

SAWStudio / SAWStudioLite Latest Release Info

Introduction

Welcome to SAWStudio. This environment offers an exciting new vision from Bob Lentini. The interface is built around the idea of a virtual console and multitrack recorder intimately interwoven together to offer an entirely new way of manipulating audio and building entire audio projects in the virtual world.

Please take some time to explore the built-in HelpFile and also download the .pdf version of the manual, available at www.SAWStudio.com. The navigation capabilities are powerful and complex and will require some getting used to. Reading, exploring and practicing inside the environment will greatly enhance your experience of the interface. We feel the rewards gained for the time invested, will be great. Have fun!

Version History Follows:

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Version 5.7

Enhancements

- * Corrects HtmlHelp issues on some systems which will fail on the first attempt after a system reboot.
- * A new menu item has been added to the Options/SACLink menu called *Input Mix Data From SAC Input Chans To Cur Track (Active/Selected)*. This option imports mix data from selected active SAC input chans and offsets the first one to the current MultiTrack HotTrack. The following chans stack in order without altering the MT layout. This option allows specific SAC chans to be offset in the MT for overdubbing to any track, while still importing the SAC chan settings. The Track order in the MT is not altered. The Record template is properly setup as well.

Video Track Viewer Version 3.8

- * Added code to use the Lav Splitter in the K-Lite Codec Pak for .mov files.
- * Now allows File dialog resizing.

Video Track Viewer Version 3.9

- * Allows Extended Monitor rendering to external video projectors to stay active even when SAWStudio is minimized off the screen.

Bug Fixes

- * Fixed Edit Dialog box sizing to not cut off text on Win 7, 8 and 10.
- * Fixed an issue with VST Plugin initialization that could cause certain VST Plugins to crash when patched.

- * Fixed code that could cause a crash when displaying the Record Setup window under certain conditions.
- * Opening a Mix Template with selected Mixer chans no longer disturbs existing plugins on non-selected Mixer chans.

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Version 5.6

Enhancements

- * Opening Mix Template Files will now respond to selected Mixer Chans and only overlay those chans with the new template data.
- * All window views are now "Border Padding" aware for better Win 7, 8 and 10 compatibility.
- * Re-compiled the helpfile into the newer html help .chm format. This allows for better searching and indexing as well as allows the helpfile to open correctly in Win 7 and 8 and 10.
- * Added code to keep Helpfile ontop and keep from loading multiple instances.
- * When the SACLink is active, playback in the Soundfile View will now warn if SF Samplerate is different than SAC instead of play at the incorrect speed.
- * Added code modifications for better Win 8 and 10 compatibility.

Bug Fixes

- * Fixed code to avoid crash when Record is activated thru the SACLink and no active record meters are set in SAWStudio.
- * Fixed code to properly control Midi Control Surface STOP, PLAY and REC lites on the MCUPro thru SACLink.
- * Fixed code for the Blend Session function to only affect mix data for blended tracks with active entries. All other chan mix data is untouched.

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Version 5.5

Enhancements

- * Added SACLink Record Bus functionality. When the SACLink is now active with a SAC Host of Version 4.0 or greater, the SAC record chan list offers an extra 8 record bus channels. These will process data from SAC Out Assigned Record bus links. Each of the SAC Master Outs and Aux Master Outs on all mixers can now be assigned to the Record Buses as well as Device Outs. This allows you to direct outputs for record as well as inputs. These assignments must be made manually. They will not automatically import with the Import SAC

Mix Data function.

- * Added SACLink midi ctrl template transport functions. Now the Mackie and Icon midi templates can send stop, play and record messages to SAWStudio thru the SACLink.

Bug Fixes

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Version 5.4

Enhancements

- * Enhanced the code to help recognize more wav file formats that could not be opened previously.
- * Added Smpte Format 60 Non-Drop and 59.94 Non-Drop to the Smpte Format Menu. These options can be used on the timeline with the Video Viewer but can not be generated, triggered or chased.

Video Track Viewer Version 3.7

- * Added code to recognize Smpte Format 60 Non-Drop and 59.94 Non-Drop.

Bug Fixes

- * Fixed code that could cause record meter latency on slave machines recording in SRP mode with a host that includes an active Midi Workshop session.
- * Fixed code to stop SRP playback across a marked area from muting armed record track data when Record is not actively engaged and one of the Tape Style Monitoring modes is active.

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Version 5.3

Enhancements

- * Modified code to allow closer to sample accurate host/slave recording start and end points when using SRP and punching in and out before stopping. This allows the host and slave sessions to be blended with close to sample accuracy of both sets of files. This, of course, depends on using a word-clock sync between machines or a common master clock feeding both machines. Some slight adjustment between files from both machines may still be required once the session is blended.
- * Modified code to extend VST Plugin compatibility to the 2.4 version changes which should help with newer plugin compatibility issues. Not all new options are yet supported but this should allow many newer plugins to be used that otherwise would not load.

Bug Fixes

- * Added .aif and .aiff files to the qualifier field when browsing for a missing file location.

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Version 5.2

Enhancements

- * Modified the wav file header routine to handle newer format wav files with extended header chunks. This will now open some wav files that would not open before.
- * Included new MotorMix Midi Controller Template that adds the Next and Last switches to jump console sections.
- * Enhanced Show Control Playback mode to recognize Control Track Stop commands within a Show Control entry and allow the next Show Control playback toggle to continue playback within the same entry instead of forcing a new start over of Show Control entry playback. If the entry selection has been changed then the next playback will load and start the new entry from the beginning as normal.
- * Added a new feature to the Show Control playback. During playback in Show Control Mode you may now use the Shift Right-Click or Shift SpaceBar or Shift-Return to force an automatic fadeout of the current session entry and an immediate jump to the next entry which will then continue, wait or preload according to the current entry's setting. You may also activate this feature by Right-Clicking in the Show Control Light. The light will flash during the duration of the automatic fade.
- * Added a new option to the Show Control Options menu to set the default fade time. This value is saved with the current Show Control File and is reset each time a new Show Control File is opened.
- * Added a new feature and menu item to the MultiTrack menu called *Shift MT Center To Quarter Position*. This option will shift all automatic centering operations within the multitrack to the left first quarter position instead. This offers more editing room to the right of the newly positioned cursor when using the zoom and other functions that would normally automatically center the cursor position. This option saves with the preferences.

Video Track Viewer Version 3.6

- * Added code to recognize a few newer HD video format FourCC codes.

Bug Fixes

- * Fixed code that corrects the FBCenter XYPan adjustment for tracks greater than 1. This previously only worked correctly on track 1.
- * Fixed code to properly update the Show Control listbox on Remotes when a new entry is loaded on the host and sitting in Wait or Preload mode.
- * Fixed Code to properly import the track re-order data from SAC without duplicating return and output data on SAWStudio Full.

- * Fixed Code to further correct stretching automation entries and keeping any entries that are exactly on the marked end boundary from moving off the end boundary.
- * Adjusted code to help window views draw correctly under different conditions when switching between apps using various methods. This should help keep views from disappearing off the screen and ontop windows correctly ordered.
- * Fixed code in the midi controller 14 bit resolution conversion routines which result in much more accuracy and smoothness of hi resolution fader controllers like the Behringer BCF and Mackie MCU controllers. All Hi-Res templates have been adjusted. Make sure to test and adjust any custom templates you may have created.
- * Fixed code that allows modal message dialog boxes to respond correctly to pen and touch commands in Windows 8.
- * Fixed code to stop the MultiTrack Cursor from disappearing in close zooms in Windows 8.

Eq Plugin Version 3.3

- * Fixed code that traps max/min crashes when adjusting controls in Win 8 with a pen or touch. Forces you to be close to the knob when grabbing a control with a pen or touch so the value does not jump far to the current cursor position.

Echo Plugin Version 3.3

- * Fixed code that traps max/min crashes when adjusting controls in Win 8 with a pen or touch. Forces you to be close to the knob when grabbing a control with a pen or touch so the value does not jump far to the current cursor position.

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Version 5.1

Enhancements

- * A new option has been added to the File Menu called *Open SoundFile And Fix Header*. This option can be used to fix a corrupted wav file header that was caused by a crash during a recording which then never had a chance to finish updating the header data when the recording was finished. This generally results in wav files with a zero data length value in the header which will not open correctly later. This option will calculate the data length based on the file length and the header length and write in the corrected values. A new peak data file will then be created.
- * The Zoom Mixer has been fully integrated into the SAWStudioLite version. Add it into your F-Key views and enjoy the extra power of multiple E-Mixer modules.

Bug Fixes

- * Fixed code to adjust the VSTTimeInfo play flag to allow the Melodyne plugin to respond correctly to BuildMix operations.

- * Fixed code to properly read Temp group names from Mix Template Files.

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Version 5.0

Enhancements

- * Enhanced the track count to 120 tracks (Full) and 48 tracks (Lite). When loading existing edls, the extra tracks will be found at the end after the last output track. Reset the track order or move the new tracks into position at the end of the input tracks if desired, then re-save the session.
- * Enhanced the recording capabilities to extend up to 80 (Full) and 40 (Lite) record tracks when using the SACLink. Each record meter can handle mono or stereo signals from SAC.
- * Cleaner display switching between SAC and SAWStudio.
- * The Full Mixer labels now display in upper and lower case rather than being forced to all upper case characters.
- * Added a new option to the Options Menu called *TCP/IP Slave To Host Disable Warning Messages*. This option blocks any warning message dialogs from being sent from TCP/IP Slaves to the Host when active. This then allows a single slave machine to have trouble loading a session without stopping the host and other slaves from continuing on in a Show Control setup while waiting for a message dialog reply. This option saves with the preferences.
- * Added code to allow midi control processing for VST Plugins that support it and are not classified as VST Synths.
- * A new menu keyboard link has been added to the Main Menu to allow a keyboard switch to SAC thru the SACLink with a press of the Alt-Key and then the L-Key.
- * The TCP/IP Options have been gathered under a sub-menu called *TCP/IP Options* on the Options menu.
- * The Wide Mixer View in the Full Version can now be sized and vertically scrolled to fit onto smaller netbook size screen resolutions.
- * When the program is started for the first time or after the default F-key file has been cleared, F-Keys will now be automatically generated to fit the screen resolution. You can save these as the default F-Keys, or use them as a starting template to be modified and then saved as your own. I recommend you look at each one and consider using them as a guide to creating useful ones of your own.
- * A new enhancement has been added to the Extract Session feature which will prompt you to automatically move the extracted session start position to zero on the TimeLine. If you answer Yes, the entire session will be slipped forward to the zero TimeLine position before it is saved. Use this option if you have no reason to keep the session start position offset within the master session TimeLine.

Eq Plugin Version 3.2

- * Added a new option to the Options menu called Clear Preferences, which clears the preference file and resets the plugin to its default behavior.

Echo Plugin Version 3.2

- * Added a new option to the Options menu called Clear Preferences, which clears the preference file and resets the plugin to its default behavior.

Bug Fixes

- * Fixed code to allow the SACLink to work correctly with SACRemote.
- * Fixed code to center the MT cursor position in SAWStudio when switching from SAC.
- * Modified code to eliminate Windows memory management issues when repeatedly opening and closing sessions, such as when using the Show Control View. Memory no longer gets fragmented easily which helps eliminate memory allocation errors when new sessions open.
- * Fixed code to properly sync a slave connection activated while the host is sitting idle in a preload waiting condition.
- * Modified code to handle higher performance Counter Frequencies that are now starting to appear on the newer i5 and i7 motherboards. All Performance Counter math is now handled completely in 64 bit math variables. This assures the accuracy of the CPU load percentage readout on these newer faster motherboards.
- * Fixed code to properly handle and display the 4 decimal place value for VariSpeed.
- * Fixed code to trap for false value jumps on popup fader activation by accident when mouse-click release is held long enough to release just as the popup fader is beginning to display.
- * Fixed code to trap for possible divide by zero errors in the fader display scaling routines.
- * Fixed code to trap for the X key softedge function on Return and Output tracks.
- * Fixed code to toggle the VSTTimeInfo play flag correctly with the engine status.
- * Fixed code to eliminate meter and monitor delay on SF record with any input device higher than device 1.
- * Fixed code to softclip and avoid wrap-around on recording when using the input level adjust and pushing the signal to clipping.
- * Fixed code to properly chase Peak Limit meter display in SoundFile View as the cursor is manually swept through the file.
- * Fixed code to jump cursor position to the end of the track after a Library add selections to HotTrack operation.

- * Fixed code to properly display mono L/R input source settings when recalling stored chan data from the popup Store/Recall menu functions.
- * Fixed code to properly jump the HotChan when using the Ctrl-Left-Arrow and Ctrl-Right-Arrow commands in the Full and Zoom Mixers.
- * Fixed code to properly update the DirX and VST window views after a shade change.
- * Fixed code to lock automation entries on the end boundary when stretching or shrinking an automation marked area.
- * Fixed code to allow Midi Control Templates that include a Master Fader to properly follow re-ordered Out channels and stay locked to Out Chan 1.

Eq Plugin Version 3.2

- * Fixed code to stabilize patching the plugin from SAC remotes and scene changes. Also made changes to keep the processing thread from being blocked during preset and paramset loads.
- * Fixed code to stop host paramset corruption when canceling a load preset operation on a remote.

Echo Plugin Version 3.2

- * Fixed code to stabilize patching the plugin from SAC remotes and scene changes. Also made changes to keep the processing thread from being blocked during preset and paramset loads.
- * Fixed code to stop host paramset corruption when canceling a load preset operation on a remote.

Video Track Viewer Version 3.5

- * Fixed code to save the *Keep Original Video Aspect On Extended Monitor* option with the video preferences.

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Version 4.9a

Enhancements

- * Enhanced code to better resolve network file paths to avoid missing file error messages on SAWStudio remotes when first connecting or opening files.
- * Enhanced code to allow drive substitution on slaves when opening files from host. If the slave does not have a matching drive as the host, the drive letter will be substituted from the default session path in the path setup dialog.
- * Enhanced the MultiTrack Slide Entry Data function (Shift-Right-Drag) to respond to number-selected tracks for multiple track editing operation. You can cancel the group editing temporarily for this function by using the Alt-Key along with the Shift-Right-Drag to perform the operation.

- * The current Shade name in use, if any, is now displayed in the Shades/Open menu option.

Eq Plugin Version 3.1

- * Enhanced code pertaining to SAC.

Echo Plugin Version 3.1

- * Enhanced code pertaining to SAC.

Bug Fixes

- * Fixed code when using the Fx Bypass switch with multiple channels selected to only update the switch bypass condition on channels with patched plugins.
- * Changed code to help with activating another application on the first click when switching from SAWStudio.
- * Fixed code to extract region name, instead of filename, as the base name for new regions created by Alt-Left-Clicking a marked MT Entry and dropping a new entry on the MT.
- * Fixed code in the message dialog windows which could have chopped titlebar message text short under certain conditions.

Echo Plugin Version 3.1

- * Fixed code to properly dissolve FeedBack delays as they near -infinity db.

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Version 4.9

Enhancements

- * Enhanced the SACLink protocol to pass necessary information between SAC and SAWStudio to allow for record loopback latency compensation and an overall more accurate record sync alignment during overdub recording using the SACLink.
- * Added a new TCP/IP mode called *Activate TCP/IP Video Slave Mode* to the Options Menu. This option allows you to use a slave machine specifically as a video slave only, meaning no audio is being played from its engine. The video viewer playback sync is locked to the host machine network position, not the local soundcard playback position. Therefore this machine does not require any special word clock or other clock sync connection to keep host and slave accurately synced for the video playback. Normally a slave machine plays its own soundcard outputs and handles its own internal positioning, depending on some sort of hardware clock sync between the host and slave soundcards to keep from drifting.
- * Added TCP/IP control of the AutoRewind Switch for Remotes.
- * Added a new option to the Host Mode TCP/IP functions that allows you to now see a list of all Remote and

Slave computers currently connected. *Left-Clicking* in the main titlebar Host/Master zone when you have active connections will display a list of each computer connection and the computer names.

Video Track Viewer Version 3.4

- * Added two new options on the popup Options Menu called *Render RealTime To Extended Monitor* and *Keep Original Video Aspect On Extended Monitor*. These options emulate the Hardware Overlay Render features on video cards that do not support the second monitor full-screen video playback options. These options will output a full-screen display on a secondary extended monitor. The display is scaled using hi-speed software manipulation to replace the missing overlay output capabilities. This now allows you to create very inexpensive video slave machines using small NetBook computers or laptops, as long as they have a dual monitor video output, which most currently do. You can then run them as TCP/IP remotes or video slaves for perfect video sync, feeding video projectors in shows using separate video streams.

Bug Fixes

- * The SAC Link *Import Mix Data From SAC* option now correctly ignores the Input Att, Swap LR, Phase Rvs and Mono Switch.
- * Modified code to trap for TCP/IP packet splitting of long command string data that could cause corruption in the command execution under certain conditions.
- * Modified code for loading VST Presets and forcing a screen update of the new settings for certain plugins that would not update properly on their own.
- * Modified code to force a MT Cursor redraw when switching back from other applications.

Eq Plugin Version 2.8

- * Fixed code to properly initialize all parameters when loading presets while the engine is live.
- * Code modified to stabilize sending and receiving parameter set data for preset saves and loads while the processing engine is live.

Echo Plugin Version 2.9

- * Fixed code to properly initialize all parameters when loading presets while the engine is live.
- * Code modified to stabilize sending and receiving parameter set data for preset saves and loads while the processing engine is live.

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Version 4.8

Enhancements

Bug Fixes

- * Fixed TCP/IP Slave Mode communications which were broken in 4.6 and 4.7.

- * Fixed code to trap Output Chan Solo switches from writing as automation entries under certain conditions.

Eq Plugin Version 2.7

- * When SAWStudio was in Realtime Priority mode, certain system configurations could cause the left-click up/dn parameter adjustment feature to fail. This code fixes that issue.

Echo Plugin Version 2.8

- * When SAWStudio was in Realtime Priority mode, certain system configurations could cause the left-click up/dn parameter adjustment feature to fail. This code fixes that issue.

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Version 4.7

Enhancements

- * Enhanced the Aux Send processing to allow for a Pst Fader – Pre Pan send scenario by disengaging the Aux Send Pst FX switch.
- * Enhanced and renamed the SACLink Import Mix Data from SAC option to now read as *Import Mix Data From SAC Input Chans (Active/Selected)*. This function includes only active (input source assigned and not disabled) input chans and properly handles re-ordered SAC chans when creating the new Record Template. If SAC chans are selected, then only those chans are included in the import. Another new SACLink option called *Arm Last Imported Record Template* assures that the record arming begins on the proper imported start track so that all record input assignments will correctly follow the imported SAC channels. You can also engage the record template on the proper track by Alt-Clicking on any track Rec switch.

Bug Fixes

- * Fixed code to correct problems with the SACLink *Recall Scene By Name* function that would cause certain scenes not to recall based on naming length conditions and other recall order factors. Also fixed code to stop a crash that could occur when the SACLink was not active and a *Recall Scene By Name* entry would be exercised..
- * More work done on saving VST settings and presets. This new code should fix compatibility issues with Voxengo plugins and UAD plugins (and others) that were having trouble saving presets and session settings.
- * More Work done on VST Multi-In/Out plugins like some of the newer Voxengo plugs to stop the possibility of a hard crash once playback is initiated.
- * More work done on retaining the last active window when switching between apps using the SACLink or minimize functions.
- * Fixed code to stop SRP playback across a marked area from muting armed record track data when Record is not actively engaged.

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Version 4.6

Enhancements

- * Included the new 32 chan Behringer BCF2000 midi controller template. See details in the helpfile for setting up multiple BCF2000 units.
- * Enhanced the Copy Track (Or Marked Area) to Layer feature to allow copying to all layers at the same time by holding the Shift-Key when activating the command. This will also apply to multiple track options of the same function.
- * Enhanced the Copy All (Or Marked)Automation to Layer feature to allow copying to all layers at the same time by holding the Shift-Key when activating the command. This will also apply to multiple track options of the same function.
- * Modified the SRP auto-punch function. When SRP is engaged with a marked area on the MT, an auto-punch operation is ready to engage at the marked area. The auto-punch will not activate unless the REC button has also been pressed sometime before the auto-punch area. When the REC button has been armed, it will flash until the actual auto-punch area is reached, at which point it will engage record and display solid red. This helps eliminate accidental record operations when using SRP to playback after an auto-punch. If the REC is armed, you will see the REC light flashing, giving you ample warning that you are about to overwrite the punch area with a new recording. The Shift-SRP can also be used to engage SRP and arm the REC at the same time. The auto SRP/REC latch option can also be used. You can also override the flashing REC button by pressing the REC again before reaching the auto-punch area and recording will start immediately.
- * Added a warning prompt if you attempt to clear the marked area while Offset Mode is active. This can help prevent offset changes from being applied to the entire track by accident. Also added the creation of an undo file when exiting Offset Mode and applying changes.
- * Enhanced the TCP/IP options to save with the preferences so you can automatically boot into one of the Host, Remote or Slave modes.
- * Added support for using Show Control View and show playback on Remote computers.
- * Right-Clicking on the Show Control View Blue Pyramid Options icon will now allow the window to float over top of other programs.
- * Show Control Mode now has a new *Continue* enhancement... you may now select *Wait* to load the next session and wait, not starting playback and not preloading and placing a prompt on screen. Playback may then be started at any time with any playback command when ready.
- * Show Control Mode now also allows for Global Midi Play and Stop notes to control the Show Control playback. These save with the Show Control File and allow a single note-on to control global play and another to control global stop within the entire Show Control list of individual session files.
- * Show Control Mode now also allows for Global Midi Prev and Next notes to control the Show Control

selection listbox. These save with the Show Control File and allow a single note-on to move to the previous or next Show Control listbox entry within the entire Show Control list of individual session files.

- * Enhanced the TCP/IP Remote capabilities to now allow connecting during live playback... the remote will be synchronized into the playback loop, including the detection of Show Control Mode.
- * TCP/IP Remote computers will now display a popup notice when the Host is waiting to answer a message dialog. The wait can be overridden by pressing Shift-Esc on the remote computer.
- * TCP/IP Host computers will now display a popup notice when a Remote is waiting to answer a message dialog. The wait can be overridden by pressing Shift-Esc on the host computer.
- * The MT and SF play cursor freeze action has been extended down 2 more zoom levels from 256 to 64.
- * The Control Track Built-In Commands have been enhanced to now include two new SACLink functions; *SACLink Recall Cur Scene* and *SACLink Recall Scene By Name*. The first command recalls the currently selected SAC Scene View entry. The second command jumps the SAC Scene View listbox to the named scene and then recalls it.
- * Added modifications to allow compatibility with new Waves 6 VST plugins. The plugins need to first be extracted from the Wave Shell using the Shell2VST utility.
- * Enhanced the SRC resolution in the Lowest Quality setting to retain better accuracy of the samplerate during a conversion.
- * BuildMix will now automatically ignore live device inputs. VST synths will still be included in the build.
- * The Export Region function now defaults to the current Session folder. It will retain any path change you make until you open a new session at which point it will now reset and default to that session folder.

Video Track Viewer Version 3.3

- * Enhanced the Video Viewer to allow it to be moved to a secondary monitor. Be aware that some DirectDraw driver implementations may not function correctly on monitors other than the Primary monitor. If you loose the video viewer from the Primary monitor due to screen resolution changes, you can force the viewer to the current monitor resolution by opening the viewer from SAWStudio while pressing the Shift-Key.

Echo Plugin Ver 2.7

- * Modifications made to properly update settings display on an open plugin altered by a SAC Scene change using the SACLink option.

Graphic Eq Plugin Ver 2.6

- * Modifications made to properly update settings display on an open plugin altered by a SAC Scene change using the SACLink option. Also now allows the Options menu to open while the engine is live.

Bug Fixes

- * Code modified to display Chan labels in the Wide Mixer popup Dynamics Key menu in the same manner as the Zoom and Exploded Mixer views.
- * Fixed code to display the Export Region progress bar window without cutting off the word "Cancel".
- * Fixed code to retain whether the Ctrl key was pressed when clicking on a track record switch to open a record template and the save session dialog pops up asking for a session name. Once the name is entered and the dialog is closed, the entire record template will now correctly open.
- * Fixed code to trap for duplicate record filenames for track labels that are the same and when rate, res, or filetype is changed midstream.
- * Fixed code to properly shutdown Soundfile playback with SAC-Link at end of file and end of marked regions in SF view.
- * Fixed code to initialize the timeline mode when opening a saved preference file.
- * Fixed code to stop MT Cursor from jumping back to starting play position if playback is stopped when zoomed in past the cursor freeze zoom ratio.
- * Fixed code to break the MT-SF cursor link when jumping to a Control Track marker position after transferring data from the MT to the SF view.
- * Fixed code to properly repaint mixer top client mixer label zones whenever labels are cleared or entered, including maintaining selected channel status.
- * Fixed code to trap for SoundFile Playback crash on a TCP/IP computer remote. SF playback on a remote computer is not currently possible.
- * Fixed code to ignore Label Selected tracks when using the Remove Silence function. This eliminates a possible crash that could otherwise occur.
- * Fixed the Frontier AlphaTrack Midi Controller Template to stop fader chattering when playing thru fader automation and the readout display was not set to Fader.
- * Fixed the SampleRate Conversion algorithms to output more accurate final filesizes based on the rate conversion predicted size.
- * Fixed code to allow midi controllers to properly follow track re-ordering for Rec Meter engaging and Section jumps.
- * Fixed code to correct for Show Control Mode stopping at the end of each session when SACLink is active.
- * Fixed code to correct for possible display corruption when the engine is active on multiple cpu systems and under moderate to heavy load.
- * Fixed code to correct loading of the various Recent File List data when any one of the .ini files does not

exist.

- * Fixed code to maintain the hide/show windows as the active window when returning back into SAWStudio.
- * Fixed code to automatically skip save session prompts during Show Control playback which would normally popup if any mixer controls had been altered since the current session had been loaded.
- * Fixed a misspelling in a File View file relocation message box.

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Version 4.5

Enhancements

- * The DirectX and VST plugin windows now allow you to load and save presets while playback is active.
- * The Backspace-Key Record Retake functions can now be used during Rec/Rdy mode.
- * Snapping marked Control Track Entries to the current MT cursor position has been enhanced to allow you to snap the end offset to the current MT position by using the Shift-Backspace-Key variation.
- * Enhanced the Record Loopback Latency Adjustment to now accept a max value of 999,999 samples.... This option counteracts record latency due to hardware in the loop by adjusting the record data within the region, effectively sliding the recorded data earlier in the timeline.
- * Activated all of the Shift, Ctrl, or Alt key MT region manipulation functions on the first click, even when changing hottracks.
- * SAC-Link playback is now available from the SoundFile View and will show up in SAC as the SS-Out Chan corresponding to the SoundFile View Out Device setting.
- * The SAC-Link setting can now be saved with the preferences so it can automatically activate when starting SAWStudio if SAC is already running.
- * The View Filter (V-Key) and View Filter popup Menu (Right-Click on Aut Switch) can now both be operated during playback, or any other live engine mode.
- * The File View window re-path options now display all files in destination browse folders.
- * Enhanced network data handling for more remote and slave efficiency across wireless networks... including Wireless-B, G and N.
- * TCP/IP Slave Mode can now be initiated while the host is currently playing back and the slave will load the proper session, jump to a delayed sync trigger position, using the MTC Trigger Advance setting, and actively sync live into the current playback operation.

- * The *Ctrl-S* Save Session keyboard shortcut can now be used to save a session during MultiTrack Play, PlayMark, and PlayLoop modes, as well as Live and Rec/Rdy modes.
- * The SnapShot Session (* Key) function can now be used during Rec/Rdy mode to manually force the creation of an Undo File.
- * Track selection in the MultiTrack using the drag method on the track numbers, now works during playback.
- * Enhanced Auto-Rewind switch operation. If you engage the Auto-Rewind switch during playback while pressing the Shift-Key, the original rewind position is reset to the current playback cursor position.
- * Added a Recent Show Control File List option to the Show Control View.
- * Enhanced the marked area special automation feature which writes the new automation at the mark begin position and returns the automation to its origin value at the mark end position. This feature will now automatically set the slope to zero if either entry falls on an exact MTEEntry boundary.
- * Writing any automation entry that falls on an MTEEntry end boundary will now automatically set the slope to zero.

Echo Plugin Ver 2.6

- * Enhanced the Delay ms popup menu to display a reference distance in Feet or Meters (selected in the Pyramid Logo Options menu) based on the speed of sound through dry air at 68 degrees F (20 degrees C).
- * A new Tap Mode feature is available by clicking on one or both of the Tap Lights (Pressing the Ctrl-Key while clicking on either will activate both channels). When this mode is activated, you can click the Left Mouse button in the Tap zone between the Tap lights twice in succession, or tap the Left, Right, Up or Down Arrow keys twice in succession or the SpaceBar twice in succession or any combination of those keys once each for quicker response times and the delay time will be calculated between taps. You can leave this mode active and tap a new delay at any time. If the time between taps is longer than the max delay time for your specific samplerate, then the taps will be ignored.
- * Enhanced the DelayTime, FeedBack and Strength controls to stereo latch when using the Ctrl-Key and any of the control adjustment methods.
- * The Pyramid Logo Options menu may now be used while the engine is active.

Video Track Viewer 3.2

- * Enhanced code to eliminate network traffic load when using remote mode containing video files and the video viewer is closed. If no external firewire or overlay render options are active and the viewer is closed, the remote machine will not attempt video file seeks across the network, thereby dropping the network load tremendously.
- * There is also a new option in the Special Options menu called *TCP/IP Remote Mode – Ignore Video*. This option can be activated to completely ignore video file requests on a remote machine whenever the host

machine opens sessions that contain video files. This is another way to save video network loading from a remote machine and this option can be saved with the Video Preferences.

Bug Fixes

- * Code modified to improve SAWStudio SAC-Link playback and eliminate possible audio glitches when the system is under heavy load.
- * Fixed code to trap F-Keys when program is minimized.
- * Fixed code to allow windows to activate on first mouse click when switching between hide/show floating app windows.
- * Fixed code to keep the Control Track listbox in the same scroll position and re-select the same entry when done editing that entry.
- * Fixed code to trap for using the Shift-Right-Drag mouse command to slip region data on a blank track area.
- * The File View window will now correctly open on top of the Video Viewer and other OnTop windows.
- * Fixed code to trap for illegal softedge problems when adjusting regions that incorrectly extend past the soundfile length.
- * Fixed code to properly display channel recalls when Automation Mode is active.
- * Fixed code in the FX Eq and Echo plugins to trap mouse-click control adjustments from crashing looped playback under certain conditions.
- * Fixed code to properly update the FX SampleRate shared variable every time the MT Rate is changed.
- * Fixed code to correct for meter timing in SAWStudio when using the SAC-Link for playback.
- * Fixed code to properly handle un-assigned wave devices used in the session when the SAC-Link is active for both playback and buildmix operations.
- * Fixed code to properly redraw the Multitrack display during live playback Sac-Link or minimize/restore switching.
- * Fixed code that could cause Automation Gallery inserts to jump down the timeline from the cursor position when certain VST plugins are patched anywhere in the MultiTrack.
- * Fixed code to correctly display the Wide Mixer view with default mix templates that start with a Return or Output track as the first track.
- * Fixed code that would lock up remote and slave network data when the About Window was open.
- * Fixed code to stop a slave machine lockup that could occur when the slave is missing it's own copy of the

host file trying to be played.

- * Fixed code to properly chase the Control Track View entries on a remote machine.
- * Fixed code in the Extract Session routine to properly restore the current edl if the process encounters an error and to also parse track labels for illegal filename characters as those track labels get used in the extracted soundfile names.
- * Fixed code in the Export Tracks routine to parse track labels for illegal filename characters as those track labels get used in the exported soundfile names.

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Version 4.4

Enhancements

- * Moved the [SAC-Link] menu option to the front of the main menu for more consistent placement between SAWStudio and SAC.

Bug Fixes

- * Code modified to fix possible crash issues with ASIO drivers and more than 48 channels of soundcard devices when opening the Sync Devices Setup window.
- * Assigning a record meter input source to SAC channels with the SACLink active will now assign the correct SAC channel, even if SAWStudio tracks have been re-ordered.

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Version 4.3

Enhancements

- * A new Main Menu option next to the Info Menu called [SAC -Link] is now available to switch to SAC when the SAWStudio-SAC Link is active.
- * Added a new Midi Control Template for the Behringer BCF2000 unit. There is a sysex preset dump included in the SAC Configuration folder that must be sent down to the BCF2000 unit first and assigned to a preset. You can dump this file with any midi sysex dump utility program like Midi-Ox, or something similar.

The BCF2000 template gives you control of the 8 faders, in high resolution mode, as well as mutes, solos and pans. The top 2 buttons in the bottom right corner of the unit can be used to bank switch up or down, and the bottom 2 buttons of that group can be used to jump forward to the next console section (I, R, O).

Bug Fixes

- * Code modified to fix issues when importing SAC data into SAWStudio Lite using the SACLink feature. This fix makes adjustments for the lesser channel count in Lite and corrects mis-aligned Input, Return and

Output data.

Video Track Viewer 3.1

- * Fixed code to trap for miscalculated Dropped Frames during Timeline playback that could report negative numbers under certain conditions and result in the display of a ridiculously large positive value.
- * Modified code to keep overlay output from tearing on certain video cards. This modification also overrides other video apps that use overlay flipping chains from locking out SAWStudio's use of the overlay.
- * Modified code to help hold sync when using small buffer sizes of 128 and under.

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Version 4.2

Enhancements

- * Added the hooks to SAC. The *SAC Link* option is activated from within the SAWStudio app and once a connection link between SAWStudio and SAC has been established, you can now pass data in both directions for recording and playback with SAWStudio using internal shared memory buffers that completely bypass the Windows soundcard drivers. SAWStudio will automatically disconnect from the drivers and use the internal shared buffers to communicate with the outside world through the SAC engine.

The menu options are selected from within SAWStudio and show up as follows:

The *Activate SAC Link* option on the SAWStudio Options menu will establish the internal connection between the two programs. SAC and SAWStudio must both be running at the time, and when the connection is established, a SAC<->LINK icon will appear in the left corner of the SAWStudio main titlebar.

The *SAC Link Options* option expands out to include these following choices:

The *Export Mix Data To SAC* option allows you to instantly transfer the main MT track and channel mix data directly to the SAC FOH console. This will also automatically preset each SAC console channel input source to point to the associated SAWStudio MT track. This option allows you to playback the SAWStudio MT tracks in a 1 to 1 configuration through the SAC console. You can then use the SAC Monitor mixers to setup separate performer mixes. SAWStudio will not play audio through its own driver devices while the *SAC Link* is active. You do not have to make any preference changes in SAWStudio... the buffer settings will be internally set to relax the SAWStudio cpu load and rely on SAC to handle the low latency performance. The internal link will adjust for SAWStudio playback buffer size changing and latency causing plugins and deliver a fixed data stream to SAC with no changes needed to your edl session in SAWStudio.

The *Import Mix Data From SAC* option allows you to instantly transfer the SAC FOH console setup directly into SAWStudio, including automatically creating a record template with all channel input assignments preset, ready for a live recording of the current SAC session. All that is needed after this option is activated is to Ctrl-Click the first track's record button in the SAWStudio MT to open all record meters for all active SAC channels, already pre-assigned. Once again, SAWStudio completely bypasses the soundcard drivers

and gathers its audio data directly from the SAC engine. This allows SAWStudio to perform the MT record operation with very little added cpu load on the system, and also relaxes the buffer settings to essentially coast along quietly in the background while SAC handles the low latency monitoring load.

The *Input Chan Play Tap At SRC* option selects the SAWStudio tap for sending its track data to SAC. This option sends the data from the SRC position at the top of the chan module just after the Mono section. Using this option means you are essentially sending the playback data directly from the wav files on each track with no added processing from the SAWStudio virtual console.

The *Input Chan Play Tap At PRE-PATCH* option selects the SAWStudio tap for sending its track data to SAC. This option sends the data from just after the PRE-PATCH position within the chan module. This option would allow VST Synths data to be passed onto SAC and the Pre-Patch position routing options within SAWStudio will still apply, so some signal processing from SAWStudio may be part of the signal chain before the data reaches SAC.

The *Input Chan Play Tap At PST-FDR* option selects the SAWStudio tap for sending its track data to SAC. This option sends the data from the bottom of the chan module, which includes all chan processing and automation. Very useful for show playback of pre-recorded tracks.

Once the *SAC Link* is initiated, the SAC input source options will expand to allow individual SAWStudio Mixer Chan selections instead of just the hardware device selections. You will see all SAWStudio label references for each channel in the list. You may select any Input Chan from SAWStudio or any Output Chan. Selecting an Output Chan allows you to maintain a complete mix in the SAWStudio environment and only use one stereo input chan in SAC to playback the entire 72 tracks from SAWStudio. Any Input Chan selection is subject to the above mentioned Tap points set in SAWStudio.

Likewise in SAWStudio, the record meter Input Zone will display the SAC channel list with the SAC labels. You may record from any SAC channel which will automatically adjust the record meter to mono or stereo based on the SAC source assignment. An added bonus here is that you now have the ability to record extra channels in your current SAWStudio version than is possible with SAWStudio alone. For instance... SAWStudio Lite allows up to 24 record meters which are normally connected to the 12 possible stereo hardware devices. Normally that translates to 12 stereo tracks or 24 mono tracks or any combination in between. But with SAC's ability to handle 36 stereo devices, you would now have the ability to pass on up to 72 signals in any combination of mono/stereo to the 24 record meters. Therefore, you can now record up to 24 stereo tracks (48 channels worth of data) in Lite as long as you have that many channels of hardware devices connected to SAC.

- * The H/S Hide/Show option has been activated on the Record Remote Transport. Left-Clicking in this zone will hide (minimize) SAWStudio and leave the transport visible on top of whatever is underneath. This can be used to control SAWStudio's recording functions from inside SAC for instance. Clicking the zone again will restore SAWStudio to the screen.
- * The Hide/Show option has also been added to the Control Track view. Right-Clicking in the Control Track Pyramid Options zone will hide (minimize) SAWStudio and leave the Control Track view visible on top of whatever is underneath. This can be used to control SAWStudio's playback functions from inside SAC for instance. Right-Clicking the zone again will restore SAWStudio to the screen.

- * Record Retake will now function while RecRdy mode is active.

Bug Fixes

- * Fixed the illegal softedge correction routine to trap for region entries with bad file links. This solves the mysterious appearance of giant softedges that keep coming back even after they have been removed.
- * Fixed the ASIO menu text display to properly display the 16 bit integer format.
- * Fixed code to handle right-click options in the MultiTrack Label area even if the mouse button is held down for a time instead of released in a normal quick click operation.

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Version 4.1

Enhancements

- * The Solo Bus Device option has been enhanced to automatically internally assign and keep properly updated even if no active track assignment is setup, whenever one of the Solo Bus options has been activated. It will properly output whatever data is assigned to it or blank buffers if no data is assigned to it and swap to the solo data when a solo is activated. You will no longer be flagged with an assignment error message if no active track assignment has been setup.
- * Enhanced the Record Mode keyboard shortcut *Ctrl-Spacebar* to force a stop condition from any REC, SRP, or REC/RDY mode, thereby stopping the engine immediately.
- * Enhanced the Midi Controller API functions to handle the Frontier AlphaTrack special functions. The AlphaTrack Midi Template is included in this update.

The LCD display is used to show parameter and channel labels in the various selection modes.

Make sure your controller is set to Native Mode (TaskBar Icon) to ensure compatibility with this template.

Using the **Shift Mode** does not require you to hold down the **Shift** Button. Just press it once and it will engage and light up to show that **Shift Mode** is active. You can cancel **Shift Mode** by pressing the button again. Most commands that use **Shift Mode** will automatically disengage it after the command is executed.

Fader: Control mixer channel faders. Can operate Input, Return, and Output channels based on track / channel select switches. If the *Mixer Views to Hardware Controller* navigation link is active, the surface will chase *SAWStudio's Hot Track* selection. Touching and adjusting the fader will automatically switch the LCD to **Fader Mode** and display the fader data.

Shift Button: Toggles **Shift Mode** on / off. Using the **Shift Mode** does not require you to hold down the Shift Button. Just press it once and it will engage and light up to show that **Shift Mode** is active. You can cancel **Shift Mode** by pressing the button again. Most commands that use **Shift Mode** will automatically disengage it after the command is executed

Rec Button: Toggles the record meter open/close for the current track.

Shift Mode: Operates the record meters as a record template, allowing multiple channels to be armed or disarmed at once.

Solo Button: Toggles Solo on and off for the current channel.

Shift Mode: Toggles all active solos off.

Mute Button: Toggles Mute on and off for the current channel.

Left or Right Parameter Knob: Either of these knobs act as a function selector, scanning through different control types. Use the left or right knob, depending on whether you are left or right handed so you do not cover up the display as you turn the knob.

The current selectable control types are: Layer; Fader; Pan; Aux 1 In; Aux 1 Pst Fdr; Aux 1 Lvl; Aux 1 Pan; Aux 2 In; Aux 2 Pst Fdr; Aux 2 Lvl; Aux 2 Pan; Aux 3 In; Aux 3 Pst Fdr; Aux 3 Lvl; Aux 3 Pan; Aux 4 In; Aux 4 Pst Fdr; Aux 4 Lvl; Aux 4 Pan; Aux 5 In; Aux 5 Pst Fdr; Aux 5 Lvl; Aux 5 Pan; Aux 6 In; Aux 6 Pst Fdr; Aux 6 Lvl; Aux 6 Pan; Comp In; Comp Gn; Comp Thr; Comp Ratio; Comp Rel; Comp Att; Gate In; Gate Rvs; Gate Thr; Gate Flr; Gate Rel; Gate Att; Dyn Key Listen; Dyn Eq Lo; Dyn Eq Hi; Dyn Key; Eq In; Eq LoCut In; Eq LoCut Frq; Eq HiCut In; Eq HiCut Frq; Eq Gn 1; Eq Frq 1; Eq Q 1; Eq Gn 2; Eq Frq 2; Eq Q 2; Eq Gn 3; Eq Frq 3; Eq Q 3; Eq Gn 4; Eq Frq 4; Eq Q 4; Eq Gn 5; Eq Frq 5; Eq Q 5; Mono; Swap LR; Phase Rvs; Attenuator; MultiTrack Position

The LCD displays the currently selected type and value.

Center Parameter Knob: This knob adjusts the value for the currently selected control type. If the current type is the MultiTrack Position display, this knob has no effect and the position is adjusted by the various transport controls and touch strip.

Pressing the knob as a switch sets the control to the default value.

Shift Mode: For **Aux_Lvl** control types sets the control to -inf.

Pan Button: Switches the Control Type to **Pan** for the current channel. The Pan LED lights when in **Pan Mode**.

Send Button: Switches the Control Type to **Aux_Lvl_1** for the current channel. Repeated pressings switch to **Aux_Lvl_2**, **Aux_Lvl_3**, **Aux_Lvl_4**, **Aux_Lvl_5**, **Aux_Lvl_6**, and then back around to the beginning. The Send LED lights when in **Aux Mode**.

EQ Button: Switches the Control Type to **Eq_In** for the current channel. Repeated pressings switch to **Eq_Lo_In**, **Eq_Hi_In**, **Eq_Gain_1**, **Eq_Gain_2**, **Eq_Gain_3**, **Eq_Gain_4**, **Eq_Gain_5**, and then back around to the beginning. The EQ LED Lights when in **Eq Mode**.

Plug In Button: Activates and opens (if needed) the *FX_Pre* and *FX_Pst* views. If the current *Hot Track* is an *Output* track, it also activates the *Final Res* patch view.

Shift Mode: Closes all FX patch views.

F1 Button: Jumps to Locate Point 1.

Shift Mode: Sets Locate Point 1.

F2 Button: Jumps to Locate Point 2.

Shift Mode: Sets Locate Point 2.

F3 Button: Jumps to Locate Point 3.

Shift Mode: Sets Locate Point 3.

F4 Button: Jumps to Locate Point 4.

Shift Mode: Sets Locate Point 4.

Track < Button: Decrements the Track / Channel.

Shift Mode: Marks the begin position. When any marked area is active, the LCD displays a small mark in the top right corner.

Ctrl Mode: Set by pushing the left or right parameter knob. Lights both track button LEDs and jumps down one section from Output to Return to Input channels.

Track > Button: Increments the Track / Channel.

Shift Mode: Marks the end position. When any marked area is active, the LCD displays a small mark in the top right corner.

Ctrl Mode: Set by pushing the left or right parameter knob. Lights both track button LEDs and jumps up one section from Input to Return to Output channels.

Loop Button: Toggles AutoRewind on and off. When active, regular MT playback will jump back to the starting point when playback is stopped. If there is an active marked area, MultiTrack playback will continue to loop the marked area.

Record Mode: Toggles AutoRecord Loop Mode on and off. SRP recordings will continue to create new takes of the marked area, looping back to the cursor position pre-roll starting point.

Record-Shift Mode: Toggles AutoRecord Layer Loop Mode on and off, which fills layers with new takes on the Lite and Full SAWStudio versions.

Flip Button: Switches the Control Type to **MultiTrack Position**. The LCD now displays Timeline position information in the current Timeline display mode. Pressing the button again switches the Control Type back to the previous type selection.

Transport Rewind Button: Moves the current cursor position back 10 seconds on the timeline. This function will auto-locate the playback if active.

Shift Mode: Jumps to the session home position.

Transport Fast Forward Button: Moves the current cursor position forward 10 seconds on the timeline. This function will auto-locate the playback if active.

Shift Mode: Jumps to the session end position.

Transport Stop Button: Stops playback, record and live input operations.

Shift Mode: Saves and updates the session edl.

Msg / Dialog Mode: When a message dialog box is active, acts as a cancel or "no" response. The LCD will display many important messages directly.

Transport Play Button: Starts MultiTrack play or SRP play operations.

Shift Mode: Activates Live Mode.

Msg / Dialog Mode: Acts as an Okay, Yes, or Enter response.

Transport Record Button: Starts a multitrack record operation or punches in during SRP play mode.

Shift Mode: Starts a RecRdy operation.

Touch Strip: Acts as a position shuttle which adjusts the MultiTrack cursor position. When first touched, the Flip button is activated and the LCD will display the cursor position.

FootSwitch Jack: Toggles Playback on and off.

Record Mode: Toggles Punch-In and Punch-Out during an SRP operation. Does a Punch-In on a straight Record operation.

- * Modified the Trigger Sync record behavior to always trigger an SRP operation, allowing for a manual punch-in operation, or an auto-punch-in operation based on a marked area, or an instant auto-punch-in based on the auto SRP/REC option setting.
- * Modified the record behavior when stopped to snap the cursor position back to the newly recorded region end position. This will happen only when record mode is active at the time of the stop command. If you have punched out during an SRP record operation prior to executing the stop command, the cursor will stay at the current stop position. If using the Midi WorkShop add-on, this feature requires version 1.7 or higher to function correctly.
- * Sample Edit Mode in the SoundFile View has been modified to switch samples at the mid-point between samples instead of the start of each sample. This makes Sample Edit control much easier when modifying sample values.
- * Replaced repeating audio device missing and changed warnings with a single warning message if current devices no longer match your preferences.
- * A new option has been added to the Mixer Menu called *Mixer Chan Record-Tap Routed Before Eq / Dyn*. This option allows you to force the Mixer Chan Record tapoff point in front of the Eq/Dyn section without re-routing the Pre-Patch point. The normal default behavior when recording from a Mixer Chan source is to tap the record signal after the Pre-Fx-Patch point, which is normally after the Eq/Dyn section. You can re-route the Pre-Fx-Patch point before the Eq/Dyn section and the record tap will follow along, however, so will the Pre-Aux Send point. When using the virtual console as a PA mixer, this would force all Pre-Aux monitor sends to remain flat without the benefit of any Eq or Dynamics. Many times this is not the desired method of sending monitor mixes to stage performers, so this new option allows you to break the link between the record tap point and the Pre-Fx-Patch point, allowing you to record flat signals while still processing front of house and monitor mix signals.

This setting saves with the Mixer Templates and also with each session edl file. This setting clears when sessions are closed. If you use a default Mixer Template, you can arrange the default console signal routing

any way you like and those settings will be used each time the console is reset.

- * The record meter displays will now actively chase MultiTrack tracks and keep the hottrack meter (if active) visible within the Record Meter window. If mixer navigation links to the MT are active, the record meter displays will also chase mixer hotchan changes. Right-Clicking the Record Meter window *Close* zone will toggle a lock option to freeze the meter displays from chasing. You are still free to scroll the meters within the window with the wheel mouse or arrow keys.
- * A new option has been added to the Options Menu called *TCP/IP Host-Remote Receive HotTrack Link*. This option toggles the reception of the hottrack link between the Host and Remote machines. If the option is active on the host, the host chases any hottrack changing happening on the remote machines. If the option is active on a remote, the remote chases any hottrack changing happening on the host machine. This can be useful for a visual reference of changes being made from the connected machines. If you are using the console as a PA mixer and are controlling from the host and remote machines at the same time, you may find it nice to leave this option off so that the individual machines are not jumping around from actions taken on the connected machines.
- * The manual adjustment resolution of Vari-Speed has been increased to .0001%.
- * The Default EDL Undo Path option in the *File Path Setup* in the *Options Menu* has been enhanced. You may now enter a sub-folder of the EDL project folder by starting the folder name with a backslash character. For example, entering **\Undo** will force all undo files for each session to be saved in a sub-folder named Undo under the session folder. This helps keep the session folder better organized and easier to maintain. If you decide to use this feature, you must manually create the same folder under existing session folders and copy all existing undo files for current sessions into this folder in order for them to be automatically available. New sessions will automatically create this folder when the first undo file is created.
- * A new item has been added to the *File / Mix Template* menu called *Open Without Labels*. This option opens a mix template without disturbing labels in the current session.
- * Added code to trap and adjust for invalid softedge entries as entry boundaries are altered, moved and copied, and as new entries are inserted. Invalid softedges will now be corrected on the fly as editing operations create them.
- * Enhanced MT Entry deletion to now include automation enclosed by entry softedges.
- * The *Copy Automation To Layer* function has been enhanced to respond to selected MT Tracks and also to copy all track automation if there is no marked area. You may also use the Ctrl-Key when activating the function to do all tracks without having to select them.

Video Track Viewer 3.0

- * Added compatibility for some HD mp4 formats, and extended compatibility for more mpeg and quicktime formats. Many DVD .vob files can now also be opened and converted directly inside the viewer, depending on the actual compression format used to create them. Some HD formats may require the installation of the ffdshow codecs available on the web.
- * Two new menu options have been added to the Zoom Options menu to help display HD files; 1/2 Actual Size

and 1/4 Actual Size.

- * Two new menu options have been added to the Overlay Render Size Options menu to help display HD files; 1/2 Actual Size and 1/4 Actual Size.

Studio Fx Eq 2.4

- * Changes added to correct possible display corruption on dual processors.

Studio Fx Echo 2.4

- * Changes added to correct possible display corruption on dual processors.

Bug Fixes

- * Fixed Priority Class overrides to work properly when loading new preference files from the File menu.
- * Fixed the Sweep To Vari-Speed and Vari-Pitch Destination option to trap for very small destination changes and also added a much higher degree of accuracy across the marked area.
- * Fixed the Slip Track command for All Layers to properly handle Control Track entry positions.
- * Fixed Undo History Window positioning to trap for F-Key views that could cause the window to be positioned off-screen when first opened.
- * Adjusted FX Buff Chng message window to a larger size to accommodate plugins with longer names.
- * Trapped F-Key View changes while actively grabbing Mixer Controls.
- * Fixed the Alt-I, R and O jumps to work correctly when tracks are re-ordered.
- * Fixed Exploded Mixer View code to clear meter when playback is stopped even when Zoom Mixer view is sized very short.
- * Shift-Right-Dragging operations in the MT now lock the cursor into the MT wave display area and eliminate possible crashes which could occur under certain circumstances when moving the mouse outside the MT boundaries.
- * Adjusting the compressor threshold, when the program is set to Remote Mode will no longer crash the system.
- * Fixed code to correctly display Aux Master meters on TCP/IP connected remote machines.
- * Fixed code to correctly display Dynamics GR meters on TCP/IP connected remote machines.
- * Toggling *Automation Mode* On/Off when *Offset Mode* is active will now cleanly cancel *Offset Mode* and any offset changes in progress.
- * Fixed code to allow regions to be moved to the last tracks even when Return and Output tracks have been

re-ordered to the top of the MT.

- * Adjusted code to fix display corruption above the MT ruler when scrolling the MT up or down.
- * Fixed code to reset an active marked area started during playback with the B-Key that never received the E-Key command to end the mark when playback is stopped.

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Version 4.0c

Enhancements

- * Added a new function to the FX API to allow plugins to link to the dual monitor configuration info from the main program.
- * Updated the Echo and Eq plugins to utilize the new API function to be dual monitor aware.
- * A new enhancement has been added to Live Mode Automation chasing with Locate Points or Cue Location commands in the Control Track. Snapping down the timeline to a new position with automation written in, will now follow mute, pan and fader slopes, allowing for automatic fades and pan sweeps based on long slope values to be executed at the new Cue. This can be used for live show automation to auto fade out and in various mixer channels.
- * Added some extra keyboard functionality for operating the Record Remote panel:
 - * {Enter} activates Record Mode or punches in and out when SRP Mode is active.
 - * {Shift-Enter} activates Rec/Rdy Mode.
 - * {SpaceBar} toggles between SRP Mode and the last active state of Stop, Rec/Rdy or Live Mode.
 - * {Shift-SpaceBar} toggles between SRP/Rec Mode (forcing a record punch) and the last active state of Stop, Rec/Rdy or Live Mode.
 - * {Ctrl-SpaceBar} forces Stop Mode breaking any links to Rec/Rdy or Live Mode toggling.

Bug Fixes

- * Fixed the ZLM Monitor Switching protocol to work correctly for odd and even mono channel record meter assignments in any combination.

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Version 4.0b

Enhancements

- * Modified the SoundFile View recording engine to now allow the same low latency live monitoring of input

signals as the 4.0 MT engine whenever either of the Tape-Style monitoring options are selected.

- * The SoundFile View Lock zone will now also lock the SF Out Device and keep it from changing when transferring regions from the MultiTrack or Regions view.
- * The code has been enhanced for handling display screen resolutions of multiple monitor configurations. The code now attempts to determine the full virtual screen resolution across all monitors. This will not work on all systems or video card drivers, so the reported resolution can now be overridden and new values can be manually entered and saved with the preferences. The *Max Screen Resolution Override* option on the Options menu allows you to set a new max screen resolution which will control the limits of all window positions. The main window size no longer sets the limits.
- * Many more initial popup windows and small dialogs will now follow the *Dual Monitor Configuration* setting in the options menu to keep from spanning across the monitor boundary between dual monitors.

Bug Fixes

- * Fixed code to stop a crash that could occur when using a marked area auto-punch record operation with the Region Memory Caching option activated.
- * Fixed code for SoundFile View recording while Tape-Style Monitoring is selected.
- * Fixed error trapping code for Selected entry track conflicts of moves and copies in the MultiTrack.
- * Fixed disappearing automation moves and copies in all directions.
- * Changed code to clear buffers when switching from a blank layer during playback to make for a smoother transition to the new layer.
- * Modified code to help with allowing the taskbar to popup ontop of SAWStudio on certain Windows installations that may have trouble doing so.

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Version 4.0a

Enhancements

- * Two new options have been added to the Options menu to allow adjustment of the base Priority Class of the program. I have adjusted code to allow for safely increasing the Process priority internally to High or RealTime priority. You may force the priority of the program to be raised above Normal for a possibly more robust performance level. Be careful with the RealTime option, however, because you will force SAWStudio above other system processes and if the program locks for some reason, you may not be able to escape, even from the Task manager. This can be useful, however, for stopping interference from other background services and processes and may allow smooth audio operation at very low latency settings.
- * A new option has been added to the Command Line processing when the program first starts.

SAWStudio will now accept multiple FKY filenames on the command line when starting up. The first .fky filename found will load as the default F-Keys. The next one found will load as the default Alt-F-Keys. The third one found will load as the Midi WorkShop default F-Keys (requires MWS Version 1.6f or higher). You do not need path information for the Fky files, only the filenames. The SAWStudio files must be stored in the Configuration folder under the SAWStudio folder. The Midi WorkShop file must be stored in the MidiWorkShop_Configuration folder under the SAWStudio Native_PlugIns folder.

Example: C:\SAWStudio\SAWStudio.exe Test.fky TestAlt.fky TestMws.fky

Bug Fixes

- * The new Slide MT-Entry data function undo creation has been fixed.
- * Both new Export Tracks to SoundFiles options have been fixed to properly handle automation and Fx buffer size changes with no glitches.
- * Fixed the loss of window focus when using Ctrl-S and other menu commands with message and dialog boxes.
- * Fixed code to keep Solo Bus options from interfering with the performance of BuildMix operations.
- * Fixed Solo Bus mode solos to be active in Rec and Rec/Rdy modes.
- * Fixed MTLoad readout to be active in Rec and Rec/Rdy modes and for the MTLoad and SrcLoad windows to be properly cleared when the engine is stopped.
- * Code modifications have been extended to the SoundFile View to enhance stability and eliminate corruption of screen displays with multi-processors, multi-core processors and hyperthreading processors.

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Version 4.0

Enhancements

- * Added a new feature called *Roll-Over Context Help* to the Info Menu. You may activate this feature from the menu or by pressing the Alt-H key in any window. When this feature is active, each active zone, switch and control is outlined in red as you roll the mouse over the screen, while a text display window chases the mouse position. By Left-Clicking in one of the active areas, information about how to use that zone is displayed in the text window which freezes in position. You can scroll the text in the display window by using the MouseWheel or Up and Dn arrow keys or the PgUp and PgDn keys. Pressing the H key while the text is displayed will jump you directly to the related section of the Help File. Pressing the Esc key or Right-Clicking the mouse will unlock the freeze and allow you to scan for more screen zones. Pressing the Esc key or Right-Clicking again de-activates the Context Help Feature.
- * Added engine modifications to support Tape-Style Record Monitor Switching. This new feature now allows full live input monitoring direct from device inputs during recording. This does require low latency

operation capabilities of your system. Buffer settings of 3 x 128 or less are generally very good. There are two new choices available on the *Options Menu* in the *Auto Audio-Monitor Switching Protocol* option.

One is called *Tape Style – Playback / Input Switching*. This option will switch between the Stereo or Mono Device input and the MT playback automatically when you punch-in record. In Rec/Rdy or Rec mode, the device input will be routed through the record channel console module. When SRP is engaged, the MT playback will be the monitor source and when you engage the Rec button to punch-in, the monitor source will switch to the device input, exactly like most professional multitrack tape decks.

The second option is called *Tape Style – Input Always On*. In Rec/Rdy or Rec mode, the device input will be routed through the record channel console module. When SRP is engaged, the MT playback will be mixed with the device input allowing you to monitor both sources together. When you engage the Rec button to punch-in, the monitor source will switch to the device input only, muting the MT Playback signal.

These new engine features make virtual recording and monitoring possible completely in the virtual environment. It's now very easy to setup headphone mixes using the pre-aux sends and even blend reverb into the phones mixes without the need for any external mixing hardware.

These features do not require you to use Live Mode console inputs, and therefore keep the recording process much easier to setup and manipulate. Each console input source is kept as MultiTrack and the monitoring now comes direct from the device inputs selected in the record meter input source zone.

You can also use this type of monitoring when using Live Input mode console inputs. In this case, all live input channel assignments will automatically switch to MT playback for all tracks that have region data on them. Those tracks with live input assignments which are armed for record will mute the playback when record is punched in. If the *Tape Style – Input Always On* option is active, the live input channels will stay active and blend with the MT track playback until record is punched in.

The Pre Patch Signal Flow routing will be handled correctly in that, if your recording point is post Eq and Dynamics, the monitor playback will be post of the processing also, so you will not double process the playback data. If you record the data pre Eq and Dynamics, the monitor playback will route pre processing so it sounds the same as when monitoring the input source.

* New Solo Mode options have been added to the Mixer Menu:

The *Solo In Place (Mutes Other Channels)* mode is the original standard default SAWStudio mode. This mode internally mutes channels that are not soloed, giving a true exact *In Place Solo* for critical mix decision making. This allows full use of the engine buffer size changing and auto-latency VST compensation capabilities with no problems.

The *Solo Bus – Pre Fader* mode functions as a true console PFL Solo. This mode leaves all other channels alone and feeds the pre-fader signal of soloed channels into a separate mix bus which can be assigned with the *Solo Bus Out Device* option. If this device is your main mix bus, the solo signal will interrupt the main mix output, but not disturb any other channel signals, leaving *Aux Send* headphone feeds intact on other devices. This option also allows you to monitor the output of different devices on any other device, so it makes it possible to send multiple headphone mixes to different hardware outputs and still be able to solo each mix into the main control room device, without the use of external switchers or mixers. The solo level

may also be adjusted with the *Solo Bus Level* option. It is generally recommended that certain latency producing plugins, like Time Compressors, not be used with this option. Strange behavior may result when combining signals from different routing paths that each run in a different time frame.

The *Solo Bus – Post Fader* mode functions as a true console bus Solo. This mode leaves all other channels alone and feeds the post-fader signal of soloed channels into a separate mix bus which can be assigned with the *Solo Bus Out Device* option. If this device is your main mix bus, the solo signal will interrupt the main mix output, but not disturb any other channel signals, leaving *Aux Send* headphone feeds intact on other devices. This option also allows you to monitor the output of different devices on any other device, so it makes it possible to send multiple headphone mixes to different hardware outputs and still be able to solo each mix into the main control room device, without the use of external switchers or mixers. The solo level may also be adjusted with the *Solo Bus Level* option. It is generally recommended that certain latency producing plugins, like Time Compressors, not be used with this option. Strange behavior may result when combining signals from different routing paths that each run in a different time frame.

A special feature has been added to the Aux Master Sends. If an Aux Master is assigned to a device out, to be used for a headphone mix, for instance, and the corresponding Output track is assigned to itself as a device out, then the Output track solo button also acts as the Aux Master solo and blends the Aux Master data into the solo bus. This allows you to solo and hear the aux mix in the main output device or whichever device is assigned to the solo bus output.

The *Solo Bus Out Device* option can be used to route the solo signal to a separate device output to monitors or headphones, leaving the main mix bus intact when using SAWStudio's virtual console as a Live Mode Front Of House replacement. Some signal routing must be active on the Solo Bus device. You can duplicate the main mix assignments if you like, or assign an empty Aux Send to it. You can also assign an empty muted track set in Live Mode to supply the needed routing signal.

The *Solo Bus Level* option can be used to adjust the Solo level feeding the Solo Device.

- * The popup Aux Send Menu has been enhanced with new features. Clicking on the Aux Send section label or any of the individual Aux Send number labels on the E, Z or W mixer views opens up a popup menu. This menu shows the list of Aux Send Master labels and now also includes some quick Aux Send setup options. When using one of the Solo-Bus modes, you can Solo this Aux Mix Device-Out if it is linked to a hardware assigned Out-Track, as when used for a headphone mix. You can duplicate a mix into the current Aux Send, across all channels, from the main mix settings or from any other Aux Mix settings. This only duplicates Input Channel settings. You should adjust Aux Send Master Fader settings manually to make sure the mix is not clipping. You also have choices to Engage and Disengage the Aux Mix, or to set the mix to Pre Fader or Post Fader, and to also Clear the Aux Mix.
- * The Store and Recall Channel file functions have been enhanced and can now act as a very powerful Partial Mix Template recall.

Storing channel settings to a file now operates across selected channels. The starting channel opens the File Dialog allowing you to specify a path and name. The default name is filled in to match the channel label. Each selected channel will write a separate file named the same as the channel label. This creates a channel mix template of individual files, one per selected channel. Recalling channel settings from a file now also operates across selected channels. The starting channel opens the File Dialog allowing you to specify a path and name. The default name is filled in to match the channel label. Each selected channel will look for a file

named the same as its label and if one is found in the specified path, it will load. If no matching file is found it will leave this channel alone. This allows you to recall settings to multiple channels in a new edl with channel labels that match the channel template names. This is extremely useful for an album project, for instance. You have recorded 10 songs, all of which are very similar, but not identical in track layout. The basic rhythm tracks are the same, Kick, Snare, Toms, Cym LR, Bass, Guitar, etc... Now, after finishing the mix of the first song, you select all the channels and store the settings to files. It's a good idea to create a Mix Template folder under the main project folder. You then open the next song, and select all channels and recall the files from this folder. This will find and match each channel with its associated file settings, including patched plugins, even if the track order has been changed, and ignore any channel with a different label that was not part of the other song. By labeling tracks in a similar fashion across all projects, you can easily exchange mix settings from one unrelated project edl to another, one channel at a time, or all at once.

A new option has also been added to the popup menu called *Recall All From File And Duplicate To Selected Channels*. This option opens the file dialog and allows you to select a file. The settings will be recalled and duplicated on all selected channels.

- * A new feature has been added to the *Driver Protocol* Menu for the *Asio Protocol* option. Now, whenever the Asio Protocol mode is selected, the ASIO Data Format Type will be displayed on the Asio Protocol Menu option line. This information will display the Integer or Floating Point data format type that the driver uses.
- * Starting playback when Live Mode is active from the MWS version 1.6d or higher will now auto toggle back to Live Mode when playback is stopped.
- * Many functions have now been enhanced to work while Live Input Mode or Rec/Rdy Mode are engaged. This makes it much easier to keep these modes active during a recording session with live monitoring and still manipulate the MultiTrack. The functions now active in Live Input Mode and Rec/Rdy Mode are:

Cursor positioning with mouse.

Position display.

Marking MT areas.

Changing MT layers.

The RTZ zone.

The Home-Key.

The End-Key.

The Tab-Key.

The D-Key.

The G-Key.

The K-Key.

The M-Key.

The R-Key.

The S-Key.

The U-Key.

The *-Key.

The Select Mode button.

The Grid zone.

Locate Points.

Disabling MT tracks.

Clearing all track entries.
Entering track labels.
Moving MT-Entries.
Alt-Grab adjustment of MT-Entries.
Changing record tracks with the record meter Track zone.

Undo files are created the same as when the engine is stopped.

- * Changed the *Left-Right-Click Set To Default* value to zero db for aux send level controls. This makes it much easier to snap the levels to a starting mix value for aux send mixes.
- * Automation changes In Live Input Mode are now processed if you jump the cursor down the timeline. This allows Cue Location Markers to be used for Live Mixer automation within songs.
- * The Select Mode nudge feature has been enhanced. In Select Mode, the *Left and Right Arrow* keys can be used to snap and then nudge the selected entries one cursor step at a time, keyed from the front of the key entry. Pressing the *Shift* key at the same time will key from the end of the key entry. Pressing the *Shift-Alt* modifiers at the same time will key from the key entry offset position, if one has been set.
- * Double-Clicking the F Mixer view label area now opens the E Mixer offset to the main fader position for quick level adjustment.
- * Live Input Device source assignments to mixer channels are now displayed in the F Mixer as small patch bars in the I/A zone. L-Only sources display as a bar on the left side of the zone. R-Only sources display as a bar on the right side of the zone. Stereo and other combined mono sources display as a bar in the center of the zone.
- * Increased the maximum buffer size for VST preset settings saves to compensate for more and more VST plugins that are taking huge amounts of data space to save their presets.
- * Layers may now be changed during playback to blank layers. When changed back to layers with data, the data will remain in sync with the playback. If you start playback on a blank layer, the layer can be switched to a layer with data on it, but the data will not be part of the current playback cycle because the track was never initialized into the playback loop. You must stop and restart playback to hear the new layer data.
- * Working with Group Presets has been enhanced and works differently than earlier versions.

Right-Clicking the MultiTrack titlebar opens the Group Preset Menu.

Shift-Left-Clicking any group preset will set the group to the current number-selected tracks. This setting will overwrite any previous group entries in that preset, not append them.

Left-Clicking any group preset will clear any existing number-selected tracks and select the preset group, not blend them.

Ctrl-Left-Clicking any group preset will blend the preset with any currently number-selected tracks.

Alt-Left-Clicking any group preset will clear any existing label-selected tracks and select the preset group, not blend them.

Ctrl-Alt-Left-Clicking any group preset will blend the preset with any currently label-selected tracks.

Right-Clicking any Mixer View titlebar opens the Group Preset Menu.

Shift-Left-Clicking any group preset will set the group to the current selected mixer channels. This setting will overwrite any previous group entries in that preset, not append them.

Left-Clicking any group preset will clear any existing selected mixer channels and select the preset group, not blend them.

Ctrl-Left-Clicking any group preset will blend the preset with any currently selected mixer channels.

- * The FX API has been enhanced to allow plugins to request track label information.
- * The BuildMix To Current HotTrack function has been enhanced to allow the HotTrack to be one of the tracks that carries mix source data. This option now creates an undo file, since it can destroy current edl data, and will force an insert and overwrite existing data on the destination HotTrack(s). This allows you to replace a track's data with the new processed buildmix data in one operation. Pay attention to warnings of existing mix files. Make sure to append the data if you are performing multiple separate mix operations to the same file, or existing regions connected to the mix file may be corrupted.
- * A new BuildMix option has been added to the Process/Mixdown menu called *BuildMix To Current HotTrack / Layer*. This option allows you to select a destination layer for the Buildmix operation. This will build the mix and place it on the current HotTrack and the selected destination layer.
- * A new option has been added to the Mixer menu called *Clear Selected Mixer Labels*. This option clears only selected mixer channel labels, leaving other labels alone.
- * FX Buffer Size Changing plugins will now cause a notice to appear on the Main Window TitleBar when the engine is activated. Clicking in the displayed msg zone will display the plugin's name and the channel it's patched into. This warning msg picks up and displays the first plugin to alter the buffer size only. Be aware that when you are depending on any live input monitoring during Live Mode, playback or recording, buffer size altering will most likely cause latency drift due to the engine attempting to loop multiple times to fill the buffer in a look-ahead mode and live device inputs have no look-ahead data available so blank buffers are inserted. You should find and bypass all plugins causing this warning while attempting to monitor live device inputs.
- * The Record Meter Input Zone is now sensitive to Channel Input Device Mono L-Only and R-Only assignments and correctly enables unassigned Mono Devices in the popup menu.
- * A new feature allows you to copy an MT marked area directly to a Region by pressing *Ctrl-C*. The region is automatically selected in the Regions View allowing you to instantly follow up with an *Insert* or *Shift-Insert* keystroke to paste the data to a new location.

- * All On-Top windows will now drop beneath overlapping application windows when SAWStudio loses the application focus and be restored to On-Top status when SAWStudio again gains focus.
- * MultiTrack Waveform scaling with the Mouse-Wheel or the Ctrl-Numeric-Keypad now responds to number selected tracks and adjusts all selected tracks at the same time.
- * Recall From Memory Cells and Files now creates an undo file.
- * Altered buildmix base or device filenames are now cleared in the new edl file created when using the Save-As or Save Copy-As functions. This helps accidental buildmix overwrites of the original mix files when later working in the newly created edls.
- * Marking areas in the SoundFile and MultiTrack Views has been enhanced to allow you to slide a fixed marked area to a different position while maintaining the marked area size. The Shift-B key will adjust the begin position to the current cursor location and automatically shift the end position to maintain the same marked area size. The Shift-E key will adjust the end position to the current cursor location and automatically shift the begin position to maintain the same marked area size. Shift-Dragging either the begin or end position in the Timeline Ruler area will drag the marked area to a new location while maintaining the marked area size.
- * A new option has been added to the Mixer menu called *Snapshot Chan Settings To MT Automation*. This option allows you to snapshot all basic mixer channel settings and write them as MultiTrack automation data at the current cursor position. This function responds to and will write data for all selected Mixer Channels simultaneously. You do not need to be in Automation Mode to use this function. This function will not write non-automatable items such as solos and device assignments, or FX patches.
- * The Numpad functions for MT-Zoom, WaveForm Scaling and Locate are now active in all Mixer Windows.
- * The EQ and Echo plugins have been enhanced for faster overlapped redraws when activated. The new versions are also now sensitive to offscreen positioning saved with edls from higher resolution displays and will automatically correct themselves to fit on the current screen resolution.
- * Two new options have been added to the Process/Mixdown menu called *Export Track(s) To SoundFile(s) – [No Mixer Processing]* and *Export Track(s) To SoundFile(s) – [With Mixer Processing]*. These options make it simple to export solid track wav files from SAWStudio to be easily used in any other DAW system. The first option bypasses all mixer channel processing and automation and outputs the source file region data, neatly assembled into a solid wav file. All edits and SoftEdges are processed for smooth transitions. The second option processes the data through the mixer channel controls, patched plugins and automation. Both options will translate the source files to the current MT SampleRate and Resolution settings.

If there are selected tracks, these options process all selected tracks only, otherwise all tracks are processed.

You are given a choice to process all layers or only the top layer. You are also asked to select a location for the exported files as well as a base filename. The base name (usually the edl name) will be appended with the track label and layer number if layers are chosen. I recommend creating a folder called *Export* in the project folder to separate all exported files for easy transfer to another system. A separate folder also helps to eliminate problems due to filenames matching existing source files in the current project folder. Duplicate

filenames in the same folder will be overwritten.

- * Selecting MT Track Labels for special playback functions has been enhanced with the addition of two new commands. Alt-Ctrl-Clicking will now label-select all tracks between the last selected track and the current one. Alt-Shift-Clicking any label-selected track will transfer and add all the selections to the track numbers for a quick way to group editing functions on the fly.
- * A new MT-Entry editing feature has been added to allow you to slide the Region data within an existing MT-Entry without repositioning the entry. Shift-Right-Dragging within an MT-Entry will slide the data within the entry boundaries without affecting the entry size or position. This can be very helpful when making slight adjustments on various tracks to align horn or vocal parts.
- * Startup Command Line processing has been added with the following options:

SAWStudio will accept a WAV or EDL filename on the command line when starting up. WAV files will automatically open into the SoundFile View. EDL files will automatically open into the MultiTrack View. With EDL filenames, you may also include a /P command option to immediately begin playback of the EDL. Make sure to include the entire path and filename and leave a space after an EDL name before adding the /P.

For example, to have SAWStudio load and begin playback of an EDL upon startup from a shortcut icon on the desktop:

1. From the Windows desktop, right-click the SAWStudio shortcut icon.
2. Select Properties from the shortcut menu.
3. Click the Shortcut tab.
4. In the Target textbox, click at the end of the command line.
5. Add a space, then type the pathname for the EDL followed by another space then add a /P.

Example: C:\SAWStudio\SAWStudio.exe D:\Audio\Test\Test.edl /P

6. Click OK.
7. Double-click the icon to start the program.

A WAV file example might look like this:

Example: C:\SAWStudio\SAWStudio.exe D:\Audio\Test\Test.wav

SAWStudio will also accept a PRF filename on the command line when starting up. In this manner, multiple preference files (including different shades) can be maintained and loaded automatically. You do not need path information for the prf file, only the filename. It must be stored in the Configuration folder under the SAWStudio folder.

Example: C:\SAWStudio\SAWStudio.exe Test.prf

Note that if any of the target line paths or names contain spaces, be sure to enclose the full pathname in quotes, with the /p option (if used) placed outside of the quotes.

Example: "C:\SAWStudio\SAWStudio.exe D:\Audio\Test 2\New Test.edl" /P

- * A new option has been added to the Control Track Built-In Commands called *Stop Playback / Cue Next / Play*. This option allows you to instantly jump to the next Cue Location and begin playback.

Video Track Viewer Version 2.9

- * Framerate display has been expanded to 3 decimal places.
- * A new option has been added to the File Menu called *Stamp New Avi File FrameRate*. This option allows you to change the framerate stamped in an avi file header. This can be very useful to force odd framerate stamps like 24.999 to 25.000 which will stop mismatched framerate warnings when adding clips and force perfect frame accurate sync on the timeline.

Bug Fixes

- * Fixed automation copies of overlapped automation data when using the V Filter.
- * Live Input Mode now handles automation changes correctly and no longer chases the automation moves while sitting idle on the timeline.
- * Code modifications done to enhance stability and eliminate corruption of screen displays with multi-processors, multi-core processors and hyperthreading processors.
- * Alt-Drag MT-Entry boundary adjustments now correctly ignore the Auto-Zero Cross setting and allow exact boundary adjustment in both directions on selected or non selected tracks.
- * The active mixer window now stays active after using a popup fader from any of the controls.
- * Locate points and Control Track View tempo entries now correctly display measure count offsets if used.
- * Setting a new MT sample rate now correctly updates the MT Timeline.
- * Changing Smpte Sync Devices while a Smpte mode is active, now correctly switches to the new device settings without having to toggle Smpte Mode on and off.
- * Adjusted code to fix SRP startup from sometimes failing when initiating directly from Rec/Rdy mode.
- * Fixed code to properly display the Dynamics GR Meter on the E-Mixer when switching between F-Keys.
- * Fixed code that could cause buffer crashes with certain VST Synth plugins when passing data streams between SAWStudio and the MidiWorkShop.

- * The Wide Mixer view now correctly displays marked channels when switching from the Return or Output section to the Input section using the I, R and O zones.
- * Offset Mode now correctly offsets default mixer values when you stop and restart playback without ever exiting and committing Offset adjustments.
- * Opening a Mix Template will now correctly disengage any active solo mode.
- * Using any of the commands to mark the entire SoundFile in the SoundFile View now first correctly clears any existing marked areas and then properly marks the entire file.
- * Modified VST initialization code to compensate for certain plugins that seem to require the audio engine to be running in order to initialize their interface properly.
- * Control Track View long name entries are now truncated in the display window and no longer push the tabbed columns out of alignment. The internal name length is preserved.
- * The Control Track Listbox correctly updates back to the beginning now after the execution of the *Cue Beginning / Play* command.
- * Fixed link between Dynamics Hi and Lo Eq when using the popup fader with the Shift Key.

Video Track Viewer Version 2.9

- * Video Track splits and moves will now correctly redraw marked areas.
- * Edit Mode can no longer be toggled when Edit playback is active.
- * The Render To DV File functions will now correctly re-sync the video viewer display and the MT cursor when the render is finished.

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Version 3.9n ***Enhancements***

Bug Fixes

- * Adjusted the Tempo display format to allow display of tick resolution numbers up to 4 digits. The Measure display was reduced from 5 to 4 digits to compensate. When measure counts beyond 4 digits are needed, the measure and beat separator is reversed and the measure count wraps around at each 10,000 value. For example, tempo display at position 9999>01>0000 will display as shown and when it wraps around past measure 10,000 to 10,002 for example, the display will be shown as 0002<01>0000. This compromise was done to salvage all existing shades and the current pixel layout of the MultiTrack Top Client area. The MT and SF timeline ruler display will still show the 5 digit measure value.

- * The SoundFile View will now correctly display the timeline ruler values in Sample Edit magnified zoom mode.
- * Fixed the *Cue Next/Preload* Control Track command to operate properly in Slave Mode. The Preload command will be ignored on a Slave machine so the slave lock and go operates correctly.
- * The MT and Mixer windows will now correctly display the window sizing cursor when the mouse is placed over the window borders even in Live Mode and when a Trk or Chn cursor is selected.
- * Changing the Base Record Filename or any Track Record Filename in the Record Setup dialog now checks and corrects for duplicate filenames.

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Version 3.9m

Enhancements

- * The engine has been enhanced for tighter Live Mode operation with lower actual latency at the same buffer settings than before and perfect record sync positioning in all combinations of recording modes, using the Auto Loopback adjustment as well as automatic compensation for monitoring from Aux Sends assigned to devices and Aux-Send-Return device loops for using hardware processing gear. The engine now senses and adjusts in the following manner:

Normal recording direct from device- ins, while monitoring from an external mixer source, adjusts the record region sync position using the Auto Latency Adjust value only. Sync is not dependent on buffer latency size settings and therefore makes perfect recordings even on slow audio drivers and hardware. Overdubbing will be in perfect sync when monitoring playback from any bus out directly or from Aux-Send-Masters assigned to device outs. This mode uses an external mixer (or soundcard driver hardware mixer) to split the source signal and blend it with the playback signal from SAWStudio for headphone monitoring during recording.

Recording from mixer channels assigned to live device-ins, while monitoring direct from the SAWStudio virtual mixer source, adjusts the record region sync position using a combination of the Auto Latency Adjust value as well as the exact internal buffer latency present in the monitor chain. Recording from mixer channels with VST synths patched into the Pre Patch point, while monitoring direct from the SAWStudio virtual mixer source, adjusts the record region sync position using the exact internal buffer latency present in the monitor chain only. These modes require low latency buffer settings of 4 x 128 or lower to be useful for monitoring without distracting delays. The Out and In buffer sizes should be set the same. The In-buffer-count should be set to 4 or higher and will not add to the monitor latency. The Out-buffer-count does add to the monitor latency and should set as low as possible while still maintaining stable system operation. This does require good audio drivers and hardware. Only a few soundcards can do this in MME mode... many cards can do this using ASIO mode. Overdubbing will be in perfect sync, regardless of the monitor latency, when monitoring playback from any bus out directly or from Aux-Send-Masters assigned to device outs. The record signal is taken from the Pre Patch point when recording from mixer channel sources. The record signal will include the EQ and Dynamics section of the virtual mixer unless the Pre Patch point routing has

been changed in the Mixer Menu Pre-Fx Patch Signal Flow option. You may monitor the Control Room signal from the main faders and freely use the Mute and Solo buttons without disturbing the recording. You may also use Pre or Pst Aux Sends to send monitor mixes to performers through headphones. Temporary playback override of the mixer channel device-in source assignments can be done by pressing the Shift-Key when you start playback. This will force all mixer channels to MT source for the duration of this playback so you can easily listen back to the recording without having to change your input assignments. When you are finished recording, you should then change all mixer channel source assignments to MT for normal editing and mixing operations.

A special Live Aux-Send-Return processing loop feature is designed into the engine to allow the use of hardware processing gear to be blended into the mix in perfect sync regardless of the latency buffer settings. This mode is automatically engaged when an Aux-Send-Master is assigned to an out-device and its corresponding Return is assigned to an in-device. This mode splits the engine and delays the out buffers while leaving the Aux-Send signals in original time, thereby allowing the normally delayed hardware processing data to arrive and mix into the playback in perfect time. This does not require low latency buffer settings, but it does however delay the normal playback signal, and therefore will add latency to Live Mode virtual monitoring. Only the Aux-Send-Return device pairs will be affected, therefore you may still use other aux sends as headphone monitors, as well as any other bus out. The record signals will all be properly adjusted to drop in perfect sync regardless of the added monitor delay. This mode is best suited for mix operations where hardware processing gear is desired in realtime. It is recommended that you do not assign Return channels to in-devices when using Live input channels for virtual monitoring, in order to obtain the lowest possible monitor latency.

Bug Fixes

- * Fixed the ontop status of the overwrite/append msg box for the BuildMix dialog.
- * Adjusted code for the MT, SF, Record, F-Mixer, and Z-Mixer views to properly re-display memory images when resizing with the Windows "Show Window Contents While Dragging" option ON.
- * Added code to use an alternate query method needed for certain VST plugins to register themselves as a synth.
- * Adjusted code to compensate for LoopBack Latency only on active Mixer Channel Device recording tracks. The engine now auto-senses the correct amount of adjustment required for each type of recording source on a track per track basis regardless of the combinations of Live, VST, MT or direct sources being used at the same time.
- * The Live Aux-Send-Return slip devices delay adjustment feature has been fixed to allow for using hardware reverb or other processing gear in the Aux-Send-Return loop assigned to audio device ins and outs.
- * The engine modifications have taken away the DWave option of using a 1 buffer latency setting, although the actual latency performance at 2 buffers is now the same as it was in the earlier engine at 1 buffer. If you have been using a 1 buffer DWave setting, change it to 2 buffers...latency should remain the same.

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Version 3.9l

Enhancements

- * DirectX and VST Plugin positions will now save with the edl whether the plugin window is open or not at the time of the edl save. Native plugins have their own control over this feature.
- * The Aux Send mini faders have been enhanced to use the large popup faders by clicking and holding in the Aux Send readout displays above the mini fader.

Bug Fixes

- * Fixed VST code that could cause some plugins to open with only the SAWStudio VST titlebar and no window display. This was caused by some of the VST crash code adjustments from 3.9k.
- * Fixed ShowControl Midi Trigger code to work correctly with edl entries containing DV video. This fix should stop the video graph error messages and allow the video to open properly.
- * Fixed ShowControl Midi Note-Off Trigger code to correct for misfire possibilities.
- * Fixed E-Mixer meters code which could stop responding based on Z-Mixer size adjustments... now completely independent.

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Version 3.9k

Enhancements

- * Two new options have been added to the VST popup Options menu called *Override Auto Latency Compensation* and *Override Auto Latency Compensation Value*. The first option will display the reported latency delay in samples that the plugin returns to SAWStudio when asked. This option can also be used to override that value. If overridden, the new compensation value used will be taken from the second option setting, which can also be set to zero to bypass all automatic latency compensation. Some plugins report latency differently than expected or not at all. These options allow you to correct for VST latency or bypass it altogether. These options save with the edl and with individual saved presets to allow for the same plugin to have different latency values dependent on the actual plugin parameter settings.

Bug Fixes

- * Adjusted the VST auto compensation routines to fix some problems associated with odd sample latency sizes interacting with buffer boundaries dependent on SAWStudio buffer size settings. This should solve issues with pops and clicks in certain VST latent plugins.
- * More VST code adjustments to help with compatibility issues concerning certain plugins that cause a crash when patched into SAWStudio. This one takes care of the Applied Acoustics product line and also some other plugins including the Ivory piano plugin.

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Version 3.9j

Enhancements

- * VST Plugin hosting has been enhanced to allow VST Plugins to reside in any folder on any drive. If the VST Plugin dll is not installed into the VST_Plugins folder under the SAWStudio main folder, then you can now place an ini file substitute in the VST_Plugins folder pointing to the full path of the dll file itself. Create an ascii text ini file in the Notepad and name it the same as the original dll file. Inside the file type the full drive and path and original dll filename on the first line of the file. Make sure to finish the line with a carriage return. For example... if a VST Plugin called *TestPlug.dll* is installed to *D:\VST\Work*, then create an ini file called *TestPlug.ini* and inside the file type the line *D:\VST\Work\TestPlug.dll* followed by a carriage return. This ini file, placed in the VST_Plugins folder under SAWStudio, will now link SAWStudio to find the VST plugin in its originally installed path. This can help solve compatibility issues with certain hardwired path plugins and their various copy protection schemes.
- * VST Plugin hosting has been enhanced to automatically compensate for plugin latency as reported by the plugins themselves. Using any external latency compensator or otherwise adjusting the track data to compensate is no longer necessary. Realize that previous edls which include such adjustments must be altered to remove the manual compensation, otherwise the data will now be incorrectly positioned on the timeline. Note that the bypass switch is backward compensated to allow bypassing during live playback without losing sync. Unpatching the plugin during live playback is not backward compensated however, and will cause data sync to be incorrect. You must stop and restart playback to correct the track sync. Also, realize that plugins that have latency will add the latency to live inputs creating delays and in some cases may force the engine to shutdown.
- * *Hot Track Solo Mode* may now be used with the *Shift-Key* to keep the Return Channels active so you can hear the Return effects. Each time you switch to a new HotTrack it will react to the *Shift-Key*, so you can switch the Returns On and Off at will as you jump around by pressing the *Shift-Key* or not.
- * The Full Mixer colored section icons can now be used to vertical scroll E-Mixer and Z-Mixer sections, exactly like the section zones on the MT left edge. The dead zones just above the Full Mixer faders are also active zones for jumping to the fader sections.
- * The E-Mixer, Z-Mixer and Wide Mixer popup Aux Label Display zones have been altered to only be active on the individual Aux Number text (1, 2, 3, etc.) and the main Aux Asgn text. This helps to keep the display from popping up when mouse aim slightly misses a switch or other active aux control zone.
- * All MT Entry moves and copies have been enhanced to now include Automation and Control entries within any SoftEdge boundaries.

Bug Fixes

- * Modified the BuildMix code to solve a crash that could occur when doing long mix builds (over an hour) using the Hi Resolution SRC options.
- * Fixed the Load Preference function to properly load new Midi Controller Templates when changing preferences from within the program.

- * Store and Recall channel operations now correctly handle FX Bypass switch settings.
- * Fixed code that could cause a crash when naming tracks under certain specific conditions.

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Version 3.9i

Enhancements

- * The Store/Recall menu has 2 new options. *Store All From Channel To File* and *Recall All From File To Channel*. These two options allow direct transfers to and from Channel Template Files to mixer channels through Memory Cell 1.
- * The Exploded Mixer View has been enhanced to accept the Left and Right Arrow keys and the *Mouse Wheel* to scroll through the mixer channels while keeping the E Mixer view active.

Bug Fixes

- * The Open and Save dialog box has been forced to an ontop status to open above other ontop windows.
- * Modifications to the VST process routines to handle buffer size changes that come from other plugins patched in front of VST plugins that might otherwise crash.
- * Fixed live playback marked area updating in the MT to display correctly when zooming in and out.

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Version 3.9h

Enhancements

- * The Record Meter window scrolling has been enhanced. When the Record Meter window is smaller than the current number of active meters, you can now use the Shift-Key with the mouse wheel or left/right arrow keys to scroll an entire page of meters at a time.
- * Extended API functions for Midi WorkShop enhanced features. MWS Virtual Port Names are now passed back to SAWStudio when using MWS version 1.5d or higher.
- * A new option has been added to the Control Track Built-In Commands called *Stop/Cue Next/Live Mode*. This command stops playback, cues to the next Cue Location and then activates Live Mode.
- * HotTrack Solo Mode has been enhanced to stay active through undo recalls.
- * The I, R and O zone functions have been enhanced to retain the last vertical offset for each module type when jumping to different types and jumping back.

Bug Fixes

- * The Clear Current Mixer Channel option on the Mixer Menu now correctly clears the current Mixer Hot Channel, rather than the last mixer channel clicked on. The clear operation uses the built-in default mixer settings and does not react to any saved default mixer template.
- * Adjusted code that stops automation entries at marked boundaries from disengaging when doing stretch/shrink automation operations.
- * Fixed code to stop MWS from playing back data when the SAWStudio RecRdy and Record modes are activated with live inputs and no SRP playback engaged.

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Version 3.9g ***Enhancements***

Bug Fixes

- * Adjusted message and dialog box code to free the cpu during the modal loop.
- * Adjusted the Memory Caching code to reduce cpu load on large sessions with many regions and MTEntries by as much as 50-60%.
- * Fixed Custom SampleRate entries to correctly accept values over 100,000.
- * Fixed Goto Time Dialog keyboard function.
- * Fixed EDL Undo Levels Dialog to correctly accept levels up to 99.

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Version 3.9f ***Enhancements***

- * A new Control Track Built-In Command has been added called *Cue Location / Wait For Time*. This command allows you to place a Cue mark and designate a Wait For Time value in 24 hour time format. When this Control Track Entry is activated, the system stops and displays a message window showing the wait for time value and the current time value. The current time continues to update until the wait for time is reached. At that point, the system starts playback, or SRP playback if record meters are active. If you have the SRP/Record Latch turned on, then the system will begin recording immediately. If instead, you mark an area on the multitrack, recording will auto punch in and out. Using this feature, you can designate a defined length recording, and then stop the system with a Control Track Stop command at the end of the marked area. You may cancel the wait for time feature when the time window is displayed and counting by pressing the Esc-Key.
- * The Replace MT Entry (*Shift-R*) function has been enhanced to preserve automation entries if Automation Mode is active when you engage the operation.

- * The BuildMix function has been modified to maintain the increased performance and no longer depend on the Windows Program/Application priority setting. The Windows Performance Optimize for Programs/Applications setting is still recommended for best overall SAWStudio performance, but you may now use the Background Application setting without destroying the BuildMix performance.

Video Track Viewer Version 2.8

- * New Video Viewer enhancement saves the current Overlay Render size and the Overlay Render Mode to the Video Preferences, so you can now force the Overlay Render mode active as a default.

Bug Fixes

- * Adjusted Shutdown code to correct for problems when Region Caching is active under certain session conditions.
- * Adjusted Relative Tempo position calculating routines to correct for display problems and add more accuracy.
- * Fixed display problems on Out Assign switches 19, 21, and 23 to keep them from overwriting part of the numbers 20, 22, and 24 next to them.
- * Fixed the Marked Time to display correctly even when the MultiTrack is not the active window on an F-Key change.
- * Fixed waveform display problems using .aiff files.
- * Adjusted floating point accuracies for grid calculations.
- * Hooked Mono settings for a Key Channel so keyed Dynamics and Fx are now properly following mono settings.
- * Fixed Dynamics GR Meter to properly handle L/R Rvs Gate data.
- * Fixed Undos to restore video entries correctly when you move audio and video selected entries by grabbing an audio entry to initiate the move.
- * Fixed Selected audio and video moves to properly detect audio entry limits when grabbing a video entry to initiate the move.
- * Fixed full zoom out on large displays from crashing.
- * Fixed Region split functions from causing crashes when region names are near the max length of 127 characters.
- * Fixed Store/Recall Fx problems on Output Channels.

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Version 3.9e

Enhancements

- * Lowered the Memory Caching thread priority to keep it out of the way of normal user activity.
- * A new option has been added to the MT Menu called *Disable Retake-All Function*. This option will allow you to disable the use of the Retake-All function helping you from damaging a session by its accidental use. When this option is active, the Retake-All command will be blocked. You must toggle this option OFF in order to re-use the Retake-All function. This option saves with the preferences.
- * The Record Setup window will now respond to the Enter-Key for OK and the Escape-Key for Cancel as well as the mouse clicks.
- * The Cue functions (Q, Shift-Q, Ctrl-Q) are now active from the Record Remote and Meter windows as well as the MultiTrack.
- * The Regions View Insert button can now be used with the Alt-Key to force an insert and overwrite function, which inserts the currently selected Region View region to the current HotTrack at the MT cursor position and overwrites any existing data. If Automation Mode is active, then existing automation data is preserved.
- * A new option has been added to the Select Mode popup menu called *Associate Selected In Regions View*. This option will select and hilite all Regions in the Regions View associated with all MT Selected Entries in Select Mode. A very easy way to visually select groups of regions for an export or rename operation.
- * The Regions View Rename option now creates an undo file.
- * Two new options have been added to the Regions menu called *Sequential Append Format “ {001}”* and *Sequential Append Format “ – 001”*. These two options work with the ReName Regions function and control what the sequential appended number format looks like. These options save with the preferences.
- * The Native Plugins are now listed in the FX Choices View as {SAW}.
- * The Shift-Insert command for adding Time Stamped Regions to the MT has been enhanced to force an insert, if necessary, overwriting underlying MT-Entries. This guarantees that the entry will be placed at the original Time Stamp.
- * A new option has been added to the Mixer Menu called *Clear Current Channel*. This option clears the current mixer channel settings to default. If the current channel is part of a selected mixer group, all of the group channels are affected.
- * The Control Track Midi Global Play function has been enhanced to control the SRP button when armed record meters are active. This means you can now remote trigger SRP/Rec mode from a midi keyboard assigned note, or Midi Controller Footswitch. This option will press the SRP button when record meters are active (instead of the Play button) and can trigger record in two ways. A marked area auto punch section or by using the SRP/Rec latch option in the options menu.

- * A new record feature has been added called *Multi-Take Loop Record*. This feature along with 2 other options can be found on the Retake Popup Menu on the Record Remote Panel. Activating Multi-Take Loop Record mode allows you to mark a punch-in/out area on the MT... place the start cursor position in front of the marked section to allow for some pre-roll time and then start SRP playback. When the punch-in area is reached, recording is engaged automatically and dis-engaged at the punch-out position. The region (or regions for multi tracks at once) will be stamped with the starting date and time and take number as well as the normal file or track label name. The system then automatically stops and restarts the process again at the original pre-roll start position and continues to loop, each time dropping new takes in the recording area. You can set a loop counter to stop after a certain number of loops up to 100, using the *Multi-Take Loop Record Count* option. When you stop the process or when the loop counter runs out, you will be left with the last complete take onscreen. The other takes are grouped together by the date and time stamp and it becomes an extremely easy process to lay any take group back onto the MT. Simply select the take number region of interest (or multiple regions for multi track recordings) and use the Shift key when you click the Insert To MT button, or press Shift-Insert on the keyboard. The region or group of regions will instantly insert themselves and overwrite the current set of regions at the original record position... nothing could be simpler... you can instantly lay down multiple takes of multiple tracks and even mix and match takes on different tracks. The insert of multiple regions lays down the tracks from the current HotTrack in order to the next track. Make sure to have the MT track order in a normal sequential order when using this insert feature to lay all take regions to their proper tracks at one time.

Another option called *Multi-Take Layer Loop Record* works in a similar fashion, but adds the extra feature of placing each new group of takes on the next layer (automatically) until the layers are filled, at which time it keeps inserting the new takes on the last layer.

- * The B and E keys are now active during MT Play mode. Pressing the B-Key starts a live marking update on the HotTrack, and pressing the E-Key stops the growing marked area. You may continue to press the E-Key to expand the area to the current cursor position. Pressing the B-Key again, starts the live update of a new area.
- * Right-Clicking on the MT Play button will now toggle Live Input Mode.
- * Opened up more functions in Live Input Mode like Marking Areas, Home, End, Tab, etc.
- * Live Input Mode will now automatically be restored when play and record modes are stopped if Live Input Mode was active at the time the other modes were started. Rec- Rdy will now behave the same... If Rec-Rdy is active when you start SRP or Rec mode, Rec-Rdy will automatically restore when you stop the SRP or Rec operation.
- * VST plugins now save their OnTop window status with the edls.
- * VST Synth Plugs now have a new option in the VST Popup Options Menu called *Disable SoftSynth*. This option allows you to completely bypass the internal routing of a VST Synth plug and pass underlying audio track data through. This allows you to keep a patched synth on the track, but still record the data as audio on the same track and ignore the patched synth, while still keeping it in the edl with all its settings in case you need to make changes and re-record again. When this option is active a large Red X displays across the Blue Pyramid Options Icon. This option saves with the edl.

- * Native support has been added for Frontier Design's TranzPort wireless remote controller. A lot of control has been packed into this very small control box. The controls with this Midi Controller Template operate as follows:

The Track (Channel) buttons increment and decrement the track/channel. Used with the Shift key, they increment and decrement by 8 tracks/channels.

The Rec button toggles the record meter open/close for the current track. Used with the Shift key, it operates the record meters as a record template, allowing multiple channels to be armed or disarmed at once.

The Mute button toggles the mute on/off for the current channel.

The Solo button toggles the solo on/off for the current channel. Used with the Shift key, it toggles all active solos off.

When Record Meters are active, The Undo button will Retake To The Last Record Position. Used with the Shift key, it will Retake To The Cur Cursor Position.

The In and Out buttons will Mark Beg and End. Used with the Shift key, they will jump to the Mark Beg and End positions. When any marked area is active, the LCD displays a small hatch mark just after the time readout display.

The Punch button is used as a special Function button. When active, it causes the Scrub Wheel to act as a function selector scanning through different control types within the program. Used with the Shift key, it resets the current selected control type to its default value. The current selectable control types are: Layers; Fader; Pan; Aux 1 In; Aux 1 Pst Fdr; Aux 1 Lvl; Aux 1 Pan; Aux 2 In; Aux 2 Pst Fdr; Aux 2 Lvl; Aux 2 Pan; Aux 3 In; Aux 3 Pst Fdr; Aux 3 Lvl; Aux 3 Pan; Aux 4 In; Aux 4 Pst Fdr; Aux 4 Lvl; Aux 4 Pan; Aux 5 In; Aux 5 Pst Fdr; Aux 5 Lvl; Aux 5 Pan; Aux 6 In; Aux 6 Pst Fdr; Aux 6 Lvl; Aux 6 Pan; Comp In; Comp Gn; Comp Thr; Comp Ratio; Comp Rel; Comp Att; Gate In; Gate Rvs; Gate Thr; Gate Flr; Gate Rel; Gate Att; Dyn Key Listen; Dyn Eq Lo; Dyn Eq Hi; Dyn Key; Eq In; Eq LoCut In; Eq LoCut Frq; Eq HiCut In; Eq HiCut Frq; Eq Gn 1; Eq Frq 1; Eq Q 1; Eq Gn 2; Eq Frq 2; Eq Q 2; Eq Gn 3; Eq Frq 3; Eq Q 3; Eq Gn 4; Eq Frq 4; Eq Q 4; Eq Gn 5; Eq Frq 5; Eq Q 5; Mono; Swap LR; Phase Rvs; Attenuator;

When Record Meters are not active, the Loop button toggles Auto Rewind on/off. When active, regular MT Play will now jump back to the starting point when play is stopped. If there is a marked area, MT Play will continue to loop the marked area.

When Record Meters are active, the Loop button toggles Auto Record Loop mode on/off. SRP recordings will continue to create new takes of the marked area, looping back to the cursor position pre-roll starting point. Used with the Shift key, Auto Record Layer Loop mode is engaged, which will fill the layers with new takes on Lite and Full SAWStudio versions.

The Shift button is used as a momentary modifier key.

The Markers Prev button will jump to the previous Cue marker.

The Markers Next button will jump to the next Cue marker. Used with the Shift key it will toggle Live Input

Mode on/off. Live Input Mode is displayed on the LCD display as a small single character level meter.

The Markers Add button will add a new Cue Location marker at the current cursor position. Used with the Shift key, it will delete any Cue Location markers at the current cursor position.

When the Selector Mode is not active, the Scrub Wheel will scrub the MT cursor position forward and backward on the timeline. The LCD displays the current time position in all timeline display modes. When the Selector Mode is active (the Punch button), it will select various control types for display and adjustment. Used with the Shift key, it will actually adjust the current control type.

The transport Rewind button will move the cursor position back 10 secs on the timeline. This function will auto locate the playback if active. Used with the Shift key, it will jump to the session Home position.

The transport Fast Forward button will move the cursor forward 10 secs on the timeline. This function will auto locate the playback if active. Used with the Shift key, it will jump to the session End position.

The transport Stop button stops playback, record and Live Input operations. Used with the Shift key, it will Save and Update the session edl. When a message dialog box is active, this key acts as a Cancel or No answer.

The transport Play button starts MT Play or SRP play operations. Used with the Shift key, it starts an MT Play PreLoad operation. When a message dialog box is active, this key acts as an OK, YES or Enter answer. The FootSwitch Jack emulates this button.

The transport Record button starts an MT Record operation. Used with the Shift key, it starts a RecRdy operation.

- * Modified the older Midi Controller templates to control Return and Output channels when using the Navigation Link *Mixer Views To Hardware Controller* option under the Mixer Menu.
- * Enhanced the DWave engine to handle 1 buffer at 64 samples with much more stability than before and even be able to do 1 buffer settings on systems that could not do it before.
- * Updated the Native Plugin API with a new function that allows a plugin to request the current TempoMap information.
- * Patch Views will now remain on their current tracks when switching to the Video or Control Track in the MultiTrack.
- * A new option has been added to the Library View File popup menu called *Insert Selected To MultiTrack*. This option inserts the current Library Entry to the MultiTrack at the cursor position and overwrites any underlying regions. This function can be activated by pressing Shift-Insert also when the Library View is the active window.

Bug Fixes

- * Modified Shutdown code to fix potential crashes when Region Memory Caching is actively loading data

during a program exit.

- * Jumping to different module types with the I, R and O zones no longer freezes the meter on a locked Zoom Mixer module.
- * Canceling an ASIO Preload and then restarting playback will no longer playback at the wrong speed.
- * In the SoundFile View, the Ctrl-Up-Arrow or Ctrl-Dn-Arrow now correctly resets any display vertical offset, even if the offset is maxed to its limit.
- * Fixed the SF View from following the MT Zero Locate setting.
- * Fixed a problem with the Hi-Cut and Lo-Cut EQ filters which could cause them to change values internally when starting playback in Offset Mode, thereby changing the mix between the two modes.
- * System crashes caused by linking and inserting Library view file entries with extremely long filenames has been fixed.
- * Trapped for accidental Retake corruption. Anytime record settings that affect record files are altered, the Retake flag is now cleared to block accidental retakes that may affect the wrong files.
- * The Smpte/Midi Menu, *Midi Control-In Active* and *Midi Control-Out Active* options now correctly remain off when an attempt to open the midi ports fails.
- * Modified the VST TimeInfo code to help solve some problems with certain Tempo driven VST synth plugins.
- * Fixed issues with multiple out assigns and input tracks containing region data that would cause buffer underrun errors when trying to initiate Live, Rec Rdy or Rec Mode, but would be fine in SRP or Play Mode.
- * Fixed FX API Solo control to allow plugins to set solos on all Channel types. This now fixes the Levelizer Key Listen switch for Return and Output Tracks.
- * Fixed SF waveform drawing which would cause zero data value pixels to remain behind on the display when using the vertical centerline shift feature.
- * Code has been modified to leave the MT Cursor position untouched when aborting from certain Region Insert operations that warn of a conflict.
- * Fixed the SF Rec button display to update correctly when views change and the SF Record Meters are active.

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Version 3.9d

Enhancements

- * Added a new feature to the MultiTrack Insert Key command. Using the Alt-Insert Key in the MT now inserts the currently selected Region View region to the current HotTrack at the MT cursor position and overwrites any existing data. If Automation Mode is active, then existing automation data is preserved.
- * Added TimeLine support for Smpte 23.976 HD video.
- * Added a new WheelMouse function to the MultiTrack and SoundFile View. Pressing the Ctrl Key with the WheelMouse will now operate the waveform vertical scaling function.
- * The I, R and O Jump To Channel zones have been enhanced to eliminate jumping to blank module sections on the Return and Output channels. Whenever you jump to a different module type, the vertical offset is now adjusted to display the fader section of the module.
- * Changed these info files to .rtf format for compatibility with the newer XP Service Pack 2 WordPad installs. The .rtf format is still compatible with older WordPad versions even back to NT.
- * Pressing the T-Key in the SoundFile View will now transfer focus back to the MultiTrack window. If a region transfer from the MT was active, then the cursor position in the MT will be updated to match the current SF cursor position.

Video Track Viewer Version 2.7b

- * Added TimeLine support for Smpte 23.976 HD video.

Bug Fixes

- * Modified the Asio engine to correct for compatibility issues with some newer soundcard drivers. (M-Audio and DigiDesign products).
- * Fixed Live Insert Fx patches from causing following Fx plugs to stop functioning.
- * In Select Mode, the Left/Right Arrow snap/nudge function now creates an undo.
- * Fixed Video Track entry snapping and moving to grid... grid calculation precision has been improved with new conversion routines.
- * Fixed DirX and VST Plugin FX Bypass switches so they now correctly display the current status when first opening the plugin window when automation entries have been written that alter the bypass settings.

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Version 3.9c

Enhancements

- * The Exploded Mixer View is now dual monitor aware. When popped up from within the Full Mixer View it

will maintain its position within the Full Mixer View even when that view is on the second monitor of a dual monitor configuration.

- * The Record Meters are now dual monitor aware and will look to the right edge of the Main Window for its right-edge detection. If you stretch the Main Window background across both monitors, the record meters will now operate correctly on the second monitor or can be stretched across both monitors.
- * DirectX and VST windows are now dual monitor aware and will look to the right edge of the Main Window for its right-edge detection. If you stretch the Main Window background across both monitors, DirectX and VST plugin windows can be placed on the second monitor and will retain their positions correctly when the session edl is re-opened.
- * Popup mixer control faders are now dual monitor aware and will look to the right edge of the Main Window for its right-edge detection. If you stretch the Main Window background across both monitors, these faders will retain their positions correctly even in mixer views placed on the second monitor.
- * The Zoom Mixer Locking feature has been enhanced. *Shift-Right-Clicking* in the *Close Button* zone of the Zoom Mixer will lock the view from channel chasing and vertical chasing when using the MT Left Client vertical hot zones. This mode displays two vertical red lines in the padlock display of the *Close Button* zone.
- * The build mix routine performance has been enhanced to speed up the process by about 10% – 15%.
- * The *Ctrl-Tab* and *Ctrl-Shift-Tab* keys are now active in the Wave Automation Display mode as well as full Automation Mode.

Bug Fixes

- * The File View Delete Files function now displays a warning message when video or midi files are selected for deletion.
- * Adjusted code to fix inversed MT Track Labels from randomly not clearing correctly.
- * Fixed Record Template code to maintain track offsets and source assigns in record templates where individual tracks are removed from an existing record template and a new one created.
- * Fixed the Exploded Mixer View Compressor Gain Reduction Meter to now display properly at all E-Mixer positions and offsets.

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Version 3.9b

Enhancements

- * Two new options have been added to the MultiTrack Menu called *Disable Right-Mouse-Btn Engine Toggle* and *Disable SpaceBar/Return Engine Toggle*. These options can be used to lockout the mouse and/or keyboard engine toggle commands so that during critical recording or Live Mode sessions, you cannot

accidentally toggle the engine to stop by pressing the *Right Mouse Button* or *SpaceBar* or *Return* keys. You will be forced to use the play and stop buttons on the MultiTrack or use the SRP, REC or Stop buttons on the Record Remote panel. These options may be saved with preferences, but realize that if both of these options are left active, you will lose some editing playback capabilities in certain views like the Regions, Library, Show Control, etc.

- * A new enhancement has been added to the MT display. *Right-Clicking* on the **Wv** button or pressing the *Alt-W-Key* now toggles a display mode that shows automation entries dimmed overtop of the waveform normal display. This allows you to see automation entries while still being free to make control adjustments without actually writing automation data. A red outline around the **Wv** button indicates that this special view mode is active. When the normal Automation mode is engaged, the automation entries will display in full color over the dimmed waveform display and automation writing will be engaged as normal.
- * Relative Time display is now active while dragging in the Timeline Ruler area when in Select Mode.
- * The Library Import feature has been enhanced to allow marked boundary SoundFile adjustments to override the original Region boundary marks. If you double-click a Library EDL Region into the SoundFile View and then adjust the marks to a smaller or larger segment, the new marked area will be the area used when using the import function to bring the data into the current session.
- * Two new options have been added to the File View Options Menu called *RePath Selected Entries Only* and *ReName Selected Entries Only*. These options allow you to modify the paths or names of the EDL file entries without modifying or altering any of the actual files on disk. This option then requires that you move or modify the files in question yourself. This option will warn you of any missing files directly after you alter the paths or names, if you have not already moved or renamed the proper files before changing the links in the session EDL. These options only change the links in the EDL.
- * A new enhancement has been added for MT playback of selected tracks. You may now select playback tracks by *Alt-Left-Clicking* on the Track Label. The label will inverse. You may *Alt-Drag* the mouse to continue selecting and the MT will scroll up or down. *Alt-Left-Clicking* a selected Label will un-select it. *Alt-Right-Clicking* any Label will un-select them all. This works the same as the selected Track Number function without causing group MT edits. The cpu load is reduced during these special playback modes because only the selected tracks are loaded into the engine loop, all other track data is completely ignored. The BuildMix function will respond to this track selection also as it does with selected Track Numbers. You may also use this function with preset groups available from the *Right-Click* on the MT TitleBar. When selecting a group from the popup menu, press the *Alt-Key* to select this special Label group instead of a Track Number group.
- * A small enhancement has been added to the Library Link option when in soundfile directory mode. The filename now ignores the file extension and uses just the name portion of the filename as the region name base.

Bug Fixes

- * Increased the internal work buffers size to accommodate for the ever increasing parameter storage requirements of newer VST and DirectX plugins.

- * The Aux Master Pans have been fixed when adjusting live.
- * The Hi-Res SampleRate Conversion routines have been fixed to maintain proper sync in sessions which use multiple vari-pitched regions along the timeline.
- * *Alt-Drag* to create and drop a new region from existing data on the MT now correctly responds to both SampleRate and Vari-Pitch when displaying the new region ghosted drop length.

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Version 3.9a

Enhancements

- * Enhanced the Locate Point feature by adding the use of the NumPad keys to jump to the first 10 Locate Points. Pressing Alt-NumPad-Key 1-9 will jump to Locate Points 1-9. Pressing Alt-NumPad-Key 0 will jump to Locate Point 10. The use of the NumPad keys for zoom are still intact and the use of the Ctrl-NumPad keys to adjust waveform vertical scaling are also still intact.
- * Increased the accuracy of the meter data collection routines to check every data sample for clipping. This now guarantees that peak display lights will catch even a single clipped sample rather than a previously required 4 sample overage. This does increase cpu load slightly, but hopefully will not cause any problems. The increased display accuracy should be worth the trade-off.
- * Moving and copying MT-entries has been enhanced to allow a forced insert mode. When grabbing and moving MT-Entries, you can force an insert and overwrite condition for conflicting entries at the destination by pressing the Alt-Key as you release the mouse to finish the move. Normally the entry conflict will cause the moved entry to snap and butt-splice to the front or back of the conflicting entry, depending on the overlap condition.
- * Enhanced Host/Slave code to pass the Shift parameter for starting MT playback and forcing all active channel device assignments back to the MT.
- * Enhanced Host/Slave code to pass solos in both directions to force a clean solo of the combined Host/Slave mix when a solo is engaged on either the Host or Slave machines.

Bug Fixes

- * Fixed the Extract Session routine to properly handle duplicate regions.
- * Fixed a possible crash bug in the new eq code introduced in 3.9.
- * Extended work buffer sizes even larger to correct for some of the new VST plugins that extremely large buffer storage requirements for their parameter settings.
- * Fixed marked area display from disappearing after changing to a new Shade.
- * Adjusted code to properly maintain compressor release values when dynamically raising compression

threshold during playback.

- * Fixed code to stop crashes in the Save And Trim operation when using mixed samplers.
- * Fixed the Recent SoundFile List to loop back around after removing an item using the Shift-Left-Click option.
- * Fixed crashes that could occur with grid cursor snapping across time signature changes less than quarter note denominators.

Eq PlugIn Module Version 1.9

- * Corrected code that could cause track changing commands (arrow keys, wheel mouse etc) in the MT to stop working when the plugin is displayed with multiple plugins patched.

Video Track Viewer Version 2.7a

- * Fixed Bitmap rendering to the overlay.

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Version 3.9

Enhancements

- * Added VST Time Info support for tempo syncing VST synth plugins to the TimeLine.
- * Added the ability to read 32 bit floating point wav files directly and also expanded the wav parser code to accept the same basic SAWStudio wav formats that have been saved with the new Microsoft "Extensible" flag, by other programs.
- * Added the ability to read 16, 20, and 24 bit mono and stereo .aif and .aiff files directly.
- * The File View has been enhanced. The RePath and ReName File Entry features now actually re-locate and/or rename the actual files also, and automatically saves and updates the session when closing the File View window.
- * A slight change has been made to import and auto-drag-and-drop region names. The brackets and file extension are no longer included when default region names are created from existing filenames.
- * A new option has been added to the File Menu called *Extract Session*. This option offers a sub-menu of varying Region Handle sizes just like the Save and Trim Session. This option will extract all components of a session from the Mark Begin to the Mark End position (or the entire session if there is no marked area) into a new session folder and edl file. You will be prompted to include all layers or not. All active file sections for each track will be re-written into new track files, labeled with the new session name and track label. Regions within the marked area will remain intact. All remaining Sequence entries outside the marked area or included layers will be removed and the new session will be opened at completion. The Sequence Entries will be left in their original timeline positions, in case there might be Smpte references that need to

be retained. You can simply mark the data and use the Slip Track function for all tracks to snap the data to the front of the timeline if desired in the new edl. This is designed with the original intent of extracting separate and named song edls from a single long live recording session which was forced to be placed into one giant session because there was no time to break and create separate edls for each song during the live performance. Of course, I'm sure many other uses for this feature will come to mind for the creative engineer. I recommend doing the session extractions before you begin editing and automating the original session, which will then start each new edl out with a single region and file for each track, properly labeled with the session name and track label. You may wish to setup a basic starting mix with eq and compression and reverb plugs and so forth, before the extractions, which will then carry this starting setup into each new edl as a starting point. This feature also has the added benefit that it can help clean up the intense amount of disk fragmentation that can occur when recording 24 or more live files at once, due to the fact that the files are all being written in small noncontiguous blocks. The new files are written 1 file at a time and can end up being much less fragmented, which improves playback as you start building dense mixes with lots of processing.

- * The Master/Slave relationship has been enhanced to properly handle SRP and Record Mode sync.
- * Extended the A-Key (Automation Mode Toggle) and the O-Key (Offset Mode Toggle) to all mixer views.
- * Enhanced the Wide Mixer View to allow stable placement on the secondary monitor of a dual monitor configuration.
- * The popup Locate Menu has been enhanced. You can now Set, Clear and Rename Locate Points from the popup menu. You can also use Shift-Click to set a point directly or Ctrl-Click to clear a point directly. When setting a point, the Name Dialog now automatically pops up to facilitate setting and naming in one quick operation. You may set and name live during playback. Locate points now display the position in the current timeline format.
- * Enhanced the Cue Location feature. The Cue Location dialogs will now popup even when playback is active. The dialog has been enhanced to accept keystrokes for the Name (N-Key), Parameter Data (P-Key), Midi Trigger (T-Key), and Midi Note On/Off (O-Key). This will help speed up live-on-the-fly Cue Location entries.
- * New code has been added to activate a complete forced Engine Shutdown to hopefully allow you to recover from most driver or audio engine lockup conditions. Pressing the Break-Key (labeled Pause on many keyboards) will force all engine threads to shutdown in sequence to break the engine out of a locked play loop. A *Forced Engine Shutdown* message will display on the screen while the program attempts to reset the threads to a stable condition. If the engine is in a locked play condition and you attempt to stop multiple times back to back, it will force this Shutdown routine into action also.
- * Default settings for the Aux Sends and the XY Center and XY Sub have been altered to drop to inf.
- * Active Control ReadOut Zones have been enhanced for quicker control operation. Many controls that required the push/pull scrolling operation for adjusting the control settings will now popup a variable sized fader for instant and direct adjustment with a fader knob. The fader will adjust its length to fit the exact number of parameter values available for the control. When you release the mouse, the fader will disappear. The fader will popup to the right of the control zone to allow the readout to be used as a visible reference

while you adjust the value. The mouse will automatically jump to the current fader position and return back to its original position when the fader disappears. Control zones that already have an associated built-in fader will continue to operate in the original push/pull fashion if grabbed in the ReadOut zone area.

- * MultiTrack Tab will now function in Live Input Mode.
- * A new option has been added to the Mixer Menu called *Mixer Hot Channel Color*. This option allows you to set the Mixer Hot Chan display color by designating an RGB color. Use your favorite Windows graphics program color picker chart and find the RGB values for your color choice. Enter these three values, separated by commas into this option to change the color of the highlight bars that display the Mixer Hot Channel. This value saves with the preferences.
- * Enhanced some of the device assignment error messages to designate the troubled device or track, which should help when chasing down assignment problems.
- * A new enhancement has been added to *Automation Mode*. Right-Clicking the *Aut* button displays a popup filter menu of every automation data type. Selecting one of these options sets the *View Filter On* for that data type. If the *View Filter* is active when displaying this menu, the current filter data type will be checked. A special feature allows all Fx PlugIn automation data types to be shown at once if the cursor position is not directly behind an Fx automation data type when selecting this option. If the last tracked data type is an Fx automation type, only that specific type will be displayed.
- * A new option has been added to the Automation Menu called *Disable Automation*. This option allows you to disable all automation and reset all channel controls back to the starting default condition. This can be used live during playback for comparison purposes also. You can also activate this option by pressing the Shift-A-Key or by holding the Shift-Key down while Left-Clicking the *Aut* button.
- * The L-Key Live Mode Toggle has been extended to work in the MultiTrack View also.
- * A new option has been added to the Driver Model submenu called *Record LoopBack Latency Adjust*. This option can be used to compensate for latency values resulting from a loopback recording through your soundcard and converter chain. You can test and set this option by playing back a single track of transient audio material, like a drum track, and looping the playback signal around and back to the soundcard inputs and recording the same signal on the adjacent track. In an ideal situation, the two signals should line up perfectly when looked at in a zoomed in display. In reality you will probably see the recorded signal is late by a certain number of samples. You can zoom in and mark the difference between two identical transients, set the timeline to sample mode and notice the value in the Marked Area readout display. Set this value into this Latency Adjust option and then try the test again. Adjust this value so that the resulting recordings are perfectly lined up. You should then be able to change buffer sizes and not affect the accuracy of the recordings. If you change external converters or soundcards or even driver models, you should reset this value, or set it back to zero. If set incorrectly, you could actually cause the resulting recordings to be placed in front of the original source material and mess up recording sync. It is arguable whether this test is an accurate representation of real recording sync for live overdubbing, but the option is here if you are so inclined to use it. If not interested in using it, make sure to set the value to zero.
- * The Phase Switch has been enhanced to now include phase reversal on both channels of a stereo track or just the Left or Right channels only. Left-Clicking to the left of the switch itself will display a popup menu of choices. This can be real useful when a stereo file contains left and right signals that are out of phase.

Playing such a file in mono will cause the signal to cancel badly. Using the Left Only or Right Only phase reverse can instantly solve this problem.

Video Track Viewer Version 2.7

- * Added special routines to detect and use the MainConcept Mpeg codecs and Ulead Mpeg Codecs for decoding mpeg2 formats, and the CyberLink QuickTime DirectShow Source Filter, from the QuickTime alternative program files, to help decode numerous QuickTime formats directly in the viewer. Be careful with all of these special formats though, seek times can be very slow on slower machines.
- * Modified code to allow the Conversion routines to detect and handle the new codec formats added above.
- * Added code to access multiple firewire devices with the same name. This can happen when multiple devices show up in the firewire device list as the generic Microsoft DV Camera And VCR device.
- * Modified the overlay code used to adjust for changes in Dx 9 that can cause overlay output to lock to hardware clocks slowing frame rates internally down to exact hardware output speeds. For example, on my test machine, DV-avi NTSC output in DX 9 and Windows XP using a Matrox P750 Parhelia video card has been slowed to 33ms per frame in the running seek test when the overlay render is active. The new code brings that down to 6ms per frame on the same machine. Quite a difference by bypassing the use of generic Windows DirectShow filters. Overlays are tricky and very video card, OS and DX version dependent. For example, the same machine with an ATI Radeon 9600 video card displays results of 16ms per frame, down from 33ms per frame for the old code. Both video cards display 4ms per frame with the overlay turned OFF. This new code also allows any open video file to be rendered externally to the overlay. The old code limited overlay output to only DV-avi format files.
- * A new option has been added to the Options Menu called *Overlay Render Size*. This option controls the size of the internal overlay renders with the new code. Using larger sizes can improve overlay output quality, at the expense of more cpu time. Using exact sizes as the source video can generally give the best combination of quality and speed results. The default size of 360 x 240 (Half DV size) usually delivers good results. If you are using PAL, select the Half DV PAL size of 360 x 288. A great compromise for speed and quality can be achieved on DV-avi files by using the full DV decoder resolution with the half Overlay Render Size.

Bug Fixes

- * Trapped Plugin param data buffers that are larger than the internal max buffer size from crashing edls and Mix Templates.
- * Modified routines to allow patching plugins live during playback that are slow to initialize without causing buffer overruns or crashes. This fix should allow even the bulkiest and slowest plugins to patch live during playback with no trouble.
- * Modified code to help popup ASIO control panels for certain ASIO drivers that would not react to SAWStudio's ASIO Driver Setup function.
- * Corrected code that could cause sustained waveforms to cut off prematurely under certain buffering conditions and certain eq settings. This fixes pops and clicks that could be caused by that condition.
- * Adjusted code to handle auto stopping at the end of the session even if there are channels that are unassigned

to a valid output.

- * Fixed MT Cursor from disappearing after moving the MultiTrack window.
- * Adjusted Dual Monitor Dialog/Msg Box positioning to keep dialogs from starting offscreen.
- * Eliminated crashes that could occur when grabbing knob controls when the top range of knob motion is off the top of the channel view by trapping the ability to grab the knob under these conditions.
- * Recall Dynamics From Memory Cell now correctly sets the Reverse Gate switch.
- * Saving and recalling Record Meter Templates will now work correctly even with re-ordered tracks in the MultiTrack.
- * The Automation display is now correctly updated when using the R command to split and remove MT entry data that may have contained automation entries.
- * Fixed code to properly draw region waveform displays with active softedges when Region Memory Caching is turned ON.

Eq PlugIn Module Version 1.8

- * Corrected code that could cause sustained waveforms to cut off prematurely under certain buffering conditions and certain eq settings. This fixes pops and clicks that could be caused by that condition.

Video Track Viewer Version 2.7

- * Corrected code to fix capture problems with Type 1 DV files.

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Version 3.8a

Enhancements

- * The Dynamics Gate Threshold, Gate Floor and Compressor Threshold waveform display reference lines have been enhanced to track the Input Attenuator control for the channel that is keying the dynamics data. Even though the waveform display itself does not change in regards to the Attenuator control, the reference lines are now properly offset to display the an accurate reference to the full scale waveform data.
- * A new option has been added to the FX Choices View Group menu called *Set Cur Group As Default*. This option displays the current default group and will change it to the currently active group when selected. The default group will be the active group when the program first starts.

Bug Fixes

- * Trapped record activation with open record meters not assigned to legitimate input devices.
- * Fixed Show Control column lineup of the Filename information in the listbox..

- * Stopped the SnapShot Undo command from clearing the EDL Modify flag, so the prompt to save modified sessions would work correctly when changing sessions or exiting the program with un-saved session changes.
- * Closing a session now correctly resets the Midi WorkShop default tempo.
- * The Control Track Cue Location / PreLoad and Cue Location / Play commands are now correctly accepted as plain Cue Location commands when used following any of the Stop / Cue Next commands.
- * The Clr button in the Pre and Pst FX patch views now correctly responds to selected Mixer Channels instead of selected MT Tracks. This is considered a mixer function rather than a MT function. The mouse cursor will now display CHN as the cursor is moved over the Pre and Pst Client top area to reflect the fact that mixer channels are selected.
- * Recalling Fx from a memory cell or clearing the current mixer chan will no longer respond incorrectly to selected MT Tracks, causing Fx clearing on those extra tracks.
- * Fixed the Library View *Right-Click* in the Top Client Area to toggle playback, which was broken by the code to toggle Library Lock mode on and off.
- * Fixed the *Corrupted Region* message from falsely popping up during layer copies under certain conditions.
- * Adjustments made to keep the SoundFile view from popping up on top of other windows when using the *BuildMix To HotTrack* function and there is an active soundfile already opened.
- * Adjusted code to fix multiple selected tracks layer switching which include video track layers. The video layer, if also selected, will now correctly switch even if your hottrack is one of the selected audio tracks.

Video Track Viewer Version 2.6

- * Corrected code to maintain image file lengths after they have been stretched and reloaded..

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Version 3.8

Enhancements

- * A new option has been added to the MultiTrack Menu called *Record-Mark Display*. When this option is active and MultiTrack Record is engaged, each record track will display a growing red mark area designating the actual record region areas. These areas will be replaced by the recorded regions when record is disengaged.
- * The File Read routines have been enhanced to accept a full DWORD position rather than the half Signed DWORD position. Max file lengths that can be correctly handled have now been doubled.

- * The MT Load display has been increased in resolution for a more accurate result at very small buffer sizes. The readout display flickering has been smoothed to remain a little more stable between large value shifts.
- * A new enhancement has been added to *Select Mode* moves and copies. If the Control Track is selected, any audio or video selected entry moves or copies will now include all Control Track entries within the range of selected entries from the earliest start position to the latest end position.
- * A new enhancement has been added to adjusting MT-Entry boundaries. When using the Alt-Drag or the U-Key methods, adjusting MT-Entry boundaries will now function on all selected tracks, for a quick multiple track manipulation of splice points. Be careful that all selected tracks have associated entry boundaries at the adjustment point, or you may obtain unexpected results on certain tracks.
- * A new enhancement has been added to the X-Key softedge crossfade feature. This function will now operate on all selected tracks. Be careful that all selected tracks have associated entry boundaries at the cursor point, or you may obtain unexpected results on certain tracks.
- * Live Layer Switching during playback has been extended to the Return and Output Tracks. The new layers must have automation entries in order for the switch to occur.
- * The copy layer submenus now display the <> marks to show which layers have data already on them.
- * The Drag And Drop Region and Library entries function has been enhanced to properly handle horizontal and vertical scrolling in the MT by using the Right-Hold Horz/Vert Scroll Modes, and zooms.
- * The Drag And Drop Region and Library entries function has been enhanced to allow the entry to cut into and insert itself over the top of existing entries at the drop position by Shift-Left-Clicking to drop the entry. If *Automation Display Mode* is active, current automation entries at the insert position will not be disturbed, otherwise, automation entries at the insert position will be cleared.
- * A new feature has been added to the Library Views. Right-Clicking in the *Close* zone of any Library view window will now toggle Library Lock Mode for that window. Only one Library view window may be locked at a time. If Lock Mode is active, the use of the Insert-Key in the MT when the MT is the active window will now default to inserting the locked Library view currently selected entry, instead of the currently selected region from the Regions view.
- * The Build Mix dialog window now responds to the Enter-Key for *OK* and the Escape-Key for *Cancel*.
- * Two new Dither options have been added to the *MultiTrack Dither* Menu called *NonCorrelated L/R* and *Random*. The *NonCorrelated* option causes different noise patterns of the selected type to be applied to the Left and Right channels. Many suggest that this can help keep the stereo field more intact in the final mix when using Dither and reducing bit resolution. The *Random* option takes this a step further and randomizes the noise pattern with every buffer process, such that repetition of the applied noise pattern is much less frequent. These options may be applied individually or together. Both of these options are global and save with the preferences. These options do not save with individual edls.
- * A new enhancement has been added to the Compressor and Gate Threshold Display Lines. If the channel has a Key set to another channel, the Threshold Display Lines will display on the Key Channel for accurate

reference to what is actually keying the dynamics.

- * The Blend Session function has been enhanced to now include Control Track data.
- * The Blend Session function has been enhanced to now include Video Track data.
- * The *Shift-BackSpace* key may now be used in *Automation Mode* to snap the back end of marked automation entries to the cursor position.
- * A new option has been added to the Control Track Built-In Commands list called Cue Beginning / Play. This command loops back to the beginning and initiates playback immediately.
- * A new view called *Show Control View* has been activated on the View Menu. This view offers features for playlist style operation. The *Show Control* view resides outside of the session edls and actually allows lists of independent edls to be controlled in a sequential or non sequential playback arrangement. Place the view in an F-Key workspace where no other views overlap and from this view you can control an entire show of independent edls.

The view is basically a listbox where you can add session edl entries in a specific order. Each entry may have a *Continue* option and a *Midi Trigger* option that controls the playback flow of the list at that point.

The view contains a blue pyramid logo that will display the *Show Control Options* popup menu when clicked. The *Show* light displays when playback is currently being controlled in *Show Playback* mode.

The options menu contains the following options:

Open Show Control File – This option opens a pre-saved Show Control file containing the list of edls with all Show Control options. The file extension is .shw. Opening a Show Control file loads all entries and settings into the listbox and opens the first edl in the list, ready for playback.

Close Show Control File – This option closes an open Show Control file. If unsaved changes have been made to the current file entries, you will be prompted to save the file before closing.

Save And Update Show Control File – This option saves and updates the current Show Control file without prompting, unless the current file has not yet been named.

Save Show Control File As... – This option prompts for a new name and saves the current file to that new filename. The new file now becomes the current working Show Control file.

Save Show Control File Copy As... – This option prompts for a new name and saves the current file to that new filename. The current file remains as the current working Show Control file.

Add New Session Entry {Ins} – This option opens a new edl session file and adds the session to the listbox. The entry dialog box is displayed for you to set the entry options. You may edit the name of the entry as it will appear in the list. You can also set the *Continue* option to one of three values; *Yes* – means to continue on to the next entry when this session finishes playing; *PreLoad* – means to continue to the next entry when this session finishes playing, but PreLoad it only, waiting for a manual play command; *No* –

means to stop the flow of the list when this session finishes playing. You may also select a **Midi Trigger** note for starting playback of this entry. You may select a Midi Trigger note from the popup menu, or press a key on your midi controller keyboard and choose the last midi note played as your selection. The **Note-On/Off** option allows you to choose how the trigger is applied. If set to *Note-On*, the session will be opened and playback will start as fast as it can. If set to *Note-Off*, the session will be opened and PreLoaded, waiting for the Note-Off signal when you release the midi key to start playback instantly.

Edit Current Session Entry {Alt-Dbl-Click} – This option allows you to edit an entry by displaying the entry dialog box with all options available for editing. Closing the dialog from the close button in the upper right corner will cancel any changes.

Midi Receive Trigger Active – This option toggles the ability for Show Control to receive midi trigger data from the midi ports. This option must be On to trigger from midi data, along with the *Midi Control In Active* option on the *Smppte/Midi* main menu.

Midi Receive Chan – This option sets the Midi receive channel for the Show Control midi trigger.

File Lock Active – This option locks the current Show Control file from being altered. No editing will be allowed when this option is active.

All of these options save with the Show Control files.

Basic listbox operation includes a few mouse and keyboard controls. You may select multiple entries with the mouse in standard listbox fashion. The *Delete* key may be used to delete selected entries. The *Insert* key may be used to add new entries. The *Spacebar* key opens the currently selected entry and begins immediate playback at the start of the session. The *Return/Enter* key opens the currently selected entry and PreLoads it waiting for the playback go command. The *Up/Dn* arrow keys can be used to select different entries. The *Ctrl-Up/Dn* arrow keys can be used to move an entry up or down in the list to a new position. *Double-Clicking* an entry will open that session. *Alt-Double-Clicking* an entry will open that entry for editing. *Right-Clicking* an entry will open that entry and begin immediate playback at the start of the session.

Whenever playback is started from the *Show Control View*, the *Show* light will display and playback will flow through the *Show Control* list according to the **Continue** options of each entry. You can stop playback from the *Show Control View* with the *SpaceBar* or *Enter* key or *Right-Clicking* an entry or *Clicking* directly on the *Show* light. Any of these methods will de-activate *Show* playback mode and turn off the *Show* light. If playback is stopped from any other view or method, *Show* playback mode will remain active and continue through the list when the current session plays to its end.

You can use Show Control playback in combination with Control Track options inside each session to setup some very powerful playback options for theater and production show automation.

Video Track Viewer Version 2.5

- * Two new options have been added to the *Special Options* menu called *DV Video Decoder Res = Half* and *DV Video Decoder Res = Full*. These options allow you to set the DV Video Decoder Resolution. Newer versions of Windows XP default the resolution to full, which can slow down the DV decoding process quite a bit and make live rendering to Overlay or FireWire not function properly if your machine is not fast enough. This option defaults the resolution to half, like Windows 2000. The output video quality is only

slightly degraded, but the performance speed is significantly better. This option saves with the Video Preferences.

Bug Fixes

- * Fixed Record Device lock-outs from clearing in-devices that are assigned to multiple channel modules when changing the assignment on one of those multiple channel modules.
- * Fixed Mix Template to properly open DirectX PlugIns from earlier template files.
- * Auto Punch record length is now correctly adjusted when Live Inputs are active.
- * Stopped XYPan Mute Nodes from interfering with XY positioning information.
- * MT PreLoad operations now correctly maintain the current window focus.
- * The SoundFile View is no longer forced ontop after a Build Mix To Current HotTrack operation if it was not already visible.
- * Window focus is now maintained correctly after a SnapShot Session command.
- * Copying marked areas to layers will now correctly also copy automation data when the marked area ends exactly on an MT-Entry boundary.
- * Refreshing or deleting entries in the File View Window will no longer clear the warning flag from re-pathing or re-naming entries.
- * The Red OutLine of the Aut button is now correctly redrawn after minimizing the program or when the screen area is covered and re-exposed for any reason.
- * Corrected the Aux Master Send 1 Label from overwriting the MT Video Track label area.
- * Adjusted code to correct a possible ClipCursor function call failure in Windows 2K and XP on certain machines which could cause crashes when grabbing a knob in a window that is not currently the active window.
- * Fixed a sync issue that could occur for following entries when starting playback in an entry's End-SoftEdge tail, that happens to extend beyond the end of file for that entry, which is also being vari-pitched or samplerate converted.
- * Fixed code that could cause a flash of the hand cursor at the top of the Zoom, Exploded, or Wide Mixer View before locking the hand in the control zone, when grabbing any horizontal knob.
- * Fixed Host/Slave mode MT PreLoad operation.
- * Added code to trap for multiple quick playback start commands while in Host/Slave mode. This should eliminate possible crashes from rapid mouse clicks during the Slave mode preload cycle.

- * Copying Marked Areas to Layers now correctly adjusts for samplerate and vari-pitch.
- * SRP Punch-ins with live inputs now correctly maintain sync between mono and stereo sources.
- * Device Ins are cleared correctly now when using the *Right-Click Set To Default* method for Input Channel Sources and Return Channel Sources.
- * Corrupt regions with Memory Region Caching that could be caused with SRP Punch-Outs and live inputs have been fixed.
- * Fixed code to correctly set patched plugins starting automation when playing back using the Automation View Filter.
- * Trapped the Automation View Filter toggle during playback.
- * Moving marked automation entries now correctly holds the mark when the screen is scrolled horizontally.
- * Moving marked Control Track entries now correctly holds the mark when the screen is scrolled horizontally.
- * Slipping a marked track area now correctly holds the mark when the screen is scrolled horizontally.
- * Adjusted code in the Echo plugin to correct a possible ClipCursor function call failure in Windows 2K and XP on certain machines which could cause crashes when grabbing a control.

Video Track Viewer Version 2.5

- * Trapped for missing audio devices when opening Edit Mode video. The video will now open correctly without a link to the audio device.
- * PAL video FireWire capture is now fixed.

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Version 3.7b ***Enhancements***

Bug Fixes

- * Fixed Dynamics Compressor problem that could cause distortion at certain combinations of threshold and ratio settings when using low latency buffer sizes. This fix also delivers more consistency at low latency buffer sizes.
- * Fixed output subgroups from being delayed when live inputs are assigned.

- * Fixed Live Returns from loosing sync when preload buffers have been set to 4 or more.

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Version 3.7a

Enhancements

- * A new option has been added to the File View window popup Options menu called *Delete Selected Entries*. This option will delete file links from the session. If there are any connected Regions and MTEntries, you will be prompted to continue or not.
- * The File View window now places a '#' character next to Audio File listings to denote an orphan file in the session. This is a file link that is not connected to any regions and therefore safe to delete with the above option.
- * The *R-Key Split/Remove Left Entry* feature has been enhanced with the addition of the *Alt-R-Key Split/Remove Right Entry* feature. This splits at the cursor and removes the entry to the right of the cursor position.
- * The *D-Key Split/Delete Left Entry* feature has been enhanced with the addition of the *Alt-D-Key Split/Delete Right Entry* feature. This splits at the cursor and deletes the entry to the right of the cursor position, pulling all following butt-spliced entries forward.

Bug Fixes

- * Fixes memory allocation buildup problem as undos are recalled, created by the parsing undo routine introduced in 3.7.
- * Adjusted the extended delay before shutdown when playback reaches the end of the session in the MT or the end of the SoundFile in SF caused by the new threading technique changes in version 3.7.
- * Fixes SoundFile View file corruption that could occur when re-building mixes to HotTracks with the destination file open in the SoundFile View.
- * Trapped range marking functions in *Select Mode* that were not supposed to be active when *Select Mode* was engaged.

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Version 3.7

Enhancements

- * A new breakthrough in the engine threading technique now allows incredible latency performance gains. MME performance with RME Hammerfall cards can now accept 2 x 64 sample buffer settings for awesome

latency results. This modification should also benefit most other soundcard MME performance depending on driver capabilities. RME ASIO settings will now also function at 1 x 64 on good machines.

- * Enhanced the F-Key restore routines to bypass certain Windows functions that were blocking some of my High Level threads. This results in drastically better performance with less interference at very low latency settings.
- * Enhanced live layer switching during playback. New routines offer much higher performance allowing more tracks to switch layers live without buffer overrun problems, even at low latencies.
- * The undo function has been enhanced to now parse for File, Fx, Video and Midi changes and skip these sections if possible. This enhances the recall undo performance considerably when VST synths and many video file filter graphs are part of the session.
- * The Return Track Solos have been enhanced to maintain the in-place solo feature while still allowing pre and pst aux send channel information to reach the return bus. Now you may solo Return tracks and hear the blend of all aux send information coming through that track.
- * A new option has been added to the *File View* popup menu called *ReFresh Selected Entries PeakData Files*. This option will force a peakdata refresh on all selected files. Use this option after first opening an edl file created outside the SAWStudio environment such as one created from the Edl Convert Pro program. In most cases, PeakData files are not created by external SAWStudio edl manipulation programs and will need to be created in SAWStudio in order to see waveform data in the MultiTrack under most zoom conditions.
- * A new feature has been added to the Exploded, Zoom and Wide Mixer views. Left-Clicking in any of the non-active areas of the *Aux Send* section of the modules will popup a list of the *Aux Send Labels* for reference. You may Left-Click anywhere in the menu to close it. No action will be taken, the list is for reference only.
- * A new option has been added to the *Mixer* menu called *Link Mixer V-Offset To F-Keys*. When this option is ON, the *Exploded Mixer* and *Zoom Mixer* response to F-Keys remains as it has always defaulted in past versions. The vertical offset position along the module is linked and restored with the F-Keys. When this new option is OFF, the vertical offset is ignored when F-Keys are restored and the modules will remain in their current section position, for example, if you are scrolled to the EQ section, now jumping to other F-Key views will leave the *Zoom* and *Exploded Mixers* still at the EQ section. The vertical offset position will always be saved with new F-Keys, but ignored during the restore when this option is OFF.
- * Removed the ONTOP status of the Exploded Mixer view so it would not interfere with the Midi Workhop and other displays.
- * Added Asio support for Smpte Generate.
- * Re-activated and corrected Waveform Threshold display lines for Dynamics in Automation Mode.
- * Record Meter Peaks may now be cleared by Left-Clicking anywhere in the meter LED display area.
- * *Control Track Cue* switching is now active during *Live Input Mode*. This allows preset automation entries to

be set along the timeline and jumped to when using the virtual console as a live PA console. Cue entries can be set for each song or song segments and you now have the ability for unlimited snapshot automation recall.

Video Track Viewer Version 2.4

- * Video Viewer modifications to take advantage of the undo parsing which will only close and rebuild file filtergraphs when needed.

Bug Fixes

- * Fixed crash that could occur when Right-Clicking a region from the Regions View which had no peakdata file. The peakdata file is now correctly built before the region playback begins.
- * SoundFile View Recording Level is now correctly defaulted to zero db.
- * Fixed code that could cause a playback crash under certain conditions when all Input, Return, or Output tracks were assigned in a mix.
- * Trapped illegal assignment and XYPan switches from getting placed into the automation database when using the Blend Session function.
- * Edl sessions are now automatically scanned when opened to strip illegal automation data and also reorder the position information properly.
- * Fixed a problem which caused all TopMost windows to change to Non TopMost when canceling one VST window's TopMost flag.
- * Modified code to allow a hidden Non TopMost VST window to be brought to the top by Double-Clicking it's entry in the Fx Patch views.
- * Fixed code to send TempoMap Sequential Measure Change info correctly to Fx plugins and the Midi WorkShop.
- * Current tempo information is now correctly updated in the Midi WorkShop every time Tempo TimeLine Mode is engaged.
- * Fixed crash that could occur under certain conditions when doing video slip and move track operations. Also trapped these operations from creating multiple undo entries when combined with audio tracks.
- * HotTrack Solo mode is now switching correctly when using the I, R, and O zones.
- * HotTrack Solo mode now correctly clears when closing a session or opening a new session.

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Version 3.6c

Enhancements

- * Modified the buffer flush routine for VST plug-ins to improve engine stop time for certain VST plug-ins. Also included the cursor change to the waiting icon while the buffers are flushed.

Bug Fixes

- * Fixed code for buildmix operations which use the hi-res SampleRate Conversion routines to stop compatibility interactions with certain patched plug-ins that use the floating point processor. This fixes buildmix operations that would cause maxed-out results in the mix file.
- * Blocked Threshold lines from displaying in the MultiTrack View when Automation Mode is active.
- * Fixed a small problem that could cause crashes with certain plug-ins when storing active settings to a memory cell.

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Version 3.6b

Enhancements

- * Slowed down the mixer settings scrolling adjustment mode to be less sensitive to small mouse changes resulting in an overall feeling of more control.
- * The SRP/Rec latch operation has been enhanced to automatically detect a marked area and override the latch function for auto punch-in at the marked area.

Bug Fixes

- * Adjusted SRP punch-in code to help eliminate Record Buffer Overruns under certain conditions on certain systems.

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Version 3.6a

Enhancements

Bug Fixes

- * Fixed code that was broken by the change in 3.6 to link the video entries to MT entry moves and copies. The problem would show up in as false entry conflict messages and copies to different tracks that were not correctly aligned.

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Version 3.6

Enhancements

- * The *Input* zone on the *Record Meters* has been enhanced with two new options. *Adjust Input Level* and *Reset Input Level*. These options can be used to adjust the actual signal level of the recorded data on the way to the harddrive. Even the level of digital input sources can be adjusted here. Both of these options are available while recording is active or inactive. If you change a record meter to another track by using the popup *Track* zone, the current input level will be transferred to the new track. If you *Shift-Left-Click* any record button to clear input assignments back to default, all input levels will be reset also.
- * Track and Mixer Chan Labels may be entered now even while playback is active. If Record Meters are open, the engine must be stopped to enter labels due to the already opened and linked record files.
- * Pressing the *Alt-B-Key* or *Alt-E-Key* will mark an entire MT Entry including its softedges.
- * MT Automation Entries will now maintain their relative positions within a Vari-Pitched entry if the VP Factor is later changed.
- * A new option has been added to the *Options Menu* called *Auto Record/SRP Latch*. When this option is activated, clicking the SRP button will also latch and engage the Rec button. Pressing the *Shift-Key* when engaging the SRP button will override this option. When this option is not engaged, the SRP button works independently UNLESS the *Shift-Key* is also pressed. This option saves with the preferences.
- * The *BuildMix To Current HotTrack* has been enhanced to add the destination track label or track number to the default output files.
- * Added Soft Clipping Detection into the Hi-Res SRC algorithm to eliminate wrap-around clipping problems when using the Levelizer near max percentages with the Hi-Res SampleRate conversion.
- * A new option has been added to the *Control Track Options Menu* called *Output Bypass*. When this option is selected, all Control Track output data is suppressed and the listbox will display as dark gray. The listbox will still chase current entries and can be still be used for Cue Location points.
- * Opening a session with an attached Library edl that has pathing problems will now notify you in the warning dialog that the problem is in the Library session as opposed to the main edl session.
- * A new option has been added to the *Library File Menu* called *Lock All Library Windows*. When this option is activated, closing a session will not clear the current Library windows. You may now open a new session that does not contain Library data and merge the current Library links directly into that new session. If the new session already contains its own Library data links, you will be prompted to clear the lock and load the new data, or not.
- * Using *Select Mode* with video entries has been enhanced. Whenever selected entries include video entries, video and audio will be moved together, regardless of which type of entry is grabbed. Both types of entries will contribute to movement limits resulting from bumping into other nearby entries. All movements will be forced to frame boundaries to maintain proper video entry placement.

- * Video entries have now been included in the slip track functions, including the all layer slip track function.

Bug Fixes

- * Fixed the code to trap certain problems that could occur when opening complex SAWStudio sessions into StudioLite.
- * Library Views will no longer clear open Libraries when selecting the *Open Edl Library* or *Open Diectory Of Wav Files* prompt if you cancel the operation from the Open File Diaolg.
- * Placed a trap into the Control Track Handler that should help eliminate crash problems under certain conditions when stopping directly on a Control Track entry.
- * Fixed Crash that could occur under certain conditions when using the *Shift-Home-Key* function in Select Mode.
- * Modified punch-in routine to maintain track sync when recording multiple tracks from virtual console channels as inputs.

Video Track Viewer Version 2.3

- * Video Viewer modifications to correct PAL render to firewire issues on some systems with XP.

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Version 3.5

Enhancements

- * The Exploded Mixer View now responds to F-Keys. This allows the E-Mixer to be controlled more easily for SAWStudioLite. The view may now be set to be visible or not based on F-Keys. It may also be set to default to a visible condition based on the default F-Key setup.
- * VST Synth Load And Save Preset commands are now active during Live Input Mode for easier testing of saved patches.
- * Selecting groups from the Select Mode Group menu now assigns the first entry of the group as the Key Entry so group selection can be immediately followed by a snap move or copy operation without the need to first click on a Key Entry.
- * Asio Driver Reset Requests are now processed automatically with no need to restart playback manually.
- * A new enhancement has been added to the MultiTrack and SoundFile Views. The NumKeypad (with NumLock ON) can be used with the Ctrl key to change to different preset waveform scaling factors. *Ctrl-*

Numkey-1 will set the scale back to full zero db.

- * A new feature has been added for marking ranges. Pressing the Alt-End-Key in normal mode marks an entire track no matter where the current cursor position is.
- * The MultiTrack Menu has been updated with some of the basic keyboard editing functions.
- * The code for live layer switching has been enhanced for slightly better performance at low latencies.

Bug Fixes

- * Modified the Src Load detection routine for more accuracy under certain types of edl conditions.
- * Added more buffer size to allow settings to be properly saved for some of the larger footprint VST synths such as the SpectraSonics products.
- * Using the X key softedge feature on the exact boundary of the last entry of a track now correctly deletes any existing softedge for that boundary.
- * Using the Asio Skip First Buffer option now correctly compensates the sync position of a new recorded region.
- * Reloading new preference files with an active Midi Control Template is now handled correctly.
- * The Select Mode Insert function has been modified to correct problems under certain selected configurations.
- * Hot Track Solo Mode no longer disengages when the Ctrl Key is used with certain operations.
- * Record Meter Input Source Mixer Channel selection now operates correctly even when Return and Output channels are re-ordered in front of Input tracks.
- * Modified SoftEdge code that could cause small crackle sounds at the start of entries with softedges that followed VariPitch entries under certain conditions.
- * Setting Tempo To Marked Measures now correctly handles the time signature denominator when not equal to a quarter note.
- * Channel Out Assign switches for Lite are now correctly trapped for switches beyond the max 12 devices.

Video Track Viewer Version 2.2

- * Video Viewer modifications for better firewire video capture performance.

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Version 3.4e

Enhancements

- * Modified VST initializing routine for much faster performance. Individual plugins may still require preload time for samples and param data when first patched in.
- * Added a special routine to clear virtual midi port data and flush buffers just before the playback engine stops, to help stuck note problems with VST synths. This also helps leftover reverb and echo trail data from outputting when restarting the engine. Many VST synths do not automatically clear their internal buffer data when the engine is stopped.
- * The Build Mix option has been enhanced to allow mixes to be built which include VST synth outputs. This means you can transfer midi data from the Midi Workshop directly to audio tracks through VST synths while building a mix. You do not have to playback in realtime and record the synth output data to a track. Selecting individual midi tracks and VST synth tracks and using the BuildMix to Current HotTrack, gives you a simple and fast way to transfer the VST output data as audio data to MultiTrack tracks.
- * A new option has been added to the *Regions Menu* called *Create Blank Region*. This option creates a blank region which links to a blank mono wav file. This region can be inserted and manipulated like any other region. Blank regions can be used to extend the end of a track to allow for decaying effects trails like reverb or echo.
- * A new enhancement to the X-Key crossfade feature has been added. If the cursor is tabbed directly to an MT-Entry boundary before using the X-Key crossfade feature, the current crossfade, if any, is cleared and set to zero.
- * The special audio mute function linked to the Midi WorkShop has been enhanced to now detect and leave VST synth tracks active as Midi output rather than audio output.

Bug Fixes

- * Fixed the T-Key transfer to SoundFile function. It is no longer blocked by the *Dbl-Click Transfer To SoundFile View* flag.
- * Double-Clicking the same wav file in the Library View list box a second time will now still correctly switch focus to the SoundFile View.
- * The *Zoom Mixer Automation View Filter* link now works correctly on re-ordered tracks.
- * The Zoom and Full Mixer now correctly update the MT nottrack when using the Ctrl-Left-Click name label feature to enter multiple chan names.
- * Trapped a problem with the Blend Session code that could cause crashes with regions linked to missing files.

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Version 3.4d

Enhancements

Bug Fixes

- * Fixed mix template compatibility issue with older templates that could cause format errors when booting with default mix templates.
- * Fixed edl crashes that could occur with some VST plug-ins that use both parameter and chunk method settings saves. Older edls with active VST plug-ins of this type would crash on loading the edl in 3.4c.
- * Adjustments to fix problems with first and last entry snap-to-softedge function.

Video Track Viewer Version 2.1

- * Adjustment to routine that could return false entry info under certain conditions.

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Version 3.4c

Enhancements

- * The Asio engine has been enhanced to allow buffer sizes that are not even-powers of 2. This should provide compatibility with most every Asio driver available. If your driver allows, set sizes to match SAWStudio sizes (like 64, 128, 256, 512 etc) for best performance.
- * A new option has been added to the *Asio Protocol* menu called *Asio Skip First Buffer PreLoad*. This option can be used with certain Asio drivers that send an extra callback at the time of engine start which would normally cause the first playback buffer to be thrown away. This option saves with the preferences. You can determine whether you need this option with the following test: Create a track of audio on track 1 containing a few metronome clicks or kick drum accents. The first accent should be at the exact beginning of the track. Start the cursor at zero and playback. If your driver requires this option, you will notice the attack of the first accent is missing and you will only hear the trailing decay. You can enhance this test by setting the ASIO driver latency size to 1024 or more samples. If the attack is missing, activate this option and try again... this should fix the problem. The Echo Layla driver requires this option active. The current Soundscape Mixtreme ASIO driver also needs this option. If you update drivers in the future, redo this test in case the driver code has been altered in this regard.
- * A new option has been added to the *VST Property Page Options* menu called *Cancel 'Always OnTop' Status*. This option cancels the ONTOP status of the window, allowing mis-behaved dialog boxes on some VST plugins to display ontop of the plugin window. This option will remain set even when the window is hidden. The option will be cleared when the plugin is unpatched.
- * Enhancements to the VST code handling for better performance and more VST Synth compatibility.
- * Two new options have been added to the *Mixer* menu called *Pre-Fx Patch Signal Flow* and *Eq/Dyn Signal Flow*. These options allow the signal flow of the input chan modules to be altered on a chan by chan basis. The Pre-Fx Patch insert point can be moved in front of the Eq and Dynamics section, and the Dynamics may

also be moved in front of the Eq. Left-Click any chan to toggle the option on/off. Ctrl-Left-Click any chan to toggle all chans at the same time. Moving the Pre-Fx Patch point to the front can be very useful when using VST Synth plug-ins. This allows you to use the Eq and Dynamics section of the chan strip to directly process the synth output signals. These settings save with the Mixer Templates and also with each session edl file. These settings clear when sessions are closed. If you use a default Mixer Template, you can arrange the default console signal routing any way you like and those settings will be used each time the console is reset.

- * A new enhancement to the VST Plugin window allows you to Right-Click on the blue pyramid options icon to toggle *Live Mode* on/off. This helps when adjusting VST Synths because the internal engine is started activating the synth outputs.
- * A new option has been added to the *VST Plugin Options* menu called *Assign SoftSynth Multi-Out Chans*. This option displays a popup menu of synth output chan choices. The stereo / mono grouping of the synth is displayed next to the associated pre-assigned SAWStudio track. The track assignments follow in sequence starting with the track that the synth is patched into. The outputs are kept inactive for performance reasons until selected on this menu. The alternate outputs of the synth are then routed to the pre-patch insert point on the associated tracks. By altering the signal flow of the pre-patch point, you may route the synth signals directly into the console Eq and Dynamics section for direct processing. These assignments save with the session edl and also with the SAWStudio presets.
- * File Dialog Boxes have been enhanced to maintain dual monitor awareness and enable sizing.
- * The automation View Filter now displays a red outline around the Automation button in the Multitrack for positive indication of it's on/off status.
- * A new feature has been added to the automation View Filter. When activating the View Filter, the Zoom and Exploded Mixer views, if visible, will jump to the vertical offset required to display the filter control type. This places the control within easy reach for adjusting. The module will VScroll only if the current Hot Track module is visible.
- * A new option has been added to the *TimeLine* menu called *Auto Snap-To-Grid When Shifting Entries*. When this option is active, the grid will automatically turn on when grabbing and shifting MT Entries. The grid will turn off when the entry is released. This mode leaves the cursor free to move without constraints, but forces all MT Entry moves to snap to the grid. If the grid mode was already active before the move it will be left in its active state.
- * A new option has been added to the *Library File* menu called *Refresh Library Window*. Selecting this option will refresh the current window updating the listbox with any newly added items.
- * Fx patches may now be re-ordered in any of the patch list boxes. Select the entry you wish to move and press Ctrl-UpArrow to move the effect up in the list, or Ctrl-DnArrow to move the effect down in the list. This procedure can be done live during playback with no interruption of signal flow. This function does NOT save an undo file since it does no real irreversible damage to the session.
- * Priority has been given to the *Select Mode* BackSpace-Key when record meters are active. This allows you to switch into *Select Mode* for a quick edit while record meters are active without having the BackSpace-Key

default to a *Record Retake* operation.

- * A new feature has been added for jumping to the next and previous softedge. Pressing *Alt-Left-Arrow* jumps you to the previous softedge position. Pressing *Alt-Right-Arrow* jumps you to the next softedge position. If there is no softedge for the current entry, the jumps are to the entry boundaries, just like the tab function.
- * The *X-Key SoftEdge CrossFade* has been enhanced. If there is no marked area, pressing the *X-Key* creates a softedge of even proportion on both sides of the splice your MultiTrack cursor is in front of.

Bug Fixes

- * Fader level readout displays between -70db and -79db will now display correctly on automation moves within that range.
- * Fixed the *Fade To Next Automation Entry* routine to eliminate close double starting entries that would occur under certain fade conditions.
- * Adjusted the automation display routines for more accurate slope drawing.
- * Double-Clicking a video track entry into the viewer to Edit Mode now correctly ignores the Double-Click SoundFile Transfer option setting.
- * When reloading preference files that are set to ASIO, the ASIO Driver Setup option is now correctly enabled.
- * When reloading preference files that are set to MME, any active ASIO drivers are now correctly shutdown.
- * Auto Punch-in entries now correctly adjust for live input delay offsets.
- * When building a mix with multiple out files, device files set to NONE will now be correctly ignored during the file exists test.
- * Modified Auto Slope routines to eliminate display and playback crashes under certain automation entry position combinations.
- * Moving marked automation entries horizontally now adjusts the entries correctly when the mark beg position is off the screen.
- * The File View window now correctly modifies file names and paths when the session contains deleted internal file entries.
- * Adjustments made to the meter decay code for more consistency as the buffer size gets smaller.
- * VST Synths that use the chunk method for saving and loading settings will now save and restore presets correctly.
- * Adjustments made to the code for unpatching VST Synths now stops certain synths from crashing the system when repatching.

- * Traps have been set for uninitialized names in VST Built-In Preset lists.
- * VST modifications to correct for certain plugins not updating the screen after preset loading.
- * The link to the Exploded Mixer View from the Full Mixer view has been fixed after being broken in 3.4b.

Video Track Viewer Version 2.0

- * Changing the *FireWire Frame Advance* setting while the *Render RealTime To FireWire* option is active, now correctly adjusts internal frame seek variables to keep FireWire output from freezing.
- * Corrected a crash problem that could occur when shutting down the main program with the Video Viewer Edit Mode Active.
- * Pressing Ctrl-B or Ctrl-E on a video track entry now correctly marks the entire video clip.

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Version 3.4b ***Enhancements***

Bug Fixes

- * All slope value calculations have been corrected to perform as displayed. This allows much smoother fades overall and perfectly smooth fades with the auto slope calculation function all the way down to DC signals.
- * Links to the E Mixer and W Mixer have been fixed to properly display the current hottrack after all methods of Track re-ordering.

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Version 3.4a ***Enhancements***

Bug Fixes

- * The Group Menu selections now correctly respond to track re-ordering.
- * Record Meter Mixer Channel input source selection now correctly responds to track re-ordering.
- * The video track viewer now correctly ignores movement in any window except the MultiTrack window.
- * Reloading preset preferences now correctly handles the ASIO initialization and menu checked items for the Audio Driver Model.

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Version 3.4

Enhancements

- * The SampleRate/Vari-Pitch routine has been enhanced for high resolution capability. The *MultiTrack* menu now includes options for setting the *RealTime SampleRate / Vari-Pitch Quality*. The *Process/MixDown* menu now includes options for setting the *BuildMix SampleRate Quality*. The options are:
 - * **Lowest / Fastest.** This option is the same as the current conversion routine. It is the fastest (very realtime) but can introduce artifacts on certain steady state signals like high frequency sinewaves. These artifacts do not occur as easily in real music complex waveforms and therefore can still sound perfectly fine to the human ear. This option allows realtime conversion of multiple tracks in the MultiTrack on most any machine that can run SAWStudio.
 - * **Low / Fast.** This option introduces some up-sampling and filtering to help remove artifacts, but starts to load the cpu due to the increased number of calculations involved. This option cleans up the artifacts up to about 15k and should still allow realtime playback of a good number of tracks, dependent on your machine power.
 - * **Med / Med.** This option increases the up-sampling and filter configuration to increase the output quality (clean to 18k) at the expense of higher cpu load. RealTime playback of multiple tracks will require a very fast machine.
 - * **High / Slow.** This option increases the up-sampling and filter configuration more to increase the output quality (clean to beyond 20k) at the expense of higher cpu load. RealTime playback of multiple tracks will become more difficult.
 - * **Highest / Slowest.** This option increases the up-sampling and filter configuration to deliver the highest output quality (clean to beyond 80k) at the expense of a very high cpu load. RealTime playback of multiple tracks will require an intensely well tuned machine.
- The higher quality settings should most likely be reserved for the BuildMix setting where realtime performance is not an issue. These options save with the preferences.
- * A new view called the *File View* window has been added. This window displays a list of all files involved in a session. All Audio, Video and Midi linked files are displayed. You may select individual or multiple files and change the paths or names or both from the popup options menu available by *Left-Clicking* the small blue pyramid logo zone. This window locks out all further program operation until closed. Using these functions changes only the session edl links and does not alter the files or file locations themselves. You must move the files to their new destinations and rename them outside the SAWStudio environment. You are notified to save the new session edl and re-open it to refresh the session to the new parameters after the files have been altered to match. Do not continue editing the current session after file paths and names have been altered or random corruption of the edl can occur.

- * A new popup *Group Menu* has been added to the Mixer and MultiTrack Views. Right-Clicking on the titlebar of any Mixer view or the MultiTrack view will popup a *Group Selection / Assignment* menu. There are 32 group assignments and a few special groups for mixer and MT section groupings. Left-Clicking on any option selects that group for the mixer channels or MultiTrack tracks depending on which window you activated the menu from. Pressing Shift-Left-Click will assign the currently selected channels / tracks to the selected group and prompt for a group name. Pressing Ctrl-Left-Click will clear the selected group assignment. The group selections are additive so you can select multiple groups one at a time for special operations. When you are finished with the group operation simply Right-Click in one of the highlighted group displays to clear the group as normal. The group assignments will save with the edl and mix templates.
- * Automation slope maximums have been extended by a factor of ten to approximately 22 secs at 44100.
- * A new enhancement has been added to the *Change Slope Within A Marked Range* function (the / key). By marking a range in *Automation Mode* and pressing the Shift-/Key, the slope will be calculated automatically between each entry within the range, adjusting itself for a smooth transition that just fits the gap between entries. This always guarantees a smooth transition, however it does not guarantee a zipperless transition on sustained low frequency waveforms. In those cases, a fixed slope of 200ms or more is needed to remove the zipper noise.
- * Now, only Automation entries that respond to slopes are displayed with slopes. The slope displays now have a higher resolution for a more accurate reflection of the actual time to complete the slope cycle.
- * Making adjustments to sloped automation entries will now maintain the original slope.
- * The *Recover EDL Undo* option has been enhanced. If there is an active session, only the undo files for that session name will be displayed. If there is no active session, all undo files for all sessions will be displayed.

Video Track Viewer Version 1.9

- * The current Video Track Entry under the cursor can now be nudged in either direction one frame at a time by pressing the Shift-Key and the *Forward* or *Backward Step* buttons on the Viewer, or by pressing the Shift-Left-Arrow or Shift-Right-Arrow keys when the Viewer is the active window.
- * The Video Track now accepts layers. You may change layers, while the MultiTrack is the active window, by pressing the number keys as with any other track. Or you may Right-Click to pop up the *Track Properties* menu and change layers there. You may also use the menu to *Copy Marked* or *Selected* video sections to another layer to build a composite track. Video Track layers can be extremely useful when comparing multiple camera angle source footage. Place each camera's video on a different layer, in proper sync position, and simply switch layers to check different shots at any position. Layers may be switched during playback for an instant camera angle comparison.

Bug Fixes

- * VST Synths with up to 16 outputs can now be handled with no crash during playback.
- * Modified preload routines to fix SRP problems with certain soundcard drivers. This fixes Layla and Gadget Labs known problems.

- * Asio Output Buffers are now cleared each time the engine is started to help fix looping buffer problems with certain soundcard Asio drivers. This fixes Layla known problems.
- * Modified Asio record routines for more accuracy of SRP sync.
- * Modified Live Input routines for more accuracy of SRP sync.
- * SoundFile cursor position updates have been corrected in Zoom Magnify Mode for various functions like Zero-Cross detection.
- * The *SoundFile Sample Info View* window update routines have been adjusted to correct display problems that could keep the window from updating under certain conditions.
- * The Yamaha 03D Midi Control Template mutes have been fixed.
- * Solo Mode is now correctly disengaged when activating any track reorder command.
- * In Select Mode, the Alt-Key is now correctly blocked from extending the selection from the previous, when the Shift-Key is pressed to initiate a move.
- * Refreshing a soundfile in the SoundFile View will now correctly update all associated MultiTrack entries, whether peak data is cached or not.
- * The PgUp key failure to repaint the MultiTrack under certain exacting size settings has been fixed.
- * F-Key files of higher resolution are now scanned for window sizes larger than the current screen resolution and corrected to eliminate crashes when loading cross resolution F-Keys.
- * Renaming track labels will now correctly update the new name in the Zoom, Exploded and Wide View ClientY areas.
- * Blend Session will now leave all FX patches intact. The patch bar displays in the mixer views will remain active.
- * Adjustments to MT loop playback to stop lockups that could occur while adjusting mixer controls at the precise moments of the loopback.
- * Fixed FX_BEGIN_PROCESS API function to include the patch list index for Pst and FRes patches.

Video Track Viewer Version 1.9

- * Opening Image Files has been fixed.
- * DVC Pro DV formatted video files are now correctly recognized.
- * Missing Video Files are now handled more elegantly when using the Ctrl-Key to skip warning messages.

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Version 3.3

Enhancements

- * The *BuildMix Setup* dialog has been enhanced for sessions with multiple output files. You may now toggle each output file between *Stereo*, *Mono* and *None* by clicking in the filetype zone. Toggling the file to *None* will cancel generation of that mix file. This allows multiple output assigns, such as Aux Sends to headphone output devices, to remain assigned without the unnecessary generation of mix files during the *BuildMix* operation. This setting saves with the edl session so each time you re-open the session, these settings will be restored.
- * Midi Control Surface data has been separated into its own thread to lessen much of the load from the main MT threads when lots of control surface data is being sent. This allows heavy Control Surface loads, as are needed for controllers like the Mackie Control, to mesh seamlessly with low latency buffer settings used for Live Input Mode.
- * The *XY Pan* now responds to pan slope values in all directions, thereby eliminating zipper noise during motion. The Node points are NOT attached to slope values, therefore you should still toggle them only at zero cross points or silence in order to avoid any clicks.
- * Multiple track reordering has been added. Single tracks may still be dragged into a new track order by using the Shift-Left-Drag feature. If one or more tracks are selected (track number inversed), then Shift-Left-Clicking on the destination track will move all selected tracks to this new position and group them together. If moving toward the top of the Multitrack the top of the clumped group will reside at the destination track. If moving toward the bottom of the MultiTrack, the bottom of the clumped group will reside at the destination track.
- * Undos with Select Mode active will now also restore the Key Entry info.
- * The DirectX and VST shell window Bypass Switch will now respond to marked area automation writes, with the cursor inside the marked area, creating a begin and end entry at the marked area boundaries. For example, if you write a switch bypass within a marked area, the bypass will happen at the begin boundary and the switch will be reset at the end boundary.
- * The *Memory Cell* channel store and recall features have been enhanced to now include Return and Output channels.
- * The MultiTrack cursor will now change shape to notify you any time one or more tracks are selected. Other latched modes that alter the cursor will take precedence over this feature.
- * The Mixer cursors will now change shape to notify you any time one or more channels are selected. Other latched modes that alter the cursor will take precedence over this feature.
- * The Save As name is now cleared when a session is closed and set to the session filename when a new session is opened. This should help stop accidental overwrites of the wrong session.

- * Redesigned the MultiTrack smooth scrolling routines when pushing against the edges with the left mouse button. You no longer need to push against the mouse to keep the scrolling active.

Video Track Viewer Version 1.8

- * The Video Track Viewer has been enhanced to allow the keyboard left and right arrows to step thru video frames while in Edit Mode with the same functionality as the Step buttons.
- * The Video Track Viewer *Special Options* menu has a new option called *Use Audio For Edit Mode Playback*. This option activates audio playback direct from the current video file that is loaded in Edit Mode during Edit Mode playback. This option saves with the video preferences.
- * The Video Track Viewer *Special Options* menu has a new option called *Viewer Visible As Default*. This option allows the viewer to default onscreen on program startup. This option saves with the video preferences.
- * Canceling from the Video Track Viewer File Open dialog now leaves the current open edit file active.
- * The Video Track Viewer will maintain its size and position through edl changes. It will not be closed when closing edls, but will still be automatically opened if the edl was saved with the viewer visible.
- * The Video Track Viewer scrub routines have been enhanced to multi-threads to create much smoother scrubbing response, even on file formats that are not known for efficient seeking action.
- * The Video Track Viewer now offers analog video-only capture from most USB cameras and some analog TV cards. You may capture direct thru any codec installed in your system to create mpeg or other compressed formats in one pass, provided your machine can handle the performance aspects of the compressor algorithm.
- * The Video Track Viewer now allows single frame stop animation capture from either firewire or analog capture devices. Clicking on the step forward button in the viewer or pressing the spacebar will capture 1 frame at a time.

Bug Fixes

- * Engaging any record mode operation while *Live Input* is active will now correctly exit *Live Input Mode* and then automatically engage the record operation. *Live Input Mode* is not needed to record live input signals. Engaging any record or play operation will automatically engage live input signal assignments.
- * The *Alt-Drag* of a marked *MT-Entry* area now corrects properly for SampleRate and VariPitch parameters.
- * Adjustments to the Reverse Audio code to handle softedges at file boundaries and memory caching correctly.
- * Adjustments to the Select Mode copy routines to fix problems with Vari-Pitched entries causing an entry conflict message to pop up in the middle of the operation under certain conditions.
- * Adjustments to the MTC Sync Light screen display updates that could cause MT display shutdown on

certain Motherboard/Hardware/OS combinations.

- * Adjustments to the MTC Trigger code to help eliminate possible random freeze ups when triggering that would require a mouse click or key entry to reset.
- * The Control Track View now adjusts the text color for the Contemporary Shade to correctly display the ClientY text headings.
- * The Control Track View now correctly clears the Midi Note Trigger table when first starting the program.
- * Using the MT-Entry Reverse option during playback now correctly re-syncs the MultiTrack.
- * The EQ Reset Flat switch now correctly automates all bands flat when written in Automation Mode.
- * The *Build Mix To Fx Modules* option now correctly forces and latches the sample rate to the MultiTrack rate.
- * All message dialogs now clear any mouse clip zones to free the mouse movement correctly to respond to the dialog.
- * Live marking during SoundFile View playback using the *B* and *E* keys, now correctly disengages when playback is stopped even if you never end the mark zone manually.
- * Fixed the automatic reset of chase trigger mode when incoming smpte stops and the session is at the end of the timeline.
- * Fixed the mixer views to always display the mixer hot channel when changing F-Key views, unless a mixer view is locked.

Video Track Viewer Version 1.8

- * Adjustments made to the Video Track Viewer DirectShow code to fix memory leaks caused by FilterGraph components not clearing properly during operation and shutdown of the viewer.
- * Fixed audio dropout problem that could occur under certain conditions with the Video Track Viewer Capture To Firewire option.
- * Fixed Video Track Render Session to only receive data from Output Track 1.

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Version 3.2a ***Enhancements***

Bug Fixes

- * Fixed crash problem when using Live Input Return channels, caused by the shared live input sync fix in 3.2.

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Version 3.2

Enhancements

- * The DirectX and VST *Built-In Presets* options are now accessible during playback or Live Input Mode.
- * The MWS Virtual Port Buffers have been enlarged to handle complex midi sessions feeding multi-timbral VST synths thru one MWS Virtual Port.
- * Changed the DirectX and VST Plug-In Titlebar display fonts to the smaller label font size to display more information.
- * The Export Regions feature now retains the last used folder path.

Bug Fixes

- * Patching to the Final Res View patch point when the current Hot Track is not an output track now correctly forces the patch to output track 1.
- * When Audio and Midi data are part of a session and an empty audio track is selected, the selected track is now forced into operation instead of track 1, thereby muting all audio tracks correctly. This can also be accomplished by using the *Mute Audio* button in the MidiWorkShop.
- * Fixed sync problem that could occur when recording from shared input devices on multiple console channels as the recording source. The second shared channel and all following would start to drift from the first channel as a group.
- * The *Mixer* Menu *Live Input Mode* option is no longer grayed and disabled in SAWStudioLite.

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Version 3.1c

Enhancements

- * A new option has been added to the DirectX and VST Plugins *Options* menus called *Built-In Presets*. This option opens a list of built-in presets that come with the individual plug-ins (if any).
- * Live Input Mode has been activated for SAWStudioLite to facilitate VST Synth scrubbing in the Midi WorkShop Add-In. All operation details of SAWStudioLite Live Input Mode are now the same as for the full SAWStudio version.
- * Engaging Live Input Mode now changes the cursor shape to give visual feedback when in any of the Mixer

views or the MultiTrack view.

Bug Fixes

- * Trapped a problem on certain Sony Vaio and Dell laptops that would cause the cursor clip routines to fail, not locking the mouse within certain zones which could then cause GPF's as data values extend past legal limits, for example when grabbing a mixer fader.
- * Modifications to the Asio code now creates compatibility with the MidiMan Delta series and Digi002 soundcards.
- * Trapped loss of mouse focus in Zoom or Full Mixer vertical scroll mode when the Windows taskbar is overlapping the bottom of the mixer views. A good suggestion is to autohide the taskbar to give full use of screen real estate with no overlap, or adjust the F-Key views to leave space for the taskbar with no window overlap.

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Version 3.1b

Enhancements

- * Added new visual feedback routine when clicking on command zones in various windows within the program. The zone text will temporarily shift slightly to indicate that the click was received. Shades have been updated to accommodate this routine, be sure to download the new shades versions that you use.
- * VST Synths patched to a track will now automatically force that track active and allow the MultiTrack play operation to function even if there is no other active data from the MT, Video Track or Midi WorkShop.
- * A new Built-In Command has been added to the *Control Track Built-In Command Menu* called *Midi Ascii String*. This command allows you to enter straight Ascii Text strings and even include Ctrl char codes such as carriage returns and linefeeds. Ctrl codes are entered by using the "^" character followed by the Ctrl code letter such as "^m" for a carriage return (dec 13) and "^j" for a linefeed (dec 10).
- * A new option has been added to the *Options Menu* called *Auto Record SoftEdge*. This option allows you to set a SoftEdge value to be applied automatically to every record region entry dropped onto the MultiTrack. If the recording drops into the middle of existing regions, both the in and out splices will receive the auto SoftEdge. Setting this value to 0 Ms de-activates this feature. This option saves with the preferences.

Bug Fixes

- * Fixed Control Track lockup that could occur when jumping to a Stop/Cue/Preload command in the Control Track View and then starting playback.

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Version 3.1a

Enhancements

- * Modified the Asio code to allow more compatibility with more Asio soundcard drivers. The buffer size setting is now automatically matched to the Asio setting which is set in the Asio Driver Setup control panel. The buffer size for Asio mode is no longer adjustable in the *Audio Device Setup* window, although the number of preload buffers may still be adjusted and utilized to control latency and performance issues.

Bug Fixes

- * Trapped Asio driver buffer sizes that are not even powers of 2 which do not match SAWStudio buffer size options exactly.
- * Resetting Audio Sync Devices now correctly re-initializes all sync variables for immediate access to Smpte generation without restarting the program.
- * Cancelling an MT PreLoad operation now correctly ends all initialized plug-in processes.

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Version 3.1

Enhancements

- * Improvements have been made to live input track latency. With small buffer settings (2 at 128 output, 6 at 128 input) you can start to experience virtual realtime performance for live input signal monitoring. Selecting a mixer channel as a record source now activates live monitoring capability. The Mono Switch setting of the channel determines whether a mono or stereo file is created. If the channel is set to an input device source, live input signals will be routed thru the channel strip, utilizing all eq, gate and compressor functions as well as fx patches and aux sends. If the channel is assigned to an output, the signal can be directly monitored. If aux send masters are assigned to output devices, they can be used as headphone feeds, back to the performer. The recording signal is taken pre-fader after the Pre Fx patch. The main fader and mute and solo switches can be used to control the control room monitor mix without affecting the recorded signal. If the channel input is set to the MultiTrack, the recording will pickup whatever signal is on the track, which could be disk data or a VST synth patched pre and record directly from the track output with no need to physically route the signal thru A/D or D/A converters and cables. All three record modes will activate the monitor thru capability.
- * Pressing the Shift-Key while starting MultiTrack playback will now internally switch all tracks to MultiTrack source, for playback of MultiTrack data even while the track is assigned to a *Device-In* source. This is a temporary condition for this playback only. All *Device-In* assignments remain intact.
- * A brand new option has been added to the Mixer menu called *Live Input Mode*. This mode (not available in SAWStudioLite) places the entire virtual console into Live Input operation. You may also toggle this mode in any mixer view by pressing the L-Key. When this mode is active, all input channels that have been assigned to active input audio devices or have VST Synths patched in will go live. All FX patches are active for all plug-ins to operate. The entire console routing is available to truly turn the virtual console into a live PA Sound Reinforcement console. The latency is completely controlled by the audio device in and out

buffer settings. The new advances in the live input latency engine enhancements now allow this mode to be very realtime when buffer settings of 4 at 128 or lower are achieved. You should find that most stable SAWStudio machines will now be able to achieve these buffer settings due to the new engine enhancements. You may exit this mode with the *L-Key* or pressing the *Stop* button on the MultiTrack transport in the top client area. Note that when using live inputs, plug-ins that withhold buffers or change buffer sizes (such as Time Compressors and Pitch Shifters) may cause glitches or even stop the engine due to the extra demands for more data out of realtime.

- * Multiple Input Channels may now be assigned to the same source Input Device for internally duplicated signal creation. This can be useful when assigning two channels to the same device and setting one channel's Mono selection to Left and the other to Right. This allows complete separation of input devices as mono signals for use with the Live Input Mode. Multiple Return Channels may also be assigned this way.
- * *Asio Driver Protocol* has now been added to the *Options* menu. Low buffer latencies should be attainable on most machines if your audio card has ASIO drivers. An Asio Driver Setup option is also included to allow Asio Driver Control Panel settings to be altered.
- * Record Templates now retain track offset information. If record tracks are not sequential, the track offset information will be applied starting from the current track where the record template is opened. For instance, if the record template is saved with tracks 1, 3, 5 and 6 in record mode, and then the template is recalled starting at track 11, tracks 11, 13, 15 and 16 will be placed into record.
- * More hooks for the first release of the Midi WorkShop add-in module.

Bug Fixes

- * Live Input Tracks now process correctly to Output Tracks when they are the only assignment on that output.
- * The Time Display is now correctly updated when changing Workspace Views while Record Ready is active.
- * Fixed Regions View Titlebar screen display problem that could occur with certain video card drivers.
- * Fixed crash that could occur in SAWStudioLite when opening sessions created in SAWStudio with active data on layers greater than layer 4.
- * Fixed Mono setting from being changed when starting playback in Offset Mode.

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Version 3.0

Enhancements

- * More API enhancements to accommodate the Midi WorkShop.
- * Enhancements to the *Grid Mode* toggle have been added. *Right-Clicking* in the *TimeLine Grid Zone* under the time readout display will toggle the *Grid Mode* On and Off. *Left-Clicking* the *Grid Zone* will popup the

grid settings and toggle the *Grid Mode On* if it is currently Off.

- * The Midi WorkShop view option has been added to the MultiTrack Left Client Track popup menu, allowing you to display it during playback when the main menus are locked out.
- * The *Slip Track* options now also work in Automation Mode.
- * The Track Properties Menu *Clear All MT-Entries* options have been renamed and enhanced to clear all MT-Entries and Automation Entries at the same time.
- * A new option has been added to the Track Properties Menu called *Clear All Entries On All Background Layers*. This option clears all MT-Entries and Automation Entries on all hidden layers leaving the current top layer untouched.
- * The *Save And Trim Session* option has been enhanced with the choice of including data on all layers or only the top active layer for each track. This can further reduce trimmed session size and clean up unused extra data from layers no longer needed in the final mix.
- * A new feature has been added for marking an area in normal MultiTrack mode. You can now press the Shift-End-Key to mark from the current cursor position to the end of the session.
- * Modifications made to the CM MotorMix Midi Control Template to accommodate the current MotorMix labeling. The F1 Button (Play) and the F2 Button (Stop) functions have been switched. The Next and Last Button functions have been moved to the F3 (FFwd) and F4 (Rew) Buttons. The Record Function has been moved to the Enter Button.
- * Due to complications with WheelMouse Click sensitivities, the WheelMouse toggle between scroll and zoom mode has been changed. Whichever mode you set as default in the MultiTrack WheelMouse menu option can be temporarily toggled to the opposite by pressing the Alt-Key while you engage the mouse wheel.
- * SAWStudio now retains the last property page displayed for DirectX Plug-ins when saving and opening sessions. This maintains accurate settings for certain plug-ins that require a certain property page to be selected in order to function properly.
- * Track Re-Ordering now saves undo files.
- * New options have been added to the Options Menu called *Control-Track Midi Output To Comm1 and Comm2* and *Comm Port Setup*. These options allow the Control-Track Midi commands to be routed to the Comm ports along with or instead of the Midi Ports. This allows control of RS232 type theatre equipment direct from SAWStudio. The Comm Port settings can be adjusted with the Comm Port Setup option.
- * The *Custom Commands* option in the *Control-Track View* has been activated. This popup menu allows you to select any entry in the *Control-Track* listbox and add it to the list of *Custom Commands*. This list is automatically updated and saved and reloaded each time you start the program. You may remove a *Custom Command* from the list by Shift-Left-Clicking it on this popup menu. Left-Clicking adds the entry to the *Control-Track* at the current MultiTrack Cursor position.

Bug Fixes

- * The Tempo Grid Measure setting now works correctly.
- * The Slip Track options now correctly maintain automation positions when doing all layers simultaneously.
- * The Layer Display Count now correctly shows a plus sign whenever other layers contain MT-Entries or Automation Entries.
- * Video Track Viewer updated to properly display black frames when cursor is jumped by various interface options to empty video track sections.
- * Rec and RecRdy operations of a Master / Slave network connection now work correctly on either machine. An SRP operation from the Master machine now correctly controls the Slave playback while recording on the Master. An SRP from the Slave correctly keeps the Slave independent of the Master.
- * Tempo percentage Snap To Grid now works correctly within multi-entry TempoMaps.
- * The TimeLine display now works correctly at all zoom levels when using Tempo Mode and a zero locate offset position.
- * Added some traps to certain MultiTrack zones during playback for cleaner interface operation.
- * MTC Chase Sync operation now correctly resets itself if playback fails for any reason after triggered.

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Version 2.9

Enhancements

- * A new option has been added to the *Control Track View Options Menu* called *Midi Receive Trigger Active*. This option toggles the Control Track Note On/Note Off Midi trigger features. When this option is Off, Control Track Midi trigger information will be discarded. This option is saved with each session Edl. When sessions are closed, this option is turned Off automatically. Any sessions previously saved which use Control Track Midi Note triggering will need to be opened and re-saved with this option active. They will operate normally after that.
- * Full implementation and inclusion of the Mackie Control template. Most all mixer controls and many editing controls as well as F-Key Views are active. Check the help file for details. Button layout templates should be available from Mackie shortly. Call Mackie and request your Lexan template. In the meantime, you may download the pdf button layout template available at our website. It will print at exact size. Have fun punching out the holes :)
- * Implementation and inclusion of the Mackie Baby Hui template. Check the help file for details.

- * The Full Mixer View now displays 6 patch bars in the channel *Aux Zone* referencing the 6 *Aux Send On* switches, allowing you to instantly see all channels with active aux sends.
- * The *Left-Drag* MultiTrack scrolling has been re-designed for easier control. When holding the *Left Mouse* button and pushing at the MultiTrack wave display area edges, the multitrack now scrolls in any direction under direct control of mouse movements, rather than in an autoscroll mode. You can keep scrolling by applying a slight pressure towards the edge direction you are moving. By holding the mouse still at the edge, the scroll will stop, allowing you to control the pace and exact stopping point much easier than before. This feature is now active during MultiTrack play mode also.
- * The Locate points have been enhanced to allow for automatic marking during the jump. Pressing the *Alt-Key* while selecting a Locate point will mark from the current position to the new position at the same time the jump is made.
- * A new feature has been added to the Mixer Views. By *Right-Clicking* on the Close button of the Full, Zoom or Wide Mixer view, you can lock or unlock that view. Moving around in any of the other views will not cause the current locked view to chase along. You may still change chans in the locked view itself, but it will no longer be linked to affect other views. The Close button will change to display a small padlock when the view is locked.
- * The EDL Undo function now resets the MultiTrack Cursor position to its undo saved position.
- * Processing times for screen redraws and zooms under heavy CPU load has been improved with enhanced dynamic latency code.
- * Modified thread code in the Video Track Viewer for overall smoother playback response in both Win 2000 and Win XP.

Bug Fixes

- * Fixed the screen redraw problem that would lockout screen updates after using the Track Properties option *Copy Selected Entries To Layer* on multiple selected tracks.
- * Fixed the screen redraw problem that would lockout screen updates after using the Blend Session option if the Blend Session routine had difficulty inserting entries and exited early.
- * Fixed the screen redraw problem that would lockout screen updates after using the Slip Track feature if the routine had exited early.
- * Trapped live layer switching during playback from tracks which start with an empty layer. Also, layers will not switch during playback to empty layers.
- * Fixed MultiTrack screen drawing problem which could leave one line of garbled data at the bottom of the MultiTrack when scrolling the display vertically under certain conditions.
- * Fixed MultiTrack screen drawing problems that could garble the MT ClientY area under certain scrolling and marking combinations in Select Mode.

- * Fixed accuracy of Compressor Ratio calculations when adjusting the ratio during playback.
- * Modified Mixer ClientY display routines to help with drawing problems under heavy playback load.
- * Modified code to handle Softedges that overlap the end of the next entry without creating an endless playback loop.
- * The Disable Track feature now correctly sets the EDL modified flag.
- * Fixed gpf condition that could occur when building mix files with wide range of samplerate conversion and bit depth increase, for example building a 44100 16 bit file into a 192000 24 bit unpacked file.

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Version 2.8a

Enhancements

Bug Fixes

- * Fixed TCP/IP Remote lockups that could occur under certain conditions after Right-Clicking to stop playback.

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Version 2.8

Enhancements

- * A new option has been added to the Video Track Viewer Options Menu called *Render Realtime To Overlay Video Out*. This option can be used with the Matrox dualHead video cards that support the DVDMax feature to output the Video Track video, full screen to a second computer monitor or TV Monitor. The DVDMax feature can be activated in the Matrox settings advanced section under the DualHead options tab. Other video dualHead cards may also work if they output an overlay rendering to their TV out hardware.
- * The Recent Session File List is now updated everytime there is a session save with a name change. This includes saving a fresh session on program exit.
- * Added percentage readout display in taskbar icon during minimized background operations like BuildMix.
- * You may now open record templates across Return and Output tracks that are re-ordered. For instance, if a Return track is re-ordered to track 2 and you attempt to open a 4 track record template starting on track 1, the template will now skip the Return track and continue onto the following 3 tracks, instead of stopping at the Return track.

Bug Fixes

- * Fixed Source Buffer Underrun errors and playback crashes that could occur under certain MultiTrack conditions with Pre-FX patches on output tracks, caused by some of the 2.7 enhancements.
- * Fixed FireWire video track output problems in Windows XP.
- * Trapped extra user input commands during timed error messages.
- * Fixed Fx Patch window displays to lock onto the last output track when the HotTrack is set to the Video or Control Track. This will also open the correct (last output track) patched plug-ins when Double-Clicking on them.
- * Fixed full screen restore problem when restoring from minimized background operations like BuildMix.

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Version 2.7

Enhancements

- * The TCP/IP options have been activated, and new TCP/IP items have been added to the Options Menu. All TCP/IP options will save with the Preferences.

The *Activate TCP/IP Host/Master Mode* option allows the program to operate as the Host/Master machine across a standard ethernet 100 base-T network. Activating this option displays the Host/Master signature on the Main window titlebar and allows the program to accept up to 8 Remote or Slave machine connections, in any combination.

The *Activate TCP/IP Slave Mode* option allows the program to operate as a Slave machine that can sync to another machine running SAWStudio as the Host/Master. The Slave machine will link and synchronize to the Master machine when a connection is established. When a link is first established or the Master machine activates an Open Session command, the Slave will attempt to open its own local edl using the same drive and path name from the Master machine. If it does not find the edl at the duplicated path it will substitute the default session file path setting and look there. If both fail to find the edl, then it will simply ignore the open command. In Slave mode, each machine plays its own version of the edl through its own soundcard outputs. You can mix the outputs of each machine with an external mixer, or stay completely virtual and feed the slave machine outputs back to a Master machine MultiTrack input with the channel source set to a pair of soundcard inputs on the Master machine. You can use this mode to duplicate session playback on two machines for live theatre, one machine serving as a backup for live performances. You can also use this to spread the load across two machines, extending different instrument tracks onto the Slave machine under a common edl name. When you start playback on the Master machine, the Slave will cue and begin playback in perfect sync... all without Smpte or Mtc connections... simply an ethernet network connection. Actual hardware lock can be achieved by using WordClock between the Master and Slave machines. You may use a single master WordClock source to feed both machines, or send WordClock from the Master machine

converters to the Slave machine converters. If the Slave has record channels active, it will enter SRP-Record mode when the Master begins playback. If there is a marked area in the MultiTrack, auto punch-in/out will be engaged for that area. Editing commands remain independent between the Master and Slave machines. Any work done on a session on the Slave must be saved independently on the Slave. When the Master closes the session, the Slave will prompt, if needed, to save any session changes before closing its session.

Slave commands supported:

OPEN_SESSION
CLOSE_SESSION
MT_AUDIO_PLAY
STOP_AUDIO
SET_MT_SAMPLE_POS

The *Activate TCP/IP Remote Mode* option allows the program to operate as a Remote machine that can control another machine running SAWStudio as the Host/Master. The Remote machine will link and synchronize to the Master machine when a connection is established. When a link is first established the Remote will attempt to open a copy of the same edl on the Master machine across the network. You will now be able to operate the Master machine from the Remote machine. Opening, closing and saving sessions, playing, recording, retaking, and editing the Master machine session. The Remote machine does not use its soundcard, it does not even need one installed. During playback, the Master machine sends all position and meter information across the network to the Remote. Audio only plays on the Master machine. The Remote machine acts truly as a sophisticated remote interface. When you save the session, you are saving the Master session as if you were editing on the Master machine. Device names in the Mixer Assign section will display Master machine soundcard devices, not the devices on the Remote machine. The actual Remote devices are not available during a Remote session. FX Plug-ins are not supported yet. The FX Choices list will gray-out FX Plug-ins on the Remote machine that are not installed on the Master machine.

Remote commands supported:

OPEN_SESSION
CLOSE_SESSION
SAVE_SESSION
RECALL_EDL_UNDO
REDO_EDL_UNDO
MT_AUDIO_PLAY
MT_AUDIO_PLAY_MARK
MT_AUDIO_PLAY_LOOP
MT_AUDIO_REC_RDY
MT_AUDIO_REC
MT_AUDIO_SRP
MT_AUDIO_REC_PUNCH_IN
MT_AUDIO_REC_PUNCH_OUT
STOP_AUDIO
OPEN_MT_TRACK_REC_METER
CLOSE_MT_TRACK_REC_METER
MT_REC_RETAKE (Shift and Ctrl versions also)
REC_SET_INPUT
REC_SET_TRACK

SET_MT_SAMPLE_POS
SET_MT_HOT_TRACK
SET_MT_TRACK_LABEL
SET_MT_TRACK_LAYER
SET_MIXER_CONTROL (Entire Mixer)
SET_ALL_SOLOS_OFF
SET_AUTOMATION_MODE_ON
SET_AUTOMATION_MODE_OFF
DELETE_SEQ_ENTRY_AT_POS
SPLIT_KEEP_MT_ENTRY
SPLIT_MARK_MT_ENTRY
SPLIT_REMOVE_MT_ENTRY
SPLIT_DELETE_MT_ENTRY
UPDATE_MT_ENTRY (Alt-Shift and Ctrl versions also)
CLEAR_MARKED_AUTO_ENTRIES

Be respectful of the supported commands. Using unsupported commands will result in random undesirable edl results. More commands will be added in later updates.

When Editing on the Master machine, it is recommended that all Remote connections be broken to avoid possible problems due to unsupported operations. Reconnect Remote machines only when attempting to edit remotely.

The *TCP/IP Port* option allows you to enter the network port to be used for network communications. The Master and Slave/Remote machines must use the same port. There is a list of possible available ports in the dialog for setting this value.

The *TCP/IP Host Computer Name/Address* option allows you to enter the network computer name or TCP/IP address for the Host/Master machine. This option is only used for the Slave and Remote machines.

The *TCP/IP Slave Sync Latency Adjust* option sets a latency plus or minus offset in samples to compensate for delays in the network transmission and differences in soundcard latency. This value is used to move the playback starting position to an earlier or later value than actual. Network transmission delays are not exactly repeatable, but this value can help tighten the sync to within a few dozen samples.

- * A new option has been added to the *Driver Protocol* option in the *Options Menu*. You may now select the 24 Bit WDM Compatible MultiMedia option which allows full 24 bit operation for newer soundcards which use only the WDM driver model. Previous Multimedia compatibility would only work in 16 bit mode.
- * The *U-Key Update MTEEntry* function has been enhanced to follow the *Auto ZeroCross* setting in the *Options* menu.
- * The *ScrollWheel* button may now be *Double-Clicked* in the MultiTrack view to toggle between *ScrollWheel Inc/Dec* or *Zoom* mode.
- * A new option has been added to the *Control Track View Options Menu* called *Set Cue Base Name*. This option allows you to enter a cue base name which will be used automatically as the name for all following

Cue Location entries until changed or cleared. This can help you locate all cue locations, for example, that you entered during a vocal overdub session as markers by first setting the base name to "Vocal OD". All entries can be easily seen, and edited after the overdub, because they will all be labeled "Vocal OD" in the Control Track View listbox.

- * Two new options have been added to the *Control Track Built-In Command* list, called *Midi Bank Select* and *Midi Bank Select / Program Change*. The first option allows you to send a Bank Select command to your chosen Midi channel, and the second option automatically follows the Bank Select with a Program Change command.
- * The FX API has been updated to include the seamless integration of the soon to come Studio Midi WorkShop PlugIn.
- * The Midi Control template API has been enhanced to allow full use of the Mackie Control surface features in a soon to come Mackie Control integrated template. This also allows an expanded version of the Motor Mix template in this release, with access to all Aux Send, Eq, Compressor, Gate and Key controls. Be sure to see the HelpFile or pdf Manual for MotorMix Controller operation details.
- * VST SoftSynths may now be patched to an empty track without the need to place a blank entry at the track's end for the processing loop to be active.
- * The Library Wav File Import function has been enhanced. If the selected wav file is open in the SoundFile View when using the import function, marked area positions will be utilized, allowing you to import a small section of the file instead of the entire file.
- * Automation fades and individual entries written while playback is stopped, now force a zero ms slope value on all MT-Entry start boundaries for an instant change at the boundary.
- * Left-Clicking in the *MT TimeLine* area during normal MT playback now performs a live jump to the current cursor position, much the same as a Locate point jump during playback.
- * Reverse MT-Entries are now marked with a small white hatch mark in the top left entry corner for identification, like vari-pitched entries.
- * A new feature called *Replace MT-Entry* has been added. Placing the MT Cursor on an entry and pressing the Shift-R key will replace the entry with the currently selected *Region Listbox* region.
- * A new option has been added to the MultiTrack Menu called *L-Btn Edge Vertical Scroll*. This option controls the edge detection for MT vertical scroll with the Left Mouse button. Normal SAWStudio behavior has this option activated. You can still do MT vertical scrolling with the Right-Hold mouse functions, even when this option is not active.
- * Offline automation writing within a marked area, which creates an auto entry on both boundaries, has been modified to only operate when the cursor is within the marked area. If the cursor is outside the marked area, only a single auto entry is created at the cursor position, ignoring the marked area.
- * The Mixer Channel *Store/Recall* menu can now be activated by a Left-Right-Chord-Click as well as the Alt-

Right-Click combo. The mouse chord can be done by holding the left mouse button and then tapping the right mouse button at the same time.

- * The BuildMix Base and Device filenames may now be cleared to their default settings by Shift-Left-Clicking on them in the BuildMix FileName Setup dialog.
- * Enhanced Layer Switching during playback performance.
- * A new option has been added to the MultiTrack Track Properties Menu, for Input Tracks only, called *Enable Track FX Auto Bypass*. When active, this option scans incoming FX data and outgoing FX data and automatically bypasses the FX processing for that track when both buffers contain all zero data values. This helps give back CPU time to the rest of the MultiTrack during blank track sections. The output buffer scan allows reverb trails to dissipate before bypassing further processing. Be aware that certain plug-ins with meter decays might freeze meter displays because buffer processing has been bypassed and displays might not complete their decay. Also, do not use this option for tracks that alter overall track length like Time Compressors, because those plug-ins must process every buffer to properly output the new length data stream. This option responds to the Ctrl-Key for all tracks, and also Selected tracks for specific track activation.
- * The Video Track Viewer may now be stretched out of proportion by dragging the left or right border. Dragging the top or bottom border will still retain proportion.

Bug Fixes

- * Eliminated screen flashing when closing Control Track User Input Dialogs.
- * Fixed Control Track Midi-Note-On/Midi-Note-Off command from being corrupted after editing its values.
- * Channel Settings Files (.cht) will now transfer FX PlugIn settings correctly between different SAWStudio workstations. This fix corrects the problem where different workstations have different FX PlugIns installed, thereby causing the PlugIn order to be different between systems.
- * WaveForm drawings of close zoomed waveforms no longer draw a solid line from center up or down to a high valued first pixel, keeping the joints of close zoomed MT Entries clean.
- * Actively assigned XY-Pan Outputs with no actively assigned XY-Pan Inputs is now trapped with a warning message.
- * Inserting a Region to Grid within a marked area now correctly inserts the first entry if the marked area begins at zero.
- * The Track Properties *Disable Track* option is now correctly grayed during active Playback or Record.
- * Right-Clicking in a Library View of .wav files, now builds peakdata files correctly when none exist before playback begins.
- * Automated mixer FX bypass switches now correctly detect whether plugins have been removed before

displaying FX patch icon bars.

- * Double-Clicking in the Final Res View now opens the correct plugin, even if the current hottrack is not an output track.
- * Aux Send Masters now respond correctly to the Ctrl-Click increment/decrement zones to change 1 db per click.
- * The *Ctrl-Track* now correctly adjusts to samplerate changes.
- * Solved edl corruption problem that could occur with multiple patches of the same plugin and certain edl-undo combinations. This corruption showed up as extra param sets displayed in the plugin tracklist with mis-matched FX Patch bars in the mixer.
- * The *Ctrl-Track* view is now correctly updated with all position changes in the MultiTrack.
- * Dynamics track keying has been fixed to correctly detect empty or inactive tracks and clear the key buffer accordingly. This fix also applies to the FX API that controls the Levelizer keying function.
- * Offline automation writing within a marked area now correctly handles multiple changes on the same boundaries, such as multiple Eq bands.
- * Exiting and canceling *Offset Mode* with the Right-Click or Ctrl-O key, now correctly clears the offset values and resets the original values during playback.
- * Fixed FX API Start SRP and Rec functions.
- * Fixed crash when pressing Ctrl-8 during playback.
- * Fixed the Video Track Viewer conversions/extractions from being 1 audio frame short.

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Version 2.6f

Enhancements

- * Blend Session has been enhanced for quicker loading times.

Bug Fixes

- * Fixes to the undo routines connected to video edits.
- * Modified some code to help eliminate redundant MultiTrack screen redraws in certain operations.
- * Track Properties popup menu items that do not apply to Return and Output tracks have been correctly

disabled. Layer displays for Return and Output tracks now properly look only at automation data.

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Version 2.6e

Enhancements

- * A new option has been added to the Regions menu called *Import New Region*. This option takes its information from the currently open SoundFile in the SoundFile View and imports the marked area to a new import destination file, then creates a new region in the session, linked to the new import destination file.
- * The Save and Trim option has been enhanced to clear all BuildMix Filenames in the new trimmed session to free any links to the original session.
- * The Import and Save and Trim functions have been adjusted to size down the blank time before and after regions in the final created files from 500 ms to 200 ms.

Bug Fixes

- * Fixed problem which locked out the use of the period key in dialog boxes.
- * Fixed problem which could cause peakdata files to remain open after sessions were closed under certain conditions. This could cause sharing violations when trying to manipulate the file outside SAWStudio while SAWStudio is still open.
- * More adjustments made to correct the crash with the UAD powered plugins during a BuildMix operation.
- * More adjustments to the VST initialization routines to help compatibility with certain VST plug-ins.
- * Fixed code to correct the disappearing SAWStudio About Box that could occur under certain conditions. Also made the About Box be an OnTop window to force it above plug-in displays.
- * Fixed undo problem with the Levelizer Remove Silence command. The fix was in SAWStudio. No need to update the Levelizer.

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Version 2.6d

Enhancements

Bug Fixes

- * Modifications to the VST code to allow compatibility with the Universal Audio Powered Plug-Ins. Try to

get SAWStudio's buffer size down to 256 or less to bring the Powered Plug-Ins latency within reason. Also, be careful not to place DirectX plug-ins that alter the buffer size (like Time Compressors and Pitch Shifters) in front of these plug-ins, because they may not respond properly to varying buffer sizes.

This modification will also help fix certain other VST plug-in screen updating and loading problems.

- * Fixed possible crash problem if large SoftEdges completely overlap tiny MT Entries.

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Version 2.6c

Enhancements

- * The Record Meter Windows have been enhanced to allow horizontal sizing. The window can be sized down to 1 record meter or up to the max opened meters. The window can then be saved while open in an FKey or Alt-FKey. FKeys saved with open Record Meters will retain the window size as a maximum lock. Whenever the Fkey is used, the current Record Meters will size down to fit the max saved size. If more meters are currently opened than will fit, they can be accessed by using the left or right arrow keys or *Left-Clicking* near the left or right edge of the window. This feature now allows you to create two simple FKey views, one view with one meter, and one view with as many as you might ever use at one time that fits across the screen. When doing a recording session with 16 meters open, you can simply use one FKey to instantly compact the meters down to 1 meter while playing back the last recording. This allows you to have access to the mixer and multitrack views without all the meters on top, but still keeps the meters open for access to the retake commands if you decide to do a retake. Then, using the other FKey, you can instantly expand all the meters across the screen again to do another recording.

Bug Fixes

- * The Update SoundFile Region function has been fixed to allow upper / lower case changes in the Region name.
- * Automation now displays correctly on mixer channels during playback when the Control and Video Track are displayed at the top of the MultiTrack.
- * Dynamics threshold lines now display on the correct track when the Control and Video Track are displayed at the top of the MultiTrack.
- * Crashes caused by playing a varipitched or samplerate converted file to the end and then immediately exercising a zero-cross detection near the file end, have been fixed.
- * Fixed code that was causing ticks and pops with softedges used on vari-pitched or samplerate converted entries.
- * Changed code that checks for existing files to extend the filepath size from the older Windows routines.

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Version 2.6b

Enhancements

- * The MouseWheel now also controls the Zoom functions in the SoundFile View Window. This action is independent of the MouseWheel option selection for the MultiTrack.
- * The Control Track View has been enhanced to include a marked time between entries option. Left-Click the first entry of interest, then Alt-Left-Click the next entry (further down the timeline), and the area between them will be marked and displayed in the Marked Time zone on the MultiTrack.
- * The Control Track View has been enhanced to allow Cue Location selections using the mouse or keyboard within the listbox during playback, to jump and continue playback for instant live cueing operations.
- * A new option has been added to the channel *Store* and *Recall* popup menu called *Clear Current Channel*. This option clears the current channel to default settings. If the current channel is one of a group of selected channels, all selected channels are cleared.
- * Two more new options have been added to the channel *Store* and *Recall* popup menu called *Save All To File From Memory* and *Load All From File To Memory*. These options allow any memory cell to be saved to a disk channel template file or loaded from a disk channel template file. The file extension used is .cht.

Video Track Viewer 1.2

- * The LayBack To FireWire option has been enhanced to allow the Play button to also pause the layback.

Bug Fixes

- * The Control Track View now properly chases cursor movement in the MultiTrack initiated with the Left and Right Arrow keys.
- * Fixed Fx Automation problems that could cause loss of multiple automation entries written to the same sample position, after automation editing or overwriting operations. The Studio Graphic Eq plug-in Hi-Cut and Lo-Cut parameters were affected by this problem.
- * Recalling channel data from memory cells during playback, now correctly ignores assignment switch data that cannot be altered while playback is active.

Video Track Viewer 1.2

- * The LayBack To FireWire option DV Type-2 files audio connection has been corrected.
- * Video Track Viewer now properly chases when selecting Cue Locations in the Control Track View.

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Version 2.6a

Enhancements

- * The *Control Track View* window no longer has the *On-Top* window attribute, so it may now be mixed in behind other windows in the F-Key views if desired.

Video Track Viewer 1.1

- * Two new options have been added to the Video Viewer Menu called *Use NTSC DV Output Format* and *Use PAL DV Output Format*. Selecting one of these options rebuilds all filter graphs to force DV Render and FireWire outputs to the selected NTSC or PAL format. Make sure to adjust your TimeLine to the proper Smpte Format. For example, 29.97 Frames Per Sec for NTSC and 25 Frames Per Sec for PAL. These options save with the Video Preferences.
- * Pressing Stop when capturing from FireWire, now closes the capture file to write the final header information and then automatically re-opens it up in EditMode, ready for editing and insertion onto the Video Track.

Bug Fixes

- * Fixed problems when trying to record on input tracks that are below re-ordered output and return tracks.
- * Fixed Record track menu and stereo channel menu listings when tracks are re-ordered with input tracks below return and output tracks.
- * Fixed layer copies of marked areas which was causing automation entries to copy multiple times on top of each other.
- * Fixed Remove Silence lockups on long length areas.
- * More work done to stabilize Memory Region and PeakData caching lockups.

Video Track Viewer 1.1

- * Trapped crashes that could occur on certain systems with certain FireWire device drivers whenever an attempt was made to access a FW device that was not powered up or plugged in.
- * Fixed EditMode playback using the Render Realtime to FireWire option.
- * Fixed EditMode Render Realtime to FireWire when the VideoTrack contains no video entries.
- * Fixed possible lockups that could occur under certain conditions when stopping an EditMode playback.
- * Fixed EditMode Image File oversize trapping and DV FireWire rendering.
- * Trapped DV format crashes when using PAL or NTSC DV files in a system set to output in the opposite format.

Version 2.6

Enhancements

- * The Video Track has been activated. The new viewer is built-in and can be popped up from the *View Menu* or by Left-Clicking the VideoTrack Label area. Left-Clicking the pyramid logo pops up the *Video Track Menu*. Left-Clicking the *V-Letter* zone jumps the MultiTrack directly to the Video Track, similar to the *I, R* and *O* zones at the bottom of the MultiTrack View. The viewer is based on the DirectShow interface and therefore offers access to the many varieties of filetypes and functions that this interface supports. It is highly recommended to use the latest DirectX version available. At the time of this writing, that would be DirectX 8.1 for Windows 2K and XP, and DirectX 6.0 for Windows NT. FireWire DV capture and output will most likely require Windows 2K or Windows XP.

The viewer has two distinct modes of operation; *Edit Mode* and *TimeLine Mode*.

Edit Mode:

The Edit light will turn on when in *Edit Mode*. You can toggle *Edit Mode* on and off by Left-Clicking the Edit light. This mode separates the viewer from the MultiTrack timeline and causes it to act on its own, similar to SoundFile View. The top client area of the viewer displays the current frame count in this mode, and the current In Frame and Out Frame.

Selecting the *Open Video File* option from the Video File Menu, opens a video file into the viewer and forces *Edit Mode* active if it is not already. Any video file type that has a codec in the system can be opened. This includes DV/Avi, mpg, indeo, certain quicktime formats and others.

Left-Clicking in the scrub zone at the bottom of the viewer allows you to scrub through the video file from front to back. The scrub zone always represents the entire length of the file. Shift-Left-Clicking near the red center line in the scrub zone will slowly jog the video forward or backward depending on which side of the red line center position you are.

The play and stop buttons are active to play the video. Pressing the Shift-Key and the play button will play the clip from the In and Out frame positions. Pressing the Ctrl-Key and the play button will loop the clip from the In and Out frame positions. No audio is played in this mode. The step forward and backward buttons allow you to step, one frame at a time, in either direction. Left-Holding one of these buttons steps the video in very slow motion, about 100 ms per frame.

The In and Out buttons allow you to mark in and out frames for creating and extracting clips from the total file. Pressing the Ctrl-Key and the In or Out button will clear the associated frame mark. The *Create New Clip And Add To MT* option from the Video Clip Menu, creates a clip from the in and out frame markers and adds the clip to the Video Track at the MultiTrack cursor position. The clip will be displayed as a video entry on the Video Track in the MultiTrack. If there is an existing clip under the cursor position, the new clip will butt-splice itself to the end of the current underlying clip. The *Create New Clip And Insert To MT* option will force the new clip to cut itself into any underlying existing clip at the exact cursor position.

You may also use the *Open Video File And Add To MT* or *Open Video File And Insert To MT* options from the Video File Menu to open a video file and place the entire file as a clip onto the MultiTrack in one simple operation.

You may Double-Click any Video Entry on the Video Track and it will open that clip into *Edit Mode*. You may then use the *Re-Name* or *Delete Clip* options from the Video Clip Menu, or remark in and out frames and make new clips.

There are many options available in *Edit Mode* under the Video Convert/Extract Menu. The convert and extract options use the *In Frame* and *Out Frame* settings to control the portion of the file that is included in the operation. You may convert directly to DV/Avi Type 1 and Type 2 formats, with or without audio, or choose the *Convert To Custom Avi File* option to select any compressor in the system for both audio and video options. You may also extract audio to a Wav file from any portion of the video file, and then place that audio on a track in the MultiTrack for further processing and mixing.

TimeLine Mode:

The Edit light will turn off when in *TimeLine Mode*. Left-Clicking in the MultiTrack will automatically switch the viewer to *TimeLine Mode*. In this mode the viewer locks to the MultiTrack timeline and forces the video playback in sync with the MultiTrack audio. The top client area of the viewer displays the current Smpte Time in this mode, even if the MultiTrack is using a different TimeLine display mode.

Left-Clicking in the scrub zone at the bottom of the viewer allows you to scrub through all video clips on the TimeLine from front to back. The scrub zone always represents the entire length of the session. Shift-Left-Clicking near the red center line in the scrub zone will slowly jog the video forward or backward depending on which side of the red line center position you are. The MultiTrack cursor position is locked to the viewer position and will always remain in perfect sync with the viewer scrub position.

The play and stop buttons are active to play the MultiTrack. All MultiTrack audio and processing is played in this mode. The step forward and backward buttons allow you to step, one frame at a time, in either direction. Left-Holding one of these buttons steps the video in very slow motion, about 100 ms per frame.

Video entries on the Video Track may be moved and copied exactly like audio entries on the MultiTrack. The in and out boundaries may be adjusted exactly like audio entries. All video formats can be handled without conversion in the *TimeLine Mode*. Only DV format files can be live rendered to the Firewire output without conversion. Individual file framerates will be automatically conformed to the MultiTrack framerate setting. You will be warned if a clip does not match the current settings when the clip is placed on the TimeLine. It is recommended that you set the MultiTrack project Samplerate and Smpte Framerate prior to adding clips to the MultiTrack.

Clips may be arranged and adjusted on the TimeLine and then audio from those clips can be extracted, in sync, directly to a selected HotTrack using the *Extract Audio To MT* option from the Video Convert/Extract Menu. This option responds to a marked area of the MultiTrack, or the entire track if not marked. Select a blank audio track, then activate this option and all audio will be extracted and placed on the track, in sync, from each separate clip.

Other Features:

Many features of the viewer operate in both modes with slight differences. In either mode, you may Right-

Click on the video image display to popup information about the current video clip and/or file. The current number of files and clips in the session is also displayed at the bottom of the info dialog.

The *Delete All Unused Clips* option from the Video Clip Menu will remove all clips and associated files not being used in the session on the TimeLine. This can help keep the system memory and resources load to a minimum, as each opened video file taxes the system through the use of DirectShow Filter Graphs. The *Delete All Clips* option will completely clean the video clips and files database and allow you to start fresh.

The viewer may be zoomed to various preset standard sizes using the *Zoom* option from the Video Track Menu. You may also size the viewer to any size by grabbing the window edges and dragging to the desired size. The aspect ratio will be automatically maintained. The scaling is done with the DirectDraw interface and maintains a high quality size adjustment to keep the video looking sharp.

You may render the final MultiTrack audio and video splices to a brand new DV/Avi file with the *Render To DV/Avi Type-1 File* or *Render To DV/Avi Type-2 File* options from the Video Track Menu. All audio assigned to Output Chan 1 is merged, in sync, with the video clips on the Video Track to build a single finished video file. Video clips of different formats will be automatically converted to the DV format during the render.

If your system supports FireWire (1394) ports, you may select a FireWire device by using the *Select FireWire Device* option from the Video Track Menu. You may then select the *Render RealTime To FireWire* option to send the video out to an external camera or converter box live, in sync, with all *TimeLine* or *Edit Mode* operations. The FireWire device selection as well as the viewer size and position can be saved as a default by using the *Save Video Viewer Preferences* option from the Video Track File Menu.

The live scrub and TimeLine FireWire output can sometimes jitter or skip while it attempts to maintain perfect sync with the MultiTrack playback. To output a perfectly smooth final render to an external FireWire device, you should use the *LayBack To FireWire* option from the Video Track Menu. This option opens a finished rendered DV/Avi file and outputs it directly to the FireWire port using the port clock for a perfect playback.

You may also capture DV video directly into the viewer from the FireWire port. You may use the viewer's play button to toggle between capture and pause, allowing you to stream different video clips back to back into one file if desired. The stop button completes the capture process and properly closes the file.

The *Special Options* selection on the menu offers a quick way to test your video system performance for the current video file conditions. This works in both *TimeLine* and *Edit Mode*. The *Test Static Seek Time* option measures how many milliseconds per frame it takes to seek independent frames one by one. This is how the system works during scrub modes. The *Test Running Seek Time* option measures how many milliseconds per frame it takes to seek successive frames that may be built upon information contained in the previous frame. This time should be faster in most instances. This is how the system works during playback. The viewer display size may influence these times considerably and you should try to adjust your viewer display size to keep running times under 20-25 ms per frame, thereby not overly loading down the system, and allowing plenty of remaining CPU time to maintain good MultiTrack performance.

* Two new *SampleRate* choices have been added to the MultiTrack SampleRate menu. They are 176400 and 192000.

- * The *Custom SampleRate* option has been activated on the MultiTrack SampleRate menu. You may select any rate between 3000 and 400000.
- * SF and MT playback, when zoomed in below the 256 samples per pixel level, keep the playback cursor frozen onscreen and automatically resets the play position back to the starting point, as in the original design. A new function using the Shift-T-Key now allows you to transfer to the actual stopped playback position while in this close zoom if desired.
- * Enhanced performance of live layer switching.
- * Smpte Format now saves with the preferences.
- * The Select Mode *Include Orphan Automation* setting now saves with the preferences.
- * The Zoom Mixer Label area may now be used as an available area to side scroll the mixer view by Left-Dragging the mouse to the left or right edge of the window. This now works the same as the Full Mixer View window.
- * The *Edit Input Box* dialog used for entering various labels and values throughout the program has been enhanced with the addition of an *Ok* zone on the TitleBar. Left-Clicking the *Ok Zone* in the upper right corner of the window may now be used to close and accept the input, exactly like pressing the Enter-key. Left-Clicking the *Close Zone* or outside the window or pressing the Esc-key will close and cancel the input.
- * The *Record Retake* menu has been enhanced with separators between choices, making it easier to select the desired option. A keyboard shortcut has also been added. Pressing the Backspace-Key after a recording will activate the *ReTake To Last Record Position* option; Pressing the Shift-Backspace-Key will activate the *ReTake To Current Cursor Position* option; Pressing the Ctrl-Backspace-Key will activate the *ReTake All* option.
- * The last record start play position is now retained, even after playing the MultiTrack to listen to the last recording before utilizing the *Record Retake* option.
- * The NumPad number keys are now assigned to zoom levels for the MultiTrack and SoundFile views. The values are as follows: 1-Key = 1; 2-Key = 4; 3-Key = 16; 4-Key = 64; 5-Key = 256; 6-Key = 1024; 7-Key = 4096; 8-Key = 16384; 9-Key = 65536. Note that the keyboard NumLock mode must be active.
- * The Control Track View window now includes a *Jump To Control Track* zone in the *Client-Y* area. It looks like a capital letter C. Left-Clicking in this zone jumps the MultiTrack view directly to the Control Track.
- * Moving and copying entries on the Control Track can now be done using the Backspace-Key and Ctrl-Backspace-Key, similar to moving and copying automation entries on other tracks. Mark an area surrounding the desired entries, place the cursor at the destination position and press the Backspace-Key to move the entries, or press the Ctrl-Backspace-Key to copy the entries to the new position.
- * The MultiTrack View Window now allows the use of the Q-Key to drop *Cue Locations* on the Control Track at the MultiTrack position while playback is stopped or active. The Q-Key activates a *Cue Location*

command, the Shift-Q-Key activates a *Cue Location / PreLoad* command, and the Ctrl-Q-Key activates a *Cue Location / Play* command. If Playback is stopped, a dialog pops up allowing you to name the cue and also attach a Midi Note-On/Off trigger. Left-Clicking in the Midi Trigger readout pops up a menu displaying the full range of Midi notes. There is also a *Last Midi Input* option that will accept the last Midi note played from a keyboard or other Midi device. While the menu is active, the Client-Y area of the Control Track View Window will display live, all incoming Midi notes above the Midi-Trigger column heading.

- * The Control Track View Window now allows the use of the Right-Click and SpaceBar-Key to toggle playback, and the Return-Key to preload playback or stop. This feature used along with the *Cue Location* command creates an excellent markers list. Each Control Track command type has special leading characters in the listbox to help locate them. The Stop commands will have '- -' in front of the name. The Cue commands will have '@' in front of the name, and the Midi commands will have '>' in front of the name.
- * The Control Track View Window now displays the popup Options Menu, by Left-Clicking on the blue pyramid logo. Three options are listed; *Set Midi Receive Chan*, *Set Global Play Midi Trigger*, and *Set Global Stop Midi Trigger*. The *Midi Receive Chan* selects a midi chan just for the Control Track commands. The *Global Play* and *Stop* triggers allow you to set a Midi Note assignment to act as a global play and stop command. When the system is cued and in a preload wait state, these keys can be used to start playback, or cancel the preload.
- * A new shortcut key for saving and updating the session has been added. Pressing the Ctrl-S-Key will save and update the session. Please note the new arrangement of the session options on the File menu and the slightly changed menu underlined keys for those options.
- * Opening a Library EDL now offers repathing choices to find linked files in different locations. This allows opening edl's across a network with automatic file link relocation.
- * Multi-Selection ListBoxes have been enhanced to allow for multi-selection functions of up to 5000 items at a time, with a warning message if you exceed those limits.
- * The *Save And Trim Session* has been enhanced with the addition of three longer *Region Handle* options; 10 secs, 20 secs, and 30 secs. Be careful though, because these long handles could actually add length to the overall trimmed session, depending on the session layout.
- * All new *MessageAnd Dialog Box* routines that allow complete control over placement on dual screen monitors. The *Options Menu* now contains a new option called *Message/Dialog Box Position* which opens up a submenu of possible choices. The choices are: *Top Left*, *Top Center*, *Top Right*, *Center Left*, *Center*, *Center Right*, *Bottom Left*, *Bottom Center*, *Bottom Right* and *Follow Mouse*. This choice can be saved with the preferences.
- * A new option on the *Options Menu* called *Monitor Configuration* opens up a sub menu with choices for *Single*, *Dual Left To Right* or *Dual Top To Bottom* monitor configurations. This setting allows the program to keep popup messages and dialogs that follow mouse positions from splitting across the gap between monitors. This choice can be saved with the preferences.
- * Enhancements to the FX API now pass Tempo Map changes along to the plug-ins and also allow the plug-ins complete access to the Tempo Map storage data.

- * The VST implementation has been enhanced to handle VST Virtual Instruments and SoftSynths. A new option on the VST Window will offer a selection for a Midi-In Port if the plug-in is a synth. You will need to get your playback latency low in order to take advantage of these instruments. A setting around 4 buffers at 256 size works pretty well. Make sure to have a blank region of audio farther down the track the synth is patched into so Studio will not think the track is empty. Start MT playback and then the synth will be playable. To record, assign the synth track simultaneously to another output track. Set that as a straight device out. Patch a physical cable from the device out to the device in and then select that device on a track to record. Use SRP-REC and you can play the synth and record to any track.
- * A new option has been added to the File Menu called *Save And Re-Path Session To New Drive/Folder*. This option allows you to browse for a new drive/folder and save a new edl, forcing all edl and video files to re-path to this location. This option will close the current session when complete.
- * A new *Time Display Mode Toggle* option has been activated. By Right-Clicking in the Time Display zone, the time mode will toggle between the current and the last selected mode. For example, select Tempo mode, then select Smpte Mode. Now Right-Clicking in the Time Display zone will toggle between the two modes. The keyboard shortcut for this feature is the Ctrl-T-Key.
- * The *User Input Smpte Dialog* and *User Input Control Track Dialog* now accept the Escape-Key for canceling the input and the Return-Key for accepting the input.
- * The Mixer *Mono Switch* has been enhanced with a popup menu of mono choices. Left-Clicking on the word "Mono" next to the button pops up an options menu. The choices are: *L Plus R (-6db)*; *L Plus R*; *L Only*; *R Only*; *L Minus R (-6db)*; *L Minus R*.
- * A new option has been added to the MultiTrack Menu called *MouseWheel*. This option offers two choices: *HotTrack Inc / Dec* and *Zoom In / Out*. This option saves with the preferences. This controls the behavior of the mousewheel in the MultiTrack view. In either case, the Shift-MouseWheel will always control the HotTrack in a page inc / dec mode.
- * A new option has been added to the *Library View File Menu* called *Add Selected To MultiTrack HotTrack*. This option adds the selected Library entries to the current HotTrack, back to back, one behind the other. The shortcut key is the Ctrl-Insert-Key.
- * The Regions View has been enhanced. When inserting Regions onto the MultiTrack from the Regions View, using the Ctrl-Key with the *Insert* button or *Insert-Key*, now inserts the entries to the current HotTrack, back to back, one behind the other. If a marked area has been defined, then each entry will be looped repeatedly on the track for the length of the marked area. Multiple selected Regions will be looped onto successive tracks.
- * When using the Grid and Ctrl-Inserting a region in a marked area, the length of the region is now automatically truncated to the grid length forcing all entries to add properly on the next grid point regardless of whether the region length is too long to fit. This operation tracks tempo map changes. This makes building a click track to tempo an extremely simple procedure.
- * Two new shortcut keys have been added to the MultiTrack View to assist in doing minor fader adjustments.

The Greater-Than-Key (used by itself without the Shift) will increment the hottrack fader .25db. The Less-Than-Key (used by itself without the Shift) will decrement the hottrack fader .25db.

- * A new feature has been added when writing offline automation. Creating a marked area on the MultiTrack and adjusting any console control that writes automation will now adjust the marked range to the new setting and reset the old setting at the end of the range. This feature writes the new value at the Mark Begin position and then writes the original value at the Mark End position automatically.
- * A new channel *Store/Recall* menu has been added to the mixer views. Alt-Right-Clicking in any of the mixer views pops up the *Store/Recall* menu. The options allow you to store all or part of the mixer channel settings to one of four possible memory cell locations. You can then recall those settings from any of the memory cells to the same or a different mixer channel. This allows instant copying of channel settings, including Fx plug-ins with all the plug-in parameters between channels. If the recall channel is one of a selected group of channels, the recall operation will duplicate the settings and Fx plug-ins on all selected channels. You can also use this for a quick compare between different settings on a single channel. For example, storing different eq settings to different cells, and then recalling them for an instant compare between settings. These functions work during playback also for realtime comparisons.
- * Narrowed the active mixer view edge value which controls side scrolling and stepping of the Zoom and Full Mixer views when Left-Clicking near the channel edge. This should help eliminate non-intentional side scrolls.
- * A new option has been added to the MultiTrack *Track Properties* menu called *Disable Track*. Selecting this option disables an input track and removes it from the multitrack load. Pressing the Ctrl-Key when activating this option operates on all tracks. Activating this option on one of a selected group of tracks operates on the selected group. This option saves with the session edl file.
- * A new option has been added to the *MultiTrack* menu called *Dbl-Clk Transfer To SoundFile View*. This option allows you to de-activate the MultiTrack *Dbl-Clk Entry Transfer To SoundFile View* feature. The T-Key option is still available to perform the same function with the keyboard. This option saves with the preferences.

Bug Fixes

- * Adding Fx Plug-ins when the Hot Track is beyond the last audio track is now correctly trapped.
- * Trapped extra loop cycles that could slow down MultiTrack Entry drawing under certain conditions.
- * Fixed Left-Arrow and Right-Arrow *Select Mode* nudging.
- * Fixed AuxSend Master Pans.
- * Ctrl-Delete in the Regions View now correctly pulls all following MT-Entries forward.
- * The Echo Delay plug-in now correctly processes delay-time automation changes.
- * The Play-Mark and Play-Loop buttons now correctly update on screen redraws requiring preset conditions.

- * Wide Mixer View selecting and clearing channels in the Client-Y area is now fixed.
- * Label displays are now correctly updated in the Client-Y areas of all mixer windows when entering a new label.
- * Fixed BuildMix lockup that could occur with certain plug-ins that withheld massive amounts of data during processing.
- * Fixed lockups that could occur with multiple rapid undo's and redo's.
- * Group interactions between the Wide Mixer and Zoom Mixer have been corrected.
- * Recording filenames created from MultiTrack or Region labels are now correctly parsed for illegal characters. The label will be left intact, but the filename created will replace illegal characters with a '-'. This fixes problems which displayed a warning message about trouble opening or creating files during a record operation.
- * Trapped for empty key tracks when using dynamics keying across multitracks to fix possible program crashes.
- * SoundFile Edits in the SoundFile View now correctly free and reload any Ram cached connected Regions and update the MultiTrack display.
- * The Control Track View now correctly chases the Control Track Entries during playback.
- * The Control Track View now correctly updates when editing entries with the tracks re-ordered.
- * *HotTrack Solo Mode* now works correctly even when tracks are re-ordered with the Video or Control Track at the top, or when the navigation hot chan link is turned off. Fixed broken links to different navigation functions.
- * Fixed MT Cursor display updating when overlapping windows in the MT while SoundFile View is actively playing.
- * Recording thru a stereo channel while the channel is assigned for delayed monitoring now correctly adjusts the recorded region length for the delay. This helps eliminate region end boundaries that could otherwise go past the end of the file length.
- * Fixed the crash that could occur under certain conditions when slipping a marked area of multiple tracks by using the Shift-Left-Hold within a marked area.
- * Adding a new Locate Point now sets the EDL modified flag.
- * Fixed interaction problem between Live Input Chan recording and SRP playback. This problem could cause glitched record buffers with bursts of random noise.

- * Adjusted routines that control the time display during playback to stop the time display numbers from being corrupted under certain conditions when switching workspace views rapidly.
- * Fixed crash that could occur when adding multiple Library entries to the MultiTrack at one time under certain memory caching conditions.
- * Fixed the *Vst Load* and *Save Presets* options.

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- * Trapped crashes that could occur on certain systems with certain FireWire device drivers whenever an attempt was made to access a FW device that was not powered up or plugged in.
- * Fixed EditMode playback using the Render Realtime to FireWire option.
- * Fixed EditMode Render Realtime to FireWire when the VideoTrack contains no video entries.
- * Fixed possible lockups that could occur under certain conditions when stopping an EditMode playback.

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Version 2.5

Enhancements

- * A new option has been added to the *TimeLine* menu called *Snap-To-Grid*. This option toggles the snap-to-grid on or off. Pressing the G-Key operates this option also. When this option is on, two vertical bars will surround the current time mode display text under the time display area, and the cursor will snap to invisible grid points based on the grid size set for each timeline mode. Moving entries will also snap along the grid points forcing the entries to start on an exact grid point. This option saves with the preferences. The *Ctrl-Insert* option of the *Regions* view (which adds the selected Region repeatedly along a marked area) will also respond to the *Snap-To-Grid* mode making it easy to build a click track from a small Region of data.
- * A new option has been added to the *TimeLine* menu called *Auto Snap-To-Grid In Select Mode*. When this option is active, the snap-to-grid will be turned on every time Select Mode is entered, and turned off when Select Mode is exited. If the grid was active prior to entering Select Mode, it will be left undisturbed. This option saves with the preferences.
- * A new option has been added to the *TimeLine* menu called *Grid Settings*. This option opens a sub menu allowing you to set grid sizes for each of the TimeLine Modes. These sizes save with the preferences. Left-Clicking in the current time mode display area (when *Snap-To-Grid* is active and the two vertical bars are displayed) links directly to the associated TimeLine *Grid Settings* option, without the need to go through the menus.
- * A new option has been added to the *TimeLine* menu called *TempoMap Settings*. This option opens a sub menu allowing you to change tempo parameter values at specific positions along the timeline, thus creating a tempomap. This tempomap saves with the Edl session files. When not in *Select Mode*, you may use the

Shift-Right-Arrow-Key or Shift-Left-Arrow-Key to jump to the next or previous tempomap entry.

Set Tempo At Position sets a new tempo from this position forward to the end of the timeline or the next tempomap entry. This entry is allowed only on beat boundaries.

Set Tempo To Marked Measures At Position sets a new tempo calculated from a marked area from this position forward to the end of the timeline or the next tempomap entry. This entry is allowed only on beat boundaries.

Set Time Signature At Position sets a new time signature from this position forward to the end of the timeline or the next tempomap entry. This entry is allowed only on measure boundaries.

Set New Measure Count At Position sets a new measure count from this position forward to the end of the timeline or the next tempomap entry. This entry is allowed only on measure boundaries. You may use this to re-start the measure count at any value from 1 up to the current measure count. To clear a previously changed measure count, simply enter the original sequential measure count value, which is the default value displayed in the dialog.

Clear TempoMap Entry At Position clears the current tempomap entry. This entry is allowed only on an exact tempomap entry boundary.

Clear Entire TempoMap clears the entire tempomap.

- * The MultiTrack cursor position will now update to the final stop position even when the zoom level is less than 256 where the cursor does not scroll during playback. This behavior can be overridden by the Auto-Rewind button. This behavior now remains consistent with the behavior when the screen is zoomed out beyond the 256 ratio.
- * The Regions View and Library View Title Bar region count now follows the currently selected group.

Bug Fixes

- * FX automation is now correctly identified and handled with regard to View Filtered fades, clears, moves, stretches and other manipulation.
- * SRP punch-in on the fly now corrects and adjusts for possible negative region start values. This eliminates corrupted region entries from being created during SRP punch-in..
- * The SoundFile Sample Info view is now properly initialized whenever first displayed, even if no soundfile is currently open.
- * Marked Time, Relative Time and SoundFile View time now correctly ignore Smppte Start Offsets in Smppte Display Mode.
- * Edl files are now properly closed and released when all connected regions are deleted from the edl. This allows file manipulation outside the SAW environment while SAW and the edl are still open.
- * The Dynamics Key selection menu now correctly ignores track re-ordering and selects the proper channel

for keying.

- * Fixed program crash that would occur when opening 34 or more record meters at once.
- * Fixed lockup that could occur when using the auto-punch-in record feature and the *Enter-Key* was pressed to exit the recording before the auto-punch-out position was reached.
- * Closing a SoundFile in SoundFile View now breaks any active MultiTrack transfer cursor link.
- * MultiTrack Cursor positioning initiated from an Fx plug-in now correctly chases mixer automation.
- * Fixed the *SRP* or *Rec* buttons during a live punch-in/out on the fly from interfering with trigger or chase sync operations.
- * The *Add SF* options on the *File* menu no longer force the SoundFile View open when building missing peak data files.
- * Fixed Lockup that could occur when *Right-Click* stopping SoundFile playback at the precise moment that the SoundFile runs out of data and stops automatically.

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Version 2.4

Enhancements

- * New Hi-Speed, Hi-Resolution Eq algorithm replaces the console Eq, Plug-In Eq and Dynamics Keying Eq filters. The new algorithm effectively removes all low end dc offset and noise artifacts due to math truncation and filter band interactions. It actually uses less CPU load at the same time it doubles the internal math decimal places. It also extends the Bandwidth from .1 to 3 octaves. Take a close listen and enjoy the new smoothness and transparency. Note that edls using the earlier console Eq or Studio Eq plug-in will need to be re-adjusted because the sound changes might be noticeable due to the more accurate algorithm. The most noticeable change will be in the old Q or Bandwidth setting. The old Eq affected a much wider range of frequencies at the same bandwidth setting. The new algorithm uses a 6 db drop for the bandwidth cutoff points, while the old algorithm used an approximate 3 db bandwidth cutoff point. I have included a routine which detects the older edls and attempts to calculate new settings to maintain as close to the original curve as possible. The routine also attempts to alter all Eq automation changes. In most cases this should work fine, but you should listen closely and make any further adjustments you need. I think you will agree that the inconvenience of re-adjusting older edls will be offset by the higher accuracy and extended functionality of the new algorithm.

Note: Due to the Edl version changes, version 2.4 Edls are not backward compatible to earlier versions. Keep copies of Edls if you plan on stepping back to earlier program versions.

- * BuildMix To Current HotTrack operations now stamp the mix position in the new Region. This allows the use of the *Shift-Insert* operation at a later time to insert the Region at its original synced position.

- * Added a small enhancement to the FX API. The **FX_BEGIN_PROCESS** function now passes the current index position in the patch listbox to the plug-ins in the *FX_Handler_Int_Param1* variable.

Bug Fixes

- * More work done to trap and eliminate internal resource and API function parameter errors.
- * The Standard MultiMedia Driver Menu item is now correctly checked on startup and on a new preference load if needed.
- * More work done to improve stability of Hot-Patching plugins during playback.
- * Reverse MT-Entries now correctly adjust when offset starting positions, softedges, vari-speed and samplerate conversion elements are active.
- * BuildMix To Current HotTrack operations with samplerate conversion are now correctly marked and placed in the MultiTrack.
- * Shift-Delete operations on *Marked Area* MT-Entires now work correctly on first entries and entries starting at zero.
- * Corrected SoftEdge values listed on MT-Entry popup menu for roundoff error on very small values.
- * Fixed SoftEdges which take place on tracks which contain SampleRate Conversion or Vari-Pitch operations.
- * Increased SampleRate Conversion resolution to improve roundoff error with all rate conversion calculations.
- * Eliminated multiple device BuildMix operations from interfering with each other when SampleRate Conversion was active.
- * Adjusted Dynamics Gain popup menu to fit screen at 1024 resolution.
- * The SoundFile Sample Info view is now properly initialized when first displayed.
- * *SoundFile Record Mode* now correctly restores focus to the *SoundFile View* after closing the *Record Setup* window.
- * Tempo settings now correctly save with the session edl files.
- * Fixed MultiTrack waveform display slowdown when zoomed in close which was caused by disk access changes in version 2.3.
- * More work done to eliminate the MultiTrack display bug that causes track information display corruption under certain random conditions.
- * Library Views can now correctly open SAWStudio or SAWStudioLite Edl versions in either program.

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Version 2.3

Enhancements

- * The *Options Menu* has been altered to now include an option called *Driver Model*. This option opens a sub menu displaying a choice of driver models. The *Standard MultiMedia* choice is the common Windows MultiMedia driver mode. The *Hi Performance MultiMedia* choice eliminates certain redundant driver function calls during playback/record operations for slightly higher performance possibilities. Not all soundcards support this mode. The *DWave Protocol* is an original driver model offering much more direct communication between the soundcard and the application for very high performance possibilities. This mode is currently still under development.
- * A new option has been added to the *Options Menu* called *Auto Monitor Switching Protocol*. This option pops up a sub menu which allows support for various proprietary monitor switching protocols to be selected. This option allows SAWStudio to control automatic punch-in monitor switching for various soundcards that have implemented a proprietary method of such control. The only current choices are *Off* and the *RME ZLM Protocol* for use with RME soundcards. This option saves with the preferences file.
- * When Browsing for missing files, the Browse dialog now displays the full path of the missing file in the titlebar to help you with your search.
- * Improved Disk Thread routines for more than double sustained playback performance.
- * Improved Disk Thread routines for a significant increase in recording performance on slower drives.
- * Improved Playback PreLoad routines for faster preload times.
- * Low level engine re-design now allows SoftEdge entry overlap to be any length. SoftEdge crossfades can be 30 secs if desired, still implemented in realtime with no background stem files built. Note that for the length of each overlap, the track count increases by one... so be careful of overrunning your machines track load capabilities.
- * The Automation Gallery current folder can now be saved with the preferences.
- * Sync Trigger now detects and ignores backwards timecode which is sometimes generated by certain decks while rewinding.
- * Repeated Double-Click transfers from the MultiTrack to the SoundFile window will no longer require an extra click to make the MultiTrack window the active window.
- * The *Auto Zero Cross* option has been added to the *Options Menu*. When activated, marking and splitting functions will perform an automatic zero cross detection. This will snap the cursor to the nearest zero cross point before performing the operation. This option saves with the preferences.
- * The MultiTrack *Play Mark* and *Play Loop* buttons have been activated. The end position and loop are not sample accurate or seamless due to the numerous MultiTrack routing and effects processing options that

might be engaged at any time.

- * Moving and snapping marked automation entries now responds to selected tracks, performing the operation across multiple tracks at once.
- * Stretching marked automation entries now responds to selected tracks, performing the operation across multiple tracks at once.
- * Deleting marked automation entries now responds to selected tracks, performing the operation across multiple tracks at once.
- * Copying a marked area to another layer now responds to the Ctrl-Key for all tracks, or selected tracks, performing the operation across multiple tracks at once. Vari-Pitch and SoftEdge data are now also copied.
- * The Copy Marked Area To Layer option has been enhanced. New Regions will now only be created for Regions which do not completely fit within the marked area. If there is no marked area, the entire track is copied, using the current Regions unmodified.
- * A new menu option has been added to the popup *Select Mode Properties* menu called *Include Orphan Automation*. When this option is activated, automation entries that are not attached (within the boundaries of a Region entry) that lie between the first and last selected entries will be included in the operation.
- * Brightened the hi-light at MT-Entry boundaries for easier visual of entry cuts.
- * Two new options have been activated on the popup *Track Properties Menu* called *Slip Track To Cursor Position On Current Layer (Marked Area)* and *Slip Track To Cursor Position On All Layers (Marked Area)*. These options will slip a marked range of track forward or backward to the MT cursor position. Pressing the Ctrl-Key when activating these options will affect all tracks. Or, if the current hottrack is also a selected track, all selected tracks will be affected. These options adjust all entries and automation within the marked range. If the marked range begins or ends within a region boundary, the region will be split at the range begin or end position depending on the direction of the slip. The first option works only on the current layer, the second option does all layers.
- * When in normal display mode, a marked range on the MultiTrack may now be grabbed and slipped forward or backward. All entries and automation within the range will be affected. If the current hottrack is also a selected track, all selected tracks will be affected. If the marked range begins or ends within a region boundary, the region will be split at the range begin or end position depending on the direction of the slip.
- * When auditioning regions from the *Regions View* or *Library Views*, the region length is now displayed in the *Marked Time* readout display in the *MultiTrack* window.
- * Deleting multiple Regions in the Regions View is now quite improved in performance.
- * Vari-Speed and Vari-Pitch adjustments made during playback will now keep the value entry window onscreen so you may continue making fine adjustments without having to popup the properties menu again and again.

- * Two new options have been added to the popup *MT-Entry Properties Menu* called *Sweep Vari-Speed To Destination Value* and *Sweep Vari-Pitch To Destination Value*. Both of these options will cause a smooth sweep of the Vari-Speed/Pitch factor by splitting and adding regions within a marked area, each with a slightly incrementing or decrementing Vari-Speed/Pitch value. The marked area may not span the starting entry boundaries and you must be careful about expanding entries running into the next separated entry. If you do not achieve the desired results, simply use the undo option and try again with altered settings.
- * A new option has been added to the *File Menu* of the Library Views called *Add Selected To MultiTrack*. This adds the selected entries to the MultiTrack at the cursor position starting from the HotTrack and continuing in sequential order downward. The *Insert-Key* is the keyboard shortcut for this option.
- * The *Dynamics Key* control on the console now displays channel labels to make selecting the key channel easier.
- * Added new GeneralMidi Midi Control Template.
- * A few new options have been added to the popup *Track Properties Menu*. The *Remove Silence From Track (Or Marked Area)* options will strip silent sections of audio from solid tracks of data. The *Automatic* selection immediately splits and removes the silent regions, while the *Split/Mark* selection turns on *Select Mode* and selects (marks) the regions to be removed. You get to look at the details and when ready, simply press the *Delete-Key* to remove them. These options also respond to selected tracks and will perform the operation on all selected tracks at once. You may also mark an area on the MultiTrack to limit the range of the operation. These options use default settings for the Attack, Release and Threshold settings applied to the algorithm. These may be set and saved with the preferences. If you activate the *Gate* on any track, you may override the settings for that track by adjusting the *Gate* settings.
- * Added support for the Tempo settings in the FX API. This has now been updated to Version 1.1.
- * Two new options have been added to the *File Menu* called *Add SoundFile To MT* and *Add SoundFile As Region*. Both of these functions operate just like their counterparts without actually opening the file into the *SoundFile View*, thus keeping the *SoundFile View* from popping up on top.
- * The *View Menu* has been adjusted so each view has a unique key letter assignment. The views may be selected by pressing and releasing the *Alt-Key* and then pressing the *V-Key* to select the *View Menu*, then pressing the unique key value for the view of interest.
- * More stationary buttons have been enhanced with a momentary flash to signal their activation.
- * A new option has been added to the *Process/MixDown Menu* called *BuildMix To Fx Modules*. This option is similar to the other BuildMix options except that SAWStudio does not create any output files directly. It performs the mix and passes all data through the Fx modules allowing Fx modules to create their own special output data as files or as a CD burn.
- * The *Record Meters* will now scroll within a fixed window size. If the *Record Meter* window right edge expands to the max screen horizontal border as you add more record meters, the meters will offset within the existing window size. You may scroll the meters left or right to see meters that are not visible by pressing

the *Left-Arrow-Key* or *Right-Arrow-Key*. You may also *Left-Click* the mouse near the left or right edge of the *Record Meter* window to single step the meters or you may *Left-Hold* the mouse and push on the left or right edge of the *Record Meter* window to smooth scroll the meters continuously. You may also use the *Wheel Mouse* to scroll left or right. If an *F-Key* is saved with the *Record Meter* window active and positioned, whenever that *F-Key* is used, the *Record Meter* window will position and lock to that max size. As you add more meters than will fit in the preset window size, the offset action will occur.

- * Any Record Template loaded or created within a session will now save with the Session EDL file. When you later open that session the Record Template settings will also be loaded.
- * Activating a record track in the MultiTrack on an untitled session will now popup the *Save As* dialog prompting you for a folder and session name before recording linked files.
- * Two new options now appear on the *Options Menu* called *Activate TCP/IP Rcv Mode (Host)* and *TCP/IP Port*. These options are the beginnings of an exciting new TCP/IP remote network and internet hosting capability being introduced into the SAWStudio engine. This is still under development and in the near future will allow third party companies complete control of the SAWStudio interface from a remote interface of their own design. These options currently only have meaning to other developers working with this new control protocol along with Bob. These options should be left off, as they offer no benefits to the user at the current time.

Bug Fixes

- * 2.3 Maintenance Fix to eliminate crash when building a mix file using plug-ins that alter buffer sizes, like time compression.
- * 2.3 Maintenance Fix to eliminate crash when console dynamics are keyed from an empty track.
- * The Record SRP punch-out routines have now been modified to eliminate system hangs when the session is heavily loaded. This should correct all lockup problems with auto-punch recordings as well as manual SRP punch-in/out recordings. Once a punch-out is in progress, the cursor will change to the hourglass mode and all subsequent transport controls will be blocked until all new entries have been dropped to the MultiTrack. This can take a few seconds on loaded sessions. Wait till the cursor turns back into the arrow mode before proceeding with other commands.
- * The Record routines have been re-designed to handle heavier loads without glitching or losing data on route to disk.
- * Record Buffer Overruns are now properly trapped and will shutdown recording.
- * Menu command access through the keyboard is now correctly locked out during playback/record.
- * The *Save And Trim Session* function is now trapped for zero length files and regions.
- * Copying multiple MT-Entries to an earlier TimeLine position will now correctly include the last MT-Entry on the track, if it is also part of the selected group.

- * *Double-Click* transfers from the MultiTrack to the SoundFile window are now correctly trapped when *Select Mode* is active.
- * *Chase Trigger Mode* is trapped from re-starting when a MultiTrack playback overrun message is onscreen. When the message times out, or is cancelled by a mouse click, the chase trigger mode is re-engaged. This prevents lockups on overloaded chase trigger sessions.
- * Adjusted code to correct an FX corrupted data warning when using a default mix template with pre-patched plug-ins, after new plug-ins have been added or old plug-ins removed from the system.
- * Missing Pst Patch Plug-Ins will now correctly display in the Pst FX Patch window.
- * Missing FRes Patch Plug-Ins will now correctly display in the FRes FX Patch window.
- * Eliminated trapped mouse zones that lie under overlapping windows. Now active controls will stay latched even as they move beneath overlapping windows and release the latched mouse when the mouse button is released.
- * Keyboard focus now returns to MultiTrack after popping up the Record Setup Window.
- * Certain Vari-Pitch keyboard value entries which would cause incorrect calculations are now corrected.
- * Removing and clearing entries from the Final Res patch window is now handled correctly when the current Hot Track is not an output track.
- * Copying a marked area to another layer will no longer complain about zero length regions when the marked end position resides on an exact region boundary.
- * EQ Freq changes made during playback now correctly max at the nyquist frequency for the current session samplerate.
- * The *Dynamics Key* control on the console is now correctly trapped during playback. This setting must be set when in a stopped condition.
- * Fixed Mutes On Panasonic WR-DA7 Midi Control Template.
- * FinalRes patches that alter the buffer size are now correctly trapped in playback and buildmix operations.
- * Fixed overspill waveform drawing in SoundFile View Sample Edit Mode.
- * Adjusted *Alt-FKey* programming to accept the workspace even without a visible active window.
- * Adjusted *FKey* restore to properly restore the *Main* window settings that were saved with the *FKey*.
- * Routine modifications to enhance region altering function performance while *Region Memory Caching* is active.

- * *Max Track Length* calculations now correctly include trailing *SoftEdges*.
- * *Region Memory Caching* now correctly adds the proper amount of extra data needed to support the *SoftEdge* settings and file rate and Vari-pitch factor for the connected MT-Entries. If more than one entry is linked to a common Region with different *SoftEdge* and VP Factor settings, the Region will not be cached.
- * Inserting entries to the MultiTrack now correctly updates the insert cursor position if it is altered for any reason during the insert operation.
- * Selecting a view from the *View Menu*, now correctly changes that view to the active window.
- * *Save And Trim Session* has been modified to correctly handle *SoftEdges* on MT-Entries of different Vari-Pitch Factors and SampleRates.
- * Fixed Live Input Channel init routines that could have caused faulty device assignments when multiple live input channels were active.
- * *User Input* special dialog boxes now correctly disable all windows to trap all input except for the dialog box itself.
- * The *Exploded Mixer View* Dynamics Gain Reduction Meter now correctly resets when playback is stopped.
- * The *Exploded Mixer View* now correctly tracks the height of the *Main Window*.
- * Corrected Return and Output Track re-assignment of FX Patches when reading SAWStudio sessions into SAWStudioLite.
- * Re-designed the Shutdown routines to eliminate random crashes on program exit in Windows 2000.

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Version 2.2

Enhancements

- * *Vari-Speed/Pitch Setting and Clearing* has been enhanced. You will be prompted if there is a conflict because of expanding entry size. You may choose to adjust all following entries to accommodate the expanded size or force the setting to adjust to accommodate the largest expansion it can without moving following entries. Butt-Spliced Entries will be treated as a single group unit. This applies to *Select Mode* multi-entry operations also, and the prompt answer will apply to all entry conflicts that follow.
- * The *MT-Entry Properties Menu* has a new option add called *Reverse Audio*. This option reverses the audio of the MT-Entry when active. This option responds to multi-selected entries in *Select Mode* also.
- * The *File Menu* session section has been re-organized to add a new option called *Blend Session*. This option allows you to blend an existing session with the current session in two different ways.

If you offset the MultiTrack cursor to a section of blank tracks underneath the current session tracks, you can blend the existing session information in sync with the current session information. The session being blended will offset each element to the new track and cursor position. Global data for each track being blended will be applied as long as the underlying track was empty at the time of the blend.

If you offset the cursor position to the end of the current session, new data being blended will be offset in position, but global data for the track will not be applied, since there are already global settings for tracks that already have data in front of the newly blended data. In this case, the new global mixer default data will be written in as automation entries at the start of the blended data.

Automation data will be blended into its new proper location.

Currently, FX Plug-in data will not be blended.

- * Enhanced disk handling routines to eliminate cache slowdowns on repeated play areas.
- * Adjusted Region Memory Caching to leave at least 128 megs of physical ram for the operating system.
- * Re-designed the MTLoad calculation to use the High Performance micro-second timers. This allows for greater accuracy and also eliminates the 59% readout problem on the duals.
- * The MultiTrack I, R and O zones have been enhanced. Alt-Left-Clicking in one of these zones jumps you back to the last selected hottrack for that section. This allows you to jump to the output section, for example, and then immediately jump back to the last hottrack you were working on in the input or return section.
- * The Exploded Mixer View is now transparent to F-Key changes. This view will remain onscreen in its current position as an always ontop window.

Bug Fixes

- * Expanded Variable Storage arrays to handle driver callbacks with less chance of overruns on heavy CPU loads.
- * Fixed multi-channel record problem on dual processors which would cause random dropped buffers.
- * Trapped auto SRP punch-in from causing zero length regions when the SRP is started past the marked area punch-out position.
- * Scaling the SoundFile View waveform display with the *Up/Down* buttons during *SoundFile Fixed Position Scroll Mode* now correctly redraws the fixed playback position marker.
- * *HotTrack Solo Mode* now works correctly with the wheel mouse and the Right-Hold-Scroll operations.
- * Record FileNames are now checked for duplicates and the duplicate names are appended with an '_a' to help differentiate them during the recording process. You should still avoid using duplicate track labels and try to keep this from happening.

- * TimeStamped MT-Entries should now behave correctly when dragging and copying them on the MultiTrack.
- * Multiple Recording meters of different formats will now display correctly if lower numbered tracks are disarmed.
- * Trapped Divide By Zero error that could occur with the Video Viewer immediately after opening a file that could not be decompressed.
- * SAWStudioLite versions now correctly display Record and BuildMix Setup Windows, allowing proper access to each filename.
- * Any attempted FX Buffer Size Change in a Final Res FX Patch now stops the MultiTrack and displays a warning message.
- * Clicking on an Exploded View channel FX Patch zone, now pops up the patch window so that it is never covered up by the channel strip itself.
- * FX Plug-in automation is now properly initialized during a BuildMix operation.
- * SampleRate Conversion range has been increased and trapped to warn in cases of out of range parameters. 11025 to 48000 range conversions will now work correctly.

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Version 2.1

Enhancements

- * *Mtc Sync Trigger* and *Chase Trigger* modes are now active. The operation of the trigger modes is interwoven into the interface in a very transparent manner. A new *Sync Light* display has been added to the top of the MultiTrack under the *Solo Light*. This light flashes yellow whenever a trigger mode is activated and waiting for sync. The *Mark/Relative Time* display changes to a *Waiting For Sync* display and shows the incoming timecode reading during the lock-up phase. When the trigger point is reached, the *Sync Light* turns green.

Activating the *Mtc Trigger Sync Mode* from the *Smpte/Midi* menu sets the system ready to read incoming timecode for triggered MultiTrack playback or recording. This mode only looks for external sync when you first press the *SpaceBar-Key* or *Return-Key*. The *Sync Light* flashes yellow notifying you that the system is waiting for external timecode to start the MultiTrack operation. You may press the *SpaceBar-Key* or *Return-Key* again to cancel the waiting mode. You may also override the waiting by *Right-Clicking* or pressing any play or record buttons to immediately begin the operation.

The system reads the incoming timecode and immediately jumps the MultiTrack position to the proper cue point, then adjusts the position by the *Trigger Advance* and *Latency Adjust* values, pre-loads the data and starts playback when the timecode reaches the cue position.

This is a one time operation. When the MultiTrack is stopped, you are free to edit and play without the external sync until you initiate the waiting sequence again with the SpaceBar-Key or Return-Key.

Activating the *Mtc Chase Trigger* Mode, allows for more unattended operation. The *Waiting For Sync* mode is started automatically, with no intervention from the user, and when the MultiTrack is stopped, the *Waiting For Sync* mode is automatically activated again. You are still free to edit and play without the external sync even while the system is waiting.

In either mode, when record meters are open, the system automatically activates a record operation and punches in at the cue point. Depending on the *Sync Trigger Record = SRP* option, SRP mode is engaged. If you have a marked area, SRP is always engaged and an auto punch-in and out will occur in that section.

You may also Left-Click on the *Sync Light* to temporarily toggle the Trigger Mode on and off. The system remembers the mode it was in when it toggles off and resets the same mode when it toggles on.

- * A new option has been added to the *Smpte/Midi* menu under the *Smpte /Mtc Sync* sub-menu called *Mtc Trigger Sync Advance*. This option determines how many seconds of pre-load time is added when determining the trigger point. On fast systems with smaller session loads, you can set this value to 2 or 3 seconds. On dense sessions which take a few seconds to pre-load before playback, you should set this value to 4-6 seconds. If this value is set too low, the session will miss the trigger point and simply drop out of lock and stop the operation. This value saves with the preferences.
- * A new option has been added to the *Smpte/Midi* menu under the *Smpte /Mtc Sync* sub-menu called *Mtc Trigger Sync Delay Frame Count*. This option determines how many frames are thrown away when the first sync signals arrive. This allows you to adjust for skewing problems as a tape deck with sync code comes up to speed or a sync generator that creates initial noise or spikes when first started, before settling down to a steady code output. This value saves with the preferences.
- * A new option has been added to the *Smpte/Midi* menu under the *Smpte /Mtc Sync* sub-menu called *Mtc Trigger Sync Latency Adjust*. This option allows you to compensate for Midi latency by offsetting the trigger point by a certain number of subframes. This allows you to adjust for inherent system delays and gain a more accurate sync. This value saves with the preferences.
- * A new option has been added to the *Smpte/Midi* menu under the *Smpte /Mtc Sync* sub-menu called *Sync Trigger Auto Format Detect*. This option activates a format auto detection function when sync is first received. If this option is on, whenever a new format is detected in the incoming timecode, the format is changed to match and the MultiTrack is re-cued. If this option is off, you may preset the format and it will not be changed even when timecode is received in a different format. This can be useful for receiving 29.97 MTC code for instance, because there is no provision in the MTC protocol to define this format. This value saves with the preferences.
- * A new option has been added to the *Smpte/Midi* menu under the *Smpte /Mtc Sync* sub-menu called *Sync Trigger Auto Stop Detect*. This option activates the auto stop detection function. If this option is on, whenever incoming sync trigger timecode is lost for any reason, the program dis-engages any active MultiTrack operation. This value saves with the preferences.
- * A new option has been added to the *Smpte/Midi* menu under the *Smpte /Mtc Sync* sub-menu called *Sync*

Trigger Record = SRP. This option initiates an SRP record operation whenever active record meters are present and a trigger sync function is engaged. This value saves with the preferences.

- * The *Sync Light* is also used for sync generation operations. Whenever a generate sync option is activated, the *Sync Light* will turn green during any operation that is generating sync.
- * When using the *Shift-Key* to remove a selection from the recent file list, the list will automatically clear and popup again, ready for the next removal or selection operation.
- * Inserting multiple entries directly to the MultiTrack from a Library View window is now enhanced for speed. Waveforms are drawn at once instead of looped over and over one at a time.
- * The file header check routine has been enhanced to accept most Broadcast Wave files. These can now be opened and appended properly in the **SAWStudio** environment.
- * Every Region created by recording directly into the MultiTrack, now maintains its original time-stamped position. Inserting the Region later by the *Insert To MT* zone or the use of the *Insert-Key*, works as normal and inserts to the current cursor position. Using the *Shift-Key* when inserting with either method, forces the insert at the original time-stamped position. All time-stamped Regions display the '@' symbol after the name.
- * SoundFile View playback will now respond to live re-positioning of the playback cursor. *Left-Clicking* to a new playback position within the file will immediately jump the playback cursor and continue playback at the new location.
- * Marked Area begin and end boundaries may now be altered live during loop playback in the SoundFile View.
- * A new option has been added to the *Options Menu* called *SoundFile Fixed Position Scroll Mode*. When this mode is active, SoundFile View playback will center the playback position and live scroll the entire waveform display past this fixed play position. If you zoom in below zoom level 8, the display will resemble a realtime oscilloscope.
- * A new *Solo Mode* has been added to the interface. *Left-Clicking* on the *Solo Light* at the top of the MultiTrack turns on *Hot Track Solo Mode*. The light turns solid red and the current Hot Track is soloed. Changing to another Hot Track automatically causes the solo to follow, always keeping the Hot Track soloed. The solo buttons are locked out when this mode is active. You may change Hot Tracks from the MultiTrack, Full View or Zoom View mixers. *Left-Clicking* on the *Solo Light* again, turns this mode off.
- * A new option has been added to the *Edit Menu* called *Recover EDL Undo*. This option allows you to see all undo files (.u01 - .u99) for each session in a folder. You may select any one of them trying to recover a session that was somehow lost or corrupted.
- * The SoundFile View Sample Info display window has been adjusted for smoother display updates with less screen flashing.
- * Midi Control and Midi Sync ports have been enhanced to perform full merging and splitting of sync and

control data. Both ports may now be the same, although keeping them separate is still highly recommended.

- * SoundFile View Top Client Area buttons now flash when clicked for positive feedback to the user that the button was activated.
- * Added the Ctrl-OK option to skip all similar warnings to the first File Repath dialog that is displayed when a file can not be found in its edl referenced position.
- * Vari-Speed/Pitch Clearing has been enhanced. You will be prompted if there is a conflict because of expanding entry size. You may choose to adjust all following entries to accommodate the expanded size or bypass the operation. This applies to Select Mode multi-entry operations also, and the prompt answer will apply to all entry conflicts that follow.
- * A new feature has been added to all mixer views. You may now click into any of the meter displays to popup a *Meter Options Menu*. The *Clear Current Meter Peaks* option will clear the current meter's peak limit displays. The *Clear All Meter Peaks* will clear all meter's peak limit displays.

Bug Fixes

- * Modified code in the MME driver callback threads to block multi-processor callbacks from creating an out of sequence pattern for multi-in/out driver channels. This should eliminate glitching on multi-channel operation with multi-processor machines.
- * Final Res patches are now sending the correct Bytes Per Sample data to the plug-ins.
- * The Peak Data File refresh routine has been corrected to eliminate problems with files of certain exact boundary byte counts.
- * The Goto Smpte Position function now works correctly at 24 and 25 frame formats.
- * Fixed a problem with moving entries on high number tracks in EDL's with tracks re-ordered in certain configurations.
- * Multiple FX automation entries at the same location will no longer cancel similar entries out.
- * The MultiTrack cursor now correctly re-draws after moving the MultiTrack window.
- * Multiple clicks on the Solo Mode Light when no solos are active are now properly trapped and will not foul up the solo mode display.
- * Copying an MT Marked Area to another layer, now correctly bypasses warning messages about underlying entries on the destination layer.
- * Copying Selected Entries to another layer from all tracks (using the *Ctrl-Key*), now correctly bypasses warning messages for tracks not containing selected entries.
- * Corrected access rights problem when using the Directory of Wav Files option in a Library window to reference a CD-ROM drive.

- * Canceling a multiple selection Import from a Library window now correctly exits the loop.
- * Regions added to a full Regions View listbox window will now correctly scroll the listbox to make the added Region visible in the list.
- * Midi Hardware Fader Controllers will now properly bank switch and chase the mixer hot channel even when tracks are re-ordered out of sequence.
- * Undo files now retain the Mark Begin and End positions.
- * Scrolling the SoundFile View left or right when zoomed to the maximum sample edit mode level now works correctly.
- * Mixer Meter peak limit displays will now remain accurate, even when changing hot channels.

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Version 2.0

Enhancements

- * Pre-Release status has been removed.
- * This marks the first release version of SAWStudioLite.
- * *ZeroCross* detection has now been added. Pressing the *Z-Key* in an active SoundFile in the SoundFile View or with the MultiTrack Cursor over an MT-Entry in the MultiTrack View now finds the nearest *ZeroCross* lowest energy point within 800 samples on either side of the cursor. In the MultiTrack, the *ZeroCross* point is found by searching the resultant file contents after applying any SampleRate coinversion or Vari-Pitch factors first.
- * The Save And Trim Session command has now been enhanced to automatically delete pre-existing trim files when you re-do a trim session. This allows you to make multiple tries on the same trim and not continue to increase the size of the new trim files.
- * FX Patch windows Track Label areas have now been extended to the window right boundary, allowing displays of long label names without being cut off.
- * SampleRate, Dither and Resolution changes will now set the session modified flag which causes prompting to save the session when closing the current session or exiting the program.
- * The Pan processing now responds to slope values, creating smooth pan automation with no clicks or pops.
- * A new menu option has been added to the *Automation* menu called *Set Default Pan Slope*. This option sets the default slope value used for pan controls. This value saves with the preferences.

- * When *Automation* mode is active, pressing the *Backspace-Key* will snap a marked group of automation entries to the current cursor position. Pressing the *Ctrl-Backspace-Key* will snap a copy of a group of marked automation entries to the current cursor position. Pressing the *Left-Arrow-Key* or the *Right-Arrow-Key* will nudge a marked group of automation entries in the respective direction.
- * *Right-Clicking* on the *MultiTrack* or *SoundFile View* **Zoom+** or **Zoom-** buttons, now pops up a zoom selection menu allowing you to go directly to any specific zoom level referenced as Samples per Pixel.
- * Using the keyboard entry option of the *Enter Smpte Value* dialog box now automatically advances to the next input selection after typing 2 characters without the need to press the *Tab-Key*.
- * New key modifications for consistency have been included. The *Full*, *Zoom* and *Wide Mixer* views now respond to the *Shift-Ctrl-Left-Arrow-Key* and *Shift-Ctrl-Right-Arrow-Key* to jump to the previous and next console sections. The *Tab-Key* is no longer used for this operation. The *Wide Mixer* view now also responds to the *Ctrl-Left-Arrow-Key* and *Ctrl-Right-Arrow-Key* to jump to the first and last console channel.
- * The *Full*, *Zoom* and *Wide Mixer* views now respond to the *Tab-Key*, *Shift-Tab-Key*, *Ctrl-Tab-Key* and *Shift-Ctrl-Tab-Key* exactly the same as the *MultiTrack* view, controlling jumps to MT-Entry boundaries and Automation Entry positions.

Bug Fixes

- * All mixer views now correctly update when entering MultiTrack labels.
- * Using Auto SRP punch-in with the record file open in the SoundFile View will no longer cause an exception error.
- * Transferring the MultiTrack Cursor Position to and from the SoundFile View now correctly accounts for SampleRate and VariPitch factors.
- * The Vst PlugIn Window track number now displays correctly.
- * All scrolling modes are now correctly cleared if MT playback stops due to a CPU overload.
- * Traps have been put into the Memory Region and PeakData caching routines to bypass zero length entries.
- * Splitting Vari-Pitched MultiTrack Entries at certain positions no longer displays entry too large warning messages.
- * Fx Automation data is now corrected for re-ordered or missing Fx modules.
- * Adding multiple entries to the MultiTrack at one time will no longer interfere with the Region Memory Caching option.
- * Fixed Record Filename adjustments after saving a session with a new name.
- * The Enter Label box now correctly remains inside the right screen edge boundary.

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Version 1.9 Pre-Release

Enhancements

- * *Alternate F-Keys* are now active. You may create alternate F-Keys by pressing *Alt-Shift-FunctionKey* and recall these alternate F-Keys by pressing *Alt-FunctionKey*. Two new options are available on the *File* menu under the *F-Key File* option called *Open Alternate* and *Save Alternate*. These options open an *F-Key File* to the alternate F-Keys and save an *F-Key File* from the alternate F-Keys.
- * You may now add an effect to any of the FX windows without causing the effect to automatically open its setup window by *Shift-Left-Clicking* on the FX window *Add* button.
- * The *Exploded Mixer View* window is now an ON-TOP window which will not get covered up by other windows. It is also responsive to channel marking by *Left-Clicking* and *Alt-Left-Clicking* and clearing by *Right-Clicking* in the *ClientY* area, similar to the *Zoom Mixer View*.
- * You may now enter channel labels by *Shift-Left-Clicking* in any of the mixer view label display zones. *Ctrl-Left-Clicking* in the mixer label zones will continue advancing automatically to the next channel until you cancel the operation by closing the edit box with a *Left-Click* or by pressing the *Esc-Key*.
- * When opening an EDL that has trouble finding its files, you will now be prompted to try auto re-pathing to the drive the EDL resides on, or go directly to a Browse window to pick an alternative search path yourself. If your EDL resides on the drive where the soundfiles are, simply clicking OK will automatically find and re-path all the files. If the files cannot be found on the EDL drive, you will be prompted again and given a second chance at the Browse window to manually setup a new search path. You will be prompted again for each missing file and be allowed to enter up to 10 alternate paths.
- * Library Windows are now automatically cleared when closing a session. Opening a new session will fill Library Windows with any links that were originally saved with the session or clear the Library Windows if the session contained no Library links.

Bug Fixes

- * Deleting automation entries on Return and Output tracks is now fixed.
- * Mute automation initialization on output tracks is now fixed.
- * SRP recording under heavy load should no longer glitch or spot noise into the recorded files.
- * Added code to eliminate potential PeakData file corruption under heavy SRP loaded session overdubs.
- * Added code to trap bad punch in offset calculations before they migrate to the added region entry boundaries. This should help in stopping random corrupt MultiTrack entries after an SRP punch-in.

- * Added code to stop playback buffer overruns on heavy loaded SRP sessions when the punch-in file is opened and therefore being updated in the MultiTrack during the SRP punch-out operation.
- * Default Mix Templates now correctly update out of order channel modules when closing a session.
- * The *Solo Mode Flashing Light* status now correctly follows undo and session changes.
- * The Echo module now correctly initializes Cross Mode, if set, when opening a session.
- * The *Exploded Mixer View* now correctly responds to currently marked group channels.
- * The MultiTrack Label Edit box now correctly displays the proper Input, Rtn, or output track in the titlebar.
- * Modified shutdown routines to handle proper close down of complex sessions before exiting the program.
- * Fixed EDL Open problem for edls with all six Library Windows active.
- * Full size softedges now behave correctly at any playback start position.
- * Closing a soundfile now correctly clears the SoundFile View titlebar.

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Version 1.8 Pre-Release

Enhancements

- * Aux Send Controls now follow the *Chan Fader Taper* curves.
- * Midi Control Fader Packs now follow the *Chan Fader Taper* curves.
- * A new option under the *Mixer Navigation Links* menu called *Mixer Views To Hardware Controller*, now links the current mixer *HotChan* to a hardware controller. Every time the *HotChan* is changed, the controller will follow aligning the first fader to the *HotChan*. This option saves with the preferences.
- * Enhanced the *MotorMix Midi Control Template* to give access to all 6 aux sends using the rotary knob adjusters coupled with the rotary selector knob.
- * The *XY Pan* has been enhanced with individual node point control. You may now click on each of the 8 node surround points on any channel, and the node will toggle between active and inactive. The node turns red when it is inactive. When a node is inactive, audio from that *XY Pan* will not feed that particular output bus. You may use this feature to keep music out of the center channel for instance. These nodes may be automated, allowing you to toggle them during automated playback.
- * The Mixer has been enhanced with the addition of *Solo* and *Mute* buttons on the *Output Tracks*. The solo routines have been modified to allow the mute switches to be free from the solo operation, thereby allowing

mute automation to still function correctly even on soloed tracks. The output and input solos may be operated together, and output group solos may even be nested with individual channels still contained within the group. The routines keep an internal updated count on each channel that is soloed, no matter where from. Whenever any solo is activated, a new flashing *Solo Mode Light* in the top right corner of the MultiTrack client control area will keep you informed. You may Left-Click on this flashing light to automatically clear all active solo switches.

- * New Timed message display notices for Saving and SnapShooting sessions, and for Buffer Overrun and Underrun conditions.
- * New *Offset* features have been added to the *MT-Entry Properties* menu. When an entry offset has been set, using this entry as the *Key Entry* during *Select Mode* move and copy operations and pressing the Alt-Backspace-Key, causes the offset position to be the reference for the current destination cursor position. The *Set Offset To MT Mark-Beg Position* option allows you to set an internal offset reference for the entry. Set the *Mark Beg* position to the desired offset position within the entry boundaries and select this option. The *Jump To Offset Position* option jumps the cursor to the current offset position. The *Clear Offset Position* option clears the current offset. The offsets save with each entry in the edl files.
- * Improved the speed of adding multiple selected Regions to the MultiTrack in normal or loop mode.
- * MultiTrack selected tracks and Mixer selected channels are now cleared when closing the current or opening a new session.
- * Enhanced the SRP/Rec operation to automatically force the playback loop, even if all tracks are empty. This now allows for Smpte Gen recording even on an empty MultiTrack. The first record meter track assignment is used, and it must be assigned to a valid output path.
- * The Spacebar-Key and Enter-Key now function in all Mixer Views the same as the MultiTrack View to control playback and record operations.
- * The *Automation F-Key* and *Shift-F-Key* have been enhanced. These keys create a fade to next automation entry, and normally default to the channel fader. If, however, you pick any other control type and activate the *View Filter* to display only that type, these functions will create a smooth transition on that control type also.
- * The Zero Locate point now creates an undo file and saves with your session files.
- * The *Control Track* has been activated. This track at the bottom of the MultiTrack can be used to hold *Control* entries that can influence the MultiTrack play and record functions and also send Midi commands to external devices. Control entries are displayed as vertical colored lines in the Control Track. You may move entries by enclosing them in a marked area and then Left-Dragging to a new location. Tapping the Right-Mouse-Button while dragging sets the copy flag which then copies the entries at the new location. You may also clear entries within a marked area by pressing the Delete-Key.

The *Control Track View* window is available from the *View* menu or by Left-Clicking in the *Control Track* label area. The *Control Track* window allows access to the various *Control Entry Types* and also displays the current entries in listbox format in sequential fashion as they are positioned along the timeline.

The *Control Track* window will chase the current cursor position in the MultiTrack. Left-Clicking an entry snaps the MultiTrack cursor position to that entry's position. Left-Double-Clicking an entry in the listbox opens up the entry edit dialog box. You may select single or multiple entries in the listbox and press the Delete-Key to delete the selected entries.

Left-Clicking in the *Built-In Cmds* zone will pop up a menu of command types. Selecting a command then pops up a dialog box with the various parameters applicable to that command type. You may change any of the parameters that are displayed in yellow text and Left-Click the *OK* zone to enter the command at the current *MultiTrack Cursor* position. Command parameter string formats are displayed for each command type under the parameter string zone.

The current command types are as follows:

Stop Playback

This command causes playback to stop at this position.

Stop Playback / PreLoad

This command causes playback to stop at this position and then does an immediate MultiTrack preload and waits for your command to activate playback.

Stop Playback / Cue Next

This command causes playback to stop at this position and then cues to the next *Cue Location* position.

Stop Playback / Cue Next / PreLoad

This command causes playback to stop at this position and then cues to the next *Cue Location* position and does an immediate MultiTrack preload and waits for your command to activate playback.

Cue Location

This command sets the current MultiTrack Cursor position as a cue point.

Midi Program Change

This command sends a Midi Program Change command to external devices.

Midi Note On

This command sends a Midi Note On command to external devices.

Midi Note Off

This command sends a Midi Note Off command to external devices.

Midi Note On / Off

This command sends a Midi Note On followed by an immediate Midi Note Off command to external devices.

Midi Hex String

This command sends a Midi string of Hex numbers to external devices.

Midi Dec String

This command sends a Midi string of Decimal numbers to external devices.

Bug Fixes

- * Changes made to the thread shutdown routines to adjust for differences in Win ME and Win 2K. This should eliminate lockups and other random fault errors when exiting the program.
- * The new scan EDL routine has been modified to handle bad file handles correctly.
- * Re-designed Mixer View display routines to eliminate many repeated zone clipping function calls to Windows responsible for random screen display updating problems.
- * More work done to control *Open* and *Save Dialog Boxes*. They should now open near where the mouse pointer is, be modal and lockout other commands and windows while active, and not allow duplicate boxes to open simultaneously.
- * The MT Track Properties menu is now correctly trapped from popping up on the Video and Control tracks.
- * In the MT, the Ctrl-Up-Arrow and Ctrl-Down-Arrow now jump to the top track and bottom track, regardless of track order.
- * Fixed crashes caused by the XYPan on Return Tracks.
- * Fixed XYPan Center from trashing the output data when set to zero db.
- * When zooming in past the peakdata display during playback the cursor will now correctly display in a frozen position until you zoom back out into the peakdata information.
- * The MT cursor no longer disappears when changing HotTracks with RecRdy engaged.
- * Writing an offline automation entry now properly flags the mixer readouts to update the chase correctly when moving to an earlier position without ever moving to a later position first.
- * Bringing files into the current session from a Library window will now check for peakdata files and refresh them if needed.
- * Meter display routines have been corrected to keep stray meter images from occurring when switching channels during playback.
- * Eq Hi / Lo Cut switch parameter data for multiple Eq patches now saves and restores correctly.
- * The LTC Smpte generated signal is now properly delayed to match the MultiTrack playback when live input channels are active.
- * Opening a new session now correctly clears the Full Mixer and Zoom Mixer Titlebar reference to any previously opened Mix Template files.

- * Using the File Update command on an untitled session now correctly transfers and updates the new session name entered in the file dialog box.
- * The PeakData Memory caching routine has been modified to detect bad regions before trying to load them, helping to eliminate crashes.
- * Soloed channels will no longer interfere with automation of mute switches.
- * Src Load display values now adjust for the end of disk data and will properly display a zero value from that point till the end of the session instead of the 99% value.
- * Mixer settings are now correctly updated on screen when playback starts or position is altered after making manual override changes in non-Auto Mode following previously written automation of the same control type.
- * When deleting overlapping automation entries using the *View Filter*, all entries within the marked range will now be correctly deleted.
- * Automation moves and copies across different module types are now correctly trapped.

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Version 1.7 Pre-Release

Enhancements

- * An exciting new feature has been added to the *Mixer* menu called *Chan Fader Taper*. This option allows you to select from different fader control tapers that affect how the fader reacts in its sweet spot.

Standard Log is the new default and it is a true log taper reacting very much like a long throw physical console fader in its movement to db ratio. There is a comfortable working range in the center of the fader to make finer adjustments to db level changes.

Expanded Log expands the sweet spot around the zero db position to allow for smaller increments in db changes with longer movements of the fader in both directions.

Condensed Log condenses the sweet spot closer towards a more even or linear reaction near the zero db position.

Linear is the original **SAWStudio** default, which creates an even scaling of motion to db changes.

Custom is a special selection that allows you to alter the way the fader reacts in 5 actual scaling zones. When selecting this option, an exploded view of channel 1 is displayed and the main fader will show three nodes along the right side of the fader zone. These three nodes control the +6db, -12db and -36db points starting from the top down. The +6db node controls the plus section of the fader above the zero db position,

providing two separate scaling areas above and below the node. The other two nodes control the reaction of the fader below the zero db position, providing three more scaling zones. By grabbing these nodes and sliding them you can control the actual stretching or shrinking of the various zones and determine how the main sweet spot center area of the fader reacts to movement. You may also select one of the preset tapers while this special edit mode is active which will allow you to start with them as a basis for building your own taper. The custom taper is updated when you close this special exploded view window.

Selecting any one of these options and then saving your default preferences will save your selected fader taper and use it as the default way the faders react each time you open the program.

- * The *Full Mixer View Link Zones* now display patch bars in the *Eq*, *Dyn* and *Fx* zones. The *Dyn* zone displays *Gate Switch* info in the left side of the zone and *Compressor Switch* info in the right side of the zone. The *Fx* zone displays *Pre Patch* info in the left side of the zone, *Post Patch* info in the right side of the zone and *FRes Patch* info in the center of the zone..
- * The *Dynamics Gate* has been enhanced with a *Rvrs* button. This button causes the gate to operate in reverse. When the signal is greater than the threshold, the gate closes down to the floor setting and when the signal falls below the threshold, the gate opens back up to full. This can be used to create a simple and powerful ducking processor by assigning the key to another track which will then control when this track lowers its level. Set the floor value to the desired ducked level and adjust the attack, release and threshold to control the overall timing. You can also use this mode with self keying to create a new sounding limiting effect. When the signal rises above the threshold on loud transients, the gate will lower the level to the fixed floor level. This sounds different than limiting or compression, because the transient is actually dropped below the level of the rest of the average signal.
- * The *Open Session* function has been enhanced with automatic Network and local drive file path re-routing. If a file is not found at the original stored path, the EDL file network drive or local drive info is substituted and the file open is attempted again. If that fails, then the Browse option will be displayed. This new enhancement allows for a session to be easily moved to a new drive, with no user interaction required to find the file paths, as long as the EDL is also located on the new drive. Saving the opened session will now save the new substituted paths. This will also work fine for access across the network, because the network naming convention will still operate fine from the local drive the session is stored on.
- * *Record Template* information is now saved with the *Mix Template* files, thereby maintaining a complete matched set of mix and track layout data with preset record input assignment data.
- * The *Record Input Assignment* has been enhanced. Every track will now remember its last input assignment and automatically begin with that assignment when record is activated again on that track. You may override the assignment at any time by clicking on the *Input Zone* on the record meter or by engaging record with the *Ctrl-Key* to recall the current active *Record Template*. If another meter is already opened with the same assignment, then the track will auto assign the next higher available input.

Closing the *Record Window* of all meters will no longer affect the current active *Record Template*. You must close the window while pressing the *Ctrl-Key* to override the current or create a new template.

Pressing the *Shift-Key* when activating a *Record* button will clear all previously saved track record input assignments and engage the auto-assign mode assigning the next higher available input.

- * The speed has been enhanced for the *Import EditList File* function.
- * The *Automation F-Key Fade* operations have been enhanced and added to the *Automation* menu. The *F-Key* will fade down or up to the next automation change or create a fade stretched within a marked area. The *Shift-F-Key* will always force a fade up to the next automation change or create a fade up stretched within a marked area. If no start or end automation change is present, the defaults will be set to mute for the start and zero db for the end.
- * The MultiTrack Change to Active Window is now altered when Automation Mode is active and will process functions without the need for a second click. This can make it quicker to adjust a mixer control and then position the MT cursor, then adjust a mixer control again and position the MT cursor again etc.
- * The FX API has been enhanced to allow Plug-Ins to request a Key Buffer directly from any channel and to control the Solo status of the virtual console for use with a Key Listen switch.
- * Session File parameter info is now scanned for changes and automatically updated when opening a session. This allows for file format swaps within projects without playback problems.
- * The channel Aux Sends have been enhanced. *Ctrl-Left-Clicking* in the *Up/Dwn Arrow Zones* now increments and decrements the fader value by 1db instead of .25db.
- * A new option has been added to the *Mixer* menu under *Navigation Links* called the *Full And Zoom Mixer Views To Wide Mixer View*. This option breaks or activates the link between the Full and Zoom mixer views and the Wide mixer view.
- * The *Tempo TimeLine Display Mode* has been activated.
- * Four new menu options have been added to the *TimeLine* menu under the *Tempo Settings* option.

Set Tempo allows you to set a default session tempo.

Set Tempo To Marked Measures allows you to mark any number of measures from the waveform display and automatically calculate a reference default session tempo from the length of the marked area.

Set Time Signature allows you to set a default session time signature.

Set Tick Resolution allows you to set a default session tick beat resolution.

Bug Fixes

- * *Open* and *Save Dialog Boxes* are now forced on top and will no longer disappear behind other windows when the mouse or *F-Keys* are pressed.
- * Fixed Final Res Fx Patches from sending the wrong position information to the FX plug-ins.
- * Console Dynamics Gain Reduction Meter has been fixed for more accurate tracking.

- * Fixed the Dynamics keying routine to properly detect the end of the key track and clear the key buffer from that point on.
- * Fixed the Dynamics Key Listen switch from possibly toggling into an opposite solo condition when solo's are toggled OFF separate from the Key Listen switch.
- * Added more traps to stop crashes when accessing bad EDL files.
- * The EDL *Modify Flag* is now correctly set when using the *Fade To Next Automation Entry* operation.
- * The channel main faders in the *Wide View* have been fixed to include the Ctrl-Left-Click in the *Up/Dwn Arrow Zones* to increment and decrement the fader value by 1db instead of .25db.
- * Fixed incorrect MT-Entry updates when updating a Region from the *SoundFile View* that is used in the MT with possible Vari-Pitch/Speed or SampleRate conversion.
- * Trapped condition where no active track is assigned to a valid output.
- * Copying selected MT-Entries to another layer now correctly copies SoftEdges also.
- * Negative VariPitch values now enter correctly.
- * Remaining *Record Meters* will now correctly continue to track their respective inputs even after other meters are individually closed.
- * *Setup* windows no longer display a *Close* button in the top right corner of the title bar, thereby forcing you thru the *Cancel* or *Ok* zone to close the window.
- * Fixed minor screen display problem with the *MultiTrack Master* track image under ceratin conditions of MutliTrack screen scrolling.
- * Fixed the crash caused by Left-Clicking on Track Number 1 and then Alt-Left-Clicking to select track 1 again.
- * Fixed the F-Key redraw problem when MultiTrack is exactly the same size between multiple F-Keys.

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Version 1.6 Pre-Release

Enhancements

- * MultiTrack *Playback PreLoad* is now active. Pressing either the main or NumPad Enter-Key will now preload the MultiTrack and wait for the next Enter-Key press or Left-Click **OK** in the message box to start

playback. Pressing the Esc-Key or Left-Clicking **Cancel** will cancel the playback.

- * The *Regions View* has been enhanced with a new feature to link a Region to all *MT Entries* that reference it. In the *Regions View* press the Tab-Key to immediately link and snap the MultiTrack to the first use of the Region. Pressing the Tab-Key again will snap to the next use of the Region... and so on. If you select a different Region and press the Tab-Key, the incrementing usage count will reset to the first entry usage for the new Region. Pressing the Shift-Tab-Key on any Region will reset the usage count to the first entry usage.
- * The *Wide Mixer View* navigation has been enhanced. Pressing the Tab-Key now jumps the view to the next mixer section. Pressing the Shift-Tab-Key jumps the view to the previous mixer section. Pressing the Home-Key jumps the view to the first chan. Pressing the End-Key jumps the view to the last chan.
- * A new *Window View* has been added called the *Automation Gallery View*. This view allows you to create and use *Automation Preset Files*. Left-Clicking the *File* button in this window opens a popup menu of options. The *Open Directory Of Automation Files* allows you to pick a folder containing **.aut** files. The filenames then list in the Gallery listbox. Left-Clicking on a selection displays a thumbnail view of the automation stored within the file. Left-Double-Clicking a selection or Left-Clicking the *Insert To MT* button, inserts the automation into the MultiTrack at the MultiTrack Cursor position. Pressing the Insert-Key does the same thing. If you mark an area of the MultiTrack, the automation is inserted and sized to fit within that area. *Automation Mode* must be active for the insert to function.

The *Save Automation File* option allows you to name and save a marked area of automation from the MultiTrack, for later retrieval.

The *Clear Gallery Window* clears the listbox and the thumbnail display.

The Gallery window can be included in F-Key workspace views.

- * Double-Click or T-Key linking an MT-Entry into the *SoundFile View* now sets the *SoundFile View* Device Out to match the assignment routing of the entry's track. This follows subgroup output routing, thereby allowing you to hear the *SoundFile View* raw playback through the same device that the MT playback routes the entry to.
- * A new item has been added to the *Mixer Menu* called *Full Mixer Label Position*. This option allows you to place the Full Mixer vertical labels at the *Top*, *Center* or *Bottom* position within the label area. This option saves with the preferences.
- * The channel main faders have been enhanced. Ctrl-Left-Clicking in the *Up/Dwn Arrow Zones* now increments and decrements the fader value by 1db instead of .25db.
- * *MouseWheel* support has been added. In the MultiTrack, the *Wheel* will scroll the view up and down changing HotTracks by one increment per *Wheel* click. Pressing the Shift-Key at the same time will change the view one page at a time. In the Mixer Views, the *Wheel* will scroll the view left and right changing HotChannels by one increment per *Wheel* click. Pressing the Shift-Key at the same time will change the view one page at a time.
- * The *I*, *R* and *O Jump Zones* at the bottom of the MultiTrack have been enhanced. Shift-Left-Clicking in one

of these zones will jump to the next track in sequence of that section and keep incrementing until the end of the section is reached, at which time the jump will start at the beginning of the section again. These jumps will follow the physical sequential order regardless of how the tracks are re-arranged.

- * Modified F-Key View SAWStudio_1280x1024.fky. Check it out for a look at some new suggested enhanced workspaces.

Bug Fixes

- * The FX Patch Windows now correctly chase the Wide Mixer View.
- * Fixed displays of random meter bitmaps that could occur when switching mixer views under certain conditions.
- * Adjusted FilePath Setup edit boxes to be non-sizable.
- * Fixed PeakData File corruption during recording under certain special conditions.
- * Fixed Fault that could occur when using *Record Retake All* before ever engaging record.
- * The Record Meter Window is now properly closed down when Closing the session or Opening a new session.
- * Fixed Smpte Generation problem which was causing bitmap headers to be overwritten. Random crashes would then occur on screen redraws.
- * Sync generation now works correctly in Record Mode. When any Sync Generate mode is active, pressing the Record button now also latches the SRP button automatically to activate the sync generation mechanism.
- * Fixed the *Wide View* window from forcing itself to the left monitor when doing an *F-Key* restore on a dual monitor setup.
- * Fixed input edit window from displaying left-over message display prompts that are not part of the current data input.
- * Modified the Save EDL Undo routine to notify user of trouble with the default EDL Undo path and to stop giving focus to the MultiTrack at the end of its operation.
- * Fixed program setup edit boxes so they will allow proper editing in Win2000.

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Version 1.5 Pre-Release

Enhancements

- * The MultiTrack Engine has been optimized for dual processor performance boosts. A new option has been added to the *Options Menu* called *Force Single CPU*. This option allows you to force the engine back to one CPU if desired for testing and comparing or to allow other apps full use of the second processor. This option will be grayed out and disabled on single CPU machines.
- * The *Smpte/Mtc Sync* options have been added to the *Smpte/Midi* menu. You may use these options to generate *Smpte LTC* timecode to any selected stereo audio device out. The device is selected in the *Sync Device Setup* option in the *Options* menu. The software generated timecode is extremely precise and maintains exact sync with the audio device clock. The Output Chan controls for the specific device out allow you to route and adjust the timecode data level. The Output Chan will be automatically labeled and assigned as a device out. This option will also output a *Smpte Stripe* file as part of the *BuildMix* operation.

You may also choose to generate *MTC Midi Timecode* through any selected MIDI out port. The port is also selected in the *Sync Device Setup* option in the *Options* menu. The software generated MTC code can then be routed back to a MIDI In port on the same computer or to another computer or hardware sequencer to lock MIDI Sequencer playback to the MultiTrack playback. *Smpte LTC* and *MTC Timecode* can be generated separately or at the same time. These settings save with individual EDL files.

If *Smpte Generate* is active, the MultiTrack start position will be adjusted to fall on the next exact frame boundary when playback or a *BuildMix* operation is started. If *Mtc Generate* is active, the MultiTrack start position will be adjusted to fall on the next exact Even boundary.

- * The *Set Smpte/Mtc Start Offset* option has been added to the *Smpte/Midi* menu. This option allows you to set the *Smpte/Mtc Start Offset* from a *Smpte Input Dialog Box*. The dialog box allows you to adjust the individual *Smpte* parameters in a number of ways.

Left-Clicking in the right side of a parameter display zone increments or decrements the value by one depending on whether the mouse position is above or below the vertical center of the zone.

Left-Holding the mouse in the right side of a parameter display zone changes the cursor to a +/- shape that then allows you to increment or decrement the value by pushing or pulling the mouse position from vertical center. The further from center that you push or pull, the faster the movement. Right-Clicking during this operation will reset the value to zero.

Left-Clicking in the left upper portion of a parameter display zone pops up a menu list of all possible values. The default value is bolded and the current value has a checkmark displayed next to it.

Left-Clicking in the left lower portion of a parameter display zone latches keyboard entry mode. You may now type the values and press the Tab-Key to jump to the next zone. Pressing the Return-Key accepts the values and exists the dialog. Pressing the Escape-Key cancels any adjustments made and exits the dialog.

Each parameter zone has a *Lock* zone above it and Left-Clicking these zones toggles the zone between locked and unlocked mode. When a zone is locked, the value is displayed with gray text and the zone is no longer adjustable.

There is also a *Default To Keyboard* button that can be latched so that each time the dialog is opened, you

are automatically set to keyboard mode and can begin typing immediately.

Left-Clicking the *Close* zone in the upper right corner of the dialog will cancel any changes made and exit the dialog.

- * While in Smpte Mode you may Left-Click in the *Time Display Readout* in the *MultiTrack Top Client* area to popup the *Input Smpte Dialog Box*. Entering a Smpte position will jump the MultiTrack cursor to that position when the dialog is closed without canceling.
- * The Dither options are now active.
- * All Split MT-Entries functions across multiple tracks have now been enhanced for faster operation.
- * All MultiTrack Delete functions that pull following entries forward now update the MT-Cursor position to the start of the deleted entries position.
- * All Meter options now save with the preferences.
- * A change was made to the use of the Shift-End-Key when selecting entries in *Select Mode*. Pressing the Shift-End-Key will now select all entries from the last selected entry (or first entry) to the end of the set of butt-spliced entries on the current hottrack, instead of selecting all entries forward and backward to the end of the track.
- * A change was made to the use of the Shift-Home-Key when selecting entries in *Select Mode*. Pressing the Shift-Home-Key will now select all entries from the last selected entry to the beginning of the previous set of butt-spliced entries on the current hottrack, instead of selecting all entries forward and backward to the end of the track.
- * Adding a Plug-In to any of the Fx Patch windows will now automatically open the Plug-In for adjustment.
- * The *Add To MT* zone in the Regions View has been changed to *Insert To MT* to reflect the keystroke connected to it.
- * A new feature has been added to the *Insert To MT* operation. When using the *Insert To MT* button in the *Regions View* or using the Insert-Key in the *MultiTrack View* to add a Region or group of Regions, you now have the option of adding automatic multiple copies of the Regions to form a repeating loop. By pressing the Ctrl-Key when activating the insert operation, the Regions will be repeated down the length of a *Marked MT Area*.
- * The = Key can be used to center the cursor in both the MultiTrack and SoundFile views.
- * *Midi-Control Template* options have been moved from the *Smpte/Midi* menu to the *File* menu.
- * The Shift-PgUp-Key in the *SoundFile View* will now scale the waveform up. The Shift-Ctrl-PgUp-Key will scale the waveform to max. The Shift-PgDn-Key will scale the waveform down. The Shift-Ctrl-PgDn-Key will reset the waveform to zero db.

- * The SoftEdge Limit has been extended, depending on the samplerate.
- * The Slope Values are now set in milliseconds rather than sample count.

Bug Fixes

- * Automation fades on Return Tracks will no longer cause Page Fault errors.
- * Fixed Vari-Pitch routine bug which could cause random page fault errors when toggling Offset Mode with Wave Display active.
- * Fixed Offset Button display to properly reflect Offset status when MT Window is updated.
- * Stopped Native Plug-Ins from stealing the window focus during arrow key track changes in the MultiTrack.
- * Shades saved in the default preference file will no longer be lost when re-saving the default preferences again.
- * MT-Entry Delete operations which pull following entries forward, now correctly adjust automation entries also.
- * All MessageBox prompts now display as TopMost windows so they will not be hidden behind other windows.
- * Adding MT-Entries that can cause conflicts under certain conditions are now correctly trapped.
- * Changing Shades will now correctly maintain the MultiTrack track height.
- * Using the Ctrl-Tab-Key and Ctrl-Shift-Tab-Key to move between automation entries has now been corrected to properly handle the first and last entry.
- * The Echo Plug-In now correctly re-syncs delay times when using the Right-Click option to match left and right settings during playback.
- * Fixed Error Trapping for disk write problems during recording.
- * Trapped MT play lockup bug when user interaction initiates a stop action at the same time as the end of the session initiates an auto stop action.
- * Moving or copying Automation Entries now correctly saves an undo.
- * Copying Automation Entries to the left on the same track, now correctly adjusts and blends with Automation Entries earlier on the timeline.
- * Fixed crash on playback problem when opening a session with a track containing data only on a layer other than layer 1 and that layer is the default starting layer.

- * Fixed layer display problem that caused the screen to not update properly when covering over the layer display area under certain conditions.
- * Restoring SAWStudio from the TaskBar now correctly restores all windows.
- * Out Assign Switches on grouped Output Channels now work correctly.
- * Modifications to keep menu bar from graying out in Win ME and Win2000.
- * Modifications to label font parameters for a clearer display in Win ME.
- * Modifications to keyboard edit boxes to force default selection of entire entry in Win ME.

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Version 1.4 Pre-Release

Enhancements

- * The *VST PlugIn* protocol is now active. The *VST PlugIns* list in Green in the FX Choices listbox. Only *VST PlugIns* that supply their own graphic interface will be listed and usable. A solution for generic *VST PlugIns* which depend on the host to supply the graphic interface can be found at <www.SpinAudio.com>. Their inexpensive program called *VST SkinRack* can wrap these plugins in numerous and nicely done graphic skins which will then list and function directly in *SAWStudio*.
- * The *FX Choices* listbox *Group* option has been activated. This option allows you to group your PlugIns into up to 30 named groups. As groups are created, they are automatically saved to disk for exact recall the next time the program is run.
- * The Delete Region(s) function in the Regions View is now hooked to the Undo.
- * The *FX Final Resolution* red patch is now active on the Output Tracks. This patch should be used only for special output type converters like a CD Burner PlugIn or File Converter (like MP3) PlugIn. It will not allow buffer size changes and it processes after the dither and soft-clipping routines. If it adds gain, you could clip the final output.
- * The virtual console Gate Threshold, Gate Floor and Compressor Threshold will now display reference lines in the MultiTrack Waveform display area and the SoundFile display area. In the MultiTrack, the MT Cursor must be over an active region and in the SoundFile view, an open soundfile must be present.
- * The FX API has been enhanced to pass the necessary window parameters to the plugins so they may display reference information in the MultiTrack and SoundFile waveform display areas.
- * The FX API now includes automation. PlugIns that follow the automation spec can be completely automated in exactly the same manner as the mixer view controls.
- * The DirectX and VST PlugIn windows now include an FX Bypass icon in the top left corner. This allows

each effect to be individually bypassed and this control is automated.

- * The Eq PlugIn has been enhanced to the new API automation spec. The interface now offers SAWStudio type parameter control, including the popup menu list of all settings. The frequencies for each band now include the entire range from 40 to 15k with many smaller increments in between. The bandwidth now ranges from 1/10 to 3 octaves. All parameters can be automated, except the reset switch.
- * The Echo PlugIn has been enhanced to the new API automation spec. The interface now offers SAWStudio type parameter control, including the popup menu list of all settings. Echo Delay Times will now display a reference line offset from the current cursor position when being adjusted in both the MultiTrack View and the SoundFile View. All parameters can be automated.
- * *Jump To Mark Beg* and *End* functions have been added to the MultiTrack. *Ctrl-Left-Arrow-Key* jumps to the mark beg position and *Ctrl-Right-Arrow-Key* jumps to the mark end position.
- * The *SpaceBar-Key* and *Return-Key* have been activated for controlling a recording operation. In the MultiTrack, when record meters are active, the *SpaceBar-Key* begins SRP operation, the *Return-Key* punches in and out, and the *SpaceBar-Key* stops the operation. Just pressing the *Return-Key* starts a straight record operation and the *SpaceBar-Key* stops the operation. In the SoundFile Window, the *Return-Key* starts recording and the *SpaceBar-Key* stops.
- * *Vari-Speed/Pitch* options have been added to the *MT-Entry Properties* menu. These allow individual MT-Entries to be played back at different speeds without affecting adjacent entries. Speeding up an entry will also pitch it up and shorten its length and vice versa. This is not a Time Compression or in-place Pitch Shifting algorithm. *Alt-Right-Clicking* or *Left-Right-Clicking* over an entry in the MultiTrack pops up the *MT-Entry Properties* menu. You may set a *Var-Speed* factor in hundreds of a percent, or a *Vari-Pitch* factor in hundreds of a semitone. You may also mark a small area with the *Mark-End* position at the desired MT-Entry end position and the factor will be calculated automatically. You may adjust the factor to half or twice the original entry length. When an entry has a vari-speed/pitch factor attached to it, the entry will display a small white mark in the top left corner of the displayed entry rectangle. You may also clear the factor with the *Clear Vari-Speed/Pitch* option.
- * The *Shades* option has been added to The *File Menu*. You may use this option to load different graphic libraries that we call *Shades*, which completely control how the **SAWStudio** interface looks. The first available is called Pewter which presents quite a striking and different look to the interface. You may use the *Reset Back To Original Vintage* option at any time to switch back to the original SAWStudio interface graphics. Whichever graphic library is onscreen can be saved with the Preferences as the default. More *Shades* will be available for download soon as a fun add-on to the **SAWStudio** environment.
- * More work was done on thread balancing to enhance the ability to resize windows while under heavy playback load.
- * The *Import EditList* option has been enhanced to maintain its own path and pass its imported filename to the *Save Session* options as a starting default name. *Mutes* are now recognized with the import.
- * Track Labels have been added to the FX Patches windows for easy identification of tracks.

- * Active *Library File* windows now save with the Session EDLs. When opening an EDL which contains active *Libraries*, the affected *Library* windows will be reset to their saved state. This will close out any current *Library* information in that same window. All *Library* windows that were not active in the EDL will be left in their current state.
- * A new option has been added to the *Regions Menu* called *Export Region(s) To SoundFile(s)*. This option allows you to export multiple selected *Regions* in the *Regions View* to individual multiple *SoundFiles*. You will be prompted for a destination folder and then asked whether or not to create *SAWStudio PeakData Files* also. The files created will be named the same as the *Region* names. (Illegal filename characters will be substituted with an underscore character). If any destination file already exists, you will be prompted to overwrite or cancel the operation. If you press the Ctrl-Key and answer *Ok*, all similar warnings will be skipped.
- * The *Wave Display Mode* now saves with the preferences.
- * The *EDL Undo Snapshot* feature (Star-Key on Numeric Keypad) now overrides the *Auto EDL Undo* option. This allows you to turn OFF *Auto EDL Undo* for quicker editing when sessions are loaded down with tracks and plugins, and still create an instant undo backup file anytime you wish by simply pressing the Star-Key on the numeric keypad.

Bug Fixes

- * Files with the Read-Only flag set will no longer cause page faults when opened into the *SoundFile View* or for normal EDL operation. They will now be trapped only for record or other write operations.
- * The *Session Modified Flag* is now correctly cleared when using the *Close Session* menu option.
- * Grabbing marked areas in the *MultiTrack* to drag and drop a copy elsewhere, now correctly adjusts the boundaries when the source entry is not at a zero start position.
- * *SoundFile SampleEdit* mode, broken in version 1.3, has now been corrected.
- * Opening an improper *Library EDL* format file no longer closes the current session by mistake.
- * Automating groups of switches at the same time will now correctly maintain channel separation and switch action throughout the entire group.
- * The *AVI Video Viewer* now correctly only links to movement within the *MultiTrack* window.
- * Entering *MultiTrack Labels* now correctly refreshes the *Return* and *Output Track Label* area.
- * *Aux Send 5* on the input modules now correctly increments and decrements when using the mouse in the up and dwn zones.

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Version 1.3 Pre-Release

Enhancements

- * Six *Library View* windows have been added to the program. These windows can be used to open sound effect EDL library files or other EDL files to link or import regions into the current session. These windows can be saved in the *F-Keys* for quick access to regions in other EDL files. Left-Clicking the *File* button in one of these windows will allow you to open or an EDL file Regions list or a directory of .wav files into the window. This will not disturb the current session. You may now audition and view these entries in the *SoundFile View* exactly like the normal regions in the *Regions View*. Left-Clicking the *Group* button will allow you to change groups if the EDL has been saved with active groups. Left-Clicking the *Link* button, will instantly add the selected entries from the *Library* window into the current session's *Regions View* window. These regions are now part of the current session, with their soundfile reference still looking at the original *Library* source soundfiles. Left-Clicking the *Import* button, will add the entries to the current session and copy the original source soundfile data to a new destination file that is now part of the current session. A *File Dialog* box allows you to accept the default import filename (which paths to the current session name) or change the name and path to one of your choosing. The base filename will be altered to reflect differences in file formats as the regions or .wav files are copied. A 500ms blank zone will be added in front of and after the new region copy to allow for adding soft-edge ramps later. The actual region boundaries are not altered and do not contain this separator blank zone. The *Import* function frees up the current session from any references to the original *Library* soundfiles. You may also select entries in the *Library* window and use the Insert-Key to link the entries directly into the MultiTrack starting at the current cursor position and HotTrack. Multiple selections are placed on successive tracks. *Drag and Drop* to the MultiTrack is also active by Alt-Left-Clicking an entry to grab it and then drag it to a position in the MultiTrack and Left-Clicking again to drop it.
- * The *Save And Trim Session* option has been added to the *File Menu*. This option is completely automatic allowing you to save the current session to the same or a different folder and trim out all areas of the soundfiles that are not used in the session. All unused regions are removed also. There are 5 choices for the *Region Handles* extra data settings. *Region Handles* save extra data on each side of the region boundaries allowing for later editing and extending of the boundaries. All softedge data extensions are also automatically calculated into the trim. When activating this option, a File Dialog Box prompts for the destination directory, and suggests the destination edl name (the current project name with '*_Trim*' appended to it). You can change to a new folder and/or change the edl name (I recommend leaving the name the same and just changing the folder). The original files are named the same with the '*_Trim*' appended. The process is completely automatic with no further prompting. You will see the progress as the Region's list hi-lites each region, one at a time, working its way down from top to the bottom of the list. You may cancel at anytime by pressing the Esc-Key. This will delete the newly created .edl file and all newly created .wav and .wpd files. Your original session is untouched during this process and remains completely intact.
- * The MultiTrack label dialog box now pops-up slightly below the current track, so that you may easily reference region displays on the track that you are entering a label for.
- * The *Wide Mixer View* may now be completely programmed into the *F-Key* views. It will hide and show according to your *F-Key* programming.
- * A new Src Load display in the MultiTrack displays the percentage load of the data gathering routine that reads and prepares the audio data from the disk or ram and places it into the MultiTrack source track buffers.

If this routine is keeping fully ahead of the MultiTrack and Soundcard demands, then the value will hover around 0%. If this routine is having difficulty keeping up, the value will rise and stop playback as it reaches 100%.

- * The Zoom Mixer label font is now using the default larger size font.
- * Pressing the *Add To MT* button or the *Insert-Key* in the *Regions View* now adds multiple selected regions to successive MultiTrack tracks, starting at the current HotTrack and incrementing from there for each additional region.
- * The Setting and Clearing SoftEdge options from the MT-Entry Properties menu are now responsive to selected entries in Select Mode.
- * The EDL Modified Flag is now set whenever mixer controls are adjusted. This will prompt you to save the current session whenever you exit or otherwise change sessions.
- * Pressing the *SpaceBar-Key* will now toggle playback in the MultiTrack, SoundFile, Regions and Library Windows.
- * *Right-Clicking* in the *Regions View* or *Library View* Top Client area will toggle playback on and off. This can be used to override the normal behaviour of the listbox area *Right-Click* restarting playback of the region.
- * The *Clear Unused Regions* option has been added to the *Regions Menu*. This option removes all regions not being used in the MultiTrack session on any layer. Referenced files are also cleared if no other region is linked to the same file.
- * The *Recent Session FileList* option has been added to the *File Menu*. This option displays a list of the last 30 accessed session files and complete paths, which can be used to quickly re-open commonly accessed session files. The list is ordered with the most recent session file on top. Pressing the *Shift-Key* when selecting an entry will remove that entry from the list.
- * The *Recent SoundFile FileList* option has been added to the *File Menu*. This option displays a list of the last 30 accessed soundfiles and complete paths, which can be used to quickly re-open commonly accessed soundfiles. The list is ordered with the most recent soundfile on top. Pressing the *Shift-Key* when selecting an entry will remove that entry from the list.
- * The *Record ReTake* option has been added to the *Record Remote* window. *Left-Clicking* the *Retake Zone* will popup a menu of 3 choices. The *ReTake To Last Record Position* option removes the last recorded regions and resets the file pointers for each active file to the last punch-in position. The *ReTake To Current MT Position* option splits the last recorded regions at the MT Cursor position and removes the right halves and rests the file pointers to this same position. The *ReTake All* option clears all regions associated with the active record files and resets the file pointers to the beginning of the file. Be careful, these options are all final and destructive.
- * The I, R, and O zones at the bottom of the MultiTrack will now force the Input, Return or Output section to the left edge of the mixer views, rather than just being visible.

- * Pressing the *Ctrl-Key* while *Left-Clicking* the SoundFile View *Mrk Beg* or *Mrk End* button marks the entire soundfile.

Bug Fixes

- * Solo switches pressed in *Automation* mode now work correctly. You may freely enter *Automation* mode with solos pressed or not and they will correctly solo the associated channels. Solo switches do not automate.
- * Changing SampleRate or Resolution while record meters are open, now correctly checks file headers and alters filenames if needed to match parameters. In SoundFile View recording, if you select an existing filename from the filename dialog box, SampleRate and Resolution parameters will be altered to match the existing header, and the filename will be kept as a starting filename for the next time SF record is activated.
- * Recording in the MultiTrack will now correctly update the SoundFile View File if it is the same as one of the MultiTrack recording files.
- * *Right Clicking* in an empty Regions View now correctly detects that the list is empty.
- * The Automation *Fade To Next Change* function now correctly creates an Undo Entry.
- * Default Mixer Templates saved with patched FX will no longer cause a page fault when running the program.
- * The *Clear Mixer To Default* function will now correctly clear FX patch windows if there is no Default Mix Template saved which includes FX patches.
- * Aux Send In Switch programming has been adjusted to trap sync issues and page fault problems when automated.
- * Wide Mixer refresh has been corrected to properly adjust window size to match track type when updating.
- * When activating FX Patch windows from Mixer views, they will now correctly follow the current mixer channels regardless of the status of the mixer view links to the MultiTrack.
- * Wide View tracking when mixer view links are inactive should not page fault anymore.

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Version 1.2 Pre-Release

Enhancements

- * SampleRate Conversion is now active in the BuildMix options.
- * Automatic SampleRate conversion in the MultiTrack is now active. Every region connected to a file which

is a different samplerate than the current session rate will be converted to the session rate, live, in realtime during playback. The MT-Entry will also be adjusted to reflect its proper boundaries and waveform display. This does add CPU overhead, so its best to try to keep the session rate set to the rate of the majority of entries.

- * *Sample Edit Zoom* mode is now active in the *SoundFile View*. Zoom in past the *Zoom In Full* position to display each individual sample point. The *Up-Arrow-Key* and *Down-Arrow-Key* will shift the display center up or down allowing you to see the tips of magnified transient waveforms in detail. The *Ctrl-Up-Arrow-Key* or *Ctrl-Down-Arrow-Key* will reset the display center to center.
- * *Sample Edit Mode Waveform Drawing* is now active in the *SoundFile View*. When in *Sample Edit Zoom* mode, you may grab any sample point by *Shift-Left-Clicking* on the sample. The cursor changes to an X shaped crosshair. Dragging the mouse up or down will adjust the value of that sample. As you drag the mouse left or right once this drawing mode is activated, you can adjust each sample point that you pass over. The waveform will rubberband to your new shape. The sample you are controlling does not change to the next sample until your cursor passes over the next sample point square. Therefore, all positons to the right of a sample square, up to the next sample square, control the sample square to the left of the cursor. If you are trying to adjust only one sample, lean the cursor to the right of it, becuase if you lean slightly to the left of the square, you will begin adjusting the sample to the left of the original one you grabbed. Be careful, this is immediately destructive to the soundfile and peakdata file. There is currently no way to undo this operation.
- * DX Plug-ins now display tracks labeled as Input, Return and Output.
- * The Echo Plug-in has been modified to display tracks labeled as Input, Return and Output.
- * The EQ Plug-in has been modified to display tracks labeled as Input, Return and Output.
- * The Exploded View and Wide View windows have been changed from their On-Top status back to standard popup windows. This allows other windows to ride on top of them... for instance the FX Patch Builder windows.
- * The Record Meter Input selection will now remember the last input type (stereo, mono, or chan) that you selected and begin with the same type when opening up a new set of meters.
- * The *Open Record Template File* option has been added to the *File Menu*. This option allows you to open a preset *Record Template* which can then be utilized by pressing the *Ctrl-Key* and any MultiTrack Record Button.
- * The *Save Record Template File* option has been added to the *File Menu*. This allows you to save the current last *Record Template* created by closing the *Record Window* containing a configuration of meter assignments.
- * Added Midi Control Template support for the Yamaha 01V mixer.

Bug Fixes

- * Meter decays now follow samplerate correctly maintaining the same average decay times.

- * Sizing mixer views beyond the last channel size will now correctly adjust the starting channel to avoid channel wrap-around display at the right side of the view.
- * MultiTrack marked area displays that were not correctly redrawn after certain operations are now fixed.
- * Region Memory caching now correctly includes SoftEdge data which eliminates page faults on SoftEdge entries during playback.
- * Adding and Clearing SoftEdges now correctly clear and adjust Region Memory caching pointers.
- * Active Aux Masters will no longer loop a static buffer if all Aux Sends are disengaged.
- * Aux Sends on the same track to different pre and pst configurations at the same time will no longer cause a conflict.
- * Double-Clicking within a patch window to open an already opened DX Plug-in is now correctly trapped instead of opening a duplicate window that will most likely cause a page fault when attempting to close them.
- * The Echo Plug-in now correctly displays its About screen on top of the plug-in.
- * The EQ Plug-in now correctly displays its About screen on top of the plug-in which also now correctly displays as an ontop window.
- * Invalid Input Device assignments on Record Meters are now correctly trapped.

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Version 1.1 Pre-Release

Enhancements

- * Changes were made to the *Drag And Drop* operation. Due to problems with the multi-selection Shift-Key operation within the *Regions View* ListBox, the *Drag And Drop* initiation command has been changed to the Alt-Left-Click. You may also initiate a *Drag And Drop* from a Marked Area in the *SoundFile* and *MultiTrack Views* by Alt-Left-Clicking from inside the Marked Area. If the *MultiTrack View* is in *Automation* mode, this option is not functional and the Marked Area is used to manipulate *Automation* entries.
- * A new automatic file naming convention for *SoundFile View* recording has been designed. You may override the default name at any time by Left-Clicking in the *Setup Zone* at the top of the *Record Remote* panel. *SoundFile View* recording will create an automatic default name when you press the *SF Record* button as follows:

If no default *Record SoundFile* path has been setup in the *Options* menu *File Path Setup* dialog, and no

current session name exists, then a file named **Untitled_SF.wav** will be placed in your SAWStudio program \Audio folder... for example **C:\SAWStudio\Audio\Untitled_SF.wav**. If a current session name exists, then that path and name will be used as a base... for example **D:\Projects\CurSession_SF.wav**. The **_SF** is added to denote SoundFile recording.

If a default *Record SoundFile* path has been setup in the *Options* menu *File Path Setup* dialog, then a file named **Untitled_SF.wav** will be placed in that folder... for example **D:\Audio\Untitled_SF.wav**. If a current session name exists, then that name will be used as a base and appended to the default path instead of **Untitled_SF.wav**... for example **D:\Audio\CurSession_SF.wav**. The **_SF** is added to denote SoundFile recording.

The last used name will be remembered the next time you press the SF Record button within the same session. Closing the session and/or opening a new session will clear the last used SoundFile record name.

- * The current soundfile record file name is now displayed as a label on the record meter during *SoundFile View* recording.

Bug Fixes

- * Fixed Page Fault Errors that would occur after copying marked areas to another layer and switching and manipulating the data on the new layer with waveform display ON and Region Peak Memory caching option active.
- * When active MultiTrack playback tracks have no data, the playback is now correctly trapped and canceled.
- * Recording meters assigned to console channels as inputs are now correctly trapped if no input device is assigned to those channels.
- * *Alt-Left-Clicking* in the mixer top client zones to select channels is now correctly trapped when not used in the proper sequence. The idea is to first *Left-Click* a starting channel, then *Alt-Left-Click* a different channel to select all channels in between.
- * BuildMix operations which use buffer size changing plugins, especially on the output track, will now build correctly without glitched buffers.
- * The SoundFile View Refresh function will now correctly build 20 and 24 bit packed peakdata files.

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Version 1.0 Pre-Release

Enhancements

- * This represents the first public release of the product. It is called a pre-release because there are missing elements that are still to go in before the actual packaged full release version. This is, however, quite a jam packed version which should easily get things rolling and introduce you into the new world of SAWStudio

editing and mixing. Most of the basic elements and operation details are covered in the built-in HelpFile... PLEASE READ IT.... it will greatly enhance your experience. This is a complex environment, but one which is extremely rewarding once learned. Options that did not make the helpfile at release time are covered briefly here.

- * There is a new zone in the Top Client area of the SoundFile View between the Zoom zones and the Magnify zones. The Lock zone (denoted by a small padlock icon) can be used to lock the zooms and magnification to the current settings as you double-click elements into the SoundFile View. When the lock is open, the zooms and magnification follow the individual elements as they were saved.
- * Adjusting either Dynamics EQ band while pressing the Shift-Key will now lock the two bands together and adjust the other one also. This allows you to set a bandwidth and keep the same spread while you search for a center frequency.
- * *Drag And Drop* from the *Regions View* and *SoundFile View* is now active. Shift-Left-Click on a Region in the *Regions View* or on a Marked Area in the *SoundFile View*. Move the *Drag And Drop* cursor to the MultiTrack and Left-Click again to drop the entry. Left-Click anywhere outside the MultiTrack to cancel the operation.
- * Enhanced the Import EDL function to retain its own separate path and not disturb the normal EDL path. Also added the Ctrl-OK click option to bypass missing file warnings. The import will finish even with missing files. You can then save it as a Studio EDL and Open the session to Browse and repath the files.
- * The *Open SoundFile And Refresh* option is now active. This will open a soundfile and refresh its preakdata file which controls screen draw information. You may also refresh the currently open soundfile by pressing the R-Key in the SoundFile View.
- * *SoundFile View* Recording is now active. Left-Clicking the record button on the *SoundFile View* pops up the recording meter and *Record Remote* window. You may set an input device or channel source by Left-Clicking in the input zone on the meter. You may record without entering a filename. A default name will be built using your current session name with an appended _SF (for soundfile). You may override the auto naming by Left-Clicking in the *Setup* zone at the top of the *Record Remote* window. It is recommended that you take control of the naming and pathing of these files. The *Setup* window also allows you to change the SampleRate and Bit Resolution of the recording. When you press the *Record* button, the file will be loaded and snapped to the end, and a Marked Area will begin displaying and expanding to indicate the progression of the recording. When you press the *Stop* button, the waveform will update and the Marked Area will be ready for you to adjust and begin creating Regions if you desire.

Bug Fixes

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