X32 Live Toolbox

https://sourceforge.net/projects/x32livetoolbox/

User Manual

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License

Acknowledgments

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- The Behringer Forum members for their many suggestions and encouragement. It was because of the numerous discussions on the forum that this X32 online set of tools were created and developed.
- Patrick-Gilles Maillot for his enormous effort in updating the OSC Remote Protocol document (https://sites.google.com/site/patrickmaillot/x32). Without this document, this app would probably not exist.
- Music Group for creating the X32 eco-system and opening up the X32 specific OSC command language so that developers could provide enhancements beyond the standard capabilities of the X32.
- Ales Katona and Micha Nelissen for their lnet pascal unit (Copyright (c) 2005-2011) which is used to make the UDP connection.

Purpose

The X32 Live Toolbox was designed to interact directly with the X32, supplementing the X32 eco-system with tools currently unavailable to accomplish specific tasks. The initial tool simply sent and received OSC commands to and from the X32 built-in OSC server. This developed into the testing tool (screen). During numerous discussions and feature requests on the Behringer Forum, other tools (Copy EQ, Copy Headamps, DCA and Mute Group analysis, Tidbits, etc.) have been developed. As with any toolbox, this one begs for more tools.

WorkFlow

Each tool can be used independently or in conjunction with other tools available to complete a specific task. If the toolbox does not have the necessary tool, it can probably be created.

The testing tool is the heart of the toolbox. It can be used to send various OSC commands to the X32 and watch for the responses. This can provide a deeper understanding on how the X32 interacts with the OSC protocol. It can also be used to generate working commands to be incorporated into tidbits (explained later).

Contents

Quick Start Guides

Connecting

- Select the Search, enter the X32 IP address, or select from the drop-down list (default X32 port is 10023), then Connect. When it finds the console, the light will turn green.

Copy EQ

- Select the Copy EQ tab.
- Click on the **Get EQ** button.
- Live Toolbox will send commands to the X32, wait for the responses, then populate the From and To Copy EQ screen with details of which slot has which graphics EQ. The actual commands sent and received can be viewed in the Testing memo.
- Choose which slot (and side) to copy values from, then choose which slot (and side) to copy those values to.
- Click on the **Copy EQ** button to copy the values to the X32.

DCA and Mute Group Analysis

- Select the Groups tab
- Click on the **Get Data** button.
- Live Toolbox will send commands to the X32, wait for the responses, then populate the DCA and Mute Groups matrices with the current status. The actual commands sent and responses received can be viewed in the Testing memo.
- The matrices show 16 channels by 8 DCA and 6 Mutes, in 4 banks.
- Click on the appropriate cell to make changes. When all changes are complete, click on the **Send Changes** to send changes to the X32. If all data needs to be sent (instead of just the changes), check the **All Data** check box, then click on **Send All**.

Copy Headamps

- Select the Headamps tab
- Select which parameters (gains and/or phantom) to include
- Choose which headamps bank to copy from
- Choose which headamps bank to copy to
- To change the X32, click on **To X32 button**
- To add lines to a tidbit, click on **To Tidbit**

Input-Output Mutes

- Select the In-Outs tab
- Select the Input/Output blocks to include
- Click on the **Get** button. OSC commands will be sent to the X32, then wait for the responses. This will provide the names and mute values that will be added to the mute list to the right.
- Change mute values by checking/unchecking the mute check boxes. All mutes can be selected or unselected at once with the **Select All** or **Clear All** buttons.
- Clicking on the **X32** button will send the values to the X32.
- If the **New Tidbit** is selected, a Title edit box will appear to change the tidbit title.
- Clicking on the **Tidbits** button will send the mute values to the Tidbits editor. Selecting the **New Tidbit** creates a new tidbit. If not, it will be added to the current tidbit.

Input-Output Fader Levels

- Select the In-Outs tab
- Click on the **Get** button. OSC commands will be sent to the X32, then wait for the responses. This will provide the fader level values for the first block of 8.
- Values can be changed in a number of ways. Checking **Db** allows db values (-90-+10) rather than OSC values (0.0-1.0). **Relative** allows relative values rather than absolute value. Value can be entered into a particular cell or in the spinedit and clicking on the **All 8** button
- The level values can then be sent to the X32 (in blocks of 8)by clicking on the **X32** button.
- If the **New Tidbit** is selected, a Title edit box will appear to change the tidbit title.
- Clicking on the **Tidbits button** will send the the level values the Tidbits editor. Selecting the **New Tidbit** creates a new tidbit. If not, it will be added to the current tidbit.

Custom Buttons

- On the Setup tab, select the Custom Buttons sub-tab.
- Adjust the button width and height, increase/decrease number of rows to suit.
- Add button titles (eg. Mute 1-6) and OSC or tidbit commands (eg. Launch tidbit 4)
- When the list is completed, click on Update.
- Save list for later loading.
- Select the Custom tab. The custom buttons are now available to run.

Choose Tools Available

- On the Setup tab, select the Visual sub-tab.
- Select/unselect the various tabs to be displayed. This can be saves as part of the default (Save Defaults).
- If the Setup tab is selected, but need it back, double click the Port edit field.

Tidbits

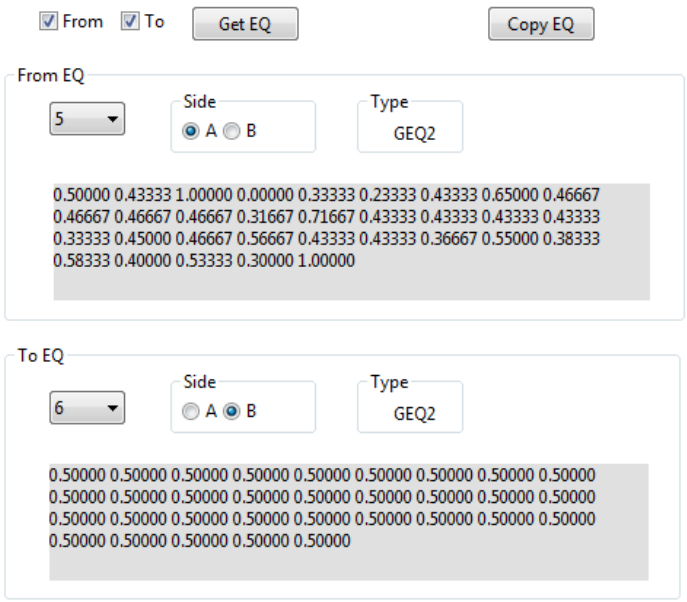
- Select the **Tidbits** tab
- Click on the first line, first column (Section) on the tidbit list (to the left) and add "Section 1".
- Click on the next line, second column (Tidbits) and type "My first tidbit".
- Double click in third column (Filename) and click on the button to the right. This will launch a Save dialog providing the means to find the location and name of the file . Add "My First Tidbit" and select Save (it doesn't save, just creates the filename).
- Click in the editor (right under the Find/Replace section) and add the following to set channel 1's name, icon and color (Kick, kick icon, green).
  ```
  /ch/01/config/name ,s Kick
  /ch/01/config/icon ,i 1
  /ch/01/config/color ,i 2
  ```
- Click on the **Save** button. It will add the header line and save the tidbit .
- Connect to the X32 if not connected.
- Click on the ->X32 button to send the tidbit to the X32.
- Create another tidbit and save to a file.
- Click on the **Save Cab** to save the tidbit list to a file (eg. My first Cabinet.cot).

Testing OSC commands

- Select the Testing tab.
- In the Command edit box type `/status` and hit enter. Below in the memo will be listed the sent command and the response from the X32. Notice that as the command is typed in, it will be auto-filled using the commands in the drop down list.
- In the Command edit box type `/ch/01/config/name`, change the Type to String, and type `Lead VOX` in the Parameters edit box, then hit return (or click on Send button). Below in the memo will be the listed just the send command (since you are making a change to the X32). Look at the X32 channel 1. The name should have changed to `Lead VOX`. The parameter will be added its drop down list.
- Using the OSC Remote Protocol document by Patrick-Gilles Maillot (https://sourceforge.net/projects/x32livetoolbox/files/Documents/), try various OSC commands. Most of these command lines are listed in the drop down list. When requesting status from the X32, change the Type to None. When sending changes, change the Type to the appropriate parameter type.
- When you want to include a certain command in a tidbit, it can be copy/pasted from the testing memo to the tidbit editor, or click on the To Tidbits button, copying the last X32 response to the tidbit editor.

Screens

Copy EQ



The Copy EQ screen provides a means of getting the current status of all graphics EQ's from the X32 in order to copy values to another side or EQ.

From/To Select the EQ block below to update from the X32

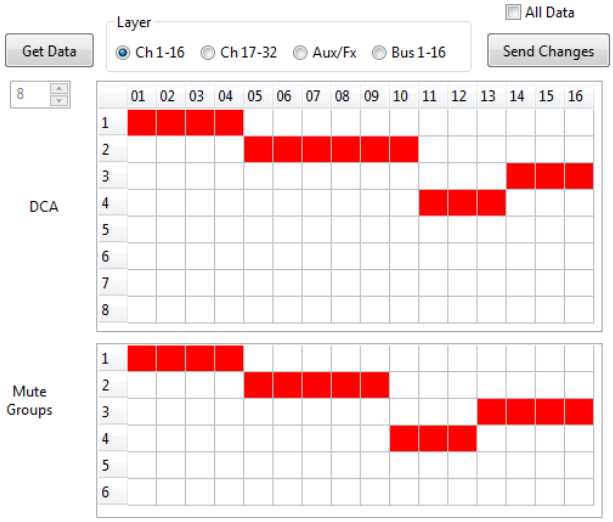
Get EQ: This runs a routine to send a number of OSC commands to the X32, first to determine which slots have graphics EQ's assigned and which type of EQ. It then requests the 32 values of each EQ found and stores this data in internal memory. If values do not look correct, click on Get EQ again. If results are consistently incorrect, increase the OSC Cmd Delay on the Setup screen.

Slot Number: This provides a drop-down list of which slots are assigned graphics EQ. Select the appropriate slot in the From EQ and To EQ section.

Side/Type: These will be changed to reflect the selected EQ. The box below will also change appropriately and show the 32 EQ values (31 bands plus the gain).

Copy EQ: This will send the 32 values of the **From EQ** to the X32 for the **To EQ**, then request an update from the X32.

Groups



The Groups screen provides a visual analysis of the DCA and Mute Groups assignments. The initial values are populated by clicking on the Get Data button. Changes are made by clicking on the appropriate cells. When everything is as desired, the Send Changes or Send All (All Data is checked) sends the data to the X32.

Get Data: This runs a routine to send a number of OSC commands to the X32 requesting the current status of all DCA's and Mute Groups.

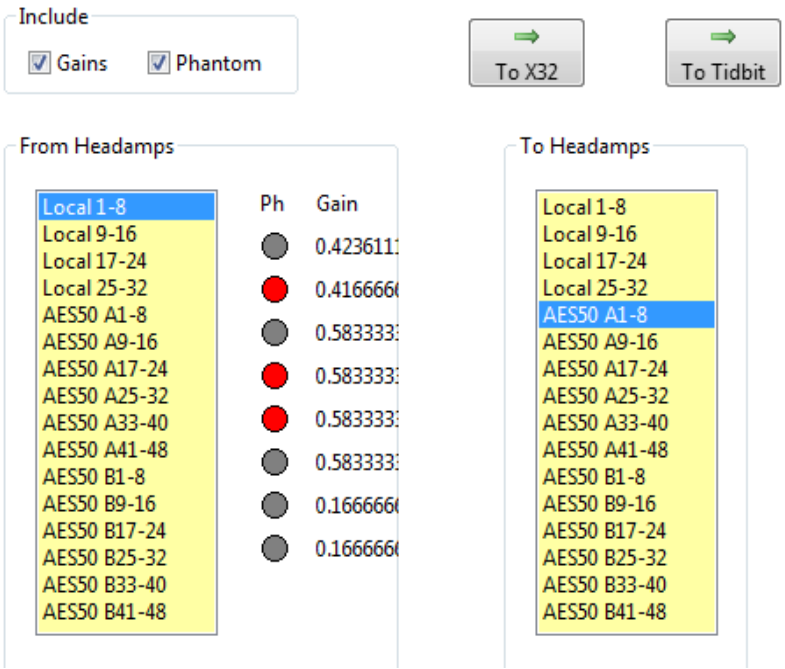
Layers: Each layer provides visual status of 16 channels, similar to the X32 channel strip layout. Choose the appropriate layer for analysis and/or changes.

DCA/Mute Groups Matrix: This provides an analysis of the current assignments. The matrix is divided in 4 layers, similar to the X32 left bank of faders. Changes can be made by clicking on the appropriate cells. As these change, the actual value will be shown just below the Get Data button.

Send Changes/All: If just the changes are to be sent to the X32, leave the All Data check box unchecked and click on the Send Changes. If all data (whether changed or not) is to be sent, check the All Data and click on the Send All button.

If check boxes are desired instead of the red squares, select **Display Groups as Checkboxes** on the Setup screen.

Headamps



The Headamps screen provides the ability to copy headamps parameter from one block of 8 to another.

Include: Include the gain and/or phantom parameters in the copy.

Db: Changes the gain values from OSC values (0.0..1.0) to db (-90..10).

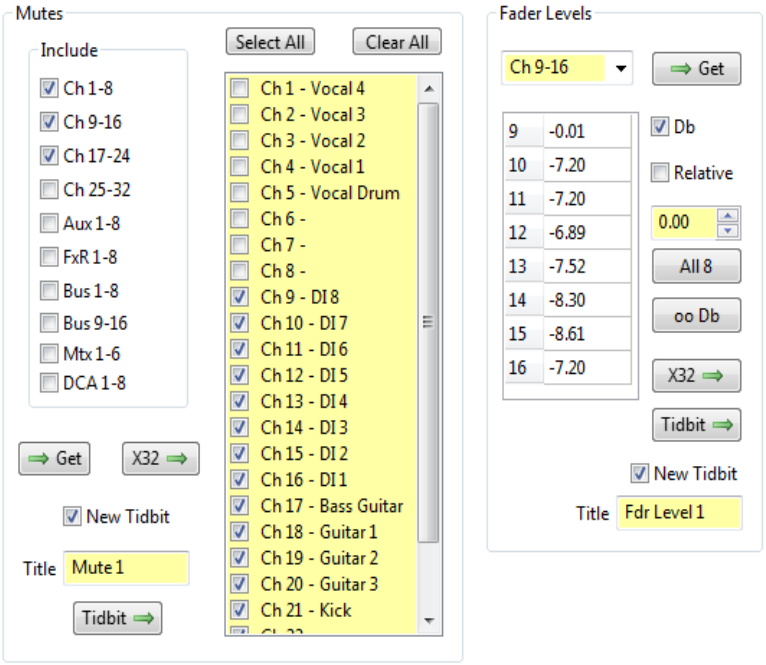
From Headamps: Choose which bank of 8 to copy the headamps from. Phantom values of the chosen bank will be represented by the 8 LED's and the gain values will be displayed to the right.

To Headamps: Choose which bank of 8 to copy the headamps to.

To X32: Sends the headamp parameters to the X32.

To Tidbits: Adds OSC commands of the headamp parameters to the current tidbit.

In-Out



There are two section related to the Input/Outputs - mutes and fader levels. Each provides the ability of reading current X32 values, analyzing the data, change values, and send results to the X32 or to the tidbit editor

Include: Select the inputs/outputs in blocks of 8.

Get: Retrieves the mute/fader level values from the X32.

X32: Sends the mute/fader level displayed values to the X32.

New Tidbit: If selected, a Title edit box will appear to change the tidbit title. When the Tidbit button is clicked, the OSC commands and mute values will be sent to a new tidbit (on the Tidbit screen).

Title: This provides a means to name the new tidbit.

Tidbit: Sends the OSC command and mute values to a tidbit in the Tidbit editor. If the New Tidbit is selected, it will create a new tidbit. If not, it will add to the current tidbit. These tidbits can be converted to snippets if so desired.

Mutes Section

Select All: Selects all mutes in the list.

Clear All: Clears all mutes in the list.

Fader Levels Section

Db: Changes the values from OSC (0.0..1.0) to db (-90..10).

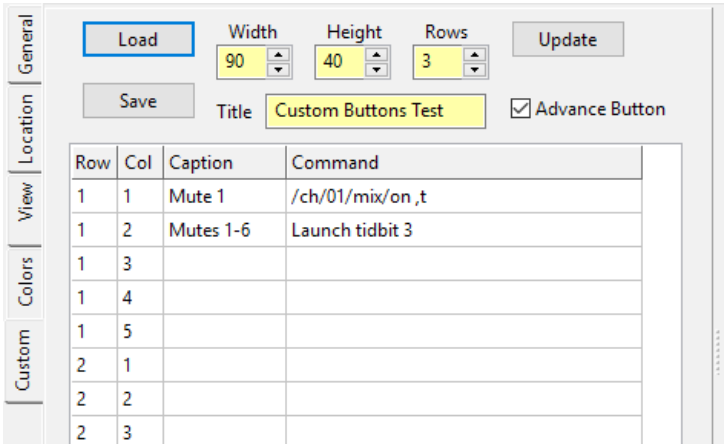
Relative: Changes the type of value from absolute to relative increase/decrease from the current value.

All 8: Changes all 8 values at once by the value in the above editbox.

ooDb: Changes all 8 values at once to infinity (-90db to be exact)..

Custom Buttons

The buttons setup is located in the Setup, Custom Buttons tab.



Load Load a custom button layout (.cbl) file

Save Save to a custom button layout (.cbl) file

Width Change the width (pixels) of the custom buttons

Height Change the height (pixels) of the custom buttons

Rows Change the number of custom button rows available

Title Change the layout title

Advance Button Selected button will advance to the next, when button is run.

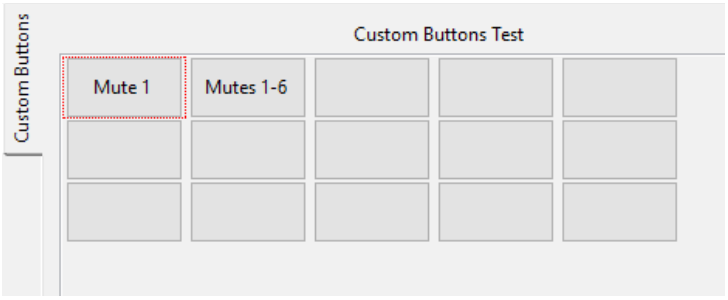
Update Update changes to the custom button list to the custom button grid

Caption Enter a button caption that will be displayed on the custom button

Command Enter an OSC or tidbit command that will be sent when he button is run.

Note: Launch tidbit can use the tidbit list number instead of the filename

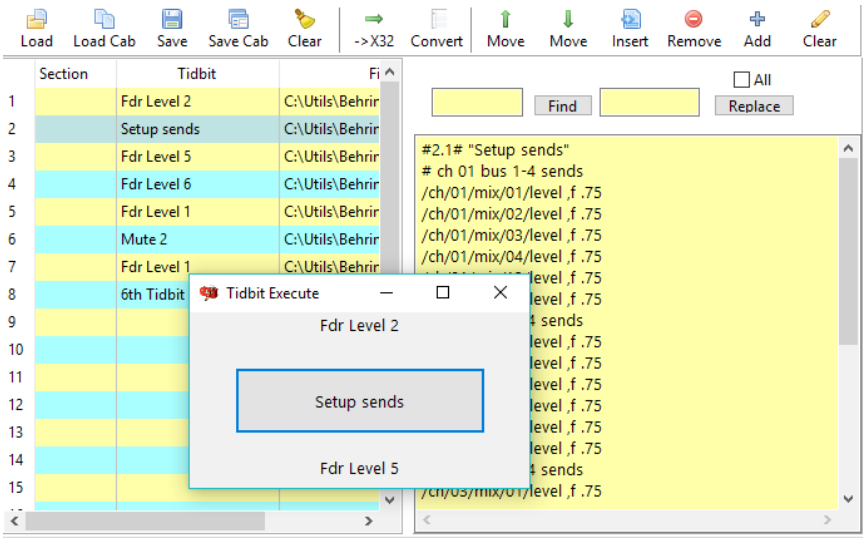
The button grid has its own tab (Custom)



Run a button by clicking on it, pressing Enter or pressing the spacebar.

If the Advance Button is selected (Setup, Custom Buttons), the next button will be selected (highlighted by the red dotted square. Direction goes left to right, then down to the next row (left button). When it reaches the last button (bottom right) it goes no further.

Tidbits



The Tidbits screen provides similar functionality of the X32 show and snippets. Tidbits have a slightly different format from snippets that conform to the OSC protocol (command, type, values(s)). These can be saved (.tid) and loaded, or can be converted to snippets (.snp).

Typically a tidbit would have a header line (first line) and one or more OSC commands (similar to snippets), but can also include comment and blank lines. The Live Toolbox OSC parsing routine checks the first character of each line for '/' and for tidbit specific commands. All other lines are ignored.

The list of tidbits can be saved and loaded as a cabinet (.cot). This is equivalent to the shows in firmware 1.x. This list is limited only by available memory and OS filesize limits. Cabinets can also be exported in a zip file. Live Toolbox strips off the file paths from the filename in order for them to be properly imported to another computer.

Each tidbit can be edited using typical editing functions (cut, copy, paste, find, replace, etc.). Each line represents a single OSC or tidbit command. It can be created by typing the command with the correct format, or it can be copied from the testing screen. This allows testing specific commands for correctness and desired X32 response before adding it to a tidbit.

Sections can be added (single line) to separate tidbit sections, such as songs, scenes, sets, etc. Blank lines can be used to separate sections.

Tidbits can be launched as single units, or stepped through the list (Advance Next Tidbit) and can be launched using the To X32 button or a popup button (Push Button) by clicking, Enter or spacebar (see Push Button below).

Note; There is a splitter control between the tidbit list and the editor to allow increasing/decreasing the size of each.

The toolbar at the top provides the following functions:

Load: Loads a tidbit file. Multiple files can be loaded at the same time.

Save: Saves the currently selected tidbit to a file. If the filename is not listed, it will launch the Save dialog to determine the location and filename.

Load Cab: Loads a cabinet file that is a list of tidbits.

Save Cab: Saves a cabinet file. This launches the Save dialog to determine location and filename.

-> X32: The X32 button sends the current tidbit to the X32.
Push Button launches a separate window with button. See explanation below
Advance Next Tidbit advances to the next tidbit in the list.

Convert: This launches the Save dialog to determine location and filename of the snippet file, then converts the tidbit format to snippet format .

Move: The 2 buttons (up/down) moves the selected tidbit up/down on the list. This can also be accomplished by dragging the bottom of the number to the left of the selected tidbit.

Insert: Inserts a blank line above the current row of the tidbit list.

Delete: Removes the tidbit from the list, but does not delete the file.

Add: Adds a blank line to the end of the tidbit list.

Clear: Clears the tidbit list

Tidbit List: This is a means to organize tidbits in a similar manner of the scenes or snippets in the X32 GUI. This could be used as an alternative to or in conjunction with the X32 snippet list (snippet list is too small, or snippets do not provide the necessary functionality to make a specific change).
Tidbits can be rearranged in the list by dragging the tidbit number (left column) up or down.

Find/Replace: Can be used to find and/or replace specific changes in the tidbit editor.
All check box changes the replace to replace all.

Editor: Provides a simple editor to create tidbits. The right-click popup provides standard cut/copy/paste as well as select all, sort all, undo, and clear editor). Standard keyboard shortcuts can also be used.

Push Button: The push button popup window provides an alternative to clicking on the To X32 button. This will display the currently selected tidbit on the button, as well as the previous tidbit (displayed above) and next tidbit (displayed below).
* As the window is resized (or made fullscreen), the button and text will remain centered in the window.
* Clicking on the button or hitting the Enter key or spacebar launches the tidbit listed on the button.
* Moving up/down the tidbit list can be done using the ‘u’, ‘d’ keys or the up/down arrows.
* Esc closes the window.

Types:

The OSC protocol requires that the type of parameter be listed. These include i (integer), f (float or real), s (string).and none. Live Toolbox has expanded this with t (toggle), p (percentage), d (db) and % (bitmap). These types are explained below.

,i Integer or enumerated value. It has a range of 0 to a max value for that command. Enumerated values are a list of descriptions represented as an integer. For instance the channel color green is the integer 2 (zero-based).

,f Float (or real) value and has a range of 0 to 1. For example, fader values are a float type.

,s String type, (eg. channel name.) Quotes are not used around the string.

,t Toggle type. This can only be used in Live Toolbox. It can be used to toggle through enumerated type values, such as colors, mutes, etc. Live Toolbox will request the current status then send the next value. It has 3 formats:
`,t` (no value) toggles between 0 and 1 (OFF/ON, PRE/POST, etc.)
`,t <maxvalue>` assumes minvalue is 0 and toggles through to maxvalue
`,t <minvalue> <maxvalue>` toggles between minvalue and maxvalue
If toggle value exceeds maxvalue, it is set at minvalue (wraparound).

,p Percentage type. This can only be used in Live Toolbox. It can be used in place of a float to increase or decrease the current value by a percentage. For example, if channel 1 fader needs to be decreased by 23% then the `/ch/01/mix/fader ,p -0.23` will make the correct adjustment.

,d This represents a db type, and can only be used in Live Toolbox. It is equivalent to the percentage type but in db instead of percentage.

,l Linear type. Provides a means of changing linear float values in db.
`,l <lin-value> <minvalue> <maxvalue>`

,% This represents a bitmap text representation of values in the form of 00110101. Examples of this type are DCA, mute groups, etc. Live Toolbox will convert this the equivalent bitmap integer value (eg. 00000101 = 9).

Multiple Some OSC commands (eg. /load, /save, /add) requires multiple values. Any strings that include spaces must be delimited by quotes.

Tidbit Commands

In addition to the OSC commands available, there are other commands that enhance the capabilities of tidbits.

#	a number
[]	set of sub values
<>	optional values.

Timing commands (# in milliseconds):

Delay # This changes the current delay between OSC commands. For example, `Delay 35` will change the delay to 35 milliseconds. This is prmarily used to ensure requested current state is paired with the OSC server response.

Buffer # This changes the current delay between OSC commands, but is used only by the Fade and Wave commands for timing purposes. This is provided to compensate for various computer related performance issues (eg. a Celeron processor would process Fade slower than an i7).

Pause # This pauses the tidbit between (tidbit) commands. For example, `Pause 2000` will pause the tidbit processing for 2 seconds.

Store Sends OSC command(s) to the X32 requesting current state
Stores the response(s) in a list.
Subsequent store commands adds to that list.
Total of 10 stores (0..9) are available
Example: `Store 1 /ch/05/config/name`

Store #	Clear store # command list
Store # osc	Stores current state of X32 of osc command.
Store # osc #-#	Stores current state, substituting any #, ## or ### with range values.
Store # network	Stores network OSC cmds to Store #.
Store # global	Stores global OSC cmds to Store #
Store # config	Stores config OSC cmds to Store #
Store # remote	Stores remote OSC cmds to Store #
Store # misc	Stores misc (everything else) OSC cmds to Store #
Store # allconfig	Stores all console config OSC cmds to Store #

Recall Sends the OSC command(s) from the store area # to the X32.

Recall #	Recalls what is in Store #
Recall # ReplStr	Recalls what is in Store #, substitutes ReplStr
Recall # ReplStr #-#	Recalls what is in Store #, substitutes ReplStr over a range ReplStr with # or ## as wildcards (eg `/ch/##/config`) ReplStr with * - copies same character from original (eg `/**/##/config`)
Recall # tid fname	Saves response list in Store # to a tidbit file
Recall # snip fname	Saves response list in Store # to a snippet file

Reset Resets levels in proportion to changes from stored levels.
- Store levels (eg. Store 1 /headamp/000/gain), then make changes to the settings (eg change first input gain), then reset (eg. Reset 1 gate)
- Reset has both standard (eg. gate) and inverse (eg igate) results.
- Reset # gain (and igain) – store fader levels.
- All others – store gain levels.

Reset # gain/igain	Resets gain levels
Reset # gate/igate	Resets gate threshold
Reset # comp/icomp	Resets compressor threshold
Reset # bus/ibus #-#	Resets channel send levels to mixbus(s)
Reset # fx/ifx #-#	Resets channel send levels to fx send(s)

Launch: Launches cues, scenes, snippets stored in X32, or tidbit file

Launch cue #	Launch a cue.
Launch scene #	Launch a scene.
Launch snippet #	Launch a snippet.
Launch tidbit #	Launch a tidbit from the tidbit list.
Launch tidbit [fname]	Launches a tidbit file [fname]

Load: Loads scenes, snippets, or channel, effects, routing presets stored in X32

Load scene #	Load a scene.
Load snippet #	Load a snippet.
Load channel # # #	Load a channel preset #, to ch #, recall scope #.
Load effect # #	Load an effect preset #, to slot #.
Load routing #	Load a routing preset #.

Go: Same as selecting the Go button on the console

Go cue [cmd]	Go to a cue stored in the X32.
Go scene [cmd]	Go to a scene stored in the X32.
Go snippet [cmd]	Go to a snippet stored in the X32.
Go default [cmd]	Go to whatever is the show control default.
Go tidbit [cmd]	Go to a tidbit (in the tidbit list)
[cmd]	**first –** go to the first on the list **previous** – go to the previous on the list **next** – go to the next on the list **current** – reload the current one

TapTempo Set a delay Fx tempo

TapTempo slot#	Assign to a custom button to set Fx tempo (slot#)
TapTempo slot# #	Set an Fx tempo (slot#) in # beats/min (bpm)

Save: Save scenes, snippets, or channel, effects, routing presets stored in X32
<> denotes optional value.
* can denote current value (currently only for scene and snippet).

Save scene <#> <name> <note>	Save a scene (blank or * for current).
Save snippet <#> <name>	Save a snippet (blank or * for current).

Examples:

Save scene	Saves current scene with current title
Save scene * "New Title"	Save current scene with "New Title"
Save scene 20 * "New Note"	Save scene to #20 with current title and "New Note"
Save snippet	Saves current snippet with current title
Save snippet * "New Title"	Saves current snippet with "New Title"
Save channel # name #	Save a channel preset #, name, index #.
Save effect # name #	Save an effect preset #, name, index #.
Save routing # name	Save a routing preset #, name.

Fade: Fades type (ch,bus,dca, etc) over a period of time (sec)

Fade type # <sec> <destvalue>	Fade a type over time (sec) to a value (db)
Fade type #-# <sec> <destvalue>	Fade a type range over time to a value **defaults**: time=5 sec, destvalue=-90db **types**: ch, auxin, fxret, bus, lr, mono, mtx, dca

XFade: Cross Fades type (ch,bus,dca, etc) over a period of time (sec)

XFade upType #<-#> destValue dnType #<-#> destValue <Sec>
Fade a type over time (sec) to a value (db)
upType, dnType (ch,bus,dca, etc)
#<-#> (single or range)
destValue (db value - oo or -90 is off)
Sec (seconds)

Wave: Produce a wave using faders for a period of time (sec)

Wave pfaders tfaders tsec Fade a type over time (sec) to a value (db)
pfaders: physical faders available
tfaders: total faders for complete sine wave
tsec: total time elapse of the wave (sec)

Update	Updates a range of scenes using a snippet, preset or tidbit.
Update snippet # #-#	Using snippet #, update scenes #-#
Update channel # #-#	Using channel preset #, update scenes #-#
Update effects # #-#	Using effects preset #, update scenes #-#
Update fx # #-#	Using effects preset #, update scenes #-#
Update routing # #-#	Using routing preset #, update scenes #-#
Update tidbit [Fname] #-#	Using tidbit [filename], update scenes #-#

Note: Only the first character of the second parameter is checked.

So an update command could be:

`Update snip 15 7-20`	(update scenes 7-20 using snippet 15)
`Update f 7 3-8`	(update scenes 3-8 using fx preset 7)**Update**

Updates a range of scenes using a snippet, preset or tidbit.

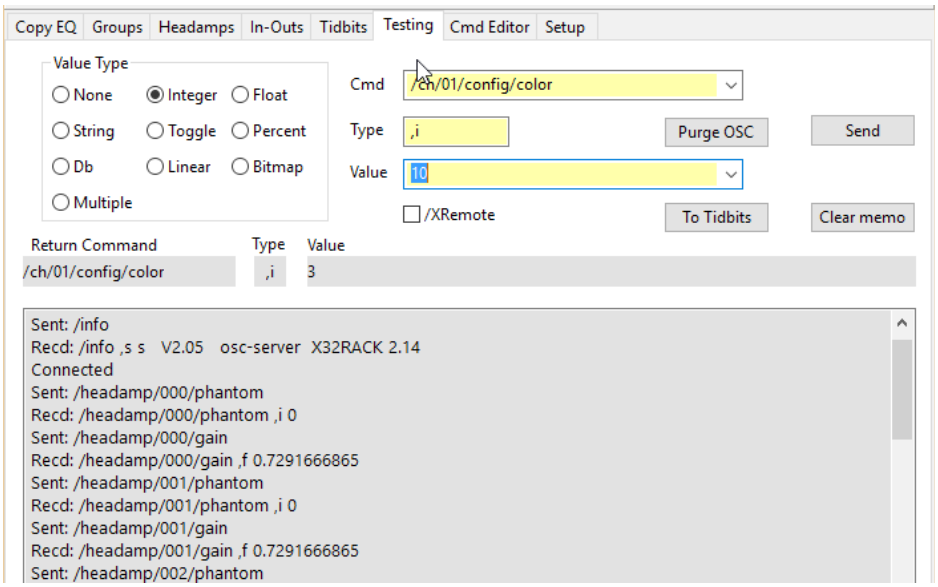
Connection commands	Connects, searches or disconnect to/from console
Connect <IP> <Port>	Connect to console of IP address - if no IP or Port, it functions as Search - port 10023 is default
Search <Port>	Search for console and connect - port 10023 is default
Disconnect	Disconnect from the console

English Equivalent Commands

Added to version 1.2 are a number of English equivalent commands of the OSC commands. Please understand this is a work in progress and is in beta stage (meaning further testing and bug-fixes). See the *English Commands Supplement.pdf* for further info.

For example, instead of:	/ch/03/mix/07/level ,f 0.50
English equivalent:	Set channel 3 send 7 fader to -10 db

Testing



Value Type: The type of parameter.
- None is used when requesting current status from the X32**.**
- Integer, Float, or String are OSC specific types used to request changes to the X32. These requires an appropriate value.
- Toggle, Percent, Db and Bitmap are Live Toolbox exclusive types to provide enhanced features.
- Toggle is used to advance through enumerated values (colors, mutes, etc). See Tidbits section for details.
- Percent increases/decreases float values by percentage. See Tidbits section for details.
- Db increase/decreases float values by db. See Tidbit section for details.
- Bitmap allows text-type values (eg. 00110101). Live Toolbox will convert this to the equivalent bitmap integer value.
- Multiple: certain commands (eg. /load, /save) require multiple values. String values with spaces must be delimited by quotes. (“Snippet 1”).

Cmd: The command (or path) of the complete OSC command line. This is now a pull down list of most of the OSC commands available (in alphabetical order). Start typing and it will auto-fill the command line.

Value(s): Value(s) used to request a change to the X32. Each time a value is used, it will be added to the pull down list. If no value is provided, the type will be assumed to be None. **Multi-values with spaces must be delimited by quotes** (eg. /save ,sissi scene 10 “Test 1” “Notes 1” 0).

/XRemote: Requests the X32 to continuously sends current status updates. Certain OSC commands require this to be active. When selected, /xremote is sent every 8 seconds. Uncheck this to stop the request.

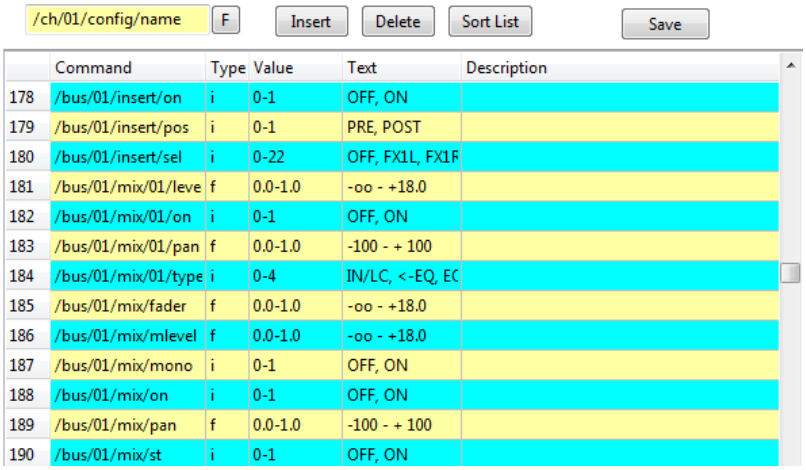
Purge OSC: Purges any remaining OSC responses from the X32 and adds them to the testing memo.

Send: Sends the command, type and value(s) to the X32. This can also be accomplished by hitting the return key when in the Values(s) edit boxes.

To Tidbit: The last sent command is added to the current tidbit.

Clear Memo: Clears the memo. This can be used if many (hundreds or more) sent commands and responses have populated the memo.

Cmd Editor



	Command	Type	Value	Text	Description
178	/bus/01/insert/on	i	0-1	OFF, ON	
179	/bus/01/insert/pos	i	0-1	PRE, POST	
180	/bus/01/insert/sel	i	0-22	OFF, FX1L, FX1R	
181	/bus/01/mix/01/leve	f	0.0-1.0	-oo - +18.0	
182	/bus/01/mix/01/on	i	0-1	OFF, ON	
183	/bus/01/mix/01/pan	f	0.0-1.0	-100 - + 100	
184	/bus/01/mix/01/type	i	0-4	IN/LC, <-EQ, EC	
185	/bus/01/mix/fader	f	0.0-1.0	-oo - +18.0	
186	/bus/01/mix/mlevel	f	0.0-1.0	-oo - +18.0	
187	/bus/01/mix/mono	i	0-1	OFF, ON	
188	/bus/01/mix/on	i	0-1	OFF, ON	
189	/bus/01/mix/pan	f	0.0-1.0	-100 - + 100	
190	/bus/01/mix/st	i	0-1	OFF, ON	

The command editor list provides a means of investigating the various OSC commands available to the X32. This screen and list was ported from the Sysex OSC Generator app (https://sourceforge.net/projects/sysexoscgen/). It shows the command (or path), the type, the value, the text equivalent, and a description (not yet complete).

This list can be rearranged by dragging the command number (left column) up or down or sorted alphabetically using the Sort button. It can also be edited (double clicking in the cell and saved if errors are discovered.

Search: Type a command (in full) in the search box and click on the F button.

Insert: This inserts a blank line above the current row of the list so that commands could be added to the list.

Delete: This deletes the current line from the list.

Sort List: This sorts the list in alphabetical order (of Command). Sorting can also be accomplished by clicking on the appropriate column header.

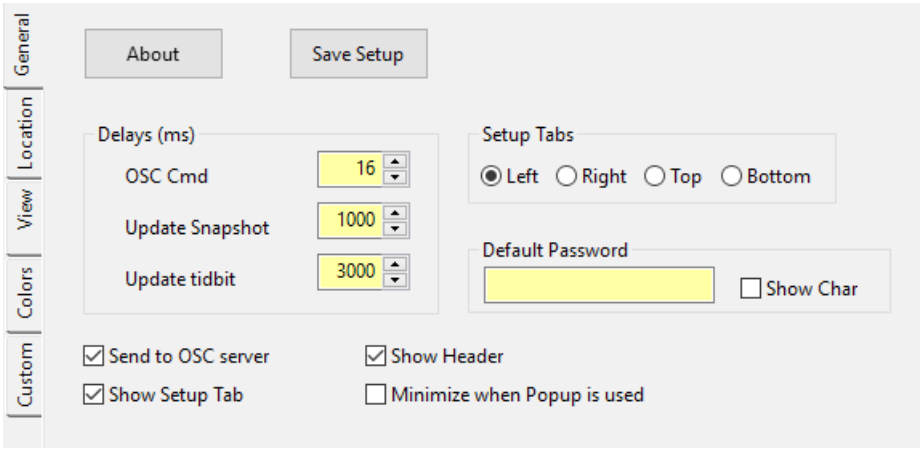
Add: This adds a blank line to end of the list so that commands could be added to the list.

Save: Saves any changes to the command list file (as established by the OSC Command List in the Setup screen).

Setup

The Setup screen allows the user to set various defaults. These settings (as well as the X32 IP, Replace All, etc.) can be saved to the Live Toolbox.ini file. This file is read during start up. The new Setup GUI is separated by sub screens (by default, tabs on the left). This allows more options in less space.

General Screen



Delays

OSC Cmd: Adjust delay (in milliseconds) between sending OSC commands and receiving the responses. This may be necessary due to the X32 OSC server being too busy, poor network (or wifi) connection, etc. Increasing the value could increase reliability, but at the same time may reduce responsiveness of Live Toolbox.

Update Scene: This adjust the delay of the Update command to wait for the scene to load before taking the next step (loading the snippet, preset or tidbit).

Update Presets, etc: This adjusts the delay of the Update command to wait for the snippet, preset, or tidbit to complete.

IP List: The IP's in the drop down will be saved.

Testing Value List: The parameters in the drop down list will be saved.

Send to OSC Server: This can be disabled for testing purposes (eg. advancing through tidbits, etc.).

Show Setup Tab: Choose to display or hide the setup screen. This setting will be saved as part of the defaults (by clicking on the Save Defaults button). The next time Live Toolbox is launched, this setting will apply. This, along with the password below could be helpful for turnkey installations.

Show Header: Display or hide the header (IP address, Port, Connect, etc).This could be hidden for installed turnkey application where just the custom button screen is shown.

Minimize when popup is used: Minimize Live Toolbox when using the tidbit popup window.

Setup Tabs: The setup sub-tabs can be placed on the left, right, top or bottom.

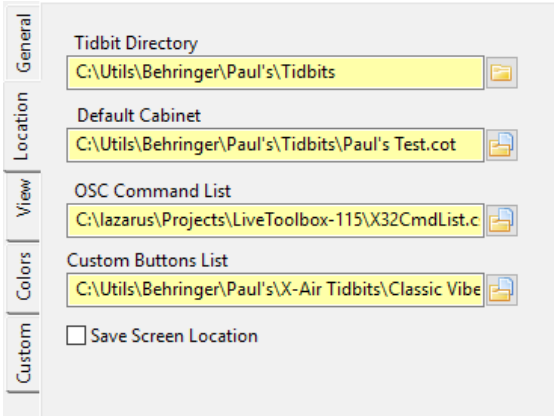
Default Password: Provide a password for the displaying of the Setup screen (tab). This will be requested when the Port edit field is double-clicked. If the correct password is provided, the Setup screen (tab) is displayed.

Show Char: By default the actual text in the Default Password is masked by asterixes. Selecting Show Char will unmask the text for verification

About: This launches the About Dialog.

Save Defaults: All items on this screen will be saved to the LiveToolbox.ini file in the same directory as the app. These values will be loaded on start up.

Location Screen



Tidbit Directory: This is the default directory where the tidbits (and cabinet) files are located.

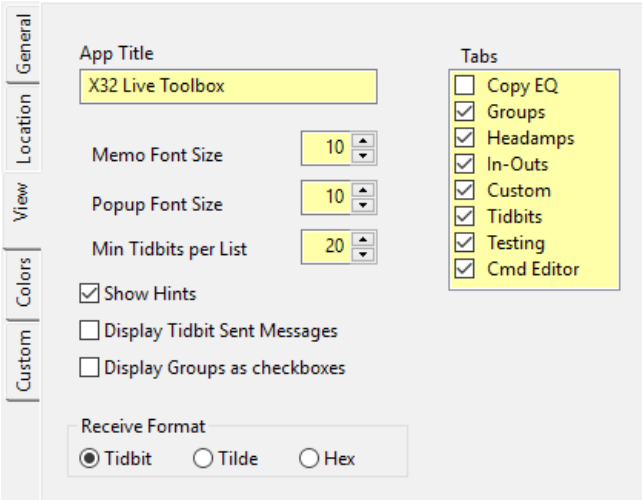
Default Cabinet: This is the default cabinet of tidbits that will be loaded during start up.

OSC Command List: This is the X32 OSC command list that is loaded in the Cmd drop-down list and the Cmd Editor screen. By default, it is the X32CmdList.csv located with the LiveToolbox.exe.

Custom Buttons List: Live Toolbox will automatically load this file on startup.

Save Screen Location: The Live Toolbox screen location and size can be saved in the ini file with the other default parameters.

View Screen



App Title: Change the apps title. This can be useful when using multiple instances of Live Toolbox controlling multiple X32.

Memo Font Size: Adjust the font size in the testing memo and tidbit editor.

Popup Font Size: Adjust the font size of the tidbit popup window.

Min Tidbit per List: Set the minimum lines in the tidbit list.

Display Tidbit Sent Messages: Show popup messages when tidbit is sent to the X32. When advancing through the tidbit list, this popup could become irritating (like a nagging wife).

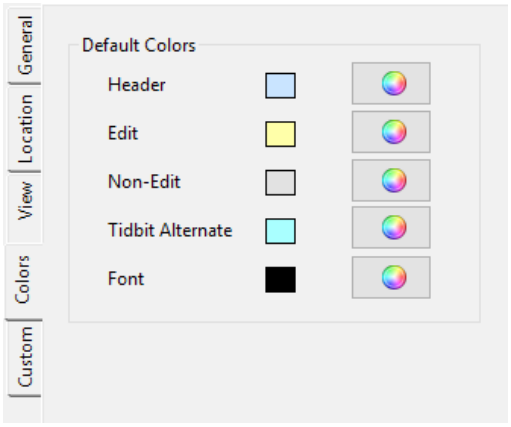
Display Groups as checkboxes: DCA and Mute Groups can be displayed as check boxes or red squares.

Show Hints: Show popup hints when hovering over the various elements of the screen.

Receive Format: The received responses from the X32 contain null characters that are not compatible with memos and editors. These can be replaced by the tilde (~) character, a space or removed. Tidbit format uses spaces. These null characters will be added appropriately by Live Toolbox when the OSC command line is generated in preparation for sending to the X32.

Tabs: Select which screens (tabs) to be displayed.
Note: If the Setup tab is unselected, it will no longer be visible. To get it back, double click the port edit field to make it visible again.

Colors Screen



Default Colors: The color swatches show the current status. The buttons to the right launches the Color dialog to provide a means to choose the desired color.

Header: This changes the color of the top panel. This can be useful when using multiple instances of Live Toolbox controlling multiple X32.

Edit: This changes the color of all edit fields

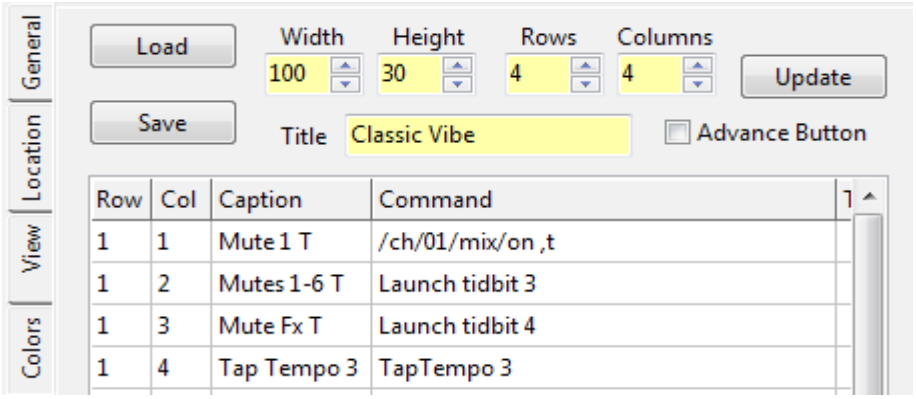
Non-Edit: This changes the color of all non-edit fields.

Tidbit Alternative: This changes the color of alternating tidbit list rows, similar to the old greenbar accounting forms (remember those?).

Font: This changes the color of all edit field text.

Custom Screen

This screen provides ability to setup the grid of custom buttons (Custom tab). Each button consist of a caption and an associated OSC or tidbit command to be launched when selected.



Load: Loads a saved custom button layout file (.cbl).

Save: Saves a custom button layout file (.cbl) for later recall.

Update: Update the grid of custom buttons with all changes.

Width: Changes the width (in pixels) of all custom buttons.

Height: Changes the height (in pixels) of all custom buttons.

Rows: Changes the number of rows displayed in the custom buttons grid.

Columns: Changes the number of columns displayed in the custom buttons grid.

Title: Provide a title that will be displayed above the custom buttons grid.

Advance Button: When selected, the selected button will advance to the next one when launched. When it reaches the 5th button in the row, it goes to the beginning of the next row. When it reaches the last button, it does not advance.

Row, Col: This is generated when the row number is changed. This helps determine what button is being modified with the caption and command.

Caption: This text is displayed on the button.

Command: This is the associated OSC or tidbit command that will be launched when the button is selected (by mouse click, enter key or spacebar). All OSC and titbit commands are available. As well the Launch tidbit can have the tidbit number instead of the filename (eg. Launch tidbit 3). Live Toolbox will look up the filename and make the substitution.

Tidbit Examples

Channel Fader decrease 25%

```
/ch/01/mix/fader ,p -0.25
```

Toggle Fx sends on/off

```
/fxsend/1/mix/on ,t
```

Toggle ch mutes on/off

```
/ch/01/mix/on ,t
```

Run scene 3

```
Launch scene 3
```

Store gains 1-8 in 1

```
Store 1
Store 1 /headamp/###/gain 1-8
```

Reset gate, comp threshold

```
#after gains are changed
#reset the gate threshold inversely
Reset 1 igate
#reset the compressor threshold inversely
Reset 1 icomp
```

Reset mixbus 1-4 sends

```
#reset mixbus 1-4 inversely
Reset 1 ibus 1-4
```

Fade in recording (mixbus 7/8)

```
#set bus fader 7/8 pair at infinity (off)
/bus/07/fader ,f 0
#start recording
/-stat/tape/state ,i 4
#fade bus 7/8 faders in 3 sec to 0 db
Fade bus 7 3 0
```

Save all X32 config to tidbit

```
#store all config
Store 7 allconfig
#recall and save to a tidbit file
Recall 7 tid "c:\X32 Files\AllConfig.tid"
```

Update scenes 7-20

```
#update scenes 7-20 using snippet 15
Update snip 15 7-20
```

Glossary

- **Bitmap Values**: Multiple choices can be stored as a single integer called a bitmap. DCA's, mute groups and snippet filters are stored in this manner. It is based on binary positions of a byte value (2 to the power of). 0000101 is a byte representation of the number 5 (0+0+0+0+4+0+1). These positions can be translated to choices. For example, consider channel 1 mute groups. It can have a combination of up to 6 mute groups. If mute groups 2 and 5 are selected, the bitmap value would be 18 (2 to the power of 1 + 2 to the power of 4 – positions are zero based).
- **OSC Protocol**: Open Sound Control (OSC) is a protocol for communication among computers, sound synthesizers, and other multimedia devices that is optimized for modern networking technology. The X32 OSC is a Music-Group implementation of this protocol, as defined in the OSC Remote Control Protocol v1.01 (Oct 17, 2012). This has recently been updated by Patrick-Gilles Maillot with his X32 OSC Protocol (See link in the Acknowledgements section). The protocol specifies that OSC command lines must include a path (or command), type (of parameters) and value(s). Each part is 4 byte aligned 32 bit null terminated.
- **Tidbit:** a compilation of OSC commands in ASCII format (text file) that can change almost all functionality of the X32 digital console. It is very similar in functionality to snippets but is exclusively used by Live Toolbox. Tidbits comply to the OSC protocol command format.
- **Cabinet**: a list of tidbits. It is very similar to the X32 firmware 1.x show. A cabinet can store a list of tidbits. The list can be rearranged as needed.