UltriMix-MXR is the newest software licensable feature available for the Ultrix Connectivity Platform from Ross Video. Each license is a 32x16 channel audio mixer processor. Up to 4 licenses can be added to an Ultrix frame providing up to 128x64 total channels. Licensed channels can then be partitioned into multiple different, independent mixers. Partitions can be configured to be a single 128x64 channel mixer, 2 medium 64x32 channel mixers or four 32x16 mixers. Each input channel comes with a noise gate, compressor/limiter, and a four-band parametric equalizer. Operators route (or breakaway) any MADI input or any SDI input de-embedded audio source to UltriMix-MXR channel inputs and then route any UltriMix-MXR output to any MADI or SDI output embedded audio destination.

Each input channel of the mixer also generates a Direct Output. A Direct Output is simply a copy of the same audio processed by a channel strip that does not go to the mixer outputs and therefore does not get mixed with other audio channels. This means that after audio is routed into an UltriMix-MXR channel, it gets processed by the noise gate, followed by the compressor/limiter, followed by the equalizer. The processed signals are then sent simultaneously down two separate paths. One path is sent to the mixing stage where it is mixed together with other channel inputs. The second path is sent unmixed back to the audio cross point to then be sent elsewhere in a system. This path is a fixed path that is automatically generated when the Mixer is added to an Ultrix and cannot be changed or assigned to another mixer channel. This means that Mixer Input 1 is directly associated with Direct Out 1, Mixer Input 2 is directly associated with Direct Output 2, etc. Direct Outs can give users a lot of flexibility when it comes to processing audio within an Ultrix frame.

## Use Case: Processing Audio before de-embedding or swapping

One use case of the direct outs would be to process the audio that is coming in as embedded audio on SDI inputs before it is de-embedded. Ultrix is commonly used to take embedded audio from SDI inputs and either swap it with other SDI output embedded audio channels, or de-embed it altogether to MADI outputs. Utilizing the Direct Output functionality of the UltriMix-MXR license, operators can add a layer of audio processing between de-embedding from the SDI inputs to other SDI embedded outputs or to MADI outputs. To accomplish this, operators will route (or breakaway) the incoming embedded audio to a channel input on the mixer. From there, the operator can use the noise gate, compressor/limiter, and EQ to process the audio. The channel strip automatically sends the Direct Out copy of the audio back to the cross point. From there, operators just route the processed audio channel(s) to the SDI output embedder or MADI output channel of their choice. This is a powerful option when operators need to level out the gain of a particular channel, filter out noise, or want to treat the equalization of the audio before sending the audio on to its next destination. This example focuses on the initial source of audio here being an SDI input embedded audio channel, but this example works equally if the source of audio comes from a MADI input channel instead.

## Use Case: Creating ISO channels separate from a Mix

Another use case of the Direct Outs would be to use direct outs to provide isolated, processed channels separate from the larger mix being done at the outputs of the UltriMix-MXR. This is a common task when an event such as a concert is being recorded with the intention of it being edited at a later date. In this example, audio from front of house would come into the Ultrix as MADI audio input channels. Operators then, can route those MADI inputs to UltriMix-MXR input channels. As usual, the operator will then mix the audio to one or more UltriMix-MXR outputs. That output or outputs will then be routed to an SDI output embedded channel and sent to a recorder. Since the Direct Output from each individual UltriMix-MXR channel is automatically generated, operators can pick select key audio channels and individually route those channels to the same SDI output just on different embedded audio levels this time. Having both mixed and iso channels give editors more content to bring together after the event concludes.