ClearOne Beamformer

ClearOne is shaking up conferencing with a smart-looking, smart-thinking microphone array. Beam me up!

Text / Christopher Holder

**It really is almost like magic.** I was at the Deakin Management Centre to hear ClearOne’s Beamformer in action and after all of the introductory chat that it was time: “so can I hear it in action?”

We set up a video conference between two rooms in the centre. One of the university’s AV teams went down the hall to talk to me from a distance no closer than 1m away. ClearOne promises that its adaptive steering smarts will provide a pickup response akin to half that distance (ie. 75cm) but even then a perfectly positioned tabletop or flush mount boardroom mic will win the shootout. Equally, a radio mic (fanyard style or lavalier) may provide a more present response.

But I did ask to tell you that professional AV integration and installation isn’t simply a performance equation. When it comes to corporate boardrooms, image and prestige is as important as performance (so, for starters, you can forget about the traditional three-cornered tabletop conferencing box). No, it’s quite likely the architect has built the boardroom table out of granite, hewn from the chairman’s own private mountain range in the Pyrenees and won’t let you within a bull’s roar of it with a drill. The ceiling is a single monocoque carbon fibre sculpture, so don’t even think about dropping ceiling mics. Beamformer will win over style-savvy architects the world over. And what’s more, running a dozen or more tabletop mics and/or a wireless system is a pain in the neck. I think most of us would happily sacrifice a little soundfield audio performance for what Beamformer is bringing to the party – convenience, consistency, clean aesthetics, ease of use and a more present response.

**24 MICROPHONES**

ClearOne’s Beamformer packs 24 microphone elements. The 24 elements are arrayed to cover six zones (beams) when in Table mode, and five zones in Ceiling mode [see diagram]. To function, it needs to be teamed with a ClearOne Converge Pro host unit (the 840/880/880T/880TA) – simply plug a Cat5/6 cable into the Converge Pro’s G-Lank expansion box, which can be 50-plus metres away if needs be. The array is powered using the optional ClearOne PoE PSU or any standard third-party Ethernet switch and PoE injector. Run as many as three Beamformers per Converge Pro box and as many as 16 Beamformers per system.

Having the Beamformer integrate into an existing Converge Pro setup is convenient and will be appreciated by existing ClearOne customers. For those married to other systems, such as Biamp, I guess it’s worth remembering Beamformer won’t play with them.

**KEEP IT CLEAN**

So why would you install a Beamformer? For its performance? Yes and no. Nothing beats a directional mic in the face – the sound of a sensitive cardiod microphone 15cm from each participant around a boardroom table is sacrificed a little nearfield audio performance in the neck. I think most of us would happily sacrifice a little soundfield audio performance for what Beamformer is bringing to the party – convenience, consistency, clean aesthetics, ease of use and a more present response.

**WHAT’S MORE**

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**BEAMFORMING BY DEFINITION**

Beamforming is a signal processing technique carried out by a processor using the input from the beamforming microphone array. The signals from the mics are combined such that signals of particular angles experience constructive interference, while others experience destructive interference. To adapt and focus the directionality of the array to focus on desired sounds, a beamforming array system adjusts the phase and amplitude of the signals coming from each microphone to synthesise a pattern of constructive and destructive interference in the wavefront. Information from different microphones is then combined such that the expected acoustic pattern is preferentially processed and fed into the conferencing audio stream.
microphone solution would not be possible and where a dozen or more participants would make a wireless solution complicated and costly. Enter Beamformer. One or more arrays can be mounted above the tables and automatically respond to every unique configuration – tracking each participant in a conference room and adjusting its gain and mic coverage pattern automatically and dynamically to beat pick up each participant.

Wow. It’s hard to see how any other conferencing system could compete in this type of application. Most rooms will have no-go regions such as pillars, doors, windows and/or a tabletop console would suffice. There’s no doubting Beamformer’s elegance. It’s an aesthetically pleasing piece of industrial design with the performance to match.

If you have existing Converge Pro hardware and you’re looking to upgrade your conferencing setup, the Beamformer is a no-brainer – a single array can replace six to 10 traditional microphones, clean up the look of your room, inject some real versatility and more than likely improve the audio performance.

If you’re looking at a fresh install, then Beamformer may well provide the answer in a medium/large room. Especially if aesthetics are a big consideration or if the room is an odd shape or regularly reset.

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It’s not all about telepresence. Less conventional spaces, such as boardrooms, classrooms, training rooms, houses of worship, could well benefit from Beamformer where directional microphone installations fall short because of the unpredictable nature of who’s talking and where.

If there’s a downside, then it will be price. Beamformer won’t be cost-effective for smaller or portable conferencing scenarios, where a cart and/or a tabletop console would suffice. There’s no doubting Beamformer’s elegance.

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**CLEARONE CLARITY**

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