Hewlett-Packard Company

ProLiant DL585 G5
(2.8 GHz AMD Opteron 8386 SE)

**SPECfp**\(^\text{rate2006} = 118\)

**SPECfp\_rate_base2006 = 107**

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**Hardware**

<table>
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<tr>
<th>CPU Name</th>
<th>AMD Opteron 8386 SE</th>
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<tr>
<td>FPU</td>
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<tr>
<td>CPU(s) orderable</td>
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<tr>
<td>Primary Cache</td>
<td>64 KB I + 64 KB D on chip per core</td>
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<tr>
<td>Secondary Cache</td>
<td>512 KB I+D on chip per core</td>
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</tbody>
</table>

**Software**

| Operating System | Red Hat Enterprise Linux Server release 5.2, Kernel 2.6.18-92.el5 |
| Compiler         | PGI Server Complete Version 8.0, PathScale Compiler Suite Version 3.2 |
| Auto Parallel    | Yes |
| File System      | ext3 |
| System State     | Run level 3 (multi-user) |
| Base Pointers    | 64-bit |
| Peak Pointers    | 32/64-bit |

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Continued on next page
SPEC CFP2006 Result

Hewlett-Packard Company

ProLiant DL585 G5
(2.8 GHz AMD Opteron 8386 SE)

SPECfp_rate2006 = 118
SPECfp_rate_base2006 = 107

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

L3 Cache: 6 MB I+D on chip per chip
Other Cache: None
Memory: 32 GB (8x4 GB, PC2-6400P CL5)
Disk Subsystem: 1x146 GB 15 K SAS
Other Hardware: None

Other Software: binutils 2.18
32-bit and 64-bit libhugetlbfs libraries

Results Table

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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

Operating System Notes

Environment stack size set to 'unlimited'
Max locked memory set to 2097152
The libhugetlbfs libraries were installed using the installation rpms that came with the distribution.
PGI_HUGE_PAGES set to 896.
Total number of huge pages available is 7168.
NCPUS set to number of cores
Hewlett-Packard Company  
ProLiant DL585 G5  
(2.8 GHz AMD Opteron 8386 SE)

SPECfp_rate2006 = 118  
SPECfp_rate_base2006 = 107

CPU2006 license: 3  
Test sponsor: Hewlett-Packard Company  
Tested by: Hewlett-Packard Company  
Test date: Jan-2009  
Hardware Availability: Jan-2009  
Software Availability: Dec-2008

Platform Notes

BIOS configuration:
Power Regulator set to Static High Performance Mode

General Notes

Environment variables set by runspec before the start of the run:
HUGETLB_MORECORE = "yes"
NCPUS = "4"

Base Compiler Invocation

C benchmarks:
pgcc

C++ benchmarks:
pgcpp

Fortran benchmarks:
pgf95

Benchmarks using both Fortran and C:
pgcc pgf95

Base Portability Flags

410.bwaves: -DSPEC_CPU_LP64  
416.gamess: -DSPEC_CPU_LP64  
433.milc: -DSPEC_CPU_LP64  
434.zeusmp: -DSPEC_CPU_LP64 -Mnomain  
435.gromacs: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX  
436.cactusADM: -DSPEC_CPU_LP64 -Mnomain  
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 -Mnomain  
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
Hewlett-Packard Company
ProLiant DL585 G5
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Base Optimization Flags

C benchmarks:
- Mvext=cachesize:6291456 -fastsse -Msmartalloc=huge -Mfprelaxed
  -Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi

C++ benchmarks:
- Mvext=cachesize:6291456 -fastsse -Msmartalloc=huge -Mfprelaxed
  --zc_eh -Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi

Fortran benchmarks:
- Mvext=cachesize:6291456 -fastsse -Mfprelaxed -Msmartalloc=huge
  -Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi

Benchmarks using both Fortran and C:
- Mvext=cachesize:6291456 -fastsse -Msmartalloc=huge -Mfprelaxed
  -Mipa=fast -Mipa=inline -tp barcelona-64 -Bstatic_pgi

Base Other Flags

C benchmarks:
- Mipa=jobs:4

C++ benchmarks:
- Mipa=jobs:4

Fortran benchmarks:
- Mipa=jobs:4

Benchmarks using both Fortran and C:
- Mipa=jobs:4

Peak Compiler Invocation

C benchmarks:
pgcc

C++ benchmarks (except as noted below):
pathCC
  444.namd: pgcpp

Fortran benchmarks (except as noted below):
pathf95
  410.bwaves: pgf95

Continued on next page
SPEC CFP2006 Result

Hewlett-Packard Company
ProLiant DL585 G5
(2.8 GHz AMD Opteron 8386 SE)

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CPU2006 license: 3
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Hardware Availability: Jan-2009
Software Availability: Dec-2008

Peak Compiler Invocation (Continued)

434.zeusmp: pgf95
437.leslie3d: pgf95

Benchmarks using both Fortran and C (except as noted below):

pgcc pgf95
435.gromacs: pathcc pathf95
481.wrf: pathcc pathf95

Peak Portability Flags

410.bwaves: -DSPEC_CPU_LP64
416.gameess: -DSPEC_CPU_LP64
433.milc: -DSPEC_CPU_LP64
434.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64
436.cactusADM: -DSPEC_CPU_LP64 -Mnomain
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -Mnomain
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64
470.lbm: -DSPEC_CPU_LP64
481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_LINUX -fno-second-underscore
482.sphinx3: -DSPEC_CPU_LP64

Peak Optimization Flags

C benchmarks:

433.milc: basepeak = yes

470.lbm: -Mvect=cachesize:6291456 -fastsse -Msmartalloc=huge
-Mprefetch=t0 -Mloop32 -Mfprelaxed -Mipa=fast -Mipa=inline
-tp barcelona-64 -Bstatic_pgi

482.sphinx3: -Mpf=indirect(pass 1) -Mfpo=indirect(pass 2)
-Mipa=fast(pass 2) -Mipa=inline(pass 2)
-Mvect=cachesize:6291456 -fastsse -Mfprelaxed -Msmartalloc
-tp barcelona-64 -Bstatic_pgi

C++ benchmarks:

Continued on next page
### Hewlett-Packard Company

**SPEC CFP2006 Result**

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<th>ProLiant DL585 G5</th>
<th>SPECfp_rate2006 = 118</th>
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<tr>
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<td>Software Availability: Dec-2008</td>
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#### Peak Optimization Flags (Continued)

- **444.namd**: `-Mpfi(pass 1) -Mpfo(pass 2) -Mipa=fast(pass 2)
  -Mipa=inline(pass 2) -Mvect=cachesize:6291456 -fastsse
  -Munroll=n:4 -Munroll=m:8 -Msmartalloc=huge -Mnodepchk
  -Mfprelaxed --zc_eh -tp barcelona-64 -Bstatic_pgi`

- **447.dealII**: `-march=barcelona -Ofast -INLINE:aggressive=on -LNO:opt=0
  -OPT:alias=disjoint -fno-exceptions -m32`

- **450.soplex**: `-march=barcelona -fb_create fbdata(pass 1)
  -fb_opt fbdata(pass 2) -L/usr/lib -lhugetlbfs(pass 2) -O3
  -INLINE:aggressive=on -OPT:IEEE_arith=3
  -OPT:IEEE_NaN.Inf=off -OPT:fold_unsigned_relops=on
  -OPT:malloc_alg=1 -CG:load_exe=0 -fno-exceptions -m32`

- **453.povray**: `-march=barcelona -fb_create fbdata(pass 1)
  -fb_opt fbdata(pass 2) -Ofast -INLINE:aggressive=on`

**Fortran benchmarks:**

- **410.bwaves**: `-Mvect=cachesize:6291456 -fastsse -Msmartalloc
  -Mprefetch=nta -Mfrelaxed -Mipa=fast -Mipa=inline
  -tp barcelona-64 -Bstatic_pgi`

- **416.gamess**: `-march=barcelona -fb_create fbdata(pass 1)
  -fb_opt fbdata(pass 2) -Wl,--T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT(pass 2)
  -L/usr/lib -lhugetlbfs(pass 2) -O2 -OPT:Ofast -OPT:ro=3
  -OPT:unroll_size=256`

- **434.zeusmp**: `-Mvect=cachesize:6291456 -fastsse -Mfprelaxed
  -Mprefetch=distance:8 -Mprefetch=t0 -Msmartalloc=huge
  -Msmartalloc=hugebss -Mipa=fast -Mipa=inline
  -tp barcelona-64 -Bstatic_pgi`

- **437.leslie3d**: `-Mpfimf=indirect(pass 1) -Mpfo=indirect(pass 2)
  -Mipa=fast(pass 2) -Mipa=inline(pass 2)
  -Mvect=cachesize:6291456 -fastsse -Mvect=fuse
  -Msmartalloc=huge -Mprefetch=distance:8 -Mprefetch=t0
  -Mfprelaxed -tp barcelona-64 -Bstatic_pgi`

- **459.GemsFDTD**: `-march=barcelona -Ofast -LNO:fission=2 -LNO:simd=2
  -LNO:prefetchAhead=1 -CG:load_exe=0 -CG:prefer_lru_reg=off
  -OPT:malloc_alg=1
  -Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT
  -L/usr/lib64 -lhugetlbfs`

- **465.tonto**: `-march=barcelona -Ofast -OPT:alias=no_f90_pointer_alias
  -LNO:blocking=off -CG:load_exe=1 -IPA:plimit=525
  -OPT:malloc_alg=1
  -Wl,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT
  -L/usr/lib64 -lhugetlbfs`

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SPEC CFP2006 Result

Hewlett-Packard Company
ProLiant DL585 G5
(2.8 GHz AMD Opteron 8386 SE)

SPECfp_rate2006 = 118
SPECfp_rate_base2006 = 107

CPU2006 license: 3
Test sponsor: Hewlett-Packard Company
Tested by: Hewlett-Packard Company

Test date: Jan-2009
Hardware Availability: Jan-2009
Software Availability: Dec-2008

Peak Optimization Flags (Continued)

Benchmarks using both Fortran and C:

435.gromacs: -march=barcelona -Ofast -OPT:rsqrt=2 -OPT:malloc_alg=1
-WL,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT
-L/usr/lib64 -lhugetlbfs

436.cactusADM: -Mvect=cachesize:6291456 -fastsse -Mconcur
-Msmartalloc=huge -Mpreflaxed -Mipa=fast -Mipa=inline
-tp barcelona-64 -Bstatic_pgi

454.calculix: -Mpfi=indirect(pass 1) -Mpfo=indirect(pass 2)
-Mipa=fast(pass 2) -Mipa=inline(pass 2)
-Mprefetch=t0 -Mpre -Mpreflaxed -tp barcelona-64
-Bstatic_pgi

481.wrf: -march=barcelona -Ofast -LNO:blocking=off
-LNO:prefetch_ahead=10 -LANG:copyinout=off
-IPA:callee_limit=5000 -GRA:prioritize_by_density=on
-OPT:malloc_alg=1 -m3dnow
-WL,-T/usr/share/libhugetlbfs/ldscripts/elf_x86_64.xBDT
-L/usr/lib64 -lhugetlbfs

Peak Other Flags

C benchmarks:
-Mipa=jobs:4(pass 2)

C++ benchmarks:

444.namd: -Mipa=jobs:4(pass 2)

Fortran benchmarks (except as noted below):
-Mipa=jobs:4(pass 2)

416.gamess: No flags used

459.GemsFDTD: No flags used

465.tonto: No flags used

Benchmarks using both Fortran and C (except as noted below):
-Mipa=jobs:4(pass 2)

435.gromacs: No flags used

Continued on next page
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Peak Other Flags (Continued)

481.wrf: No flags used

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/pgi80_linux_flags.20090710.00.html
http://www.spec.org/cpu2006/flags/amd-platform-amd909gh.20090710.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/pgi80_linux_flags.20090710.00.xml
http://www.spec.org/cpu2006/flags/CPU2006_flags.20090710.xml
http://www.spec.org/cpu2006/flags/amd-platform-amd909gh.20090710.xml

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

Tested with SPEC CPU2006 v1.1.
Originally published on 4 February 2009.