SPEC® CFP2006 Result

Hewlett-Packard Company

HP Integrity Superdome
(1.6GHz/18MB Dual-Core Intel Itanium 2)

$SPECfp^{®}\_rate2006 =$ 727

$SPECfp\_rate\_base2006 =$ 700

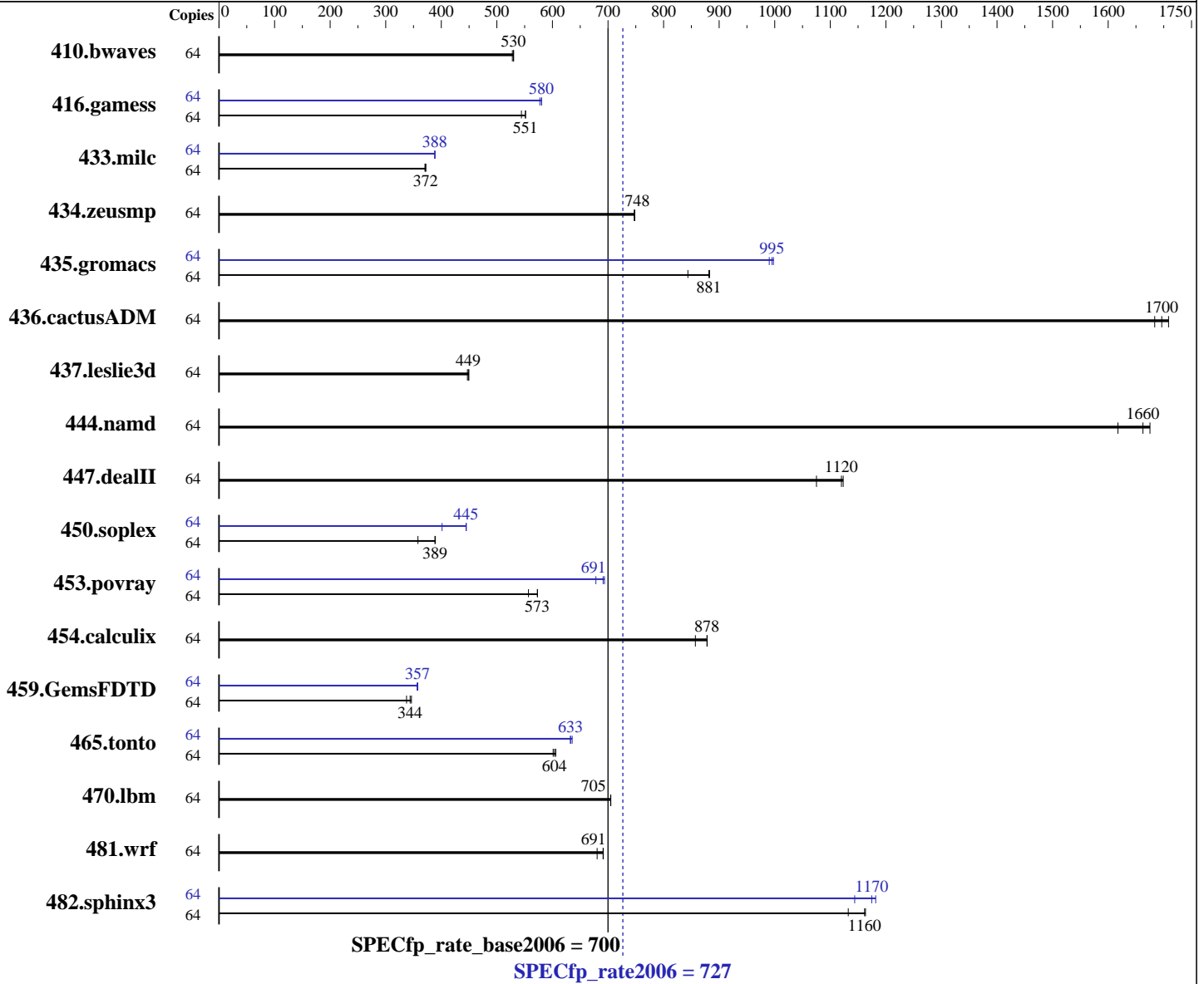|	
CPU2006 license: 03	**Test date:** Oct-2006
Test sponsor: Hewlett-Packard Company	**Hardware Availability:** Sep-2006
Tested by: Hewlett-Packard Company	**Software Availability:** Sep-2006

Copies

Benchmark	Copies	Value
410.bwaves	64	530
416.gamess	64	580
416.gamess	64	551
433.milc	64	388
433.milc	64	372
434.zeusmp	64	748
435.gromacs	64	995
435.gromacs	64	881
436.cactusADM	64	1700
437.leslie3d	64	449
444.namd	64	1660
447.dealII	64	1120
450.soplex	64	445
450.soplex	64	389
453.povray	64	691
453.povray	64	573
454.calculix	64	878
459.GemsFDTD	64	357
459.GemsFDTD	64	344
465.tonto	64	633
465.tonto	64	604
470.lbm	64	705
481.wrf	64	691
482.sphinx3	64	1170
482.sphinx3	64	1160

SPECfp_rate_base2006 = 700

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Hardware

CPU Name:	Dual-Core Intel Itanium 2 9040
CPU Characteristics:	1.6GHz/18MB, 533MHz FSB
CPU MHz:	1600
FPU:	Integrated
CPU(s) enabled:	64 cores, 32 chips, 2 cores/chip
CPU(s) orderable:	1-64 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

Continued on next page

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L3 Cache:	9 MB I+D on chip per core
Other Cache:	None
Memory:	256 GB (256x1GB DIMMs)
Disk Subsystem:	3x73GB 15K RPM SCSI (striped)
Other Hardware:	None

Results Table

| Benchmark | Base | | | | | | | Peak | | | | | | |
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	64	1648	528	1641	530	**1641**	**530**	64	1648	528	1641	530	**1641**	**530**
416.gamess	64	2303	544	2271	552	**2273**	**551**	64	2159	580	2171	577	**2159**	**580**
433.milc	64	1585	371	**1581**	**372**	1578	372	64	**1513**	**388**	1513	388	1512	389
434.zeusmp	64	778	748	779	747	**779**	**748**	64	778	748	779	747	**779**	**748**
435.gromacs	64	542	844	**518**	**881**	518	883	64	**459**	**995**	461	990	458	998
436.cactusADM	64	454	1680	448	1710	**451**	**1700**	64	454	1680	448	1710	**451**	**1700**
437.leslie3d	64	1346	447	**1341**	**449**	1338	450	64	1346	447	**1341**	**449**	1338	450
444.namd	64	317	1620	306	1680	**309**	**1660**	64	317	1620	306	1680	**309**	**1660**
447.dealII	64	652	1120	681	1080	**654**	**1120**	64	652	1120	681	1080	**654**	**1120**
450.soplex	64	1491	358	**1374**	**389**	1371	389	64	1330	401	**1201**	**445**	1199	445
453.povray	64	611	557	**594**	**573**	594	573	64	502	678	**493**	**691**	491	694
454.calculix	64	616	857	601	878	**601**	**878**	64	616	857	601	878	**601**	**878**
459.GemsFDTD	64	1961	346	**1974**	**344**	2012	337	64	1898	358	1905	356	**1900**	**357**
465.tonto	64	1047	601	1039	606	**1043**	**604**	64	996	632	991	636	**995**	**633**
470.lbm	64	**1248**	**705**	1248	705	1247	705	64	**1248**	**705**	1248	705	1247	705
481.wrf	64	**1034**	**691**	1051	680	1034	692	64	**1034**	**691**	1051	680	1034	692
482.sphinx3	64	1102	1130	**1074**	**1160**	1072	1160	64	1090	1140	1056	1180	**1062**	**1170**

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 8 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 +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.20090715.08.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.20090715.08.xml

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

Tested with SPEC CPU2006 v1.0.
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