## Dell Inc.

**PowerEdge R620 (Intel Xeon E5-2680, 2.70 GHz)**

**SPECfp**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Copies</th>
<th>Specfp_rate2006</th>
<th>Specfp_rate_base2006</th>
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<tbody>
<tr>
<td>410.bwaves</td>
<td>32</td>
<td>433</td>
<td>478</td>
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<tr>
<td>416.game3s</td>
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<td>433.milc</td>
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<td>434.zeusmp</td>
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<tr>
<td>482.sphinx3</td>
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</table>

**Hardware**

- **CPU Name:** Intel Xeon E5-2680
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.50 GHz
- **CPU MHz:** 2700
- **FPU:** Integrated
- **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:** Red Hat Enterprise Linux Server release 6.3 (Santiago)
- **Compiler:** C/C++: Version 12.1.0.225 of Intel C++ Studio XE for Linux;
  Fortran: Version 12.1.0.225 of Intel Fortran Studio XE for Linux
- **Auto Parallel:** No
- **File System:** ext4

**CPU2006 license:** 55
**Test date:** Jan-2013
**Test sponsor:** Dell Inc.
**Hardware Availability:** Dec-2012
**Tested by:** Dell Inc.
**Software Availability:** Jun-2012

**Test date:** Jan-2013

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Dell Inc.

PowerEdge R620 (Intel Xeon E5-2680, 2.70 GHz)

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

L3 Cache: 20 MB I+D on chip per chip
Other Cache: None
Memory: 128 GB (16 x 8 GB 2Rx4 PC3-12800R-11, ECC)
Disk Subsystem: 1 x 300 GB 15000 RPM SAS
Other Hardware: None

System State: Run level 3 (multi-user)
Base Pointers: 32/64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

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<thead>
<tr>
<th>Benchmark</th>
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<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.

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

System Profile set to Custom
CPU Power Management set to Maximum Performance
Memory Frequency set to Maximum Performance
Dell Inc.

PowerEdge R620 (Intel Xeon E5-2680, 2.70 GHz)

SPECfp_rate2006 = 492
SPECfp_rate_base2006 = 478

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

Turbo Boost set to Enabled
C States/C1E set to Enabled
Sysinfo program /root/cpu2006-1.2/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdffc5032aaa42e583f96b07f99d3
running on localhost.localdomain Thu Jan 3 16:26:05 2013

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) CPU E5-2680 0 @ 2.70GHz
  2 "physical id"s (chips)
  32 "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 : 8
  siblings : 16
  physical 0: cores 0 1 2 3 4 5 6 7
  physical 1: cores 0 1 2 3 4 5 6 7
  cache size : 20480 KB

From /proc/meminfo
MemTotal: 132088816 kB
HugePages_Total: 0
Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.3 (Santiago)

From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.3 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.3 (Santiago)
uname -a:
  Linux localhost.localdomain 2.6.32-279.el6.x86_64 #1 SMP Wed Jun 13 18:24:36
  EDT 2012 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jan 3 05:00 last=5

SPEC is set to: /root/cpu2006-1.2
Filesystem Type Size Used Avail Use% Mounted on
/dev/sda1 ext4 241G 36G 193G 16% /

Additional information from dmidecode:
  Memory:
    2x 00AD04B300AD HMT31GR7BFR4C-PB 8 GB 1600 MHz 2 rank
    14x 00CE00B300CE M393B1K70DH0-CK0 8 GB 1600 MHz 2 rank

(End of data from sysinfo program)
Dell Inc. PowerEdge R620 (Intel Xeon E5-2680, 2.70 GHz)

SPECfp_rate2006 = 492
SPECfp_rate_base2006 = 478

CPU2006 license: 55
Test date: Jan-2013
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Software Availability: Jun-2012

General Notes

Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/root/cpu2006-1.2/libs/32:/root/cpu2006-1.2/libs/64"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RHEL5.5
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
Filesystem page cache cleared with:
echo 1> /proc/sys/vm/drop_caches
runspec command invoked through numactl i.e.:
umactl --interleave=all runspec <etc>
The Dell PowerEdge R620 and
the Bull NovaScale R440 F3 models are electronically equivalent.
The results have been measured on a Dell PowerEdge R620 model.

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
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

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Dell Inc.

PowerEdge R620 (Intel Xeon E5-2680, 2.70 GHz)

**SPECfp_rate2006 =** 492

**SPECfp_rate_base2006 =** 478

<table>
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<tr>
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</table>

### Base Portability Flags (Continued)

482.sphinx3: -DSPEC_CPU_LP64

### Base Optimization Flags

**C benchmarks:**

- -xAVX
- -ipo
- -03
- -no-prec-div
- -static
- -opt-prefetch
- -auto-p32
- -ansi-alias
- -opt-mem-layout-trans=3

**C++ benchmarks:**

- -xAVX
- -ipo
- -03
- -no-prec-div
- -static
- -opt-prefetch
- -auto-p32
- -ansi-alias
- -opt-mem-layout-trans=3

**Fortran benchmarks:**

- -xAVX
- -ipo
- -03
- -no-prec-div
- -static
- -opt-prefetch

**Benchmarks using both Fortran and C:**

- -xAVX
- -ipo
- -03
- -no-prec-div
- -static
- -opt-prefetch
- -auto-p32
- -ansi-alias
- -opt-mem-layout-trans=3

### Peak Compiler Invocation

**C benchmarks (except as noted below):**

icc -m64

482.sphinx3: icc -m32

**C++ benchmarks (except as noted below):**

icpc -m64

450.soplex: icpc -m32

**Fortran benchmarks:**

ifort -m64

**Benchmarks using both Fortran and C:**

icc -m64 ifort -m64

### Peak Portability Flags

410.bwaves: -DSPEC_CPU_LP64

416.gamess: -DSPEC_CPU_LP64

433.milc: -DSPEC_CPU_LP64

434.zeusmp: -DSPEC_CPU_LP64

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Dell Inc.  
PowerEdge R620 (Intel Xeon E5-2680, 2.70 GHz)  

| SPECfp_rate2006 | 492 |
| SPECfp_rate_base2006 | 478 |

CPU2006 license: 55  
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Peak Portability Flags (Continued)

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<td>435.gromacs</td>
<td>-DSPEC_CPU_LP64 -nofor_main</td>
</tr>
<tr>
<td>436.cactusADM</td>
<td>-DSPEC_CPU_LP64 -nofor_main</td>
</tr>
<tr>
<td>437.leslie3d</td>
<td>-DSPEC_CPU_LP64</td>
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<td>-DSPEC_CPU_LP64</td>
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<td>470.lbm</td>
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<td>481.wrf</td>
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Peak Optimization Flags

C benchmarks:

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<th>Benchmark</th>
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<tr>
<td>433.milc</td>
<td>-xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -static -auto-ilp32 -opt-mem-layout-trans=3</td>
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<td>470.lbm</td>
<td>basepeak = yes</td>
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<tr>
<td>482.sphinx3</td>
<td>-xAVX -ipo -O3 -no-prec-div -unroll2</td>
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C++ benchmarks:

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<td>-xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -fno-alias -auto-ilp32</td>
</tr>
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<td>447.dealII</td>
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<td>450.soplex</td>
<td>-xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -opt-malloc-options=3</td>
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<td>453.povray</td>
<td>-xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias</td>
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Fortran benchmarks:

<table>
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<tr>
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<tr>
<td>410.bwaves</td>
<td>-xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -static</td>
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<tr>
<td>416.gamess</td>
<td>-xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) -no-prec-div(pass 2) -prof-use(pass 2) -unroll2 -inline-level=0 -scalar-rep -static</td>
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Continued on next page
Dell Inc. PowerEdge R620 (Intel Xeon E5-2680, 2.70 GHz)  

**SPECfp_rate2006 = 492**  
**SPECfp_rate_base2006 = 478**

**CPU2006 license:** 55  
**Test sponsor:** Dell Inc.  
**Tested by:** Dell Inc.  
**Test date:** Jan-2013  
**Hardware Availability:** Dec-2012  
**Software Availability:** Jun-2012

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### Peak Optimization Flags (Continued)

- 434.zeusmp: basepeak = yes
- 437.leslie3d: -xAVX -ipo -O3 -no-prec-div -static -opt-prefetch
- 459.GemsFDTD: basepeak = yes
  - 465.tonto: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) 
  - -no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -auto 
  - -inline-callloc -opt-malloc-options=3

#### Benchmarks using both Fortran and C:

- 435.gromacs: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2) 
  - -no-prec-div(pass 2) -prof-use(pass 2) -opt-prefetch 
  - -static -auto-ilp32 -opt-mem-layout-trans=3
- 436.cactusADM: basepeak = yes
- 454.calculix: -xAVX -ipo -O3 -no-prec-div -static -auto-ilp32 
  - -opt-mem-layout-trans=3
- 481.wrf: Same as 454.calculix

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

You can also download the XML flags sources by saving the following links:
- http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20111122.xml
- http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revA.20120410.00.xml

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