### Hewlett-Packard Company

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

**SPECfp\textsuperscript{\textregistered} \textit{rate2006} = 727**

**SPECfp\textsuperscript{\textregistered} \textit{rate base2006} = 700**

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPU Name:</strong></td>
<td><strong>Operating System:</strong> HPUX11i-TCOE B.11.23.0609</td>
</tr>
<tr>
<td><strong>CPU Characteristics:</strong></td>
<td><strong>Compiler:</strong> HP C/aC++ Developer's Bundle C.11.23.12</td>
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<tr>
<td><strong>CPU MHz:</strong></td>
<td><strong>Auto Parallel:</strong> No</td>
</tr>
<tr>
<td><strong>FPU:</strong> Integrated</td>
<td><strong>File System:</strong> vxfs</td>
</tr>
<tr>
<td><strong>CPU(s) enabled:</strong> 64 cores, 32 chips, 2 cores/chip</td>
<td><strong>System State:</strong> Multi-user</td>
</tr>
<tr>
<td><strong>CPU(s) orderable:</strong> 1-64 chips</td>
<td><strong>Base Pointers:</strong> 32-bit</td>
</tr>
<tr>
<td><strong>Primary Cache:</strong> 16 KB I + 16 KB D on chip per core</td>
<td><strong>Peak Pointers:</strong> 32-bit</td>
</tr>
<tr>
<td><strong>Secondary Cache:</strong> 1 MB I + 256 KB D on chip per core</td>
<td><strong>Other Software:</strong> None</td>
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</tbody>
</table>

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

### Results

<table>
<thead>
<tr>
<th>Benchmark</th>
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<th>Specfp Rate Base2006</th>
<th>Specfp Rate2006</th>
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<td>530</td>
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<td>465.tonto</td>
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**SPECfp\textsuperscript{\textregistered} \textit{rate base2006} = 700**

**SPECfp\textsuperscript{\textregistered} \textit{rate2006} = 727**
SPEC CFP2006 Result

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

CPU2006 license: 03
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Tested by: Hewlett-Packard Company

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

<table>
<thead>
<tr>
<th>Benchmark</th>
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<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
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</table>

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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SPECfp_rate_base2006 = 700

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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SPEC CFP2006 Result
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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

Continued on next page
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/CPF2006_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

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For other inquiries, please contact webmaster@spec.org.

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