Dante™ PHY-to-PHY Device Audio Dropouts

The purpose of this tech tip is to provide information when troubleshooting Dante connection and subscription problems between two PHY Dante devices.

Symptom:
The system works correctly when it is initially connected and installed. Subsequently, the system suffers frequent dropouts of random Dante channels. The dropouts manifest as a couple of seconds of silence.
When the devices are connected via a switch, the system functions normally without dropouts.

What is a PHY Dante Device?
A Dante device that does not have an internal switch. The Ethernet jack is connected directly to the Dante PHY (Ethernet physical transceiver), as opposed to through a switch. This includes many Ultimo-based devices on the market as well as the specific Symetrix hardware listed below.

Affected Symetrix Hardware:
- Prism (4x4, 8x8, 12x12, and 16x16)
- xIn 4
- xOut 4
- xIO 4x4

Dante devices on the market with two Dante ports (Primary and Secondary) have internal switches and will not be affected. This includes Symetrix Radius and Edge DSPs.

Why do you get dropouts when two PHY devices are direct connected?
When a PHY device is directly connected to another PHY device, audio glitches occur due to PTP (Precision Time Protocol – the Dante clock protocol) sync loss.

If both devices use PHY-based Ethernet, there will be insufficient delay on the transmitted packet to properly calculate the 1588 time. Adding a switch, creates sufficient packet delay to allow the calculation to be significant. This is a fundamental operational/mathematics issue. It is not something that can be adjusted. As such, it cannot be accounted for or fixed by firmware.

Solution:
For this situation, the only resolution is a switch. A PoE injector is a pass through device and will not resolve the problem.

When connecting Symetrix hardware with single Dante ports to each other, an external switch will always be needed. Example: Prism 4x4 to xIn 4.

When connecting Symetrix hardware with a single Dante port to a device with dual Dante ports an external switch is not needed. Example: Radius 12x8 EX to xIn 4.