WELCOME TO WEBINAR DANTE LEVELS 1 & 2

We will start at 10:00
Short pause from 11:00 to 11:30
We will proceed until 13:00 then open for Q&A

To ask questions **use Q&A** and
start with the word “QUESTION…”

IMPORTANT: **Please read through the questions of other participants before asking yours**

At the end **you will receive the PDF slides and the Video Recording of this session**

Create an account **http://www.audinate.com/certify**

Dante Certification

Webinar for Levels 1 & 2

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Who is Audinate and what is Dante?

Who is Audinate

Headquartered in Sydney, Australia

Network Engineers First

Serving the AV Industry

Develop Dante as **100%** **interoperable solution for all manufacturers.**

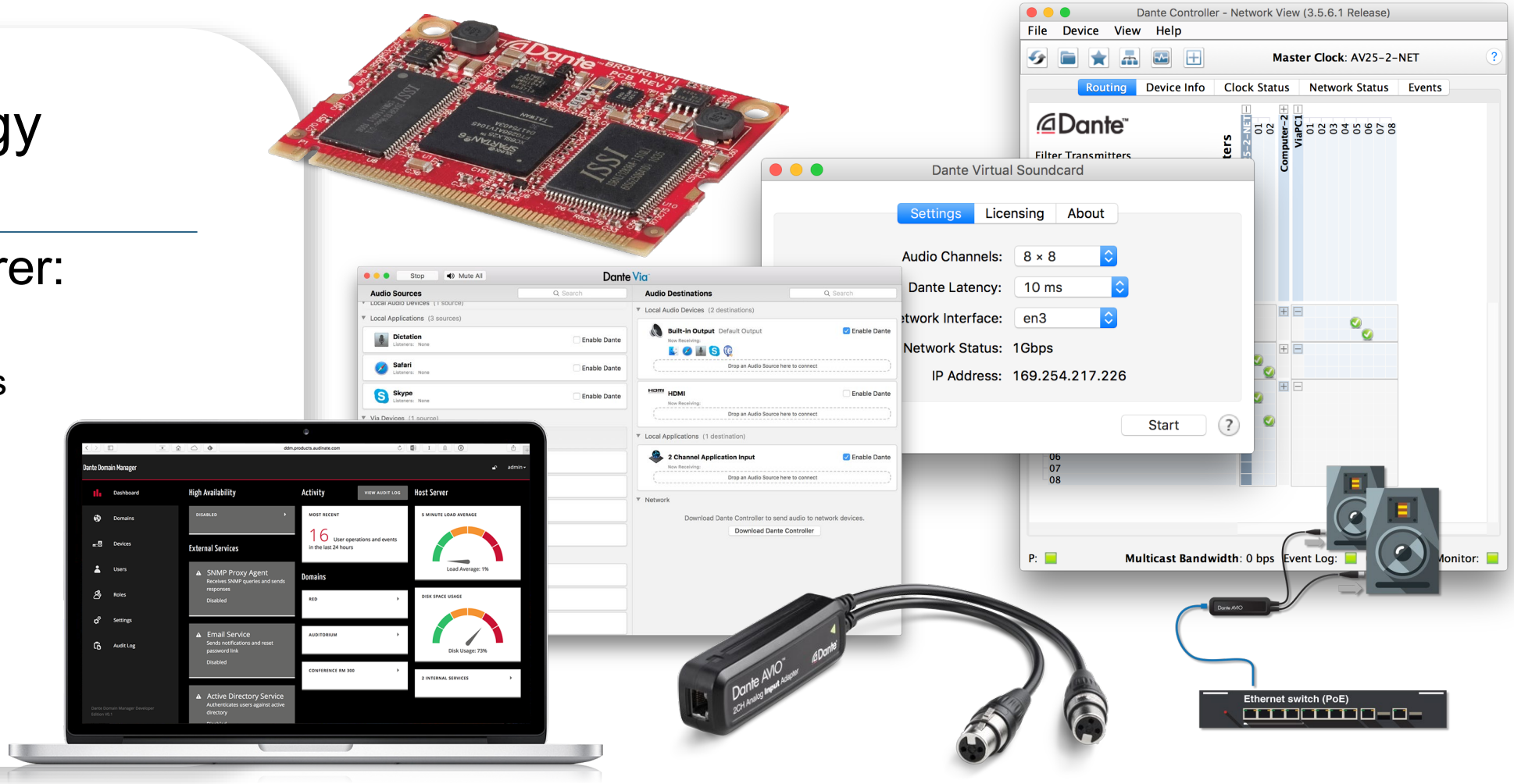
As of July, 2019

What Audinate Makes

Dante Technology
(All of it.)

For the Manufacturer:
- Hardware Modules
- Firmware and Libraries

For the End Customer:
- Dante Controller
- Dante Virtual Soundcard
- Dante Via
- Dante Domain Manager
- Dante AVIO Adapters



What is Dante?

DANTE IS A HARDWARE AND SOFTWARE SOLUTION THAT TRANSPORTS PRECISELY TIMED DIGITAL AUDIO BETWEEN DEVICES USING STANDARD IP NETWORKING

Dante Adoption

450+

Licensed manufacturers making Dante-enabled products

2,000+

Dante-enabled products in the market.

1,000,000+

Dante-enabled products in the field.

As of July, 2019

Dante adoption

From Entry Level to Top-of-the-Line in Any Audio-Visual Market

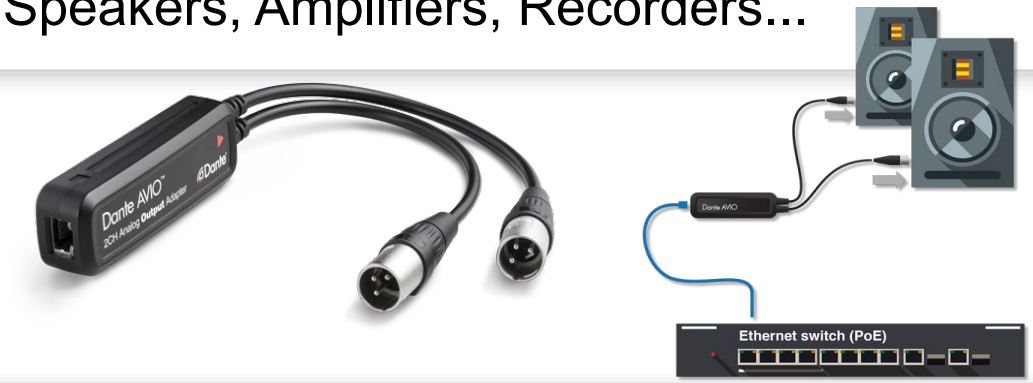
Dante is an example of Audio over IP solution

AVIO Adapters

Analog In (1 or 2 Channels up to 96kHz)
- Mixing Desks, Wireless Mics, EQ/Comp..

USB 2x2 I/O (24-bit 48kHz)
- Conference Settings, Laptops, Mobile Devices

Analog Out (1 or 2 Channels up to 96kHz)
- Speakers, Amplifiers, Recorders...



AES3 2x2 I/O (24-bit up to 96kHz)
- DSP and AES3/EBU enabled devices

Dante Support

100,000+
Dante Users

40,000+
Dante-Certified Individuals

Our technology's functionality is a given. We invest in people.

As of July, 2019

THE DANTE CERTIFICATION PROGRAM

Level 1: Introduction to Dante

- Background
- Basic signal routing with Dante Controller
- Setting up Dante in simple systems
  (personal rig in daisy chain or 1 switch)
- Recording with Dante Virtual Soundcard

THE DANTE CERTIFICATION PROGRAM

Level 2: Intermediate
Dante Concepts

- Delivered in-person
- Larger systems (multiple switches)
- Clocking options
- Understanding unicast & multicast
- Latency
- Redundancy
- Dante Virtual Soundcard and Dante Via

Why is Professional Audio Using Networks?

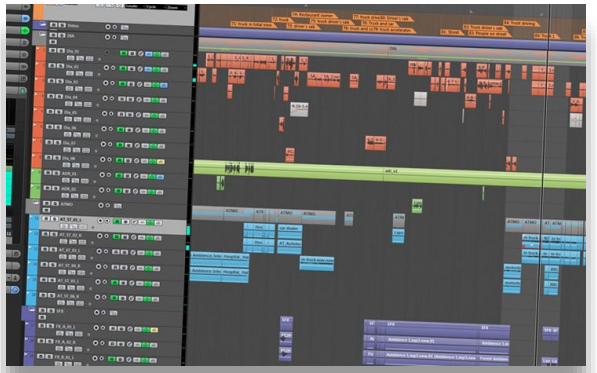
Why Do We Use Digital Audio?

Q: Why do we use Digital Audio?

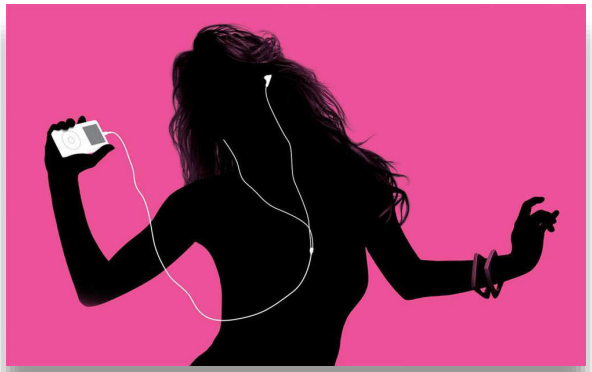
… Is it just about Sound Quality?

Why Do We Use Digital Audio?

Instant Access, Polyphony/Multitimbral



Non-Linear Editing, Virtual Tracks, Undo



Convenience/Portability

Recall, Scalability, Compact

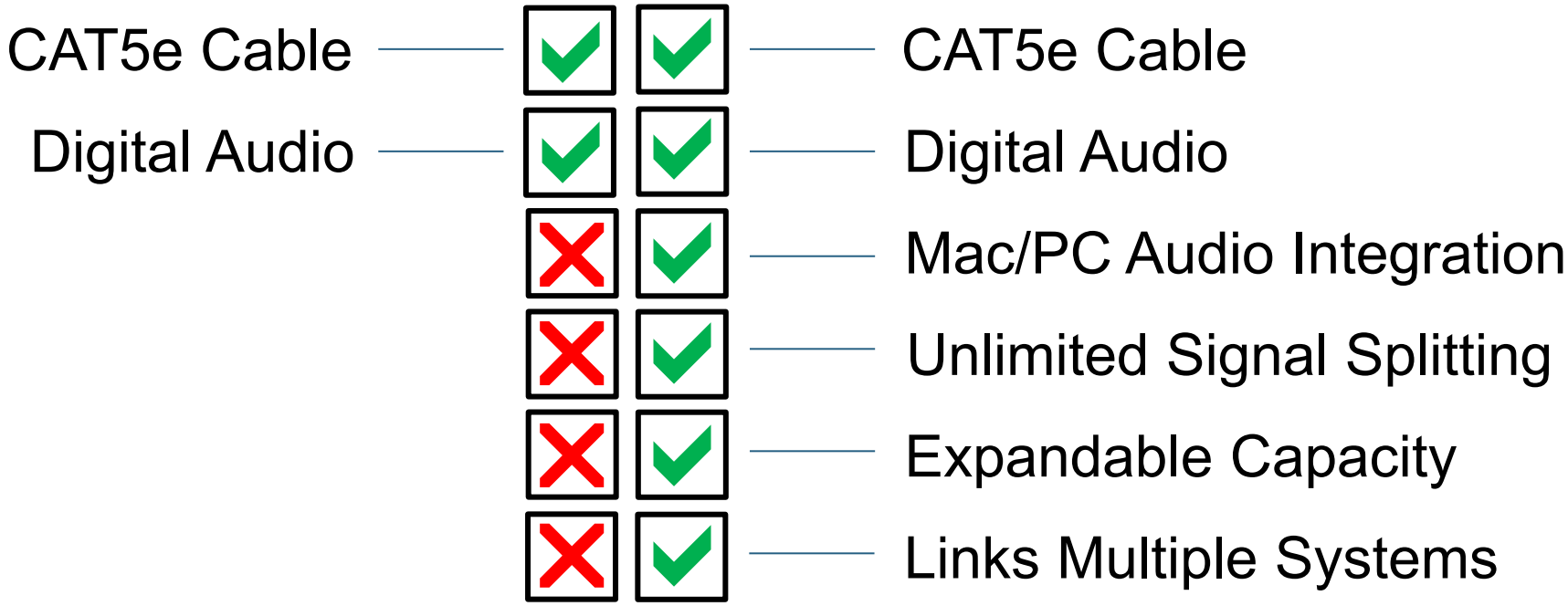
“Point-to-Point” Wiring Means…

Whatever goes in here…

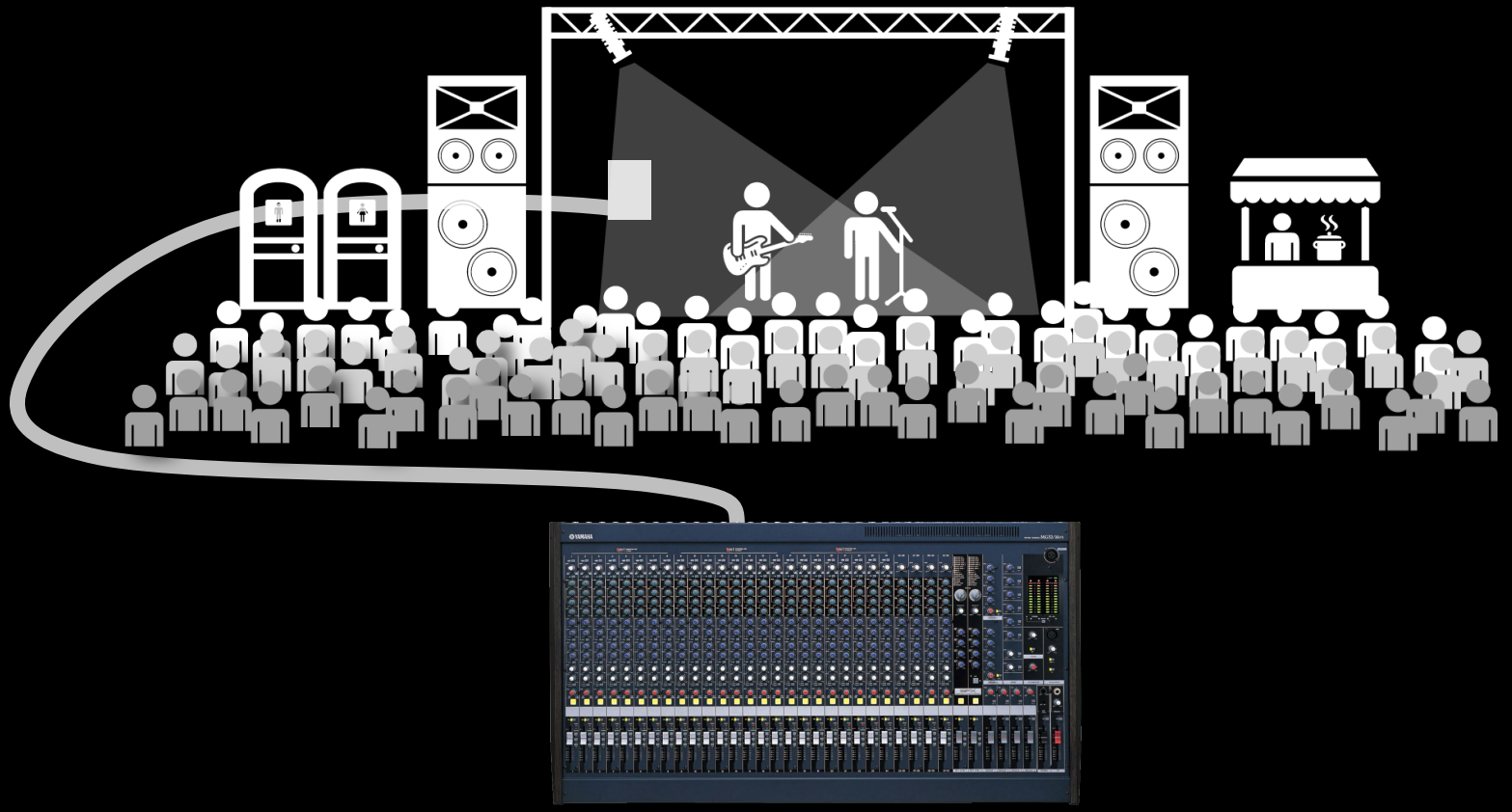
Comes out here.

Digital Audio Snakes vs Digital Audio Networks

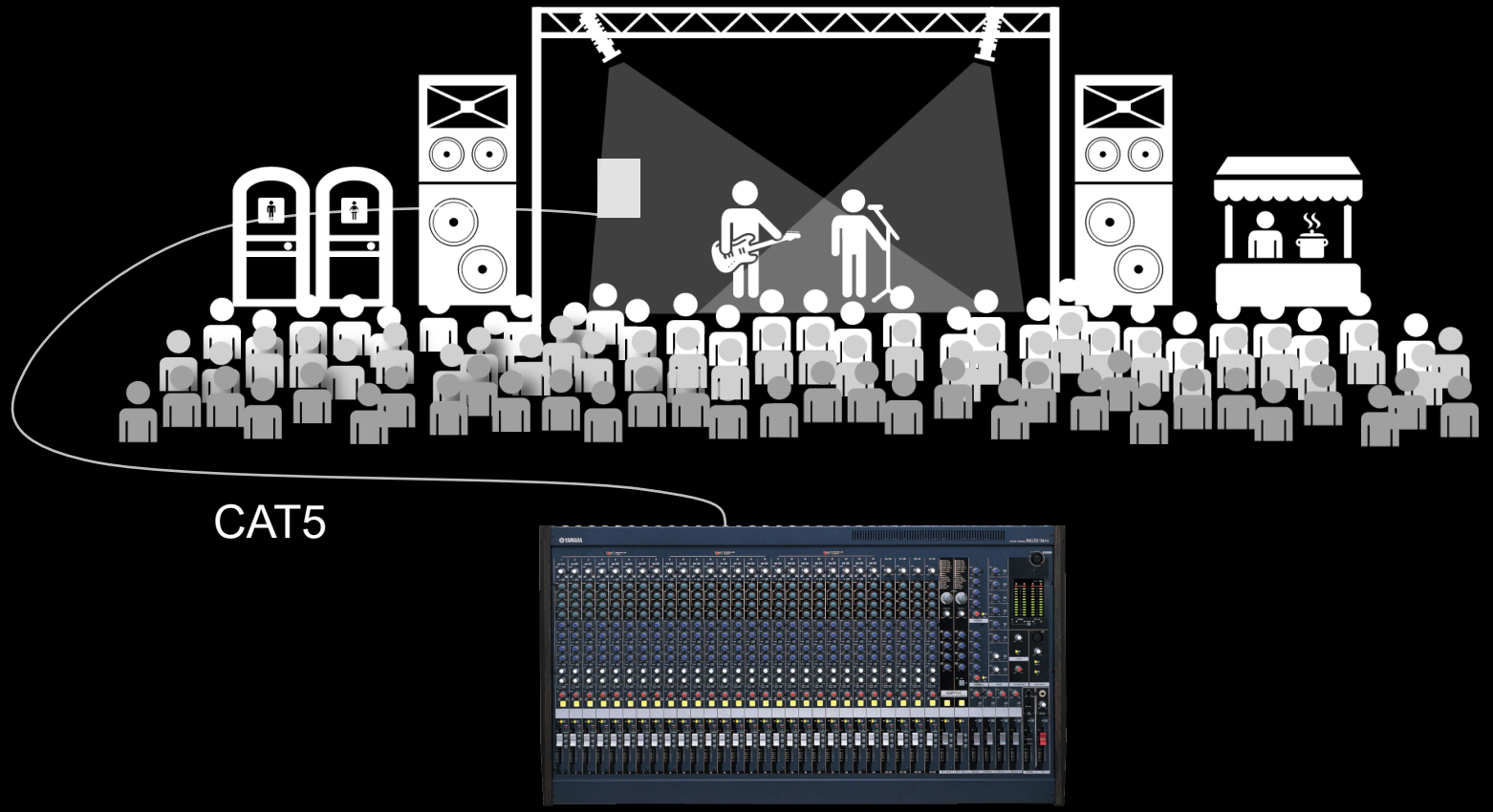
Digital Snake ≠ Digital Audio Network



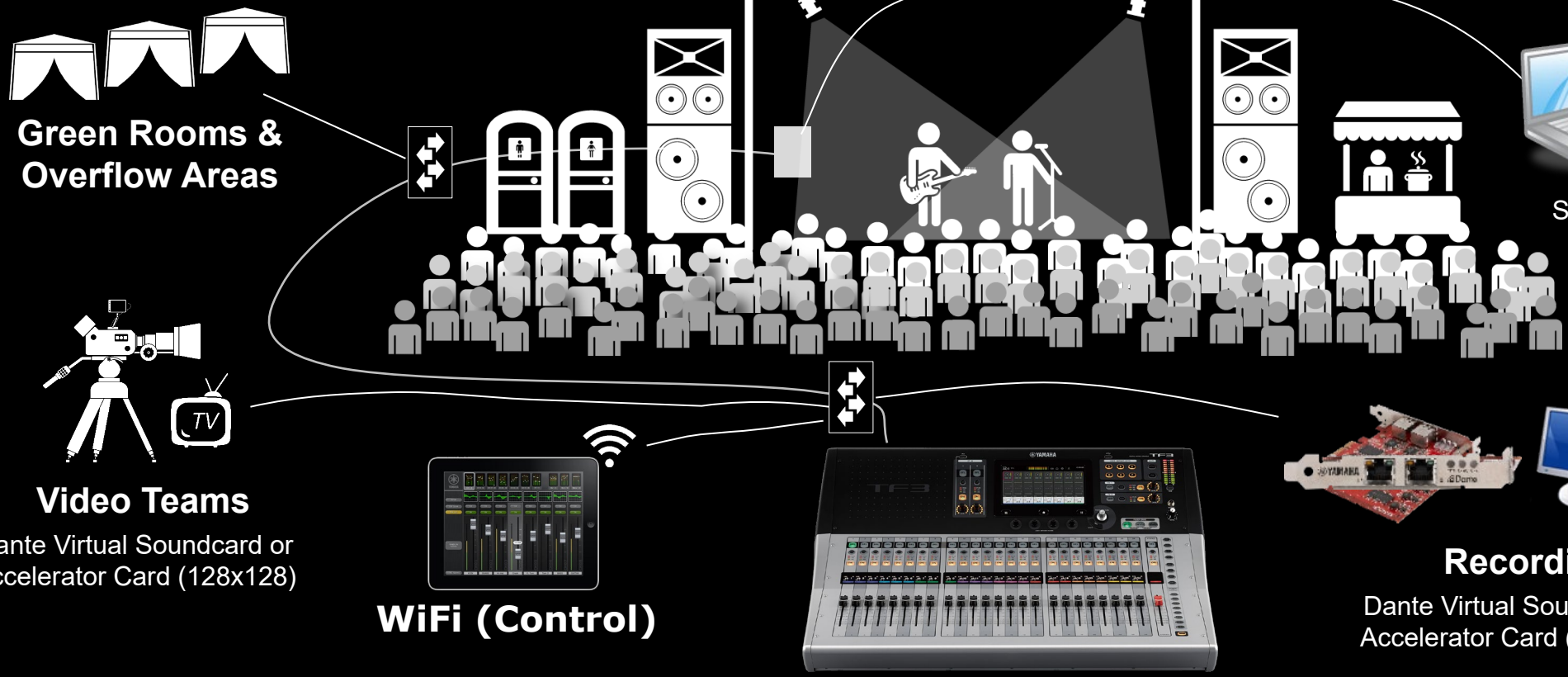
Digital Audio Snakes vs Digital Audio Networks



Digital Audio Snakes vs Digital Audio Networks



Digital Audio Snakes vs Digital Audio Networks



Green Rooms & Overflow Areas

Backing Tracks

Add Dante Virtual Soundcard (64x64): $29*.

Video Teams

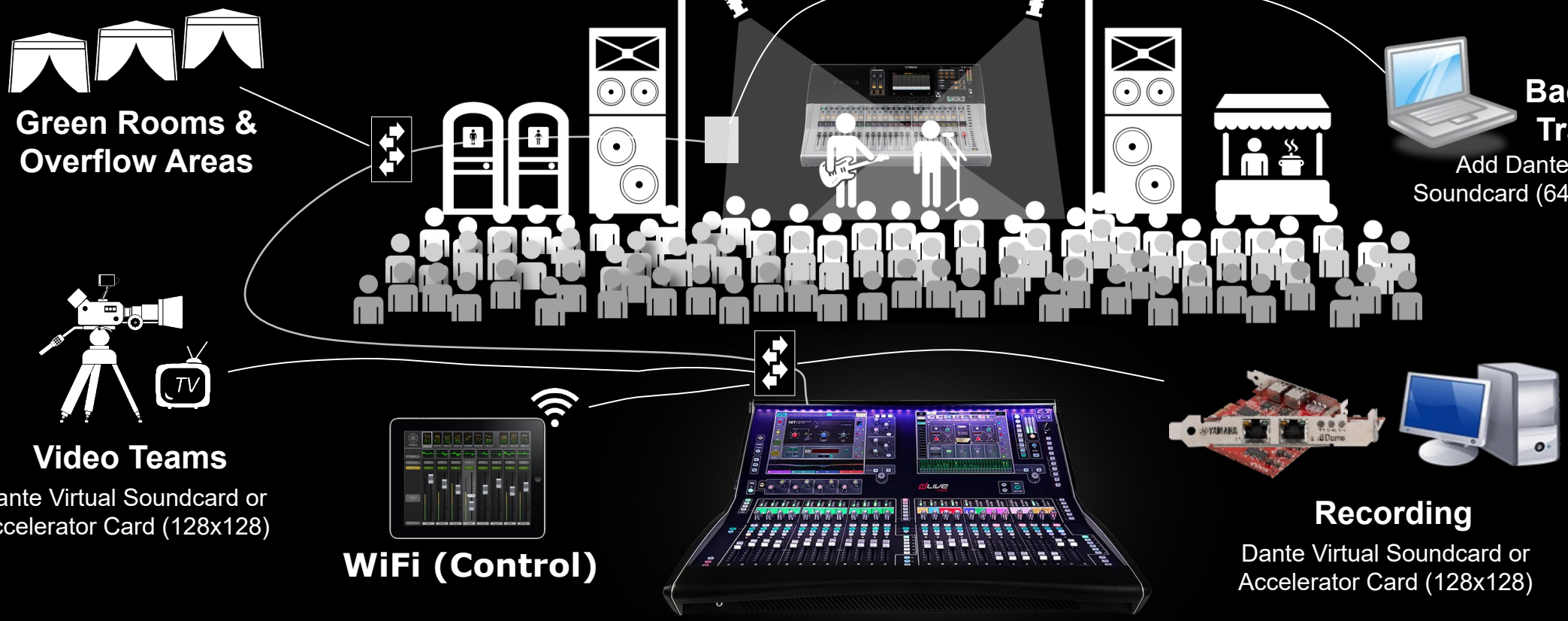
Dante Virtual Soundcard or Accelerator Card (128x128)

WiFi (Control)

Recording

Dante Virtual Soundcard or Accelerator Card (128x128)

Digital Audio Snakes vs Digital Audio Networks



Green Rooms & Overflow Areas

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WiFi (Control)

Recording

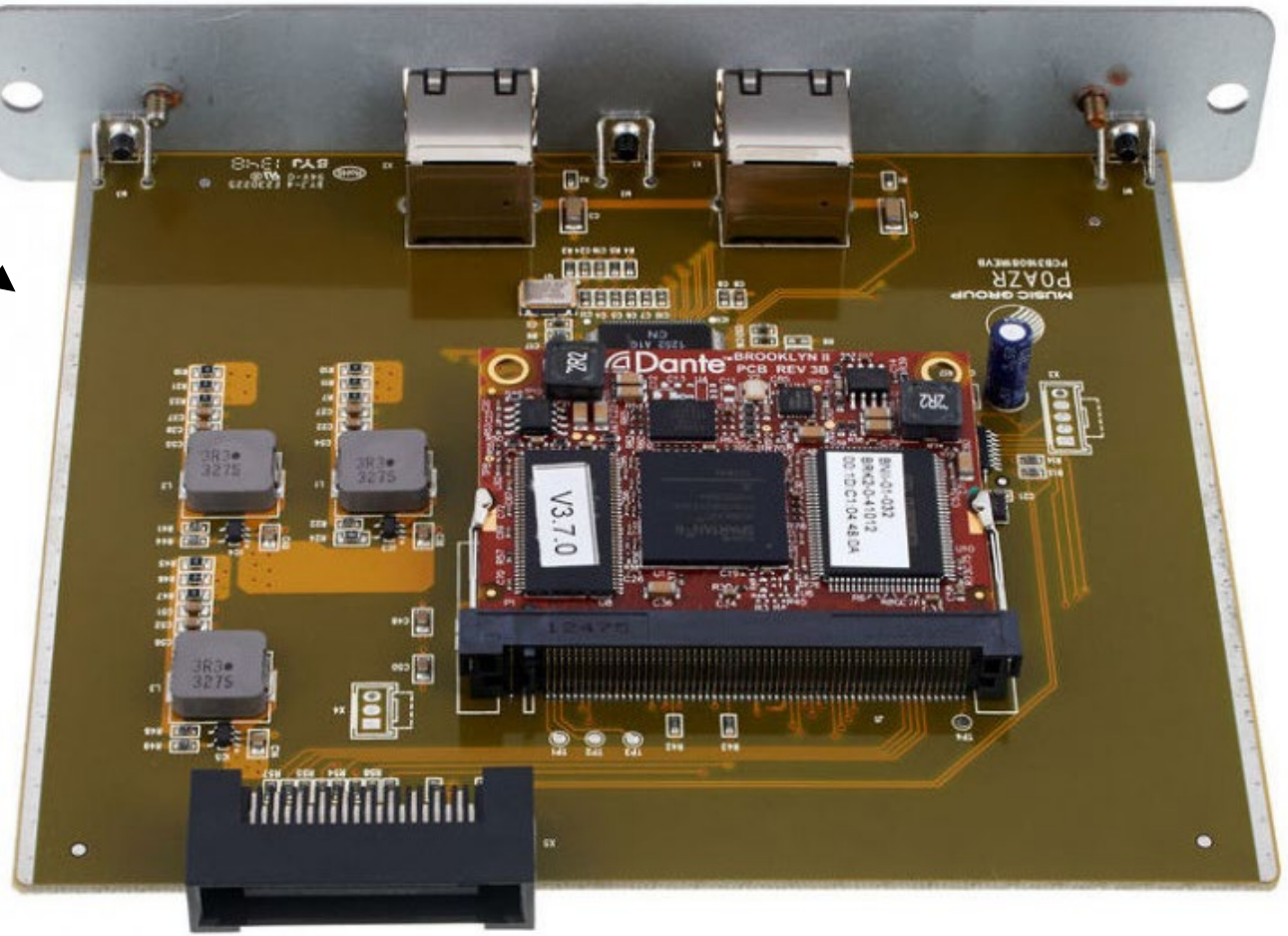
Dante Virtual Soundcard or Accelerator Card (128x128)

Why Do We Use Digital Audio?

Q: Why do we use Digital Audio Network?

A: It enables us to do things we couldn’t do before.

HOW IS DANTE BUILT INTO PRODUCTS?



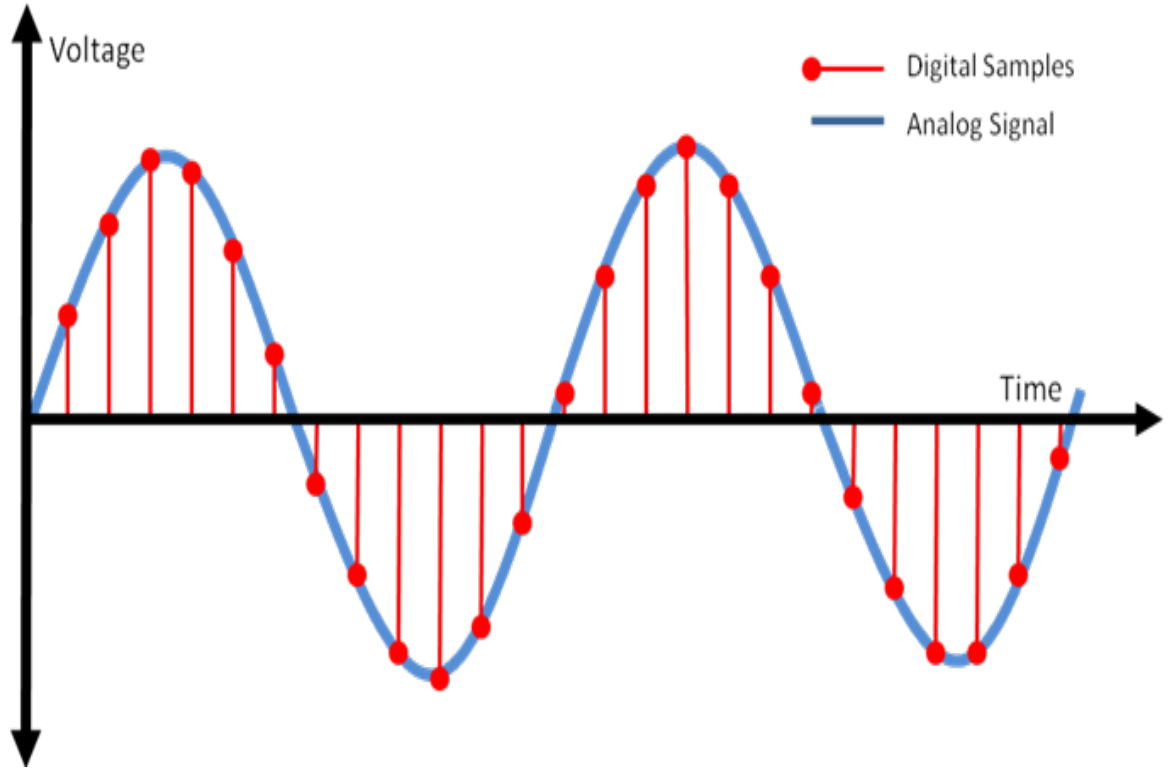
ANALOG TO DIGITAL CONVERSION

Dante uses Pulse Code Modulation (PCM) to send **uncompressed Audio**

Signal is sampled several times in a second (Hz)

Nyquist Theorem:
Samples rate must be greater than
2x the highest frequency

Humans hear from 20Hz to 20kHz
Example: 44.1kHz CD Quality lossless



BIT DEPTH = AMPLITUDE RESOLUTION

Bits are used to represent **amplitude resolution**

More bits -> more accuracy
CDs: 16 bits
Pro: 24 bits

Number of Bits	Number of Values
1	2
2	4
4	16
8	256
16	65536
24	16777216
32	4294967296

SAMPLE RATE x BIT DEPTH

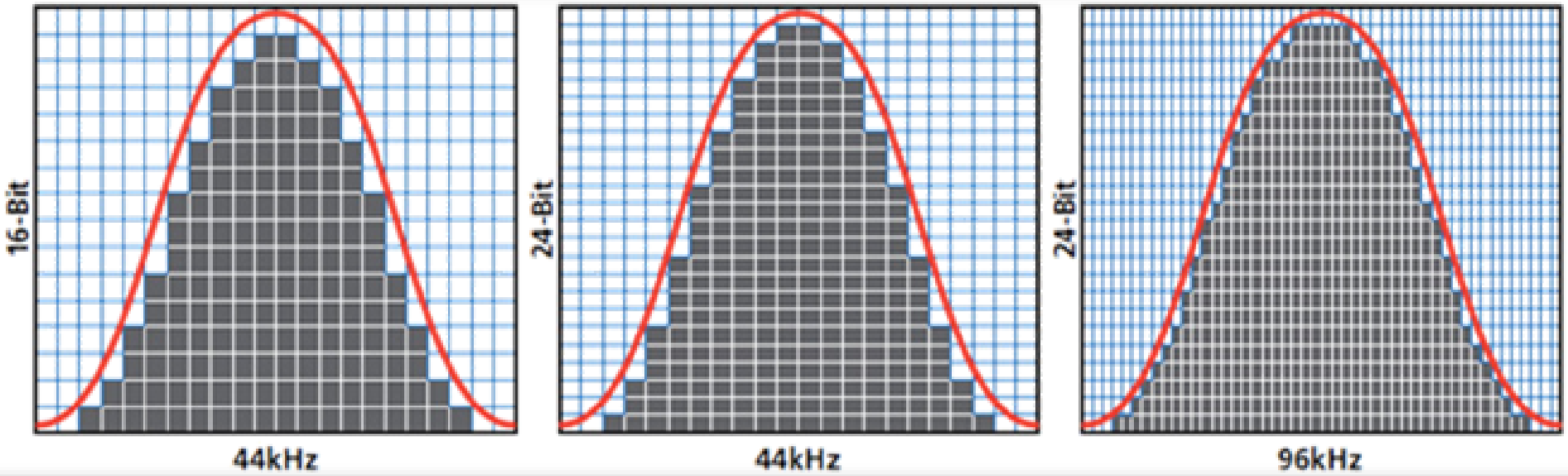
More of each -> greater fidelity

-

Increased bandwidth usage

-

Greater sample rates -> fewer I/O channels



SAMPLE RATE AND CONNECTION

Only Dante channels using the **same** sample rate can connect/subscribe

Multiple sample rates **can coexist** on the same network

Dante supports most common sample-rates **from 44.1kHz to 192kHz**

BANDWIDTH USAGE

PCM Audio Bandwidth =
(Sample rate) x (Bit depth) x (No. of channels)

●

64 ch at 48kHz/24-bit = 48,000 x 24 x 64 = 74 mbits/sec

●

With network overhead, 64 channels ≈ 96mbps

●

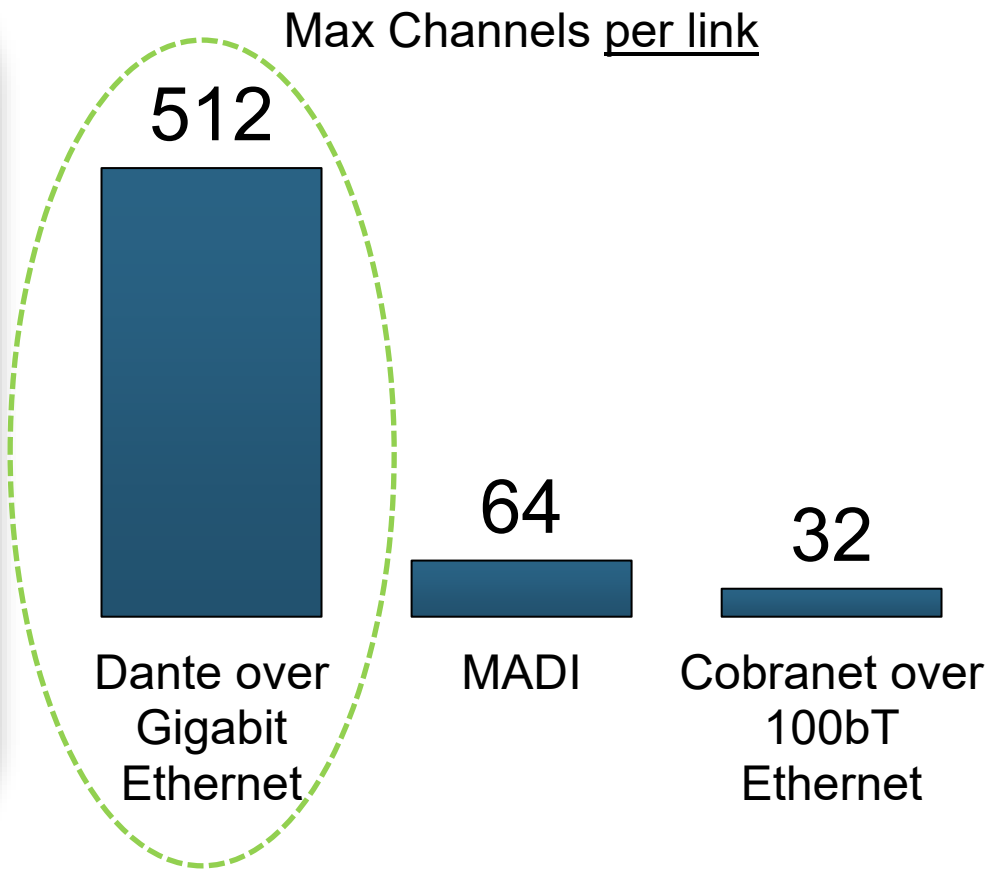
When sample rate is increased, i.e. from 48kHz to 96kHz
the channel count is reduced

DANTE BANDWIDTH

Legacy digital systems constrained to lower channel count

Gigabit means Dante is capable of **512x512** at each link

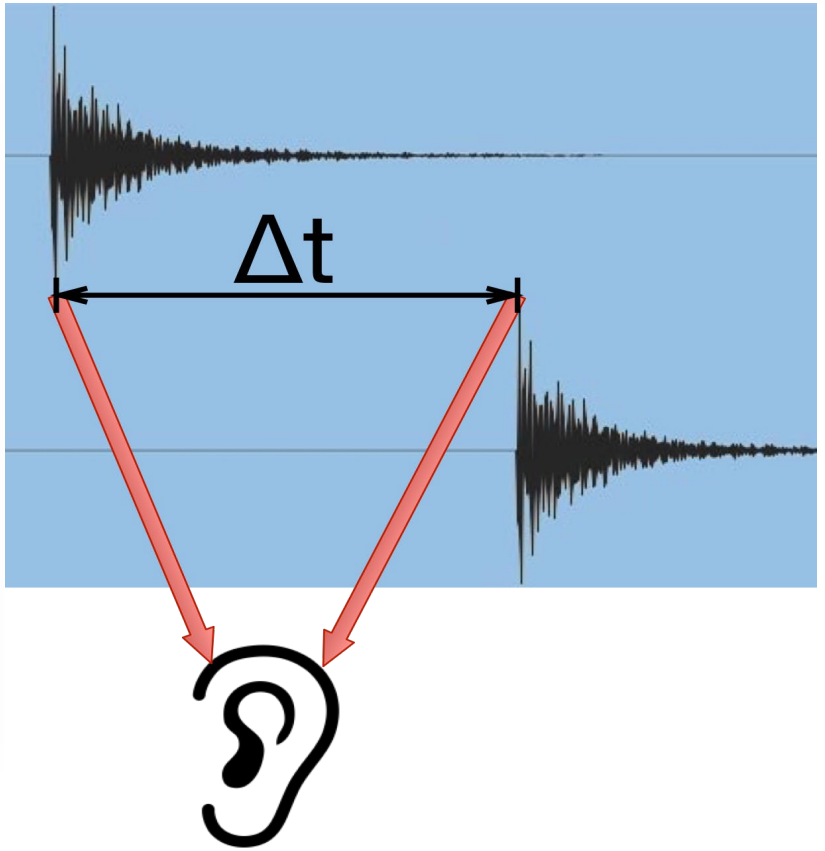
Even a large 64 channel console consumes only 1/8 capacity of a single port



LATENCY

Latency is the time a signal takes to be transported and processed in any Audio System

- Mainly a problem when we hear delayed and un-delayed signal simultaneously
- Ex1: Recording Studio, overdubbing a track
  Ex2: Live Music Festival with Delay Towers



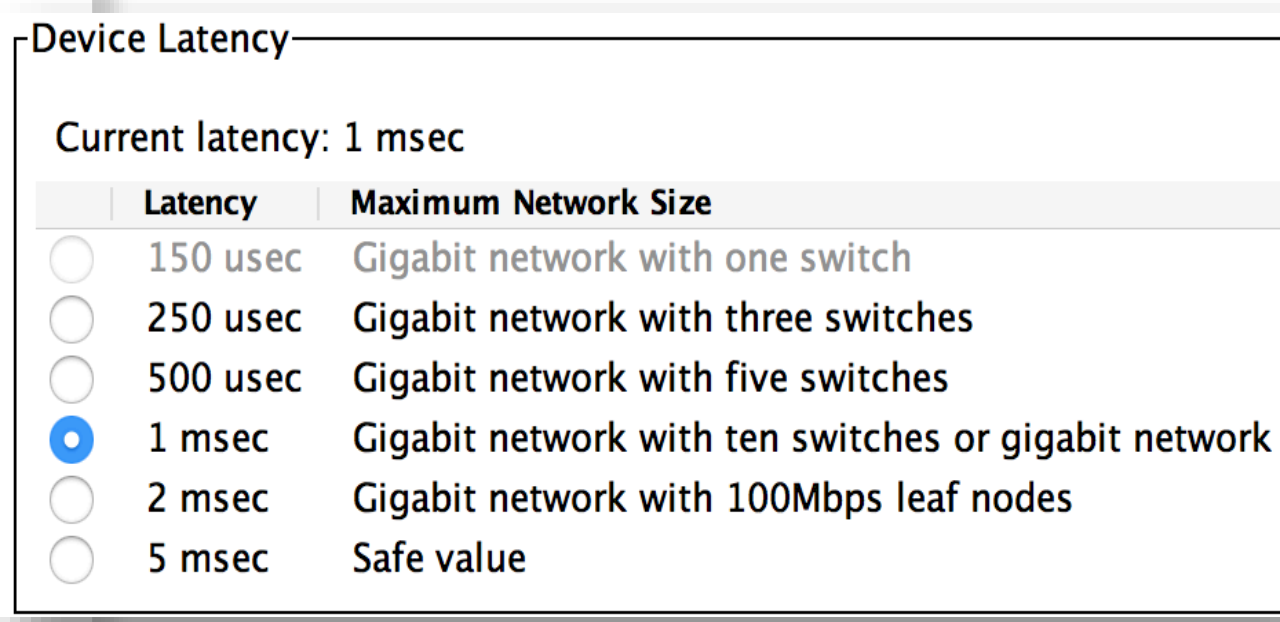
LATENCY

On a Dante Network, Latency is **deterministic**

Always a defined well-known time to match playouts and **set per device**

Default Latency is 1ms (ultra-fast!) up to 10 Switches

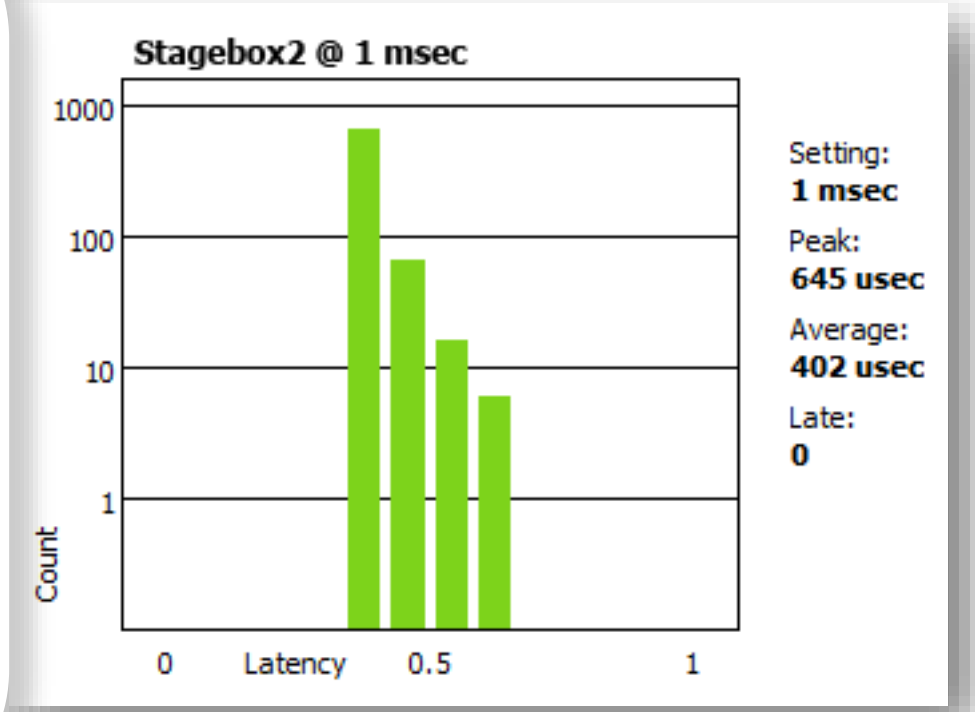
Multiple devices **can** use different latency settings on the same Network



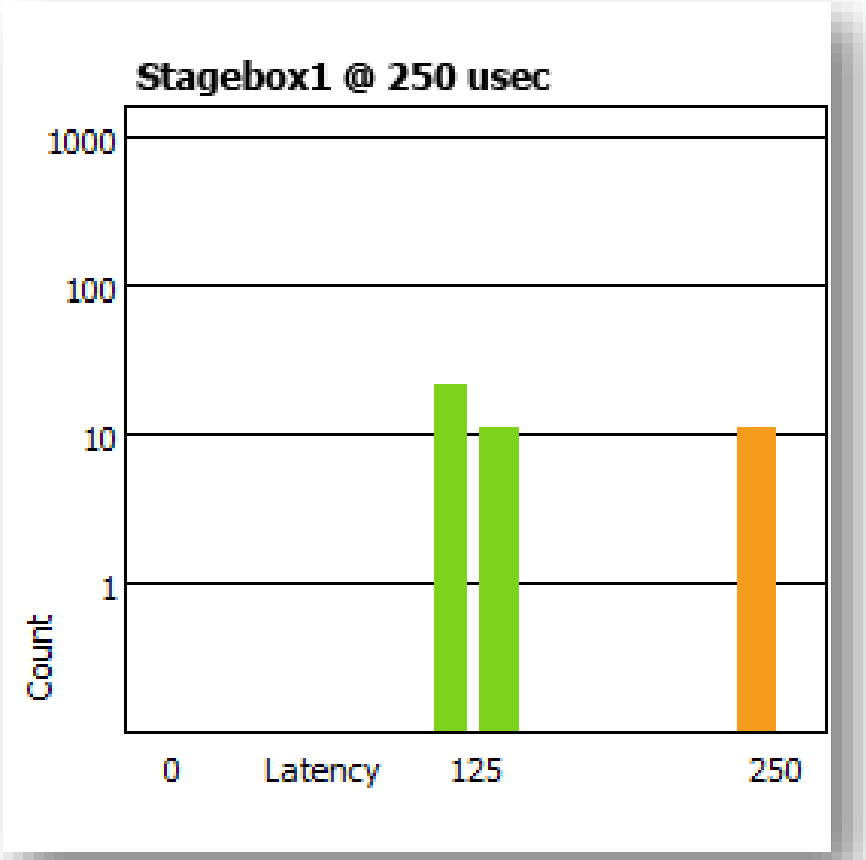
MONITORING LATENCY – GOOD EXAMPLE

- **Monitor latency in Dante Controller using the Latency Tab**

- Example on the image:
  - 3 switches
  - 1ms latency setting
- All packets safely inside window



MONITORING LATENCY – BAD EXAMPLE



Example: 250µs latency setting

- Some packets are dangerously close to the edge of the window

- **ISSUE: With more switch hops , the minimum latency must increase**

Solutions: Increase latency

- Improve network performance (QoS, etc.)
- Replace faulty equipment
- Disable unneeded switch management

WORD CLOCK

The clock that determines where the audio sample begins in the data traffic

- Must be consistent for all devices in a digital system so that data is read the same way
- Single Clock Master for multi-device systems

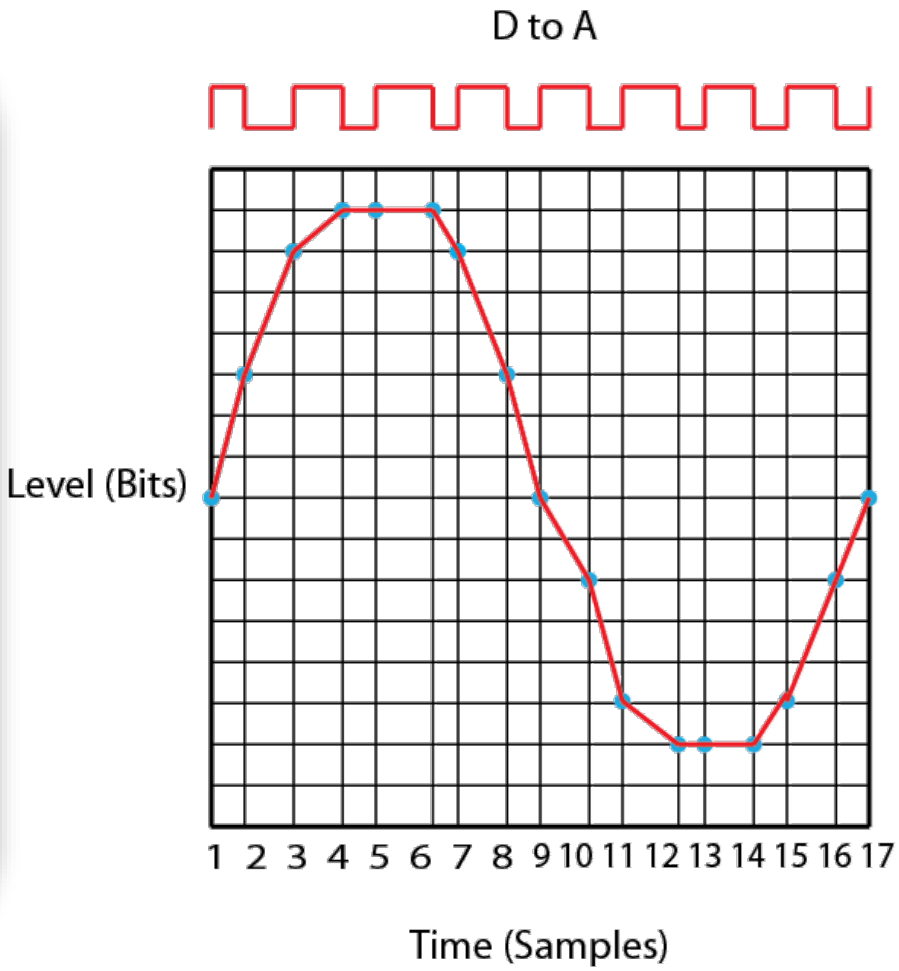
JITTER

Distortion caused by inconsistent word clock in playout

Exists in all Digital Audio Systems

Very common with other formats
AES3, MADI, ADAT, S/PDIF

Dante ensures a Jitter-Free performance!



CLOCKING

Dante handles clocking automatically via **election**

Dante Clock Master provides synchronization to all Dante devices on the Network

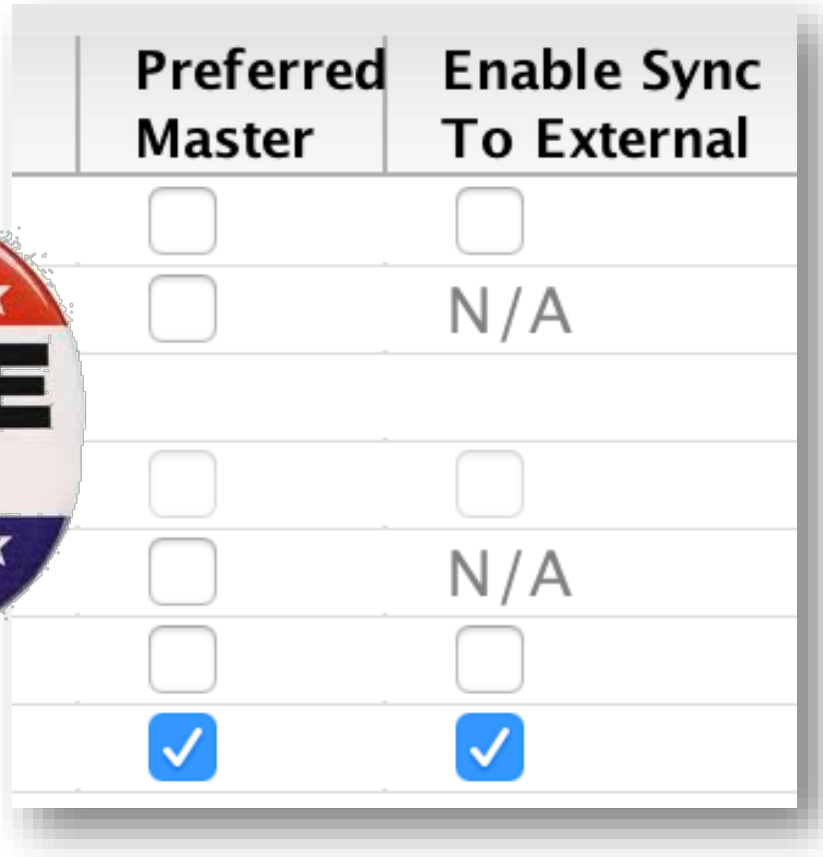
New Clock Master elected as needed

CLOCK MASTERS

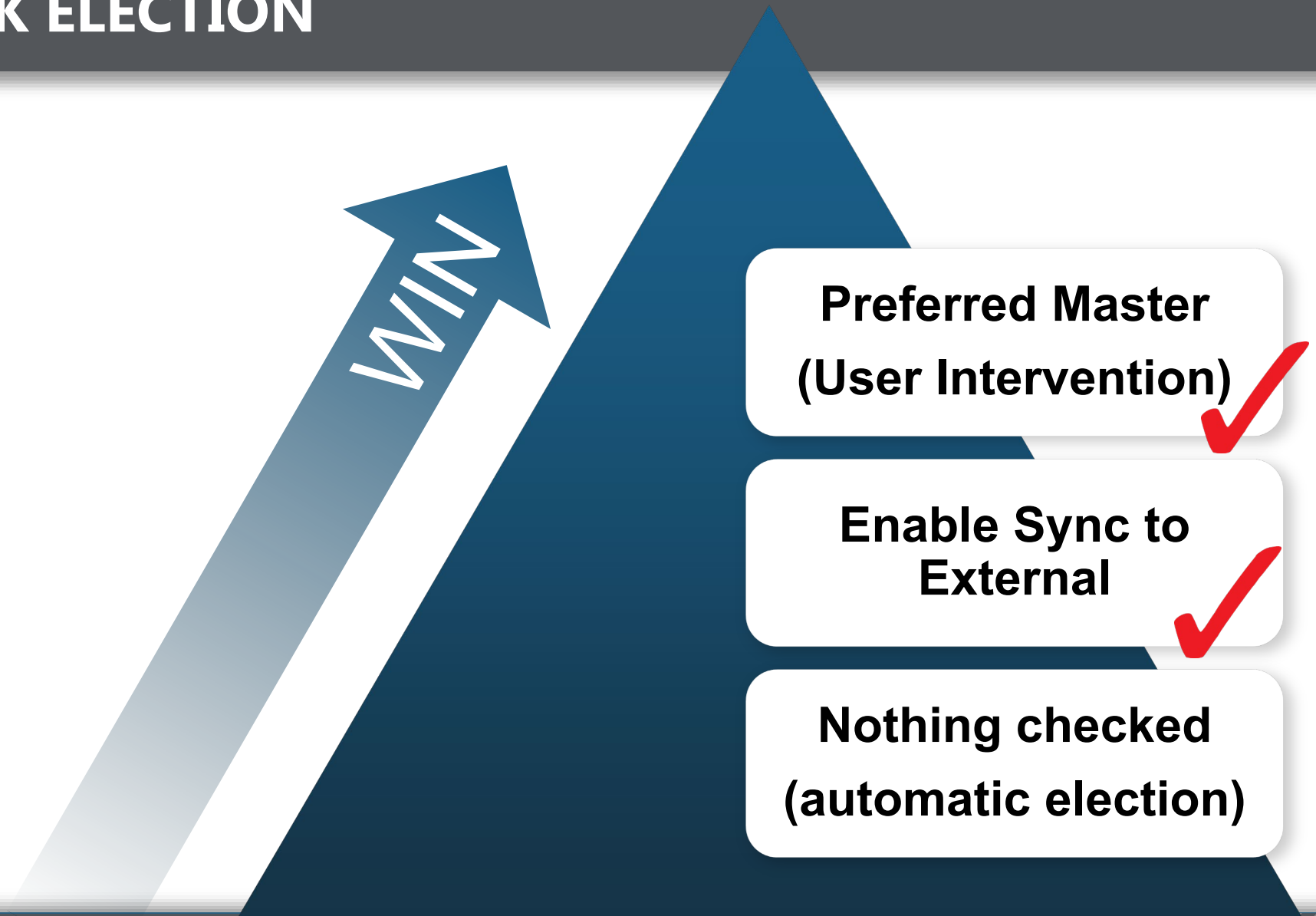
Clock Master determined by election
In accordance with PTP
(Precision Time Protocol) IEEE1588

Dante Controller offers the option “Preferred Master” to force a device to WIN the election

Multiple devices can be assigned as Preferred Masters



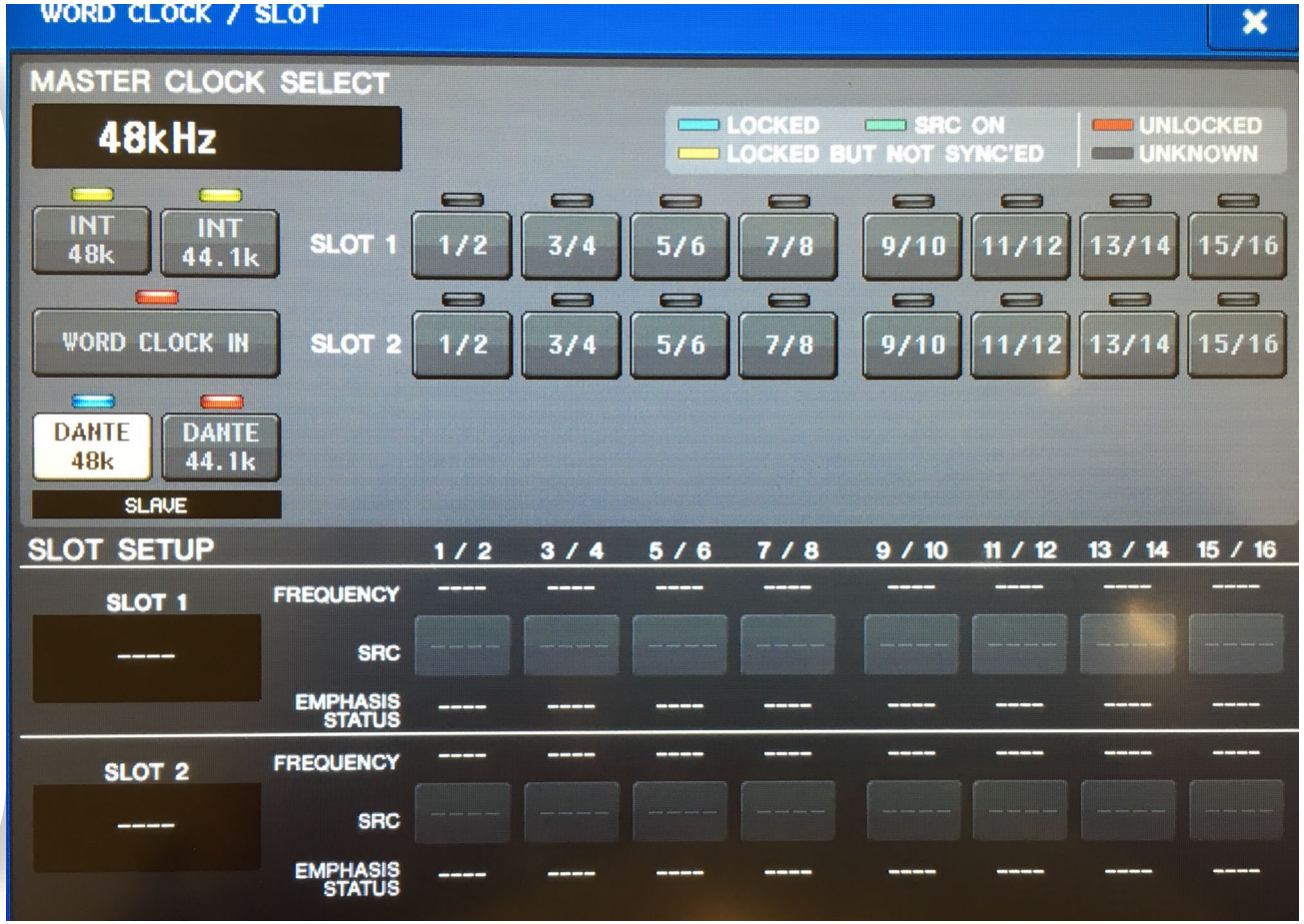
CLOCK ELECTION



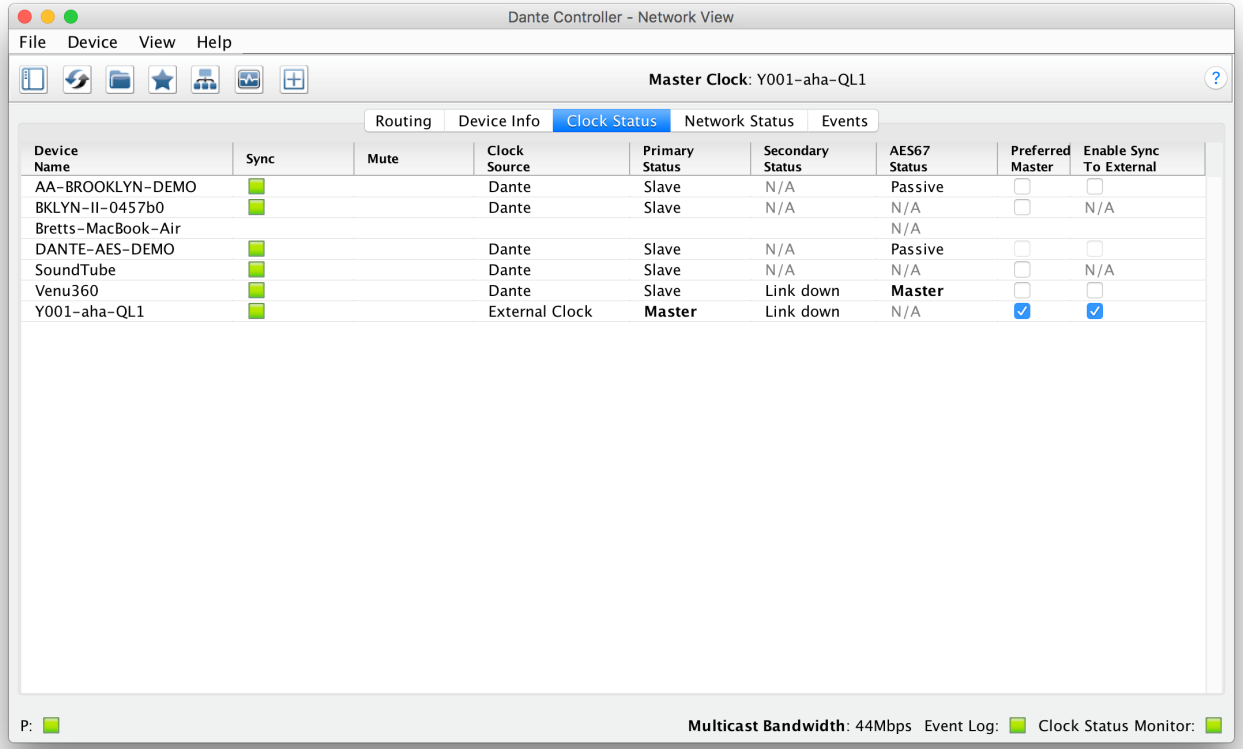
USING EXTERNAL CLOCKS

"Enable Sync to External" allows use of console (or other) clock

- Check also "Preferred Master" box
- Configure clock in console, too
- Mismatch may result in pops and clicks



PREFERRED MASTER



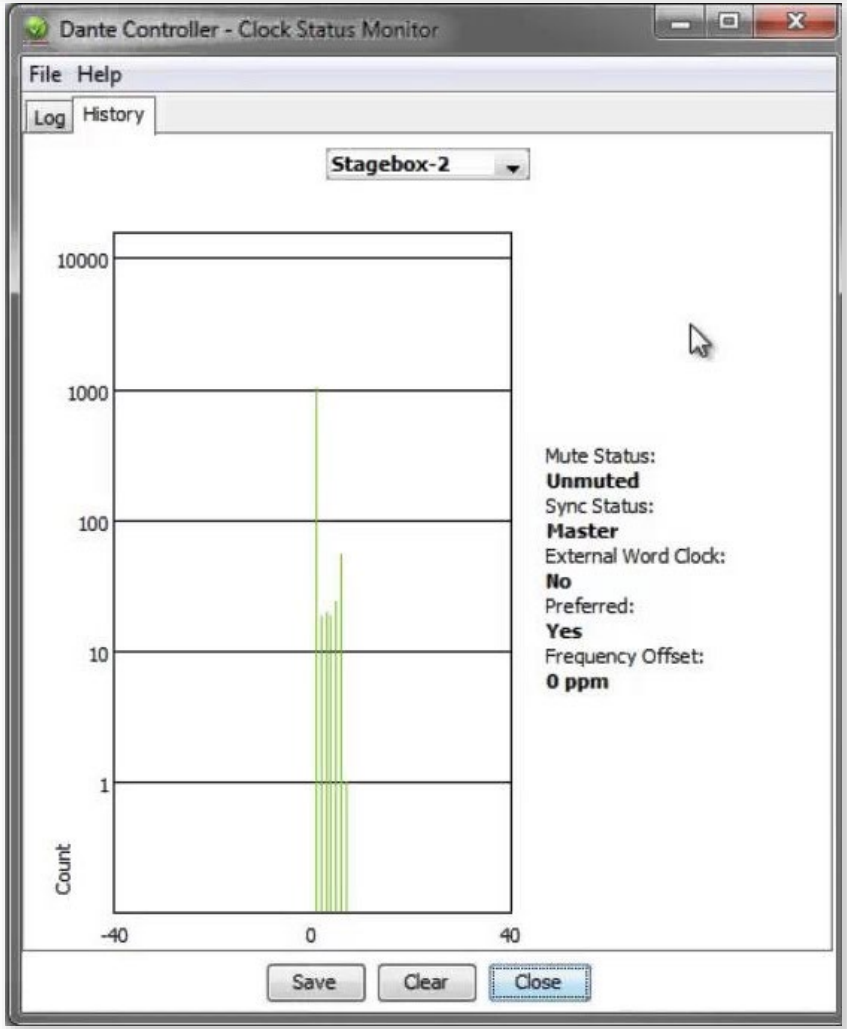
- Dante will always elect a Clock Master without intervention
- Changes to Clock Master are automatic and do not affect audio
- Any hardware device can be made a “Preferred Master” clock
- Preferred Master should be a device that is always present in system

CLOCK MONITORING BUTTON

Passive: Dante Controller alerts when any changes to Clock Master

Active: Dante Controller is looking for Clocking problems

- *Useful for troubleshooting external clocks*
- Looks for instability
- Accumulates data over time
- Displays spread of clock frequency



SUMMARY

Digital audio works by playing out or recording samples

Bit depth describes **amplitude resolution**

Sample rate determines **maximum analog frequency**

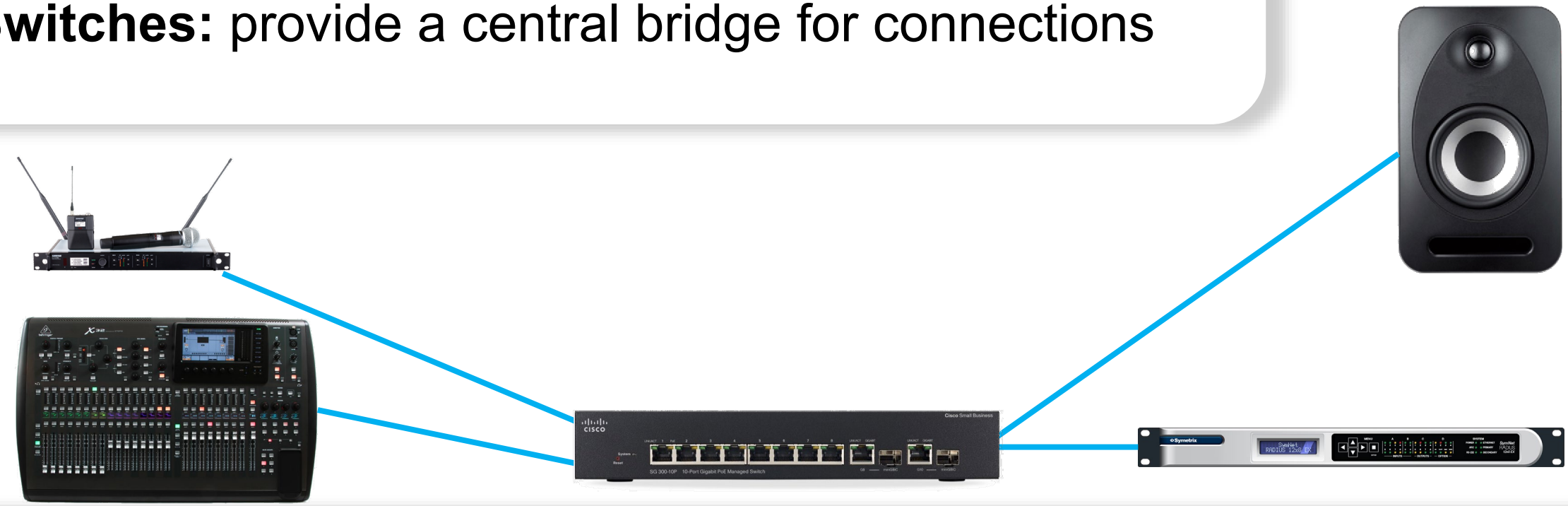
Word clock must be consistent and correctly sync'd

Digital audio produces data that can be transported like any other – *time* is the key that Dante provides

How much Networking do I need to know?
…not very much to start!

PHYSICAL SIDE OF NETWORKING

End Points: The things you are adding to a network
Cables: connect them together
Switches: provide a central bridge for connections



WHAT KIND OF CABLE FOR DANTE?

Same as for **any regular computer network**

Gigabit rated:
CAT5E, CAT6 Ethernet cables

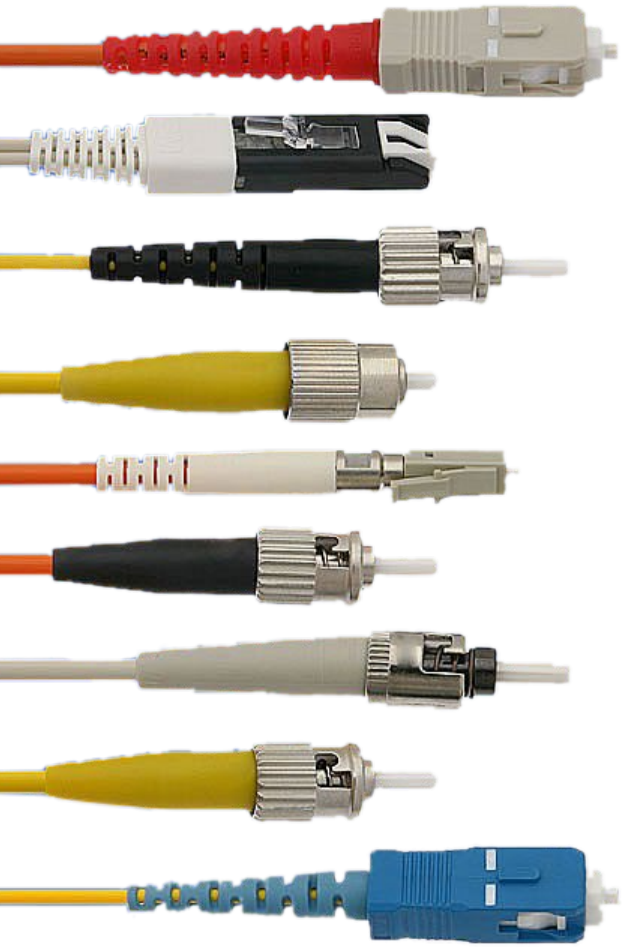
(only up to 100m max per run)

WHAT ABOUT WI-FI?

Wi-Fi is **not supported by Dante**

- Less reliable than wired Ethernet
- OK for **Dante Controller Settings only**

WHAT ABOUT FIBER? YES, IT WORKS!



Dante **works** on Fiber Networks

Required for greater distances (**over 100m**)

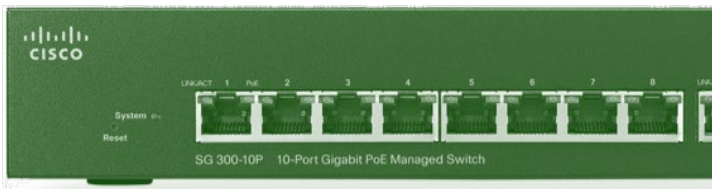
Requires switches with Fiber Connections

Small Form-factor Pluggable (SFP)

SWITCHES

Dante works on **standard Switches**

Gigabit switches are preferred for extra bandwidth



SWITCHES – UNMANAGED & MANAGED

Dante works on both!

Managed

More expensive

- Many possible settings (and risks)
- May be required in some conditions (IGMP, QoS)

Unmanaged

Less expensive

- 100% plug and play
- May not be appropriate in some situations

THEN YOU DON'T NEED A MANAGED SWITCH

- If you use only **one** switch to connect your Dante devices…
- And you are **only** using the network for Dante audio…

MANAGED SWITCHES (In case you need them…)

Start with the default features

- Do not change settings until there is a problem that the feature may help
- Resist temptation to over-configure!
- In most stand-alone Dante networks, features are not required
- Incorrect switch configurations are a common cause of problems

SWITCHES – UNMANAGED & MANAGED

YAMAHA commercial audio

Setting up a switch for use with Dante

Using the **Cisco SG300-20** or **Teqsas CyberTEQ-m**

Contents

Chapter	Title	Page
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2.0	**Getting Started: Firmware, IP Address & Password**	**2**
2.1	Login	2
2.2	Firmware Update	3
2.3	IP Address	5
2.4	System Information	5
2.5	EEE	6
3.0	**Simple System Network Design**	**7**
3.1	System Topology Tips	9
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4.2	Create A VLAN	11
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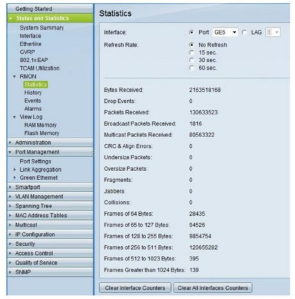
	Switch Log, Cable Check, Reboot & Initialize	29

A4 Trouble-Shooting

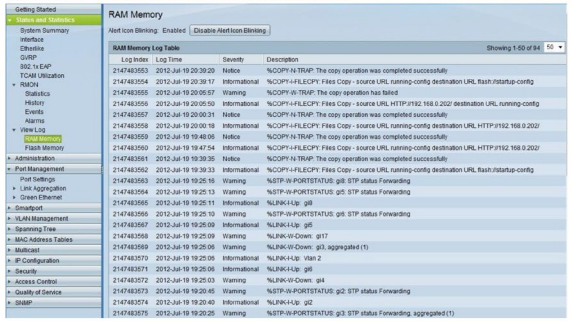
When trouble-shooting a network, it must be remembered that the vast majority of problems are caused by cable faults: whether they are crushed, bent, cut, stretched, or badly terminated. Or especially in the case of fibre-optics: dirty. Problem cables will cause lost data, or errors. These can be monitored in the web browser interface of the switch.

Open the **Status and Statistics** menu, then the **RMON** menu. And select the **Statistics** page. RMON is "Remote Network Monitoring". It will show the number of errors that have occurred, and the number of packets that have passed through each port.



Switch Log

If there is an intermittent connection between a cable and the switch, it could show up in the Log. Also the activity of connecting and disconnecting cables can be checked. Open the **View Log** sub-menu, and select the **RAM Memory** page.



If you want to know more:

Cisco SG300
Switch Configuration Guide

- Written by Yamaha & Audinate
- 29 pages long
- Not a recipe

EEE SWITCHES

EEE or “Green” switches are often **not recommended** for real time media

- The energy saving feature will shut down ports and prevent parts of Dante from working properly
- Disable this feature, or use switches that do not support it

How Do I Connect Dante Devices?

LOGICAL SIDE OF NETWORKING

In analog, physical wiring showed signal paths

In networks, connections are “logical” – name-to-name

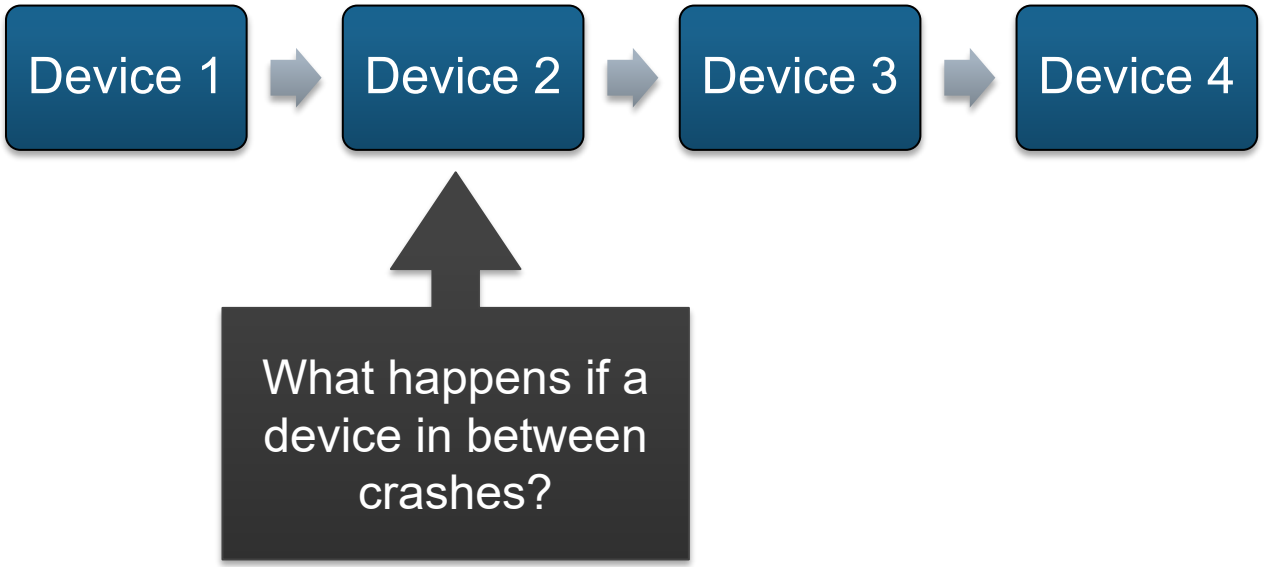
Each cable carries many signals for many devices

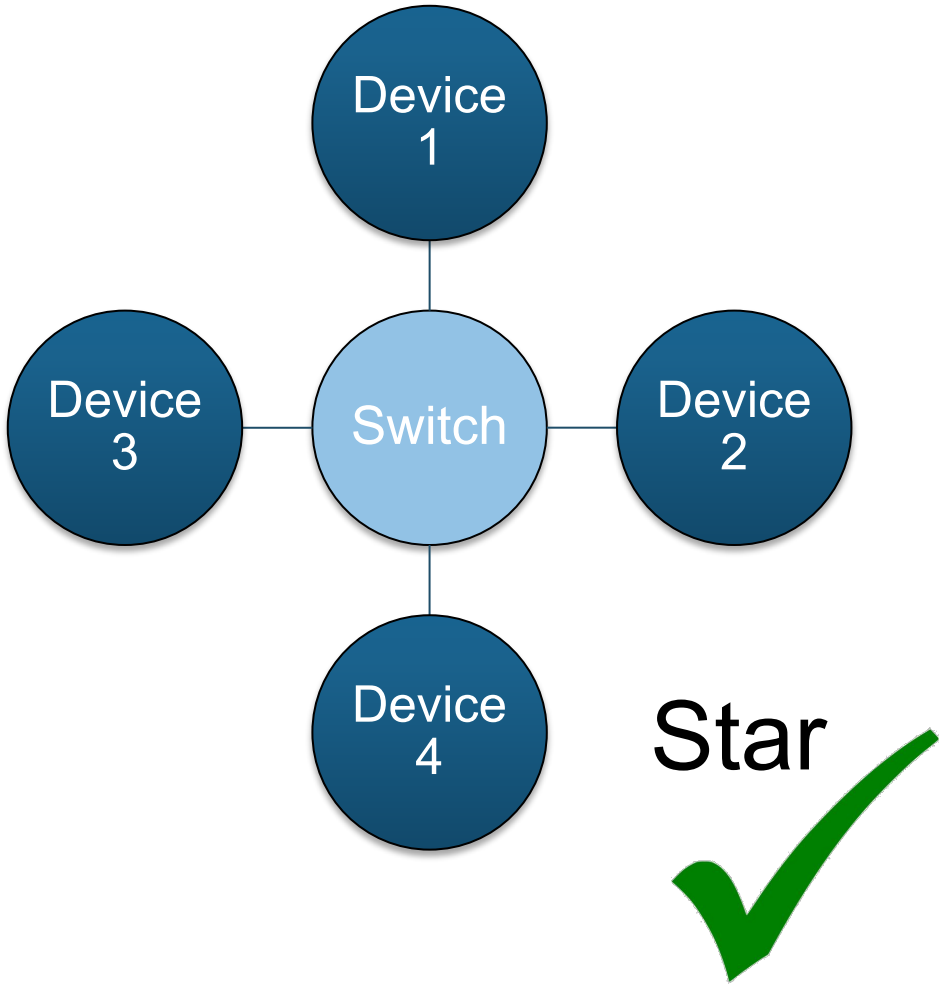
Data delivered in packets

Network technology is neutral; no special gear needed for audio

DANTE NETWORK TOPOLOGY

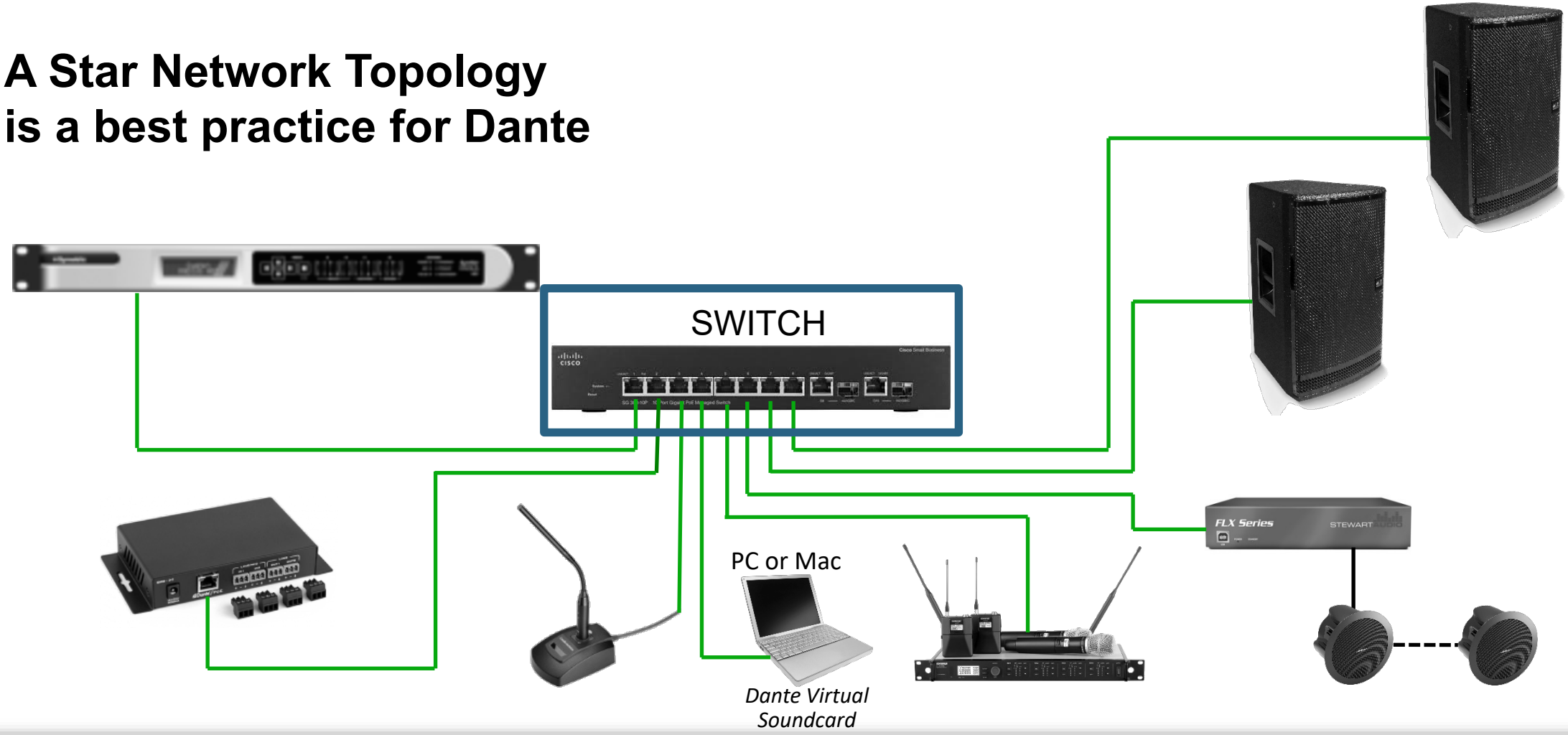
Daisy chain



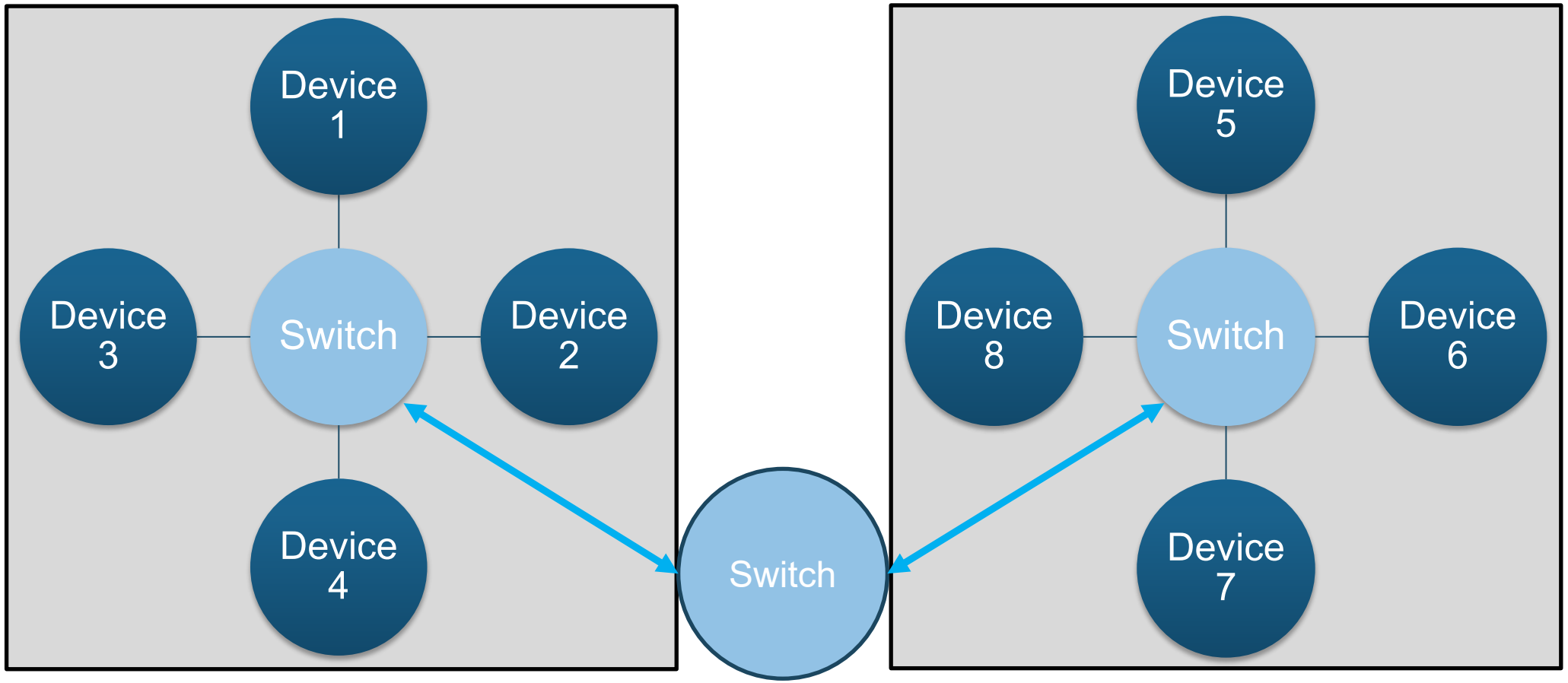


SINGLE SWITCH STAR EXAMPLE

A Star Network Topology
is a best practice for Dante



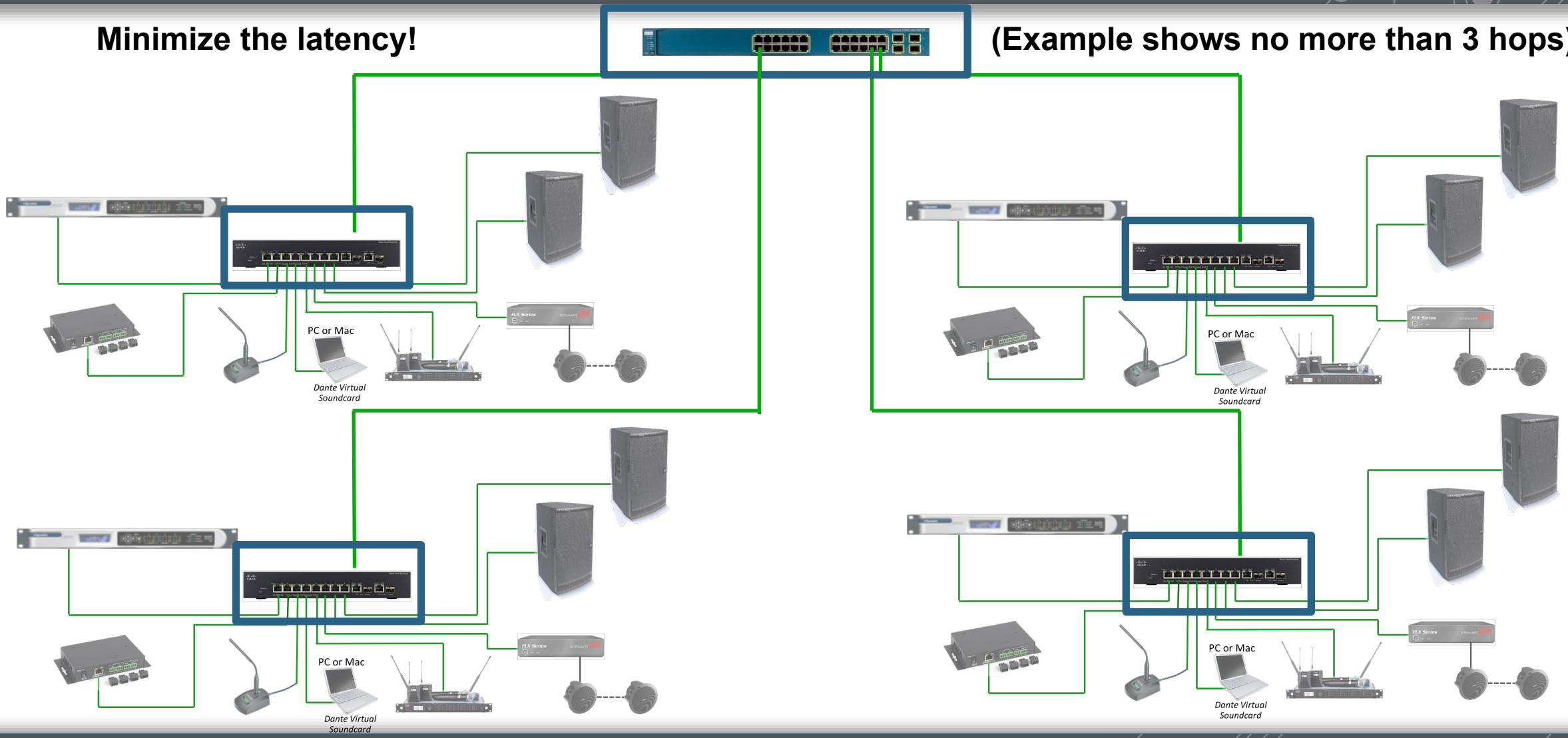
MULTIPLE STARS SCALABILITY



MULTIPLE STARS EXAMPLE

Minimize the latency!

(Example shows no more than 3 hops)



A WORD ABOUT NETWORK LAYERS

Each layer passes data to the next

Layer 1: physical connections (e.g., cables)

Layer 2: devices represented by fixed hardware addresses (MAC)

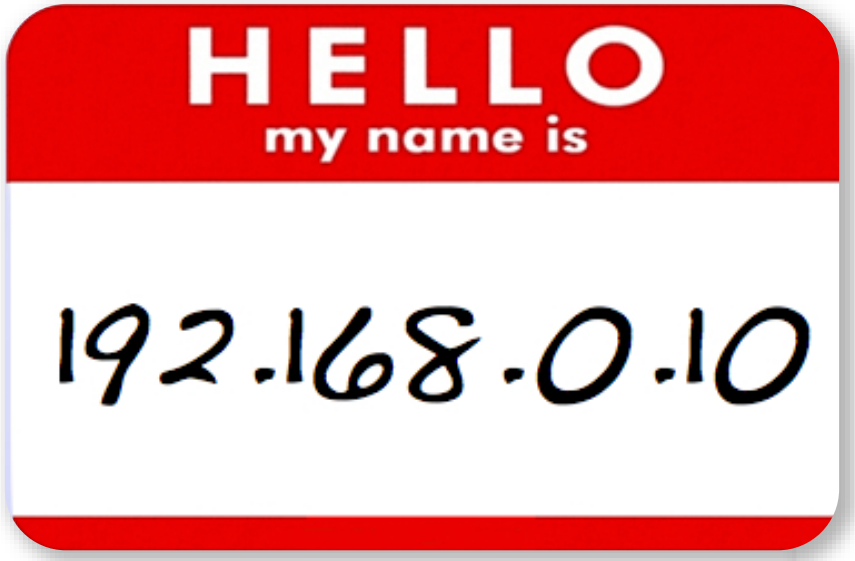
Layer 3: devices represented by variable IP addresses

Physical (hardware & cables)

Hardware addresses

IP addresses

WHAT IS AN IP ADDRESS?

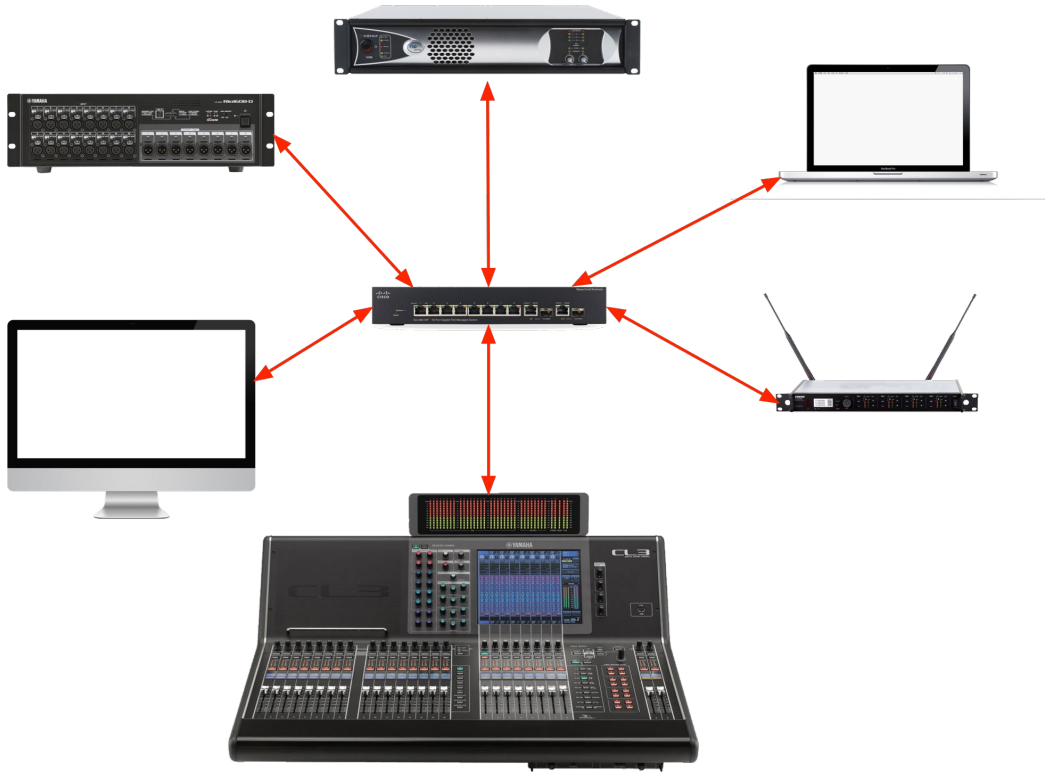


Numeric addresses to identify/map devices

Dante supports all commonly used IP Addressing methods:

- Dynamic (preferred) accomplished by DHCP Server
- Static (better avoid) as it can cause duplicates or unreachable addresses

AUTOMATIC IP ADDRESSING

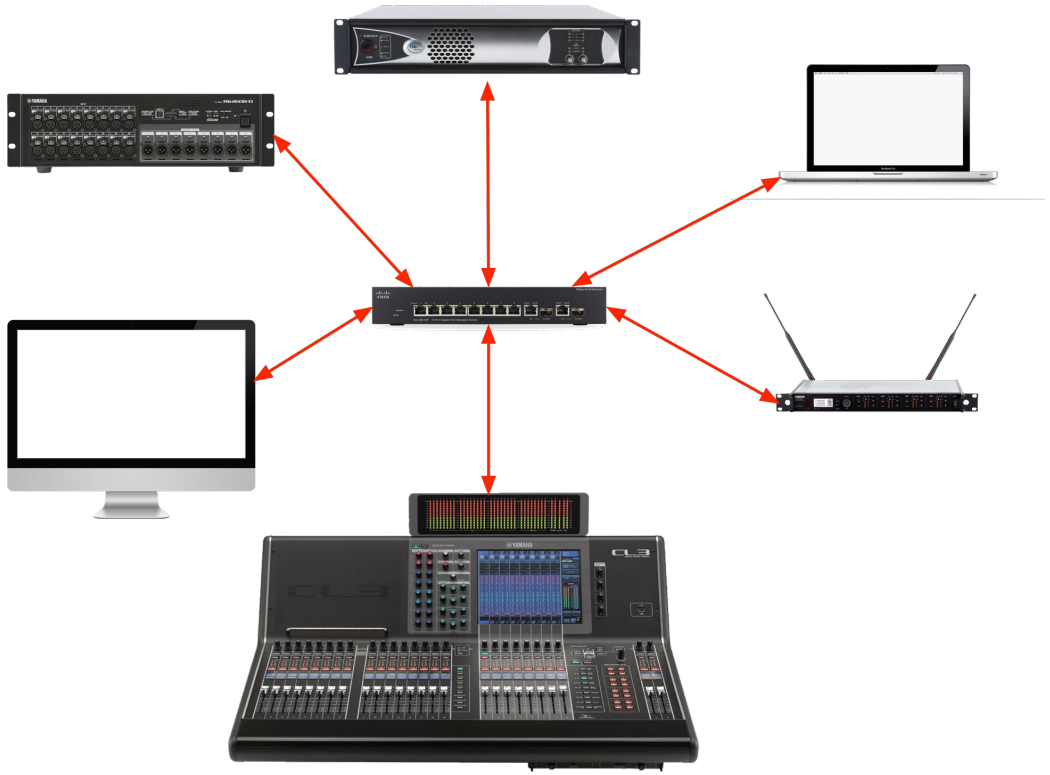


LAN connects **IP addresses in a common range**
i.e. 169.254.X.Y

Auto IP addressing ensures that Dante devices create a working LAN

Preferable for stand-alone Dante Networks

WHAT IS A "STAND-ALONE" DANTE NETWORK?



Local Area Network connecting only Dante devices

Not connected to the Public Internet, servers, etc.

Commonly used to separate responsibilities of AV installer

SUMMARY

Layer 3 networking allows use of IP addresses for connections

Automatic addressing enables simple “plug and play” use of Dante in stand alone networks – use it!

“Stand alone” networks are simpler to configure than **Converged Networks (Video, Phone, Internet Data, Audio, etc.)**

SUMMARY

- Always use gigabit switches

- Use CAT5E or (preferably) CAT6 cable
- Use fiber for longer runs (over 100 meters)

- Use either managed or unmanaged switches for smaller networks

- Dante-only networks with one switch do not require management features and may safely use unmanaged switches.

- Use a ”Star” topology to minimize switch hops

- Avoid or disable “green” or EEE features

How do I use Dante?

DANTE FEATURES AND BENEFITS

All devices use human-readable names

Precise time alignment of all audio

Automatic device discovery

One-click routing

Low, deterministic latency

Virtually jitter-free

Automatic re-connection after power cycles

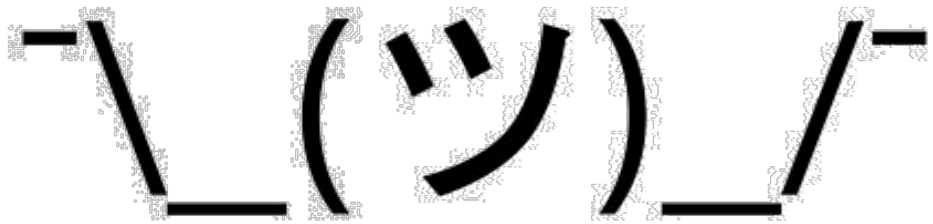
WHAT DOES DANTE NOT DO?

Dante **does not convert** Sample-rate

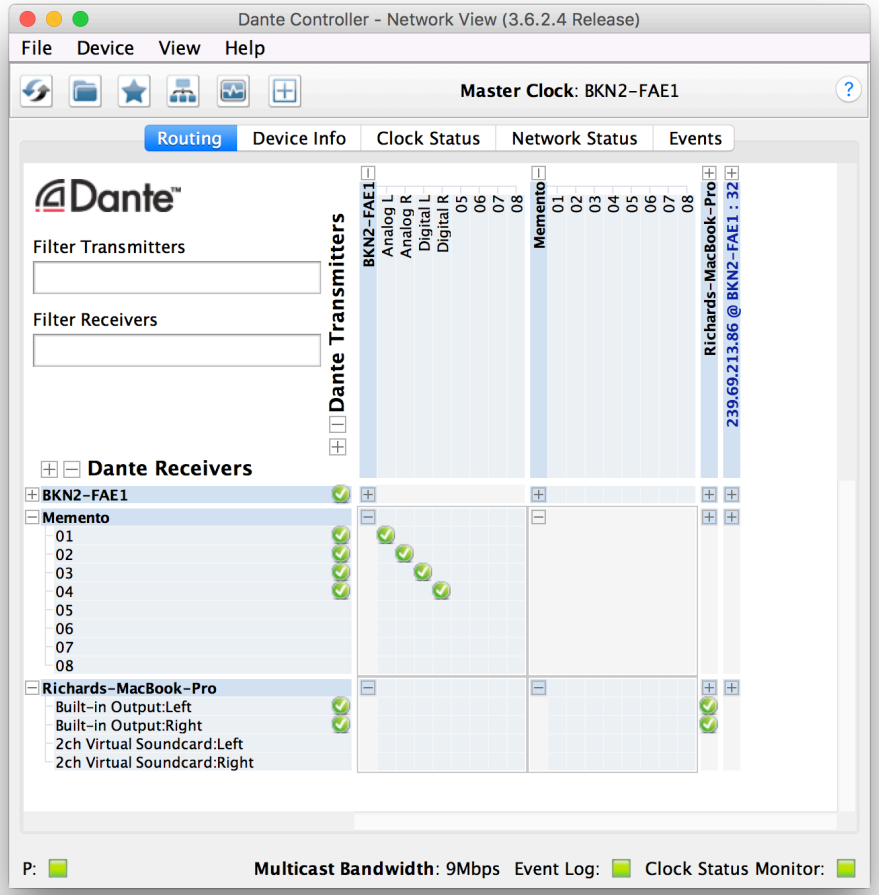
Dante **does not control** Levels, EQ, etc…

Dante **does not interfere** with MIDI

Dante **does not send SMPTE** time code digitally



DANTE CONTROLLER



Primary Dante tool for:

- **Routing, naming, saving presets**
  - **Sample Rate adjustments**
- **Clocking settings and diagnosis**
- **Latency settings and diagnosis**

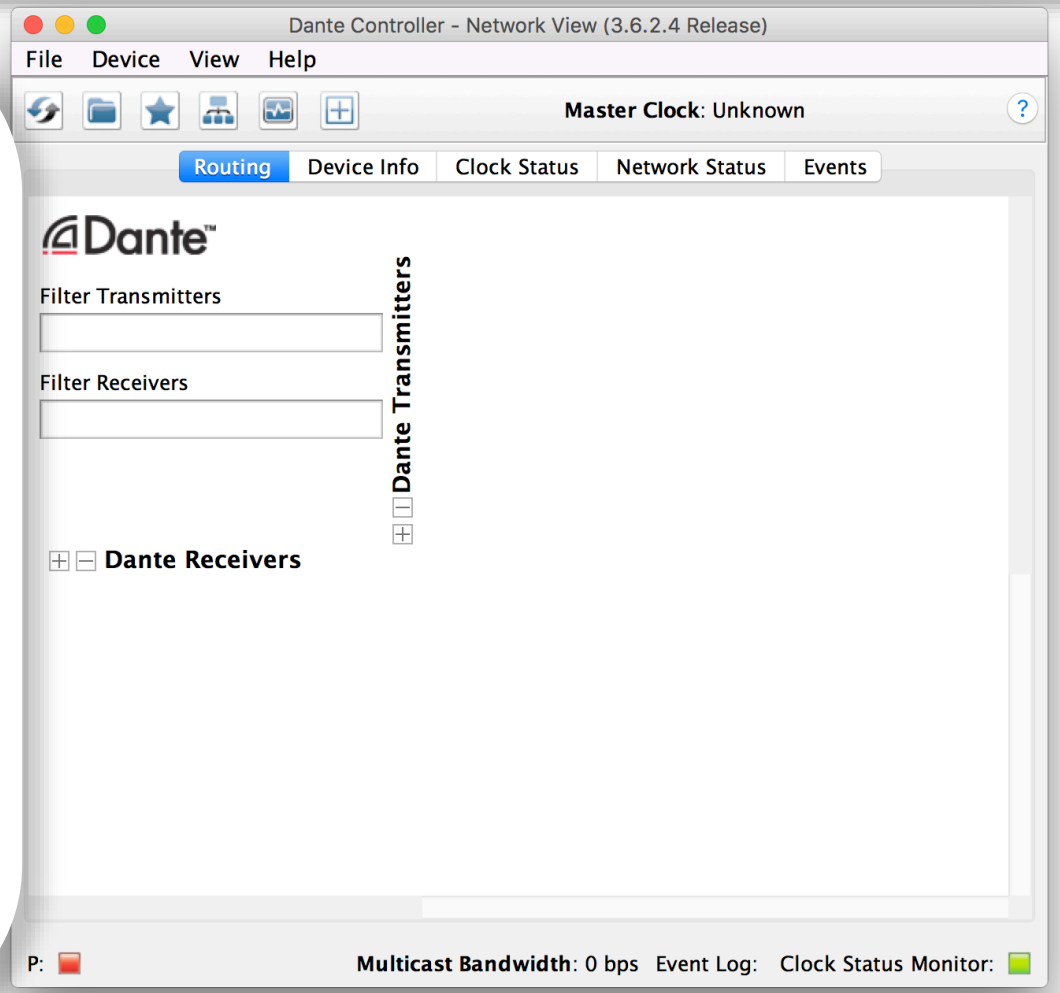
DISCOVERY AND ROUTING

If no devices are connected, Dante Controller is empty

Dante Controller **discovers and displays devices automatically**

Dante **settings reside on the devices**, not on your computer

After settings, users can quit Dante Controller and **the system continues to work normally with no interruptions**



DISCOVERY AND ROUTING
CONNECTION = SUBSCRIPTIONS

Transmitters (Tx) are Sources
Receivers (Rx) are Destinations

Click at intersection to subscribe a Rx to a Tx

Wait for Green checkmark…
OK! Subscription successful

Note: Sample rates must match

DISCOVERY AND ROUTING

DELETING

To delete a subscription:

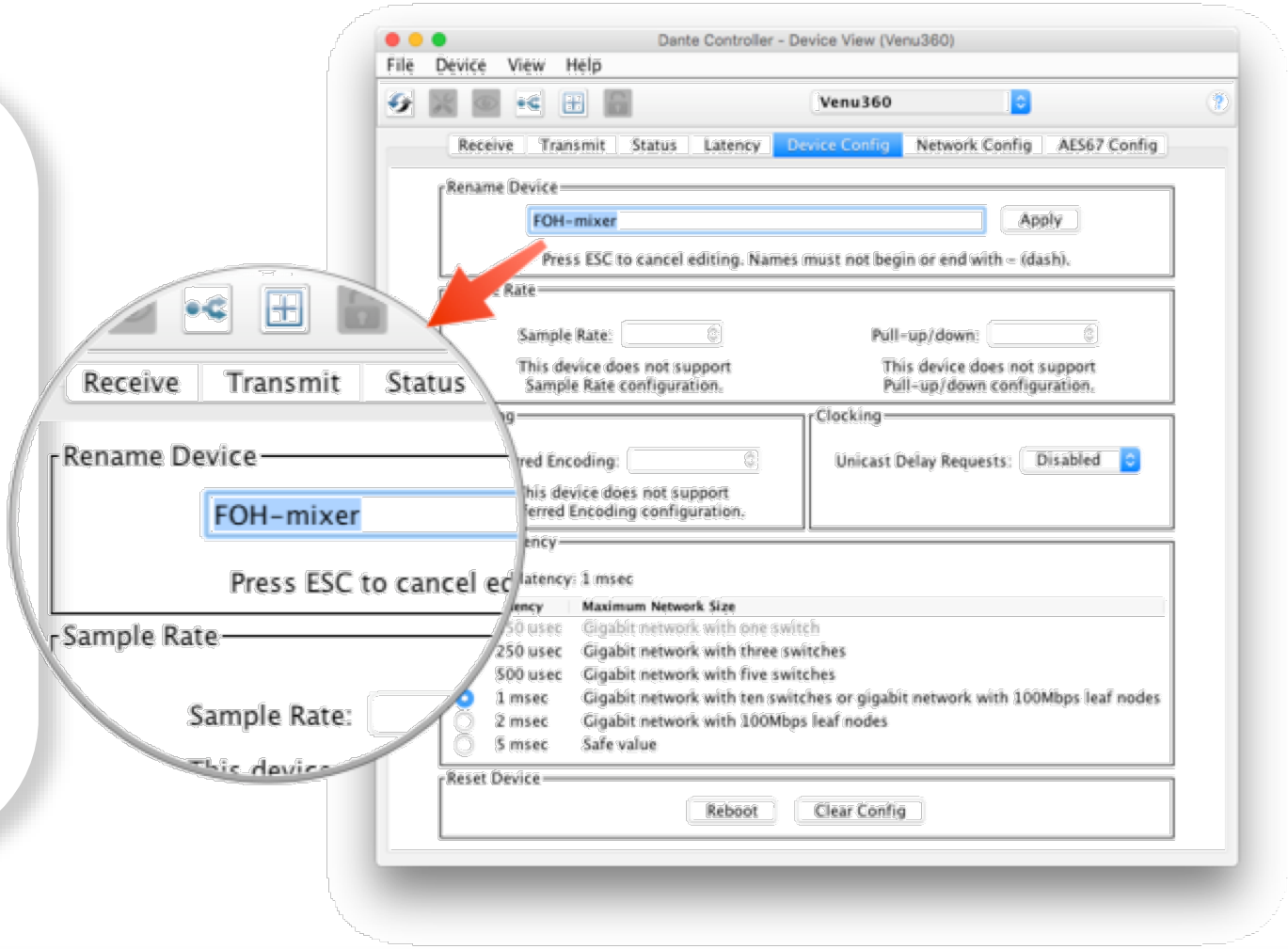
1. **Expose the channels**
2. **Click on green checkmark**
3. **Wait for it to disappear**

OK! Subscription deleted

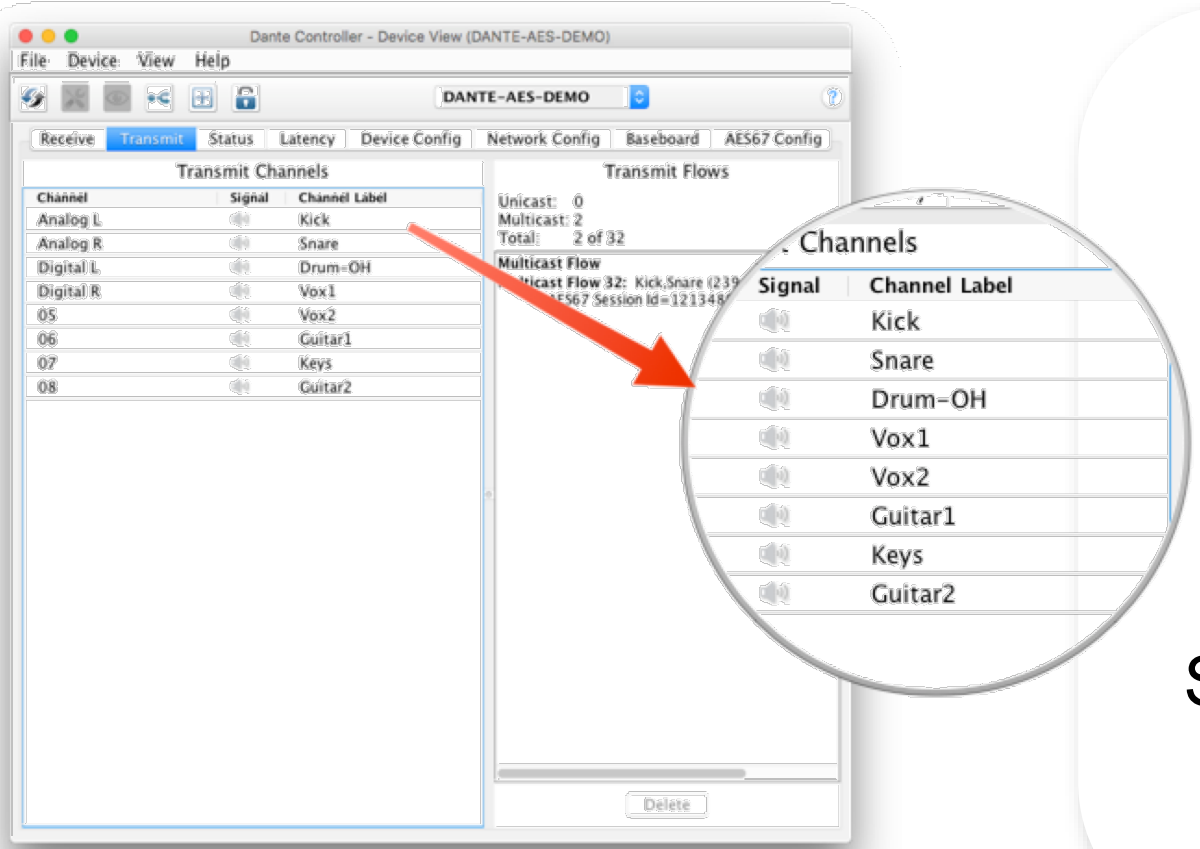
DEVICE NAMES

You can edit and use names of your choice

- **Subscriptions are made from name to name**
- Double click device in Routing view, go to Device Config tab



CHANNEL LABELS



Users can define the channel names

Names are remembered by devices

Software version of “masking tape”

😉

ADJUST SAMPLE RATE

In Device View -> Device Config tab

- Adjust sample rate and bit depth (Encoding) per product
- Most common 48kHz / PCM 24

DISCOVERY AND ROUTING

SPLITS

Simply click at intersections of multiple receiver's channels

Audio is sent to all subscribed devices and channels

When splitting to **more than 3 devices**, Dante Controller will present "Fan Out" message, indicating that Multicast is recommended

DISCOVERY AND ROUTING
DIRECTLY CONNECT ONE DEVICE

A Dante device can be connected directly to a computer

- Useful for recording using Dante Virtual Soundcard
- Useful for renaming channels and adjust settings

CREATING BACKUP DEVICES
USING NAMES

Dante uses names to create subscriptions

Use this to create plug ‘n play backup devices for critical gear

Name both primary and backup devices, including all channels and labels, identically

If the primary device fails, connect backup device to network
Subscriptions are automatically re-established using names

SUMMARY: KEY TAKEAWAYS 1

Dante Controller automatically displays connected devices

- Dante devices and channels have user-definable names
- Dante Controller displays both transmitter (source) and receiver (destination) channels
- Channel to channel connections are called **subscriptions**
- Subscriptions are made and deleted by clicking at the intersection of transmit and receive channels

SUMMARY: KEY TAKEAWAYS 2

Subscriptions may only be made between devices running the same sample rate, adjusted in Device View

Dante devices “remember” settings and subscriptions

Dante automatically selects a Master Clock

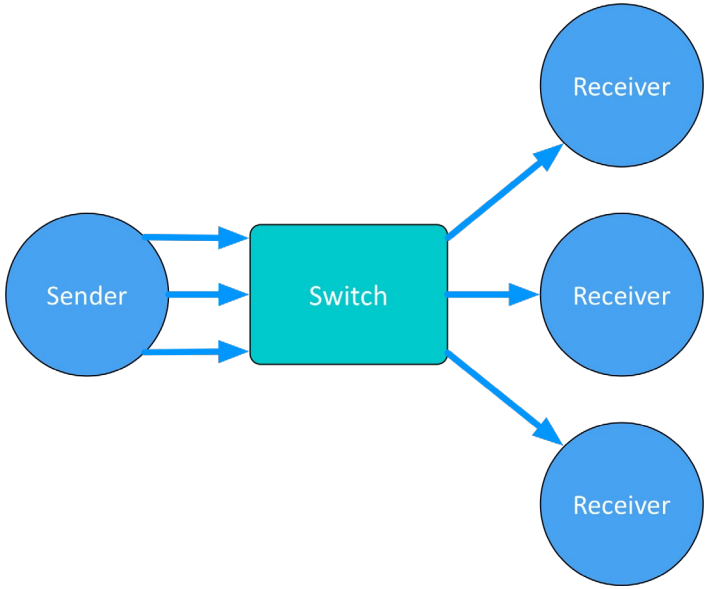
Dante Controller does not need to remain on network

Dante does not alter audio data in any way

Go with the (right) Flow!

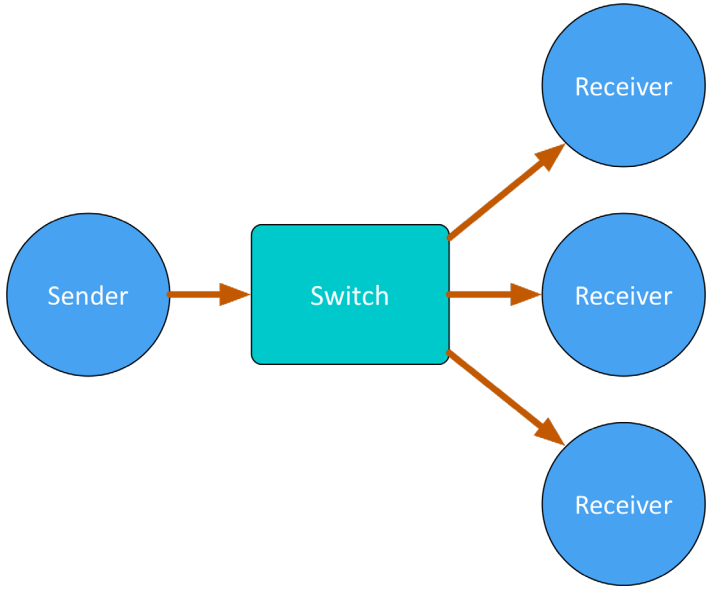
UNICAST AND MULTICAST

Unicast



1 data stream per receiver

Multicast



1 data stream for all receivers

UNICAST AND MULTICAST

UNICAST

One to one traffic

- “Private conversation” – data sent uniquely from transmitter to each receiver
- **Default Dante behavior**

Dante works with both!

MULTICAST (unmanaged)

One to many traffic

- “Public announcement” – messages sent to everybody on the network
- **Useful to solve “Fan Out” conditions**

DANTE UNICAST FLOWS

1 Flow to 1 Receiver containing 1 channel of audio

Flow 1	**A Audio**	**B (empty)**	**C (empty)**	**D (empty)**

1 Flow to 1 Receiver containing 4 channels of audio

Flow 2	**A Audio**	**B Audio**	**C Audio**	**D Audio**

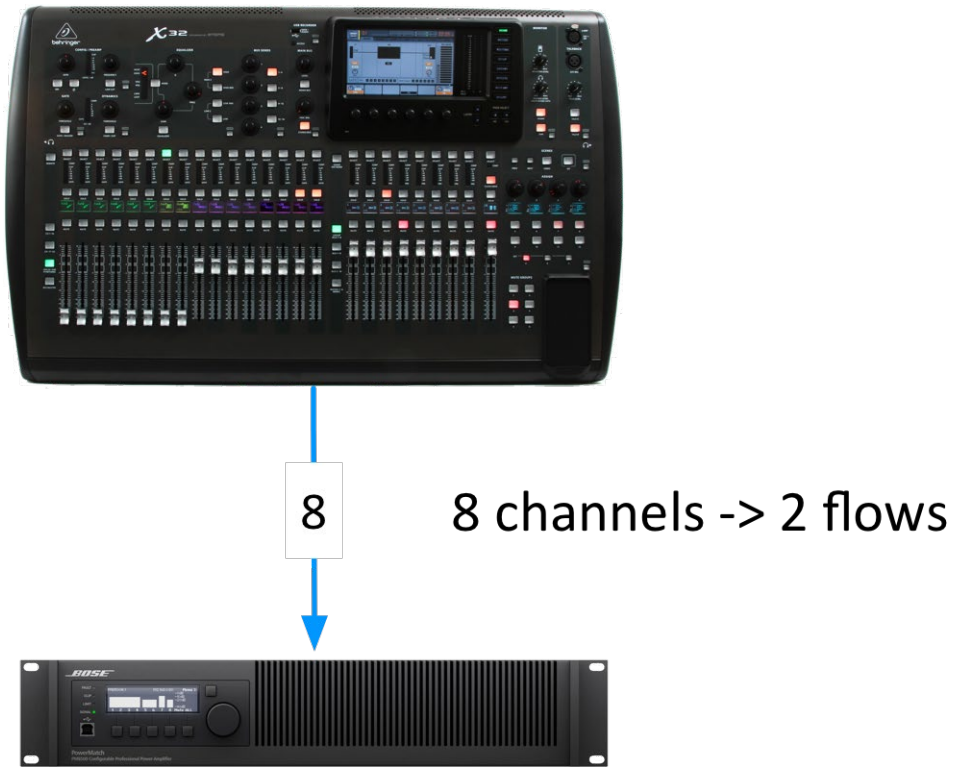
Dante packages audio into 4-channel "Flows" when using Unicast for efficiency

- Flows are unique to each receiver
- Flows may contain empty audio channels
- 1 channel sent to 1 receiver uses the same bandwidth as 4 channels

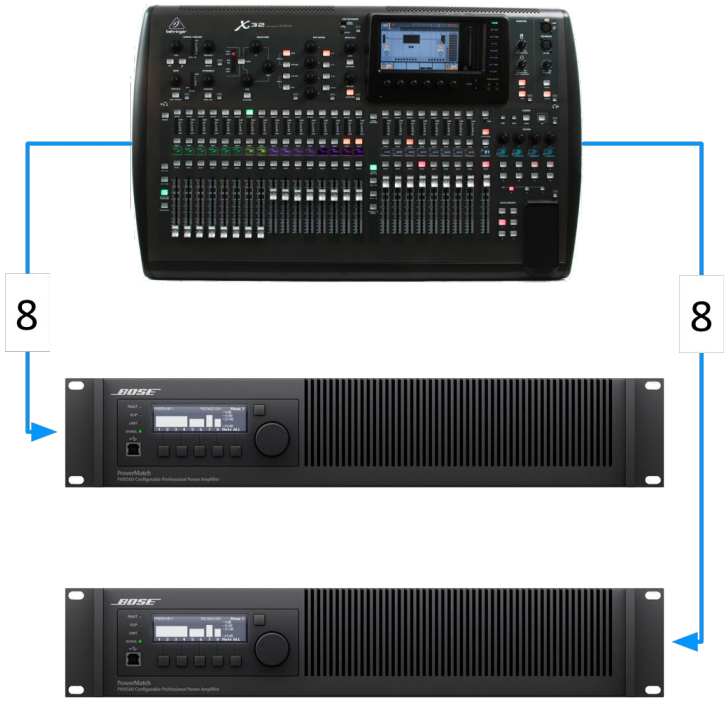
DANTE UNICAST FLOWS

More receivers means more Flows

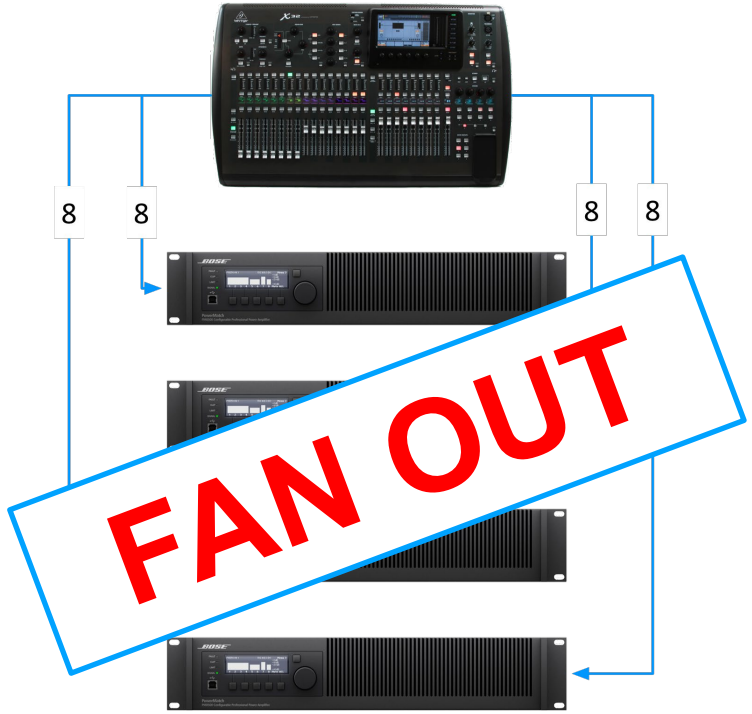
- More than 4 channels for the same receiver, means more Flows
- Small Dante devices (1 to 4 channels) support 2 Flows
- Large Dante devices (16 channels and up) support 32 Flows



DANTE AND UNICAST FLOWS

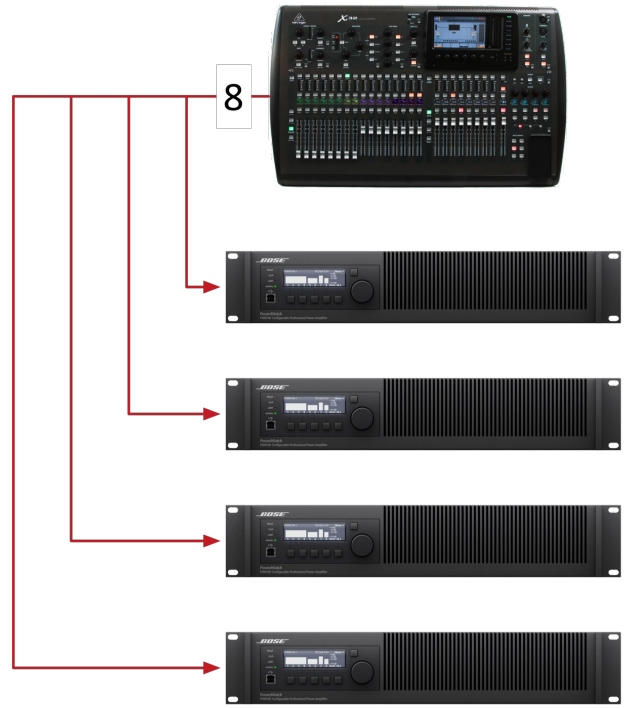


8 channels to each device
2 flows each summing
TOTAL of 4 flows = OK



Dante Controller will warn “FAN OUT”

DANTE AND MULTICAST FLOWS



8 channels -> 1 multicast flow

Multicast solves “fan out” condition

- Up to 8 audio channels **in just 1 multicast flow**
- Configured in Dante Controller

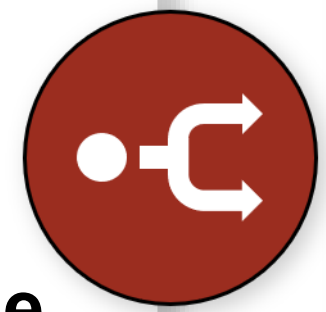
CONFIGURING MULTICAST FLOWS

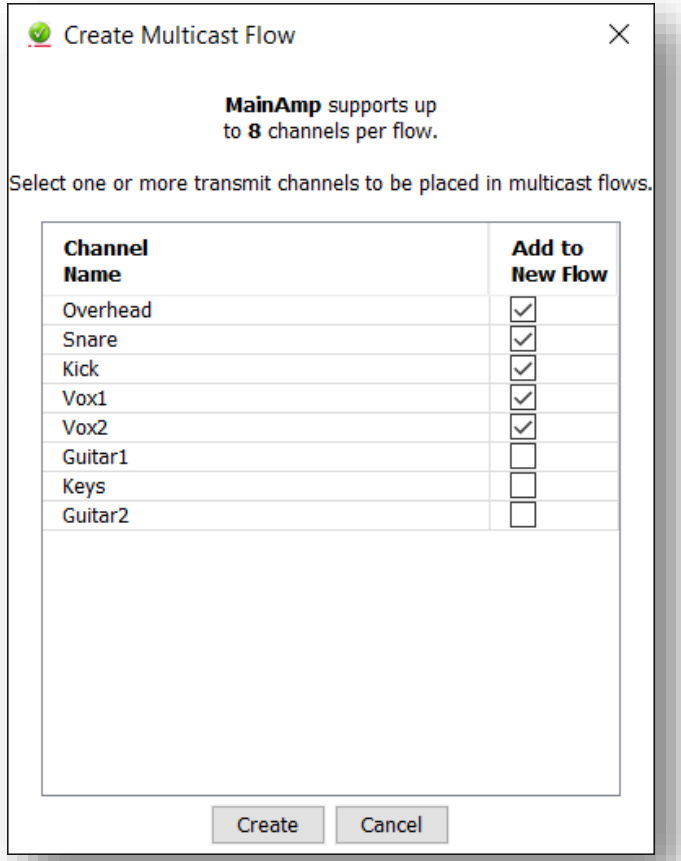
Open Device View

Click “Create Multicast Flow” button in toolbar

Choose up to **8 channels for a single multicast flow**

If needed, create more multicast flows





DO I NEED TO CONTROL MULTICAST?

On gigabit networks, multicast traffic is unlikely to be a problem

- Example: 64 channels of multicast produces approximately 100mbits/sec of traffic
- If using 100mbps devices or Wi-Fi access on the same network, use multicast filter (IGMP Snooping)

BROADCAST AND MULTICAST DIFFERENCES

Broadcast is a common type of network traffic,
but cannot be managed in the same way as Multicast can

If *unmanaged*, both send data out of all members of a LAN

Multicast traffic can be organized to send data
only to requesters (receivers) – **IGMP snooping**

Organization of multicast receiving groups
is done with managed switch

Separate LANs or VLANs are used to manage both types

SUMMARY

Dante uses unicast by default.

- Dante audio is packaged into multi-channel flows.
- Number of flows is limited (between 2 and 32)
- Each receiver requires at least 1 flow
- Unmanaged multicast sends data to all devices
- Multicast is useful for conserving flows in one-to-many situations

DANTE Controller Advanced Settings

WHAT IS DEVICE LOCK?

Prevents tampering with Dante routes and settings

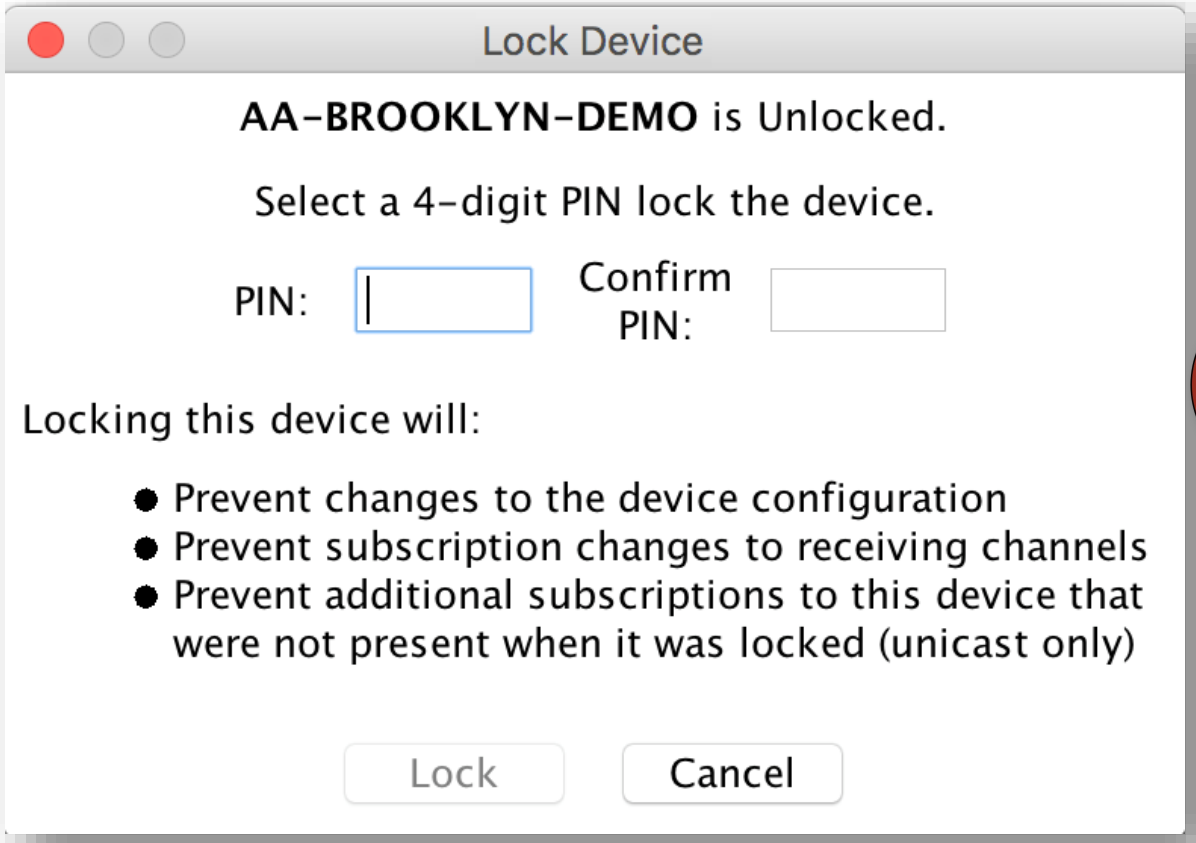
Requires Dante Controller 3.10 and firmware update for hardware

Supported in Dante Virtual Soundcard and Dante Via

Only affects devices as seen through Dante Controller

Changes from inside products are not locked

ENABLING DEVICE LOCK



Check to see which devices support locking

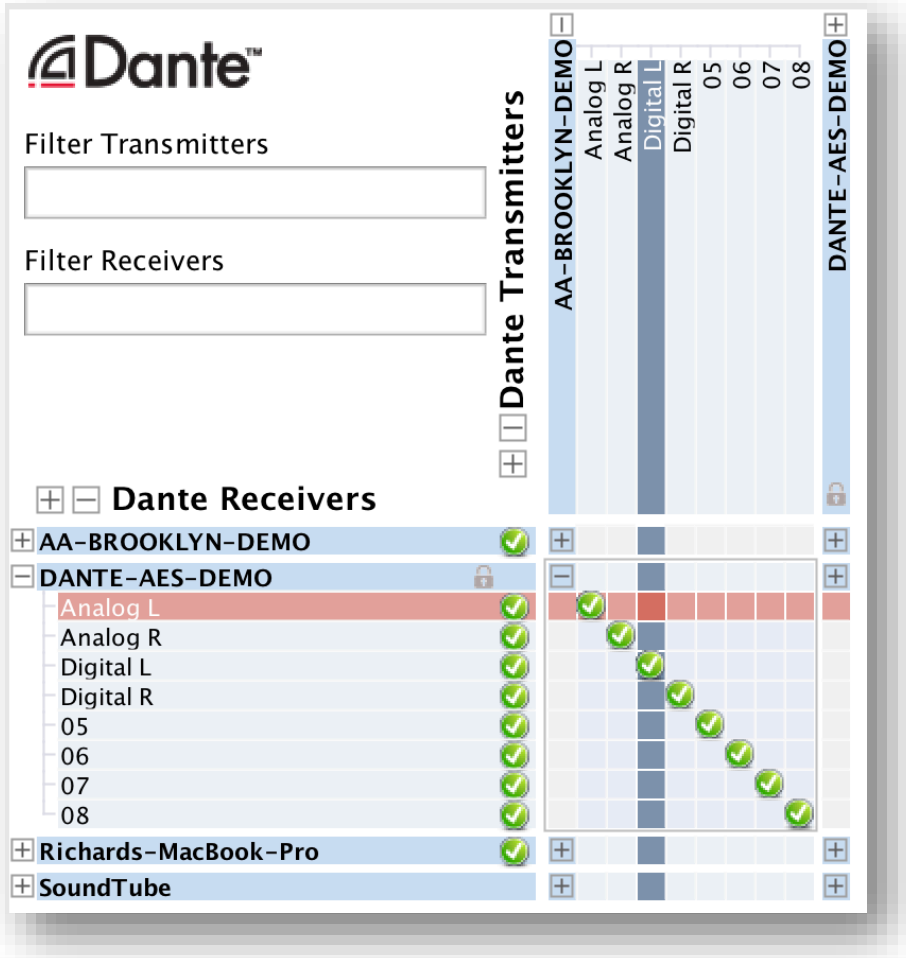
Click Lock button in Device View or check Device lock checkbox in Device Info

Select PIN in dialog box

Done

WORKING WITH DEVICE LOCK

- Locked devices have a lock icon in the name bar
- When a locked channel is selected, highlight is red
- Attempts to change routes result in no action
- Limit flows used by transmitters



UNLOCKING A DEVICE

Open Device View

Click “Lock” button

Select PIN in dialog box

Unlock device

Old PIN is forgotten

Yes, there is a recovery scheme!

DEVICE LOCK IN MIXED ENVIRONMENTS

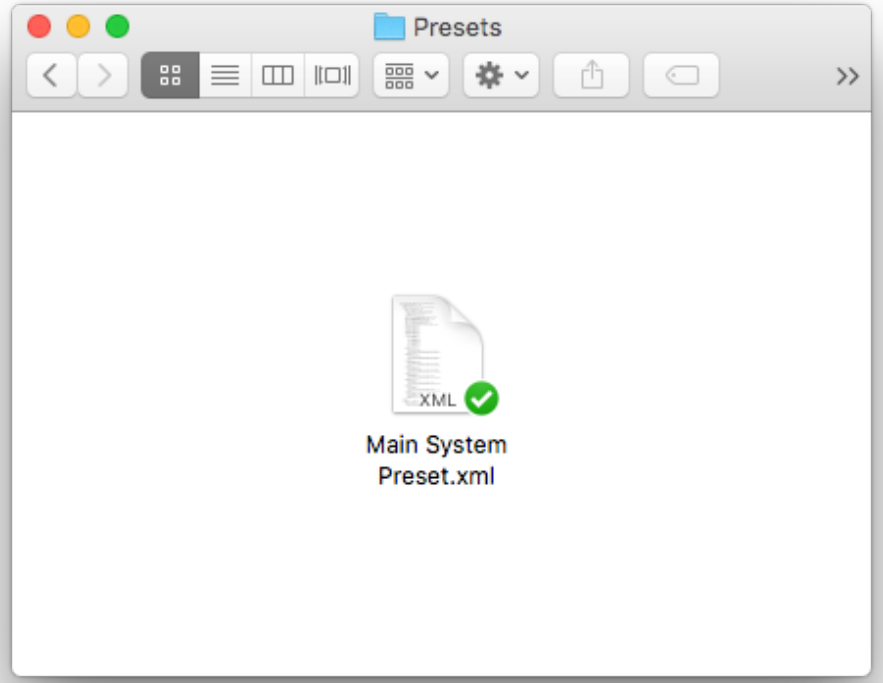
Best when both Transmitter and Receiver support feature
Lock both for maximum security

- A Locked Receiver prevents changes to its subscriptions
- A Locked Transmitter can prevent transmitting to other devices only
- Lockable and unlockable devices can be mixed

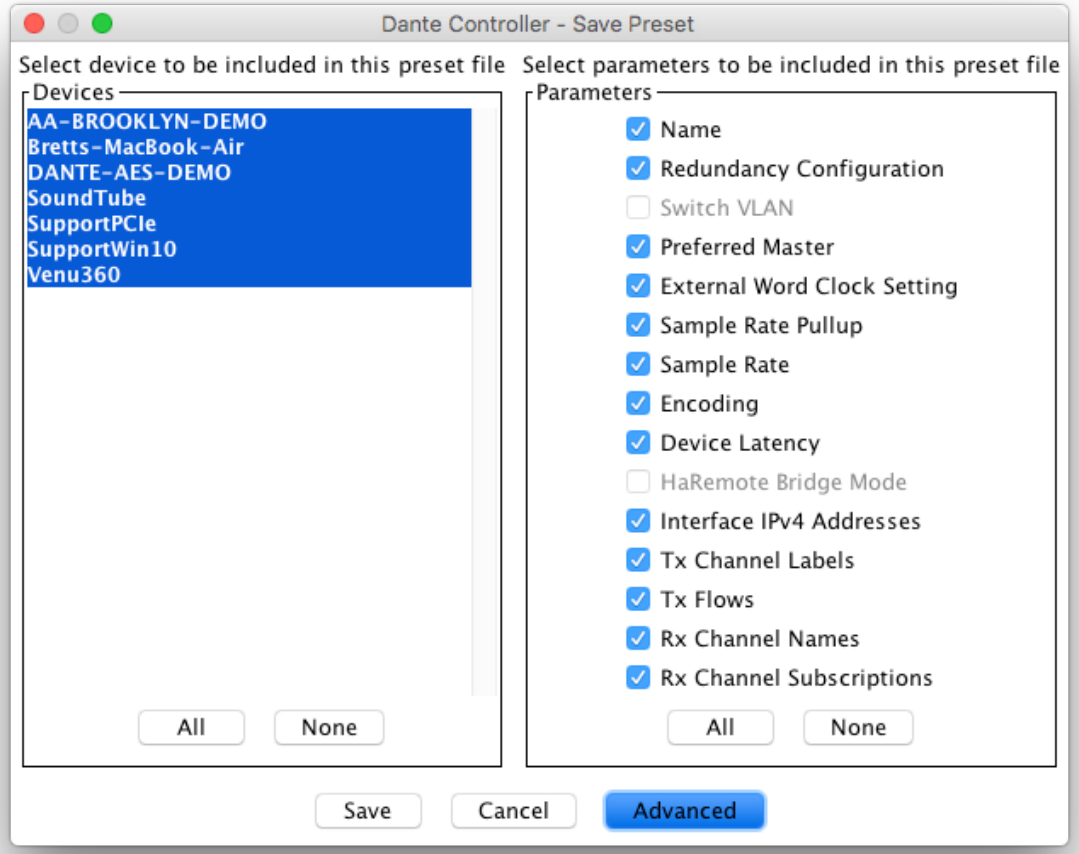
DANTE PRESETS

Dante network configuration can be saved in a file

- Preset may include device names and roles
- Quickly reconfigure a Dante system to a known state



CAPTURING A PRESET



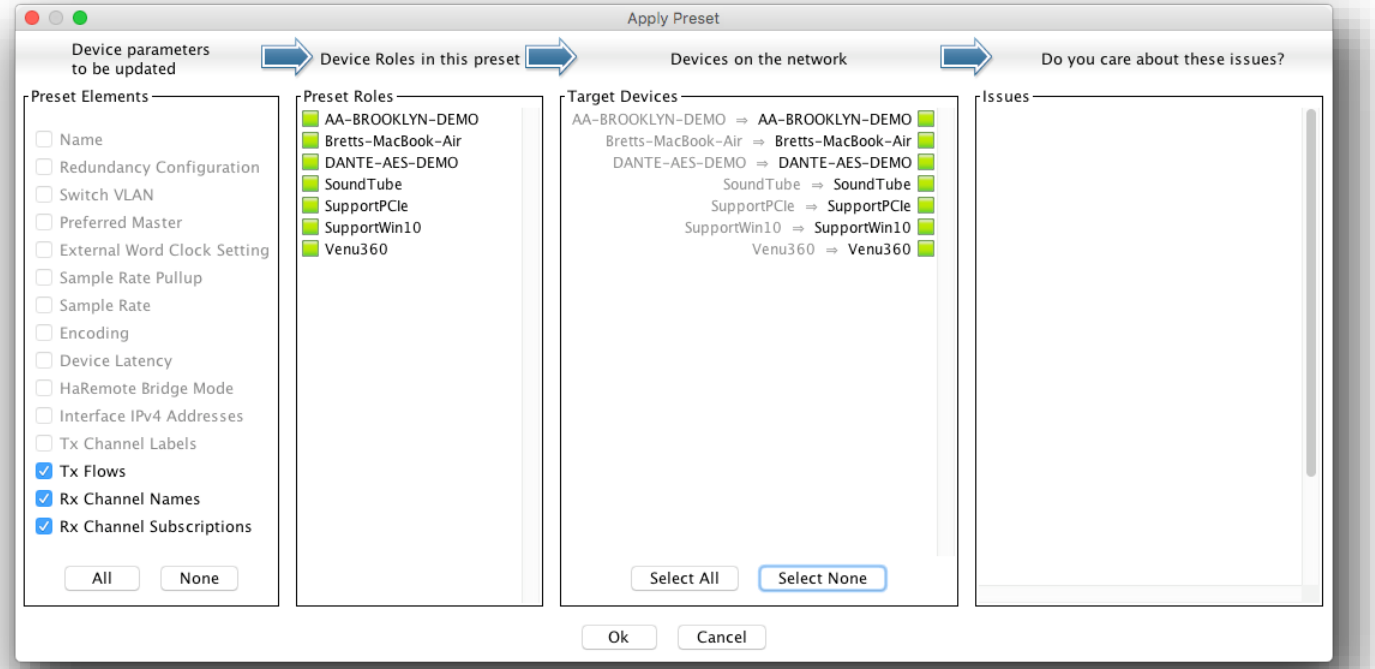
Click the ‘Save Preset’ button in the main toolbar 

- Select devices that you wish to include in the preset
- Select parameters to save
- Save the file in any folder

DEPLOYING A PRESET

Choose “Load preset”

- Select preset file
- Check elements to apply (names, sample rates, etc.)
- Apply



POWER CYCLE RECOVERY

Dante Settings are stored in Dante devices – not in Dante Controller

After power-cycle all subscriptions are automatically re-established

“I don’t want to miss a thing” aka. Redundancy

WHAT IS DANTE REDUNDANCY?

Create two physically independent networks using Primary and Secondary Dante ports

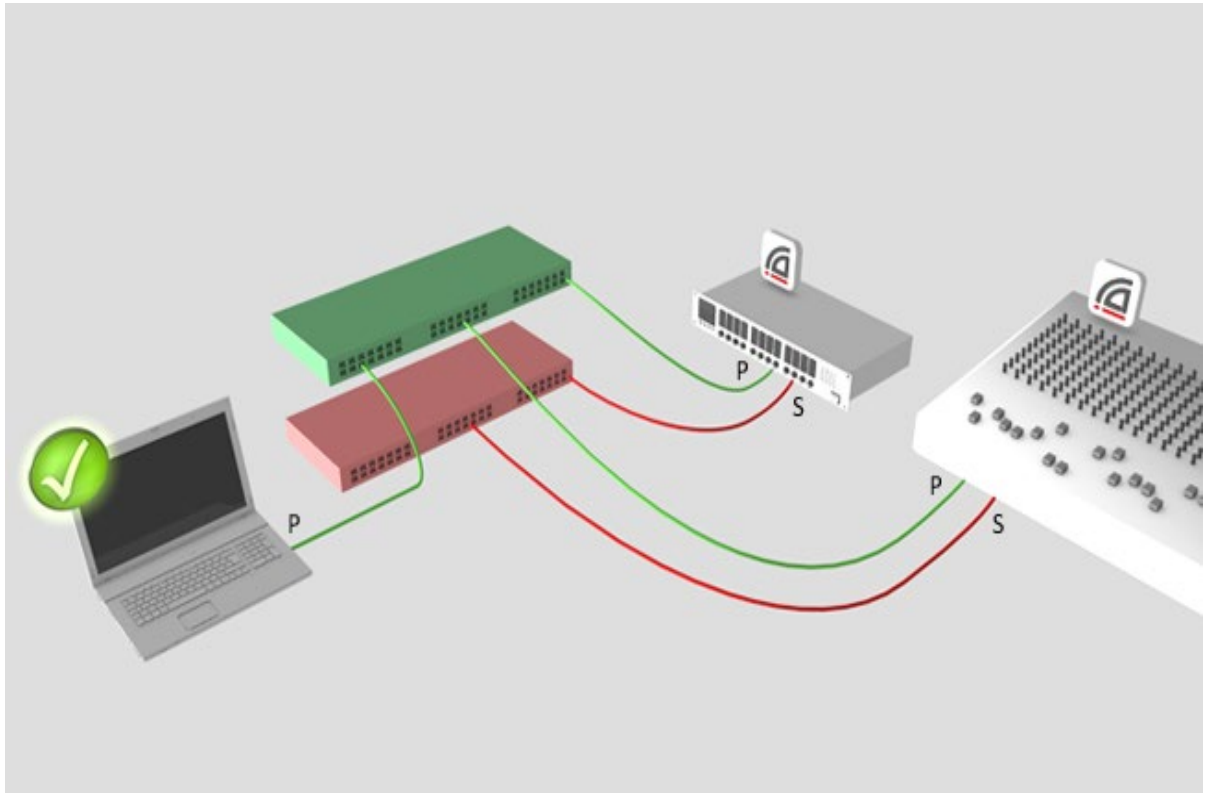
Audio flows on both networks simultaneously. There are no failover, no clicks or pops

For mission critical systems

Dante Ports and Functions

ATTENTION: DO NOT connect the Primary to the Secondary port on the same device as this will cause the network to fail!

SETTING UP REDUNDANCY



Setup Primary network first

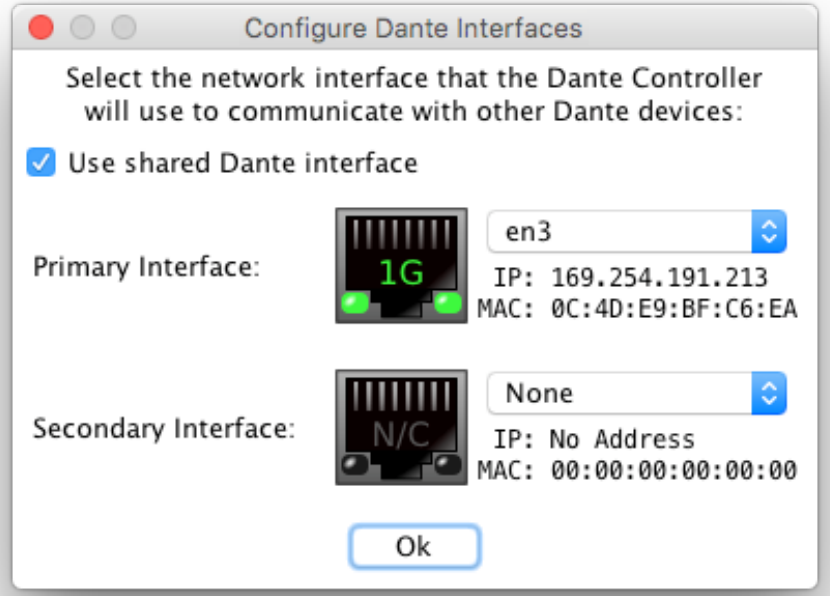
- **Use a separate set of cables to connect the Secondary ports to an additional switch**
- No other interaction required
- Some devices have only Primary

REDUNDANCY AND DANTE CONTROLLER

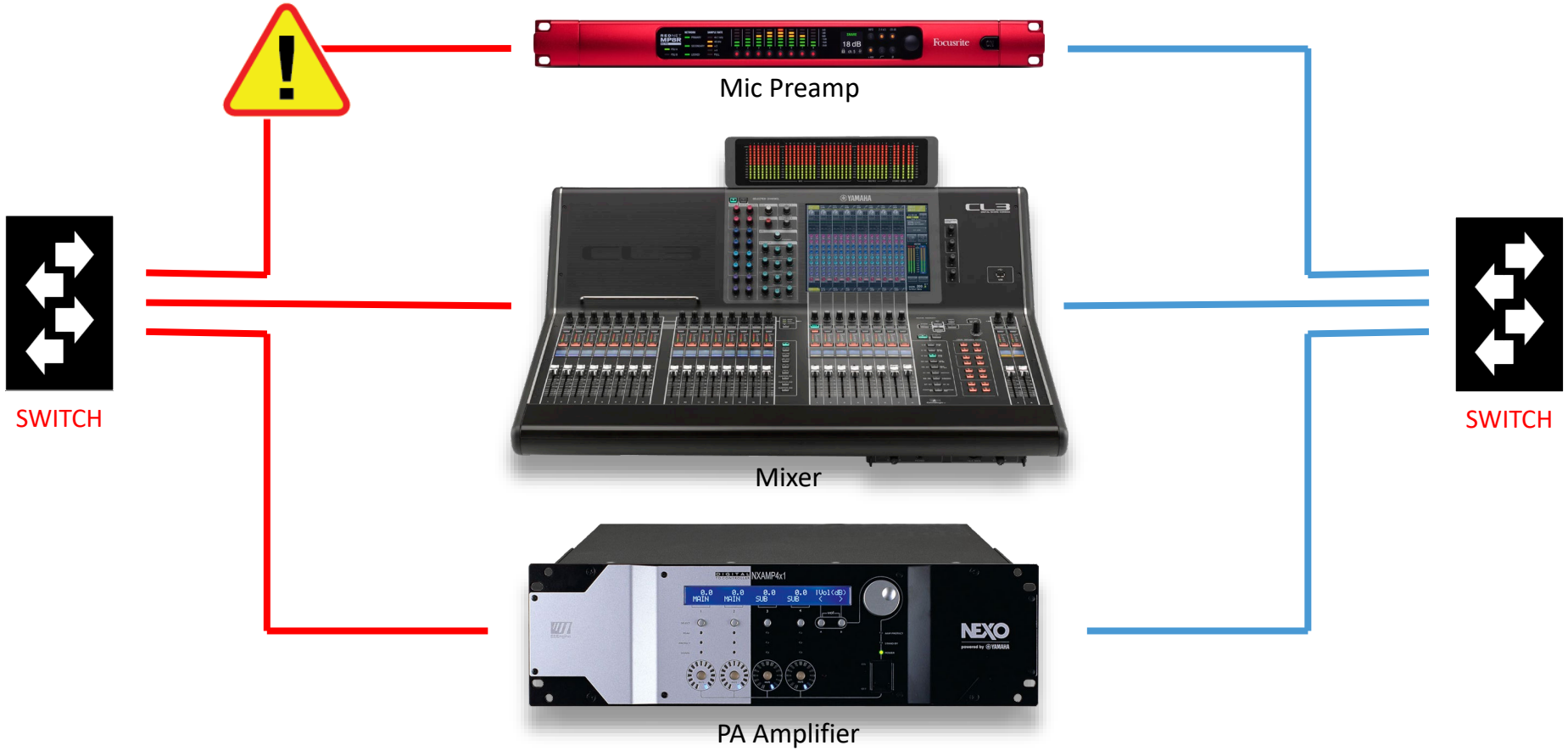
Dante Controller can be connected to both Primary and Secondary interface

Control is passed from one network to the other

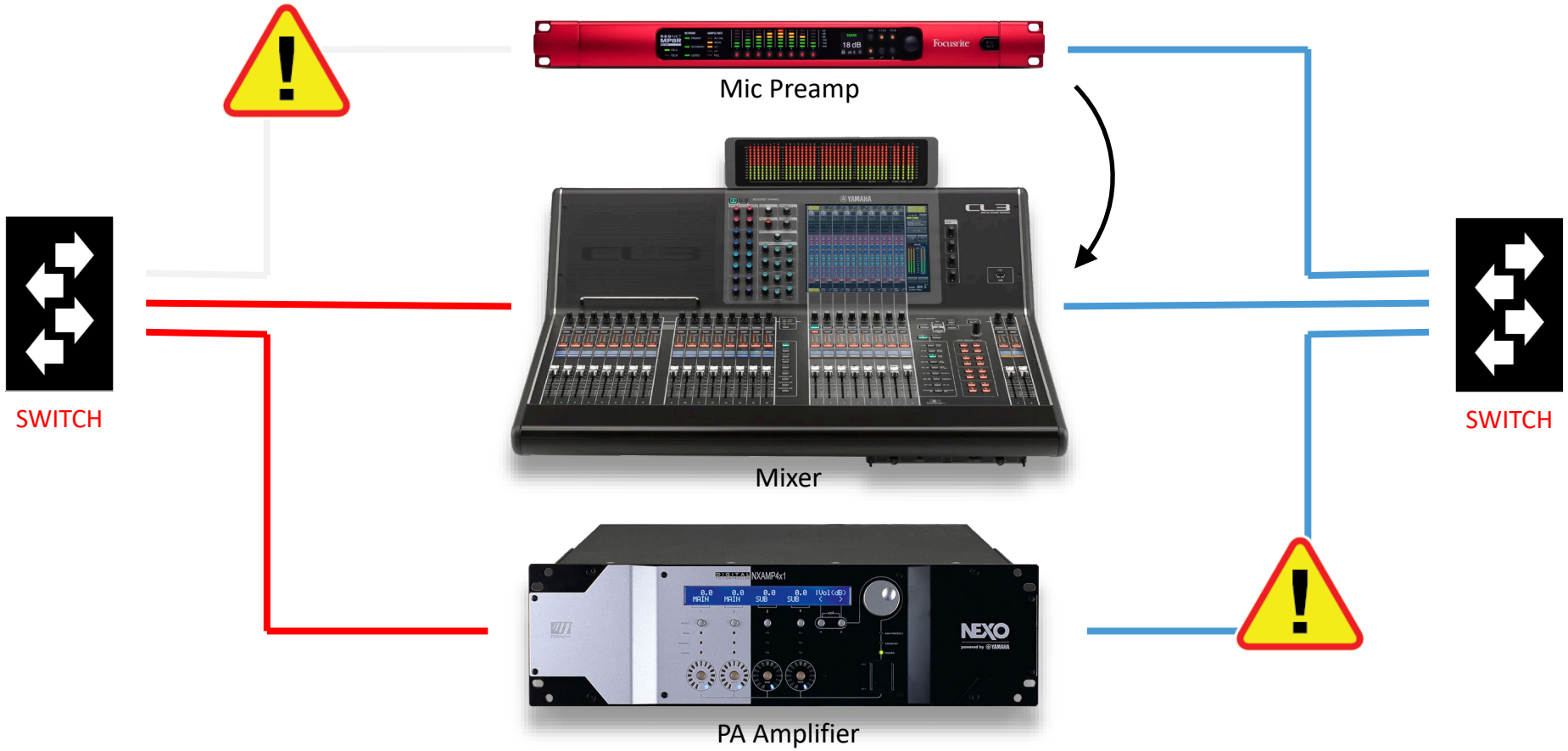
If Primary fails, Dante Controller can be connected to Secondary



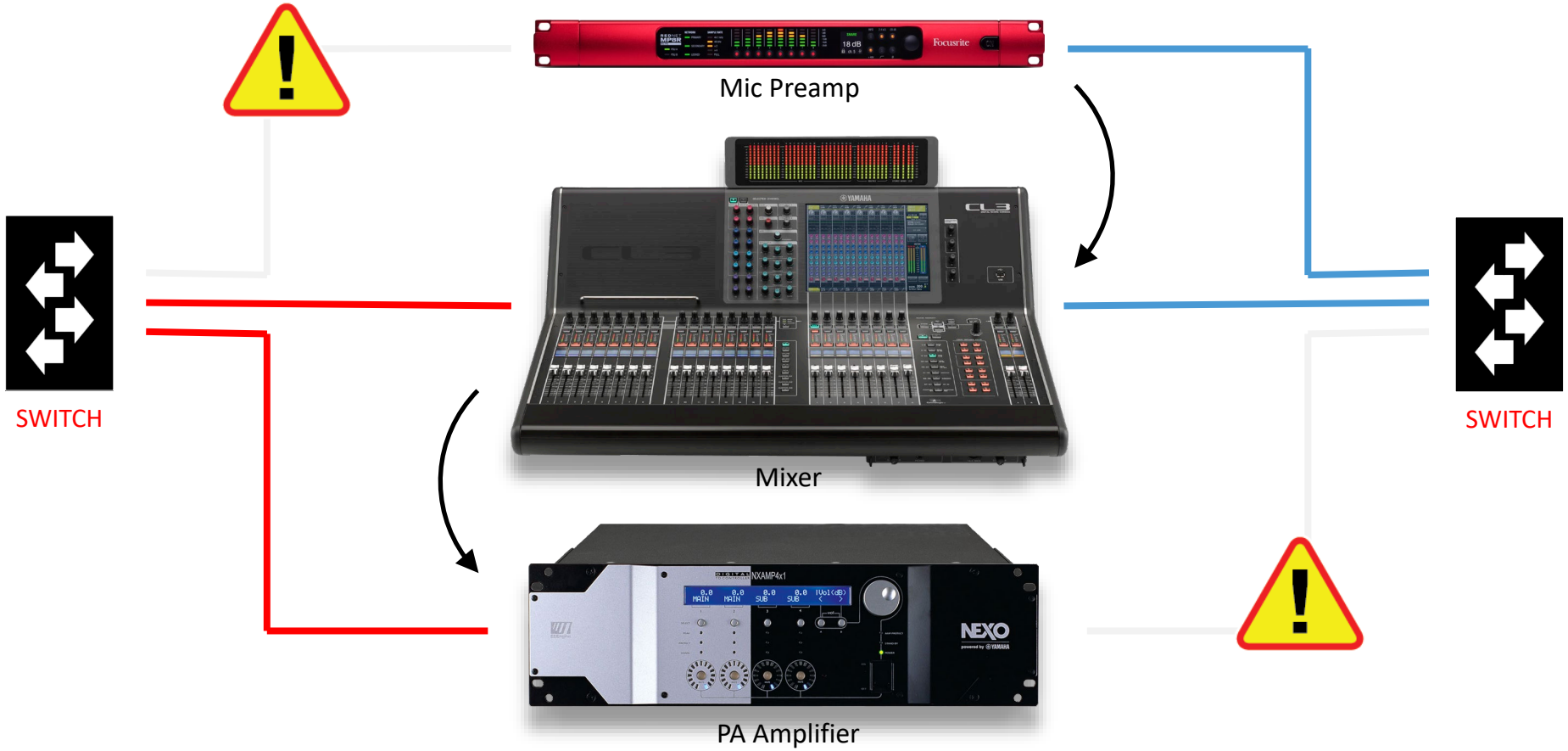
Dante Ports and Functions: Redundant



Redundant Networks – Both Run Full-Time

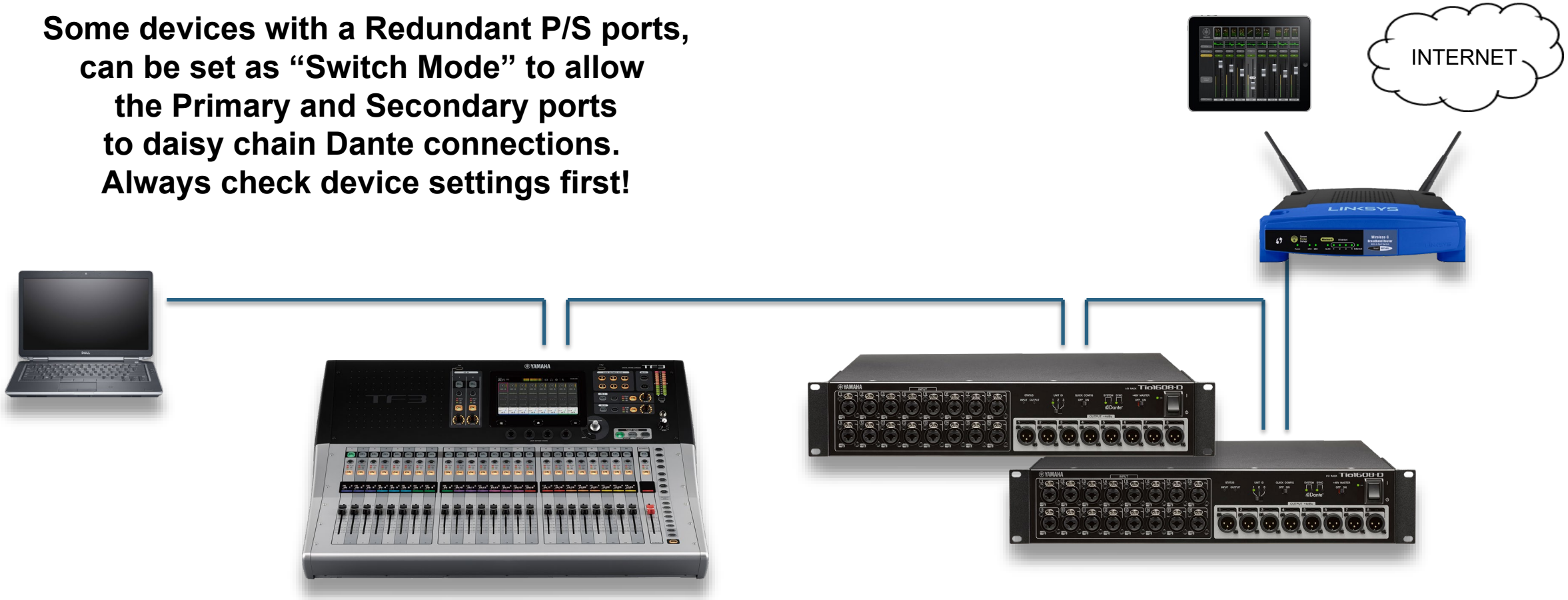


Redundant Networks – Both Run Full-Time



Dante Ports and Functions: Daisy Chain

Some devices with a Redundant P/S ports, can be set as “Switch Mode” to allow the Primary and Secondary ports to daisy chain Dante connections. Always check device settings first!



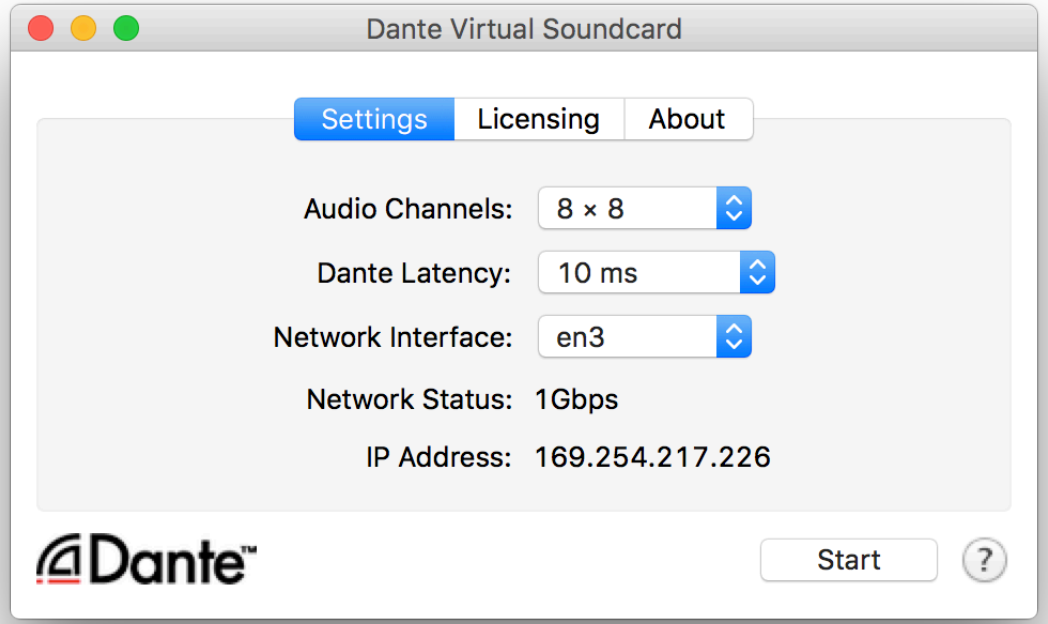
Recording with Dante Virtual Soundcard

WHAT IS DANTE VIRTUAL SOUNDCARD? (DVS)

Soft Soundcard for Mac or PC

Turns your computer into a Dante-enabled Workstation, connecting audio applications to the Dante Network

Record and playout from 2x2 **up to 64x64 channels using any DAW software**



SETTING UP DANTE VIRTUAL SOUNDCARD

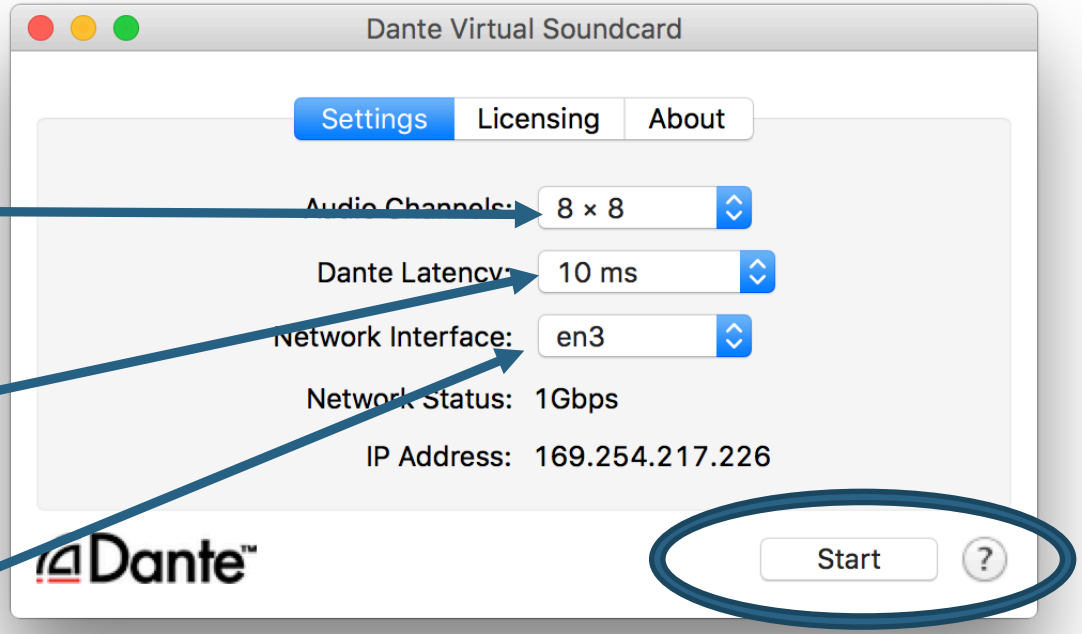
Start or Stop the service

Must be stopped to adjust

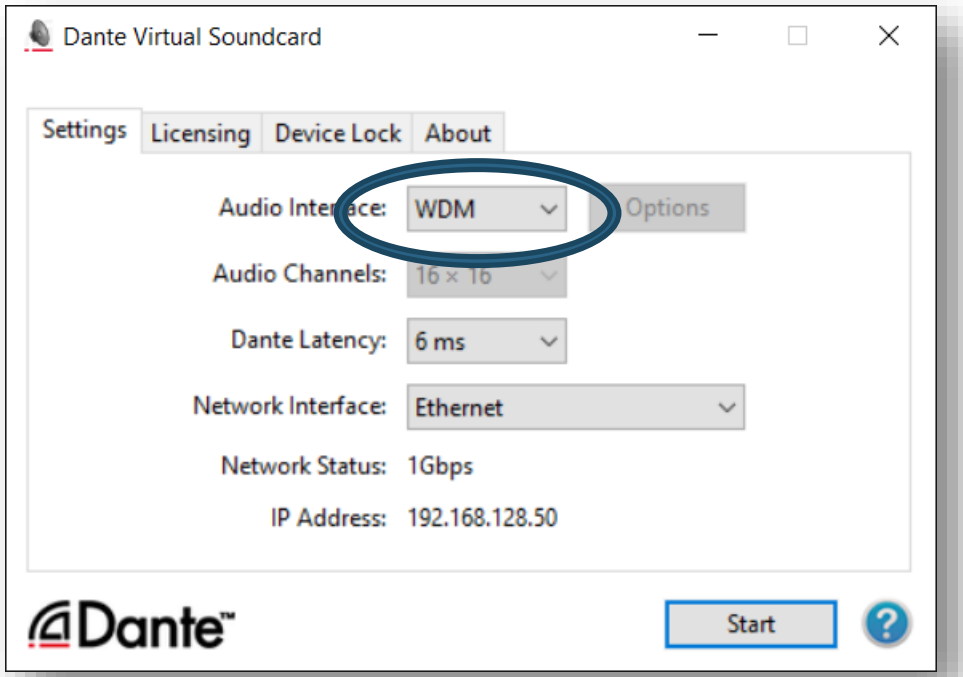
Audio channels 2x2 – 64x64

Latency – 4ms – 10ms

Choose network interface



DANTE VIRTUAL SOUNDCARD IN WINDOWS



Choice of WDM or ASIO drivers

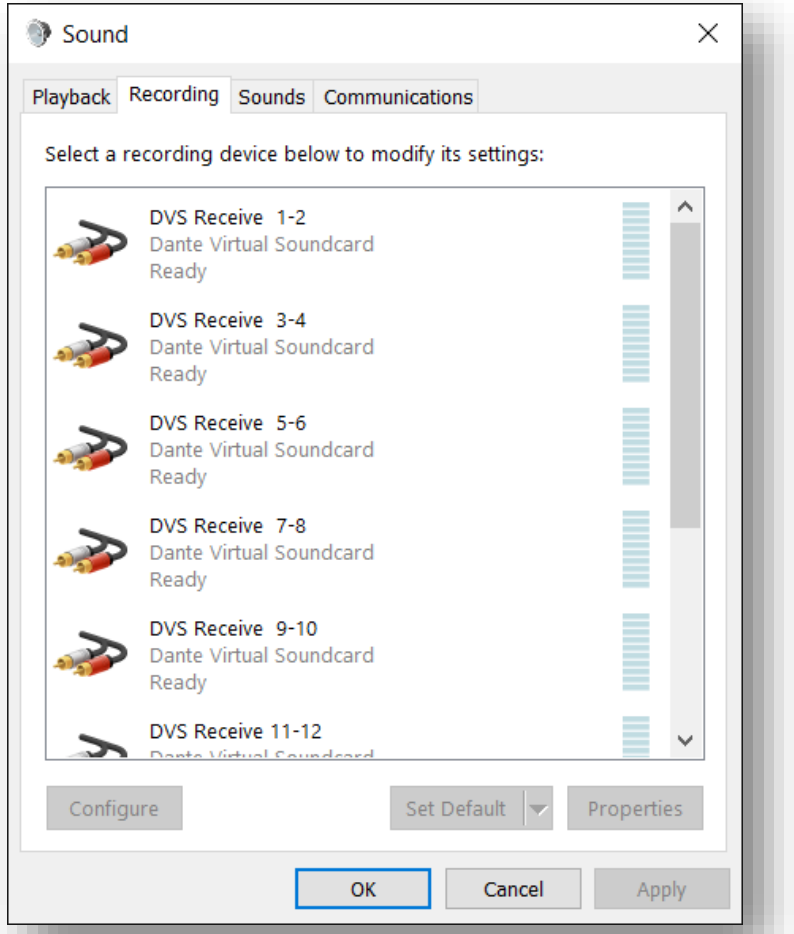
- ASIO common in professional audio applications
- WDM common in consumer audio products

DANTE VIRTUAL SOUNDCARD IN WINDOWS

WDM drivers 16x16 channels only

WDM channels presented by Windows as stereo pairs

Each stem appears as a stereo “device” in Windows Sound settings

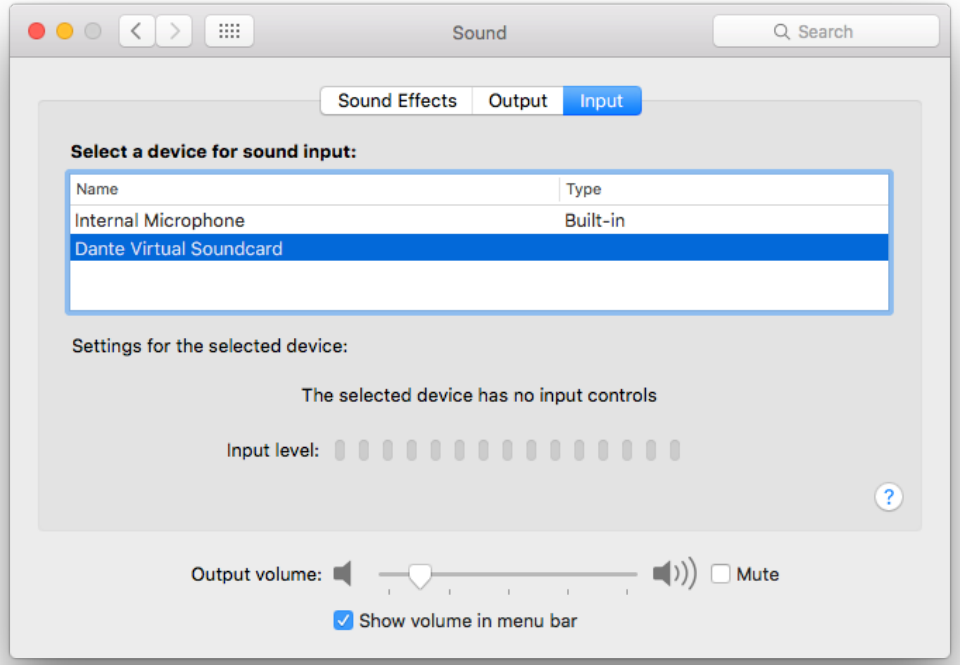


DANTE VIRTUAL SOUNDCARD IN OSX

On OS X, Dante Virtual Soundcard appears as a regular Core Audio device

Works with both pro and consumer applications

Can be made default sound device



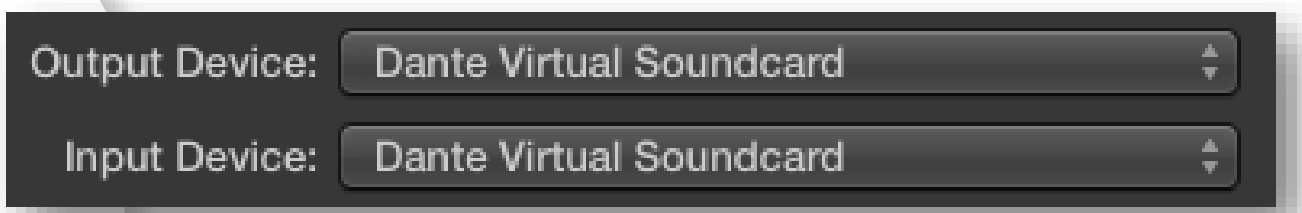
CONNECT TO A DAW

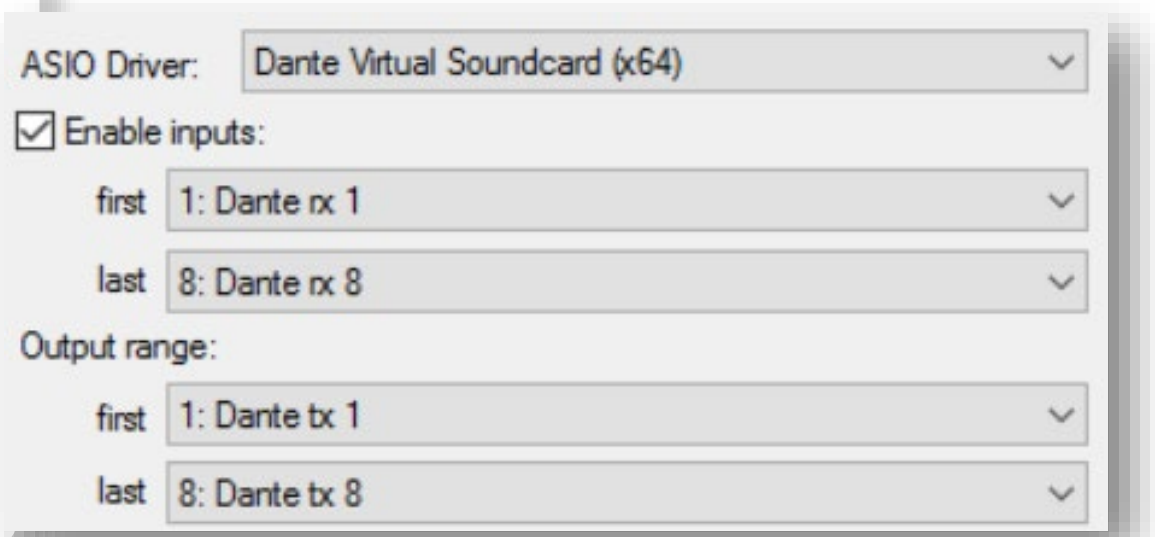
Launch Dante Virtual Soundcard

Set number of channels and Start DVS

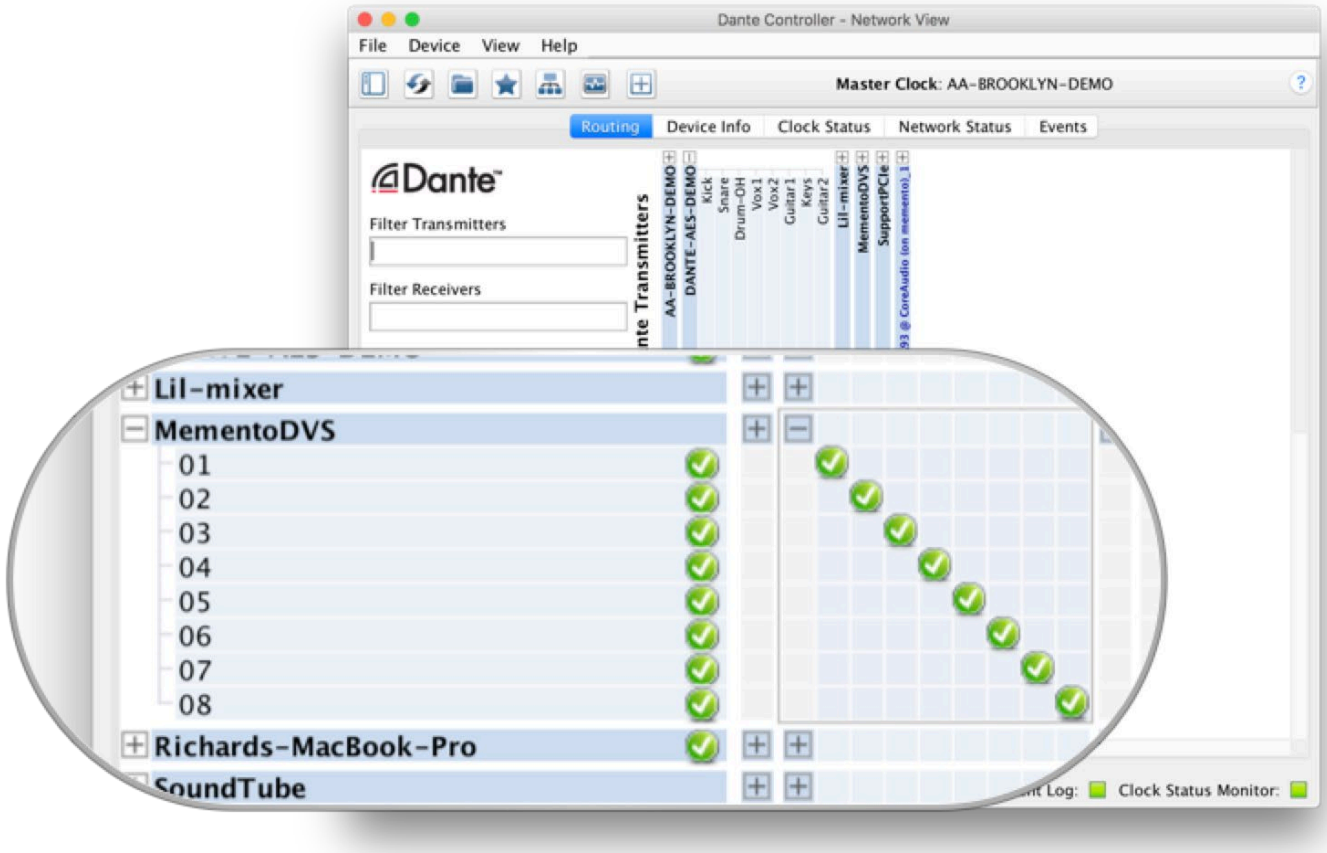
DVS will appear as audio device on computer
Mac – Core Audio
Windows – ASIO or WDM

Select as I/O device in DAW preferences





SUBSCRIBE CHANNELS



Computer with DVS appears as device in Dante Controller

Subscribe channels to Dante devices on network

Record and Playout with DAW

Adjust sample rate in Dante Controller like other devices

CLOCKING DANTE VIRTUAL SOUNDCARD

Dante Virtual Soundcard does not contain a hardware clock

DVS cannot be the Clock Master

Computer must be connected to a network with Dante-enabled hardware or another computer running Dante Via…

…what is Dante Via?

WHAT IS DANTE VIA?

Software for Mac or PC

Connect any audio device to Dante network

Connect any audio application to Dante network

Drag and drop to create internal routings on computer

ABOUT DANTE VIA

Dante Via can be a Clock Master
Creating a software-only Dante-Via Network! 😉

Dante Via and DVS **cannot run** on the
same computer at the same time

DANTE VIA: EXTENDING USB I/O

Connect USB I/O

Launch Dante Via
USB I/O discovered

Check “Enable Dante” for USB I/O

On second computer running Dante Via, USB I/O appears
Also in Dante Controller

Drag USB I/O to destination in Dante Via

DANTE VIA:
AUDIO APPLICATION ON DANTE

Start audio application, such as iTunes

- iTunes is auto-discovered
- Select “Enable Dante” for iTunes
- iTunes appears as labeled channels in Dante Controller
- Application audio only - no system sounds

DANTE VIA:
MONITORING CHANNELS

“Enable Dante” for your headphone jack (built-in output)

- Headphone jack appears in Dante Controller
- Route any Dante channels directly to headphones without disturbing audio

Audinate®

Now…what?

TAKE THE ONLINE TESTS

http://www.audinate.com/certify

- Create Audinate account
- Take Levels 1 and 2 tests

- Level 2 has a web-simulator of Dante Controller for the practical test

GET READY TO LEVEL 3

Prepare for Level 3

- Networking Concepts
- TCP and UDP
- Transmission Methods
- ARP, mDNS and much more

- Good luck!

Thank you!

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Technical Training Manager EMEA

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