SPEC® CFP2006 Result
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Acer Incorporated

Altos R380 F4 (Intel Xeon Gold 6126)

$SPECfp^®\_rate2006 = 1090$

$SPECfp\_rate\_base2006 = 1070$
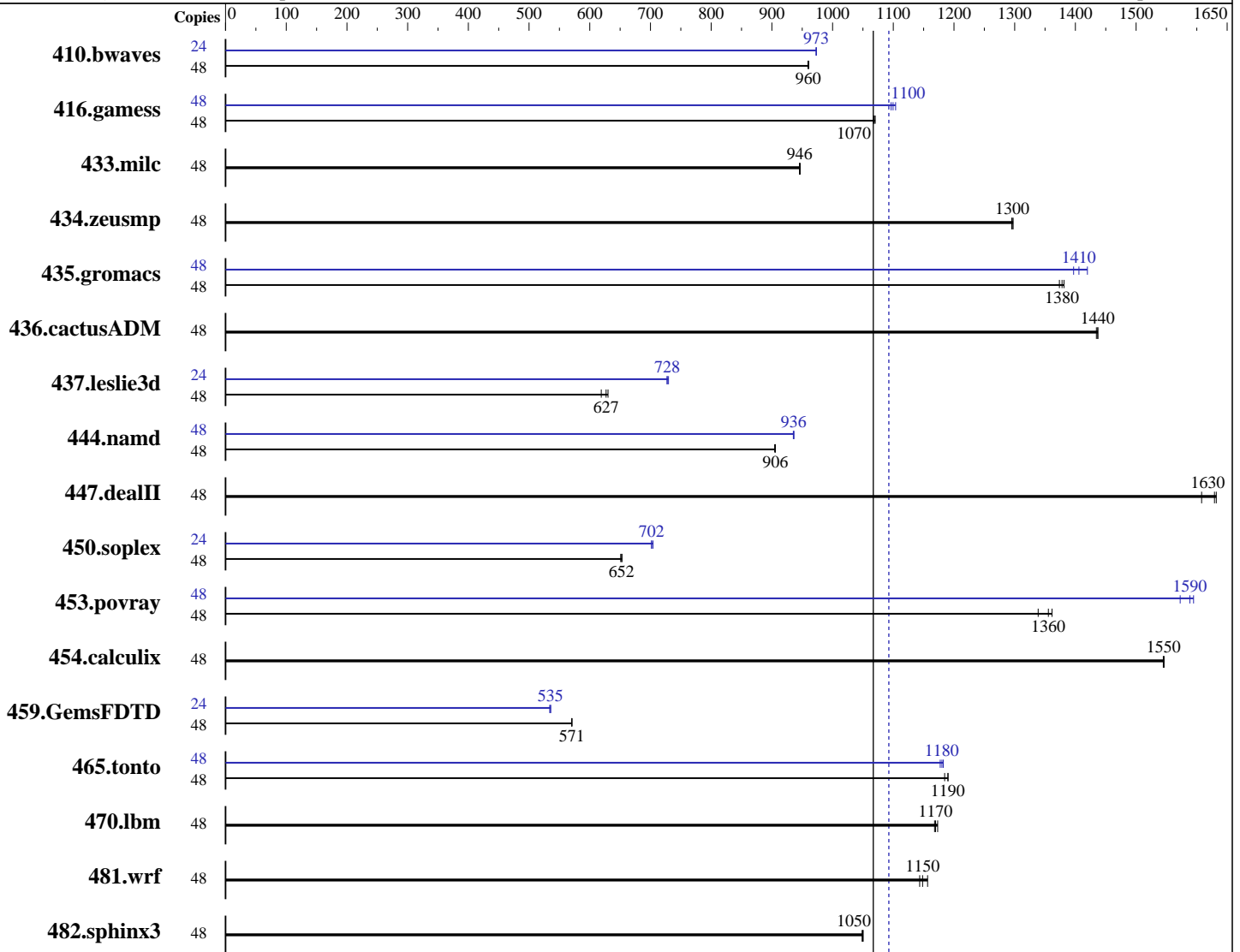
CPU2006 license: 97
Test sponsor: Acer Incorporated
Tested by: Acer Incorporated

Test date: Sep-2017
Hardware Availability: Oct-2017
Software Availability: Apr-2017

Copies

Benchmark	Copies	Result
410.bwaves	24	973
	48	960
416.gamess	48	1100
	48	1070
433.milc	48	946
434.zeusmp	48	1300
435.gromacs	48	1410
	48	1380
436.cactusADM	48	1440
437.leslie3d	24	728
	48	627
444.namd	48	936
	48	906
447.dealII	48	1630
450.soplex	24	702
	48	652
453.povray	48	1590
	48	1360
454.calculix	48	1550
459.GemsFDTD	24	535
	48	571
465.tonto	48	1180
	48	1190
470.lbm	48	1170
481.wrf	48	1150
482.sphinx3	48	1050

SPECfp_rate_base2006 = 1070

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Hardware

CPU Name: Intel Xeon Gold 6126
CPU Characteristics: Intel Turbo Boost Technology up to 3.70 GHz
CPU MHz: 2600
FPU: Integrated
CPU(s) enabled: 24 cores, 2 chips, 12 cores/chip, 2 threads/core
CPU(s) orderable: 1,2 chips
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 1 MB I+D on chip per core

Continued on next page

Software

Operating System: SUSE Linux Enterprise Server 12 SP2
4.4.21-69-default
Compiler: C/C++: Version 17.0.3.191 of Intel C/C++
Compiler for Linux;
Fortran: Version 17.0.3.191 of Intel Fortran
Compiler for Linux
Auto Parallel: Yes
File System: btrfs
System State: Run level 3 ((multi-user)

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L3 Cache:	19.25 MB I+D on chip per chip	Base Pointers:	32/64-bit
Other Cache:	None	Peak Pointers:	32/64-bit
Memory:	384 GB (12 x 32 GB 2Rx4 PC4-2666V-R)	Other Software:	None
Disk Subsystem:	1 x 1000 GB SATA, 7200 RPM		
Other Hardware:	None		

Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	48	679	961	680	959	**_679_**	**_960_**	24	335	973	**_335_**	**_973_**	335	973
416.gamess	48	878	1070	**_879_**	**_1070_**	880	1070	48	857	1100	**_855_**	**_1100_**	851	1100
433.milc	48	**_466_**	**_946_**	465	947	466	946	48	**_466_**	**_946_**	465	947	466	946
434.zeusmp	48	**_337_**	**_1300_**	337	1300	337	1300	48	**_337_**	**_1300_**	337	1300	337	1300
435.gromacs	48	248	1380	**_249_**	**_1380_**	249	1370	48	241	1420	245	1400	**_244_**	**_1410_**
436.cactusADM	48	**_399_**	**_1440_**	399	1440	400	1430	48	**_399_**	**_1440_**	399	1440	400	1430
437.leslie3d	48	729	619	716	630	**_720_**	**_627_**	24	309	730	310	727	**_310_**	**_728_**
444.namd	48	**_425_**	**_906_**	426	905	425	906	48	412	935	411	936	**_411_**	**_936_**
447.dealII	48	342	1610	**_337_**	**_1630_**	336	1630	48	342	1610	**_337_**	**_1630_**	336	1630
450.soplex	48	613	653	615	651	**_614_**	**_652_**	24	284	704	**_285_**	**_702_**	285	702
453.povray	48	191	1340	188	1360	**_188_**	**_1360_**	48	162	1570	160	1590	**_161_**	**_1590_**
454.calculix	48	256	1550	256	1540	**_256_**	**_1550_**	48	256	1550	256	1540	**_256_**	**_1550_**
459.GemsFDTD	48	893	570	892	571	**_893_**	**_571_**	24	**_476_**	**_535_**	475	536	477	534
465.tonto	48	**_397_**	**_1190_**	399	1180	397	1190	48	399	1180	401	1180	**_400_**	**_1180_**
470.lbm	48	565	1170	562	1170	**_564_**	**_1170_**	48	565	1170	562	1170	**_564_**	**_1170_**
481.wrf	48	464	1160	**_467_**	**_1150_**	469	1140	48	464	1160	**_467_**	**_1150_**	469	1140
482.sphinx3	48	891	1050	892	1050	**_891_**	**_1050_**	48	891	1050	892	1050	**_891_**	**_1050_**

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 Configuration:
CPU Power and Performance Policy set to Performance
IMC set to 1-way interleaving

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Platform Notes (Continued)

```
Sub_NUMA Cluster set to enabled
Set Fan Profile set to Performance
Sysinfo program /usr/cpu2006/config/sysinfo.rev6993
Revision 6993 of 2015-11-06 (b5e8d4b4eb51ed28d7f98696cbe290c1)
running on linux-irn9 Sat Sep  9 01:58:24 2017

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) Gold 6126 CPU @ 2.60GHz
      2 "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 : 12
      siblings  : 24
      physical 0: cores 0 1 3 4 6 8 9 10 11 12 13 14
      physical 1: cores 0 1 2 3 4 5 6 8 9 11 12 13
   cache size : 19712 KB

From /proc/meminfo
   MemTotal:       394675016 kB
   HugePages_Total:        0
   Hugepagesize:        2048 kB

/usr/bin/lsb_release -d
   SUSE Linux Enterprise Server 12 SP2

From /etc/*release* /etc/*version*
   SuSE-release:
      SUSE Linux Enterprise Server 12 (x86_64)
      VERSION = 12
      PATCHLEVEL = 2
      # 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-SP2"
      VERSION_ID="12.2"
      PRETTY_NAME="SUSE Linux Enterprise Server 12 SP2"
      ID="sles"
      ANSI_COLOR="0;32"
      CPE_NAME="cpe:/o:suse:sles:12:sp2"

uname -a:
   Linux linux-irn9 4.4.21-69-default #1 SMP Tue Oct 25 10:58:20 UTC 2016
   (9464f67) x86_64 x86_64 x86_64 GNU/Linux
```

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Platform Notes (Continued)

```
  run-level 3 Sep 7 17:10

  SPEC is set to: /usr/cpu2006
     Filesystem      Type   Size  Used Avail Use% Mounted on
     /dev/sda3       btrfs  3.7T  202G  3.5T   6% /
  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 Intel Corporation SE5C620.86B.00.01.0004.071220170215 07/12/2017
  Memory:
   4x Empty/NO DIMM NO DIMM
   12x Micron 36ASF4G72PZ-2G6D1 32 GB 2 rank 2666 MHz

  (End of data from sysinfo program)
```

General Notes

```
Environment variables set by runspec before the start of the run:
LD_LIBRARY_PATH = "/usr/cpu2006/lib/ia32:/usr/cpu2006/lib/intel64:/usr/cpu2006/sh10.2"

 Binaries compiled on a system with 1x Intel Core i7-4790 CPU + 32GB RAM
 memory using Redhat Enterprise Linux 7.2
 Transparent Huge Pages enabled by default
 Filesystem page cache cleared with:
 shell invocation of 'sync; echo 3 > /proc/sys/vm/drop_caches' prior to run
 runspec command invoked through numactl i.e.:
 numactl --interleave=all runspec <etc>
Altos R360 F4 and Altos R380 F4 are electronically equivalent.
This result was measured on Altos R380 F4.
```

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

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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-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-qopt-mem-layout-trans=3
```

C++ benchmarks:

```
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-qopt-mem-layout-trans=3
```

Fortran benchmarks:

```
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch
```

Benchmarks using both Fortran and C:

```
-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch -auto-p32
-qopt-mem-layout-trans=3
```

Peak Compiler Invocation

C benchmarks:

```
icc -m64
```

C++ benchmarks (except as noted below):

```
icpc -m64
```

```
  450.soplex: icpc -m32 -L/opt/intel/compilers_and_libraries_2017/linux/lib/ia32
```

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Peak Compiler Invocation (Continued)

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
450.soplex: -D_FILE_OFFSET_BITS=64
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: basepeak = yes

470.lbm: basepeak = yes

482.sphinx3: basepeak = yes
```

C++ benchmarks:

```
444.namd: -prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)
          -par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)
          -no-prec-div(pass 2) -fno-alias -auto-ilp32
          -qopt-mem-layout-trans=3

447.dealII: basepeak = yes
```

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Peak Optimization Flags (Continued)

  450.soplex: `-prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)`
`-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)`
`-no-prec-div(pass 2) -qopt-malloc-options=3`
`-qopt-mem-layout-trans=3`

  453.povray: `-prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)`
`-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)`
`-no-prec-div(pass 2) -unroll4 -qopt-mem-layout-trans=3`

Fortran benchmarks:

  410.bwaves: `-xCORE-AVX512 -ipo -O3 -no-prec-div -qopt-prefetch`

  416.gamess: `-prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)`
`-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)`
`-no-prec-div(pass 2) -unroll2 -inline-level=0 -scalar-rep-`

  434.zeusmp: `basepeak = yes`

  437.leslie3d: `Same as 410.bwaves`

  459.GemsFDTD: `Same as 410.bwaves`

  465.tonto: `-prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)`
`-par-num-threads=1(pass 1) -ipo(pass 2) -O3(pass 2)`
`-no-prec-div(pass 2) -unroll4 -auto -inline-calloc`
`-qopt-malloc-options=3`

Benchmarks using both Fortran and C:

  435.gromacs: `-prof-gen(pass 1) -prof-use(pass 2) -xCORE-AVX512(pass 2)`
`-par-num-threads=1(pass 1) -qopt-prefetch -auto-ilp32`
`-qopt-mem-layout-trans=3`

  436.cactusADM: `basepeak = yes`

  454.calculix: `basepeak = yes`

  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-ic17.0-official-linux64-revF.html
http://www.spec.org/cpu2006/flags/Acer-Platform-Settings-V1.3-revC.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic17.0-official-linux64-revF.xml
http://www.spec.org/cpu2006/flags/Acer-Platform-Settings-V1.3-revC.xml

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