Introduction to Dante Video
# Introduction to Dante Video - Contents

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Dante AV Value Proposition

Dante AV™

Simple, reliable, interoperable audio & video signal transmission across networks, everywhere
Based on Futuresource research the TAM for video is estimated at A$400m (research underway to refresh TAM)

Video market is fragmented, and the incumbent point to point technology is HDBaseT (potential additional TAM)

“Video Networking” opportunity relates to Pan Tilt Zoom (PTZ) cameras, screens, projectors & IO (Input-Output) boxes

Tailwinds post COVID from increasing prevalence of Zoom & MS Teams

Audinate Total Addressable Market (‘TAM’)*

* Management estimate total addressable market exceeds A$1bn

Audinate share of Audio Market estimated at 7-8%
Audinate entered the video market having established Dante as the pre-eminent audio networking solution:

- Dante is the de-facto standard in audio
- Premium Dante brand, widely recognised
- >3,500 Dante audio products available
- ~200,000 AV professionals know Dante
- Established management & configuration software
- Successful playbook from audio market

Dante AV offers:

- Familiar Dante setup & troubleshooting tools
- Good, better, best implementation choices
- Software stacks for existing chips & products
- Interoperability between same-codec products
- Path to remote management via the cloud

Dante AV in a nutshell

AV professionals want:
- Video networking that works like Dante audio

Video equipment manufacturers (OEMs) want:
- Simple ways to offer Dante video (and audio)

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1Dante Controller and Dante Domain Manager
Introduction to Dante Video

Video market is fragmented

Video signals have a **much larger data rate** than audio signals.

**Video compression** is required - video signals are 3-18Gb/s compared to standard 1Gb/s ethernet cables.

**Video codecs** compress video signals **reducing the data rate**.

**Market fragmentation** relates to three key industry dynamics:

1. **Video codecs** get chosen based on use-case - creating **incompatibility between products**
2. Video products using the **same video codec** mostly do not **interoperate** between manufacturers
3. Vertically integrated manufacturers create "**walled gardens**" using proprietary video codecs

**Impacts of fragmentation**
- Lack of interoperability
- Adoption of video networking < audio networking
- No equivalent of Dante Controller for video
- Role for Original Design Manufacturers (ODM) to manage complexity
## Video Industry Landscape

<table>
<thead>
<tr>
<th>Example Companies</th>
<th>Comments</th>
<th>Video over IP</th>
<th>Multiple Codecs</th>
<th>Interoperable</th>
<th>Networked Audio</th>
<th>Management &amp; Configuration Software</th>
<th>Mac &amp; PC Software</th>
<th>Price Point</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dante Video</strong></td>
<td>Audinate</td>
<td>• de-facto standard in audio networking • multiple price / quality offerings</td>
<td>✓ ✔ ✔ ✔ ✔ ✔</td>
<td>✓ ✔ ✔ ✔ ✔ ✔</td>
<td>✓ ✔ ✔ ✔ ✔ ✔</td>
<td>✓ ✔ ✔ ✔ ✔ ✔</td>
<td>✓ ✔ ✔ ✔ ✔ ✔</td>
<td>Low cost to Expensive</td>
</tr>
<tr>
<td><strong>Video codec chip vendors</strong></td>
<td>A-Speed Semtech (SDVOE) Ambarella (H264) HiSilicon (H264) Intopix (JPEG2000)</td>
<td>• different codecs for different use cases • not a complete technology solution</td>
<td>Enabling component</td>
<td>X</td>
<td>Limited</td>
<td>X</td>
<td>X</td>
<td>Low cost to Moderate</td>
</tr>
<tr>
<td><strong>Vertically Integrated Manufacturers “walled gardens”</strong></td>
<td>Crestron &amp; Extron</td>
<td>• utilise proprietary codec &amp; management &amp; configuration software for solution (audio &amp; video) sales</td>
<td>✓</td>
<td>✓ Within walled-garden</td>
<td>- Within walled-garden</td>
<td>✓ Some Dante</td>
<td>✓ Certified technicians</td>
<td>Limited</td>
</tr>
<tr>
<td><strong>Alternate video networking technologies</strong></td>
<td>VizRT (NDI)</td>
<td>• moderate performance technology used in small scale broadcast • cost to OEM typically 5% MSRP</td>
<td>✓</td>
<td>X Multiple NDI codecs</td>
<td>✓ Not Dante</td>
<td>✓</td>
<td>✓</td>
<td>Expensive</td>
</tr>
<tr>
<td><strong>HDBaseT</strong></td>
<td>Valens</td>
<td>• “point to point” cabling for video • incumbent technology - not networked</td>
<td>X</td>
<td>N/A</td>
<td>✓ X</td>
<td>X</td>
<td>N/A</td>
<td>Low cost</td>
</tr>
</tbody>
</table>

- **Video codec chip vendors**
  - A-Speed Semtech (SDVOE)
  - Ambarella (H264)
  - HiSilicon (H264)
  - Intopix (JPEG2000)

- **Vertically Integrated Manufacturers “walled gardens”**
  - Crestron & Extron

- **Alternate video networking technologies**
  - VizRT (NDI)

- **HDBaseT**
  - Valens
Dante Video addresses customer pain points

<table>
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<tr>
<th>Vs. SDI</th>
<th>Vs. SMPTE-2110</th>
<th>Vs. NDI</th>
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<tr>
<td>• Lack of flexibility, scalability</td>
<td>• Burdensome network requirements</td>
<td>• Challenging to scale</td>
</tr>
<tr>
<td>• Expensive matrix routers</td>
<td>• Expensive</td>
<td>• Need to keep on separate VLAN = more complexity to manage</td>
</tr>
<tr>
<td>• Difficulty getting signals across campus, WAN</td>
<td>• Difficult to configure/ manage</td>
<td>• Audio not robust</td>
</tr>
<tr>
<td></td>
<td>• Difficulty getting signals across campus, WAN</td>
<td>• Difficult to configure and manage</td>
</tr>
</tbody>
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OEM and ODM manufacturing approaches

Original Equipment Manufacturer (OEM)

- OEM product design
  - Contract Manufacturer
    - In-house manufacture
      - OEM manages branding, channels and marketing

OR

Original Design Manufacturer (ODM)

- OEM product requests
  - ODM product design
    - ODM manufacture
      - Video chip company reference designs (Aspeed, Semtech etc)

- White-label product variations
  - OEM brand 1
    - OEM manages branding, channels & marketing
  - OEM brand 2
    - OEM manages branding, channels & marketing
  - OEM brand 3
    - OEM manages branding, channels & marketing
  - OEM brand 4
    - OEM manages branding, channels & marketing

ODMs manage the complexity of making video products – getting them to design Dante into their video products can act as a force-multiplier to get into multiple brands’ video products through a single relationship.
Dante Video and Audio Platform

AV Configuration & Management
- Dante Controller
- Dante Domain Manager
- Dante Cloud

AVIO Network Adaptors
- Analogue
- USB / Bluetooth

Audio & Video Software Tools
- Dante Studio (AV)
- Dante Virtual Soundcard
- Dante Via
- 3rd party apps

Audio Products
- Chips, Cards & Modules
  - Brooklyn III
  - Ultimo
  - Broadway
- Software
  - Dante Embedded Platform
  - Dante Application Library
  - Dante Ready
  - IP Core

Video Products
- Chips, Cards & Modules
- Software
  - Dante AV Ultra
  - Viper Board
  - Dante AV-H

Audio Visual Integrators, Professionals & Consumers

Manufacturers (OEMs)
Original Equipment Manufacturers

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Summary of Dante AV functionality

**AV-ULTRA**
- Discovery
- Control & Routing API
- Dante Controller Support
- Dante Domain Manager Support
- Dante Audio
- Interoperability of products based on same technology
- Common AV Clock
- Dante Video Transport
- Integrated Codec

**AV-H**
- H.264 MPEG-4 AVC
- H.265 MPEG-4 AVC
- Dante Studio Compatible
Dante AV technical specifications

AV-ULTRA

A complete AVoIP offering where 4K60 (4:4:4), visually lossless content, tightly synchronized audio and sub-frame latency are required.

- Hardware/FPGA Deployment
- Colibri Codec
- HDCP 2.x
- 8 x Dante Audio Channels
- Supports Dante Studio & PoE

AV-H

A lighter weight, software-based deployment which enables any H.26x product into the Dante ecosystem. Add major value and features with zero additional hardware.

- Software/SoC Deployment (coexists)
- H.26x Codec*
- No HDCP
- Up to 8 x Dante Audio Channels (DEP)
- Supports Dante Studio

(*) Based on Main profile for H.264/H.265
AJA launch at NAB tradeshow – April 23

www.aja.com/products/dante-av-ultra
AJA introductory video - use cases and benefits of Dante video

Source: www.aja.com/assets/m/workflows/dante-av/DANTE_AV_Conference_Workflow_FIN.pdf
Dante Studio software

Enables Dante Video into and out of PC applications

- Use PC software with Dante AV hardware; integrate with video production solutions such as OBS & vMix as well as Teams, Zoom and other video conference platforms
- Dante Studio is a suite of 3 software components:

  **Dante Studio RX**
  Receives Dante AV hardware streams into PC software.

  **Dante Studio TX**
  Transmit your PC screen to Dante AV hardware at high quality and low latency.

  **Dante Video Viewer**
  Display Dante AV hardware streams in a standalone PC player.
Dante Video Product Inventory

### Dante AV Chips & Modules
- Dante AV Ultra and Viper are premium products targeting live venues, broadcasters, corporate board rooms and university lecture spaces.

### Dante Software
- Dante AV-H enables existing mainstream products targeting corporate meeting rooms, lobbies, education classrooms, hospitality etc.
- Provides a lower cost Dante AV endpoint for price sensitive applications
- Dante Studio enables both PC to/from devices and PC to PC use cases (Mac compatibility will follow in future releases)
- Enables future cloud Dante AV offerings

#### Dante AV Ultra
- Premium Dante AV offering:
  - high resolution
  - visually lossless quality
  - audio/video synchronization
  - subframe latency

#### Viper
- Fully integrated AV over IP board:
  - Provides a foundation for ODM designs
  - From Silex acquisition
  - Foundation of Dante AV Ultra v2

#### Dante AV-H
- Simple Dante AV offering:
  - Enables Dante audio and video routing & configuration
  - Targets existing ODM hardware designs
  - H264 is the dominant codec used in PTZ IP cameras
  - Support new & existing product designs

#### Dante Studio
- Software product that enables PCs to support Dante AV video streams
- Used by AV Professionals and consumers

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Repeat revenue model

Repeat revenue model

Repeat revenue model

Subscription revenue model

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Audinate video team

- Development team of 20+ people across 2 sites UK (Cambridge) & Belgium (Louvain la Neuve)
- Capability covers video compression, FPGA, hardware design and video software capabilities
- Critical mass in the European time zone – access to video engineering talent pools
- Audinate is now able to offer fully integrated video solutions
- Video product roadmap has been accelerated through the acquisition of Belgium team
- Established relationships with Original Design Manufacturer (ODM) and Original Equipment Manufacturer (OEM) customers
Dante AV was the perfect solution for us to send audio and video all over the facility with the lowest latency. Dante AV is cutting-edge technology that will allow us to be more productive and expand to meet the challenges of a changing industry.

Dennis Cham, HIT Productions

As we researched potential network solutions, we learned about Dante AV. This looked like the direction we needed to go. The flexible scalability that a Dante AV system offers is light-years beyond analog cabling.

Ryan Schaub, City Church Wisconsin
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<th>Conclusion: Why Dante?</th>
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<tr>
<td>Largest audio product ecosystem</td>
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<td>Interoperability between brands/OEMs</td>
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<tr>
<td>Universal setup &amp; mgmt. tools and APIs</td>
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<tr>
<td>Large, educated community of AV professionals</td>
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<td>Proven reliability and performance</td>
</tr>
<tr>
<td>Designed to deploy into typical IT networks</td>
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<tr>
<td>Software, hardware and cloud options</td>
</tr>
<tr>
<td>Scalable solutions for the LAN, campus &amp; WAN</td>
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<tr>
<td>Support for different codec &amp; quality options</td>
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