SPEC® CFP2006 Result
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Dell Inc.

PowerEdge T620 (Intel Xeon E5-2630L v2, 2.40 GHz)

$SPECfp^{®}\_rate2006 = 402$

$SPECfp\_rate\_base2006 = 393$

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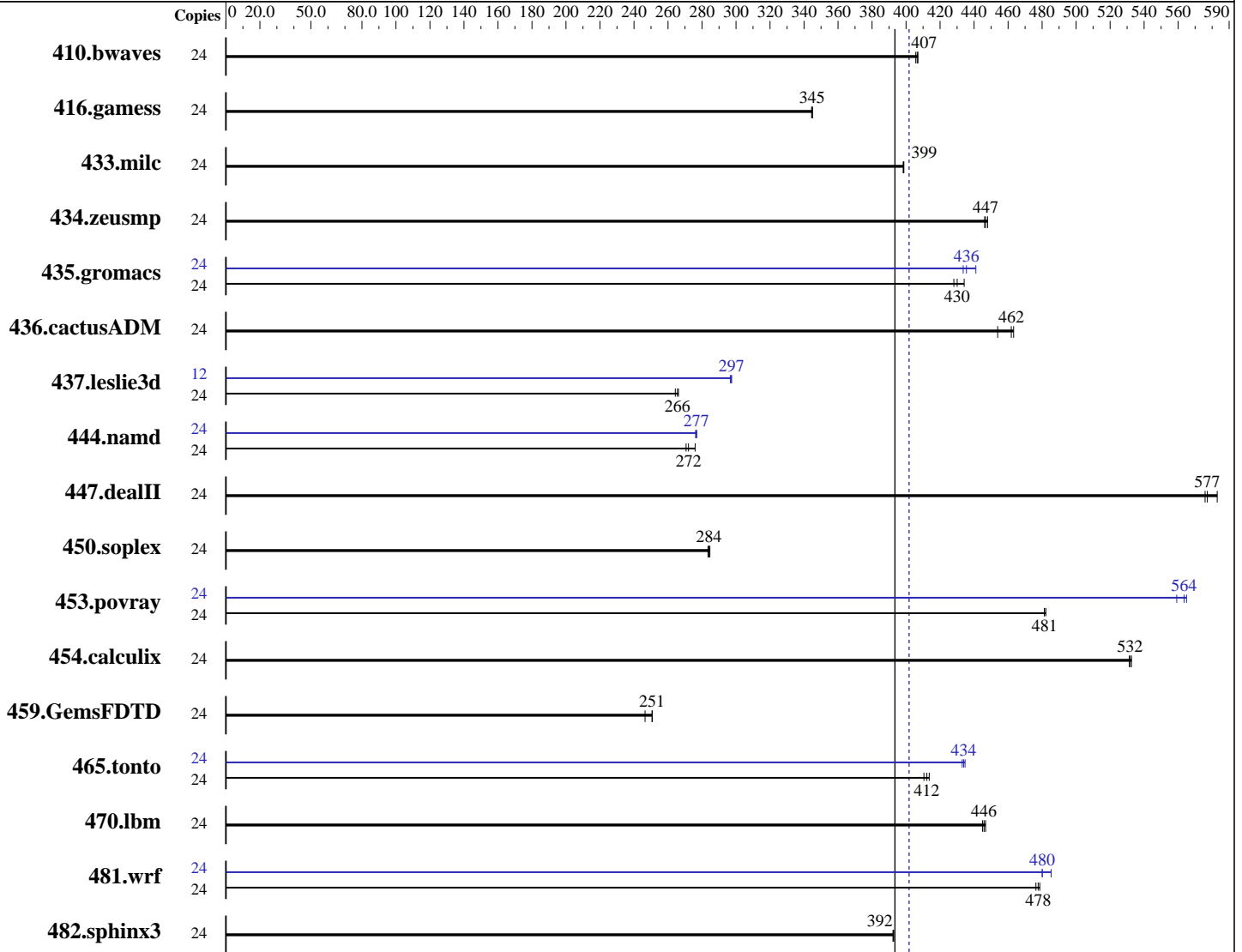**Test sponsor:** Dell Inc.
Tested by: Dell Inc.

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

Benchmark	Copies	Result
410.bwaves	24	407
416.gamess	24	345
433.milc	24	399
434.zeusmp	24	447
435.gromacs	24 / 24	436 / 430
436.cactusADM	24	462
437.leslie3d	12 / 24	297 / 266
444.namd	24 / 24	277 / 272
447.dealII	24	577
450.soplex	24	284
453.povray	24 / 24	564 / 481
454.calculix	24	532
459.GemsFDTD	24	251
465.tonto	24 / 24	434 / 412
470.lbm	24	446
481.wrf	24 / 24	480 / 478
482.sphinx3	24	392

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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

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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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							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	24	801	407	804	406	**802**	**407**	24	801	407	804	406	**802**	**407**
416.gamess	24	1364	344	**1363**	**345**	1362	345	24	1364	344	**1363**	**345**	1362	345
433.milc	24	553	398	553	399	**553**	**399**	24	553	398	553	399	**553**	**399**
434.zeusmp	24	**489**	**447**	488	448	489	446	24	**489**	**447**	488	448	489	446
435.gromacs	24	395	434	400	428	**398**	**430**	24	389	441	395	434	**393**	**436**
436.cactusADM	24	619	463	**621**	**462**	632	454	24	619	463	**621**	**462**	632	454
437.leslie3d	24	854	264	848	266	**850**	**266**	12	**379**	**297**	380	297	379	297
444.namd	24	697	276	**708**	**272**	711	271	24	**696**	**277**	695	277	697	276
447.dealII	24	471	583	477	576	**476**	**577**	24	471	583	477	576	**476**	**577**
450.soplex	24	703	285	**704**	**284**	706	284	24	703	285	**704**	**284**	706	284
453.povray	24	265	482	**265**	**481**	265	481	24	228	559	226	565	**227**	**564**
454.calculix	24	372	533	373	531	**372**	**532**	24	372	533	373	531	**372**	**532**
459.GemsFDTD	24	1033	247	**1016**	**251**	1015	251	24	1033	247	**1016**	**251**	1015	251
465.tonto	24	571	414	575	411	**573**	**412**	24	543	435	**544**	**434**	545	433
470.lbm	24	741	445	738	447	**740**	**446**	24	741	445	738	447	**740**	**446**
481.wrf	24	560	479	**561**	**478**	563	476	24	552	485	558	480	**558**	**480**
482.sphinx3	24	1192	392	**1192**	**392**	1191	393	24	1192	392	**1192**	**392**	1191	393

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 Fri Sep  6 22:10:49 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:       264601764 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 6 09:24 last=S

SPEC is set to: /root/cpu2006.1.2.ic13
   Filesystem      Type  Size  Used Avail Use% Mounted on
   /dev/sda2       ext2  267G   34G  233G  13% /

Additional information from dmidecode:
   BIOS Dell Inc. 2.0.19 08/30/2013
```

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Platform Notes (Continued)

```
    Memory:
     2x 00AD00B300AD HMT42GR7MFR4C-RD 16 GB 1600 MHz
    12x 00AD04B300AD HMT42GR7AFR4C-RD 16 GB 1600 MHz
     2x 00CE00B300CE M393B2G70CB0-CMA 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
```

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Base Portability Flags (Continued)

```
    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
   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: `basepeak = yes`

    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`

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

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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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