SPEC® CFP2006 Result

ASUSTeK Computer Inc.

ASUS RS920-E7 (Z9PX-Q32) Server System
(Intel Xeon E5-4650)

$SPECfp^{®}2006 =$ 81.9

$SPECfp\_base2006 =$ 76.6

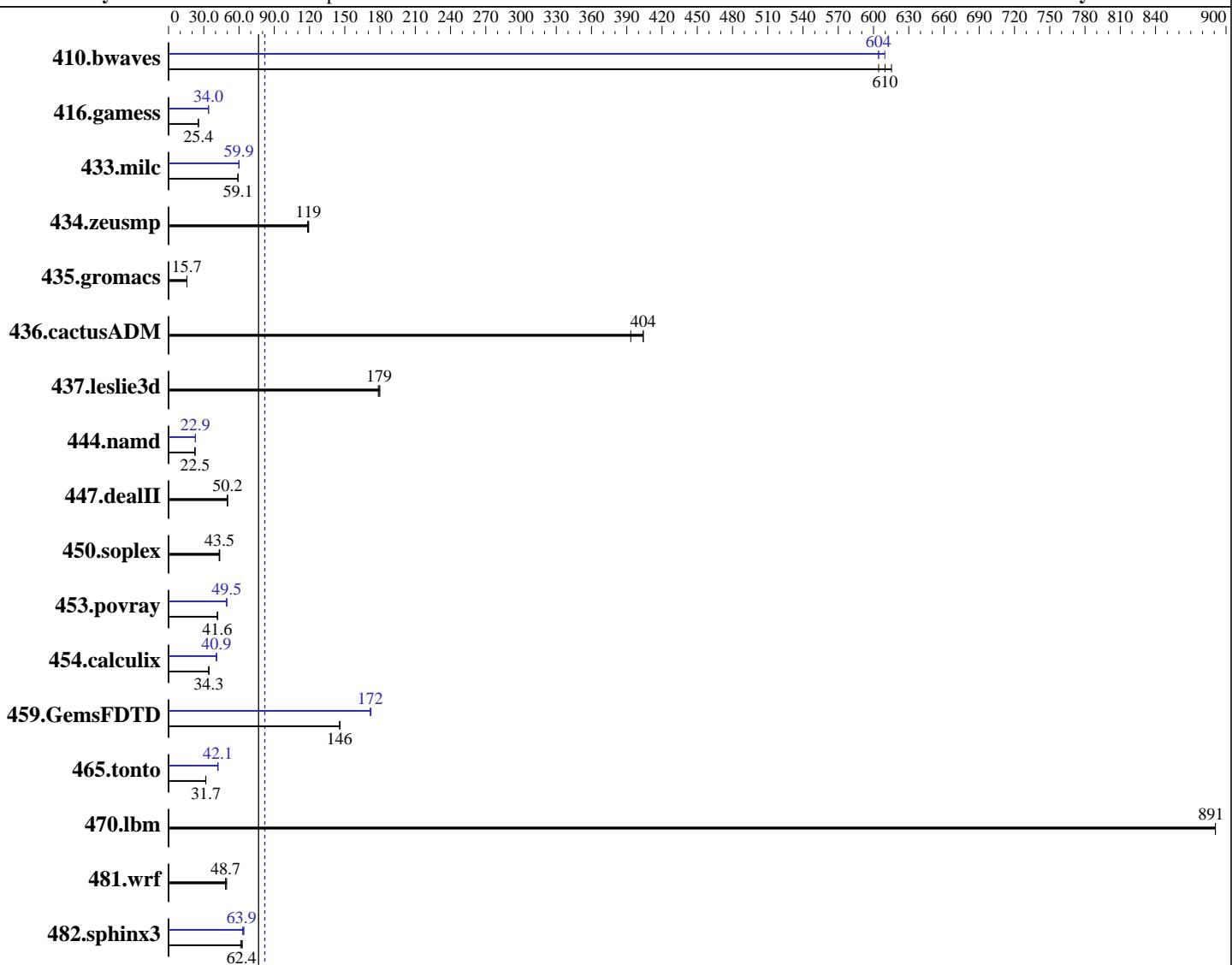|			
CPU2006 license:	9016	**Test date:**	Jan-2013
Test sponsor:	ASUSTeK Computer Inc.	**Hardware Availability:**	Mar-2012
Tested by:	ASUSTeK Computer Inc.	**Software Availability:**	Dec-2011

Results graph (scale 0 to 900):

- **410.bwaves**: 604 / 610
- **416.gamess**: 34.0 / 25.4
- **433.milc**: 59.9 / 59.1
- **434.zeusmp**: 119
- **435.gromacs**: 15.7
- **436.cactusADM**: 404
- **437.leslie3d**: 179
- **444.namd**: 22.9 / 22.5
- **447.dealII**: 50.2
- **450.soplex**: 43.5
- **453.povray**: 49.5 / 41.6
- **454.calculix**: 40.9 / 34.3
- **459.GemsFDTD**: 172 / 146
- **465.tonto**: 42.1 / 31.7
- **470.lbm**: 891
- **481.wrf**: 48.7
- **482.sphinx3**: 63.9 / 62.4

SPECfp_base2006 = 76.6

SPECfp2006 = 81.9

Hardware

CPU Name:	Intel Xeon E5-4650
CPU Characteristics:	Intel Turbo Boost Technology up to 3.30 GHz
CPU MHz:	2700
FPU:	Integrated
CPU(s) enabled:	32 cores, 4 chips, 8 cores/chip, 2 threads/core
CPU(s) orderable:	2,4 chips
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:	Red Hat Enterprise Linux Server release 6.2 (Santiago) 2.6.32-220.el6.x86_64
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:	Yes
File System:	ext4

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L3 Cache:	20 MB I+D on chip per chip	System State:	Run level 3 (multi-user)
Other Cache:	None	Base Pointers:	64-bit
Memory:	256 GB (32 x 8 GB 2Rx4 PC3-12800R-11, ECC)	Peak Pointers:	32/64-bit
Disk Subsystem:	HITACHI HDP725050GLA380 1 x 500 GB SATA, 7200 RPM	Other Software:	None
Other Hardware:	None		

Results Table

Benchmark	Base						Peak					
	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	22.1	615	**22.3**	**610**	22.5	604	22.3	610	22.5	604	**22.5**	**604**
416.gamess	769	25.5	**770**	**25.4**	772	25.4	**576**	**34.0**	576	34.0	576	34.0
433.milc	155	59.1	**155**	**59.1**	155	59.1	**153**	**59.9**	153	59.9	153	60.1
434.zeusmp	76.3	119	**76.5**	**119**	76.9	118	76.3	119	**76.5**	**119**	76.9	118
435.gromacs	455	15.7	**456**	**15.7**	457	15.6	455	15.7	**456**	**15.7**	457	15.6
436.cactusADM	29.6	404	**29.6**	**404**	30.4	393	29.6	404	**29.6**	**404**	30.4	393
437.leslie3d	52.3	180	52.7	179	**52.5**	**179**	52.3	180	52.7	179	**52.5**	**179**
444.namd	**357**	**22.5**	356	22.5	357	22.5	351	22.8	**351**	**22.9**	351	22.9
447.dealII	228	50.3	229	50.0	**228**	**50.2**	228	50.3	229	50.0	**228**	**50.2**
450.soplex	**192**	**43.5**	194	43.1	192	43.5	**192**	**43.5**	194	43.1	192	43.5
453.povray	**128**	**41.6**	128	41.5	127	41.9	**107**	**49.5**	108	49.4	107	49.6
454.calculix	242	34.1	**241**	**34.3**	239	34.5	**202**	**40.9**	203	40.7	201	41.0
459.GemsFDTD	72.7	146	72.9	146	**72.9**	**146**	61.8	172	**61.8**	**172**	61.6	172
465.tonto	310	31.8	**310**	**31.7**	311	31.6	234	42.1	235	41.9	**234**	**42.1**
470.lbm	15.4	891	15.4	891	**15.4**	**891**	15.4	891	15.4	891	**15.4**	**891**
481.wrf	226	49.5	**230**	**48.7**	230	48.5	226	49.5	**230**	**48.7**	230	48.5
482.sphinx3	311	62.7	317	61.4	**312**	**62.4**	309	63.1	**305**	**63.9**	304	64.1

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

    Sysinfo program /cpu2006/config/sysinfo.rev6800
    $Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
    running on localhost Fri Jan 18 22:18:42 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 E5-4650 0 @ 2.70GHz

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Platform Notes (Continued)

```
4 "physical id"s (chips)
64 "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:       264640908 kB
HugePages_Total:        0
Hugepagesize:        2048 kB

/usr/bin/lsb_release -d
Red Hat Enterprise Linux Server release 6.2 (Santiago)

From /etc/*release* /etc/*version*
redhat-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
system-release: Red Hat Enterprise Linux Server release 6.2 (Santiago)
system-release-cpe: cpe:/o:redhat:enterprise_linux:6server:ga:server

uname -a:
Linux localhost 2.6.32-220.el6.x86_64 #1 SMP Wed Nov 9 08:03:13 EST 2011
x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Jan 18 16:10

SPEC is set to: /cpu2006
Filesystem     Type     Size  Used Avail Use% Mounted on

/dev/sda1      ext4     459G  205G  231G  48% /

(End of data from sysinfo program)
```

General Notes

```
Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,scatter"
LD_LIBRARY_PATH = "/cpu2006/libs/32:/cpu2006/libs/64"
OMP_NUM_THREADS = "32"

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
```

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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
    482.sphinx3: -DSPEC_CPU_LP64
```

Base Optimization Flags

C benchmarks:
    -xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
    -ansi-alias

C++ benchmarks:
    -xAVX -ipo -O3 -no-prec-div -static -opt-prefetch -ansi-alias

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

Benchmarks using both Fortran and C:
    -xAVX -ipo -O3 -no-prec-div -static -parallel -opt-prefetch
    -ansi-alias

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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

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) -prof-use(pass 2) -static -auto-ilp32
                  -ansi-alias

        470.lbm: basepeak = yes

        482.sphinx3: -xAVX -ipo -O3 -no-prec-div -unroll2 -ansi-alias
                     -parallel

C++ benchmarks:

        444.namd: -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

        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) -prof-use(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

        410.bwaves: -xAVX -ipo -O3 -no-prec-div -opt-prefetch -parallel
                    -static

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Peak Optimization Flags (Continued)

416.gamess: -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

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -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 -opt-prefetch -parallel

465.tonto: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
           -no-prec-div(pass 2) -prof-use(pass 2) -inline-calloc
           -opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xAVX -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-ic12.1-official-linux64.20111122.html
http://www.spec.org/cpu2006/flags/ASUSTekPlatform.20120313.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-ic12.1-official-linux64.20111122.xml
http://www.spec.org/cpu2006/flags/ASUSTekPlatform.20120313.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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