

## APPLICATION NOTE

Converge Console (Version 1.0.4)  
Converge Pro Firmware (Version 1.0.4)

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## PUSH-TO-TALK MODE

### Purpose

This document describes how to configure the Push-to-Talk Mode feature to allow the use of Push-to-Talk (PTT) microphones with Acoustic Echo Cancellation (AEC) enabled.

### Introduction

PTT microphones are capable of muting without any external control. PTT mics typically cause problems because AEC requires a constant audio source for optimal performance. When a PTT microphone is used and the mic is muted, AEC loses audio from the room and begins to diverge. When the mic is un-muted, the AEC process must then re-adapt to the sudden change in audio. For these reasons, PTT mics have not been recommended for use with AEC. Converge Pro changes this with the new **Push to Talk Mode** feature, which allows PTT mics to be used while AEC is active.

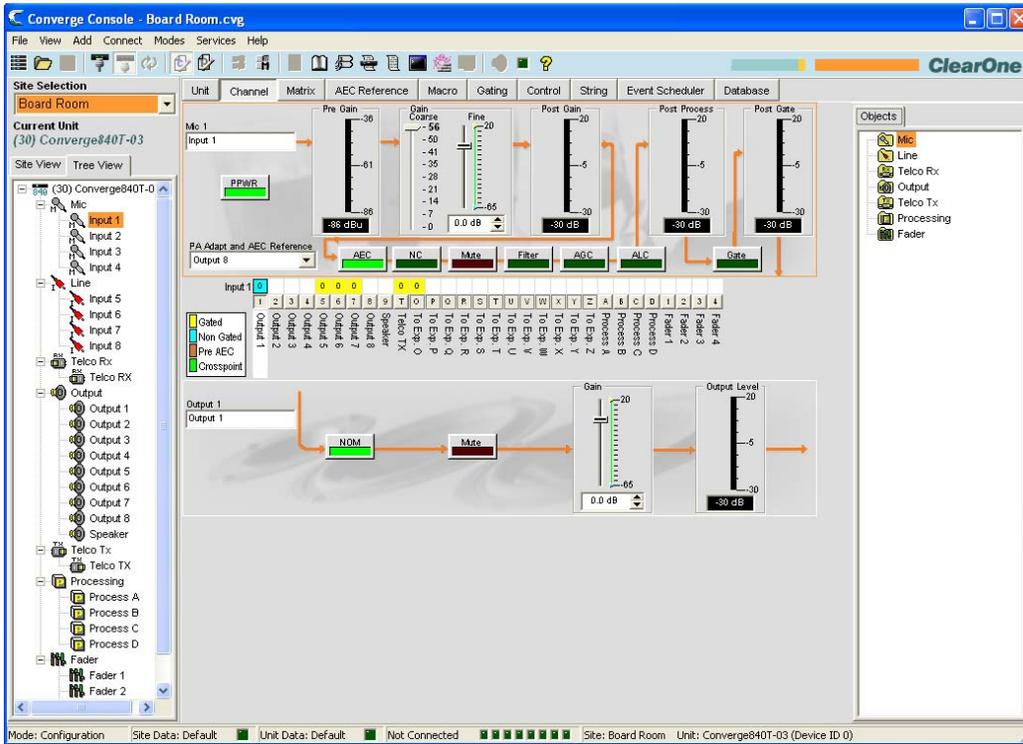
### PTT Mode Overview

PTT mode freezes AEC adaption based on a PTT threshold setting. The PTT threshold is used by AEC to determine when the mic is in the mute state. When the reference signal falls below the PTT threshold, AEC freezes adaption. When the reference signal exceeds the PTT threshold, AEC begins readaption using the frozen reference signal as its starting point. Using PTT mode with a correctly configured threshold eliminates unwanted artifacts (echo or duplex suppression ) in the output audio.

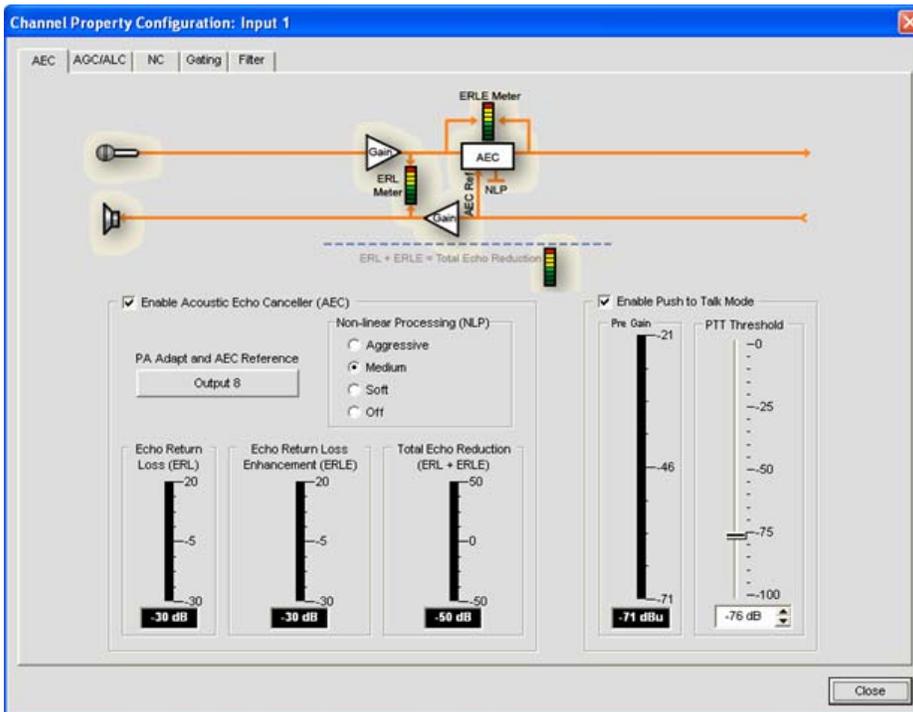
### Configuring PTT Mode

To configure PTT mode for a mic input channel, use the following procedure.

With the **Channel** tab selected on the **Tab Bar** in Console (shown below), select the desired **Mic Input** channel on the **Tree View** tab in the **Site Pane**, and press the **AEC** button (located just below the **Pre Gain** meter).



The **Channel Property Configuration** screen appears with the **AEC** tab selected (see below).



The AEC tab shows a signal flow diagram for AEC, and has the following features: **Enable AEC**, **PA Adapt and AEC Reference**, **NLP (Non-linear Processing)**, and **PTT (Push-to-Talk) Mode**.

Select the **Enable Acoustic Echo Canceller** checkbox to enable AEC.

Select the **Enable Push to Talk Mode** checkbox to enable PTT. PTT notifies AEC when a microphone is switched off, and freezes AEC convergence until the microphone is switched back on. As a result, PTT helps prevent AEC divergence and improves overall AEC performance with PTT microphones.

Mute the PTT mic and monitor the Pre Gain meter to determine the mic's electronic noise floor.  
Set the **PTT Threshold** slider to the match level on the meter while the mic is in a muted state.

For example, if the meter measures the mic's noise floor at -95 dB, set the PTT threshold to -95 dB.