Dell Inc.

PowerEdge T630 (Intel Xeon E5-2643 v4, 3.40 GHz)

SPECfp®2006 = 119

SPECfp_base2006 = 115

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

Hardware

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>48.0</td>
</tr>
<tr>
<td>416.gamess</td>
<td>44.7</td>
</tr>
<tr>
<td>433.milc</td>
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<td>435.gromacs</td>
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<td>436.cactusADM</td>
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<td>437.leslie3d</td>
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<td>482.sphinx3</td>
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</table>

Software

<table>
<thead>
<tr>
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</tr>
</thead>
</table>

Operating System: Red Hat Enterprise Linux Server release 7.1 (Maipo) 3.10.0-229.el7.x86_64
Compiler: CIC++: Version 16.0.0.101 of Intel C++ Studio XE for Linux; Fortran: Version 16.0.0.101 of Intel Fortran Studio XE for Linux
Auto Parallel: Yes
File System: xfs

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Dell Inc.

PowerEdge T630 (Intel Xeon E5-2643 v4, 3.40 GHz)

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L3 Cache: 20 MB I+D on chip per chip
Other Cache: None
Memory: 512 GB (16 x 32 GB 2Rx4 PC4-2400T-R)
Disk Subsystem: 1 x 300 GB 15000 RPM SAS
Other Hardware: None

System State: Run level 3 (multi-user)
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>
<th>Seconds</th>
<th>Ratio</th>
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</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:
  Snoop Mode set to Home Snoop
  Virtualization Technology disabled
  System Profile set to Performance
  Memory Patrol Scrub disabled
Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 $e3fbb8667b5a285932ceab81e28219e1
running on localhost.localdomain Tue Jan 12 09:53:32 2016

This section contains SUT (System Under Test) info as seen by
Continued on next page

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http://www.spec.org/
Platform Notes (Continued)

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) CPU E5-2643 v4 @ 3.40GHz
  2 "physical id"s (chips)
  24 "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 : 6
siblings : 12
  physical 0: cores 0 1 2 3 6 7
  physical 1: cores 0 1 2 3 6 7
cache size : 20480 KB

From /proc/meminfo
MemTotal: 528284164 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

From /etc/*release*/etc/*version*
os-release:
  NAME="Red Hat Enterprise Linux Server"
  VERSION="7.1 (Maipo)"
  ID="rhel"
  ID_LIKE="fedora"
  VERSION_ID="7.1"
  PRETTY_NAME="Red Hat Enterprise Linux Server 7.1 (Maipo)"
  ANSI_COLOR="0;31"
  CPE_NAME="cpe:/o:redhat:enterprise_linux:7.1:ga:server"
redhat-release: Red Hat Enterprise Linux Server release 7.1 (Maipo)
system-release: Red Hat Enterprise Linux Server release 7.1 (Maipo)

uname -a:
Linux localhost.localdomain 3.10.0-229.el7.x86_64 #1 SMP Thu Jan 29 18:37:38
EST 2015 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jan 12 05:08 last=5

SPEC is set to: /root/cpu2006-1.2
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 xfs 200G 21G 180G 11% /

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. 1.7.12 12/22/2015
Continued on next page
Dell Inc.

PowerEdge T630 (Intel Xeon E5-2643 v4, 3.40 GHz)  

SPECfp2006 = 119  
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CPU2006 license: 55  
Test sponsor: Dell Inc.  
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Test date: Jan-2016  
Hardware Availability: Mar-2016  
Software Availability: Mar-2016

Platform Notes (Continued)

Memory:
16x 00CE00B300CE M393A4K40BB1-CRC 32 GB 2 rank 2400 MHz
8x 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/lib; /root/cpu2006-1.2/lib64; /root/cpu2006-1.2/sh"
OMP_NUM_THREADS = "12"

Binaries compiled on a system with 1x Intel Core i5-4670K CPU + 32GB memory using RedHat EL 7.1
Transparent Huge Pages enabled with:
    echo always > /sys/kernel/mm/transparent_hugepage/enabled

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

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
Dell Inc.

PowerEdge T630 (Intel Xeon E5-2643 v4, 3.40 GHz)

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Test date: Jan-2016
Hardware Availability: Mar-2016
Software Availability: Mar-2016

Base Portability Flags (Continued)

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 -opt-prefetch
-ansi-alias

C++ benchmarks:
-xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias

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

Benchmarks using both Fortran and C:
-xCORE-AVX2 -ipo -O3 -no-prec-div -parallel -opt-prefetch
-ansi-alias

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

Peak Portability Flags

Same as Base Portability Flags
Dell Inc.
PowerEdge T630 (Intel Xeon E5-2643 v4, 3.40 GHz)  

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Test sponsor: Dell Inc.  
Hardware Availability: Mar-2016  
Tested by: Dell Inc.  
Software Availability: Mar-2016

Peak Optimization Flags

C benchmarks:

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

C++ benchmarks:

444.namd: -xCORE-AVX2(pass 2) -prof:gen:threadsafe(pass 1) 
-xipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) 
-par-num-threads=1(pass 1) -prof-use(pass 2) -fno-alias 
-auto-ilp32

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

Fortran benchmarks:

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

434.zeusmp: basepeak = yes
437.leslie3d: basepeak = yes

459.GemsFDTD: -xCORE-AVX2(pass 2) -prof:gen:threadsafe(pass 1) 
-xipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) 
-par-num-threads=1(pass 1) -prof-use(pass 2) -unroll2 
-inlinellevel=0 -opt-prefetch -parallel

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

Benchmarks using both Fortran and C:

Continued on next page
PowerEdge T630 (Intel Xeon E5-2643 v4, 3.40 GHz)

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Software Availability: Mar-2016

Peak Optimization Flags (Continued)

435.gromacs: basepeak = yes
436.cactusADM: basepeak = yes
454.calculix: -xCORE-AVX2 -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias
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-ic16.0-official-linux64.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revD.20151006.xml

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For other inquiries, please contact webmaster@spec.org.

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