



SPEC[®] CFP2006 Result

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Hewlett-Packard Company

SPECfp[®]_rate2006 = 186

HP Integrity rx8640 (1.6GHz/24MB Dual-Core Intel Itanium 2)

SPECfp_rate_base2006 = 179

CPU2006 license: 03

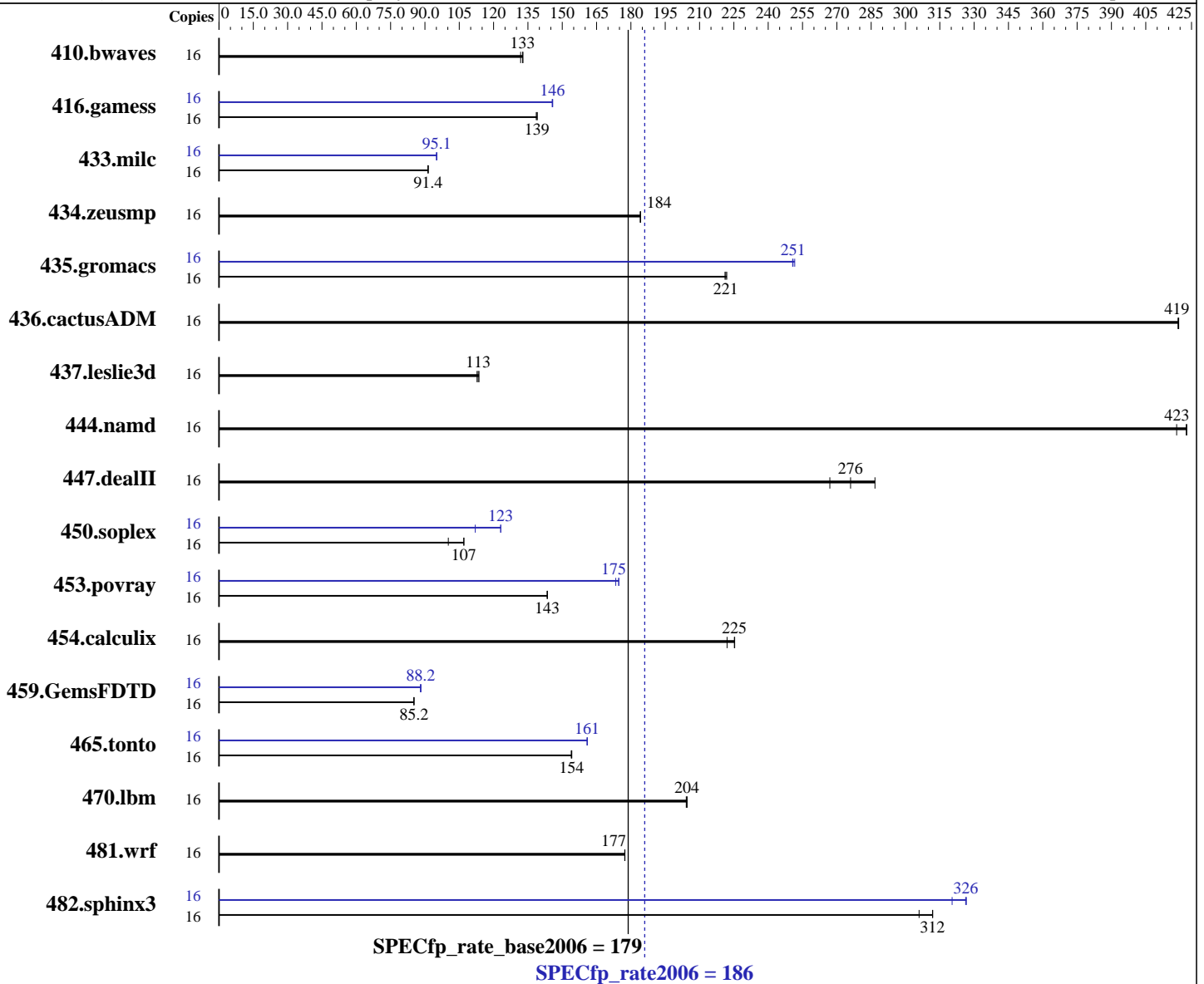
Test date: Sep-2006

Test sponsor: Hewlett-Packard Company

Hardware Availability: Sep-2006

Tested by: Hewlett-Packard Company

Software Availability: Sep-2006



Hardware

CPU Name: Dual-Core Intel Itanium 2 9050
 CPU Characteristics: 1.6GHz/24MB, 533MHz FSB
 CPU MHz: 1600
 FPU: Integrated
 CPU(s) enabled: 16 cores, 8 chips, 2 cores/chip
 CPU(s) orderable: 1-16 chips
 Primary Cache: 16 KB I + 16 KB D on chip per core
 Secondary Cache: 1 MB I + 256 KB D on chip per core

Software

Operating System: HPUX11i-TCOE B.11.23.0609
 Compiler: HP C/aC++ Developer's Bundle C.11.23.12
 HP Fortran90 Compiler B.11.23.32
 Auto Parallel: No
 File System: vxfs
 System State: Multi-user
 Base Pointers: 32-bit
 Peak Pointers: 32-bit
 Other Software: None

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L3 Cache: 12 MB I+D on chip per core
Other Cache: None
Memory: 64 GB (32x2GB DIMMs)
Disk Subsystem: 73GB 15K RPM SCSI
Other Hardware: None

Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
|---------------|--------|-------------|------------|-------------|-------------|-------------|------------|--------|-------------|-------------|-------------|------------|-------------|------------|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 16 | 1649 | 132 | 1637 | 133 | <u>1639</u> | <u>133</u> | 16 | 1649 | 132 | 1637 | 133 | <u>1639</u> | <u>133</u> |
| 416.gamess | 16 | 2260 | 139 | <u>2254</u> | <u>139</u> | 2253 | 139 | 16 | 2152 | 146 | 2148 | 146 | <u>2149</u> | <u>146</u> |
| 433.milc | 16 | 1606 | 91.5 | <u>1608</u> | <u>91.4</u> | 1609 | 91.3 | 16 | <u>1544</u> | <u>95.1</u> | 1544 | 95.2 | 1545 | 95.1 |
| 434.zeusmp | 16 | 790 | 184 | <u>790</u> | <u>184</u> | 791 | 184 | 16 | 790 | 184 | <u>790</u> | <u>184</u> | 791 | 184 |
| 435.gromacs | 16 | 517 | 221 | 515 | 222 | <u>516</u> | <u>221</u> | 16 | <u>455</u> | <u>251</u> | 456 | 251 | 454 | 252 |
| 436.cactusADM | 16 | 456 | 419 | 456 | 419 | <u>456</u> | <u>419</u> | 16 | 456 | 419 | 456 | 419 | <u>456</u> | <u>419</u> |
| 437.leslie3d | 16 | <u>1328</u> | <u>113</u> | 1334 | 113 | 1324 | 114 | 16 | <u>1328</u> | <u>113</u> | 1334 | 113 | 1324 | 114 |
| 444.namd | 16 | 307 | 419 | <u>304</u> | <u>423</u> | 303 | 423 | 16 | 307 | 419 | <u>304</u> | <u>423</u> | 303 | 423 |
| 447.dealII | 16 | 639 | 287 | 686 | 267 | <u>663</u> | <u>276</u> | 16 | 639 | 287 | 686 | 267 | <u>663</u> | <u>276</u> |
| 450.soplex | 16 | 1332 | 100 | 1246 | 107 | <u>1248</u> | <u>107</u> | 16 | 1192 | 112 | 1084 | 123 | <u>1084</u> | <u>123</u> |
| 453.povray | 16 | <u>593</u> | <u>143</u> | 593 | 143 | 593 | 144 | 16 | 491 | 173 | <u>487</u> | <u>175</u> | 487 | 175 |
| 454.calculix | 16 | 595 | 222 | 586 | 225 | <u>586</u> | <u>225</u> | 16 | 595 | 222 | 586 | 225 | <u>586</u> | <u>225</u> |
| 459.GemsFDTD | 16 | 1994 | 85.1 | <u>1992</u> | <u>85.2</u> | 1992 | 85.2 | 16 | <u>1925</u> | <u>88.2</u> | 1929 | 88.0 | 1925 | 88.2 |
| 465.tonto | 16 | <u>1022</u> | <u>154</u> | 1021 | 154 | 1023 | 154 | 16 | <u>978</u> | <u>161</u> | 979 | 161 | 978 | 161 |
| 470.lbm | 16 | 1075 | 205 | <u>1075</u> | <u>204</u> | 1077 | 204 | 16 | 1075 | 205 | <u>1075</u> | <u>204</u> | 1077 | 204 |
| 481.wrf | 16 | 1007 | 177 | 1008 | 177 | <u>1008</u> | <u>177</u> | 16 | 1007 | 177 | 1008 | 177 | <u>1008</u> | <u>177</u> |
| 482.sphinx3 | 16 | 1019 | 306 | <u>1000</u> | <u>312</u> | 1000 | 312 | 16 | 973 | 320 | <u>956</u> | <u>326</u> | 955 | 327 |

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

Operating System Notes

The system had the September 2006 HP-UX 11i v2 Technical Computing Operating Environment (TCOE) and compilers installed, along with the following patches:

```

PHSS_34858 linker + fdp cumulative patch
PHSS_34853 Math Library Cumulative Patch
PHSS_34854 Integrity Unwind Library
PHSS_34855 HP C Compiler (A.06.12)
PHSS_34856 aC++ Compiler (A.06.12)
PHSS_34857 u2comp/be/plugin library patch
PHSS_34395 FORTRAN I/O Library [libIO77]
PHSS_34397 FORTRAN Intrinsics [libF90 B.11.23.17]
PHSS_34399 Fortran Product Patch, v3.1 to v3.1.1
PHKL_34020 Perfmon enhancements and Itanium Dual-Core

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Operating System Notes (Continued)

The following kernel tunables were set, in addition to the defaults set by the Technical Computing OE:

```
dbc_max_pct=20
dbc_min_pct=20
maxdsiz=3221225472
maxssiz=401604608
```

Platform Notes

The system was configured as a single partition with 2 cells and 4 processors (8 cores) per cell. Memory was configured as 50% local and 50% interleaved.

The following config file entry was used to bind processes to cells using the HP-UX "mpsched" utility:
submit = let "MYNUM=\$SPECCOPYNUM" ; let "LDOM=\\$MYNUM/8" ; mpsched -l \\$LDOM \$command

Base Compiler Invocation

C benchmarks:
/opt/ansic/bin/cc -Ae

C++ benchmarks:
/opt/aCC/bin/aCC -Aa

Fortran benchmarks:
/opt/fortran90/bin/f90

Benchmarks using both Fortran and C:
/opt/ansic/bin/cc -Ae /opt/fortran90/bin/f90

Base Portability Flags

```
453.povray: -DSPEC_CPU_NEED_INVHYP
454.calculix: -DSPEC_CPU_NOZMODIFIER
481.wrf: -DNOUNDERSCORE +noppu
```

Base Optimization Flags

C benchmarks:
+Ofaster +Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M
-Wl,+pi,64M -Wl,-N

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Base Optimization Flags (Continued)

C++ benchmarks:

+Ofaster +Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M
-Wl,+pi,64M -Wl,-N

Fortran benchmarks:

+Ofaster -Wl,-a,archive_shared -Wl,+pd,64M -Wl,+pi,64M -Wl,-N

Benchmarks using both Fortran and C:

+Ofaster(-hp_cc) +Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M
-Wl,+pi,64M +Ofaster(-hp_f90) -Wl,-N

Peak Compiler Invocation

C benchmarks:

/opt/ansic/bin/cc -Ae

C++ benchmarks:

/opt/aCC/bin/aCC -Aa

Fortran benchmarks:

/opt/fortran90/bin/f90

Benchmarks using both Fortran and C:

/opt/ansic/bin/cc -Ae /opt/fortran90/bin/f90

Peak Portability Flags

453.povray: -DSPEC_CPU_NEED_INVHYP
454.calculix: -DSPEC_CPU_NOZMODIFIER
481.wrf: -DNOUNDERSCORE +noppu

Peak Optimization Flags

C benchmarks:

433.milc: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster
+Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M
-Wl,+pi,64M +Onoparmsoverlap -Wl,-N

470.lbm: basepeak = yes

482.sphinx3: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster
+Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M
-Wl,+pi,64M +Onoparmsoverlap

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Peak Optimization Flags (Continued)

C++ benchmarks:

444.namd: basepeak = yes

447.dealII: basepeak = yes

450.soplex: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster
+Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M
-Wl,+pi,64M +Onoparmsoverlap -Wl,-N

453.povray: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster
+Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M
-Wl,+pi,64M

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: +Ofaster -Wl,-a,archive_shared -Wl,+pd,64M -Wl,+pi,64M
+Odataprefetch=direct -Wl,-N

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster
-Wl,-a,archive_shared -Wl,+pd,64M -Wl,+pi,64M
+Odataprefetch=direct -Wl,-N

465.tonto: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster
-Wl,-a,archive_shared -Wl,+pd,64M -Wl,+pi,64M
+Odataprefetch=direct

Benchmarks using both Fortran and C:

435.gromacs: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2)
+Ofaster(-hp_cc) +Otype_safety=ansi -Wl,-a,archive_shared
-Wl,+pd,64M -Wl,+pi,64M +Onoparmsoverlap +Ofaster(-hp_f90)

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/CPU2006_flags.20090715.06.html



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

http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.06.xml

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Tested with SPEC CPU2006 v1.0.
Report generated on Tue Jul 22 10:05:44 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 3 October 2006.