



# SPEC® CFP2006 Result

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Gigabyte Technology Co., Ltd.

(Test Sponsor: Intel Corporation)

GigaByte GA-X99-Designare EX motherboard (Intel Core i7-6950X)

SPECfp®\_rate2006 = 396

SPECfp\_rate\_base2006 = 388

CPU2006 license: 13

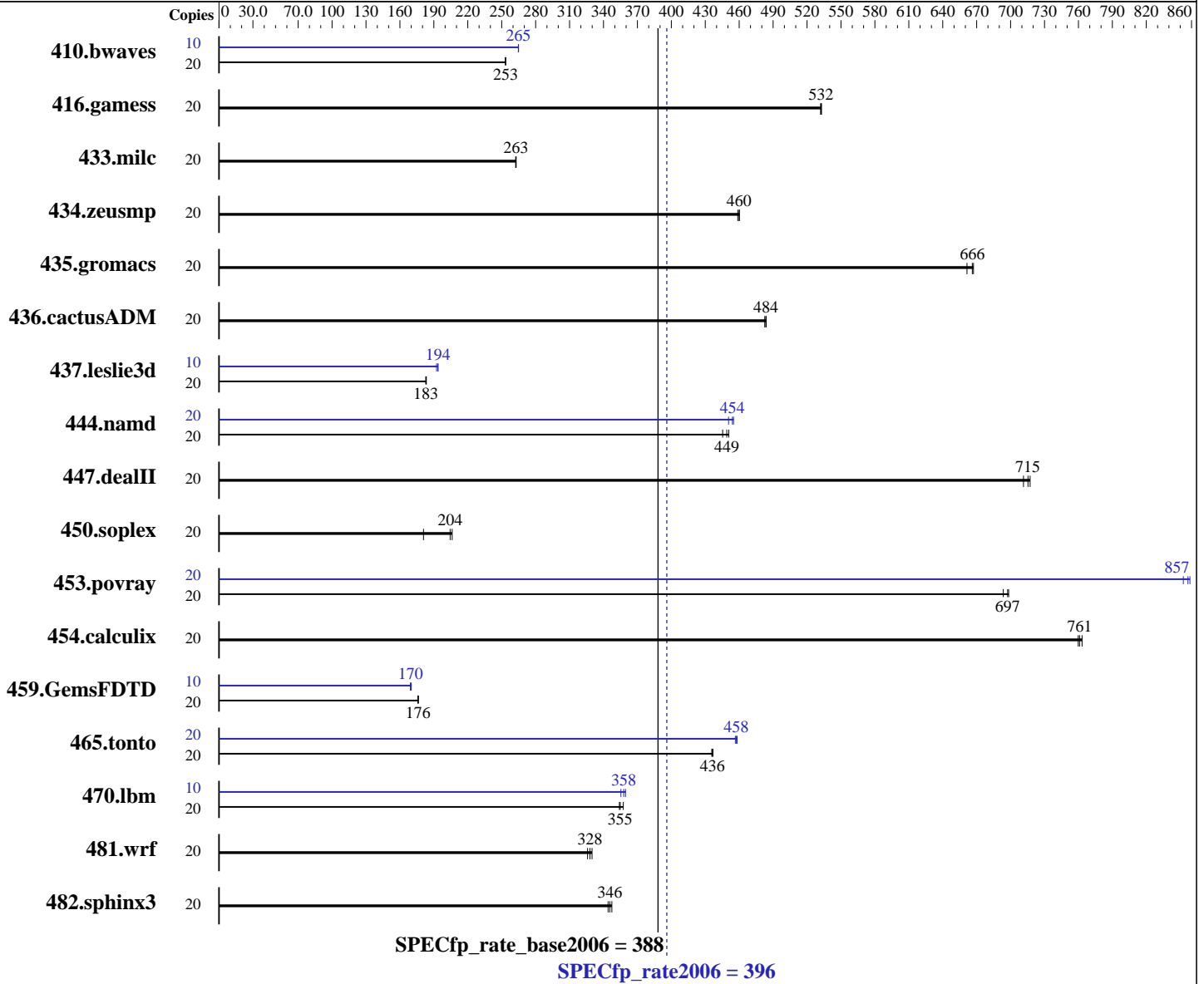
Test sponsor: Intel Corporation

Tested by: Intel Corporation

Test date: Jun-2016

Hardware Availability: May-2016

Software Availability: Nov-2015



### Hardware

CPU Name: Intel Core i7-6950X  
 CPU Characteristics: Intel Turbo Boost Technology up to 3.50 GHz  
 CPU MHz: 3000  
 FPU: Integrated  
 CPU(s) enabled: 10 cores, 1 chip, 10 cores/chip, 2 threads/core  
 CPU(s) orderable: 1 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: Microsoft Windows 10 Pro  
 10.0.10586 N/A Build 10586  
 Compiler: C/C++: Version 16.0.0.110 of Intel C++ Studio XE for Windows;  
 Fortran: Version 16.0.0.110 of Intel Fortran Studio XE for Windows;  
 Libraries: Version 18.00.30723 of Microsoft Visual Studio 2013  
 Auto Parallel: No

Continued on next page



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L3 Cache: 25 MB I+D on chip per chip  
Other Cache: None  
Memory: 32 GB (4 x 8 GB 2Rx4 PC4-2133R-U)  
Disk Subsystem: 1 TB Seagate SATA HDD, 7200 RPM  
Other Hardware: None

File System: NTFS  
System State: Default  
Base Pointers: 32/64-bit  
Peak Pointers: 32/64-bit  
Other Software: SmartHeap Library Version 11.0 from <http://www.microquill.com/>

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	20	1072	253	<b><u>1073</u></b>	<b><u>253</u></b>	1073	253	10	513	265	513	265	<b><u>513</u></b>	<b><u>265</u></b>
416.gamess	20	736	532	735	533	<b><u>736</u></b>	<b><u>532</u></b>	20	736	532	735	533	<b><u>736</u></b>	<b><u>532</u></b>
433.milc	20	700	262	699	263	<b><u>699</u></b>	<b><u>263</u></b>	20	700	262	699	263	<b><u>699</u></b>	<b><u>263</u></b>
434.zeusmp	20	<b><u>396</u></b>	<b><u>460</u></b>	397	459	396	460	20	<b><u>396</u></b>	<b><u>460</u></b>	397	459	396	460
435.gromacs	20	216	661	214	667	<b><u>214</u></b>	<b><u>666</u></b>	20	216	661	214	667	<b><u>214</u></b>	<b><u>666</u></b>
436.cactusADM	20	495	483	<b><u>494</u></b>	<b><u>484</u></b>	494	484	20	495	483	<b><u>494</u></b>	<b><u>484</u></b>	494	484
437.leslie3d	20	1028	183	1025	183	<b><u>1027</u></b>	<b><u>183</u></b>	10	489	192	485	194	<b><u>485</u></b>	<b><u>194</u></b>
444.namd	20	360	445	356	451	<b><u>357</u></b>	<b><u>449</u></b>	20	356	451	353	455	<b><u>353</u></b>	<b><u>454</u></b>
447.dealII	20	319	717	<b><u>320</u></b>	<b><u>715</u></b>	322	711	20	319	717	<b><u>320</u></b>	<b><u>715</u></b>	322	711
450.soplex	20	922	181	809	206	<b><u>816</u></b>	<b><u>204</u></b>	20	922	181	809	206	<b><u>816</u></b>	<b><u>204</u></b>
453.povray	20	152	698	153	694	<b><u>153</u></b>	<b><u>697</u></b>	20	125	853	<b><u>124</u></b>	<b><u>857</u></b>	124	859
454.calculix	20	<b><u>217</u></b>	<b><u>761</u></b>	216	763	217	760	20	<b><u>217</u></b>	<b><u>761</u></b>	216	763	217	760
459.GemsFDTD	20	1203	176	<b><u>1206</u></b>	<b><u>176</u></b>	1208	176	10	627	169	624	170	<b><u>626</u></b>	<b><u>170</u></b>
465.tonto	20	452	436	451	437	<b><u>451</u></b>	<b><u>436</u></b>	20	431	457	430	458	<b><u>430</u></b>	<b><u>458</u></b>
470.lbm	20	<b><u>775</u></b>	<b><u>355</u></b>	769	358	776	354	10	387	355	<b><u>384</u></b>	<b><u>358</u></b>	382	360
481.wrf	20	677	330	685	326	<b><u>681</u></b>	<b><u>328</u></b>	20	677	330	685	326	<b><u>681</u></b>	<b><u>328</u></b>
482.sphinx3	20	<b><u>1128</u></b>	<b><u>346</u></b>	1122	347	1133	344	20	<b><u>1128</u></b>	<b><u>346</u></b>	1122	347	1133	344

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

## Compiler Invocation Notes

To compile these binaries, the Intel Compiler 16.0 was set up to generate 64-bit binaries with the command:  
"psxevars.bat intel64" (shortcut provided in the Intel(r) Parallel Studio XE 2016 program folder)

## Submit Notes

Processes were bound to specific processors using the start command with the /affinity switch. The config file option 'submit' was used to generate the affinity mask for each process.



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**SPECfp\_rate2006 = 396**

**SPECfp\_rate\_base2006 = 388**

**CPU2006 license:** 13

**Test sponsor:** Intel Corporation

**Tested by:** Intel Corporation

**Test date:** Jun-2016

**Hardware Availability:** May-2016

**Software Availability:** Nov-2015

## Platform Notes

Sysinfo program C:\SPEC16.0/Docs/sysinfo  
\$Rev: 6775 \$ \$Date:: 2011-08-16 #\$ \8787f7622badcf24e01c368b1db4377c  
running on Clt1C1B0D05C2E5 Sun Jun 19 00:13:30 2016

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>

Trying 'systeminfo'

OS Name : Microsoft Windows 10 Pro  
OS Version : 10.0.10586 N/A Build 10586  
System Manufacturer: Gigabyte Technology Co., Ltd.  
System Model : Default string  
Processor(s) : 1 Processor(s) Installed.  
 [01]: Intel64 Family 6 Model 79 Stepping 1 GenuineIntel ~3001 Mhz  
BIOS Version : American Megatrends Inc. F2, 5/22/2016  
Total Physical Memory: 32,606 MB

Trying 'wmic cpu get /value'

DeviceID : CPU0  
L2CacheSize : 2560  
L3CacheSize : 25600  
MaxClockSpeed : 3001  
Name : Intel(R) Core(TM) i7-6950X CPU @ 3.00GHz  
NumberOfCores : 10  
NumberOfLogicalProcessors: 20

(End of data from sysinfo program)

## Component Notes

Tested systems can be used with Shin-G ATX case,  
PC Power and Cooling 1200W power supply

## General Notes

450.soplex (base): "getline\_test" src.alt was used.  
447.dealII (base): "max\_prototype" src.alt was used.  
447.dealII (base): "cxx11\_make\_pair" src.alt was used.  
450.soplex (base): "getline\_test" src.alt was used.  
447.dealII (base): "max\_prototype" src.alt was used.  
447.dealII (base): "cxx11\_make\_pair" src.alt was used.

Binaries compiled on a system with 1x Intel Xeon E5-2699 v3 CPU  
+ 64GB memory using Windows 8.1 Enterprise 64-bit



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## Base Compiler Invocation

C benchmarks:

icl -Qvc12 -Qstd=c99

C++ benchmarks:

icl -Qvc12

Fortran benchmarks:

ifort

Benchmarks using both Fortran and C:

icl -Qvc12 -Qstd=c99 ifort

## Base Portability Flags

410.bwaves: -DSPEC\_CPU\_P64  
 416.gamess: -DSPEC\_CPU\_P64  
 433.milc: -DSPEC\_CPU\_P64  
 434.zeusmp: -DSPEC\_CPU\_P64  
 435.gromacs: -DSPEC\_CPU\_P64  
 436.cactusADM: -DSPEC\_CPU\_P64 /names:lowercase /assume:underscore  
 437.leslie3d: -DSPEC\_CPU\_P64  
 444.namd: -DSPEC\_CPU\_P64 /TP  
 447.dealII: -DSPEC\_CPU\_P64 -DDEAL\_II\_MEMBER\_VAR\_SPECIALIZATION\_BUG  
 -DSPEC\_CPU\_BOOST\_CONFIG\_MSC\_VER -DSPEC\_NEED\_ALGORITHM  
 450.soplex: -DSPEC\_CPU\_P64 -DSPEC\_GETLINE\_TEST  
 453.povray: -DSPEC\_CPU\_P64  
 454.calculix: -DSPEC\_CPU\_P64 -DSPEC\_CPU\_NOZMODIFIER /names:lowercase  
 459.GemsFDTD: -DSPEC\_CPU\_P64  
 465.tonto: -DSPEC\_CPU\_P64  
 470.lbm: -DSPEC\_CPU\_P64  
 481.wrf: -DSPEC\_CPU\_P64 -DSPEC\_CPU\_WINDOWS\_ICL  
 482.sphinx3: -DSPEC\_CPU\_P64

## Base Optimization Flags

C benchmarks:

-QxCORE-AVX2 -Qipo -O3 -Qprec-div- -Qansi-alias -Qopt-prefetch  
-Qauto-ilp32 /F1000000000 shlw64M.lib -link /FORCE:MULTIPLE

C++ benchmarks:

-QxCORE-AVX2 -Qipo -O3 -Qprec-div- -Qansi-alias -Qopt-prefetch  
-Qcxx-features -Qauto-ilp32 /F1000000000 shlw64M.lib  
-link /FORCE:MULTIPLE

Fortran benchmarks:

-QxCORE-AVX2 -Qipo -O3 -Qprec-div- -Qansi-alias -Qopt-prefetch  
/F1000000000 shlw64M.lib -link /FORCE:MULTIPLE

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## Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:

-QxCORE-AVX2 -Qipo -O3 -Qprec-div- -Qansi-alias -Qopt-prefetch  
-Qauto-ilp32 /F1000000000 sh1W64M.lib -link /FORCE:MULTIPLE

## Peak Compiler Invocation

C benchmarks:

icl -Qvc12 -Qstd=c99

C++ benchmarks:

icl -Qvc12

Fortran benchmarks:

ifort

Benchmarks using both Fortran and C:

icl -Qvc12 -Qstd=c99 ifort

## Peak Portability Flags

Same as Base Portability Flags

## Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes

470.lbm: -QxCORE-AVX2 -Qprof\_gen(pass 1) -Qprof\_use(pass 2) -Qipo  
-O3 -Qprec-div- -Qansi-alias -Qopt-prefetch -Qauto-ilp32  
/F1000000000 sh1W64M.lib -link /FORCE:MULTIPLE

482.sphinx3: basepeak = yes

C++ benchmarks:

444.namd: -QxCORE-AVX2(pass 2) -Qprof\_gen(pass 1) -Qprof\_use(pass 2)  
-Qipo -O3 -Qprec-div- -Oa -Qauto-ilp32 /F1000000000  
sh1W64M.lib -link /FORCE:MULTIPLE

447.dealIII: basepeak = yes

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## Peak Optimization Flags (Continued)

450.soplex: basepeak = yes

453.povray: -QxCORE-AVX2(pass 2) -Qprof\_gen(pass 1) -Qprof\_use(pass 2)  
-Qipo -O3 -Qprec-div- -Qopt-prefetch -Qauto-ilp32  
/F1000000000 sh1W64M.lib -link /FORCE:MULTIPLE

Fortran benchmarks:

410.bwaves: -QxCORE-AVX2 -Qprof\_gen(pass 1) -Qprof\_use(pass 2) -Qipo  
-O3 -Qprec-div- -Qansi-alias -Qopt-prefetch /F1000000000  
sh1W64M.lib -link /FORCE:MULTIPLE

416.gamess: basepeak = yes

434.zeusmp: basepeak = yes

437.leslie3d: Same as 410.bwaves

459.GemsFDTD: Same as 410.bwaves

465.tonto: -QxCORE-AVX2(pass 2) -Qprof\_gen(pass 1) -Qprof\_use(pass 2)  
-Qipo -O3 -Qprec-div- -Qunroll4 -Qauto /F1000000000  
sh1W64M.lib -link /FORCE:MULTIPLE

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: basepeak = yes

The flags file that was used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-windows.html>

You can also download the XML flags source by saving the following link:

<http://www.spec.org/cpu2006/flags/Intel-ic16.0-official-windows.xml>



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For other inquiries, please contact [webmaster@spec.org](mailto:webmaster@spec.org).

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