

# Dante 101

Audio Networking

# What is Dante

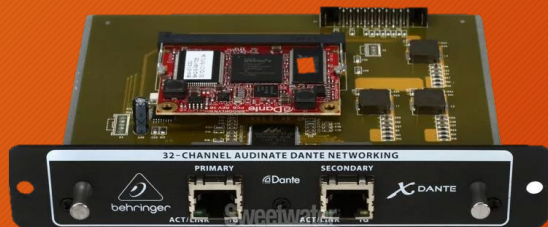
- Dante is an audio (now video) networking system created by Audinate.
- The system consists of hardware and software packages designed to facilitate the transfer of audio and video over a standard computer network, using standard networking hardware.
- Dante systems (w/o DDM) use mDNS (Bonjour) for discovery and cannot cross subnets; all devices must be on same ip subnet.
- Dante systems (w/o DDM) uses zero-config and apipa and do not necessarily need DHCP or static IPs to be defined.
- Dante systems do not require STP cabling, but many devices are configured with ethercon connectors.
- 1 Gbps connection can handle 512 bi-directional 24 bit/48 khz dante channels

# Dante Domain Manager (DDM)

- DDM allows logical grouping of dante devices into domains to provide security and ease of configuration and management.
- Dante systems with Dante Domain Manager use standard DNS for discovery and can send audio across different networks (subnets).
- Each network requires a clocking source as well as subnet leader clocks.
- DDM is a virtualized application server (linux) and can run in most virtual server environments.
- DDM uses a web interface and can be used on desktops and laptops as well as tablet devices.

# Dante Components

- The Dante network components begin with A-D and D-A encoding/decoding hardware.
- These components typically come in the form of an add-on card for your audio mixer or a stage box. These devices are connected to the computer network then the audio routes are made using the Dante Controller Software.

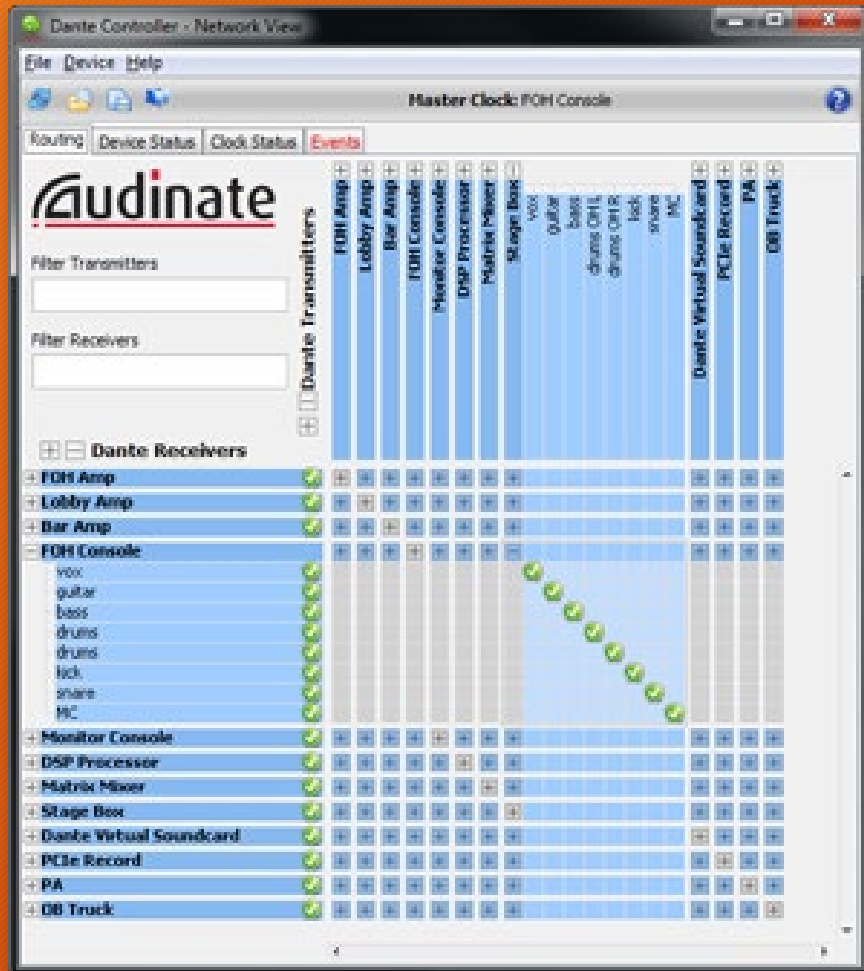


# Dante Components

- Dante devices can have single or dual network ports available
- The secondary network port can be configured for (HA) High-Availability redundancy or providing a control port for device management.
  - Shure ULXD dante ports
  - Redundancy or Shure Control



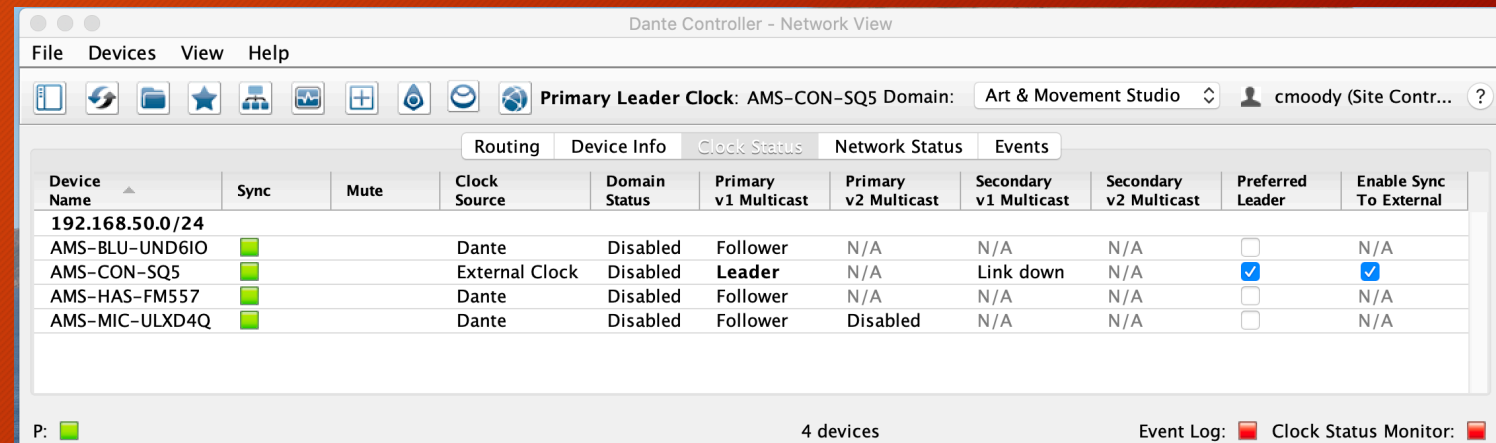
# Dante Controller



- Dante Controller allows static routes (subscriptions) to be made between Transmitters and Receivers.
- A transmitter can send to multiple receivers (up to 3 using unicast and more with multicast)
- Once subscriptions are established, they are committed to the transmitter and receiver's memory, Dante Controller does not have to remain open.
- Subscriptions are retained when equipment is powered off.
- Successful subscriptions are shown with green check mark.
- A subscription with an orange triangle means one of the devices (transmit or receive) has been removed from the network, When the device is reconnected the subscription will show a green check mark again.

# Dante Controller - Clock Status

- All digital audio systems require a clocking source.
- The master or leader clock is elected automatically in a dante system.
- You can choose a clock leader if you prefer: “Preferred Leader”
  - This is typically your audio consoles’ dante card
  - This card can receive external clocking from your audio console:
    - “Enable Sync to External”

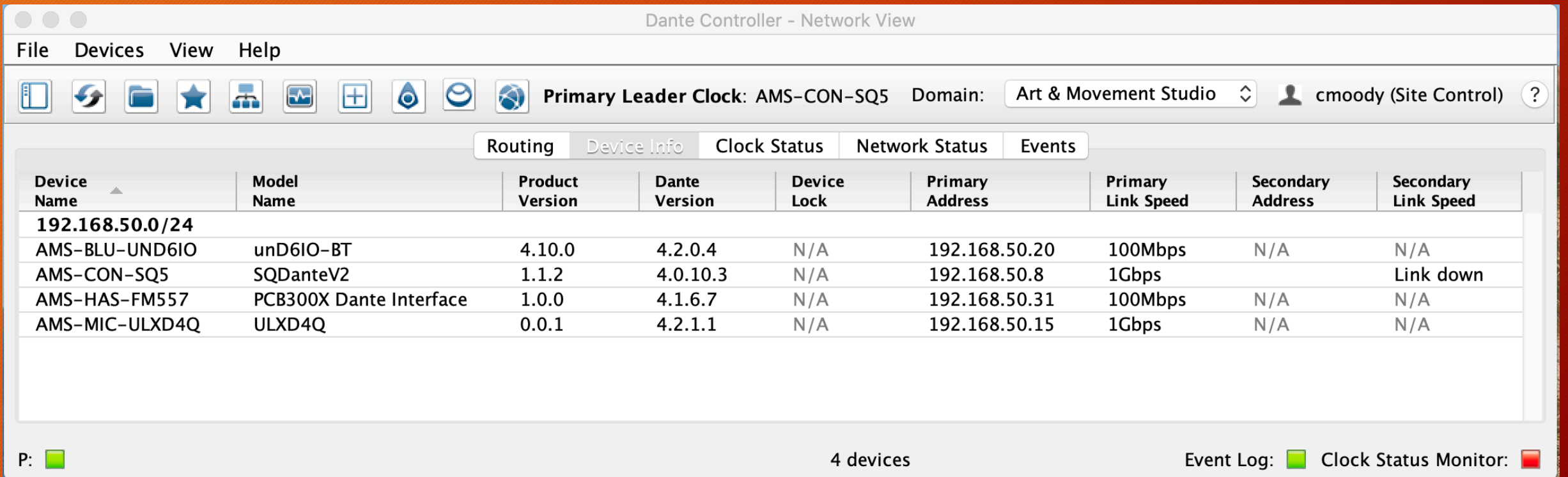


The screenshot shows the Dante Controller interface with the 'Clock Status' tab selected. The 'Primary Leader Clock' is identified as 'AMS-CON-SQ5'. The table below lists the clock status for four devices on the network.

Device Name	Sync	Mute	Clock Source	Domain Status	Primary v1 Multicast	Primary v2 Multicast	Secondary v1 Multicast	Secondary v2 Multicast	Preferred Leader	Enable Sync To External
192.168.50.0/24										
AMS-BLU-UND6IO	<input checked="" type="checkbox"/>		Dante	Disabled	Follower	N/A	N/A	N/A	<input type="checkbox"/>	N/A
AMS-CON-SQ5	<input checked="" type="checkbox"/>		External Clock	Disabled	<b>Leader</b>	N/A	Link down	N/A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
AMS-HAS-FM557	<input checked="" type="checkbox"/>		Dante	Disabled	Follower	N/A	N/A	N/A	<input type="checkbox"/>	N/A
AMS-MIC-ULXD4Q	<input checked="" type="checkbox"/>		Dante	Disabled	Follower	Disabled	N/A	N/A	<input type="checkbox"/>	N/A

# Dante Controller - Device Info

- The Device Info tab gives you model and product versions as well as IP addressing and network link speed info



The screenshot displays the Dante Controller Network View interface. The title bar reads "Dante Controller - Network View". The menu bar includes "File", "Devices", "View", and "Help". Below the menu bar is a toolbar with various icons. The main content area shows the "Device Info" tab selected, displaying a table of device information. The table has columns for Device Name, Model Name, Product Version, Dante Version, Device Lock, Primary Address, Primary Link Speed, Secondary Address, and Secondary Link Speed. The table lists four devices: AMS-BLU-UND6IO, AMS-CON-SQ5, AMS-HAS-FM557, and AMS-MIC-ULXD4Q. The status bar at the bottom shows "P:" with a green indicator, "4 devices", "Event Log:" with a green indicator, and "Clock Status Monitor:" with a red indicator.

Device Name	Model Name	Product Version	Dante Version	Device Lock	Primary Address	Primary Link Speed	Secondary Address	Secondary Link Speed
<b>192.168.50.0/24</b>								
AMS-BLU-UND6IO	unD6IO-BT	4.10.0	4.2.0.4	N/A	192.168.50.20	100Mbps	N/A	N/A
AMS-CON-SQ5	SQDanteV2	1.1.2	4.0.10.3	N/A	192.168.50.8	1Gbps		Link down
AMS-HAS-FM557	PCB300X Dante Interface	1.0.0	4.1.6.7	N/A	192.168.50.31	100Mbps	N/A	N/A
AMS-MIC-ULXD4Q	ULXD4Q	0.0.1	4.2.1.1	N/A	192.168.50.15	1Gbps	N/A	N/A



# Dante Controller - Network Status

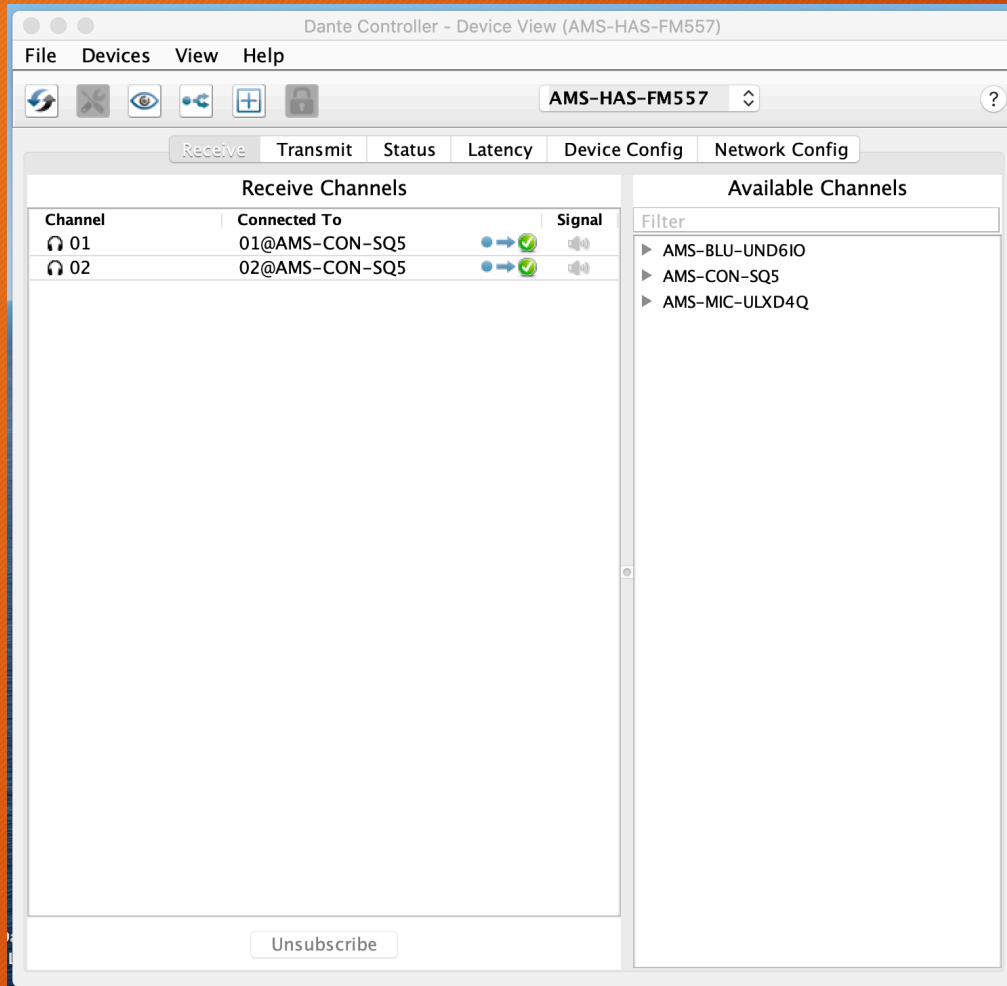
- The network status tab gives you primary and secondary link status information as well as network bandwidth consumed and latency.

The screenshot displays the Dante Controller Network View interface. At the top, the title bar reads "Dante Controller - Network View". Below the title bar is a menu bar with "File", "Devices", "View", and "Help". A toolbar contains various icons for navigation and actions. The main content area shows the "Network Status" tab selected, displaying a table of network information for four devices. The table columns include Device Name, Subscription Status, Primary Status, Secondary Status, Primary Tx B/W, Secondary Tx B/W, Primary Rx B/W, Secondary Rx B/W, Latency Setting, Latency Status, and Packet Errors. The devices listed are AMS-BLU-UND6IO, AMS-CON-SQ5, AMS-HAS-FM557, and AMS-MIC-ULXD4Q. The status for AMS-CON-SQ5 is "Link down", while the others are "N/A".

Device Name	Subscription Status	Primary Status	Secondary Status	Primary Tx B/W	Secondary Tx B/W	Primary Rx B/W	Secondary Rx B/W	Latency Setting	Latency Status	Packet Errors
<b>192.168.50.0/24</b>										
AMS-BLU-UND6IO		100Mbps	N/A	5 Mbps		< 1 Mbps		1 msec		
AMS-CON-SQ5		1Gbps	Link down	3 Mbps		11 Mbps		1 msec		
AMS-HAS-FM557		100Mbps	N/A	< 1 Mbps		4 Mbps		1 msec		
AMS-MIC-ULXD4Q		1Gbps	N/A	5 Mbps		< 1 Mbps		1 msec		

At the bottom of the interface, there is a status bar showing "P: ", "4 devices", "Event Log: ", and "Clock Status Monitor: ".

# Dante Controller - Device View - Receive



- The Device View has multiple tabs for viewing and configuring your dante device.
- The Receive and Transmit tabs display subscription information

# Dante Controller - Device View - Status

The screenshot shows the Dante Controller software interface. The title bar reads "Dante Controller - Device View (AMS-HAS-FM557)". The menu bar includes "File", "Devices", "View", and "Help". Below the menu bar is a toolbar with icons for refresh, zoom, eye, and other functions. A dropdown menu shows "AMS-HAS-FM557". The main content area has tabs for "Receive", "Transmit", "Status", "Latency", "Device Config", and "Network Config". The "Status" tab is active, displaying the following information:

**Manufacturer Information**

Manufacturer:	Williams AV
Model Name:	PCB300X Dante Interface
Product Version:	1.0.0

**Dante Information**

Dante Model:	UltimoX2
Dante Firmware Version:	4.1.6.7
Hardware Version:	4.1.6.5
ROM/Boot Version:	1.0.0

**Clock Synchronization**

Mute Status:	Unmuted
Sync Status:	Locked
External Word Clock:	No
Preferred:	No
Frequency Offset:	-13 ppm

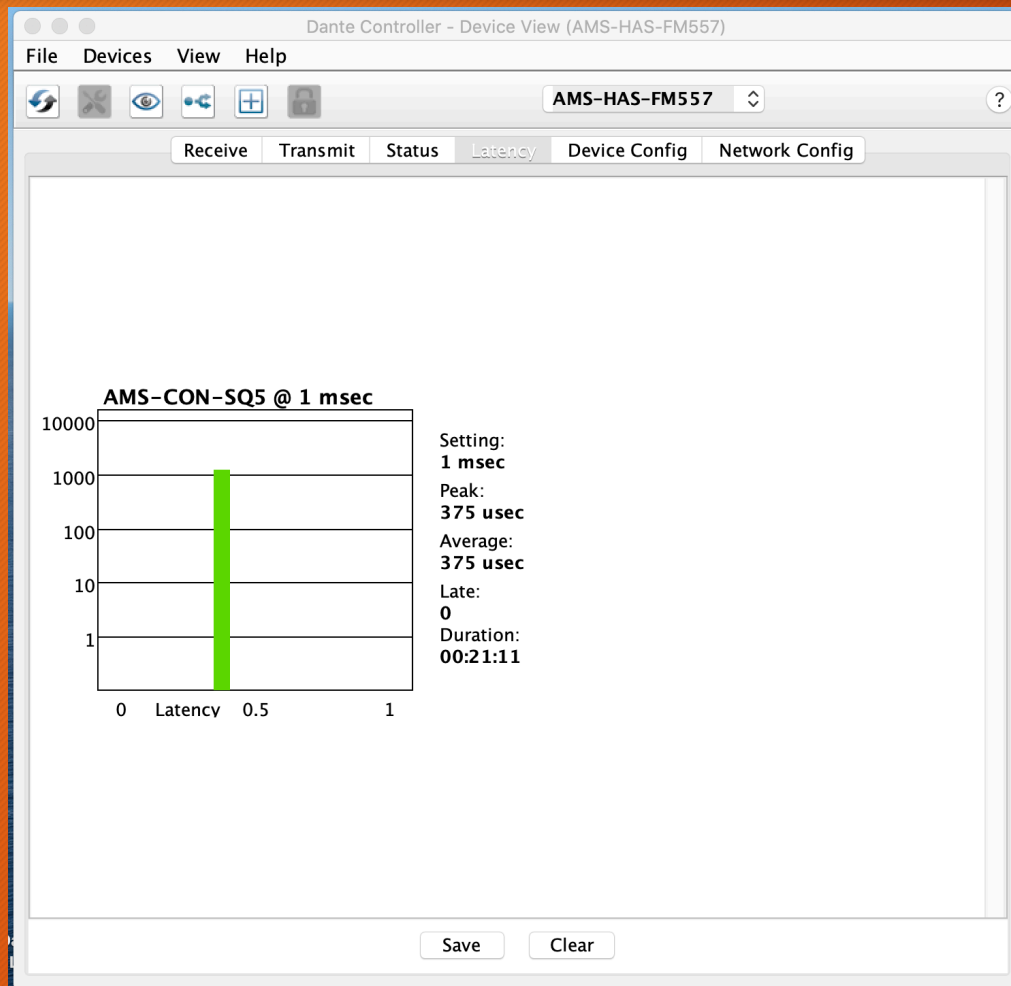
**Interfaces**

P	IP Address:	192.168.50.31
	MAC Address:	00:1D:C1:82:46:03
	Tx Utilization:	4 Kbps
	Rx Utilization:	4 Mbps

Errors: 0 (for both Tx and Rx)

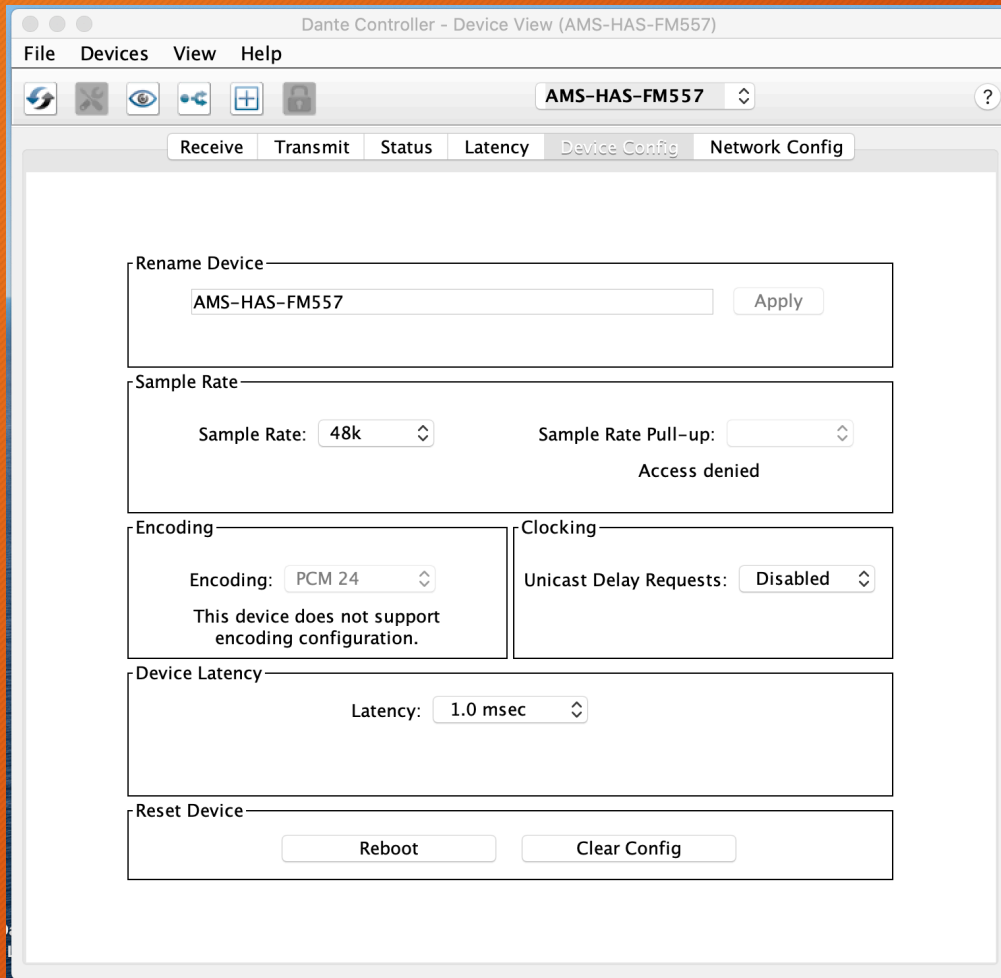
- The Device View Status tab displays model and firmware information about your dante device as well as network interface information

# Dante Controller - Device View - Latency



- The Device View Latency tab displays current latency settings as well as network utilization information

# Dante Controller - Device View - Device Config



- The Device View Device Config tab allows configuration changes to your dante device including renaming the device, changing the sample rate, PCM encoding, latency as well as the ability to reboot the device

# Dante Controller - Device View - Network Config

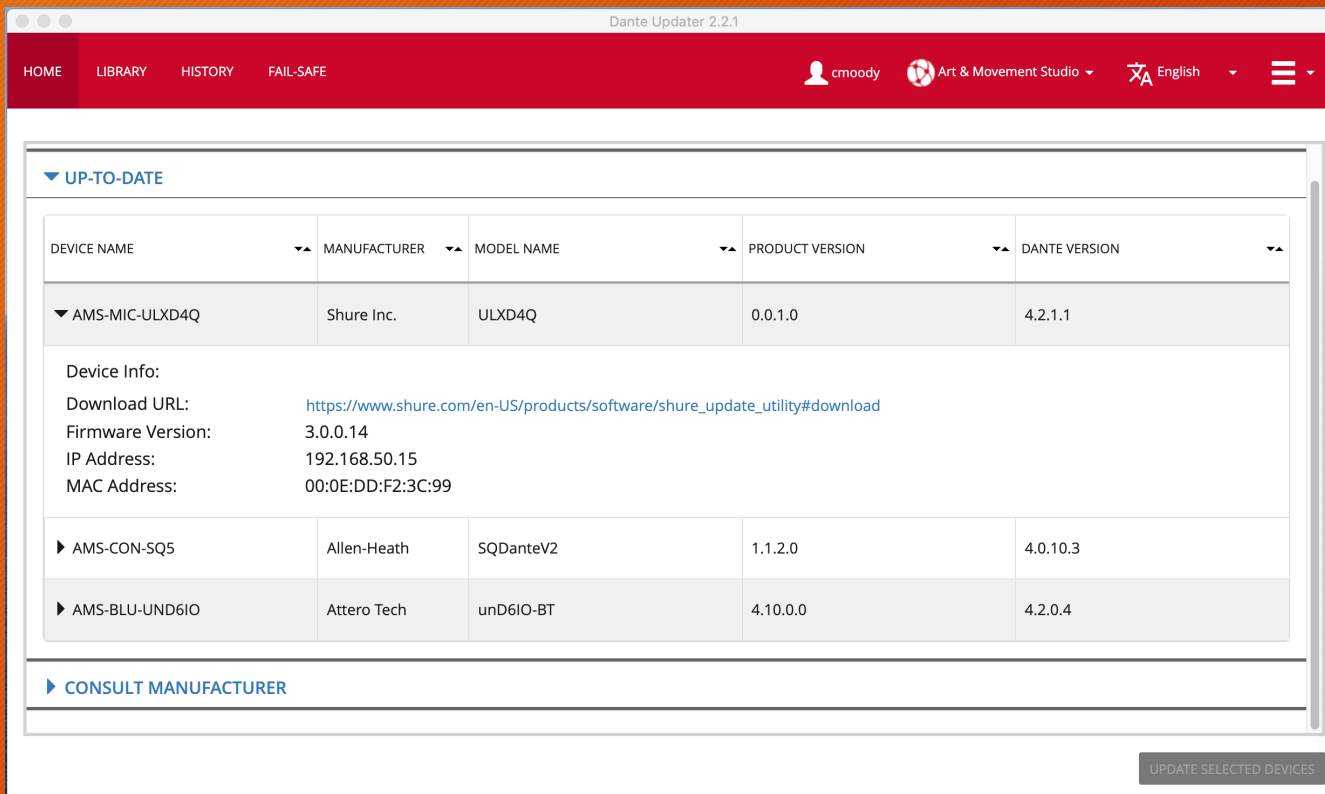
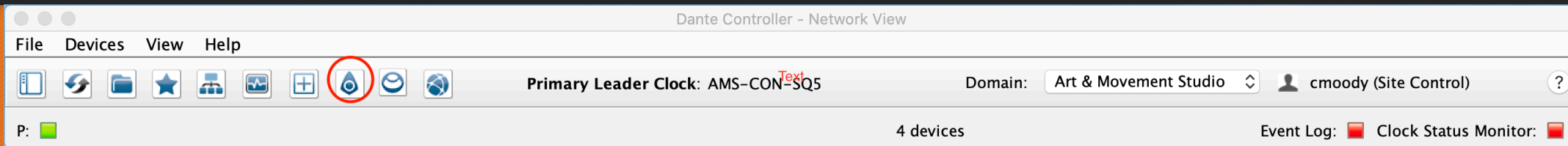
The screenshot shows the Dante Controller web interface for device MPR-MIX-DM0. The 'Network Config' tab is active, displaying the following configuration options:

- Dante Redundancy:** Current: Redundant, New: Redundant (dropdown menu).
- Addresses:**
  - Primary:**
    - Obtain an IP Address Automatically (default)
    - Manually configure an IP Address
    - IP Address: 192 . 168 . 50 . 5
    - Netmask: 255 . 255 . 255 . 0
    - DNS Server: 192 . 168 . 1 . 31
    - Gateway: 192 . 168 . 50 . 1
  - Secondary:**
    - Obtain an IP Address Automatically (default)
    - Manually configure an IP Address
    - IP Address: [ ] . [ ] . [ ] . [ ]
    - Netmask: [ ] . [ ] . [ ] . [ ]
    - DNS Server: [ ] . [ ] . [ ] . [ ]
    - Gateway: [ ] . [ ] . [ ] . [ ]
- Reset Device:**
  - Reboot
  - Clear Config

Buttons for 'Apply' and 'Revert' are located below the address configuration fields.

- The Device View Network Config tab allows configuration of the dante redundancy (secondary) port as well as setting static IP address information or setting the ports to DHCP.

# Dante Controller - Dante Updater



The Dante Updater Button in the menu bar brings up the Updater window that displays the currently installed firmware versions and allow for updates if available.

# Dante DEMO



# Thanks for Joining Us!

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# Resources

- Dante Certification Program:
  - <https://www.audinate.com/learning/training-certification/dante-certification-program>
- Dante Downloads:
  - <https://www.audinate.com/products/software>
- Yamaha Guide for Dante switch config - Cisco SG300
  - [https://usa.yamaha.com/products/contents/proaudio/docs/dante\\_network\\_design\\_guide/301\\_setting\\_sg300.html](https://usa.yamaha.com/products/contents/proaudio/docs/dante_network_design_guide/301_setting_sg300.html)