journey sound manual

WELCOME TO JOURNEY'S WORSHIP MINISTRY TEAM. WE'RE THANKFUL FOR YOU!

YOU ARE IMPORTANT.

The worship team is one of the most important at any healthy church. Human beings are deisgned to worship our Creator and as a part of the worship team at Journey Church you get to help with that sacred responsibility. So first and foremost, thanks for your servant's heart.

This manual has been created to help you fulfill your role as a sound engineer with excellence. In some ways your job is the most important piece of the worship puzzle. And we're not going to lie to you... sometimes it is hard.

The job of the sound engineer is to balance and enhance what the musicians and vocalists are doing on stage. It is to assure that the congregation gets to hear God's spoken word so that they can draw closer to Jesus. This is an act of worship and the job of a sound engineer is to be a worshipper.

Just like the musicians on stage have their guitars, vocals, keys, and drums, the sound board is your instrument. Learning how to play your instrument effectively and with excellence is a core part of the role of a sound engineer. This manual is designed to help you become more confident in playing your instrument.

There are a lot of buttons on that sound board and it can be intimidating at first. With some practice and this manual's help we will give you all the tools you need to be successful.

Once again, we are so glad that you have joined our team and we are excited to get to lead alongside you. You are an important part of what makes Journey the church that is. You are loved and valued. A child of God made in his image. Let's get started worshiping him together.

-THE JOURNEY WORSHIP TEAM

JOURNEY'S SOUND STANDARD

With different people running the front of house (FOH) and broadcast mixes, it is importnat that week to week, and service to service, we maintain a strong consistency of sound quality at Journey. We, as a team, must constantly strive for excellence.

The front door of the church is now online service streams. People will have already watched one of our services before they ever set foot on our campus. This provides both opportunities and challenges. People assume that the quality of what they hear online is equal to that of the auditorium.

Our goal is to maintain a high standard of sound in person and online.

AUDITORIUM VOLUME

Volume is measured in decibels (dB) and the human ear has a threshold for what it can safely and comfortably handle. Normal conversation is around 40-60 dB and hearing damage will begin at 120 dB. During our worship services we strive to maintain a dB level between **95-105**.

There are several free decibel meter apps available for downlaod on the App Store and Google Play Store.

When measuring decibel levels it is important to take readings from several spots in the room. The front will always be louder than the back and spots that sit in the crossover between the two mains will also be louder.

The dB level will also change once the auditorium fills up with people. Human bodies absord sound so you may find that you will need to adjust volume levels once the service actually begins.

Remember that during worship service your readings from the booth will appear quieter than what much of the room is actually hearing.

SPEAKERS

Our speaker systems are Bose L1 Pro arrays. This allows us to have less crossover than traditonal horn speakers. They each have an onboard three channel mixer and several EQ options. These are to maintain a “flat” EQ with the volume set to 6 bars.

Line arrays tend to be much clearer than traditional speakers and need less volume. This should be accounted for when mixing in a full house.

SOUND BOARD

We use a Behringer X32 soundboard in both FOH and broadcast. They are set up much differently and we will cover how they each function later on. Because our speakers are turned up, we run the MAIN around -20dB.

MIXING THE BAND

The sound mix of the band can be thought of as a pyramid. The goal of the sound engineer is to prioritize what
instruments and vocals need to be more present and focused. The illustration on the following page should function as a guide to how each song should be mixed.

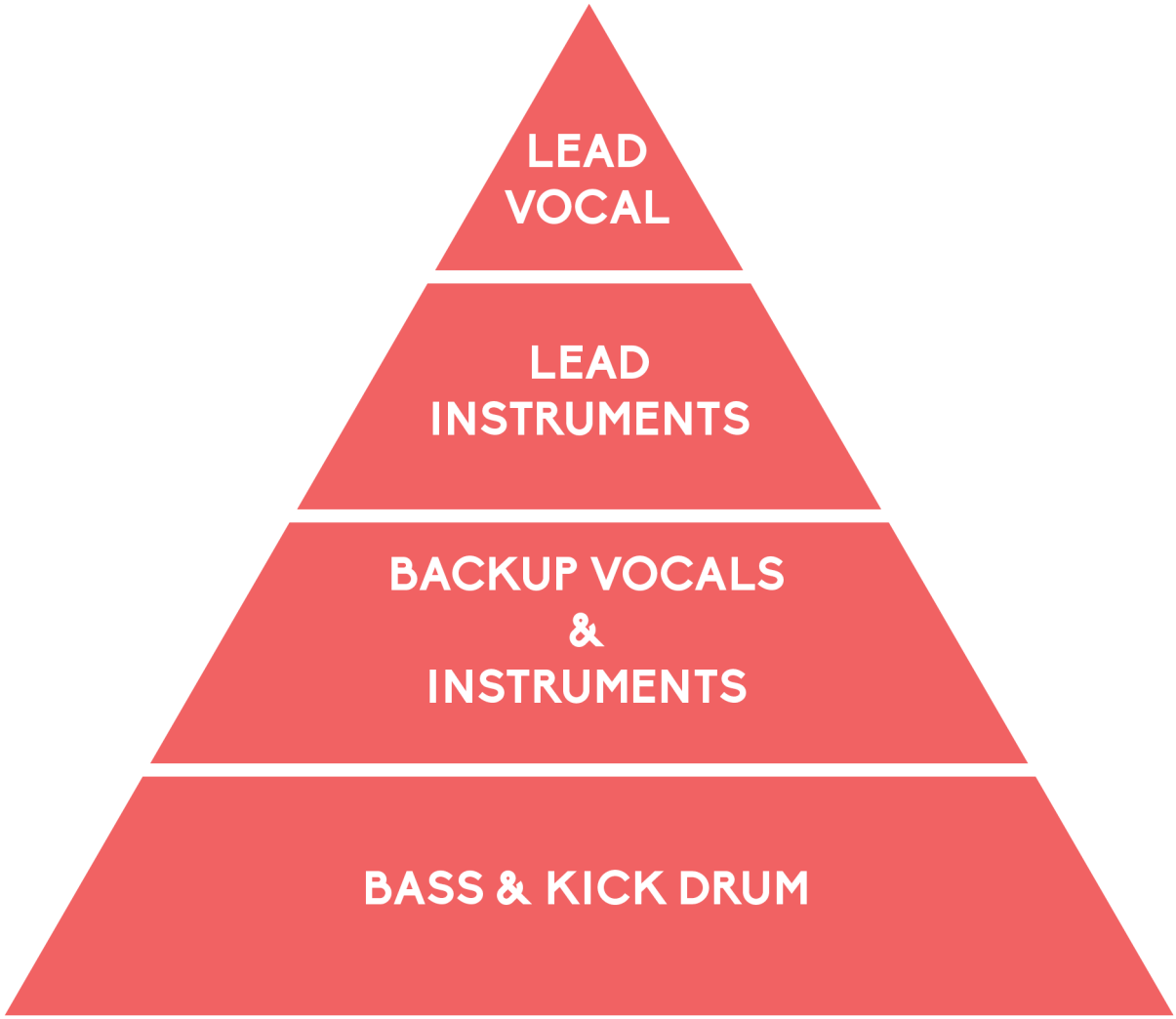
The low end of the **Bass** and **Kick Drum** serve as the foundation for the band. Everything else builds on these low end frequencies. That doesn't mean that these should be quieter than everything else but that they should be mainly pushed through the Subs. The "Subs" channel is located under "Matrix" on the right hand side of the X32.

The job of the **Backup Vocals** is to support the lead vocals. They should not be equal in volume or presence to the lead vocalist nor should they overshadow any of the instrumentation (especially the lead instrument). The goal here is nuanced enhancement of the lead vocal by adding in harmonies and melody support.

The **Instruments** include acoustic guitar, rhythm electric, keys, and other stringed instruments. They function to maintain the rhythm and the support the lead instrument. This is where sound can get "unclear" as too many of the same frequencies are being played on top of one another.

The **Lead Instrument** is usually the lead guitar and should be the most present thing, second only to lead vocals. This instruemt requires special attention especially when there are solos or pronounced parts being played. The lead
instrument is less about blending the sound and more about standing out. The lead instrument should always be heard and identifiable.

Lead Vocals always need to be the most present and audible piece of the band. The lead vocalist may change from song to song and even in certain sections of the same song. Remember that when making those changes to readjust once lead vocalists switch back to backup vocalists.


LEAD
VOCAL
LEAD
INSTRUMENTS
BACKUP VOCALS
&
INSTRUMENTS
BASS & KICK DRUM

HOW TO EQ VOCALS

Having clear vocals is the difference between being able to understood your singers and not being able to make out what they are saying or singing. Knowing how to EQ a vocal mic is an important part of the sound engineer.

SIX STEPS TO A GREAT VOCAL EQ

1. Roll off the low-end starting around 90 Hz.

2. Reduce the “mud” around 250 Hz.

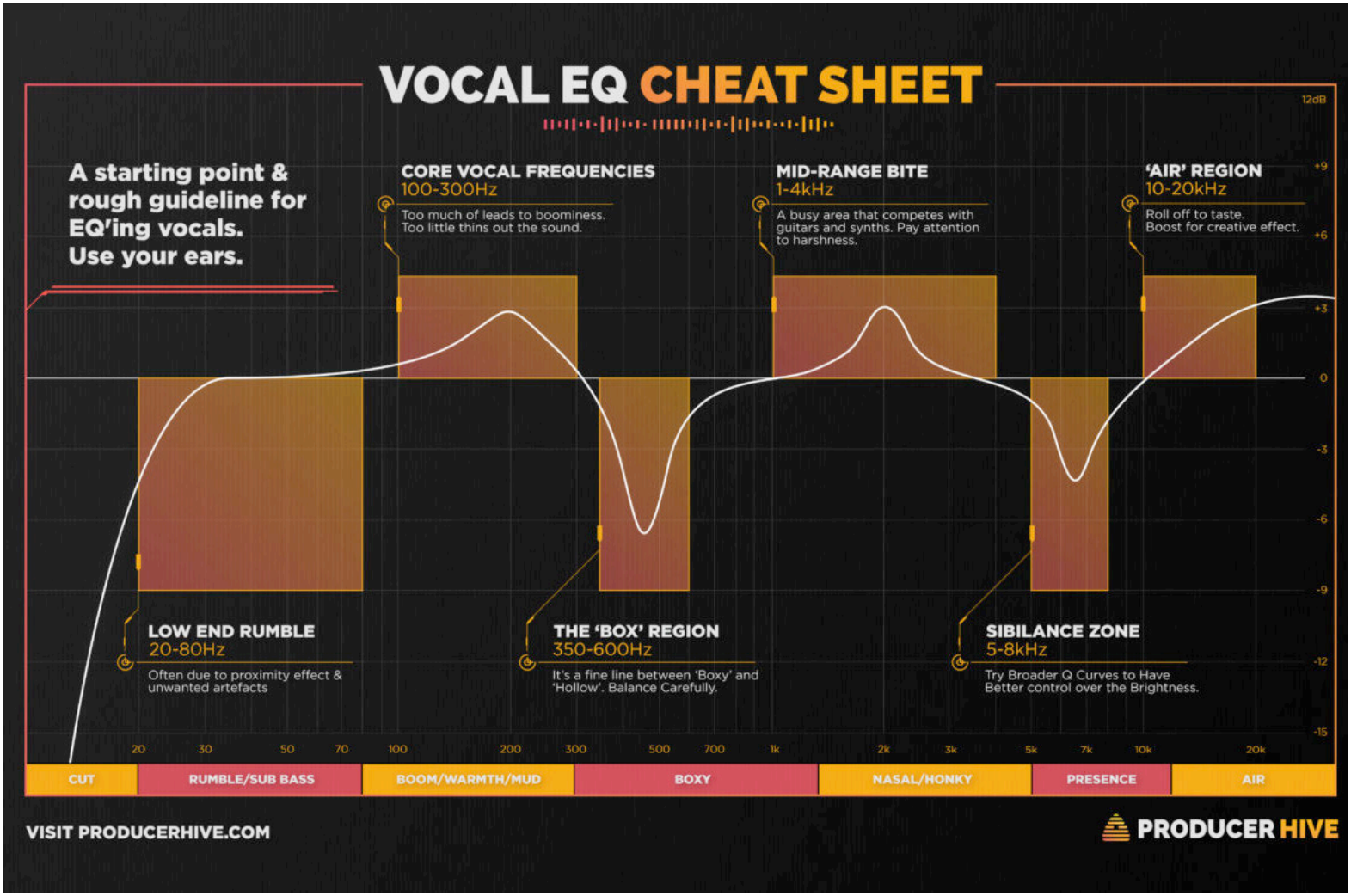
3. Add a high shelf around 9 kHz & a high roll off around 18 kHz.

4. Add a presence boost around 5 kHz.

5. Boost the core around 1 kHz to 2 kHz.

6. Reduce sibilance around 5 kHz to 8 kHz.

These six steps will serve as a great starting point for any vocal mic. Since each voice is different each EQ will be different too.


VOCAL EQ CHEAT SHEET
A starting point & rough guideline for EQ'ing vocals. Use your ears.
CORE VOCAL FREQUENCIES
100-300Hz
Too much of leads to boominess. Too little thins out the sound.
MID-RANGE BITE
1-4kHz
A busy area that competes with guitars and synths. Pay attention to harshness.
'AIR' REGION
10-20kHz
Roll off to taste. Boost for creative effect.
LOW END RUMBLE
20-80Hz
Often due to proximity effect & unwanted artefacts
THE 'BOX' REGION
350-600Hz
It's a fine line between 'Boxy' and 'Hollow'. Balance Carefully.
SIBILANCE ZONE
5-8kHz
Try Broader Q Curves to Have Better control over the Brightness.
12dB
+9
+6
+3
0
-3
-6
-9
-12
-15
20
30
50
70
100
200
300
500
700
1k
2k
3k
5k
7k
10k
20k
CUT
RUMBLE/SUB BASS
BOOM/WARMTH/MUD
BOXY
NASAL/HONKY
PRESENCE
AIR
VISIT PRODUCERHIVE.COM
PRODUCER HIVE

HOW TO EQ INSTRUMENTS

Each instrument is unqiue. Guitars, drums, keys, and horns all produce sound at different frequencies. Learning where each of these instruments fall on the spectrum will help you fine tune each instrument to sound it's best. The cheat sheet on the next page can help you create a better mix.

COMPRESSION narrows the difference between the loudest and softest parts of a track so that it's more consistent in level.

GATING is the process of using a dynamic threshold as an on/off trigger.

DID YOU KNOW?

All of our lead guitarists have a pedal board that does most of the EQ work before it ever reaches the sound board. That means that we don't need to use compression or gates on our lead guitars. Always check with the guitarists to see if they have mixing preferences for their pedal board.

TRACK	EQ BOOST	EQ CUT	COMPRESS
KICK	Between 50-70 HZ for low-end 2.5-4.5khz for slap 8khz for click & attack	150-350hz for mud 700-900hz for boxiness or "basketball" sound	Slow Attack Fast Release
SNARE	200hz for low end 2.5khz for midrange attack 8khz for crack/snap	500-700hz for boxiness	Slow attack Fast Release
TOMS	120-200hz for low end (rack tom) 70-90hz for low end (floor tom) 4.5khz for attack 8khz for attack	150-300 for mud 700-900 for boxy or 'basketball' sound	Slow Attack Fast Release
OVERHEADS	12khz shelf for high-end sheen	HPF 200hz or higher 400-700hz for boxiness and reduce kit sound	Slow to medium attack Medium to Fast release
ROOMS	80hz for low end 5-8khz for presense	150-350hz for mud 8khz and above for harshness	Fast Attack Fast Release Compress hard to bring out ambience
BASS	50-80hz for sub/low-end 1khz for attitude & cut in the mix 2-2.5khz for string noise and presence	350-700 for boxiness LPF above 4k	Medium attack Medium release
GUITARS (Heavy / Distorted)	1.5khz to cut through the mix 2.5khz for extra aggression 5-8khz for brightness	HPF below 90-120hz LPF above 10-12khz 250-350hz for mud	Medium attack Medium release
GUITARS (Clean)	1-2.5k to cut through 8-12khz for brightness	250-600hz for mud or boxiness	Medium attack Medium release
VOCALS (SCREAM)	1-2.5khz to get up-front 8khz for aggressive brightness 12-14khz shelf for air		Fast to Medium Attack Fast Release COMPRESS HARD Slower attack = harder consonants
VOCALS (SING)	1-2.5khz to get up-front 8khz for aggressive brightness 12-14khz shelf for air		Fast to Medium Attack Fast Release COMPRESS HARD Slower attack = harder consonants

BEHRINGER X32

The Behringer X32 can be a little intimidating. There are lots of buttons and screens and menus to choose from. But with a little practice and time behind the board you will feel right at home. Use this basic guide to find what you're looking for.

The Blue Box is you where you will find GAIN, PREAMPS, COMPRESSION, and GATES.

The Green Box is where EQ adjustments can be made. You can see your visual EQ on the screen to make specific adjustments.

The Red Box is where the channels and faders are located and how you change from layers 1, 2, Aux Channels, and Buses

The Pink Box is where DCA Groups, Buses, and Matrices can be adjusted. The Master Chanel is also included in this group as the last fader on the right.

The Cyan Box is where the LCD screen and output options, configuartions, and setup can be done. It's also where monitors are adjusted.

The Magenta Box is where you can save and load scenes, cues, etc.

The Orange Box is where effects can be adjusted. Effects are assigned on the LCD screen.

The White Box is where Mute Groups are located. These can be assigned in any combination.

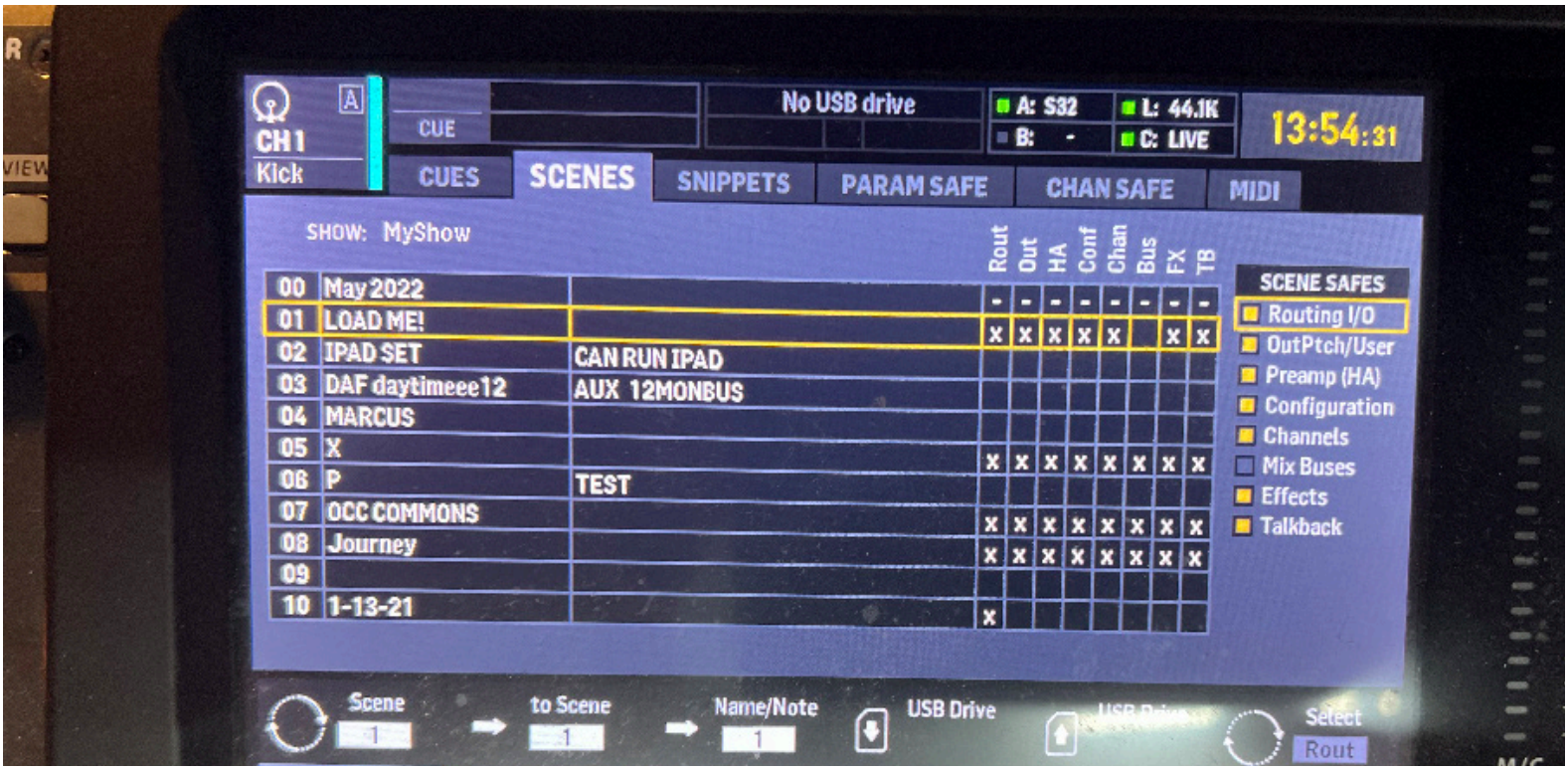

behringer
X32 POWERED BY MIDAS
CONFIG / PREAMP
GAIN
FREQUENCY
48V
LOW CUT
GATE
DYNAMICS
THRESHOLD
GATE / DUCKER
COMP / EXP
EQUALIZER
Q
MODE
FREQ
GAIN
HIGH
HIGH MID
LOW MID
LOW
BUS SENDS
MAIN BUS
LEVEL
MONO BUS
PAN / BAL
STEREO BUS
HOME
METERS
ROUTING
SETUP
LIBRARY
EFFECTS
MUTE GRP
UTILITY
PAGE SELECT
LAYER
TALKBACK
EXT MIC
MONITOR LEVEL
PHONES LEVEL
MONO
DIM
TALK A
TALK B
SCENES
PREV
NEXT
UNDO
GO
MUTE GROUPS
SELECT
SOLO
MUTE
MAIN

STARTING THE X32

Immediately after turning on the X32 you should load up the “scene” that has been preset at rehearsal.

To do this press the VIEW button located in the Magenta box from the previous page. Page over to SCENES and select the scene labeled “LOAD ME!”

This scene has already been labeled, routed, and mixed. Adjustments should be made from this starting point.



ROUTING

Occasionally you may need to route certain channels to our P16 In-Ear Monitoring System.

Begin by pressing the ROUTING button to the right of the LCD screen. Page over to the “PATCH” tab at which point a new menu will begin. Page over to P16.

The 16 channels on the left coincide with the monitoring units on stage. The key at the bottom of this page is where each channel should be routed.

The In-Ears sound are unaffected by any changes made on the board with the exception of GAIN. If you adjust the GAIN the volume will go up or down in the musician/vocalists’ in-ear monitors.

BROADCAST MIXING

The Broadcast Mixing system uses a combination of an X32 Sound Board and a WAVES SoundGrid Processor installed on a Mac Mini Computer. While there are some extra steps involved, the mixing process is very similar. Like with anything, the more practice you have with it, the more comfortable you will become.

Typically when you are scheduled to run the broadcast mix the hard part has been done for you ahead of time. Under the “SHOW” tab at the top will be about 14 different “SNAPSHOTS” that coincide with moments/ segments of the worship service. There is also a quick drop down menu of these same SNAPSHOTS to the immediate right of the SETUP menu tab. By selecting one of the SNAPSHOTS, Soundgrid will load all the necessary EQs, volume levels, gain, effects, etc.

Because we are mixing for the average TV, soundbar, headphone, or cell phone speaker we have to pay special attention to what signals we are boosting.

These devices are all tuned to boost voices which means that we don’t need to push those signals as hard. See the table to your right for a helpful guide of where things should be set.

You will also need to make adjustments on the board. These mainly function as volume faders since the vast majority of EQing and Effects are done on the Soundgrid.

STARTING VOLUME

Set all your **instruments** to **0dB**

Set your **vocals** to **-5dB**

Set the **headset mic** to **0dB**

Set your **ambient mics** to -**10dB**

Set **pre-service music** to **-10dB**

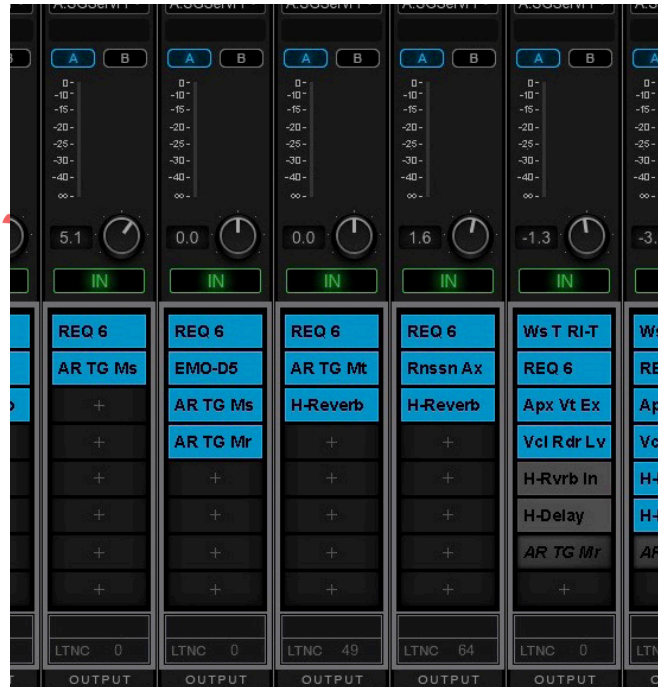
BROADCAST SIGNAL CHAIN

SANCTUARY'S X32

1. AUDIO FROM THE SANCTUARY'S X32 IS DIGITALLY ROUTED INTO THE X32 IN THE MEDIA ROOM.

2. SIGNAL ROUTED FROM X32

3. SUPER-RACK PROCESSES AUDIO AND SENDS IT BACK TO THE X32



4. AUDIO INTO X32

5. VOLUME LEVELS/MIX ADJUSTED FINAL TIME ON THE X32 AND THEN AUDIO SENT TO VIDEO SWITCHER

6. CAMERA TECH ENCODES THE AUDIO AND SENDS TO HOSTS

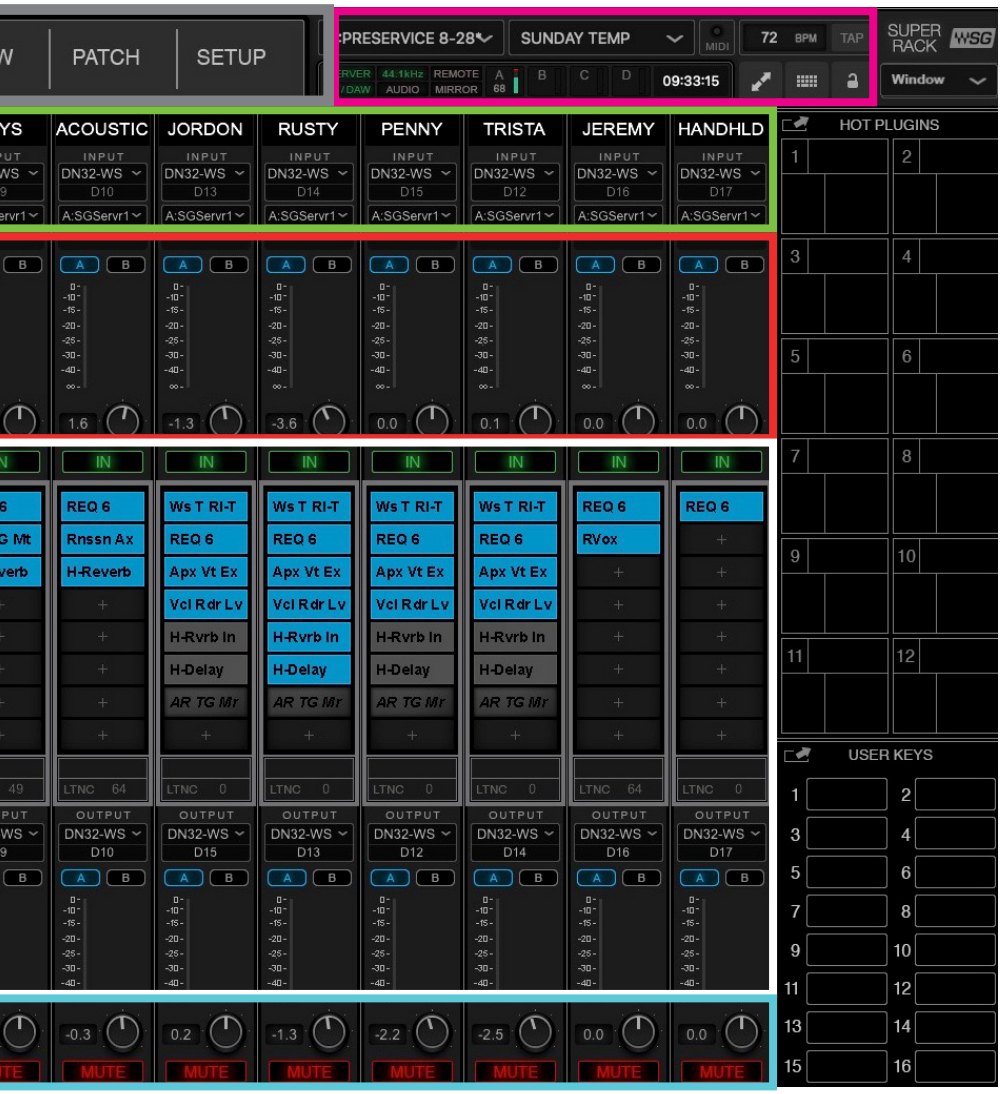
The Purple Box is the Rack that is currently selected.

The Green Box is the digital input location coming from the X32. Usually this will match the Output routing located in the Cyan Box.

The Red Box is the “Input Volume” which can be thought of as GAIN on the SuperRack.

The White Box is the location of the Plug-Ins that will effect each individual “Rack.” These will usually be adjusted beforehand and not need too much attention. If a Plug-In is “BYPASSED” it will be grayed out. If a Plug-In is “Disabled” it will be a darker shade of gray. LTNC stands for latency. As long as that number stays below 75 the audio will not be delayed.

The Orange Box is how to navigate the different “Layers” of channels/ racks. If CUSTOM is selected (as in the picture) you will get a different list of channels than if it is not selected. We only have a total of 32 channels and only 20 in use.



The Magenta Box is where "SNAPSHOTS" can be stored and recalled, changes saved, and settings loaded. It also contains a Tap Tempo that will effect the delay plug-ins on each rack.

There are also different displays in Green which informs you that everything is working properly. If any of those are red then we must troubleshoot to find out why.

The Gray Box is where you can navigate between different screens. You will rarely ever need to use these with the exception of "RACK" which is how you can adjust the various plug-in parameters.

The Cyan Box is the "Output Volume" which can be thought of as the volume level going back into the X32. In the same way that the X32 has faders, this will function as a fader. It also contains the digital output location going back into the X32.