



SPEC® CFP2006 Result

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Hewlett-Packard Company

SPECfp®2006 = 14.3

HP Integrity rx2620
(1.4GHz/12MB Dual-Core Intel Itanium 2)

SPECfp_base2006 = 13.6

CPU2006 license: 03

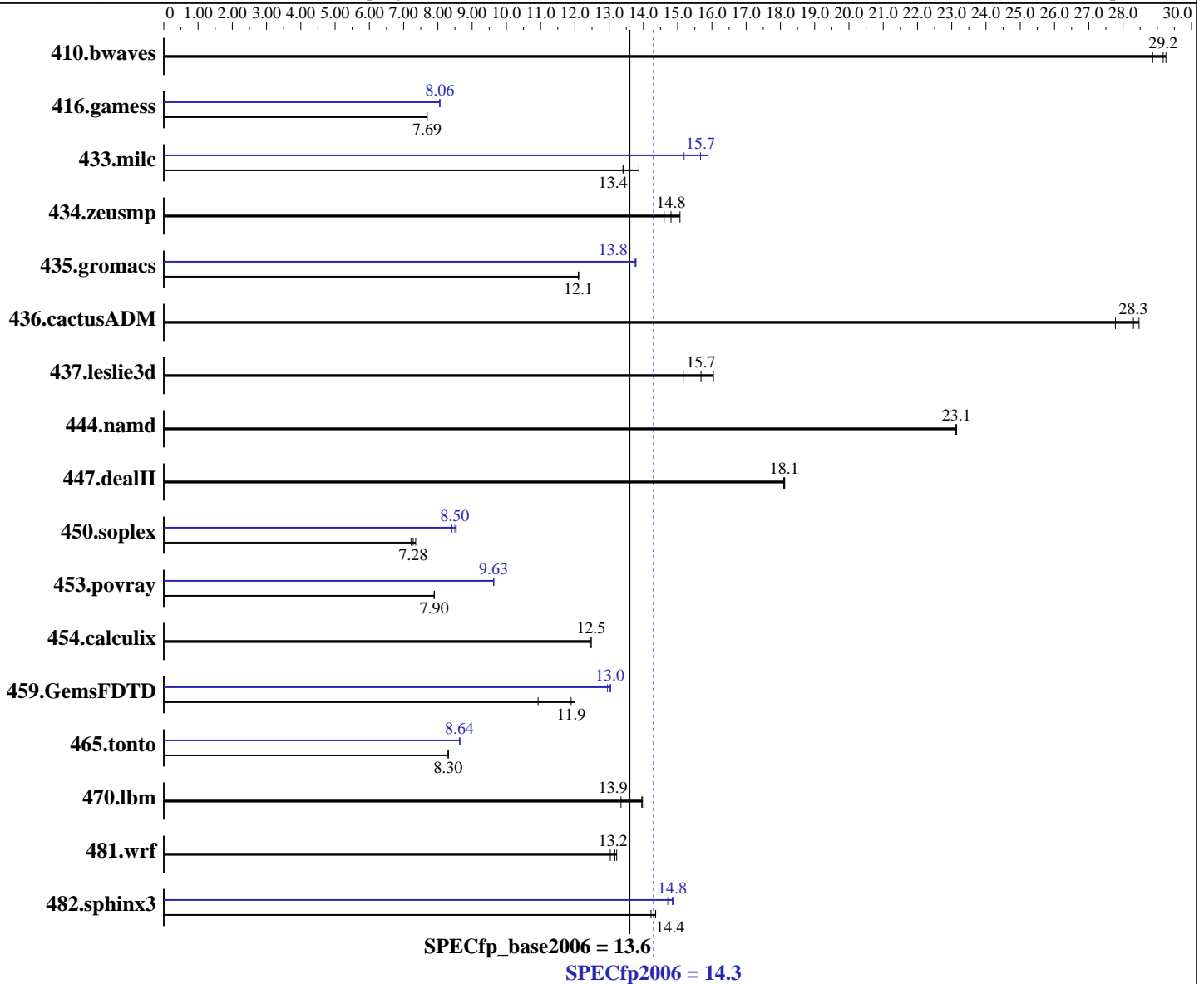
Test date: Oct-2006

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 9015
 CPU Characteristics: 1.4GHz/12MB, 400MHz FSB
 CPU MHz: 1400
 FPU: Integrated
 CPU(s) enabled: 2 cores, 1 chip, 2 cores/chip
 CPU(s) orderable: 1-2 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: 6 MB I+D on chip per core
Other Cache: None
Memory: 24 GB (12x2GB DIMMs)
Disk Subsystem: 146GB 10K RPM SCSI
Other Hardware: None

Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
|---------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|-------------|-------------|
| | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 410.bwaves | 471 | 28.9 | 466 | 29.2 | 465 | 29.3 | 471 | 28.9 | 466 | 29.2 | 465 | 29.3 |
| 416.gamess | 2549 | 7.68 | 2547 | 7.69 | 2547 | 7.69 | 2430 | 8.06 | 2431 | 8.05 | 2430 | 8.06 |
| 433.milc | 684 | 13.4 | 685 | 13.4 | 662 | 13.9 | 604 | 15.2 | 586 | 15.7 | 578 | 15.9 |
| 434.zeusmp | 604 | 15.1 | 623 | 14.6 | 615 | 14.8 | 604 | 15.1 | 623 | 14.6 | 615 | 14.8 |
| 435.gromacs | 590 | 12.1 | 590 | 12.1 | 590 | 12.1 | 518 | 13.8 | 519 | 13.8 | 519 | 13.8 |
| 436.cactusADM | 430 | 27.8 | 420 | 28.5 | 422 | 28.3 | 430 | 27.8 | 420 | 28.5 | 422 | 28.3 |
| 437.leslie3d | 620 | 15.2 | 586 | 16.0 | 599 | 15.7 | 620 | 15.2 | 586 | 16.0 | 599 | 15.7 |
| 444.namd | 347 | 23.1 | 347 | 23.1 | 347 | 23.1 | 347 | 23.1 | 347 | 23.1 | 347 | 23.1 |
| 447.dealII | 632 | 18.1 | 631 | 18.1 | 632 | 18.1 | 632 | 18.1 | 631 | 18.1 | 632 | 18.1 |
| 450.soplex | 1156 | 7.22 | 1134 | 7.35 | 1145 | 7.28 | 982 | 8.50 | 977 | 8.54 | 992 | 8.41 |
| 453.povray | 674 | 7.90 | 674 | 7.89 | 674 | 7.90 | 552 | 9.63 | 552 | 9.63 | 553 | 9.63 |
| 454.calculix | 663 | 12.4 | 661 | 12.5 | 661 | 12.5 | 663 | 12.4 | 661 | 12.5 | 661 | 12.5 |
| 459.GemsFDTD | 971 | 10.9 | 884 | 12.0 | 892 | 11.9 | 813 | 13.0 | 815 | 13.0 | 819 | 13.0 |
| 465.tonto | 1185 | 8.31 | 1185 | 8.30 | 1186 | 8.30 | 1140 | 8.63 | 1136 | 8.67 | 1139 | 8.64 |
| 470.lbm | 1030 | 13.3 | 983 | 14.0 | 985 | 13.9 | 1030 | 13.3 | 983 | 14.0 | 985 | 13.9 |
| 481.wrf | 857 | 13.0 | 845 | 13.2 | 848 | 13.2 | 857 | 13.0 | 845 | 13.2 | 848 | 13.2 |
| 482.sphinx3 | 1358 | 14.4 | 1357 | 14.4 | 1371 | 14.2 | 1325 | 14.7 | 1313 | 14.8 | 1311 | 14.9 |

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 "cpuconfig" EFI command was used prior to booting to deconfigure processors.

Although two cores were enabled during testing, the SPEC CPU2006 benchmarks used only one core.

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
```

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)

Fortran benchmarks:

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

Benchmarks using both Fortran and C:

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

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.20090715.11.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.20090715.11.xml

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Tested with SPEC CPU2006 v1.0.
Report generated on Tue Jul 22 10:10:58 2014 by SPEC CPU2006 PS/PDF formatter v6932.
Originally published on 15 November 2006.