Virscient LiveOnAir

Virscient, a developer of embedded software systems and wireless connectivity solutions, has partnered with CME Pro, the creator of wireless MIDI (WIDI) for electronic music creators (seen in picture above), in a collaboration that will launch the first-ever product to feature LiveOnAir. The partnership leverages Virscient's LiveOnAir technology, which is an ultra-low latency audio transmission protocol developed for professional performance audio and hard-core gamers. LiveOnAir was designed and developed by Virscient and will extend the functionality of CME Pro's leading WIDI range to include other instruments.

From a technical perspective, the LiveOnAir technology combines a flexible ultra-low latency wireless audio protocol with a suite of codecs that can operate on off-the-shelf System-on-a-Chips (SoCs). For example, Virscient's wireless microphone reference design is implemented on Nordic Semiconductor's nRF5340 BLE SoC, which runs both the protocol stack and codecs. LiveOnAir makes efficient use of the nRF5340 dual-core architecture by deploying the optimised low-layer protocol stack

on the network processor and running the codecs (with down to 1.5 ms algorithmic latency) and upper application layers on the application processor.

This technology is hugely beneficial to anyone using a microphone to pick up and transmit live audio into a system and is being adopted by CME Pro to enable music creators already using a wireless MIDI controller to blend inputs from different instruments with a purer, more realistic result. The integrated USB interface facilitates device firmware updates and USB audio transfer, while I2S/I2C interfaces provide flexible connectivity to an ADC and/or DAC for high quality audio reproduction.

"While amateur musicians may tolerate a single link's 20 millisecond lag, by the time this compounds across multiple links it is almost inevitably unacceptable," says the Director of Virscient's Audio Centre of Excellence, Jonny McClintock, explaining that vocalists can tolerate the least amount of latency (<3ms) followed by drummers (<6ms), pianists (<10ms), guitarists (<12ms) and keyboardists (<20 ms). "While the definition of 'low-enough' latency varies, it is universally accepted that lower is better, and crystal clear that solutions like the classic Bluetooth A2DP protocol with its 40 to 150 ms latency simply don't cut the mustard," continues McClintock. "These changes make it more appealing for performers to remove cables for mics and enjoy the freedom of performing wireless." By implementing LiveOnAir in their WIDI product development, CME Pro will be able to deliver ultra-low latency audio to a wider range of music creators, giving the company the potential to reset the benchmark for wireless audio transmission.

The agreement between the two companies was finalised by McClintock and Zhao Yi Tian, CEO of CME Pro. Zhao anticipates that a prototype from CME Pro featuring LiveOnAir will be ready for market in early 2025, saying, "LiveOnAir will enable CME Pro to extend our WIDI offering and include live instruments. This will be a game changer for our creator audience, and we are looking forward to presenting a prototype early in 2025."

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