SPEC® CFP2006 Result

Supermicro

SuperServer SYS-8017R-7FT+ (X9QR7-TF+, Intel E5-4640)

$SPECfp^{®}_rate2006 = $ **808**

$SPECfp_rate_base2006 = $ **786**

CPU2006 license: 001176		**Test date:**	Apr-2012
Test sponsor:	Supermicro	**Hardware Availability:**	May-2012
Tested by:	Supermicro	**Software Availability:**	Dec-2011

Copies

Benchmark	Copies	Result
410.bwaves	32	672
	64	655
416.gamess	64	882
	64	858
433.milc	64	671
	64	669
434.zeusmp	64	945
435.gromacs	64	690
	64	691
436.cactusADM	64	903
437.leslie3d	32	515
	64	483
444.namd	64	691
	64	681
447.dealII	64	1470
450.soplex	32	582
	64	499
453.povray	64	1350
	64	1160
454.calculix	64	1090
	64	1080
459.GemsFDTD	32	453
	64	467
465.tonto	64	975
	64	940
470.lbm	64	947
481.wrf	64	849
	64	838
482.sphinx3	64	714
	64	721

SPECfp_rate_base2006 = 786

SPECfp_rate2006 = 808

Hardware

CPU Name:	Intel Xeon E5-4640
CPU Characteristics:	Intel Turbo Boost Technology up to 2.8 GHz
CPU MHz:	2400
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:	No
File System:	ext4

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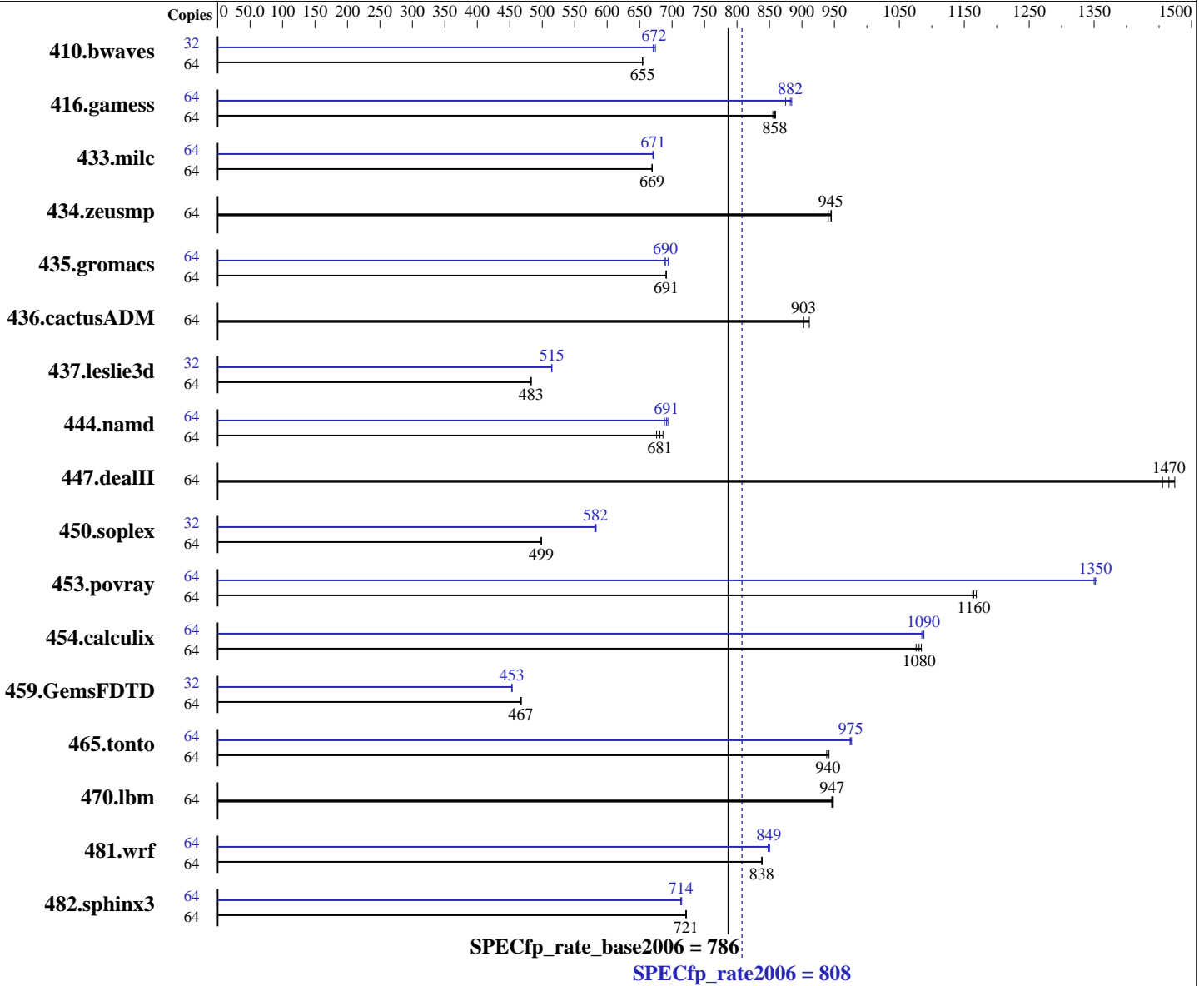$SPECfp\_rate2006 =$ 808

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Hardware Availability:	May-2012
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L3 Cache:	20 MB I+D on chip per chip
Other Cache:	None
Memory:	256 GB (32 x 8 GB 2Rx4 PC3-12800R-11, ECC)
Disk Subsystem:	3 x 460 GB SAS 6Gbps in RAID5, 15000 RPM
Other Hardware:	None

System State:	Run level 3 (multi-user)
Base Pointers:	32-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	64	1325	656	**1329**	**655**	1329	654	32	648	671	645	674	**647**	**672**
416.gamess	64	1458	859	1465	855	**1460**	**858**	64	**1421**	**882**	1417	884	1432	875
433.milc	64	877	670	878	669	**878**	**669**	64	876	670	**876**	**671**	875	671
434.zeusmp	64	619	940	**617**	**945**	616	945	64	619	940	**617**	**945**	616	945
435.gromacs	64	661	691	661	691	**661**	**691**	64	663	689	**663**	**690**	659	694
436.cactusADM	64	848	902	**847**	**903**	839	911	64	848	902	**847**	**903**	839	911
437.leslie3d	64	1245	483	1247	482	**1246**	**483**	32	585	514	584	515	**584**	**515**
444.namd	64	748	686	**753**	**681**	759	676	64	746	688	**742**	**691**	740	694
447.dealII	64	**500**	**1470**	497	1470	503	1460	64	**500**	**1470**	497	1470	503	1460
450.soplex	64	1071	498	**1070**	**499**	1070	499	32	459	581	**458**	**582**	458	583
453.povray	64	293	1160	**292**	**1160**	291	1170	64	252	1350	**252**	**1350**	251	1350
454.calculix	64	487	1080	**489**	**1080**	491	1080	64	**486**	**1090**	487	1080	485	1090
459.GemsFDTD	64	1458	466	1452	468	**1454**	**467**	32	**749**	**453**	749	454	749	453
465.tonto	64	671	938	**670**	**940**	669	942	64	645	976	**646**	**975**	646	974
470.lbm	64	927	948	930	946	**929**	**947**	64	927	948	930	946	**929**	**947**
481.wrf	64	852	839	853	838	**853**	**838**	64	843	848	**842**	**849**	841	850
482.sphinx3	64	1727	722	**1729**	**721**	1729	721	64	1745	715	**1748**	**714**	1748	713

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Submit Notes

    The config file option 'submit' was used.
     numactl was used to bind copies to the cores

Operating System Notes

    Transparent Huge Pages disabled with:
    echo never > /sys/kernel/mm/redhat_transparent_hugepage/enabled
    Filesystem page cache cleared with:
    echo 1>   /proc/sys/vm/drop_caches
    runspec command invoked through numactl i.e.:

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CPU2006 license: 001176
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Tested by: Supermicro

Test date: Apr-2012
Hardware Availability: May-2012
Software Availability: Dec-2011

Platform Notes

```
Sysinfo program /home/cpu2006v120/config/sysinfo.rev6800
$Rev: 6800 $ $Date:: 2011-10-11 #$ 6f2ebdff5032aaa42e583f96b07f99d3
running on 184-213.inet Tue Apr 24 14:14:41 2012

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 E5-4640 0 @ 2.40GHz
      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
      physical 2: cores 0 1 2 3 4 5 6 7
      physical 3: cores 0 1 2 3 4 5 6 7
   cache size : 20480 KB

From /proc/meminfo
   MemTotal:       264496964 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 184-213.inet 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 Apr 23 23:08

SPEC is set to: /home/cpu2006v120
   Filesystem    Type    Size  Used Avail Use% Mounted on
   /dev/mapper/vg_184213-lv_home
                 ext4    524G   61G  436G  13% /home

Additional information from dmidecode:
  Memory:
   32x Hynix Semiconducto HMT31GR7CFR4C 8 GB 1600 MHz 1 rank

(End of data from sysinfo program)
```

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General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2006v120/libs/32:/home/cpu2006v120/libs/64"
 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
     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
```
Continued on next page

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Tested by: Supermicro

Test date: Apr-2012
Hardware Availability: May-2012
Software Availability: Dec-2011

Base Optimization Flags (Continued)

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
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
  465.tonto: -DSPEC_CPU_LP64
   470.lbm: -DSPEC_CPU_LP64
   481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
```

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

  470.lbm: basepeak = yes

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

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: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
       -no-prec-div(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) -prof-use(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

  410.bwaves: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
       -no-prec-div(pass 2) -prof-use(pass 2) -static

  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: -xAVX -ipo -O3 -no-prec-div -static -opt-prefetch

  459.GemsFDTD: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
       -no-prec-div(pass 2) -prof-use(pass 2) -opt-malloc-options=3

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

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CPU2006 license:	001176	**Test date:**	Apr-2012
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Peak Optimization Flags (Continued)

436.cactusADM: basepeak = yes

454.calculix: `-xAVX -ipo -O3 -no-prec-div -static -auto-ilp32 -opt-mem-layout-trans=3`

481.wrf: Same as 454.calculix

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20120425.html
http://www.spec.org/cpu2006/flags/Supermicro-Platform-Settings-revA.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic12.1-official-linux64.20120425.xml
http://www.spec.org/cpu2006/flags/Supermicro-Platform-Settings-revA.xml

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