



SPEC® CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM System x3755 M3
(AMD Opteron 6262 HE)

SPECfp®_rate2006 = 583

SPECfp_rate_base2006 = 551

CPU2006 license: 11

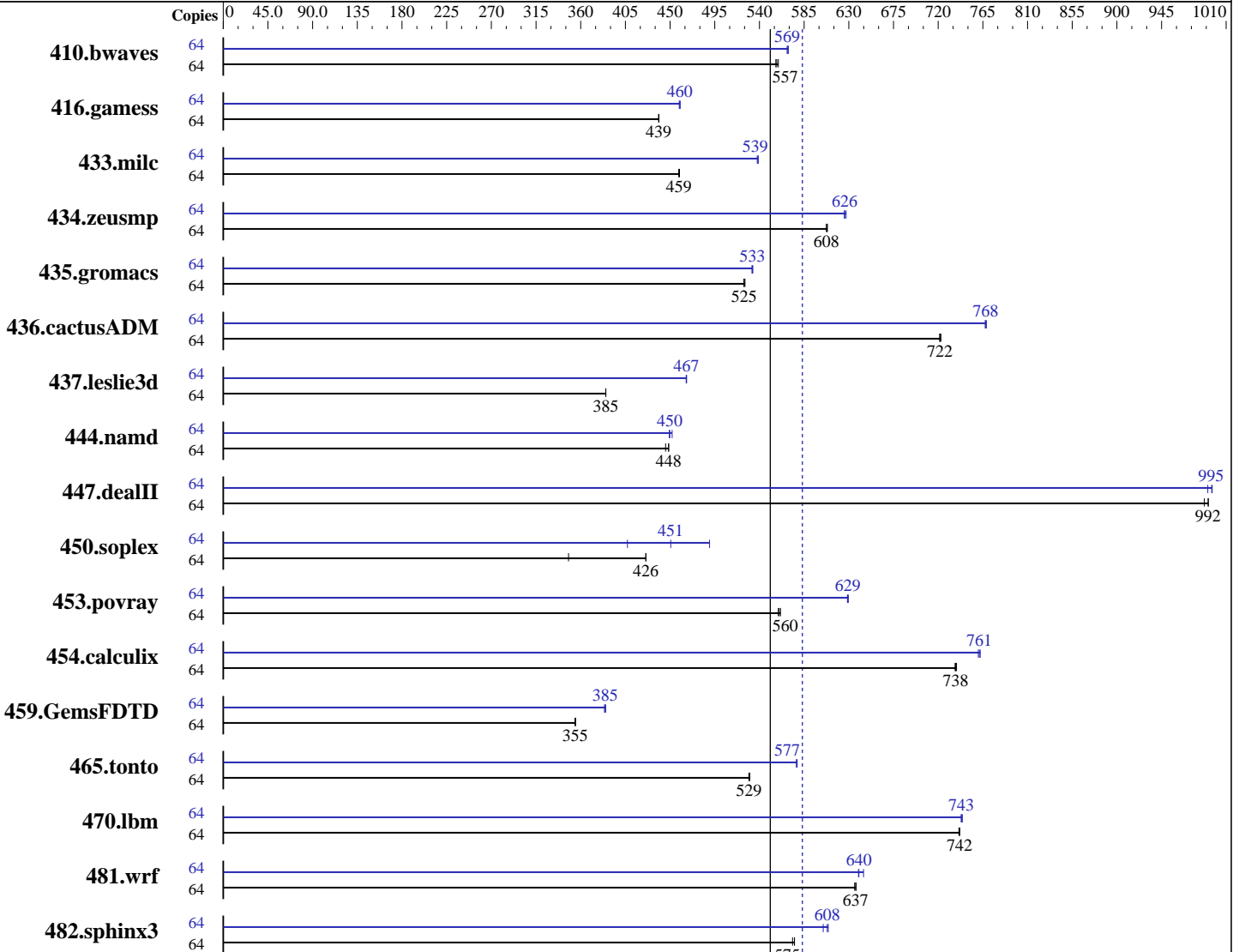
Test sponsor: IBM Corporation

Tested by: IBM Corporation

Test date: Feb-2012

Hardware Availability: Dec-2011

Software Availability: Jul-2011



SPECfp_rate_base2006 = 551

SPECfp_rate2006 = 583

Hardware

CPU Name: AMD Opteron 6262 HE
 CPU Characteristics: AMD Turbo CORE technology up to 2.90 GHz
 CPU MHz: 1600
 FPU: Integrated
 CPU(s) enabled: 64 cores, 4 chips, 16 cores/chip
 CPU(s) orderable: 2,4 chips

Continued on next page

Software

Operating System: Red Hat Enterprise Linux Server release 6.1, Kernel 2.6.32-131.0.15.el6.x86_64
 Compiler: C/C++/Fortran: Version 4.2.5.2 of x86 Open64 Compiler Suite (from AMD)
 Auto Parallel: No
 File System: ext3
 System State: Run level 3 (Full multiuser with network)
 Base Pointers: 64-bit
 Peak Pointers: 32/64-bit

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM System x3755 M3
(AMD Opteron 6262 HE)

SPECfp_rate2006 = **583**

SPECfp_rate_base2006 = **551**

CPU2006 license: 11
Test sponsor: IBM Corporation
Tested by: IBM Corporation

Test date: Feb-2012
Hardware Availability: Dec-2011
Software Availability: Jul-2011

Primary Cache: 512 KB I on chip per chip,
64 KB I shared / 2 cores;
16 KB D on chip per core
Secondary Cache: 16 MB I+D on chip per chip, 2 MB shared / 2 cores
L3 Cache: 16 MB I+D on chip per chip, 8 MB shared / 8 cores
Other Cache: None
Memory: 256 GB (32 x 8 GB 2Rx4 PC3-10600R-9, ECC)
Disk Subsystem: 1 x 600 GB SATA, 15000 RPM
Other Hardware: None

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	1563	557	<u>1560</u>	<u>557</u>	1556	559	64	1528	569	1532	568	<u>1530</u>	<u>569</u>
416.gamess	64	<u>2857</u>	<u>439</u>	2858	439	2856	439	64	2723	460	<u>2725</u>	<u>460</u>	2729	459
433.milc	64	<u>1280</u>	<u>459</u>	1281	459	1279	459	64	1093	538	1091	539	<u>1091</u>	<u>539</u>
434.zeusmp	64	957	608	959	607	<u>959</u>	<u>608</u>	64	<u>930</u>	<u>626</u>	931	625	928	627
435.gromacs	64	<u>871</u>	<u>525</u>	870	525	871	524	64	858	532	857	533	<u>858</u>	<u>533</u>
436.cactusADM	64	1058	723	<u>1060</u>	<u>722</u>	1060	722	64	<u>996</u>	<u>768</u>	997	767	995	769
437.leslie3d	64	1561	385	<u>1562</u>	<u>385</u>	1562	385	64	<u>1289</u>	<u>467</u>	1289	467	1290	466
444.namd	64	1152	445	<u>1144</u>	<u>448</u>	1144	449	64	<u>1141</u>	<u>450</u>	1143	449	1135	452
447.dealII	64	738	992	<u>738</u>	<u>992</u>	741	988	64	738	992	735	996	<u>736</u>	<u>995</u>
450.soplex	64	1535	348	1254	426	<u>1254</u>	<u>426</u>	64	1311	407	<u>1184</u>	<u>451</u>	1090	490
453.povray	64	609	559	<u>608</u>	<u>560</u>	607	561	64	541	629	<u>541</u>	<u>629</u>	542	629
454.calculix	64	<u>716</u>	<u>738</u>	715	738	716	737	64	694	760	693	762	<u>693</u>	<u>761</u>
459.GemsFDTD	64	1914	355	<u>1915</u>	<u>355</u>	1916	354	64	1769	384	<u>1765</u>	<u>385</u>	1763	385
465.tonto	64	1188	530	<u>1189</u>	<u>529</u>	1190	529	64	1091	577	<u>1091</u>	<u>577</u>	1090	578
470.lbm	64	<u>1186</u>	<u>742</u>	1187	741	1186	742	64	1181	744	1183	743	<u>1183</u>	<u>743</u>
481.wrf	64	<u>1122</u>	<u>637</u>	1122	637	1124	636	64	1117	640	1109	645	<u>1117</u>	<u>640</u>
482.sphinx3	64	2176	573	<u>2168</u>	<u>575</u>	2168	575	64	2064	604	2047	609	<u>2051</u>	<u>608</u>

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.
See the configuration file for details.

Operating System Notes

'ulimit -s unlimited' was used to set environment stack size
'ulimit -l 2097152' was used to set environment locked pages in memory limit

Set transparent_hugepage=never as a boot parameter in /boot/grub/menu.lst
Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM System x3755 M3
(AMD Opteron 6262 HE)

SPECfp_rate2006 = 583

SPECfp_rate_base2006 = 551

CPU2006 license: 11
Test sponsor: IBM Corporation
Tested by: IBM Corporation

Test date: Feb-2012
Hardware Availability: Dec-2011
Software Availability: Jul-2011

Operating System Notes (Continued)

Set kernel/randomize_va_space=0 in /etc/sysctl.conf

Set vm/nr_hugepages=57344 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages

Platform Notes

BIOS settings:
Operating Mode set to Performance Mode

General Notes

Environment variables set by runspec before the start of the run:

HUGETLB_LIMIT = "896"

LD_LIBRARY_PATH = "/root/speccpu-rate-rev1104B1/amd1104-rate-libs-revB/32:/root/speccpu-rate-rev1104B1/amd1104-rate-libs-revB/64"

The x86 Open64 Compiler Suite is only available from (and supported by) AMD at <http://developer.amd.com/cpu/open64>

Binaries were compiled on a system with 2x AMD Opteron 6282SE chips + 64GB Memory using RHEL 6.1

Base Compiler Invocation

C benchmarks:
openc

C++ benchmarks:
openCC

Fortran benchmarks:
openf95

Benchmarks using both Fortran and C:
openc openf95

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
436.cactusADM: -DSPEC_CPU_LP64 -fno-second-underscore
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

SPECfp_rate2006 = 583

IBM System x3755 M3
(AMD Opteron 6262 HE)

SPECfp_rate_base2006 = 551

CPU2006 license: 11

Test date: Feb-2012

Test sponsor: IBM Corporation

Hardware Availability: Dec-2011

Tested by: IBM Corporation

Software Availability: Jul-2011

Base Portability Flags (Continued)

```

447.dealII: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LINUX -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LP64
        -fno-second-underscore
482.sphinx3: -DSPEC_CPU_LP64

```

Base Optimization Flags

C benchmarks:

```

-march=bdver1 -Ofast -OPT:malloc_alg=1 -HP:bd=2m:heap=2m
-IPA:plimit=8000 -IPA:small_pu=100 -mso

```

C++ benchmarks:

```

-march=bdver1 -Ofast -static -CG:load_exe=0 -OPT:malloc_alg=1
-INLINE:aggressive=on -HP:bd=2m:heap=2m -D__OPEN64_FAST_SET

```

Fortran benchmarks:

```

-march=bdver1 -Ofast -LNO:blocking=off -OPT:rsqrt=2
-OPT:unroll_size=256 -HP:bd=2m:heap=2m -mso

```

Benchmarks using both Fortran and C:

```

-march=bdver1 -Ofast -OPT:malloc_alg=1 -HP:bd=2m:heap=2m
-IPA:plimit=8000 -IPA:small_pu=100 -mso -LNO:blocking=off
-OPT:rsqrt=2 -OPT:unroll_size=256

```

Peak Compiler Invocation

C benchmarks:

openc

C++ benchmarks:

openCC

Fortran benchmarks:

openf95

Benchmarks using both Fortran and C:

openc openf95



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM System x3755 M3
(AMD Opteron 6262 HE)

SPECfp_rate2006 = 583

SPECfp_rate_base2006 = 551

CPU2006 license: 11
Test sponsor: IBM Corporation
Tested by: IBM Corporation

Test date: Feb-2012
Hardware Availability: Dec-2011
Software Availability: Jul-2011

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
436.cactusADM: -DSPEC_CPU_LP64 -fno-second-underscore
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LINUX -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LP64
-fno-second-underscore
482.sphinx3: -DSPEC_CPU_LP64
```

Peak Optimization Flags

C benchmarks:

```
433.milc: -march=bdver1 -Ofast -CG:movnti=1 -CG:locs_best=on
-HP:bdt=2m:heap=2m -IPA:plimit=7000 -IPA:callee_limit=1200
-OPT:struct_array_copy=2 -OPT:alias=field_sensitive -mso

470.lbm: -march=bdver1 -Ofast -CG:cmp_peep=on
-OPT:unroll_times_max=8 -OPT:unroll_size=256
-OPT:unroll_level=2 -OPT:keep_ext=on -HP:bdt=2m:heap=2m
-IPA:plimit=8000 -IPA:small_pu=100 -mso

482.sphinx3: -march=bdver1 -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -OPT:malloc_alg=2
-CG:cmp_peep=on -CG:local_sched_alg=2 -INLINE:aggressive=on
-LNO:prefetch=2 -LNO:prefetch_ahead=4 -mso
```

C++ benchmarks:

```
444.namd: -march=bdver1 -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -LNO:ignore_feedback=off
-CG:local_sched_alg=2 -CG:load_exe=0 -OPT:unroll_size=256
-fno-exceptions -HP:bdt=2m:heap=2m

447.dealII: -march=bdver1 -Ofast -D__OPEN64_FAST_SET -static
-INLINE:aggressive=on -LNO:opt=0 -LNO:simd=0
-fno-emit-exceptions -m32 -OPT:unroll_times_max=8
-OPT:unroll_size=256 -OPT:unroll_level=2 -HP:bdt=2m:heap=2m
-GRA:unspill=on -CG:cmp_peep=on -CG:movext_icmp=off
-TENV:frame_pointer=off
```

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

SPECfp_rate2006 = 583

IBM System x3755 M3
(AMD Opteron 6262 HE)

SPECfp_rate_base2006 = 551

CPU2006 license: 11
Test sponsor: IBM Corporation
Tested by: IBM Corporation

Test date: Feb-2012
Hardware Availability: Dec-2011
Software Availability: Jul-2011

Peak Optimization Flags (Continued)

450.soplex: -march=bdver1 -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -O3 -INLINE:aggressive=on -OPT:RO=1
-OPT:IEEE_arith=3 -OPT:IEEE_NaN_Inf=off
-OPT:fold_unsigned_relops=on -fno-exceptions -m32
-HP:bd=2m:heap=2m -WOPT:sib=on

453.povray: -march=bdver1 -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -CG:pre_local_sched=off
-INLINE:aggressive=on -HP:bd=2m:heap=2m -OPT:transform=2
-OPT:alias=disjoint -WOPT:aggcm=0

Fortran benchmarks:

410.bwaves: -march=bdver1 -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -OPT:Ofast -OPT:treeheight=on
-LNO:blocking=off -LNO:ignore_feedback=off -LNO:fu=4
-LNO:loop_model_simd=on -LNO:simd_rm_unity_remainder=on
-WOPT:aggstr=0 -HP:bd=2m:heap=2m -CG:cmp_peep=on

416.gamess: -march=bdver1 -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -O3 -LNO:fu=6 -LNO:blocking=0
-LNO:simd=0 -OPT:Ofast -OPT:ro=3 -OPT:unroll_size=256
-OPT:unroll_times_max=2 -CG:local_sched_alg=1
-HP:bd=2m:heap=2m -WOPT:sib=on

434.zeusmp: -march=bdver1 -Ofast -LNO:blocking=off -LNO:interchange=off
-HP:bd=2m:heap=2m

437.leslie3d: -march=bdver1 -Ofast -CG:pre_minreg_level=2 -LNO:simd=0
-LNO:fusion=2 -HP:bd=2m:heap=2m -mso

459.GemsFDTD: -march=bdver1 -Ofast -OPT:unroll_size=0 -LNO:fission=2
-CG:load_exe=0 -CG:local_sched_alg=2 -HP

465.tonto: -march=bdver1 -Ofast -OPT:alias=no_f90_pointer_alias
-LNO:blocking=off -CG:load_exe=1 -IPA:plimit=525
-HP:bd=2m:heap=2m

Benchmarks using both Fortran and C:

435.gromacs: -march=bdver1 -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -OPT:rsqrt=2
-HP:bd=2m:heap=2m

436.cactusADM: -march=bdver1 -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -LNO:blocking=off
-LNO:prefetch=2 -HP -CG:locs_shallow_depth=1 -CG:load_exe=0
-WOPT:sib=on

Continued on next page



SPEC CFP2006 Result

Copyright 2006-2014 Standard Performance Evaluation Corporation

IBM Corporation

IBM System x3755 M3
(AMD Opteron 6262 HE)

SPECfp_rate2006 = 583

SPECfp_rate_base2006 = 551

CPU2006 license: 11
Test sponsor: IBM Corporation
Tested by: IBM Corporation

Test date: Feb-2012
Hardware Availability: Dec-2011
Software Availability: Jul-2011

Peak Optimization Flags (Continued)

454.calculix: -march=bdver1 -Ofast -OPT:unroll_size=256
-GRA:optimize_boundary=on -HP:bdt=2m:heap=2m

481.wrf: -march=bdver1 -Ofast -LNO:blocking=off -LANG:copyinout=off
-IPA:callee_limit=5000 -GRA:prioritize_by_density=on
-CG:load_exe=1 -HP -WOPT:sib=on

The flags files that were used to format this result can be browsed at

<http://www.spec.org/cpu2006/flags/x86-open64-425-flags-rate-revB.html>
<http://www.spec.org/cpu2006/flags/amd-platform-rate-revB.20120103.html>

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

<http://www.spec.org/cpu2006/flags/x86-open64-425-flags-rate-revB.xml>
<http://www.spec.org/cpu2006/flags/amd-platform-rate-revB.20120103.xml>

SPEC and SPECfp are registered trademarks of the Standard Performance Evaluation Corporation. All other brand and product names appearing in this result are trademarks or registered trademarks of their respective holders.

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.
Report generated on Mon Sep 22 18:39:53 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 27 March 2012.