SPEC® CFP2006 Result

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Dell Inc.

PowerEdge R620 (Intel Xeon E5-2630L v2, 2.40 GHz)

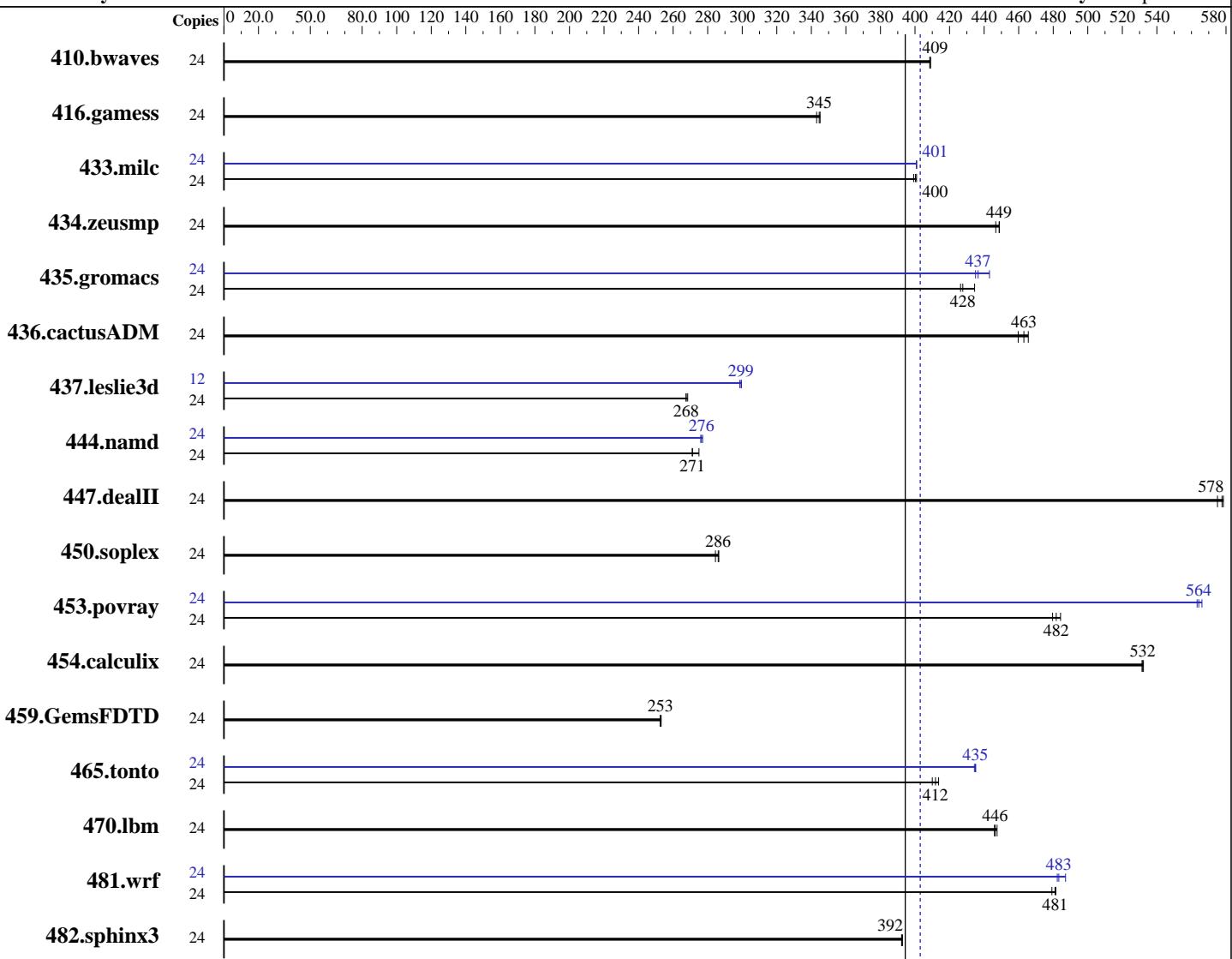$SPECfp^{®}\_rate2006 = \quad 403$

$SPECfp\_rate\_base2006 = \quad 394$

CPU2006 license: 55	**Test date:** Sep-2013
Test sponsor: Dell Inc.	**Hardware Availability:** Sep-2013
Tested by: Dell Inc.	**Software Availability:** Sep-2013

SPECfp_rate_base2006 = 394

SPECfp_rate2006 = 403

Hardware

CPU Name: Intel Xeon E5-2630L v2
CPU Characteristics: Intel Turbo Boost Technology up to 2.80 GHz
CPU MHz: 2400
FPU: Integrated
CPU(s) enabled: 12 cores, 2 chips, 6 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

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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)

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L3 Cache:	15 MB I+D on chip per chip	Base Pointers:	32/64-bit
Other Cache:	None	Peak Pointers:	32/64-bit
Memory:	256 GB (16 x 16 GB 2Rx4 PC3-14900R-13, ECC, running at 1600 MHz)	Other Software:	None
Disk Subsystem:	1 x 300 GB 15000 RPM SAS		
Other Hardware:	None		

Results Table

Benchmark	Base Copies	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Base Seconds	Base Ratio	Peak Copies	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio	Peak Seconds	Peak Ratio
410.bwaves	24	798	409	797	409	**798**	**409**	24	798	409	797	409	**798**	**409**
416.gamess	24	1370	343	1362	345	**1364**	**345**	24	1370	343	1362	345	**1364**	**345**
433.milc	24	552	399	**550**	**400**	550	401	24	**550**	**401**	550	401	549	401
434.zeusmp	24	489	447	487	449	**487**	**449**	24	489	447	487	449	**487**	**449**
435.gromacs	24	394	435	**401**	**428**	402	426	24	387	443	394	435	**393**	**437**
436.cactusADM	24	616	466	624	460	**619**	**463**	24	616	466	624	460	**619**	**463**
437.leslie3d	24	840	268	843	268	**843**	**268**	12	378	299	**377**	**299**	377	300
444.namd	24	**710**	**271**	700	275	710	271	24	697	276	**696**	**276**	695	277
447.dealII	24	475	578	477	575	**475**	**578**	24	475	578	477	575	**475**	**578**
450.soplex	24	**700**	**286**	699	286	704	284	24	**700**	**286**	699	286	704	284
453.povray	24	264	484	266	480	**265**	**482**	24	226	566	227	563	**226**	**564**
454.calculix	24	372	532	**372**	**532**	373	531	24	372	532	**372**	**532**	373	531
459.GemsFDTD	24	1009	252	1006	253	**1008**	**253**	24	1009	252	1006	253	**1008**	**253**
465.tonto	24	571	414	**573**	**412**	576	410	24	543	435	544	434	**543**	**435**
470.lbm	24	**739**	**446**	737	447	739	446	24	**739**	**446**	737	447	739	446
481.wrf	24	**557**	**481**	559	479	557	482	24	550	487	556	482	**555**	**483**
482.sphinx3	24	1191	393	1193	392	**1192**	**392**	24	1191	393	1193	392	**1192**	**392**

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"

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Platform Notes

```
BIOS settings:
Virtualization Technology disabled
Execute Disable disabled
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 Sat Sep 14 23:44:02 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 E5-2630L v2 @ 2.40GHz
      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 4 5
      physical 1: cores 0 1 2 3 4 5
   cache size : 15360 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 Sep 14 10:49 last=S

SPEC is set to: /root/cpu2006.1.2.ic13
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda2       ext2  267G   32G  235G  12% /

Additional information from dmidecode:
  BIOS Dell Inc. 2.0.19 08/29/2013
```
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Platform Notes (Continued)

```
    Memory:
      6x 00AD00B300AD HMT42GR7MFR4C-RD 16 GB 1600 MHz
     10x 00AD04B300AD HMT42GR7AFR4C-RD 16 GB 1600 MHz

   (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
```

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Base Portability Flags (Continued)

```
   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:
```
    -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:
```
    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
```

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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: `basepeak = yes`

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: `basepeak = yes`

    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`

    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`

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Peak Optimization Flags (Continued)

481.wrf: `-xAVX -ipo -O3 -no-prec-div -static -auto-ilp32`

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

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

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

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