Dell Inc.

PowerEdge M640 (Intel Xeon Gold 5118, 2.30 GHz)

**SPECfp®2006 = 127**

**SPECfp_base2006 = 122**

**CPU2006 license:** 55

**Test date:** Sep-2017

**Test sponsor:** Dell Inc.

**Hardware Availability:** Sep-2017

**Tested by:** Dell Inc.

**Software Availability:** Nov-2016

**410.bwaves**

**416.gamess**

**433.milc**

**434.zeusmp**

241

**435.gromacs**

46.1

**436.cactusADM**

**437.leslie3d**

437

**444.namd**

31.3

30.6

**447.dealII**

63.6

**450.soplex**

44.2

**453.povray**

68.1

60.2

65.9

**454.calculix**

62.7

**459.GemsFDTD**

**465.tonto**

58.8

44.4

**470.lbm**

44.4

**471.wrf**

115

**482.sphinx3**

62.5

256

1020

Hardware

**CPU Name:** Intel Xeon Gold 5118

**CPU Characteristics:** Intel Turbo Boost Technology up to 3.20 GHz

**CPU MHz:** 2300

**FPU:** Integrated

**CPU(s) enabled:** 24 cores, 2 chips, 12 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/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 5118, 2.30 GHz)

SPECfp2006 = 127
SPECfp_base2006 = 122

CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.
L3 Cache: 16.5 MB I+D on chip per chip
Other Cache: None
Memory: 192 GB (12 x 16 GB 2Rx8 PC4-2666V-R, running at 2400 MT/s)
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>Base</th>
<th>Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Seconds</td>
<td>Ratio</td>
</tr>
<tr>
<td>410.bwaves</td>
<td>17.6</td>
<td>773</td>
</tr>
<tr>
<td>416.gamess</td>
<td>463</td>
<td>42.3</td>
</tr>
<tr>
<td>433.milc</td>
<td>126</td>
<td>72.7</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>37.6</td>
<td>242</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>155</td>
<td>46.1</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>12.3</td>
<td>970</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>22.7</td>
<td>413</td>
</tr>
<tr>
<td>444.namd</td>
<td>262</td>
<td>30.6</td>
</tr>
<tr>
<td>447.dealII</td>
<td>180</td>
<td>63.7</td>
</tr>
<tr>
<td>450.soplex</td>
<td>189</td>
<td>44.0</td>
</tr>
<tr>
<td>453.povray</td>
<td>87.1</td>
<td>61.1</td>
</tr>
<tr>
<td>454.calculix</td>
<td>131</td>
<td>62.7</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>41.4</td>
<td>256</td>
</tr>
<tr>
<td>465.tonto</td>
<td>222</td>
<td>44.4</td>
</tr>
<tr>
<td>470.lbm</td>
<td>13.6</td>
<td>1010</td>
</tr>
<tr>
<td>481.wrf</td>
<td>102</td>
<td>110</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>313</td>
<td>62.3</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
## Platform Notes (Continued)

Energy Efficiency Policy set to Performance  
Memory Patrol Scrub disabled  
Logical Processor enabled  
CPU Interconnect Bus Link Power Management disabled  
PCI ASPM LI Link Power Management disabled  
Sysinfo program /root/cpu2006-1.2_iic17u3/config/sysinfo.rev6993  
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed29d7f98696cbe290c1)  
running on linux-wds7 Tue Sep 5 04:48:50 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 5118 CPU @ 2.30GHz  
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 1 2 3 4 5 8 9 10 11 12 13  
physical 1: cores 0 1 2 3 4 5 8 9 10 11 12 13  
cache size : 16896 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-wds7 4.4.70-2-default #1 SMP Wed Jun 7 15:12:06 UTC 2017  
(4502c76) x86_64 x86_64 x86_64 GNU/Linux

### Dell Inc.

**PowerEdge M640 (Intel Xeon Gold 5118, 2.30 GHz)**  
**SPECfp2006 =** 127  
**SPECfp_base2006 =** 122

<table>
<thead>
<tr>
<th>CPU2006 license: 55</th>
<th>Test date: Sep-2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sponsor: Dell Inc.</td>
<td>Hardware Availability: Sep-2017</td>
</tr>
<tr>
<td>Tested by: Dell Inc.</td>
<td>Software Availability: Nov-2016</td>
</tr>
</tbody>
</table>

Continued on next page
Dell Inc.

PowerEdge M640 (Intel Xeon Gold 5118, 2.30 GHz)

SPECfp2006 = 127
SPECfp_base2006 = 122

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)

run-level 3 Sep 3 21:21

SPEC is set to: /root/cpu2006-1.2_ic17u3
Filesystem     Type   Size  Used Avail Use% Mounted on
/dev/sda3      btrfs  855G  8.6G  845G   2% /
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:
6x 00AD00B300AD HMA82GR7AF8N-VK 16 GB 2 rank 2666 MHz, configured at 2400 MHz
6x 00AD063200AD HMA82GR7AF8N-VK 16 GB 2 rank 2666 MHz, configured at 2400 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 = "24"

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:
   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 5118, 2.30 GHz)  

SPECfp2006 = 127
SPECfp_base2006 = 122

CPU2006 license: 55  
Test sponsor: Dell Inc.  
Test date: Sep-2017

Tested by: Dell Inc.  
Hardware Availability: Sep-2017

Software Availability: Nov-2016

Base Portability Flags

410.bwaves: -DSPEC_CPU_LP64
416.gamess: -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.leslie3d: -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
Dell Inc.  
PowerEdge M640 (Intel Xeon Gold 5118, 2.30 GHz)  

SPECfp2006 = 127  
SPECfp_base2006 = 122  

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-ilp32  

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  
        -auto -unroll4

Continued on next page
Dell Inc.
PowerEdge M640 (Intel Xeon Gold 5118, 2.30 GHz)

SPECfpu2006 = 127
SPECfpu_base2006 = 122

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

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

SPEC and SPECfp are registered trademarks 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 webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.
Originally published on 3 October 2017.