Dell Inc. PowerEdge M640 (Intel Xeon Gold 6152, 2.10 GHz)

SPECfp®2006 = 136
SPECfp_base2006 = 130

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Hardware
CPU Name: Intel Xeon Gold 6152
CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz
CPU MHz: 2100
FPU: Integrated
CPU(s) enabled: 44 cores, 2 chips, 22 cores/chip, 2 threads/core
CPU(s) orderable: 1,2 chip
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 1 MB I+D on chip per core

Software
Operating System: SUSE Linux Enterprise Server 12 SP3 (x86_64) 4.4.70-2-default
Compiler: C++: Version 17.0.3.191 of Intel C/C++ Compiler for Linux;
Fortran: Version 17.0.3.191 of Intel Fortran Compiler for Linux
Auto Parallel: Yes
File System: btrfs
System State: Run level 3 (multi-user)
Dell Inc.
PowerEdge M640 (Intel Xeon Gold 6152, 2.10 GHz)

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.
Test date: Sep-2017
Hardware Availability: Sep-2017
Software Availability: Nov-2016

L3 Cache: 30.25 MB I+D on chip per chip
Other Cache: None
Memory: 192 GB (12 x 16 GB 2Rx8 PC4-2666V-R)
Disk Subsystem: 1 x 960 GB SATA SSD
Other Hardware: None

Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
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<td>297</td>
<td>65.5</td>
</tr>
</tbody>
</table>

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

Operating System Notes
Stack size set to unlimited using "ulimit -s unlimited"

Platform Notes

BIOS settings:
Sub NUMA Cluster disabled
Virtualization Technology disabled
System Profile set to Custom
CPU Performance set to Maximum Performance
C States set to Autonomous
C1E disabled
Energy Efficient Turbo disabled
Uncore Frequency set to Dynamic
Energy Efficiency Policy set to Performance

Continued on next page
SPEC CFP2006 Result

Dell Inc.

PowerEdge M640 (Intel Xeon Gold 6152, 2.10 GHz)

| SPECfp2006 | 136 |
| SPECfp_base2006 | 130 |

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: Sep-2017
Hardware Availability: Sep-2017
Software Availability: Nov-2016

Platform Notes (Continued)

Memory Patrol Scrub disabled
Logical Processor enabled
CPU Interconnect Bus Link Power Management disabled
PCI ASPM L1 Link Power Management disabled

Sysinfo program /root/cpu2006-1.2_ic17u3/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on linux-287k Mon Sep 4 01:49:18 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) Gold 6152 CPU @ 2.10GHz
2 "physical id"s (chips)
88 "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 : 22
siblings : 44
physical 0: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27 28
physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 16 17 18 19 20 21 24 25 26 27 28
cache size : 30976 KB

From /proc/meminfo

MemTotal: 196682072 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

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

SuSE-release:
SUSE Linux Enterprise Server 12 (x86_64)
VERSION = 12
PATCHLEVEL = 3
# 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-SP3"
VERSION_ID="12.3"
PRETTY_NAME="SUSE Linux Enterprise Server 12 SP3"
ID="sles"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:12:sp3"

uname -a:
Linux linux-287k 4.4.70-2-default #1 SMP Wed Jun 7 15:12:06 UTC 2017
(x86_64) x86_64 x86_64 x86_64 GNU/Linux

Continued on next page
Dell Inc. PowerEdge M640 (Intel Xeon Gold 6152, 2.10 GHz)  

**SPECfp2006 = 136**  
**SPECfp_base2006 = 130**

**Platform Notes (Continued)**

run-level 3 Sep 3 21:25  

SPEC is set to: /root/cpu2006-1.2_ic17u3  

Filesystem Type Size Used Avail Use% Mounted on  
/dev/sda3 btrfs 928G 9.0G 916G 1% /  

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

BIOS Dell Inc. 1.0.0 08/10/2017  
Memory:  
12x 002C00B3002C 18ASF2G72PDZ-2G6D1 16 GB 2 rank 2666 MHz  
4x Not Specified Not Specified

(End of data from sysinfo program)

**General Notes**

Environment variables set by runspec before the start of the run:  
KMP_AFFINITY = "granularity=fine,compact,1,0"  
LD_LIBRARY_PATH = "/root/cpu2006-1.2_ic17u3/lib/ia32:/root/cpu2006-1.2_ic17u3/lib/intel64:/root/cpu2006-1.2_ic17u3/sh10.2"  
OMP_NUM_THREADS = "44"

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:  
shell invocation of 'sync; echo 3 > /proc/sys/vm/drop_caches' prior to run

**Base Compiler Invocation**

C benchmarks:  
icc -m64

C++ benchmarks:  
iccpc -m64

Fortran benchmarks:  
ifort -m64

Benchmarks using both Fortran and C:  
icc -m64 ifort -m64
Dell Inc.
PowerEdge M640 (Intel Xeon Gold 6152, 2.10 GHz)  

**SPEC CFP2006 Result**

**SPECfp2006 = 136**  
**SPECfp_base2006 = 130**

- **CPU2006 license:** 55  
- **Test sponsor:** Dell Inc.  
- **Tested by:** Dell Inc.

### Base Portability Flags

- 410.bwaves: -DSPEC_CPU_LP64  
- 416.game5: -DSPEC_CPU_LP64  
- 433.milc: -DSPEC_CPU_LP64  
- 434.zeusmp: -DSPEC_CPU_LP64  
- 435.gromacs: -DSPEC_CPU_LP64 -nofor_main  
- 436.cactusADM: -DSPEC_CPU_LP64 -nofor_main  
- 437.lesle3d: -DSPEC_CPU_LP64  
- 444.namd: -DSPEC_CPU_LP64  
- 447.dealII: -DSPEC_CPU_LP64  
- 450.soplex: -DSPEC_CPU_LP64  
- 453.povray: -DSPEC_CPU_LP64  
- 454.calculix: -DSPEC_CPU_LP64 -nofor_main  
- 459.GemsFDTD: -DSPEC_CPU_LP64  
- 465.tonto: -DSPEC_CPU_LP64  
- 470.lbm: -DSPEC_CPU_LP64  
- 481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX  
- 482.sphinx3: -DSPEC_CPU_LP64

### Base Optimization Flags

- **C benchmarks:**  
  - -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch

- **C++ benchmarks:**  
  - -xCORE-AVX2 -ipo -O3 -no-prec-div -qopt-prefetch

- **Fortran benchmarks:**  
  - -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch

- **Benchmarks using both Fortran and C:**  
  - -xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -qopt-prefetch

### Peak Compiler Invocation

- **C benchmarks:**  
  - icc -m64

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

- **Fortran benchmarks:**  
  - ifort -m64

- **Benchmarks using both Fortran and C:**  
  - icc -m64 ifort -m64
SPEC CFP2006 Result

Dell Inc.

PowerEdge M640 (Intel Xeon Gold 6152, 2.10 GHz)

SPECfp2006 = 136
SPECfp_base2006 = 130

CPU2006 license: 55
Test date: Sep-2017
Test sponsor: Dell Inc.
Hardware Availability: Sep-2017
Tested by: Dell Inc.
Software Availability: Nov-2016

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes
470.lbm: basepeak = yes
482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
           -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
           -no-prec-div(pass 2) -fno-alias -auto-iipt32

447.dealII: basepeak = yes
450.soplex: basepeak = yes
453.povray: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
           -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
           -no-prec-div(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes
416.gamess: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
             -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
             -no-prec-div(pass 2) -unroll2 -inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes
437.leslie3d: basepeak = yes
459.GemsFDTD: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
               -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
               -no-prec-div(pass 2) -unroll2 -inline-level=0 -qopt-prefetch -parallel

465.tonto: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX2(pass 2)
           -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
           -no-prec-div(pass 2) -inline-calloc -qopt-malloc-options=3
           -auto -unroll4

Continued on next page
Peak Optimization Flags (Continued)

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32

481.wrf: basepeak = yes

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

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

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