SPEC® CFP2006 Result
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Dell Inc.

PowerEdge R620 (Intel Xeon E5-2690 v2, 3.00 GHz)

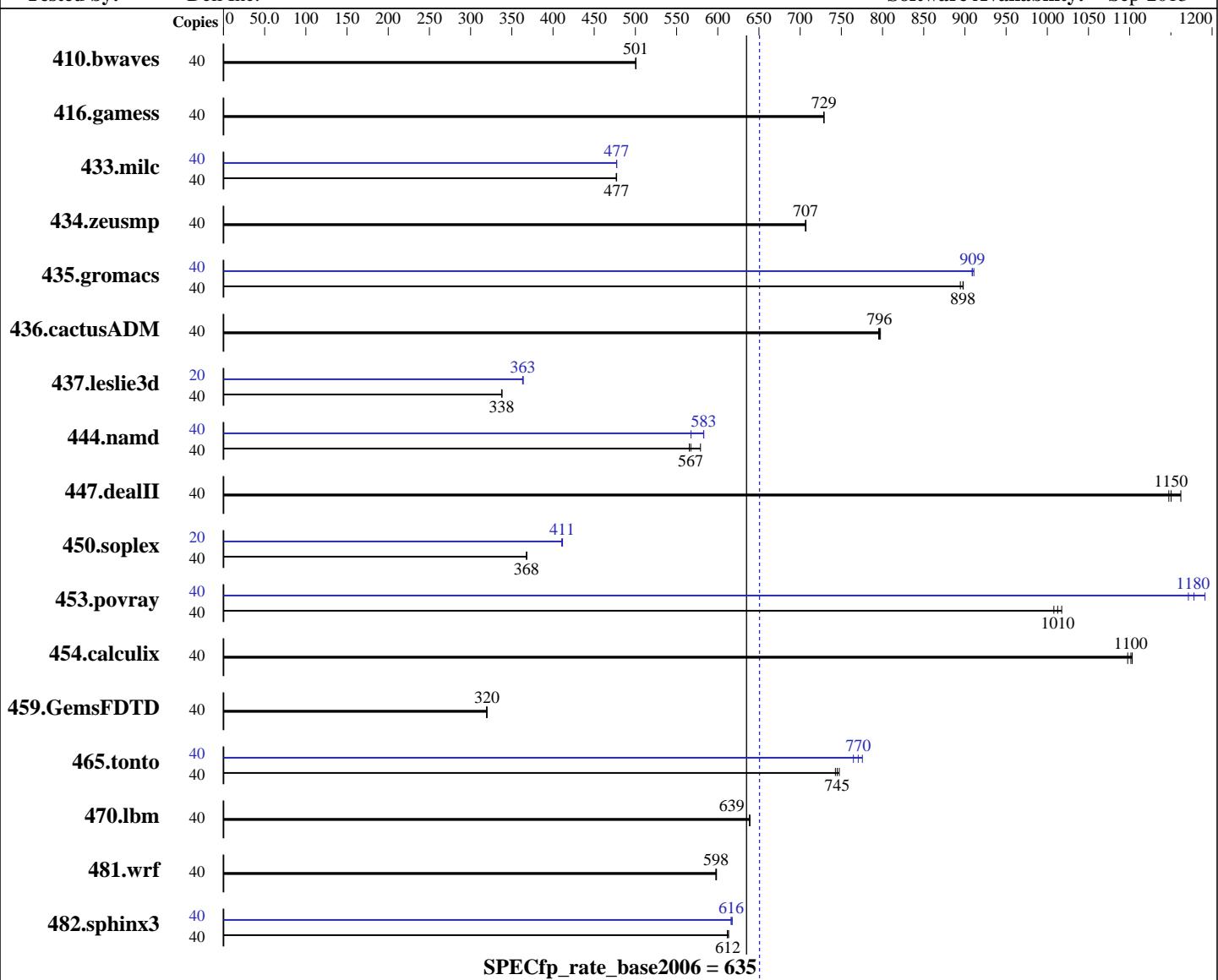$SPECfp^®\_rate2006 =$ 651

$SPECfp\_rate\_base2006 =$ 635

Copies	Result
410.bwaves 40	501
416.gamess 40	729
433.milc 40 / 40	477 / 477
434.zeusmp 40	707
435.gromacs 40 / 40	909 / 898
436.cactusADM 40	796
437.leslie3d 20 / 40	363 / 338
444.namd 40 / 40	583 / 567
447.dealII 40	1150
450.soplex 20 / 40	411 / 368
453.povray 40 / 40	1180 / 1010
454.calculix 40	1100
459.GemsFDTD 40	320
465.tonto 40 / 40	770 / 745
470.lbm 40	639
481.wrf 40	598
482.sphinx3 40 / 40	616 / 612

SPECfp_rate_base2006 = 635

SPECfp_rate2006 = 651

Hardware

CPU Name: Intel Xeon E5-2690 v2
CPU Characteristics: Intel Turbo Boost Technology up to 3.60 GHz
CPU MHz: 3000
FPU: Integrated
CPU(s) enabled: 20 cores, 2 chips, 10 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: 256 KB I+D on chip per core

Continued on next page

Software

Operating System: SUSE Linux Enterprise Server 11 SP3 (x86_64) 3.0.76-0.11-default
Compiler: C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux;
Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux
Auto Parallel: No
File System: ext2
System State: Run level 3 (multi-user)

Continued on next page

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Test date: Aug-2013	
Hardware Availability: Sep-2013	
Software Availability: Sep-2013	

L3 Cache:	25 MB I+D on chip per chip
Other Cache:	None
Memory:	256 GB (16 x 16 GB 2Rx4 PC3-14900R-13, ECC)
Disk Subsystem:	1 x 300 GB 15000 RPM SAS
Other Hardware:	None

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

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	40	**1086**	**501**	1086	501	1086	500	40	**1086**	**501**	1086	501	1086	500
416.gamess	40	1074	729	**1075**	**729**	1075	729	40	1074	729	**1075**	**729**	1075	729
433.milc	40	770	477	769	477	**770**	**477**	40	770	477	769	477	**769**	**477**
434.zeusmp	40	**515**	**707**	515	706	515	707	40	**515**	**707**	515	706	515	707
435.gromacs	40	**318**	**898**	319	894	318	898	40	314	911	314	909	**314**	**909**
436.cactusADM	40	599	797	**600**	**796**	601	795	40	599	797	**600**	**796**	601	795
437.leslie3d	40	1112	338	1114	338	**1114**	**338**	20	518	363	**518**	**363**	516	364
444.namd	40	**566**	**567**	554	579	567	565	40	565	568	550	583	**550**	**583**
447.dealII	40	394	1160	399	1150	**398**	**1150**	40	394	1160	399	1150	**398**	**1150**
450.soplex	40	906	368	907	368	**907**	**368**	20	405	412	406	411	**406**	**411**
453.povray	40	211	1010	**210**	**1010**	209	1020	40	**181**	**1180**	179	1190	182	1170
454.calculix	40	301	1100	**300**	**1100**	299	1100	40	301	1100	**300**	**1100**	299	1100
459.GemsFDTD	40	1329	319	**1327**	**320**	1327	320	40	1329	319	**1327**	**320**	1327	320
465.tonto	40	530	743	**528**	**745**	527	747	40	508	776	**511**	**770**	515	765
470.lbm	40	860	639	**861**	**639**	861	638	40	860	639	**861**	**639**	861	638
481.wrf	40	748	598	**747**	**598**	747	599	40	748	598	**747**	**598**	747	599
482.sphinx3	40	**1274**	**612**	1271	613	1275	612	40	1262	618	**1265**	**616**	1265	616

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

BIOS settings:
Virtualization Technology disabled
Execute Disable disabled

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Software Availability: Sep-2013

Platform Notes (Continued)

```
Logical Processor enabled
System Profile set to Performance
Sysinfo program /root/cpu2006.1.2.ic13/config/sysinfo.rev6818
$Rev: 6818 $ $Date:: 2012-07-17 #$ e86d102572650a6e4d596a3cee98f191
running on linux Sun Aug 25 08:58:13 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 E5-2690 v2 @ 3.00GHz
      2 "physical id"s (chips)
      40 "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 : 10
      siblings  : 20
      physical 0: cores 0 1 2 3 4 8 9 10 11 12
      physical 1: cores 0 1 2 3 4 8 9 10 11 12
   cache size : 25600 KB

From /proc/meminfo
   MemTotal:       264634596 kB
   HugePages_Total:        0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   SUSE Linux Enterprise Server 11 (x86_64)

From /etc/*release* /etc/*version*
   SuSE-release:
      SUSE Linux Enterprise Server 11 (x86_64)
      VERSION = 11
      PATCHLEVEL = 3

uname -a:
   Linux linux 3.0.76-0.11-default #1 SMP Fri Jun 14 08:21:43 UTC 2013 (ccab990)
   x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Aug 24 22:04 last=S

SPEC is set to: /root/cpu2006.1.2.ic13
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda2       ext2  267G   45G  221G  17% /

Additional information from dmidecode:
  BIOS Dell Inc. 2.0.18 08/10/2013
  Memory:
   6x 00AD00B300AD HMT42GR7MFR4C-RD 16 GB 1866 MHz
   10x 00AD04B300AD HMT42GR7AFR4C-RD 16 GB 1866 MHz
```

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Platform Notes (Continued)

```
  (End of data from sysinfo program)
```

General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/root/cpu2006.1.2.ic13/libs/32:/root/cpu2006.1.2.ic13/libs/64:/root/cpu2006.1.2.ic13/sh"

 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/transparent_hugepage/enabled
 Filesystem page cache cleared with:
 echo 1>        /proc/sys/vm/drop_caches
 runspec command invoked through numactl i.e.:
 numactl --interleave=all runspec <etc>
```

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
```

Continued on next page

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Base Portability Flags (Continued)

```
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:
```
-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3
```

C++ benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -auto-p32
-ansi-alias -opt-mem-layout-trans=3
```

Fortran benchmarks:
```
-xAVX -ipo -O3 -no-prec-div -static -opt-prefetch
```

Benchmarks using both Fortran and C:
```
-xAVX -ipo -O3 -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
```

Continued on next page

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Peak Portability Flags (Continued)

```
       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
        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
```

Peak Optimization Flags

C benchmarks:

```
         433.milc: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
                   -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
                   -prof-use(pass 2) -static -auto-ilp32

          470.lbm: basepeak = yes

      482.sphinx3: -xAVX -ipo -O3 -no-prec-div -opt-mem-layout-trans=3
                   -unroll2
```

C++ benchmarks:

```
         444.namd: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
                   -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
                   -prof-use(pass 2) -fno-alias -auto-ilp32

        447.dealII: basepeak = yes

        450.soplex: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
                   -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
                   -prof-use(pass 2) -opt-malloc-options=3

        453.povray: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
                   -no-prec-div(pass 2) -opt-mem-layout-trans=3(pass 2)
                   -prof-use(pass 2) -unroll4 -ansi-alias
```

Fortran benchmarks:

```
        410.bwaves: basepeak = yes
```

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Peak Optimization Flags (Continued)

416.gamess: basepeak = yes

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-calloc -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) -opt-mem-layout-trans=3(pass 2)
-prof-use(pass 2) -opt-prefetch -static -auto-ilp32

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

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-ic14.0-official-linux64.20140128.html
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revB.html

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You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml
http://www.spec.org/cpu2006/flags/Dell-Platform-Settings-V1.2-revB.xml

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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