

ROUTING TAB

A main tab labeled *Routing* appears in the *Configuration* panel for all sources (Figure 1). The controls in this group determine output routing of the various channels supplied as inputs to the various output mix busses (*MASTER, AUX 1, etc.*) Let's talk about what an audio bus is and how it is useful before proceeding.

BUSSES AND OUTPUTS

Consider a very basic audio mixer. Its main audio signal path, from input to output, is properly called the 'master bus.' Sound supplied to one or more inputs is placed on this master bus (in the jargon of audio processing, this is called a 'send'), which ultimately flows to output connectors.

Slightly more advanced mixers often provide more than one 'send' for individual inputs. For example, the sound from all inputs may be sent to the master bus, comprising the 'master mix'. A different mix, sometimes called a 'sub-mix', might also be created by sending certain signals to a secondary ('auxiliary', or 'Aux') bus.

Hint: A secondary mix, prepared on an Aux bus, can serve many purposes. For example, you might wish to record a mix with all sound from talent microphones but that excludes any sound effects or music.

Let's summarize what we have learned so far: A 'send' pipes audio signals from an input to a discrete pathway called a 'bus'. Multiple sends can be used to place sound from a given source onto one or more internal busses.

What else should we know?

Each audio bus is discrete. Each can be directed along different output paths. And even when the blend of signals it carries is otherwise identical to another bus, it can be *processed* separately. Thus its levels, equalization, and compressor/limiter settings can be unique.

The *Audio Mixer* provides four primary *audio busses*. These are identified in the *Audio Mixer* as:

- *MASTER*
- *AUX 1, 2 and 3*

The *Audio Mixer* provides controls for each of these busses, allowing you to manage levels and signal processing. It is important to understand the distinction between *busses* and *outputs*. Now that we understand the former, let's consider the latter.

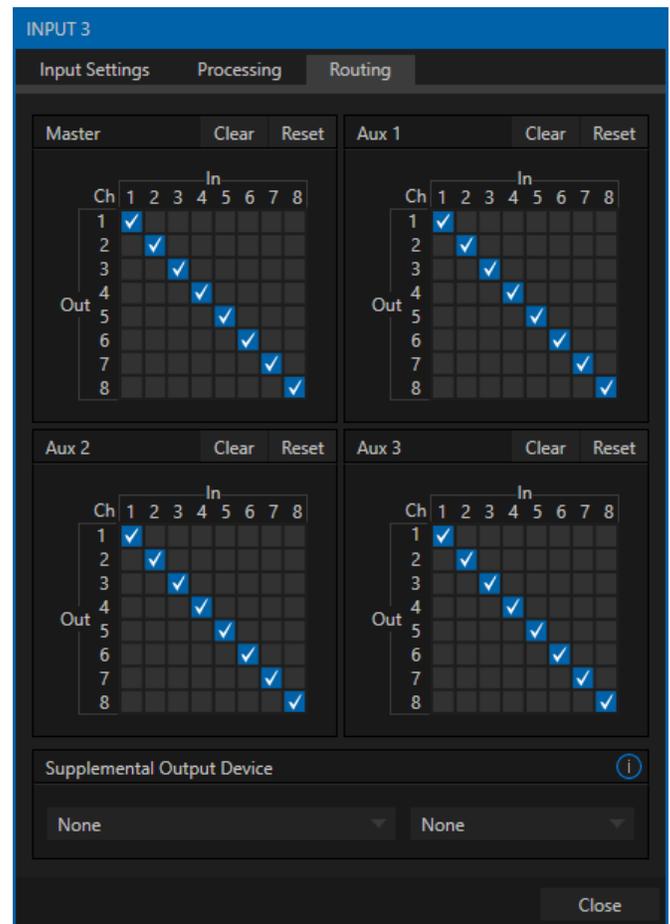


Figure 1 (VMC1)

An *output* may be physical, or virtual – i.e., it may involve a connector on the rear panel, or not. For example, audio recorded internally does not require an output connector. Likewise, it may initially be analog or digital.

Note: Analog outputs 1 and 2 are permanently assigned to MASTER and AUX 1, respectively. In contrast, digital (or 'embedded') outputs are configurable in the Output Configuration panel.

SUB-MIXES AND 'MIX MINUS'

At times you may require specially configured audio mixes. For instance – some installations call for sending audio from one or more internal sources (such as a *DDR* or the *Sounds* player) to a secondary distribution system. Alternatively, you may want a 'clean' output from one or more sources for use apart from the main primary output mix.

Specialized sub-mixes of this latter sort are often referred to as 'mix-minus,' since one or more sources are deliberately subtracted from the main program. Mix-minus capabilities can be invaluable for productions like 'phone-in' shows. The remote caller needs to be able to hear the interviewer; but if you simply send the primary mix back to him, he is forced to endure a late-arriving echo of his own voice. Needless to say, this would be confusing and undesirable.

Suppose your interviewer is speaking into a microphone connected to channel 1 of *Input 1*. The audio from your interviewee is routed into *Channel 2*. You could easily supply both to your *Master* bus for your program output needs, but remove channel 1 from *Aux 1*, and remove channel 2 from *Aux 2* to provide mix minuses to send back to the interviewee.

This approach eliminates annoying echoing, feedback and the like. Meanwhile, both participants can be heard on the main *Program* output. Also important, independent control and signal processing is provided for each part of the pipeline.

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MIX MINUS FOR EXTERNAL TALKSHOW DEVICES

The *Routing* tab provides four 4x4 (TC1) or 8x8 (VMC1) matrix routing panels for each input, allowing for more sophisticated mixes than the example above. VMC1 supports 8 channel NDI output, so it's actually possible to route a unique mono mix-minus on each channel for a single Aux bus. A single NDI output can thus provide all of the mix-minus needs for two Talkshow VS4000 systems.

Let's consider a simpler example – configuring unique mix minus audio for return to a single VS4000.

The example assumes that you have assigned *Switcher* inputs 13-16 to receive the four individual TalkShow sources. We will use video *MIX 2* to supply *Program* video for return to each TalkShow caller. And we will assign *AUX 1* as the *Audio* source for *MIX 2*, assigning a unique (mono) mix minus to each of its four channels to supply return audio for each caller.

- In the *Output Configuration* panel, assign *Aux 1* as the *Audio* source for *MIX 2*.
- In the *Audio Mixer*, open the audio configuration pane for *Input 13*.
- Access the *Routing* tab, and click the *Clear* button above the *Aux 1* routing matrix.

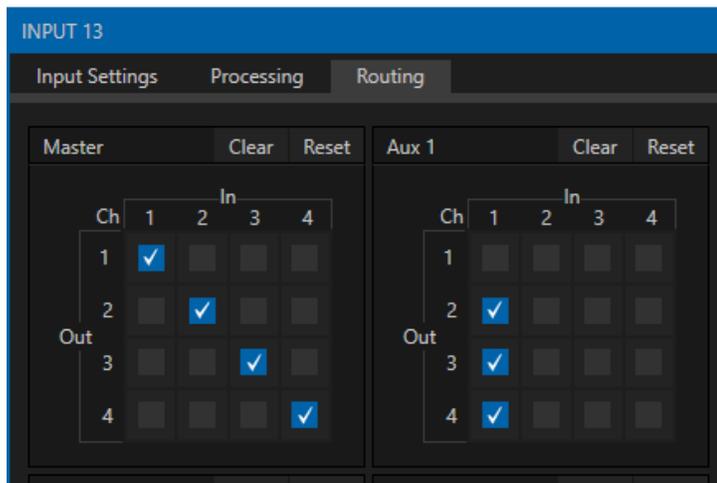


FIGURE 2

- Checkmark channels 2, 3 and 4 in the column below *In 1* (see [FIGURE 2](#)). This routes sound from the first incoming Skype caller to all *Aux 1* output channels *except* channel 1.
- Open the audio configuration pane *Input 14* and, in the *Routing* tab, clear the *Aux 1* matrix.

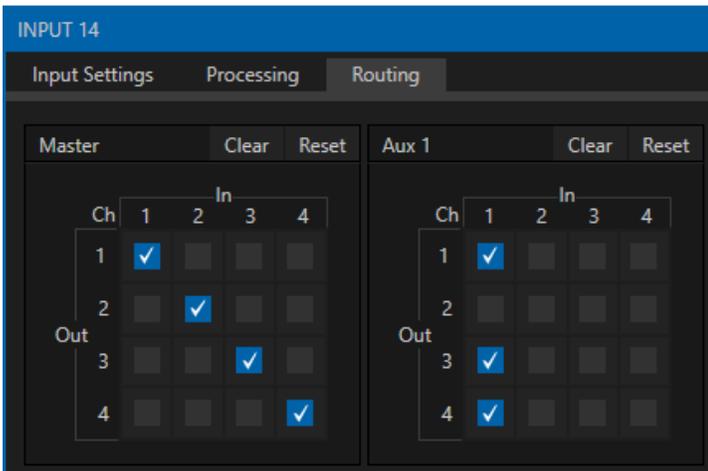


FIGURE 3

- This time, checkmark channels 1, 3 and 4 in the column below *In 1*. This routes sound from the second incoming Skype caller to all *Aux 1* output channels *except* channel 2.
- Repeat the steps above for audio inputs 15 and 16, omitting the *Aux 1* checkmarks under *In 1* for channels 3 and 4, respectively.

That's it – you've got the perfect mix minus configuration for return to your four Skype callers. All you need to do now is finish up by configuring the TalkShow returns on the VS4000 system.

- Open the *Channel Configuration* pane for TalkShow *Channel 1* to its *Return to Caller* tab.
- Assign *MIX 2* as the return *Video Source*.
- In the *Audio* level control group below, click the speaker icon above all channels except *Ch. 1* (see Figure 4), thereby muting them.

Recall that you removed the sound from the first Skype caller from *Ch. 1* of *Aux 2*, which is embedded in *MIX 2*. So this is the mix minus designed for return to that caller. Muting all the others ensures the caller does not hear an echo of his own voice.

- Open *Configure Channel* for TalkShow's *Channel 2*, and configure its *Return to Caller* tab just like *Channel 1*; but this time, mute all audio channels except *Ch. 2* instead.
- Continue to set up *Channels 3* and *4* in similar fashion, but muting all audio channels other than *Ch. 3* and *4*, respectively.



Figure 4