



SPEC® CINT2006 Result

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Hewlett-Packard Company

SPECint®_rate2006 = 324

ProLiant BL465c Gen8
(3.0 GHz AMD Opteron 6220)

SPECint_rate_base2006 = 287

CPU2006 license: 3

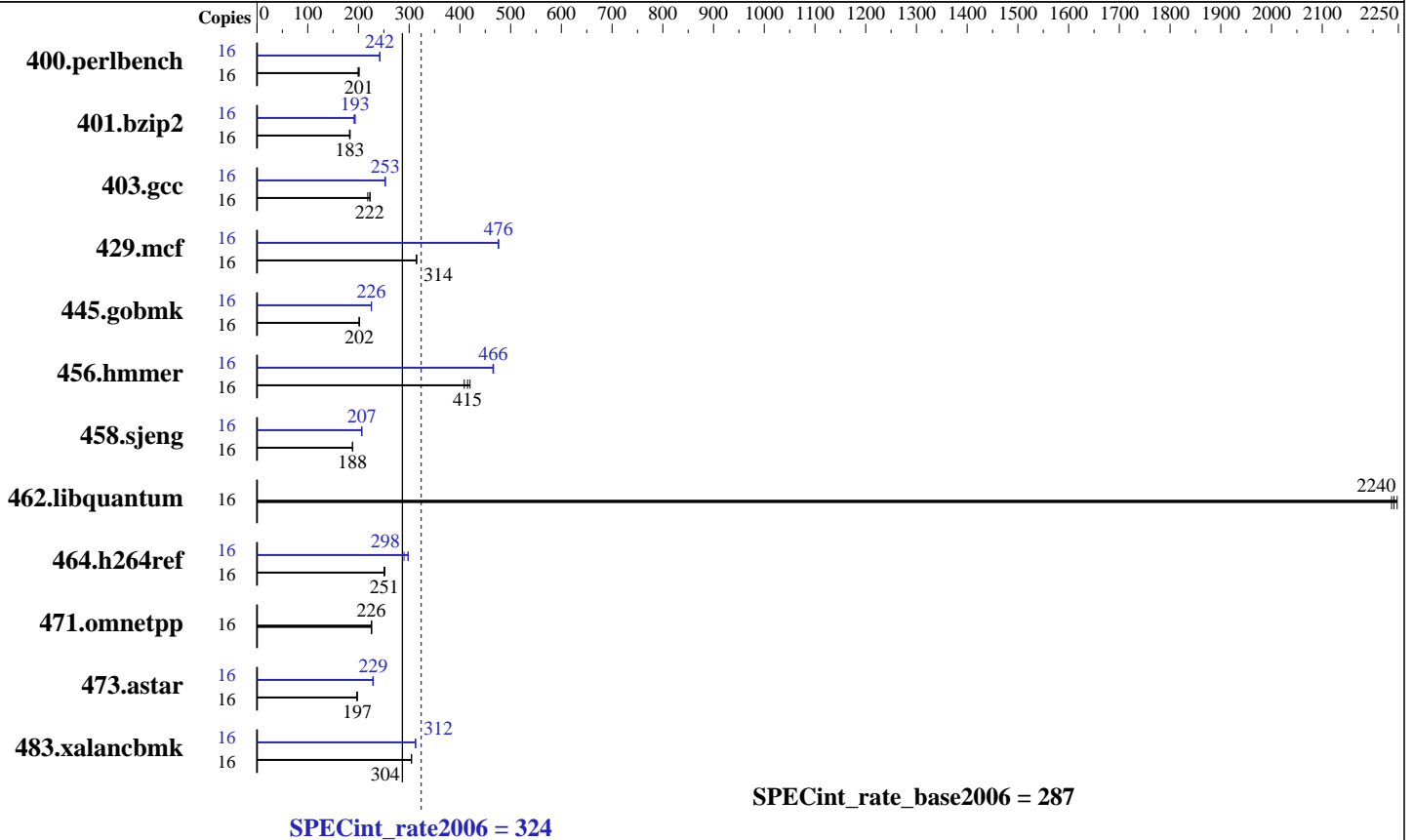
Test date: Jun-2012

Test sponsor: Hewlett-Packard Company

Hardware Availability: Jun-2012

Tested by: Hewlett-Packard Company

Software Availability: Dec-2011



Hardware

CPU Name: AMD Opteron 6220
 CPU Characteristics: AMD Turbo CORE technology up to 3.60 GHz
 CPU MHz: 3000
 FPU: Integrated
 CPU(s) enabled: 16 cores, 2 chips, 8 cores/chip
 CPU(s) orderable: 1,2 chips
 Primary Cache: 256 KB I on chip per chip,
64 KB I shared / 2 cores;
16 KB D on chip per core
 Secondary Cache: 8 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 / 4 cores
 Other Cache: None
 Memory: 128 GB (16 x 8 GB 2Rx4 PC3-12800R-11, ECC)
 Disk Subsystem: 1 x 146 GB 15 K SAS
 Other Hardware: None

Software

Operating System: Red Hat Enterprise Linux Server release 6.2,
Kernel 2.6.32-220.el6.x86_64
 Compiler: C/C++: Version 4.5.1 of
x86 Open64 Compiler Suite (from AMD)
 Auto Parallel: No
 File System: ext3
 System State: Run level 3 (multi-user)
 Base Pointers: 32/64-bit
 Peak Pointers: 32/64-bit
 Other Software: SmartHeap 10.0 32-bit Library for Linux



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Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
400.perlbench	16	785	199	777	201	778	201	16	646	242	646	242	645	242
401.bzip2	16	845	183	846	182	840	184	16	800	193	798	193	807	191
403.gcc	16	578	223	590	218	579	222	16	511	252	509	253	509	253
429.mcf	16	464	314	465	314	463	315	16	307	476	307	475	306	476
445.gobmk	16	832	202	833	202	833	201	16	744	226	745	225	744	226
456.hammer	16	365	409	360	415	355	420	16	321	466	321	465	320	466
458.sjeng	16	1028	188	1028	188	1026	189	16	937	207	937	207	938	206
462.libquantum	16	148	2240	148	2240	147	2250	16	148	2240	148	2240	147	2250
464.h264ref	16	1413	251	1413	251	1405	252	16	1221	290	1189	298	1189	298
471.omnetpp	16	442	226	444	225	443	226	16	442	226	444	225	443	226
473.astar	16	568	198	569	197	571	197	16	490	229	492	228	490	229
483.xalancbmk	16	363	304	363	304	362	305	16	353	312	354	312	353	313

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

Set vm/nr_hugepages=14336 in /etc/sysctl.conf
mount -t hugetlbfs nodev /mnt/hugepages

Platform Notes

BIOS configuration:
HP Power Profile set to Maximum Performance
Thermal Configuration set to Maximum Cooling
System Locality Information Table to Disabled
Minimum Processor Idle Power Cle State to Enabled



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General Notes

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

HUGETLB_LIMIT = "480"

LD_LIBRARY_PATH = "/cpu2006/amd1104-rate-libs-revC/32:/cpu2006/amd1104-rate-libs-revC/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 6274 chips + 64GB Memory using RHEL 6.1

Base Compiler Invocation

C benchmarks:

openc

C++ benchmarks:

openCC

Base Portability Flags

400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
403.gcc: -DSPEC_CPU_LP64
429.mcf: -DSPEC_CPU_LP64
445.gobmk: -DSPEC_CPU_LP64
456.hmmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
464.h264ref: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LINUX

Base Optimization Flags

C benchmarks:

-march=bdver1 -Ofast -CG:local_sched_alg=1 -INLINE:aggressive=ON
-IPA:plimit=8000 -IPA:small_pu=100 -HP:bd=2m:heap=2m -mso
-LNO:prefetch=2

C++ benchmarks:

-march=bdver1 -Ofast -m32 -INLINE:aggressive=on -CG:cmp_peek=on
-D__OPEN64_FAST_SET -L/root/work/libraries/SmartHeap-10/lib -lsmartheap



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Peak Compiler Invocation

C benchmarks:
opencc

C++ benchmarks:
openCC

Peak Portability Flags

```
400.perlbench: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX_X64
401.bzip2: -DSPEC_CPU_LP64
445.gobmk: -DSPEC_CPU_LP64
456.hmmer: -DSPEC_CPU_LP64
458.sjeng: -DSPEC_CPU_LP64
462.libquantum: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX
464.h264ref: -DSPEC_CPU_LP64
483.xalancbmk: -DSPEC_CPU_LINUX
```

Peak Optimization Flags

C benchmarks:

```
400.perlbench: -march=bdver1 -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -LNO:prefetch=2 -LNO:opt=0
-IPA:plimit=20000 -OPT:unroll_times_max=8
-OPT:unroll_size=256 -OPT:unroll_level=2 -OPT:keep_ext=on
-WOPT:if_conv=0 -WOPT:sib=on -CG:local_sched_alg=1
-CG:unroll_fb_req=on -CG:movext_icmp=off -HP:bd=2m:heap=2m

401.bzip2: -march=bdver1 -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -O3 -LNO:prefetch=2 -LNO:pf2=0
-OPT:alias=disjoint -OPT:goto=off -CG:local_sched_alg=1
-HP:bdt=2m:heap=2m

403.gcc: -march=bdver1 -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -LNO:trip_count=256
-CG:cmp_peep=on -CG:pre_minreg_level=2 -m32
-HP:bdt=2m:heap=2m -GRA:unspill=on -IPA:small_pu=200
-WOPT:sib=on

429.mcf: -march=bdver1 -O3 -OPT:unroll_times_max=5 -ipa
-INLINE:aggressive=on -CG:gcm=off -CG:dsched=on
-GRA:prioritize_by_density=on -m32 -HP:bdt=2m:heap=2m -mso

445.gobmk: -march=bdver1 -fb_create fbdata(pass 1)
-fb_opt fbdata(pass 2) -Ofast -OPT:unroll_size=256
-OPT:unroll_times_max=8 -OPT:keep_ext=on -IPA:plimit=750
-IPA:min_hotness=300 -IPA:pu_reorder=1
```

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Peak Optimization Flags (Continued)

445.gobmk (continued):

-LNO:ignore_feedback=off -WOPT:if_conv=2 -HP:bd=2m:heap=2m

456.hmmcr: -march=bdver1 -fb_create fbdata(pass 1)

-fb_opt fbdata(pass 2) -Ofast -LNO:prefetch=2

-OPT:alias=disjoint -OPT:unroll_times_max=16

-OPT:unroll_size=512 -OPT:unroll_level=2 -OPT:keep_ext=on

-CG:cflow=0 -CG:cmp_peep=on -CG:pre_local_sched=off

-HP:bd=2m:heap=2m

458.sjeng: -march=bdver1 -fb_create fbdata(pass 1)

-fb_opt fbdata(pass 2) -Ofast -CG:ptr_load_use=0

-CG:divrem_opt=on -CG:movext_icmp=off -CG:locs_best=on

-LNO:full_unroll=10 -IPA:pu_reorder=2 -HP:heap=2m:bd=2m

-WOPT:sib=on

462.libquantum: basepeak = yes

464.h264ref: -march=bdver1 -fb_create fbdata(pass 1)

-fb_opt fbdata(pass 2) -O3 -OPT:unroll_size=256

-OPT:unroll_times_max=2 -IPA:plimit=20000

-OPT:alias=disjoint -CG:ptr_load_use=0

-CG:local_sched_alg=1 -HP:bd=2m:heap=2m

C++ benchmarks:

471.omnetpp: basepeak = yes

473.astar: -march=bdver1 -fb_create fbdata(pass 1)

-fb_opt fbdata(pass 2) -Ofast -TENV:frame_pointer=off

-WOPT:if_conv=0 -WOPT:sib=on -CG:divrem_opt=on

-CG:p2align=1 -CG:dsched=on -GRA:optimize_boundary=on

-OPT:alias=disjoint -INLINE:aggressive=on

-IPA:small_pu=3000 -IPA:plimit=3000 -m32

-HP:bd=2m:heap=2m

483.xalancbmk: -march=bdver1 -Ofast -LNO:prefetch=2 -OPT:unroll_size=512

-OPT:unroll_times_max=8 -D__OPEN64_FAST_SET

-INLINE:aggressive=on -m32 -CG:cmp_peep=on

-CG:local_sched=off -CG:p2align=1 -GRA:unspill=on

-TENV:frame_pointer=off -fno-emit-exceptions

-L/root/work/libraries/SmartHeap-10/lib -lsmartheap

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

<http://www.spec.org/cpu2006/flags/x86-open64-451-flags-rate-revC.html>

<http://www.spec.org/cpu2006/flags/HP-Platform-Flags-AMD-V1.2-A.20120703.html>

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

<http://www.spec.org/cpu2006/flags/x86-open64-451-flags-rate-revC.xml>

<http://www.spec.org/cpu2006/flags/HP-Platform-Flags-AMD-V1.2-A.20120703.xml>

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For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.
Report generated on Thu Jul 24 11:47:12 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 31 July 2012.