This solution guide describes a practical implementation of the Waves CA DSP Engine in a multi-zone retail space to improve and optimize audio quality throughout the store.

**SOLUTION BENEFITS INCLUDE**

- Create a balanced audio atmosphere throughout all zones
- Enhance audio playback quality from any source
- Improve speech intelligibility without loss of tonality

**SYSTEM REQUIREMENTS**

- Gooseneck paging-microphone
- Wireless handheld microphone
- Media player (stereo audio), a streaming player (computer audio)
- Four sound-zones with adjustable volume controls: main retail space, mini-show stage, store front, back office.
SOLUTION OVERVIEW

Note – numbers below correspond to the numbers on the system diagram.

1. Mic and line inputs use a standard I/O-to-Dante interface box for connecting wired and wireless microphones.
2. Streaming PC includes Dante interface board to connect directly on Dante network.
3. Each input is routed using the Dante Controller to an individual Rack assignment on the Waves CA DSP engine.
4. Waves CA DSP engine is configured with the following presets for the microphone inputs: “Handheld” and “Speech” preset for both wireless handheld and gooseneck mics.
5. The processed audio from the Waves CA DSP engine is routed to a Dante-enabled audio mixer. The mixer is set for appropriate source levels for the inputs with sub-mix (group) outputs configured for the microphones (Grp 1) and audio players (Grp 2).
6. Outputs from the mixer are routed using the Dante Controller to the Waves CA engine for final processing.
7. Waves CA DSP engine is configured with presets for “Music Ducking Control” (auto-adjust playback on GRP2), and 2 individually processed stereo-outs, one output for the mini-show stage (Rack 4), and one for processing the mixer output on the main floor, front and back office zones (Rack 5).
8. The final processed audio from the Waves CA DSP engine is routed to the Dante-enabled PA systems for each zone.

THE WAVES CA DIFFERENCE

The Waves CA DSP Engine integrates directly in the Dante network to dramatically improve the audio system quality for common retail installations. The Waves CA presets are used to process the audio streams based on the input and group types: Handheld Mic, Speech Mic, and Music Ducking Control.

The presets used on the microphone channels are preconfigured to support common mic types and usage in retail spaces. The presets treat and suppress typical challenges with mics including feedback, pops & thumps, hissing and background noise.

Each microphone channel input is processed independently in order to provide the best results. This also gives the system integrator complete control and flexibility to optimize the settings for different mics that may be used in the facility.

In addition to the microphone processing, the Playback Group preset is used to provide consistent volume level and sound for the media player, which may be streaming content, CD playback unit, MP3 player, or audio output from a video system. The preset provides automatic levelling of the source audio without over-compressing, such that the resulting audio stream does not exceed the desired loudness while remaining consistent across different source media.

A special group assignment is also configured so that using a microphone will automatically compress and lower the level of the playback (music) group so that announcements or paging can be easily heard in the room zones.

The Waves CA DSP Engine also includes presets to fine-tune the audio outputs that are sent to the room PA zones. These presets provide a baseline configuration for integrators to customize the presets for the exact needs of each zone in the installation (i.e. mini-show stage with sub-woofers is processed differently from the ceiling-mount speakers throughout the main floor).

All Waves CA presets can be used “out-of-the-box” to get superior results, however they can also be easily adjusted and stored for optimal performance in a specific installation.