Dell Inc.
PowerEdge R330 (Intel Xeon E3-1230 v5, 3.40 GHz)

**SPECfp®2006 = 96.5**
**SPECfp_base2006 = 94.6**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Spec Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>139</td>
</tr>
<tr>
<td>416.gamess</td>
<td>109</td>
</tr>
<tr>
<td>433.milc</td>
<td>195</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>353</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>44</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>139</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>107</td>
</tr>
<tr>
<td>444.namd</td>
<td>79.7</td>
</tr>
<tr>
<td>447.dealII</td>
<td>109</td>
</tr>
<tr>
<td>450.soplex</td>
<td>74.3</td>
</tr>
<tr>
<td>453.povray</td>
<td>78.9</td>
</tr>
<tr>
<td>454.calculix</td>
<td>76.3</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>78.9</td>
</tr>
<tr>
<td>465.tonto</td>
<td>188</td>
</tr>
<tr>
<td>470.lbm</td>
<td>123</td>
</tr>
<tr>
<td>481.wrf</td>
<td>101</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>139</td>
</tr>
</tbody>
</table>

**Hardware**
- CPU Name: Intel Xeon E3-1230 v5
- CPU Characteristics: Intel Turbo Boost Technology up to 3.80 GHz
- CPU MHz: 3400
- FPU: Integrated
- CPU(s) enabled: 4 cores, 1 chip, 4 cores/chip, 2 threads/core
- CPU(s) orderable: 1 chip
- Primary Cache: 32 KB I + 32 KB D on chip per core
- Secondary Cache: 256 KB I+D on chip per core

**Software**
- Operating System: SUSE Linux Enterprise Server 12
- Compiler: C/C++: 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: ext4
- System State: Run level 3 multi-user

Test date: Sep-2015
Hardware Availability: Nov-2015
Software Availability: Sep-2015
## Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>410.bwaves</td>
<td>97.9</td>
<td>139</td>
<td>97.3</td>
<td>140</td>
<td>97.5</td>
<td>139</td>
<td>97.9</td>
<td>139</td>
<td>97.3</td>
<td>140</td>
</tr>
<tr>
<td>416.gamess</td>
<td>399</td>
<td>49.1</td>
<td>399</td>
<td>49.0</td>
<td>399</td>
<td>49.0</td>
<td>362</td>
<td>54.1</td>
<td>362</td>
<td>54.1</td>
</tr>
<tr>
<td>433.milc</td>
<td>83.4</td>
<td>110</td>
<td>84.5</td>
<td>109</td>
<td>84.4</td>
<td>109</td>
<td>83.4</td>
<td>110</td>
<td>84.5</td>
<td>109</td>
</tr>
<tr>
<td>434.zeusmp</td>
<td>46.6</td>
<td>195</td>
<td>46.7</td>
<td>195</td>
<td>46.8</td>
<td>194</td>
<td>46.6</td>
<td>195</td>
<td>46.7</td>
<td>195</td>
</tr>
<tr>
<td>435.gromacs</td>
<td>107</td>
<td>66.6</td>
<td>108</td>
<td>66.3</td>
<td>108</td>
<td>66.0</td>
<td>107</td>
<td>66.6</td>
<td>108</td>
<td>66.3</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>33.6</td>
<td>355</td>
<td>33.9</td>
<td>353</td>
<td>33.9</td>
<td>352</td>
<td>33.6</td>
<td>355</td>
<td>33.9</td>
<td>353</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>87.3</td>
<td>108</td>
<td>87.6</td>
<td>107</td>
<td>87.5</td>
<td>107</td>
<td>87.3</td>
<td>108</td>
<td>87.6</td>
<td>107</td>
</tr>
<tr>
<td>444.namd</td>
<td>221</td>
<td>36.3</td>
<td>221</td>
<td>36.2</td>
<td>221</td>
<td>36.3</td>
<td>217</td>
<td>36.9</td>
<td>217</td>
<td>37.0</td>
</tr>
<tr>
<td>447.dealII</td>
<td>143</td>
<td>80.0</td>
<td>144</td>
<td>79.7</td>
<td>144</td>
<td>79.4</td>
<td>143</td>
<td>80.0</td>
<td>144</td>
<td>79.7</td>
</tr>
<tr>
<td>450.soplex</td>
<td>152</td>
<td>54.7</td>
<td>149</td>
<td>55.8</td>
<td>154</td>
<td>54.2</td>
<td>152</td>
<td>54.7</td>
<td>149</td>
<td>55.8</td>
</tr>
<tr>
<td>453 povray</td>
<td>75.3</td>
<td>70.7</td>
<td>73.9</td>
<td>72.0</td>
<td>75.8</td>
<td>70.2</td>
<td>67.5</td>
<td>78.8</td>
<td>66.6</td>
<td>79.9</td>
</tr>
<tr>
<td>454.calculix</td>
<td>108</td>
<td>76.3</td>
<td>108</td>
<td>76.3</td>
<td>108</td>
<td>76.3</td>
<td>107</td>
<td>76.9</td>
<td>107</td>
<td>77.1</td>
</tr>
<tr>
<td>459.GemsFDTD</td>
<td>128</td>
<td>82.9</td>
<td>128</td>
<td>82.9</td>
<td>128</td>
<td>83.0</td>
<td>126</td>
<td>84.1</td>
<td>126</td>
<td>84.1</td>
</tr>
<tr>
<td>465.tonto</td>
<td>151</td>
<td>65.1</td>
<td>152</td>
<td>64.9</td>
<td>151</td>
<td>65.0</td>
<td>137</td>
<td>71.6</td>
<td>137</td>
<td>71.7</td>
</tr>
<tr>
<td>470.lbm</td>
<td>73.1</td>
<td>188</td>
<td>73.3</td>
<td>188</td>
<td>73.3</td>
<td>187</td>
<td>73.1</td>
<td>188</td>
<td>73.2</td>
<td>188</td>
</tr>
<tr>
<td>481.wrf</td>
<td>90.4</td>
<td>124</td>
<td>91.1</td>
<td>123</td>
<td>91.0</td>
<td>123</td>
<td>90.4</td>
<td>124</td>
<td>91.1</td>
<td>123</td>
</tr>
<tr>
<td>482.sphinx3</td>
<td>193</td>
<td>101</td>
<td>192</td>
<td>101</td>
<td>193</td>
<td>101</td>
<td>193</td>
<td>101</td>
<td>192</td>
<td>101</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:**
- Virtualization Technology disabled
- System Profile set to Performance

Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6914 $Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1 running on linux-3mqb Thu Sep 17 14:38:21 2015

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

Continued on next page
Dell Inc.
PowerEdge R330 (Intel Xeon E3-1230 v5, 3.40 GHz)

SPECfp2006 = 96.5
SPECfp_base2006 = 94.6

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

Test date: Sep-2015
Hardware Availability: Nov-2015
Software Availability: Sep-2015

Platform Notes (Continued)

From /proc/cpuinfo
  model name : Intel(R) Xeon(R) CPU E3-1230 v5 @ 3.40GHz
  1 "physical id"s (chips)
  8 "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 : 4
    siblings : 8
    physical 0: cores 0 1 2 3
    cache size : 8192 KB

From /proc/meminfo
  MemTotal: 66066084 kB
  HugePages_Total: 0
  Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
  SUSE Linux Enterprise Server 12

From /etc/*release*/etc/*version*
  SuSE-release:
    SUSE Linux Enterprise Server 12 (x86_64)
    VERSION = 12
    PATCHLEVEL = 0
    # 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"
    VERSION_ID="12"
    PRETTY_NAME="SUSE Linux Enterprise Server 12"
    ID="sles"
    ANSI_COLOR="0;32"
    CPE_NAME="cpe:/o:suse:sles:12"

uname -a:
  Linux linux-3mqb 3.12.28-4-default #1 SMP Thu Sep 25 17:02:34 UTC 2014
  (9879bd4) x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Sep 17 10:16

SPEC is set to: /root/cpu2006-1.2

Filesystem Type Size Used Avail Use% Mounted on
/dev/sda2 ext4 451G 10G 440G 3% /

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 CFP2006 Result

Dell Inc.

PowerEdge R330 (Intel Xeon E3-1230 v5, 3.40 GHz)

SPECfp2006 = 96.5
SPECfp_base2006 = 94.6

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

Test date: Sep-2015
Hardware Availability: Nov-2015
Software Availability: Sep-2015

Platform Notes (Continued)

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

BIOS Dell Inc. 0.3.16 09/09/2015
Memory:
1x 00AD00000000 HMA82GU7MFR8N-TF 16 GB 2 rank 2133 MHz
2x 00AD0000020B HMA82GU7MFR8N-TF 16 GB 2 rank 2133 MHz
1x 00AD00000800 HMA82GU7MFR8N-TF 16 GB 2 rank 2133 MHz

(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/libs/32:/root/cpu2006-1.2/libs/64:/root/cpu2006-1.2/sh"
OMP_NUM_THREADS = "4"

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

Continued on next page
SPEC CFP2006 Result

Dell Inc.  
PowerEdge R330 (Intel Xeon E3-1230 v5, 3.40 GHz)  

SPECfp2006 = 96.5  
SPECfp_base2006 = 94.6

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

Test date: Sep-2015  
Hardware Availability: Nov-2015  
Software Availability: Sep-2015

Base Portability Flags (Continued)

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.lblm: -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 R330 (Intel Xeon E3-1230 v5, 3.40 GHz)  

SPECfp2006 = 96.5  
SPECfp_base2006 = 94.6  

CPU2006 license: 55  
Test sponsor: Dell Inc.  
Tested by: Dell Inc.  
Test date: Sep-2015  
Hardware Availability: Nov-2015  
Software Availability: Sep-2015  

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)  
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)  
-par-num-threads=1(pass 1) -prof-use(pass 2) -fno-alias  
-auto-llp32

447.dealII: basepeak = yes
450.soplex: basepeak = yes
453.povray: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)  
-ipo(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)  
-ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2)  
-par-num-threads=1(pass 1) -prof-use(pass 2) -unroll2  
-inline-level=0 -scalar-rep-

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

465.tonto: -xCORE-AVX2(pass 2) -prof-gen:threadsafe(pass 1)  
-ipo(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
Dell Inc.

PowerEdge R330 (Intel Xeon E3-1230 v5, 3.40 GHz)

SPECfp2006 = 96.5
SPECfp_base2006 = 94.6

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

Test date: Sep-2015
Hardware Availability: Nov-2015
Software Availability: Sep-2015

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

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 17 November 2015.