SPEC® CFP2006 Result
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Supermicro

SuperServer 2048U-RTR4
(X10QRH+ , Intel Xeon E5-4655 v3)

$SPECfp^®\_rate2006 =$ 1130
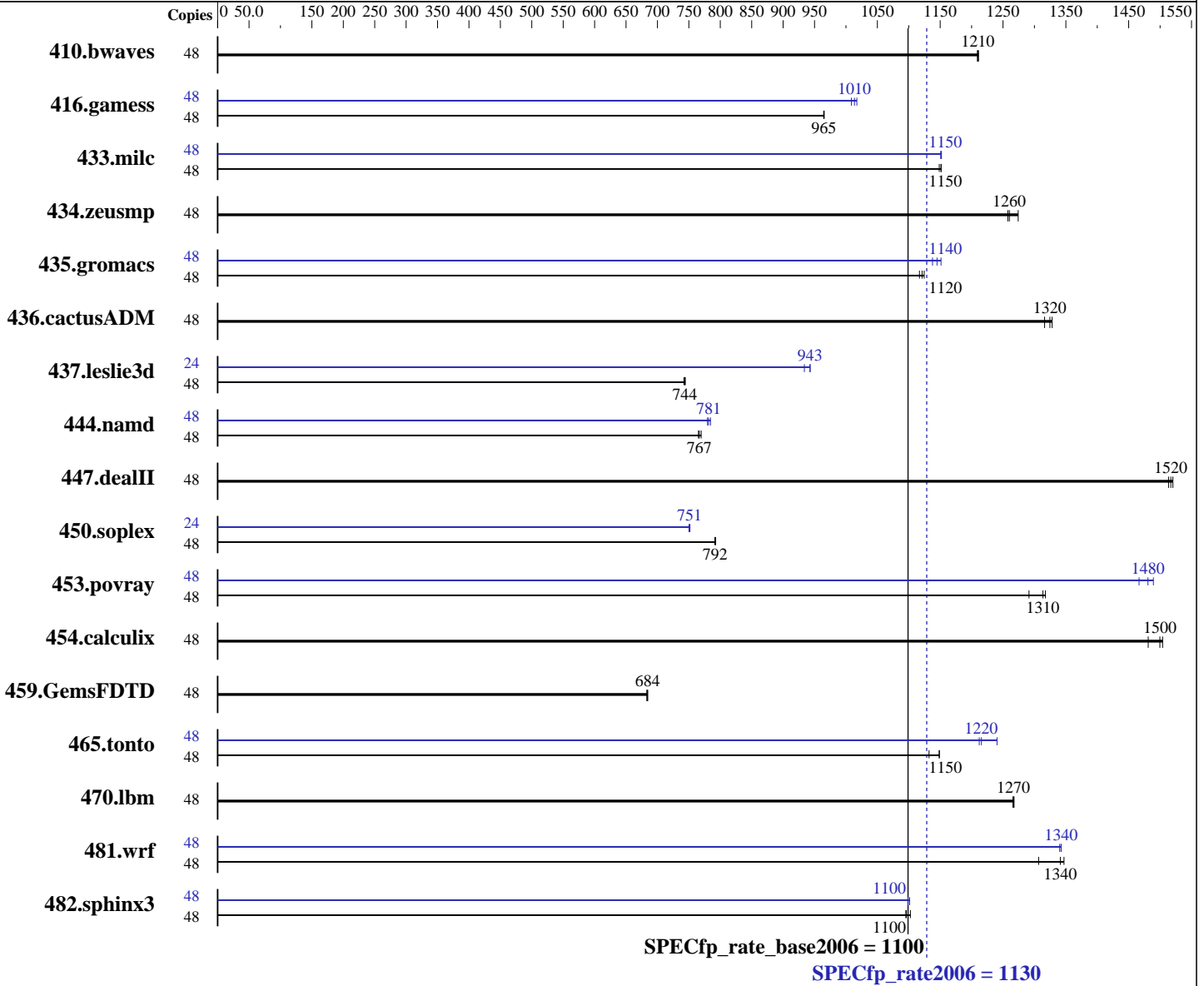
$SPECfp\_rate\_base2006 =$ 1100

CPU2006 license: 001176	**Test date:** Jun-2015
Test sponsor: Supermicro	**Hardware Availability:** Jun-2015
Tested by: Supermicro	**Software Availability:** Oct-2014

Copies   0 50.0   150 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900 950   1050   1150   1250   1350   1450 1550

Benchmark	Copies	Result
410.bwaves	48	1210
416.gamess	48	1010
416.gamess	48	965
433.milc	48	1150
433.milc	48	1150
434.zeusmp	48	1260
435.gromacs	48	1140
435.gromacs	48	1120
436.cactusADM	48	1320
437.leslie3d	24	943
437.leslie3d	48	744
444.namd	48	781
444.namd	48	767
447.dealII	48	1520
450.soplex	24	751
450.soplex	48	792
453.povray	48	1480
453.povray	48	1310
454.calculix	48	1500
459.GemsFDTD	48	684
465.tonto	48	1220
465.tonto	48	1150
470.lbm	48	1270
481.wrf	48	1340
481.wrf	48	1340
482.sphinx3	48	1100
482.sphinx3	48	1100

SPECfp_rate_base2006 = 1100

SPECfp_rate2006 = 1130

Hardware

CPU Name:	Intel Xeon E5-4655 v3
CPU Characteristics:	Intel Turbo Boost Technology up to 3.20 GHz
CPU MHz:	2900
FPU:	Integrated
CPU(s) enabled:	24 cores, 4 chips, 6 cores/chip, 2 threads/core
CPU(s) orderable:	1,2,4 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:	SUSE Linux Enterprise Server 12, Kernel 3.12.28-4-default
Compiler:	C/C++: Version 15.0.0.090 of Intel C++ Studio XE for Linux; Fortran: Version 15.0.0.090 of Intel Fortran Studio XE for Linux
Auto Parallel:	No
File System:	ext4
System State:	Run level 3 (multi-user)

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L3 Cache:	30 MB I+D on chip per chip
Other Cache:	None
Memory:	512 GB (32 x 16 GB 2Rx4 PC4-2133P-R)
Disk Subsystem:	1 x 512 GB SATA III, SSD
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	48	**539**	**1210**	539	1210	539	1210	48	**539**	**1210**	539	1210	539	1210
416.gamess	48	**974**	**965**	974	965	974	965	48	**927**	**1010**	924	1020	932	1010
433.milc	48	384	1150	**383**	**1150**	383	1150	48	383	1150	382	1150	**383**	**1150**
434.zeusmp	48	**347**	**1260**	347	1260	343	1270	48	**347**	**1260**	347	1260	343	1270
435.gromacs	48	305	1120	307	1120	**306**	**1120**	48	298	1150	**299**	**1140**	301	1140
436.cactusADM	48	436	1320	432	1330	**433**	**1320**	48	436	1320	432	1330	**433**	**1320**
437.leslie3d	48	608	742	606	744	**607**	**744**	24	242	934	239	943	**239**	**943**
444.namd	48	500	770	503	765	**502**	**767**	48	494	780	491	784	**493**	**781**
447.dealII	48	361	1520	**362**	**1520**	363	1510	48	361	1520	**362**	**1520**	363	1510
450.soplex	48	**506**	**792**	506	792	505	793	24	**267**	**751**	266	752	267	750
453.povray	48	**194**	**1310**	198	1290	194	1320	48	174	1470	**172**	**1480**	171	1490
454.calculix	48	263	1500	**264**	**1500**	267	1480	48	263	1500	**264**	**1500**	267	1480
459.GemsFDTD	48	744	684	**744**	**684**	746	683	48	744	684	**744**	**684**	746	683
465.tonto	48	417	1130	**411**	**1150**	411	1150	48	390	1210	**389**	**1220**	381	1240
470.lbm	48	521	1270	**521**	**1270**	520	1270	48	521	1270	**521**	**1270**	520	1270
481.wrf	48	**400**	**1340**	398	1350	410	1310	48	399	1340	**399**	**1340**	400	1340
482.sphinx3	48	848	1100	**853**	**1100**	854	1100	48	849	1100	851	1100	**851**	**1100**

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:
Early Snoop = Disable
Enforce POR = Disabled

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Tested by: Supermicro   **Software Availability:** Oct-2014

Platform Notes (Continued)

```
Sysinfo program /home/SPEC2K6/SPEC2006-V12/config/sysinfo.rev6914
$Rev: 6914 $ $Date:: 2014-06-25 #$ e3fbb8667b5a285932ceab81e28219e1
running on linux-rrui Mon Jun 15 16:58:43 2015

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 E5-4655 v3 @ 2.90GHz
      4 "physical id"s (chips)
      48 "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 1 3 5 9 11 12
      physical 1: cores 1 3 5 9 11 12
      physical 2: cores 1 3 5 9 11 12
      physical 3: cores 1 3 5 9 11 12
   cache size : 30720 KB

From /proc/meminfo
   MemTotal:       529336104 kB
   HugePages_Total:        0
   Hugepagesize:       2048 kB

/usr/bin/lsb_release -d
   SUSE Linux Enterprise Server 12

From /etc/*release* /etc/*version*
   SuSE-release:
      SUSE Linux Enterprise Server 12 (x86_64)
      VERSION = 12
      PATCHLEVEL = 0
      # This file is deprecated and will be removed in a future service pack or
      release.
      # Please check /etc/os-release for details about this release.
   os-release:
      NAME="SLES"
      VERSION="12"
      VERSION_ID="12"
      PRETTY_NAME="SUSE Linux Enterprise Server 12"
      ID="sles"
      ANSI_COLOR="0;32"
      CPE_NAME="cpe:/o:suse:sles:12"

uname -a:
   Linux linux-rrui 3.12.28-4-default #1 SMP Thu Sep 25 17:02:34 UTC 2014
   (9879bd4) x86_64 x86_64 x86_64 GNU/Linux
```

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CPU2006 license: 001176
Test sponsor: Supermicro
Tested by: Supermicro

Test date: Jun-2015
Hardware Availability: Jun-2015
Software Availability: Oct-2014

Platform Notes (Continued)

```
  run-level 5 Jun 15 07:12

  SPEC is set to: /home/SPEC2K6/SPEC2006-V12
     Filesystem      Type  Size  Used Avail Use% Mounted on
     /dev/sda3       ext4  458G   49G  409G  11% /home
  Additional information from dmidecode:

     Warning: Use caution when you interpret this section. The 'dmidecode' program
     reads system data which is "intended to allow hardware to be accurately
     determined", but the intent may not be met, as there are frequent changes to
     hardware, firmware, and the "DMTF SMBIOS" standard.

   BIOS American Megatrends Inc. 1.00 06/01/2015
   Memory:
    16x NO DIMM NO DIMM
    1x Samsung(data:13/44) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
    1x Samsung(data:13/48) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
    3x Samsung(data:13/51) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
    2x Samsung(data:14/13) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
    1x Samsung(data:14/16) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
    5x Samsung(data:14/17) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
    1x Samsung(data:14/25) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
    14x Samsung(data:14/26) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz
    4x Samsung(data:14/47) M393A2G40DB0-CPB 16 GB 2 rank 2133 MHz

   (End of data from sysinfo program)
```

General Notes

```
  Environment variables set by runspec before the start of the run:
  LD_LIBRARY_PATH = "/home/SPEC2K6/SPEC2006-V12/libs/32:/home/SPEC2K6/SPEC2006-V12/libs/64:/home/SPEC2K6/SPEC2006-V12/sh"

   Binaries compiled on a system with 1x Core i5-4670K CPU + 16GB
   memory using RedHat EL 7.0
   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

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Base Compiler Invocation (Continued)

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:
    -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
    -ansi-alias -opt-mem-layout-trans=3

C++ benchmarks:
    -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
    -ansi-alias -opt-mem-layout-trans=3

Fortran benchmarks:
    -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch

Benchmarks using both Fortran and C:
    -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-prefetch -auto-p32
    -ansi-alias -opt-mem-layout-trans=3

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Peak Compiler Invocation

C benchmarks:
        icc   -m64

C++ benchmarks (except as noted below):
        icpc   -m64

    450.soplex: icpc -m32 -L/opt/intel/composer_xe_2015/lib/ia32

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
       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
        482.sphinx3: -DSPEC_CPU_LP64

Peak Optimization Flags

C benchmarks:

        433.milc: -xCORE-AVX2(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)
                -auto-ilp32

         470.lbm: basepeak = yes

        482.sphinx3: -xCORE-AVX2 -ipo -O3 -no-prec-div -opt-mem-layout-trans=3
                -unroll2

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Peak Optimization Flags (Continued)

C++ benchmarks:

    444.namd: `-xCORE-AVX2`(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: `-xCORE-AVX2`(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: `-xCORE-AVX2`(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: `-xCORE-AVX2`(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-`

    434.zeusmp: `basepeak = yes`

    437.leslie3d: `-xCORE-AVX2` `-ipo` `-O3` `-no-prec-div` `-opt-prefetch`

  459.GemsFDTD: `basepeak = yes`

      465.tonto: `-xCORE-AVX2`(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: `-xCORE-AVX2`(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` `-auto-ilp32`

  436.cactusADM: `basepeak = yes`

    454.calculix: `basepeak = yes`

      481.wrf: `-xCORE-AVX2` `-ipo` `-O3` `-no-prec-div` `-auto-ilp32`

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CPU2006 license: 001176		**Test date:**	Jun-2015
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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-ic15.0-official-linux64.html
http://www.spec.org/cpu2006/flags/Supermicro-Platform-Settings-V1.2-revG.20141230.00.html

You can also download the XML flags sources by saving the following links:

http://www.spec.org/cpu2006/flags/Intel-ic15.0-official-linux64.xml
http://www.spec.org/cpu2006/flags/Supermicro-Platform-Settings-V1.2-revG.20141230.00.xml

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