

2003/02/14

Synclavier Digital Corporation

Release 5.2 for the Synclavier® Digital Audio System

Bug Fixes:

- Two-octave shift in OMS MIDI input
- VK Panel now works with colors set to "Millions"
- G-page SMPTE time entry bug fixed
- L-Page, Mark End bug fixed
- S-Page, MIDI and non-MIDI controller values corrected in the Edit Filter
- Muted tracks in recalled sequences stay muted
- Fixed missing header data when using Q-Page Optical Transfer Panel
- SyncNet Display Offset bug fixed

Features:

- Journaling feature added to File menu
- New Keyboard transpose feature
- Sum L&R - New modify function on the L-page
- L-page saves to new Directory path
- Alternate intensity added
- S-Page Overhaul
 - all 16 dialog panels rewritten to reflect better screen draw, increased accuracy of entered values, and prevention of value overlap errors
 - other S-Page enhancements including:
 - "Change Pitch", added Transpose, Pitch Inversion, Pitch Scaling
 - "Change RTE", expanded editing options
 - "Cut/Paste", added selection icon
 - "Edit Filter", added Pressure to list
 - "MIDI Mapping", added shortcuts
 - "Settings", new selection icon, added SMPTE Display Offset, new display
 - "Sequence Files", now has warning message before Recall and Unsave
 - New "SMT/SKT" panel, with bi-directional "Copy Timbre" function
 - New "Track Solos" panel, for identifying various track conditions
- Time Display modes on the Keyboard, G-Page, S-Page, and Q-page have been coordinated
- Mark Start now does not change On/Off state when recalling a sequence
- Improved Multi-Channel assignments when loading to a system with fewer outputs
- Recalling sequences from C-Page no longer affects Q-Page settings
- SMPTE times may now end with a decimal point (. = .0)
- Improved tuning algorithm
- Introduction of SSPowerPants, high-end Sample-Rate Conversion software
 - Highly accurate, Macintosh based Sample-Rate Conversion
 - Can be used to work around some bugs in InterChange™ 1.5
 - Supports large (>2GB's) file sizes
 - Reads Sonic Solutions files and EDL's
 - DVD-Audio BIN Files and PCM files
 - File bit-depth control
 - Extract tracks from DDP file sets
 - Join segmented Sonic Solutions and DVD-A files
 - Author "Cart" chunks in WAVE files
 - Play Synclavier soundfiles through your Macintosh speaker

Installing Release 5.2

As of this release we are no longer supplying Model D customers with two 3.5 inch floppy disks containing installers for the appropriate Macintosh software components. Instead we have modified the Synclavier PowerPC installer (distributed on CD) to include software components for both Model D and Synclavier PowerPC configurations. Three system extensions are placed in the "Extensions" folder by the installer. They are...

InterChange™SharedLibrary
Synclavier®PCILib
SYNCnet INIT

If you are not using Synclavier PowerPC, you can disable "InterChange™SharedLibrary" and "Synclavier®PCILib" (using the Extensions Manager).

"SYNCnet INIT" is only required if you use the NUBUS RS422 card in the Macintosh.

If you are not using the Model D processor, you can disable "SYNCnet INIT" (using the Extensions Manager).

Changes to the PROFILE

PROFILE is a small text file on the top level of W0: containing MONITOR commands. All commands in PROFILE will be executed automatically every time the system is booted. The primary purpose of PROFILE is to allow users to save their own preferences. Each release ships with a PROFILE containing the “factory” preferences.

With Release 5.2, a few changes have been made to the “factory” preferences. The changes are described here so that you will understand why certain things look or behave differently than before, and so that you will know how to change these preferences if desired. To view and edit PROFILE, break to the MONITOR and type the following command line followed by the RETURN key.

```
set cat w0:; old profile; sed
```

This displays PROFILE in the Screen Editor. You can use the arrow keys to place the cursor for inserting or deleting text. Any line beginning with * will not be executed and is used as a comment.

The three commands that have been changed in this release are as follows...

```
set grp off
```

If “grp” is set to “on”, then holding a track button for two seconds will initiate the Track Grouping function. Because some users found this to be problematic, we now default this feature to “off”. The Track Grouping can be initiated when desired by pressing the Sequence Name button.

```
set log on
```

This enables the MONITOR’s logging capability. With logging enabled, the last 36 command lines entered (A through Z) will be remembered in a HISTORY file. Previously entered command lines can be easily repeated by typing the letter associated with them or scrolling back to them using the up and down arrow keys. Previous commands can also be placed on the command line for further modification by typing a comma followed by the letter associated with the previous command line. The logging feature is the basis of a very powerful set of command line editing functions. Details can be found in the MONITOR documentation.

```
set echo on
```

This causes the command lines in “Do” files to be output to the terminal window when the “Do” files are executed.

If you have made any changes you wish to save, place the cursor on the vertical column of letters at the left edge of the screen (known as the command column) and type “.r”. Then press the RETURN key twice. To exit the Screen Editor and return to the MONITOR, type “.e” from the command column. From the MONITOR type “boot” and press RETURN to reboot the system, thereby causing your new PROFILE to be executed.

Two-octave shift in OMS MIDI input fixed

A bug which caused incoming MIDI via OMS to be shifted up two octaves has been fixed.

Termulator: Alternate Intensity reinstated

Much of the Able Synclavier code written in the 1980s took advantage of the older Pericom terminal's Alternate Intensity mode which plotted specific text half as bright as normal text. When the Macintosh terminal emulator was written, alternate intensity mode was implemented using the 50% gray pattern (at the time only black and white Macs were available). However it was disabled, probably because the text was unreadable when the display was set at Mid Size or Half Size.

Since the use of alternate intensity helps make certain screens more understandable and since the patterned text is quite readable at Full Size, we have re-enabled it in Termulator when the display is set to Full Size.

Termulator: Journaling feature added to the "File" menu

Until now, Termulator's "Journaling" feature was an undocumented "Easter Egg". This feature captures all terminal input and output to a Microsoft Word text file. Journaling was started by typing Control-Option-Forward Delete, and stopped (or continued with a new file) by typing Control-Option-End. It is now available as a menu item on the File menu because (1) it's very useful; (2) it's functionally similar to the "Capture Printer Output to File" feature and as such ought to be presented along with it; and most importantly (3) PowerBooks lack the Forward Delete key.

Termulator: VK Panel bugs fixed

When the Monitors Control Panel was set to "Millions", the VK Panel was plotted in Black and White. Also much of the behavior related to scroll bars, the size box and the zoom box was not right. For example it wasn't possible to size the window to encompass the entire panel. A few minor cosmetic issues were resolved as well, such as the centering of the text window.

Also there was a functional discrepancy between Termulator's emulation of the VK window and the real VK window. This caused the decimal point to be missing from Termulator's VK panel when Frames/Beat Tempos were displayed.

NEW Keyboard Transpose feature

The keyboard can now be transposed, such that the physical keys can produce pitches other than the usual. This new feature is accessed by pressing the "Cut/Boost" button on the keyboard (located at the bottom of the fourth panel from the left). You can then dial any transposition between -12 and +12 semitones. Press the button a second time to quickly reset the transposition to its default value of zero semitones. Aside from allowing access to the previously inaccessible pitches C0 to G#0, this feature also allows easy transposition of keyboard performance into any sounding key.

Note that the Synclavier can only handle pitches from C0 to C7. Using this feature allows physical keys to be mapped to pitches outside this range. Such keys will effectively be dead keys.

G-Page: Bugs fixed

When typing SMPTE times on the G-Page that were sufficiently far away from the sequence start time (or before it), a system hang was possible. (It was quite easy to do this unintentionally with a simple typo.) This problem has been solved by utilizing the 24-hour SMPTE wrap-around feature. Accordingly, the warning about sequence SPEED settings of 0.020 and below apply. (See the section titled "Remote issue with the 24-hour SMPTE wrap-around feature:" for a description of this.)

When typing "togg" over the type of an RTE on the G-Page, the RTE changed into a note with a pitch of C1. (The use of these "toggle events" is fully implemented on the Q-Page's event editor panel but is largely incomplete on the G-Page.)

L-Page: Sum L & R feature

There is a new feature “Sum L & R” on the “Modify II” menu of the L-Page. This creates a mono version of a stereo soundfile by mixing the two channels together in equal proportions. No scaling is applied unless needed to prevent overflow.

L-Page: Partial Treenames

Since release L, when saving a soundfile on the L-Page, the user could press return when prompted for a filename to use the current soundfile’s name. This convenience is now extended to allow the user to type in a directory path first (ending with “:”), and then press Return to append the current filename to the directory path.

L-Page: Bug Fix

When typing “K” to set a “Mark End” while in Zoom Mode, a “Mark Offset” was set instead. This has been corrected.

S-Page: General

- The S-Page has been extensively overhauled. All of the dialogs (those 16 items listed on the right side of the screen) have been rewritten. This was done primarily because of a multitude of minor problems, far too numerous and unimportant to detail here. These problems were mostly such things as fields where the arrow keys didn’t work, leaks causing labels or fields to be missing under certain circumstances, or the wrong labels to be displayed. As one example, the switch in the “Sequence Files” dialog was accessing the same location in memory as the maximum duration field of the “Change Duration” dialog. Consequently using one of these corrupted the other.

The individual dialogs are listed below. In this section I’ll mention changes that are not specific to any one dialog.

- The use of alternate intensity among the dialogs wasn’t consistent. This went unnoticed until recently since the use of alternate intensity had been disabled when the Terminal type was “Macintosh”. Now on all S-Page dialogs, alternate intensity is used for inert labels whereas normal intensity is used for active content (i.e., switches which can be jogged, or labels which update dynamically).
- Increased the accuracy of computations used by “Fit to Time” as well as the Slope functions of the “Change Duration”, “Change RTE” and “Change Velocity” dialogs.
- To prevent Minimum/Maximum limits from crossing each other, the following behavior has been implemented in all dialogs which allow the user to specify such limits: (This includes the Change Duration, Change RTE, Change Velocity and Edit Filter dialogs.)

When entering a Minimum value exceeding the current Maximum value, the Maximum will now automatically reset to the highest possible value. Similarly, when entering a Maximum value less than the current Minimum value, the Minimum will automatically reset to the lowest possible value. In the past, both values became the same in such scenarios, which wasn’t at all helpful.

- Many of the dialogs have new defaults. See below for specific details.

S-Page: Bounce

(No functional change.)

S-Page: Change Duration

In previous releases, the From/To durations used by the Slope function were stored in the same memory as the Minimum/Maximum durations used with the Set, Scale and Add functions. This created the possibility for the user to enter valid durations for From/To, which were then out of order as Minimum/Maximum durations after switching to Set, Scale or Add. Now the From/To durations are maintained separately from the Minimum/Maximum durations.

This dialog now limits entered durations to the range of values that a Synclavier sequence can accommodate.

S-Page: NEW Change Pitch dialog

The former "Transpose" dialog has been redesigned to include other types of pitch transformations. Accordingly it has been renamed "Change Pitch" and its position in the submenu list has changed to maintain alphabetical order. In addition to Transpositions, this new dialog can also create pitch inversions, augmentations and diminutions.

The new dialog has three sub-dialogs selected by jogging the field after "Action:". These three sub-dialogs are "Transpose", "Pitch Inversion" and "Pitch Scaling".

The Transpose sub-dialog now includes a Semitones field, making it possible to specify a desired transposition simply by typing the number of semitones into one field, instead of having to type pitches into two fields.

The Invert Pitches sub-dialog should be self-explanatory.

The Scale Pitches sub-dialog is a generalized linear transformation tool. It can perform a simple transposition or inversion like the previous two sub-dialogs. But you can also use it for more esoteric effects. The intervals between notes can be expanded or compressed to create radically different harmonic and melodic content. As far as we know, this is a feature offered on no other sequencer.

S-Page: Change RTE

- The "Change RTE" dialog can now be used in conjunction with the Edit Filter. This will allow much more complex edits to be performed. Since the "Change RTE" dialog already specifies which RTE to edit, the three controllers specified at the upper right of the Edit Filter will be ignored.
- "Pressure" has been added to the list of RTEs that can be edited. Since pressure is pitch-specific, when editing pressure with the Edit filter enabled, the pitch switch at the upper left of the Edit Filter can be used. This makes it possible finally to extract a range of notes along with their associated pressure RTEs. Note that the switch setting "No Pitches" really means "don't edit notes (i.e., non-RTEs)" and thus has no effect on pressure RTEs. This switch setting will function the same for Pressure RTEs as if the switch were set to "All Pitches".
- Many problems have been resolved relating to a failure of earlier software to distinguish between fundamentally different types of RTEs. Some background information will be useful here:

In terms of range and resolution, there are three different types of RTEs in the Synclavier:

- (1) Monopolar RTEs (Pedal 1, Pedal 2, Mod Wheel, Breath Controller, Pressure)
Although these are represented on screen as values from 0.0 to 100.0, they are actually the 226 discrete integers from 0 to 225.

(2) Bipolar RTEs (Pitch Wheel, Ribbon)

Although Pitch Wheel is usually represented on screen in terms of semitones, these are actually the 201 discrete integers from -100 to +100.

(3) MIDI Controllers

These are the 128 discrete integers from 0 to 127.

The problems alluded to earlier stemmed from the fact that given the differing ranges and resolutions of these three types of RTEs, each type needs to be handled differently. Yet many parts of the old S-Page failed to do this. (More on this under “S-Page: Edit Filter” below.)

For example, when the RTE type is set to Pitch Bend it might be appropriate to enter a minimum value of -2.00 semitones and a maximum value of +2.00 semitones. But then when switching the RTE type to Mod Wheel, these values become inappropriate.

To solve such problems, separate Minimum/Maximum and From/To values are now maintained for the three different types of RTEs, and appropriate limits are applied for each type. This also provides a convenience for the user, since the last set of values used for a particular type of RTE will still be there when returning to that type from another.

S-Page: Change Velocity

Bugs related to ill-behaved fields have been fixed.

S-Page: Cut/Paste

This dialog can now be brought up by clicking the “splice block” icon in the upper right panel on the screen.

The cursor stays on the dialog now after jogging a switch, instead of jumping to the global sequence time field in the upper right corner of the screen.

The “COUNT:” field will no longer accept unusable values.

S-Page: Edit Filter

“Pressure” has been added to the list of RTEs that can be filtered with the Edit Filter.

Bug fix: Previously the Edit Filter did not apply the proper range limits to MIDI controllers during edits. Even though the user could enter a separate range for MIDI controllers on screen, the range pertaining to non-MIDI controllers was applied when doing an edit, thereby producing unexpected results.

Furthermore, the previously mentioned non-MIDI controller range (0 to 225) was inappropriately applied to bipolar RTEs, thereby causing very unexpected results. Negative limits could not even be entered in the fields. The new Edit Filter dialog features three separate sets of ranges – one for each type of RTE. During edits, the Edit Filter now distinguishes between the different types of RTEs and applies the appropriate range to each.

Arrow Keys previously didn’t work on this dialog. This has been corrected.

S-Page: Fit to Time

(No functional change.)

S-Page: Justify

(No functional change.)

S-Page: MIDI Mapping

Single-keystroke shortcuts added: The MIDI Mapping dialog will now accept “0” (zero) instead of requiring the user to type “Off”. Also the keys “k” or “K” can be typed instead of requiring the user to type “Kbd”.

S-Page: Settings

The Settings dialog has been totally redesigned. This dialog can now be brought up by clicking the “sliders” icon in the upper right panel on the screen.

The SMPTE Display Offset, formerly only available on the Q-Page, has been added to the Settings dialog. To avoid confusing this new Display Offset with the SMPTE Sync Offset (formerly labeled simply as “Offset”), we now use the more descriptive labels “Sync Offset” and “Displ Offset”. Note that the Feet:Frame Offset (which also used to be labeled simply as “Offset”) is actually a Display offset. The fact that the SMPTE Sync Offset and the Feet:Frame Display Offset were both formerly labeled as “Offset”, when one pertained to synchronization whereas the other pertained only to display, was a bit confusing.

In the past, the SMPTE parameters were only displayed when synchronized to SMPTE or when the time display format was set to SMPTE. Similarly the “FEET” parameters (now renamed as “FILM” parameters) were only displayed when the time display mode was set to FEET:FRA. This created an inconvenience since there may be times when the user will want to view or edit these parameters without having to first change the time display mode, or lock the sequence to SMPTE. Now all the parameters are displayed all the time. This has been done at the expense of making the dialog rather crowded.

If the click rate field is displayed as “Sec/Beat”, the number of digits after the decimal point will now properly represent whether the sequence is mapped or not. As with the click rate displayed on the Keyboard’s window, if the sequence is mapped there will be six digits after the decimal yielding microsecond resolution. If the sequence is unmapped there will be three digits yielding millisecond resolution.

Arrow keys now work in the Settings dialog. There are still three fields that won’t “jog” (the two SMPTE fields and the Film display offset field). This cannot easily be fixed at this time.

S-Page: Sequence Files

As you may know, the SAVE SEQUENCE button has a safety mechanism whereby if an existing sequence would be overwritten, a warning is issued and the button changes to a confirmation state. Since the RECALL and UNSAVE functions are also potentially destructive, similar warning and confirmation mechanisms have been implemented for them as well. It was just too easy to wipe out hours of work when one was tired.

Longer Treenames are now possible. The treename field width has been increased from 40 to 46 characters.

S-Page: NEW Joint SMT/SKT dialog

The former SMT and SKT dialogs have been replaced by a joint SMT/SKT dialog. The new dialog features a more flexible bi-directional “Copy Timbre” function. Possible sources include the Keyboard, any Track, any Timbre Bank and Entry or the “Null Timbre”. Possible destinations include the Keyboard or any Track. (The ability to specify a Timbre Bank and Entry as a destination has been partially developed but is withheld from this release. This represents no loss of functionality as this feature was never available in the old SMT or SKT dialogs.)

An “Exchange” button is provided to make it easy to reverse the direction of a copy without having to re-enter source and destination parameters. This will be convenient in the common scenario of copying a timbre to the keyboard to make an adjustment, and then copying it back to the source.

Note that when a Timbre Bank or Entry field is selected, you can click on the track buttons as if they were Banks of Timbre Entries to place the corresponding number in the field. For example, Track 13 would correspond to Bank 2, Entry 5. So if a Bank field is current, clicking Track 13 would place 2 in the Bank field and automatically increment to the Entry field. Clicking Track 13 again would place 5 in the Entry field.

One more ergonomic bonus: When the screen is first opened, the fields will default to the most recently selected track, bank and entry.

S-Page: New Track Solos dialog

This dialog offers several tools for soloing and un-soloing tracks based on various conditions. These can be useful in clearing away unused tracks from a sequence that started from a template or underwent edits that could leave tracks with no sounding notes, etc. Some composers routinely spend a significant amount of time doing such chores in preparation for mix sessions. The functions are as follows:

- Solo all non-blank tracks
- Solo all tracks with events
- Solo all tracks with sounding notes
- Toggle all Solos
- Clear all Solos

To avoid possible misunderstanding, the following explanations may be helpful:

Solo all non-blank tracks:

By “non-blank track” we mean a track that has *any* data associated with it (not necessarily notelist data). This could simply mean that a channel assignment was typed on the H-Page or a null timbre was SMTed onto the track. The criteria used here is the same as that used by the INFO button.

Solo all tracks with events:

By “events” we mean any notelist data. This can be notes, cues, RTEs, MIDI SysEx, loops... if you can see it on the G-Page it's an event. (Be aware that a track may contain events that you might not see on the G-Page if Show Real Time Effects is set to NO.)

Solo all tracks with sounding notes:

By “sounding notes” we mean notes and cue events that can trigger audio. Often after cut and paste edits, a track may only contain some stray RTEs. This feature will leave such tracks un-soloed. This is usually desired. However there are some scenarios where you may want to retain such tracks. (If a track is routed to a MIDI output, the RTEs may have an effect on an instrument triggered by another track.)

There is currently one exception to our “sounding notes” definition. A track containing only an empty loop will still be soloed by this feature.

Toggle all Solos:

This simply reverses each track's on/off state. After you've soloed all the tracks you want to keep, you can use this to quickly solo all other tracks for erasure. After erasing them you can press this again to re-solo the tracks you kept.

Clear all Solos:

This is the same function that is always accessible from the CLR SOLOS button at the top of the S-Page.

S-Page: Track Volume

(No functional change.)

S-Page: Unwrap Loops

(No functional change.)

Initialization of time display modes

There are three separate time display modes maintained by the Synclavier RTP. They are...

- the Velocity Keyboard's time display mode
- the time display mode shared by the G-Page and the S-Page
- the Q-Page's time display mode

The Q-Page's time display mode is the one that can be saved in the .SDEF-7 file using the Write Defaults feature. To prevent users who prefer to work in a particular time display mode from having to repeatedly set up their preference as they go from screen to screen, the following initialization scheme has been implemented:

V/P Keyboard:

If a default time display format has been saved using the Q-Page's "Write Defaults" feature, then whenever the RTP is launched, the keyboard's time display mode will be initialized to that mode. Otherwise it will default to BEATS as before.

When the G-Page is first entered:

If the S-Page has previously been entered then the time display mode shared by the G-Page and S-Page has already been set and will be used. Otherwise if the Q-Page's time display mode has already been set, then that mode will be used. (Note that the Q-Page's time display mode will have been set either by the Q-Page having already been entered, or automatically at RTP launch if a default was written to the .SDEF-7 file.) Otherwise the time display mode currently set on the Keyboard will be used.

When the S-Page is first entered:

If the G-Page has previously been entered then the time display mode shared by the G-Page and S-Page has already been set and will be used. Otherwise the mode is set according to the same rules described above for the G-Page.

When the Q-Page is first entered:

If a default time display mode was ever written to the .SDEF-7 file, then the Q-Page's time display mode was already set at RTP launch. Otherwise if the time display mode shared by the G-Page and S-Page has already been set, then that mode will be used. Otherwise the time display mode currently set on the Keyboard will be used.

Mark Start no longer reset to OFF when recalling a sequence

With previous versions of the RTP, whenever a sequence was recalled, the Mark Start was automatically turned OFF. This behavior presented an inconvenience under several circumstances, particularly when undoing S-Page edits. When clicking the UNDO button on the S-Page, the system recalls ".UNDOSEQ", thereby resetting Mark Start to OFF. When using Mark Start to locate the sequence to an Edit we are focusing our attention on, having to manually turn Mark Start back on every time we clicked UNDO was very distracting. Additionally, if the Mark Start was ON when we did the edit, there's no logic in restoring the sequence with it OFF.

Consequently the Mark Start will now only change its ON/OFF status when you manually change it.

Muted Multichannel Assignments

Release 5.1 introduced the ability to assign 0 to multichannel outputs as a means of muting the channel (i.e., routing it to nowhere). After the release it was noted that when sequences with zeroed channels were recalled, the zeroed channels were interpreted as un-routed and thus automatically assigned default values. That problem has now been fixed.

The Script compiler and reverse compiler also misinterpreted zeroed channels as un-routed. They are now updated to handle muted channels as well.

Automatic Multichannel Assignments

If you were to create a sequence on a 16-channel system and later load it into an 8-channel system, you would find that all channels above 8 were automatically reset to 1. While it is necessary for out-of-range output assignments to be brought into range in order to be heard, simply setting them all to 1 was an exceedingly unhelpful way of handling it. Particularly because the user then had no way of knowing whether any of the reset tracks were originally routed in stereo or not.

To solve this problem, any out-of-range output assignments will now be transposed into range, thereby maintaining the relative settings between stereo pairs and to other tracks having out-of-range channels. Using the example of a 16-channel sequence loaded into an 8-channel system, a track originally assigned to outputs 9,10 will be reassigned to outputs 1,2; a track originally assigned to outputs 11,12 will be reassigned to outputs 3,4; and so on.

Safety feature: Sequence name in Audio Event Editor

An ergonomic booby-trap that has occasionally caused users to overwrite the wrong sequence has been resolved. In the past, when selectively recalling a track from a sequence on the C-Page, the sequence name on the Q-Page changed to that of the sequence the track was recalled from. This made it easy for users who thought they were saving over the original sequence on the Q-Page, to accidentally save over the sequence they had recalled the track from.

To avoid this pitfall, the C-Page will no longer change the Q-Page's sequence name when selective track recall is performed.

Retroactive bug fix: Soundfiles with incomplete headers written to Optical from Q-Page

There was a bug in the Q-Page's Optical Transfer Panel which was introduced in Release 5.0 and repaired in Release 5.1. It has been found that cues written to optical disk from Release 5.0's Q-Page have some data missing from the soundfile header. This missing data is not used when loading the soundfile from the optical disk back onto the Direct to Disk. However when loading the soundfile from the optical disk to polymemory, it causes the soundfile to be unplayable on the keyboard.

This release checks for the missing data when loading from optical into polymemory and manufactures the missing data as needed.

Terminating decimal accepted in SMPTE times

When typing a note time in any format other than SMPTE, it is perfectly valid to end the entry with a decimal point. However the system used to reject SMPTE times ending with a decimal. This was not only needless and inconsistent, but rather maddening considering how much extra effort goes into typing in a SMPTE time. Now, as with all other formats, a terminating decimal point will be interpreted as .0

Increased tuning accuracy for high notes (again)

In release 4.3, we improved the accuracy of an algorithm that handled the tuning of high notes. (Not just high notes produced by the FM and Poly voices, but also high notes interpreted from the strings of the Digital Guitar.) This algorithm has been improved once again. The results now match the equivalent rounded algebraic solution, so it won't get any better than this.

Remote issue with the 24-hour SMPTE wrap-around feature

The 24-hour SMPTE wrap-around feature introduced in Release 5.1 would produce incorrect results if the sequence SPEED is 0.020 or less. It's highly unlikely that anyone would utilize this feature while the SPEED was at such an absurd value. Nevertheless this feature has been modified to do nothing if the SPEED is 0.020 or less.

Note that this doesn't mean it's safe to edit cue times when the SPEED is this low. (This is because the old problems that the 24-hour SMPTE wrap-around feature was designed to avoid will not be avoided.) Consequently it's advisable not to edit cue times when the sequence SPEED is 0.020 or less.

SyncNet Protocol bug fixed

When setting the frame display offset from external applications such as EditView or Transformation, the intended parameter was not set and instead the SMPTE display offset and its on/off status were corrupted.

Cosmetic Improvement

The aesthetic appearance of the elongated-octagon-shaped buttons (prevalent on the S-Page) has been improved. They are now graphically more symmetrical and the text is nicely centered within them. To see an example, compare the STOP and CONT buttons on the S-page between this and any earlier release. Also see the buttons along the right edge of the Cut/Paste dialog.

Incidentally, an old bug that affects these buttons still persists. The centering of text within them only works correctly if Termulator's display size is set to Full Size. In the other two sizes the text in the buttons will lean toward the left.

What is SSPowerPants?

Shortly after the release of the soundfile translators in Interchange 1.5 (released March 2001 with Release 5.1), work began on a high-end sample rate conversion engine to be utilized by the soundfile translators on the next release. SSPowerPants started out merely as a temporary host application for testing the SRC algorithms in the absence of the Interchange source code. We never expected the application to serve any function beyond that, as we expected the SRC code to be integrated into Interchange in short order. Unfortunately this task was postponed, and in the interim period many other features and bug fixes pertaining to the soundfile translators were added to it. Since the sample rate conversion engine and the bug fixes are not yet available in Interchange, we have decided to make the SSPowerPants application available to customers in the mean time.

SSPowerPants is a Carbon application. It can run either on OS/X or on any Mac OS from 8.6 through 9.2 provided that CarbonLib is in the extensions folder (preferably CarbonLib version 1.6 or later). SSPowerPants reads and writes files on the Macintosh only. It does not interface directly with the Synclavier or with disk image files.

Soundfile translation bugs fixed in SSPowerPants but remaining in Interchange 1.5

A serious bug caused SoundDesignerII files to be written with two of the three mandatory resources misnamed. To avoid this bug, "import" the Synclavier soundfiles to the Macintosh, then use SSPowerPants to translate them to SoundDesignerII files.

The automatic bit depth conversion when "exporting" an 8-bit .wav file from a Macintosh volume to a Synclavier soundfile on a Winchester disk did not work. Other bugs related to bit depth conversion with 24-bit files have been fixed. To avoid these bugs when "exporting" non-16-bit soundfiles into the Synclavier, use SSPowerPants to create 16-bit versions of the soundfiles, then "export" the 16-bit soundfiles using Interchange 1.5.

Some applications (including S/Link) save wave files with the file type set to '.WAV' rather than 'WAVE'. The QuickTime Player recognizes such files as wave files, but Interchange 1.5 does not. SSPowerPants will recognize '.WAV' as well as 'WAVE'.

If you use S/Link to transfer cues or soundfiles with sample rate conversion, you'll get far better results transferring the files without sample rate conversion to AIFF, and then using SSPowerPants to perform the sample rate conversion (and possible type translation).

New soundfile translation features included in SSPowerPants but not in Interchange 1.5

Ability to handle 64-bit file sizes (files larger than 2 gigabytes.)

Support for translating from (not to) Synclavier soundfiles. SSPowerPants also includes a utility to play Synclavier soundfiles through the Macintosh speaker using QuickTime.

Support for translating from (not to) Sonic Solutions soundfiles (all packing modes). Also a Sonic Solutions EDL and all dependent files can be sample rate converted in one operation.

Support for DVD-Audio scrambled BIN files and raw PCM files.

User can control bit depth conversion.

Can extract tracks from DDP file sets.

Can process or join segmented Sonic Solutions and DVD-A BIN files.

User can author 'cart' chunks in WAVE files.

How to use the SSPowerPants application

Since SSPowerPants was not intended for public release, the application makes little attempt to explain itself to the user. Furthermore many of the features pertain to esoteric in-house needs, so if something looks alien to you, we recommend that you just ignore it. Performing the various soundfile translation and sample rate conversion tasks listed under the "Tools" menu should be intuitive enough, but there are a few things that could be confusing.

The user interface of SSPowerPants is geared toward performing sample rate conversions on large batches of files (or huge files exceeding 2 Gigabytes) that might take all night to complete. The idea was to allow a queue of source/destination pairs to be pre-selected right before going home for the day, thereby not requiring further user interaction to tell it what to process next in the middle of the night.

The application builds its queue of source/destination pairs by *repeatedly* prompting the user to select a source folder or file, followed by the corresponding destination folder. When you're done selecting source/destination pairs, just click cancel. Then you'll get the appropriate dialog to set your parameters for the conversion.

Most of the items in the dialogs should be self-explanatory, except perhaps the following:

"Ignore miniscule rate differences":

When Sample Rate Conversion is enabled in the "General Soundfile Translation" dialog, this simply prevents the audio data from being SRCed when the source and destination rates are the NTSC and non-NTSC equivalents of each other. As an example, if your target rate is 44100 and your source sound file is 44056, then you would only want to play the unaltered audio data at the 44100 rate, not actually SRC it by this miniscule amount.

"Impulse response width":

The bigger the number, the better the quality (and the longer it will take.)

Regarding "General Soundfile Translation" versus the optimized fixed integer ratio resampling algorithms ("Downsample 2 to 1", "Upsample 1 to 2", "Downsample 4 to 1", "Upsample 1 to 4", "Downsample 48 to 44.1", "Upsample 44.1 to 48" and for those 50KHz and 100KHz Synclavier soundfiles "Downsample 50 to 48"):

You would use "General Soundfile Translation" when you have a large assortment of files at many different rates, bit-depths, types etc., and you just want to mindlessly convert them all to a specified rate/depth/type. However, if for example you have a folder of files that you know are all 48K and you want them all to be 44.1K, then you'll get better quality results faster by using the optimized 48 to 44.1 downsampler.

Please be aware that "Downsample 48 to 44.1" really means downsample any soundfile whose rate is an integer multiple of 160 to the corresponding integer multiple of 147. In other words the moniker "48 to 44.1" does not imply that it can only be used to go from 48 to 44.1 - it can also be used to go from 96 to 88.2, etc. So for your 100KHz Synclavier soundfiles, "Downsample 50 to 48" can be used to yield a 96KHz soundfile.

Incidentally, the optimized sample rate conversion algorithms in SSPowerPants just might be the best commercially available. Several audio professionals in the U.S. and Europe have conducted comparative tests and have consistently reported that SSPowerPants produces results superior to the other SRC engines at their disposal.

Regarding “Merge Channels”:

This can be useful after you rip a track from a CD that came from a mono source. It’s quite wasteful to have two channels of data for material that really doesn’t have any significant difference between the channels. Anytime you’re only interested in being able to hear the sound and don’t care about stereo, you can use this tool to merge the channels into one so you can have a smaller file.

About the checkbox that reads “Apply automatic renaming rules”:

When enabled, this feature automatically changes any file extensions and any references to sampling rate found in the names of any source folders and files when creating the corresponding destination folders and files. Regarding folders, perhaps you were unaware that if you select a folder as a source, if it contains a hierarchical tree of subfolders nested several layers deep, the same hierarchical tree of subfolders will be created in the destination folder so that all the translated files will be in their intended subfolders.

As an example, suppose you have the following source folder hierarchy when you’re downsampling from 48 to 44.1 and translating from AIFF to WAVE...

```
YourSelectedSourceFolder:  
  SubfolderA_48_blah:  
    Subsubfolder48whatever:  
      FileA48.aif  
      FileB48.aif  
    Subsubfolder48abc:  
      FileC48K.aiff  
      FileD_xyz  
  SubfolderB_schmucky.aiff:  
    FileE_48.aif
```

Here is what will be created...

```
YourSelectedDestinationFolder:  
  SubfolderA_44_blah:  
    Subsubfolder44whatever:  
      FileA44.wav  
      FileB44.wav  
    Subsubfolder44abc:  
      FileC44K.wav  
      FileD_xyz  
  SubfolderB_schmucky.wav:  
    FileE_44.wav
```

Regarding filename extensions:

The following extensions are recognized (any combination of upper and lower case)...

- .aif
- .aiff
- .wav
- .wave
- .sd2
- .Sd2f
- .SDII
- .pcm
- .bin

...and will be changed to one of the following (Cased as indicated)...

- .aiff
- .wav
- .Sd2f
- .pcm
- .bin

Regarding rates:

The application assumes that sample rates in the file name are specified without the decimal or the digit following the decimal. (for example, "44" not "44.1")

when using one of the following algorithms...

- Upsample 1 to 2
- Downsample 2 to 1
- Upsample 1 to 4
- Downsample 4 to 1
- Upsample 44.1 to 48
- Downsample 48 to 44.1
- Downsample 50 to 48

...It will change occurrences of the following in folder names and filenames...

- 44 (meaning 44.1)
- 48
- 50
- 88 (meaning 88.2)
- 96
- 100
- 176 (meaning 176.4)
- 192

...to...

- 44
- 48
- 88
- 96
- 176
- 192

Regarding the "Play Synclavier Soundfile" feature:

This is a handy utility allowing you to hear your Synclavier soundfiles through your Macintosh speakers without any Synclavier hardware. The soundfiles are played from the "mark start" to the "mark end" at their original sample rates.

There is however a limitation imposed by QuickTime: QuickTime sample rates cannot exceed 65535.9999847412109375 Hz. Consequently any Synclavier soundfile sampled at a rate above this will play at this maximum possible rate.