µMPX™

Introducing Radio's First Composite FM Codec: High-quality MPX over a 320kbps IP connection

Nautel and Omnia® have been innovating together for years, famously introducing *Omnia-Direct* MPX over AES at NAB 2013. Now, the two companies partner up with Moseley to bring NAB one of the most exciting technology demos you're likely to see at NAB.

Introducing µMPX™ ("Micro-MPX") by the Telos Alliance®.

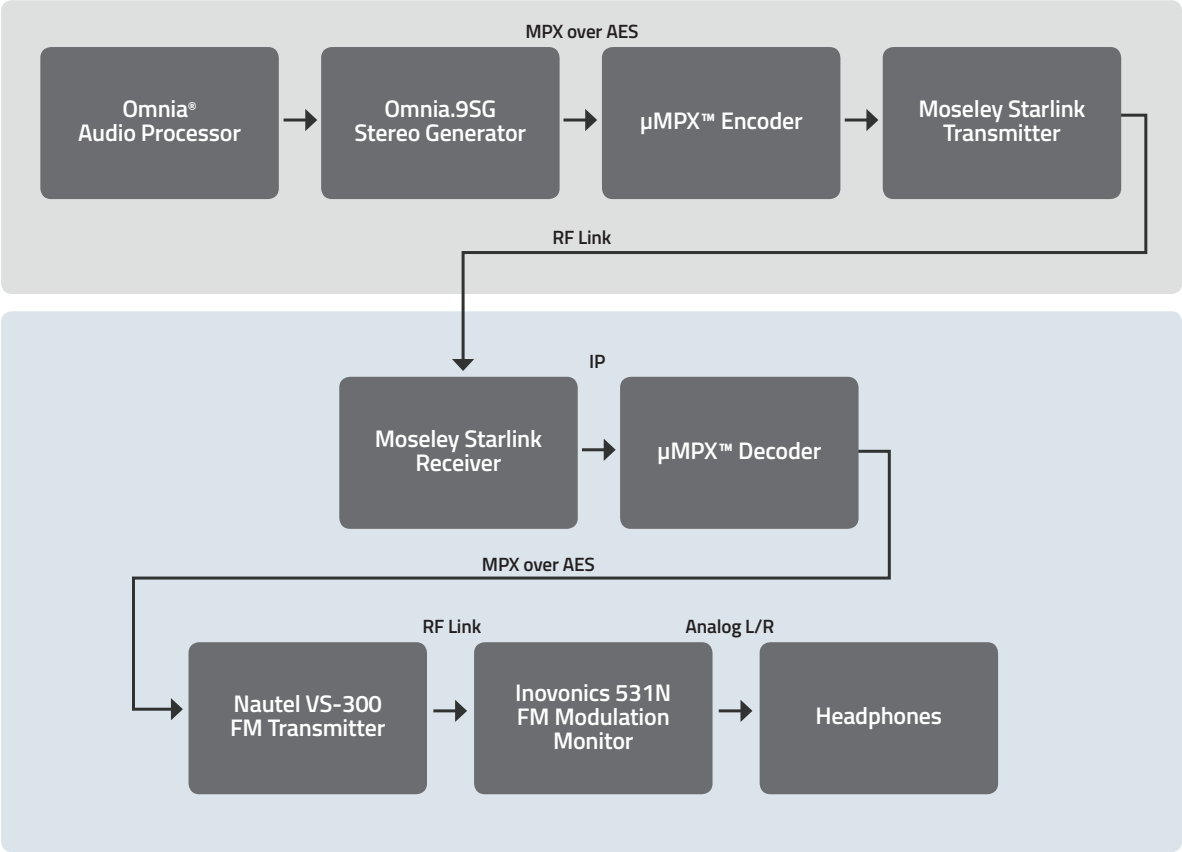
µMPX is a specially designed audio codec that is able to transport high-quality Multiplexed FM signals over a relatively small 320kbps data pipe. This specialized codec is purpose-built for FM radio. By reducing data requirements, high-quality multiplexed audio can be economically routed from an audio processor, over IP, and directly into an exciter.

The potential for this technology is enormous. Lower bandwidth IP connections and narrow band STL channels can now be put into play to transport MPX signals. µMPX will create new audio distribution options and cut equipment needs and costs, as it leverages advances in the world's ever-growing IP infrastructure. Sound quality will benefit as this purpose-built codec makes its way into more places. As with all new groundbreaking technologies, potential applications for this will only grow as creative radio engineers get their hands on it.

Designed by audio software guru Hans van Zutphen and his team at Thimeo Audio, µMPX will revolutionize the way MPX can be transported. As master licensor, the Telos Alliance intends to make this new technology accessible, affordable, and attainable to the widest variety of broadcast equipment makers, for the good of the entire industry.

Today's µMPX™ demo will transport an encoded MPX signal over IP from the Telos Alliance booth, through a Moseley Starlink STL, and directly into a µMPX decoder feeding a Nautel transmitter. See the diagram below for details.

µMPX™ NAB 2016 Demo



µMPX FAQs

What is MPX over IP?

MPX (aka multiplex) over IP is the transmission of a composite signal from the studio to the transmitter over a IP infrastructure.

What is Telos Alliance's µMPX?

µMPX is the Telos Alliance's new, extremely efficient codec for sending FM Multiplex over IP.

Why send FM MPX over IP?

MPX over IP lets engineers put FM signal processing equipment—like an Omnia audio processor or stereo generator—at the studio instead of the transmitter site. This centralizes the equipment and simplifies signal distribution, saving broadcasters money on both equipment and bandwidth licenses, and opening up the technology to budget-constrained stations.

How is Telos Alliance's µMPX different than other MPX over IP technologies and methods?

Think of regular MPX like a CD or linear WAV file, and µMPX like an MP3 or other compressed format; while linear audio may be closer to the master recording, it is just too dense to be used in bandwidth-constrained applications. µMPX is the only audio codec explicitly designed for FM MPX over IP. While other companies have full-bandwidth "linear" MPX over IP offerings, distribution of such streams requires extremely high dedicated bandwidth, typically 2 megabits (Mb) or more. µMPX slashes the amount of bandwidth needed for distribution by nearly 84% to a remarkable 320kbps! For broadcasters with slower IP connections or for RF STLs with limited bandwidth, "Linear" MPX over IP is not a possibility. µMPX*'s* micro size leverages moderate data connections and opens up new and exciting possibilities for broadcasters of any size. µMPX will let broadcasters do more with less.

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How is µMPX specifically engineered for FM radio?

Traditional lossy codecs such as MP3 or AAC were designed for noiseless (non-FM) environments, and use masking strategies optimized for consumer listening. Artifacts that are created by these lossy codecs won't be masked by FM transmission and cause peaks that must be tamed by tight peak control. When such codecs are used as an STL transport, broadcasters may get the worst of both worlds—FM artifacts and encoding artifacts. µMPX is specially designed so that any artifacts it creates are easily masked by FM reception. At 320kbps, preliminary blind listening tests have shown that it is extremely difficult to discern µMPX-encoded from non-encoded content.

How does µMPX offer better quality than other codec approaches?

Traditional lossy codecs, often used for main or backup STL links create large peaks, which broadcasters then need to clip at the transmitter site. µMPX was designed to feed a properly encoded FM signal, including tight peak control and loudness optimization, directly to the transmitter. With it, you get full MPX processing in studio, plus all the advantages of having a good MPX clipper, like those in Omnia processors, while eliminating the need for a clipper at the transmitter.

What do you need bandwidth-wise?

320kbps. That's it. For best results, private networks or microwave links are preferable. Multiple µMPX streams will fit into a narrow band STL channel.

What kind of possibilities does µMPX open up for broadcasters?

µMPX is is so new that the potential applications are being dreamed up as we speak. Obvious applications include use for primary or backup STL links, or utilizing lower-rate RF links that can transport IP in challenging STL environments.

As an enabling technology, µMPX is bound to have tremendous impact in creating new STL approaches, such as sending bidirectional signals or sending multiple channels over a single STL. Broadcasters should be able to reduce equipment needed, while still keeping their processors at the studio. As the first lossy codec designed specifically to transport MPX, µMPX will stand in a class of its own against other IP codec solutions.

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Is µMPX hardware or software?

Right now, it's a technological innovation. We have an existence proof and a live demonstration. We expect there to be both hardware and software embodiments of the technology as we continue development.

What about support for things like SCA channels, SSB, and Auto Pilot?

Over time, we expect to add functionality to the base system and grow the core of this technology. For example, µMPX does support RDS, and you will see that in our demo.

Why are you showing this if it just a concept?

The core technology is pretty far along in development, and we wanted to share this with the industry so we could broaden the conversation. We think µMPX can be good for all of Radio, and our intention is to make it available under license to a wide variety of interested parties. We want to know what *you* think.

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