



SPEC® CINT2006 Result

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Hewlett-Packard Company

SPECint®_rate2006 = 282

ProLiant BL465c Gen8
(2.60 GHz AMD Opteron 6212)

SPECint_rate_base2006 = 252

CPU2006 license: 3

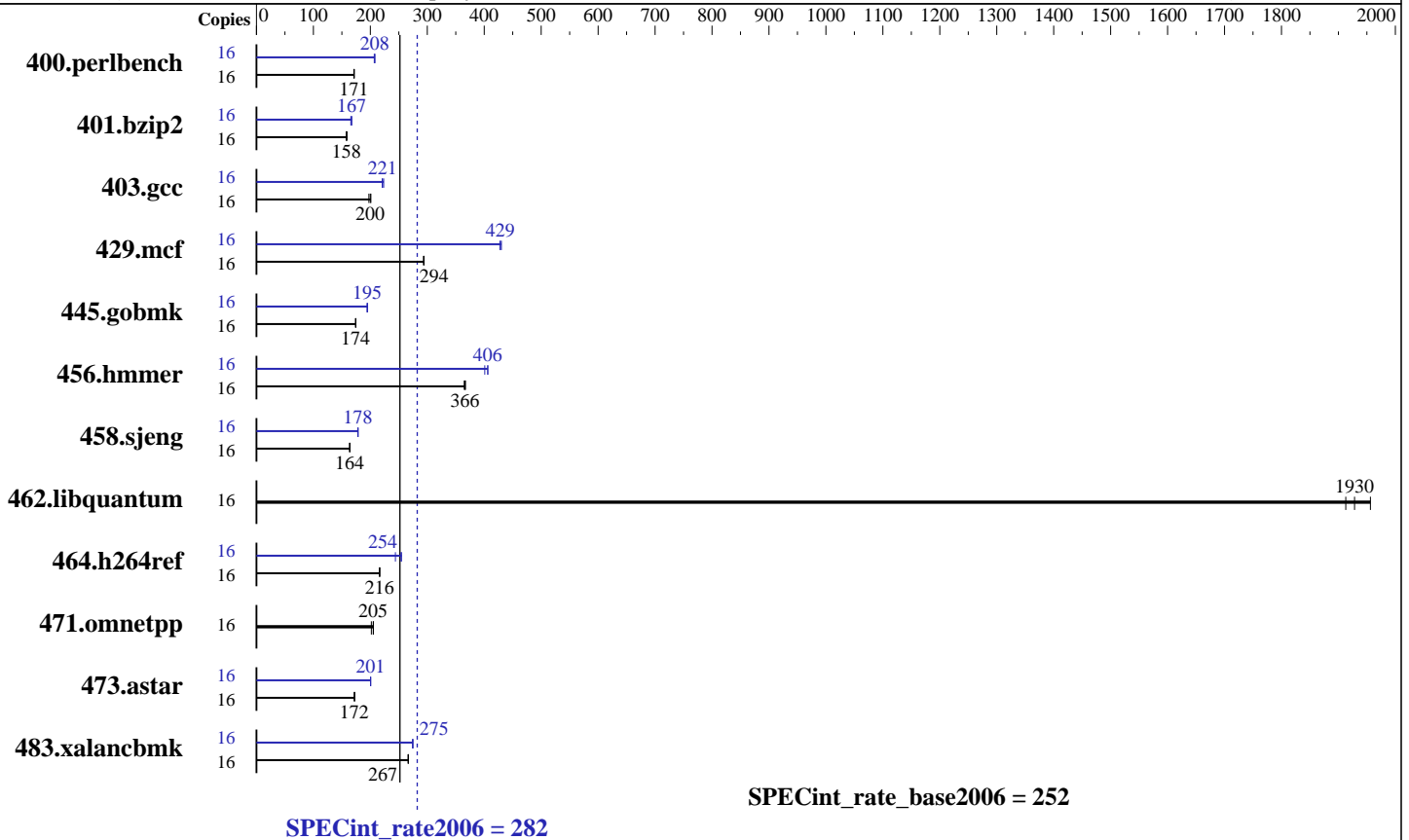
Test date: May-2012

Test sponsor: Hewlett-Packard Company

Hardware Availability: Jun-2012

Tested by: Hewlett-Packard Company

Software Availability: Dec-2011



Hardware

CPU Name: AMD Opteron 6212
 CPU Characteristics: AMD Turbo CORE technology up to 3.20 GHz
 CPU MHz: 2600
 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: ext4
 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	914	171	<u>912</u>	<u>171</u>	910	172	16	756	207	752	208	<u>753</u>	<u>208</u>
401.bzip2	16	<u>976</u>	<u>158</u>	980	158	971	159	16	932	166	<u>925</u>	<u>167</u>	923	167
403.gcc	16	<u>644</u>	<u>200</u>	641	201	652	197	16	577	223	583	221	<u>582</u>	<u>221</u>
429.mcf	16	497	293	<u>496</u>	<u>294</u>	496	294	16	339	430	341	427	<u>341</u>	<u>429</u>
445.gobmk	16	964	174	962	174	<u>963</u>	<u>174</u>	16	863	194	860	195	<u>863</u>	<u>195</u>
456.hammer	16	409	365	<u>408</u>	<u>366</u>	407	367	16	367	406	<u>368</u>	<u>406</u>	372	401
458.sjeng	16	1182	164	<u>1182</u>	<u>164</u>	1181	164	16	1084	179	1088	178	<u>1086</u>	<u>178</u>
462.libquantum	16	169	1960	173	1910	<u>172</u>	<u>1930</u>	16	169	1960	173	1910	<u>172</u>	<u>1930</u>
464.h264ref	16	1638	216	1635	217	<u>1637</u>	<u>216</u>	16	<u>1394</u>	<u>254</u>	1390	255	1451	244
471.omnetpp	16	487	205	496	202	<u>488</u>	<u>205</u>	16	487	205	496	202	<u>488</u>	<u>205</u>
473.astar	16	652	172	<u>653</u>	<u>172</u>	653	172	16	561	200	560	201	<u>560</u>	<u>201</u>
483.xalancbmk	16	414	267	415	266	<u>414</u>	<u>267</u>	16	402	275	403	274	<u>402</u>	<u>275</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

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_peep=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:bd=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:bd=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:bd=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.hmmer: -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/HP-Platform-Flags-AMD-V1.2-A.20120703.html>

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

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

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

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



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