

jünger

# AUDINATE DANTE: INTEROPERABILITY AND COMPATIBILITY

TECHNICAL WHITE PAPER



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## Audio-over-IP – one voice, many languages

Audio-over-IP is gradually replacing traditional point-to-point audio connections in today's broadcast facilities. While different manufacturers rely on different network protocols, Jünger Audio has decided to offer a variety of protocols to ensure all customers will find their preferred solution. Although many customers rely on one of these native protocols, international standardization organizations have released rules to enable interconnections between these individual approaches on AoIP. With Audinate's Dante this interoperability has been unclear to some users in the past. This document is about to help understanding Audinate Dante's approach on compatibility and Jünger Audio's implementation.

Jünger Audio offers Audinate Dante as an optional interface in the following product series:

- D\*AP – Slim Line
- C8000 - Modular Line
- Compact 64/256 – High Density Line
- AIXpressor - flexAI

### AES67

The Audio Engineering Society released the standard AES67 in 2013. It is covering successful collaboration between AoIP implementations of different manufacturers. AES67 describes methods and best practices to enable different AoIP formats to interconnect and interact to form a common audio network that is interconnecting between proprietary technologies.

**For AES67-compatibility each individual Dante audio stream can be switched to AES67 mode in the Audinate Dante Controller software.**

And even better: streams can be bridged between standard Dante and AES67 mode streams within the Jünger Audio device. This way the user is able to either cross link between AES67 and Dante or set up a dedicated AES67 network.

### SMPTTE ST 2110

The SMPTE ST 2110 suite of standards is taking a look at the bigger picture and standardizes professional media transport over IP networks in general. Of course including audio, the collection also considers video and metadata real time streams. Following is an individual look at the compatibility to specific protocol sections:

#### SMPTTE ST 2110-30

This standard sub-section is applicable to linear PCM at 16 or 24 bits, which is the basic technical format for uncompressed audio. The SMPTE standard references AES67 for audio transport with minor additional requirements. **Audinate Dante supports these additional requirements and is fully compatible to SMPTE ST 2110-30.**

#### SMPTTE ST 2110-31

This standard sub-section is considering bit transparent transport to support encoded audio formats. **Audinate Dante is partially compatible to SMPTE ST 2110-31. Please get in touch with our project team.**

#### SMPTTE ST 2059-2 (IEEE1588)

AES67 applies SMPTE ST 2059-2 as standard for media clock generation and distribution. This is mostly identical within SMPTE ST 2110, however some additional requirements need to be met. **All Dante enabled Jünger Audio products fulfill these criteria and make sure its media clock is compatible to SMPTE ST 2059-2, 2110 and AES67.**

## **SMPTE ST 2022-7**

In its standard configuration Dante is not enabled to have redundant streams in the same subnet or broadcast domain. However Audinate decided to allow for this in SMPTE ST 2110 operation mode. **All Dante enabled Jünger Audio products allow for redundant multicast streams according to SMPTE ST 2022-7.**

## **CONCLUSION**

**With Jünger Audio your Dante is AES67 and SMPTE ST 2110 compatible!**

Audinate's current software (version 4.2 or later) enables AES67 and SMPTE ST 2110 compatibility modes. All of Jünger Audio's Dante equipped products are supporting this software with their latest respective firmwares.

## Frequently asked technical questions

### **PTP AND PTP VERSION 2 - IS DANTE COMPATIBLE?**

Audinate's Dante is utilizing a synchronization protocol called PTP (IEEE 1588-2002). AES67 is based on PTP Version 2 (IEEE 1588-2008). They are not the same. However, when switched to AES67 mode Dante is automatically bridging between both sync protocols, making Dante fully compliant to IEEE 1588-2008 and AES67.

SMPTE ST 2110 requires a fixed zero-offset between the PTP media clock and the RTP time stamp. This requirement is met with the latest firmware for your Jünger Audio Dante interface.

### **NETWORK CLIENT DISCOVERY - IS IT STILL MISSING?**

AES67 does not emphasize on a specific protocol for network discovery. Even when in AES67 mode clients from different networks may not recognize each others immediately if different protocols are in use. Dante AES67 devices require the SAP protocol which is fortunately the most common and now supported by most manufacturers.

In case of missing discovery compatibility, ALC NetworX offers a translation tool. For download and more information please go to:

<https://www.ravenna-network.com/aes67/rav2sap/>

Alternatively manual multicast IP address configuration is possible within the Dante Controller software. In larger installations SDP file import can be handled in the Dante Domain Manager software.

### **PACKET TIMES - CONFORMANCE LEVELS**

In SMPTE ST 2110-30 required packet times are defined in Conformance Levels.

The main levels are:

A - Audio streams with 1-8 channels, 48 kHz sampling rate @ 1 ms

B - Audio streams with 1-8 channels, 48 kHz sampling rate @ 0,125 ms

C - Audio streams with 1-64 channels, 48 kHz sampling rate @ 0,125 ms

**All three Conformance Levels are supported!**

Please note, 96 kHz sampling rate is not supported (Conformance Levels AX, BX and CX)

## About Jünger Audio

Established in Berlin in 1990, Jünger Audio specializes in the design and manufacture of highest quality digital audio dynamics processors. Jünger Audio has developed a unique range of digital processors that are designed to meet the precise needs of the professional audio market. All Jünger Audio products are easy to operate and are developed and manufactured in-house, ensuring that the highest standards are maintained throughout. Jünger Audio's customers includes the world's top radio and TV broadcasters, IPTV providers, music recording studios and audio post production facilities. Jünger Audio is a brand owned and operated by woks audio GmbH.

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