefetch -auto-ilp32 -qopt-mem-layout-trans=3

403.gcc: -xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-mem-layout-trans=3

429.mcf: basepeak = yes

C++ benchmarks:

471.omnetpp: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2) -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -qopt-ra-region-strategy=block -qopt-mem-layout-trans=3 -Wl,-z,muldefs -L/sh10.2 -lsmartheap

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**Peak Optimization Flags (Continued)**

473.astar: basepeak = yes
483.xalancbmk: basepeak = yes

**Peak Other Flags**

C benchmarks:

403.gcc: -Dalloca=_alloca

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

http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.html
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revH.html

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

http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.xml
http://www.spec.org/cpu2006/flags/Cisco-Platform-Settings-V1.2-revH.xml

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