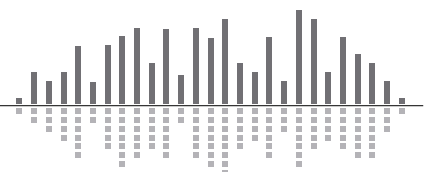


SymNet Specifics for Dante Subscriptions, 3rd Party Dante Sources, and Real-time Dante Matrixing



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SymNet Specifics for Dante Subscriptions, 3rd Party Dante Sources and Real-time Dante Matrixing

Understanding how Dante subscriptions work, in general as well as those within SymNet, can save time when commissioning a SymNet system or troubleshooting Dante routing anomalies.

Dante routing is performed by associating a receiving (Rx) channel with a transmitting (Tx) channel. This is called a subscription.



Example: Route Tx channels 1 and 2 (labeled "Audio L" and "Audio R") from the device labeled "Source" to Rx channels 3 and 4 on the device labeled "Dest".

Rx channels 3 and 4 on "Dest" are subscribed as follows:

3: Audio L@Source

4: Audio R@Source

Dante uses the labeled names of the channels, as well as the network name of the source, to automatically connect and route the audio from the Source Tx to the Destination Rx channels.

Creating Dante Subscriptions

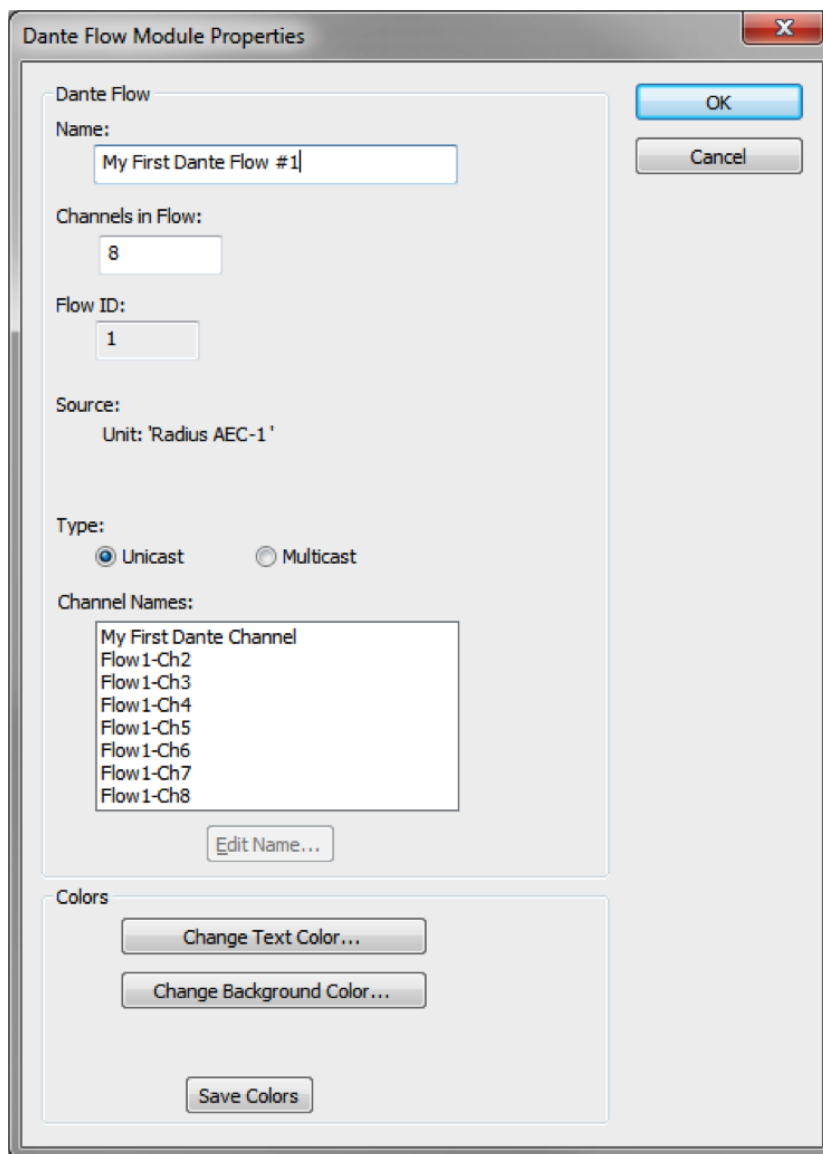
Creating Dante Subscriptions between SymNet Hardware:

Within SymNet Composer (SNC) all Dante channels are automatically named by default, although these names can be edited by the programmer. Once a transmit flow is created within any SymNet DSP * or SymNet xIn 12**, then the associated receive flow is available to be received by any other SymNet DSP or xOut 12 contained within the same SymNet Composer site file.

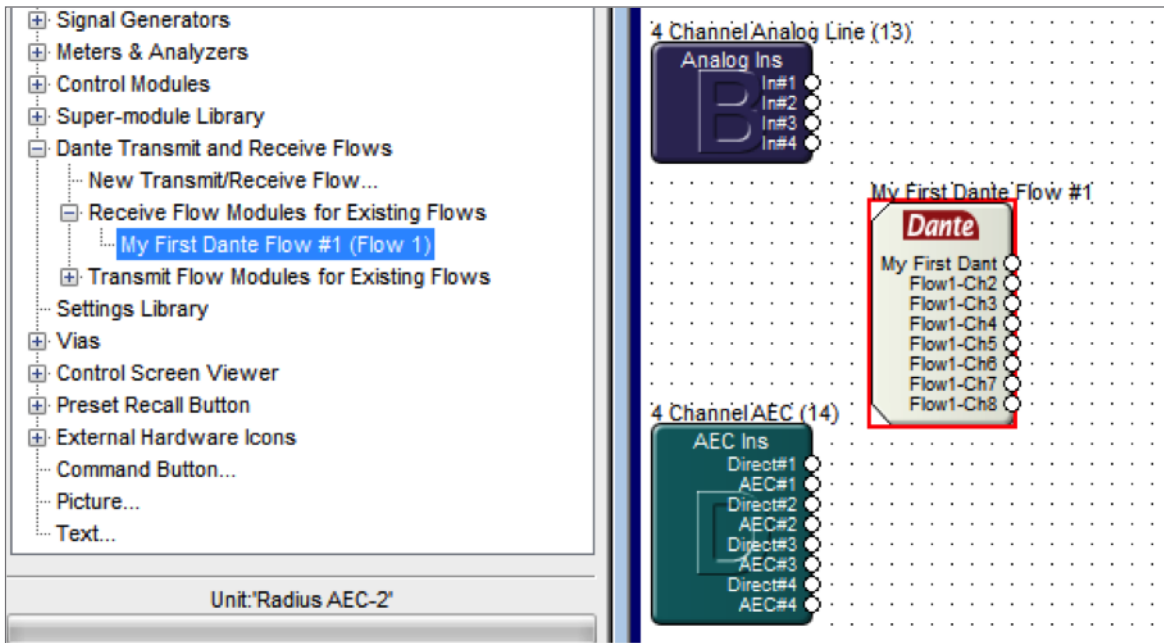
**(Edge, Radius 12x8, or Radius AEC)*

*** (three 4 channel flows are created automatically from each xIn 12)*

Unicast and Multicast flows and subscriptions are created in the same manner, although a radio button selection in the Dante Flow Module Properties designates which type of flow is created. Unicast denotes a one to one relationship between the transmitter and receiver. Multicast denotes a one to two or more relationship between a single transmitter and multiple simultaneous receivers.



When dropping an existing receive flow from the Composer toolkit into any SymNet DSP or xOut 12, the name and source is already known and associated with the transmit Dante flow, so no additional steps are needed for routing audio between SymNet devices.



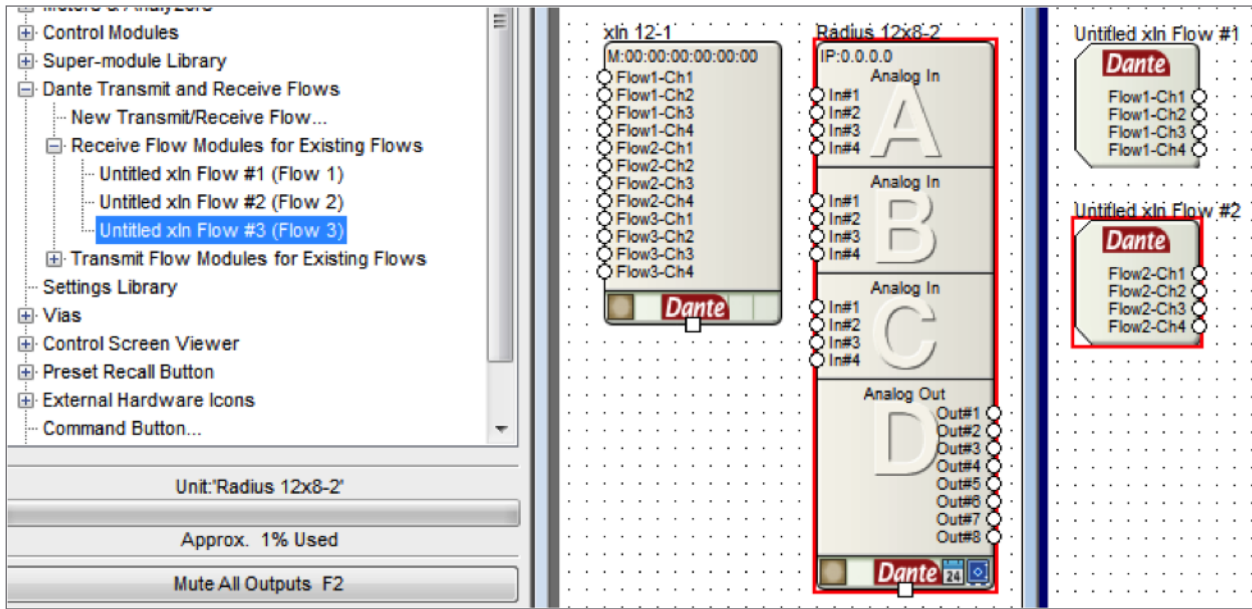
It is worth noting there are small differences between how Dante routing is accomplished in the different SymNet Composer hardware models; SymNet xIn 12, xOut 12, and the DSP hardware.

For simplicity, all examples below start with the creation of the Dante transmit flow, then proceed by subscribing a unit to the existing Dante receive flow.

Additionally, this documents assumes the programmer already knows how create a connection between SymNet hardware and the SymNet hardware icon in the Site View of SymNet Composer.

Creating Dante Subscriptions

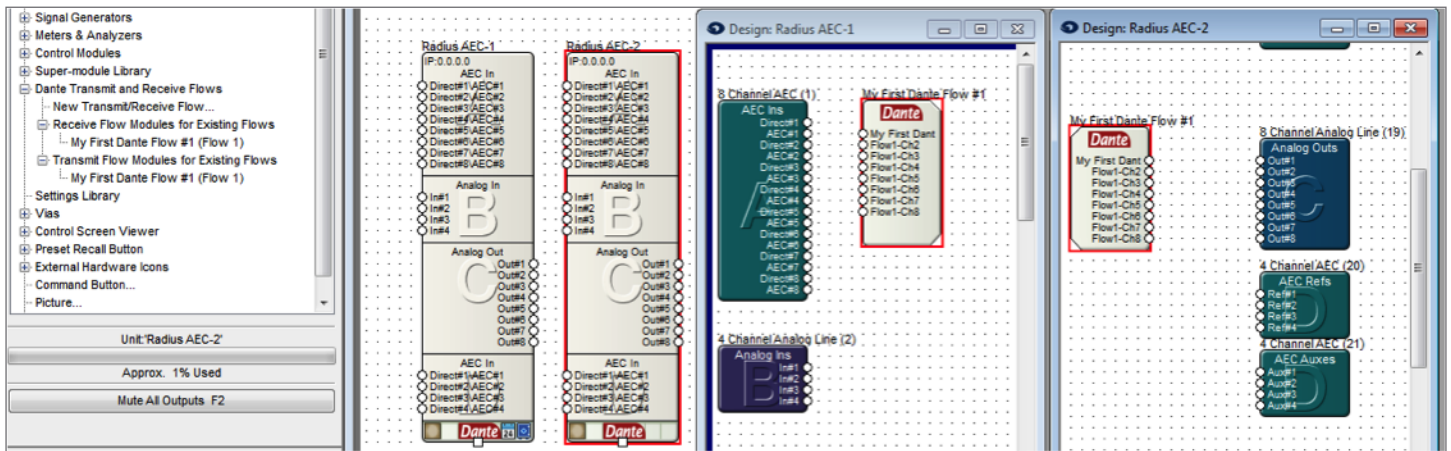
Example: xIn 12 flows transmitted to any SymNet DSP



In the above screen shot of SymNet Composer three Windows are visible, from left to right; the Toolkit showing Dante Transmit and Receive Flows, the Site View showing the xIN 12 and Radius 12x8, and the Design View of the Radius 12x8 showing the placement of the first two 4 channel Dante flows from the xIn 12.

Step:

- 1) Drag and drop a SymNet xIn 12 into the SymNet Composer site file.
- 2) SymNet Composer auto-generates three 4 channel Dante flows within the xIn 12.
- 3) The xIn 12 receive flows will be available in the Design View from the Toolkit under “Receive Flow Modules for Existing Flows”, simply drag and drop them into any SymNet DSP of choice.

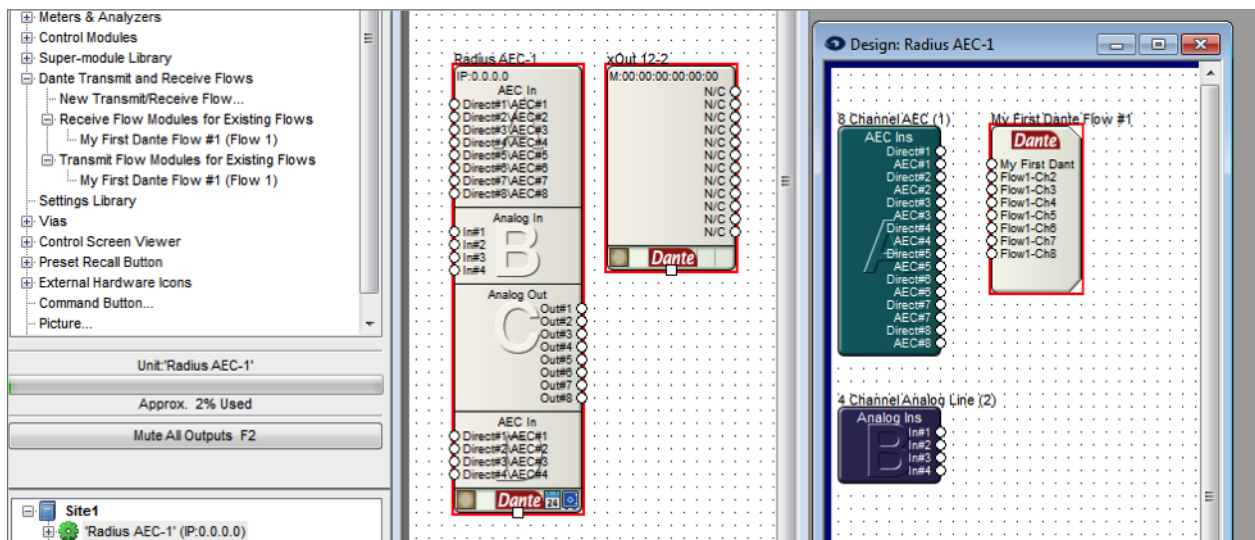


Example: SymNet DSP flows transmitted to any other SymNet DSP

In the above screen shot of SymNet Composer four Windows are visible, from left to right; the Toolkit showing Dante Transmit and Receive Flows, the Site View showing the two Radius AEC units, and the Design View of both Radius AEC-1 and AEC-2 showing the Dante transmit flow in AEC-1 and the Dante receive flow in AEC-2.

Step:

- 1) When inside the Design View of Radius AEC-1, a Dante transmit flow of 8 channels was created by drag and dropping “New Transmit/Receive Flow...” from the Toolkit under “Dante Transmit and Receive Flows”.
- 2) The new Transmit flow was labeled as “My First Dante Flow #1” and channel #1 was renamed from the default channel name of Flow1-Ch1 to “My First Dante Channel”. The default names of channels 2 through 8 were not edited.
- 3) Instantly after creation of the transmit flow in Radius AEC-1, “My First Dante Flow #1” appears in the Toolkit for both “Receive Flow Modules for Existing Flows” and “Transmit Flow Modules for Existing Flows”.
- 4) In the Design View for the Radius AEC-2, “My First Dante Flow #1” is drag and dropped from the Toolkit under “Receive



Flow Modules for Existing Flows” creating the Dante Subscription for the 8 channels originating from Radius AEC-1 to be received by Radius AEC-2.

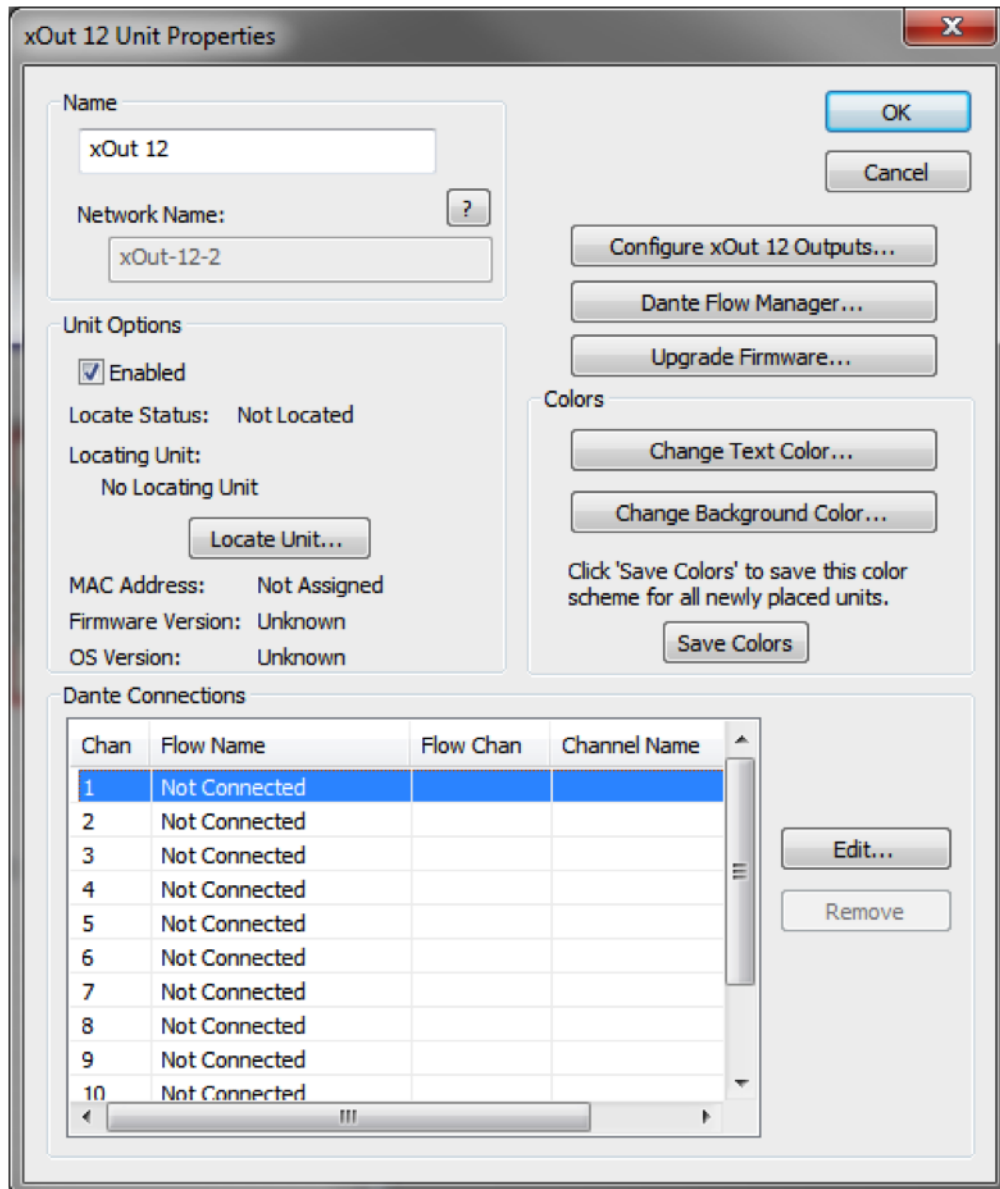
Example: SymNet DSP or xIn 12 flows received by a SymNet xOut 12

In the above screen shot of SymNet Composer three Windows are visible, from left to right; the Toolkit showing Dante Transmit and Receive Flows, the Site View showing a Radius AEC and a xOut 12, and the Design View of the Radius AEC-1 showing the Dante transmit. Notice in the Site View that the xOut 12 is not currently subscribed to any Dante channels, as all 12 channels show N/C.

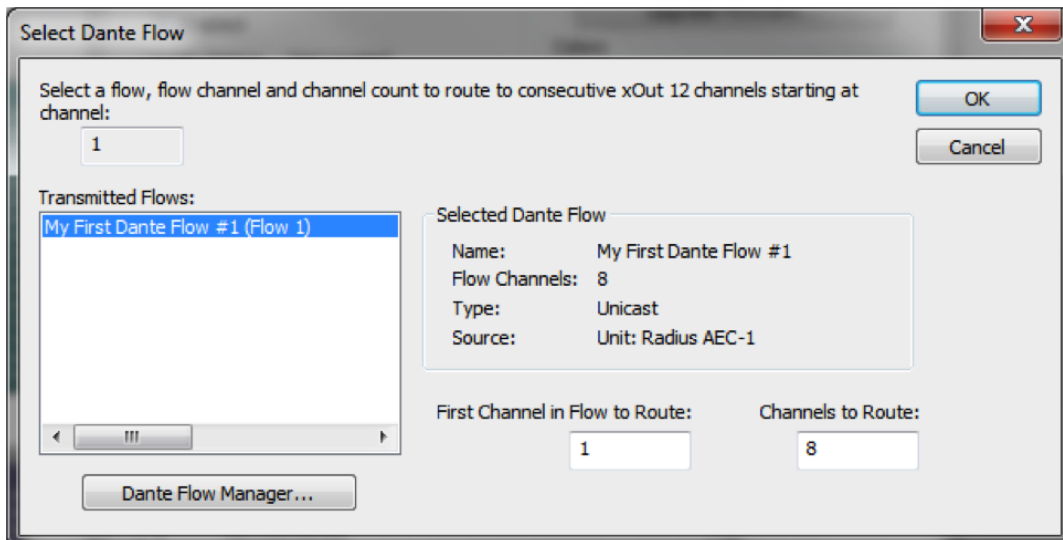
Creating Dante Subscriptions

Step:

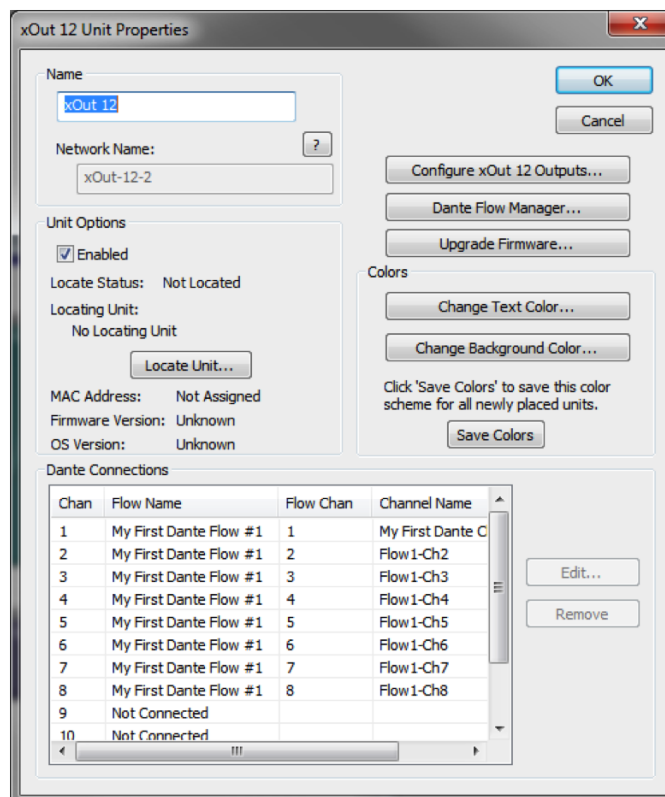
- 1) When inside the Design View of Radius AEC-1, a Dante transmit flow of 8 channels was created by drag and dropping “New Transmit/Receive Flow...” from the Toolkit under “Dante Transmit and Receive Flows”.
- 2) The new Transmit flow was labeled as “My First Dante Flow #1” and channel #1 was renamed from the default channel name of Flow1-Ch1 to “My First Dante Channel”. The default names of channels 2 through 8 were not edited.
- 3) Instantly after creation of the transmit flow in Radius AEC-1, “My First Dante Flow #1” appears in the Toolkit for both “Receive Flow Modules for Existing Flows” and “Transmit Flow Modules for Existing Flows”.
- 4) In the Site View, double click on the xOut 12, opening the “xOut 12 Unit Properties” window.



- 5) To open the “Select Dante Flow” window and create a subscription, double click the first channel in which it is desired to receive Dante audio from an existing Dante flow, or select the channel and hit the Edit button. In this example, channel 1 is selected.



- 6) Select the desired Dante flow under “Transmitted Flows:”
- “First Channel in Flow to Route”: selects the first channel in the selected flow to receive in the xOut 12.
 - “Channels to Route”: selects how many consecutive channels in the selected flow will be subscribed by the xOut 12.
- 7) After clicking the OK button on the Select Dante Flow window, the xOut 12 Unit Properties and xOut 12 on the Site View will show Dante subscriptions.



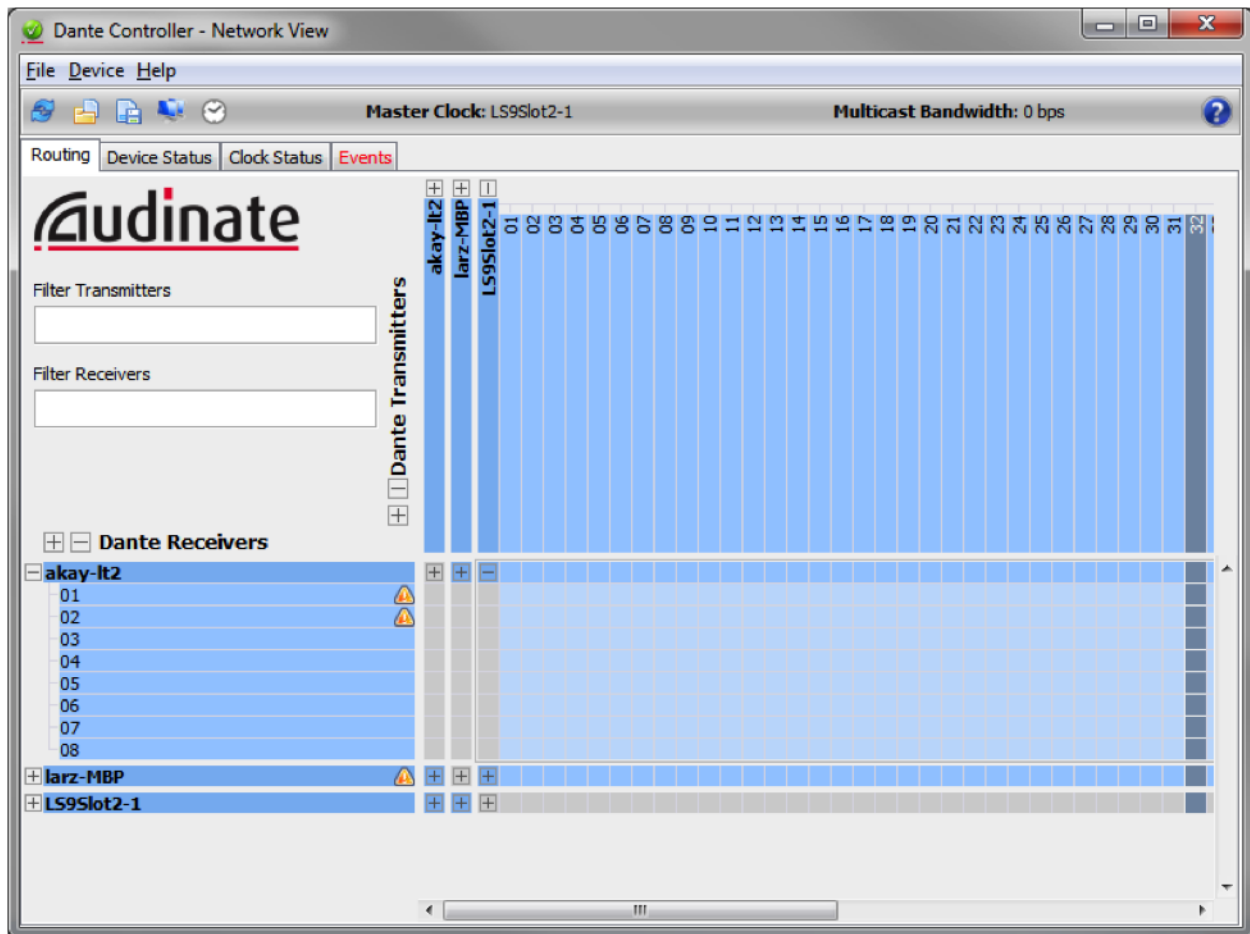
Creating Dante Subscriptions

Creating Dante Subscriptions between SymNet Hardware and a 3rd Party Dante Source:

Within SymNet Composer, familiar steps are used to subscribe to Dante channels originating from 3rd party Dante sources. The method for receiving Dante from a 3rd party source varies slightly between a SymNet DSP and the xOut 12.; however the first step of determining the Dante network name of the 3rd party Dante source is common to both methods.

To locate the Dante network name of a 3rd party Dante source, connect the LAN port of a PC running Dante Controller to the Dante network. Dante Controller should auto-populate with the network names of all Dante devices on the network, although it may require hitting the refresh icon.

On the Routing tab, locate the 3rd party Dante source in the “Dante Transmitters” and expand the unit channel tree by hitting the + sign to see the transmitting channel names. In this example the 3rd party Dante source is a Yamaha LS9 Mixing Console with a Dante card in slot 2. The Dante network name is “LS9Slot2-1” and all channels have the default label which is derived from the respective channel numbers of 01 through 64.

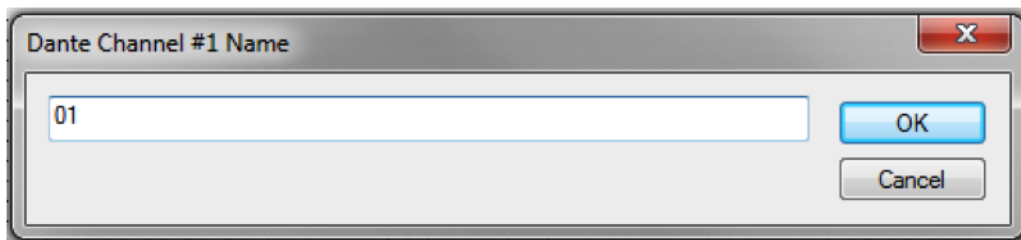


Example: 3rd Party Dante Audio Received by a SymNet DSP

Step:

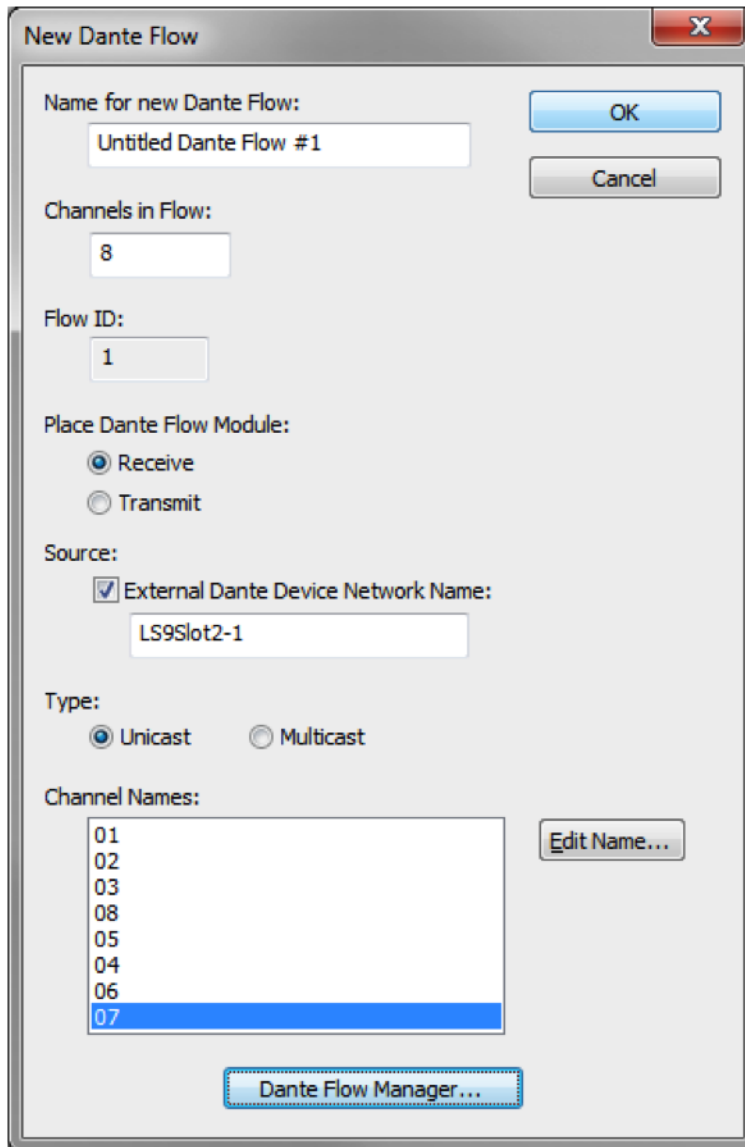
- 1) When inside the Design View of SymNet DSP, drag and drop a “New Transmit/Receive Flow...” from the Toolkit under “Dante Transmit and Receive Flows”.

- 2) A “New Dante Flow” window will pop-up and the following fields should be selected or filled in:
- Name for the new Dante Flow: This field can be left at the default or renamed to anything. It will not affect the behavior of the Dante receive flow and is used only within SNC as an organization tool.
 - Channel in Flow: Up to 8 channels can be received from a 3rd party Dante source in a single Dante receive flow.
 - Place Dante Flow Module: Be sure to select “Receive” .
 - Source: Select “External Dante Device Network Name:” by clicking the checkbox, then enter the 3rd party Dante network name discovered with Dante Controller.
 - Type: Select unicast or multicast based upon how many SymNet units will receive this flow once created.
 - Channel Names: Rename all channels to match the channel labels from the 3rd party Dante source (located in Dante Controller), in the order in which the SymNet DSP should receive them. Non-adjacent channels are allowed. Channel names must be unique within the Dante network.

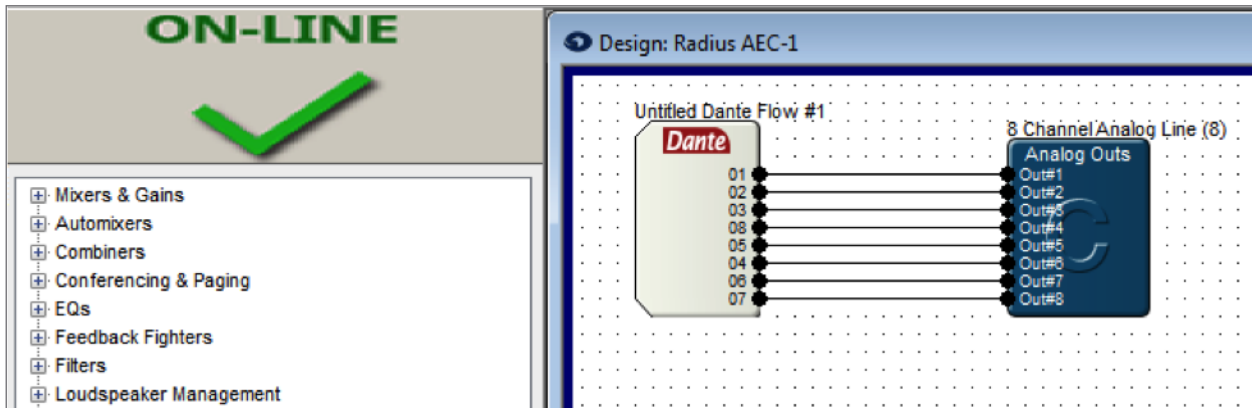


Creating Dante Subscriptions

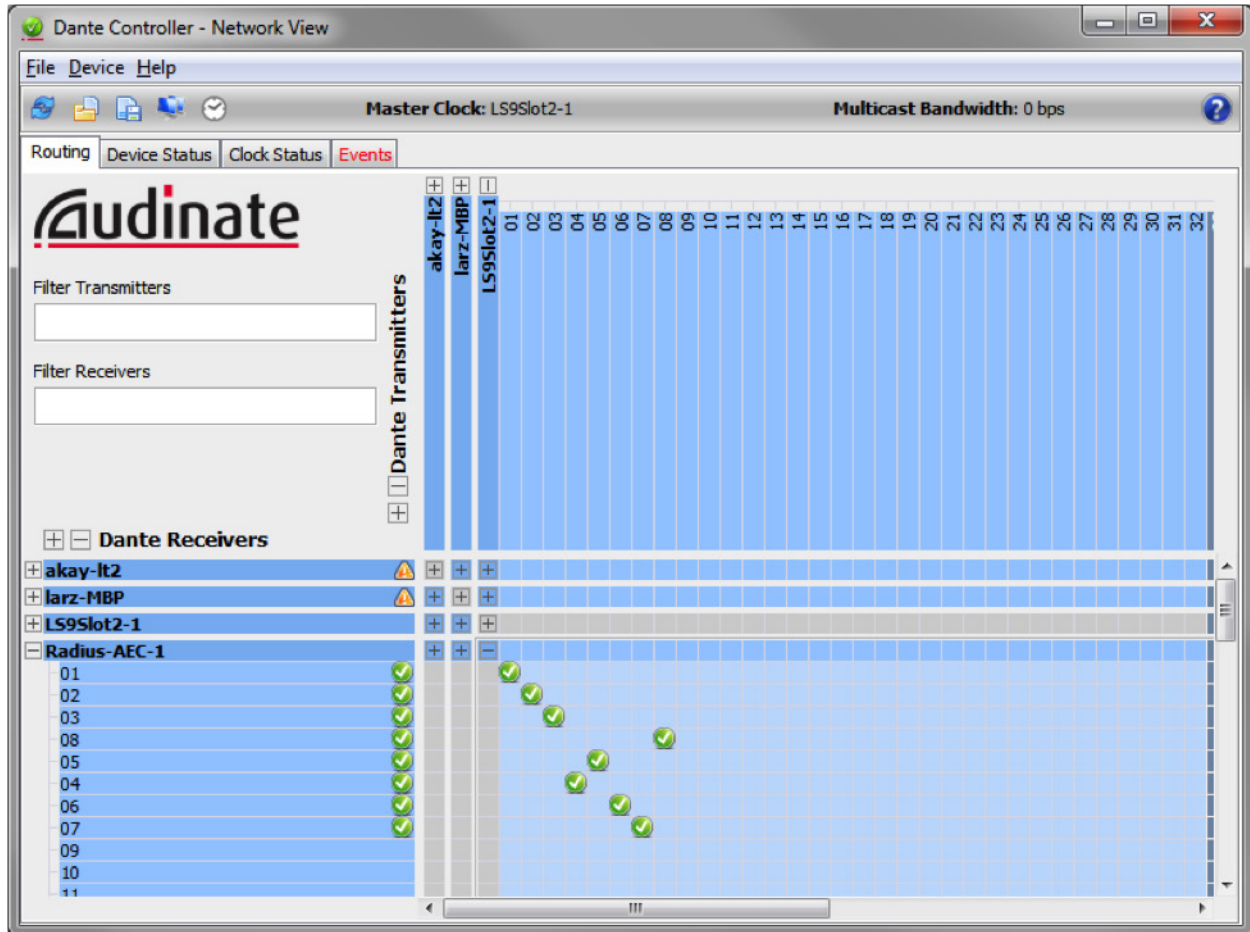
- g. Prior to clicking the OK button, the “New Dante Flow” window should look resemble this:



- 3) Click OK, wire the outputs of the receive flow channels into the SNC signal path, and then Push the file to the SymNet hardware.



- 4) Next, check Dante Controller to confirm that all cross points have automatically engaged, confirming the subscription is active.



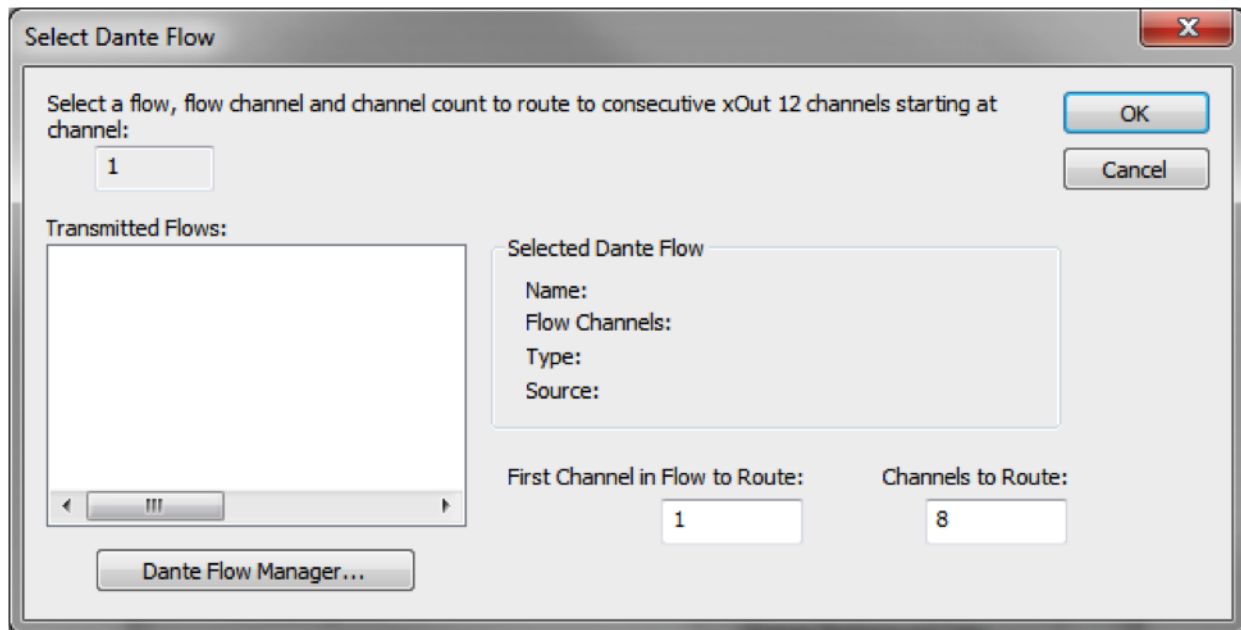
Example: 3rd Party Dante Audio Received by a SymNet xOut 12

Step:

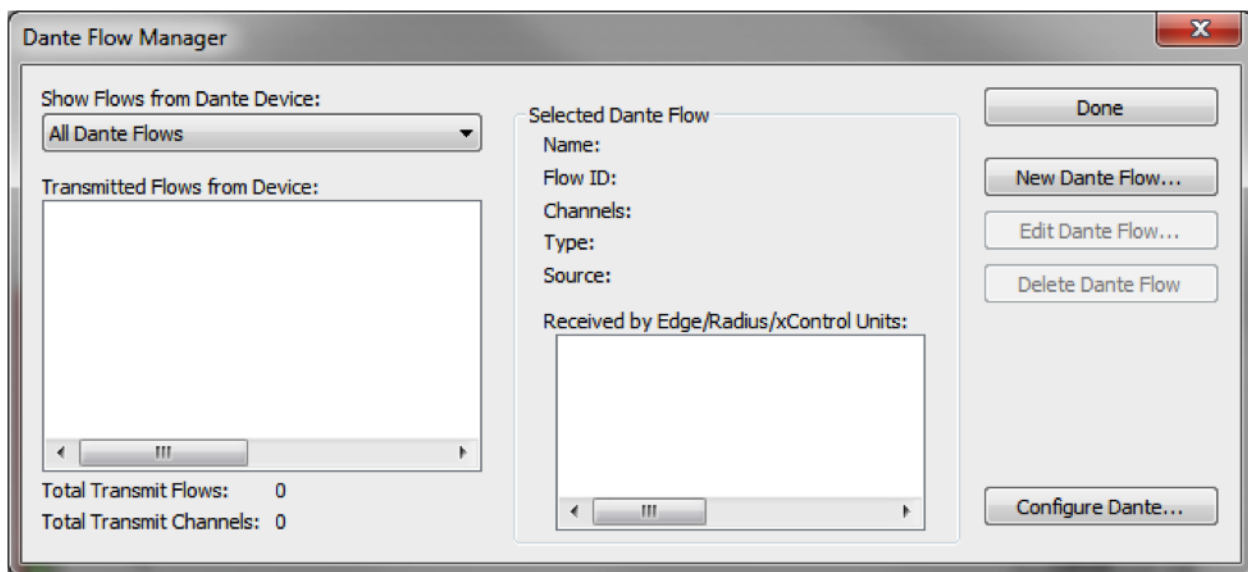
- 1) On the Site View of SymNet Composer, double click on a xOut 12 to launch the “xOut 12 Unit Properties” window.
- 2) To create a subscription, double click the first channel in which it is desired to receive Dante audio from an 3rd party Dante source, or select the channel and hit the Edit button. In this example, channel 1 is selected.
- 3) The “Select Dante Flow” window will open; however, because the Dante audio is from a 3rd party source, the 3rd party Dante flow will not be available under the “Transmitted Flows” until it has been created in SNC. To do this, click the “Dante Flow Manager...” button below the “Transmitted Flows” window.

Note: If another SymNet DSP or xOut 12 in the SNC site file is already subscribed to the 3rd party Dante flow, and the flow is multicast, select the existing flow under “Transmitted Flows” and skip to step 7)

Creating Dante Subscriptions



4) Click the “New Dante Flow...” button on the Dante Flow Manager.



5) The “Edit Dante Flow” window will open automatically to a receive flow.

The following fields should be selected or filled in:

- a. Name for the new Dante Flow: This field can be left at the default or renamed to anything. It will not affect the behavior of the Dante receive flow and is used only within SNC as an organization tool.
- b. Dante Flow Channels: Up to 8 channels can be received from a 3rd party Dante source in a single Dante receive flow.

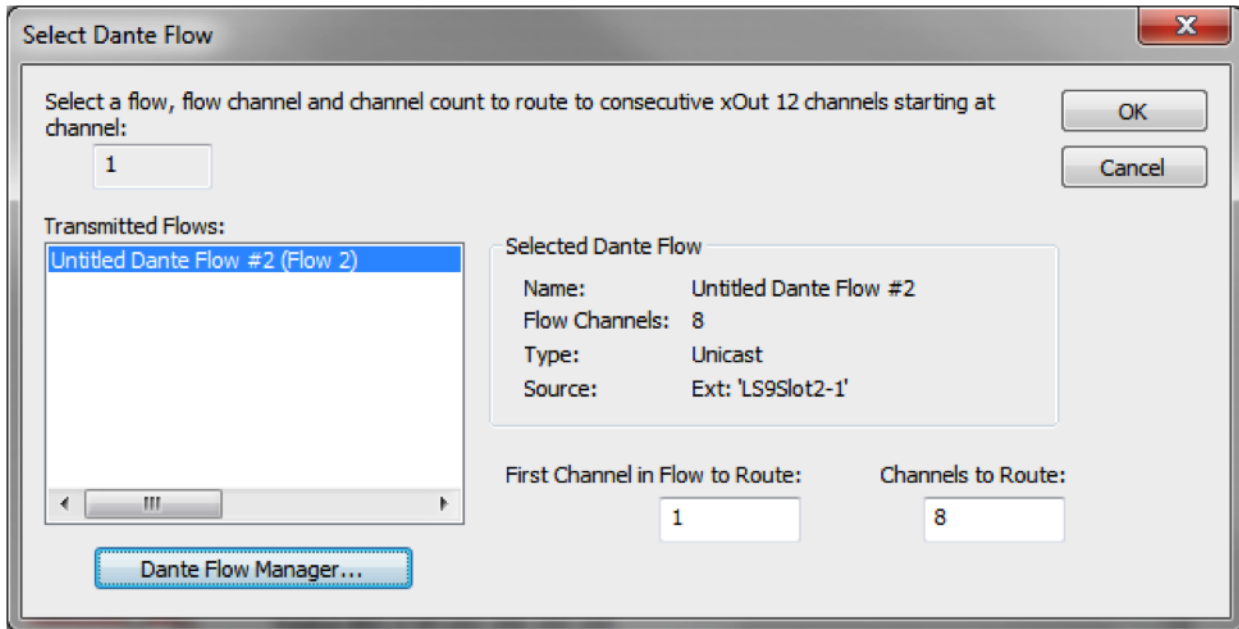
- c. Source: Select “External Dante Device Network Name:” by clicking the checkbox, then enter the 3rd party Dante network name discovered with Dante Controller.
- d. Type: Select unicast or multicast based upon how many SymNet units will receive this flow once created.
- e. Channel Names: Rename all channels to match the channel labels from the 3rd party Dante source (located in Dante Controller), in the order in which the SymNet DSP should receive them. Non-adjacent channels are allowed. Channel names must be unique within the Dante network.

The screenshot shows the 'Edit Dante Flow' dialog box. The 'Dante Flow Name' field is 'Untitled Dante Flow #2'. The 'Dante Flow Channels' field is '8'. The 'Flow ID' field is '2'. The 'Source' section has the checkbox 'External Dante Device Network Name' checked, with the text 'LS9Slot2-1' in the adjacent field. The 'Type' section has 'Unicast' selected. The 'Channel Names' list contains '01', '02', '03', '04', '05', '06', '07', and '08', with '08' selected. There are 'OK' and 'Cancel' buttons at the top right, and an 'Edit Name...' button next to the channel names list.

- 6) Click “OK” when finished. Then click “Done” on the Dante Flow Manager.
- 7) Next, Select ensure the newly created “Ext” Dante flow is selected under “Transmitted Flows:”
 - a. “First Channel in Flow to Route”: selects the first channel in the selected flow to receive in the xOut 12.

Creating Dante Subscriptions

- b. "Channels to Route": selects how many consecutive channels in the selected flow will be subscribed by the xOut 12.



Note: The "Selected Dante Flow" data indicates an external flow by Source: Ext: 'LS9Slot2-1'

- 8) After clicking the OK button on the Select Dante Flow window, the xOut 12 Unit Properties and xOut 12 on the Site View will show Dante subscriptions to the 3rd party Dante channels.

Real-time Matrixing of Dante:

Without a solid understanding of how real-time matrixing and routing of Dante works within the SymNet environment, much time and confusion may be expended troubleshooting perceived problems that actually do not exist.

There are two ways to matrix Dante, and both have advantages and disadvantages:

1. Matrix using SymNet.
2. Matrix using Dante Controller.

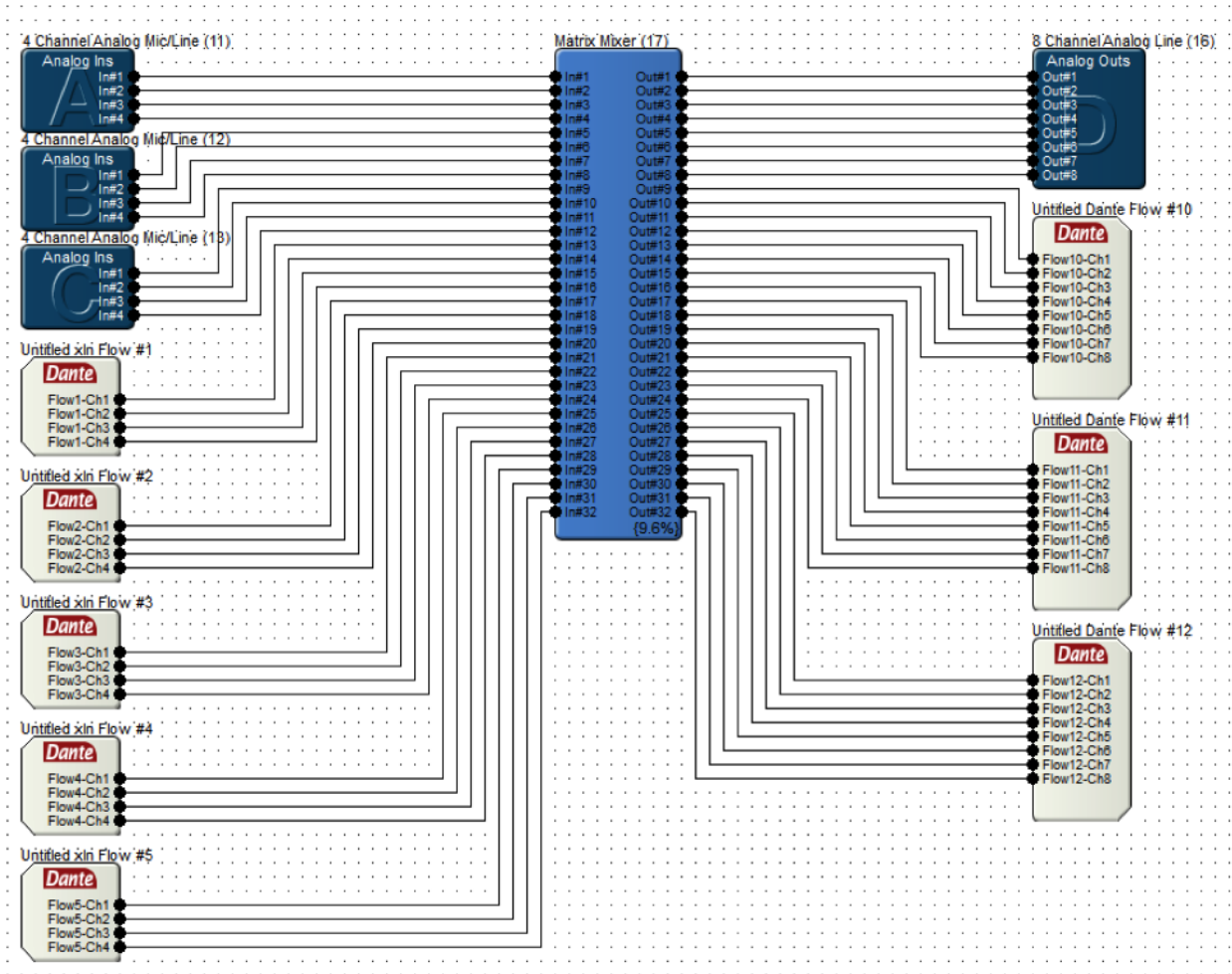
Matrix Dante Using SymNet Composer:

One of the simplest ways to matrix or route Dante audio within a SymNet system would be to simply use a matrix within a single SymNet DSP. This DSP would receive all Dante sources on the Dante network, route them through the mix-matrix or selector matrix within the SymNet signal path, and then transmit the Dante mixes or selections back onto the Dante network.

The advantage of this method is that all routing takes place within SymNet. This means ARC remotes can receive feedback and display the changes in routing, and preset routing configurations can be saved and triggered easily. Additionally, a SymVue control screen could be created, providing a simple and attractive, end user, control system for matrixing Dante in real-time.

The disadvantage of this method is that only a 64 receive x 64 transmit Dante matrix is supported in a single SymNet DSP, so an extremely large Dante matrix would not be supported without additional SymNet DSP hardware. Further, no square matrix larger than 72x72 could be achieved.

In the below screen shot, a 32x32 matrix is created that allows for real-time matrixing of 20 Rx and 24 Tx Dante channels.



Matrix Dante Using Dante Controller:

When using Dante Controller to provide real-time matrixing of Dante to or from SymNet hardware, extreme care must be taken.

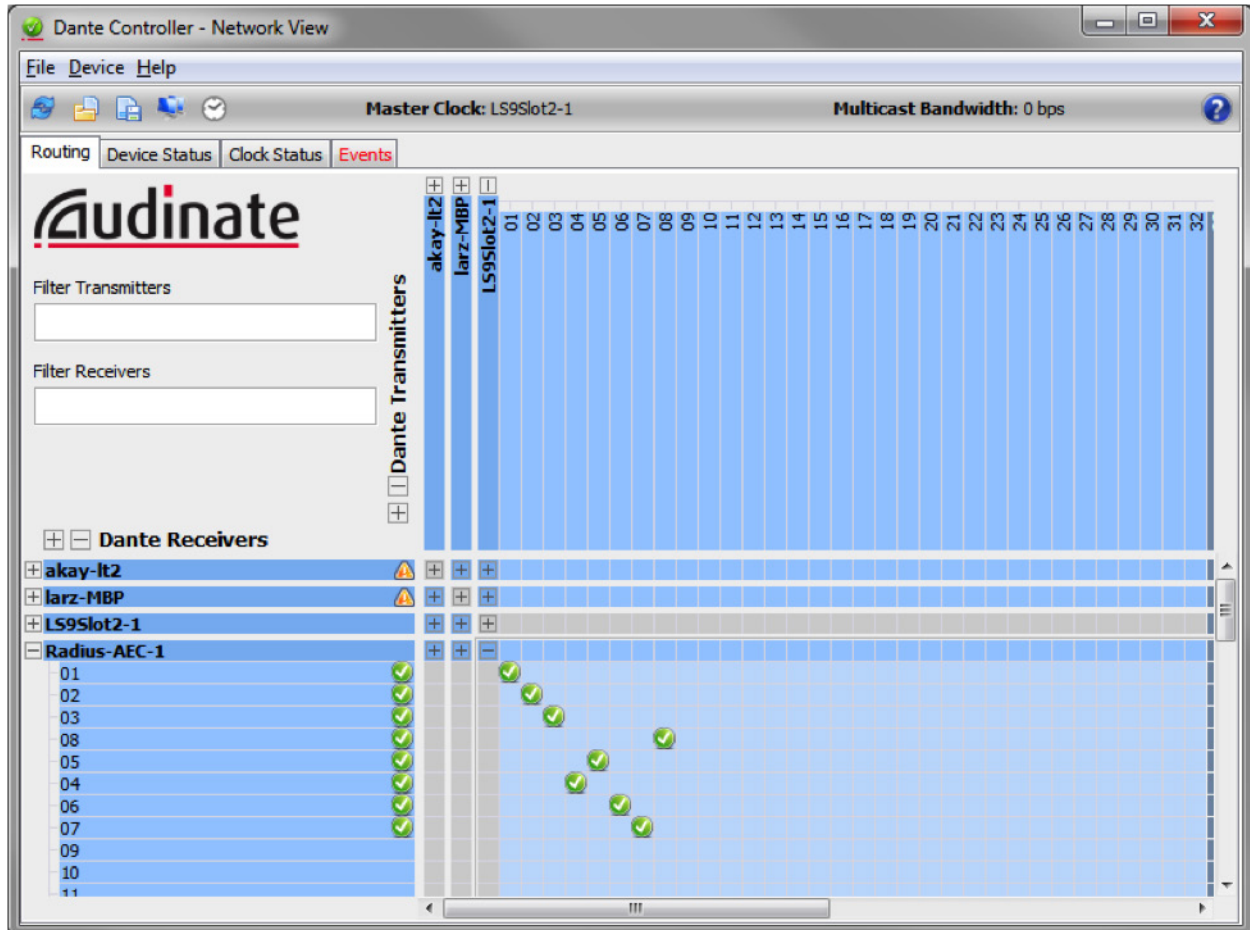
In SymNet, when a Dante Receive Flow is created, the source and channel names are set in the Dante Flow properties. As such, using Dante Controller for real-time matrixing of Dante channels in a SymNet system by clicking cross points on the Routing Tab provides only temporary routing changes.

Creating Dante Subscriptions

To repeat: All changes to routing of Dante channels being received by SymNet hardware, by using Dante Controller and clicking cross points on the Routing Tab, is 100% temporary. These changes will be lost after a power cycle of the SymNet hardware or when the SymNet site file is pushed to the hardware.

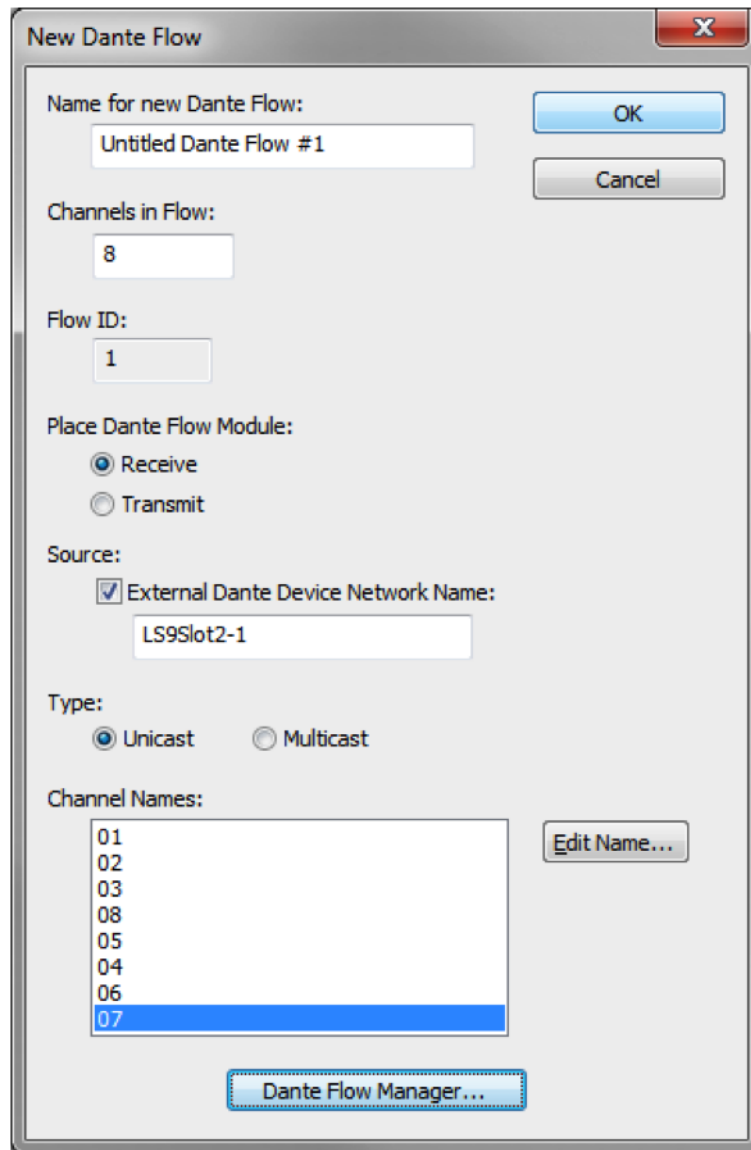
After a power cycle or push of the site file, the Dante routing will revert back to the original configuration as defined within the Dante Flow properties of each Dante Rx flow.

Take the example used earlier:



As you can see, the SymNet Radius AEC Dante Rx channels from the Yamaha LS9 are received in a different order (01, 02, 03, 08, 05, 04, 06, 07) than the LS9 transmitted the channels, which was in transmitted in numerical order (01, 02, 03, 04, 045, 06 , 07 ,08).

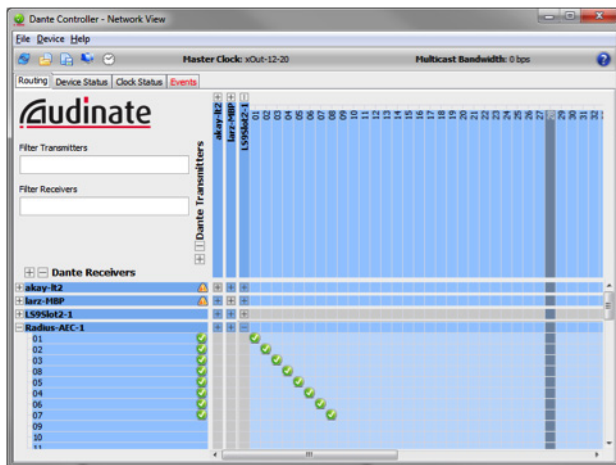
This was because the Dante Rx Flow in SymNet defined the channels to receive in the non-adjacent order:



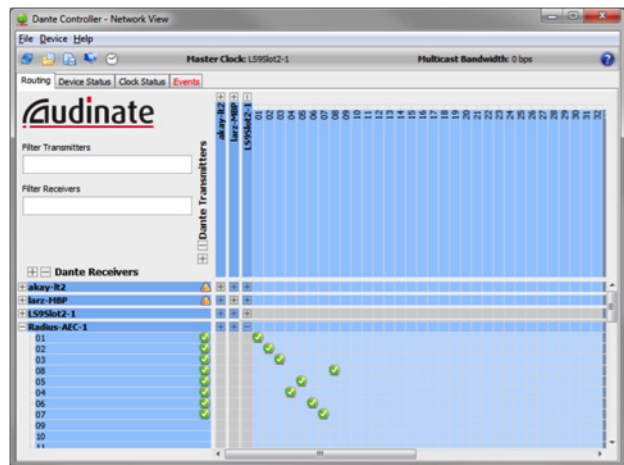
So, if Dante Controller cross points were clicked to create a one-to-one relationship between channels, the routing would happen in real-time; however, the routing would be temporary and a power cycle or site file push would revert the routing back to how they were defined within the Dante Flow.

Below is a screen shot of the before and after results of using Dante Controller to change the routing of the received Dante channels, and then power cycling the SymNet hardware. It should be noted that pushing the SymNet site file would have the same result as power cycling the SymNet hardware.

Creating Dante Subscriptions



Before a power cycle or site file push



After a power cycle or site file push

Routing Changes Using Dante Controller for 3rd Party Dante Channels Received by SymNet:

The question arises of whether Dante Controller can be used with SymNet hardware, receiving audio from 3rd party Dante sources, to perform real-time routing changes that will last through a power cycle or site file push. The answer is yes.

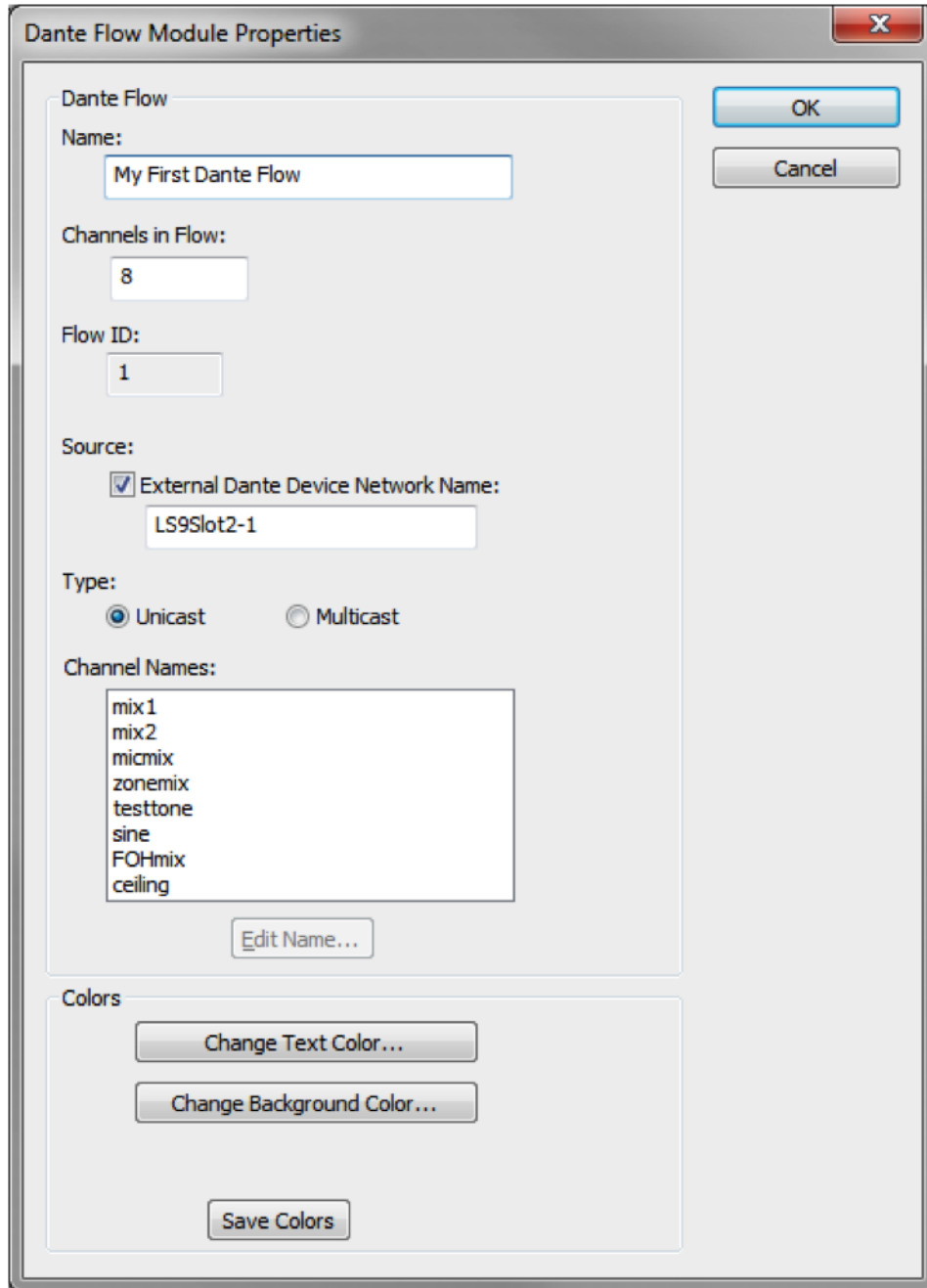
SymNet Composer controls all aspects of a SymNet system, including Dante routing. The reason behind this method was to eliminate the need for using 3rd party software to setup routing within a SymNet system. As such, systems that are 100% SymNet Dante hardware cannot use Dante Controller for permanent Dante routing changes.

However, with most Dante products designed by 3rd party manufacturers, the Dante channels and routing will be managed with Dante Controller. The exception to this is when the 3rd party manufacturer has created software, similar to SymNet Composer, which is used to manage the Dante capabilities within their Dante product. In that case, using Dante Controller for real-time matrixing of Dante would not be suggested, as all routing changes made by Dante Controller would always be temporary.

If Dante Controller is used for setup and routing of a 3rd party Dante product, such as the Yamaha LS9, then there is a method for making permanent routing changes using Dante Controller. Clicking cross points to change the Dante routing of channels received by a SymNet DSP is always temporary, but the following method will allow routing changes to remain after a power cycle or site file push.

Steps:

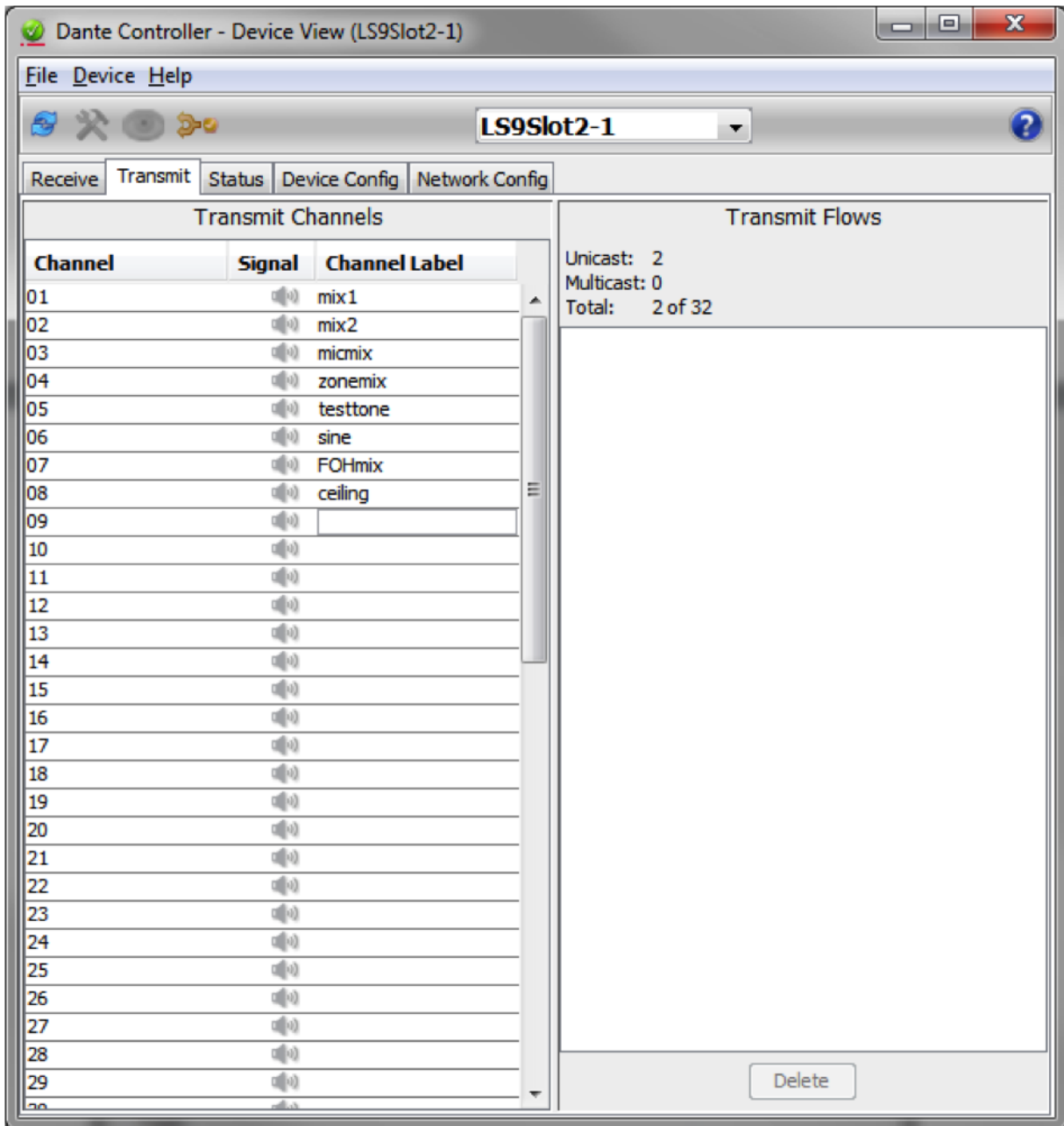
- 1) When creating the Dante Receive Flow in SymNet Composer, use descriptive names for all channels, rather than using default channel counts that Dante Controller uses by default. In other words, do not use 01, 02, 03,... example names: bgm, FOH, mix1, mix2, micmix, etc



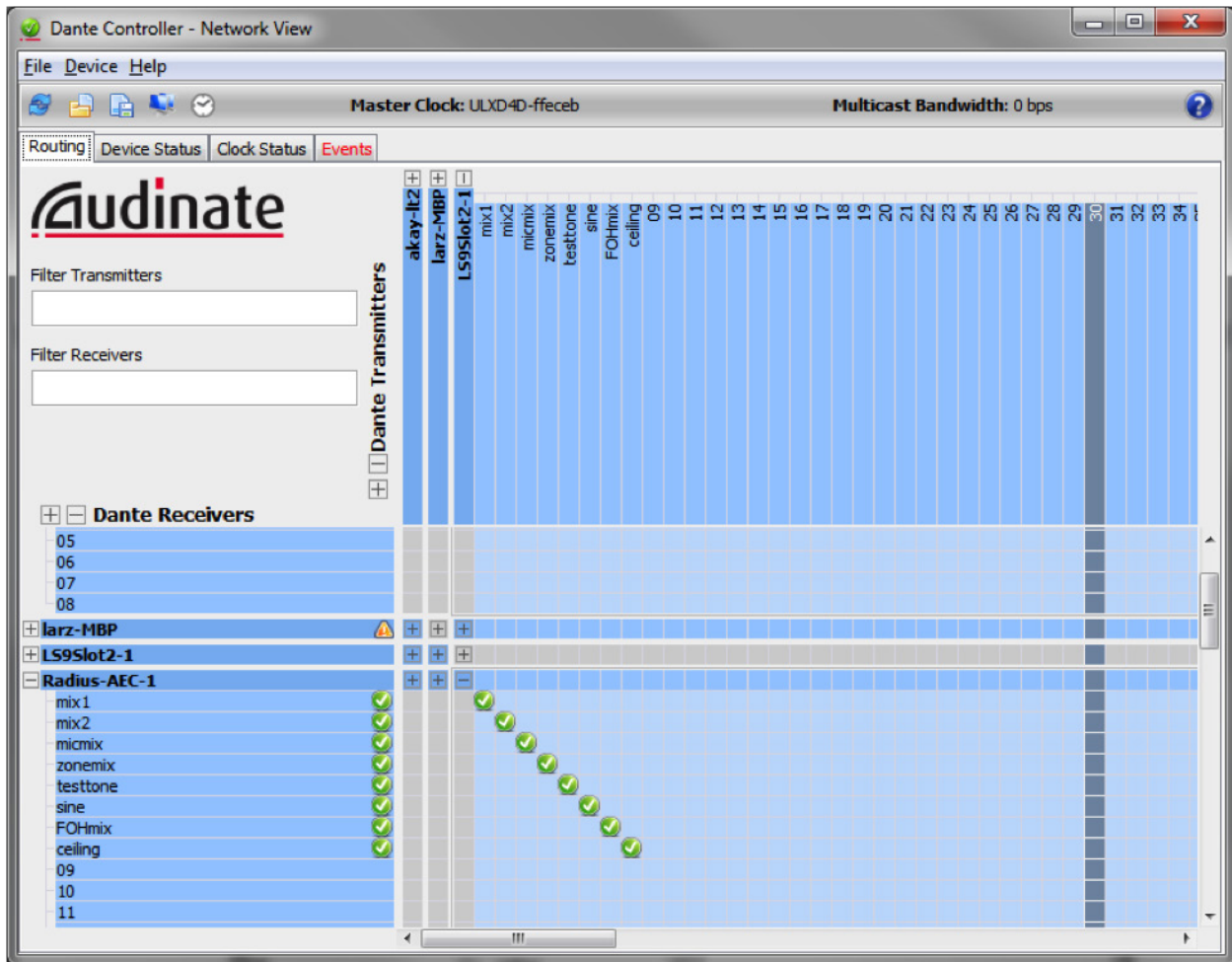
- 2) Next, in Dante Controller, locate the transmitting device network name and double click it's Dante network name to open the Dante Controller "Device View", then switch to the Transmit Tab.

Creating Dante Subscriptions

- 3) Edit the “Channel Label” column for each channel to reflect the channel names used in SymNet Composer when creating the Dante Rx Flow.

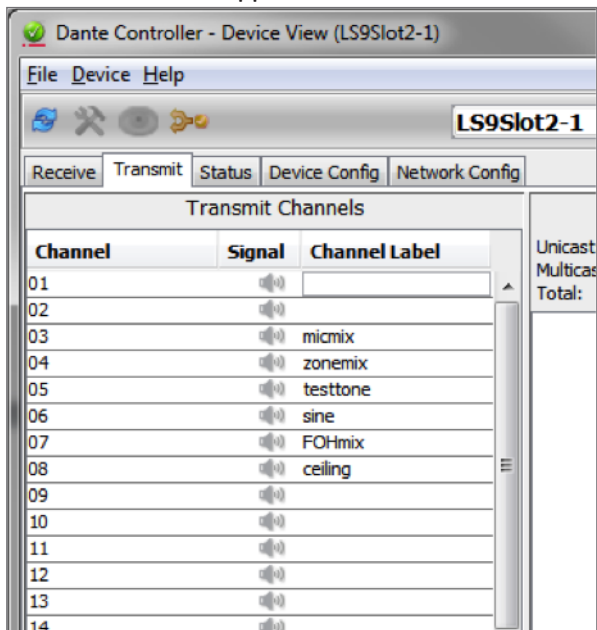


- 4) Now, on the Routing Tab of Dante Controller, all subscriptions of the SymNet DSP should align with the respective transmitted channels being sent from the 3rd party source.

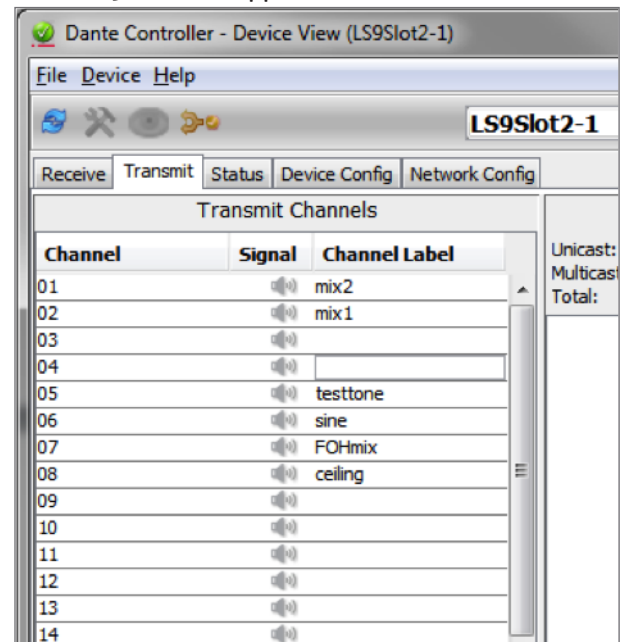


- 5) To make real-time, permanent matrix changes, double click the transmitting device Dante network name to open the Dante Controller “Device View”, then switch to the Transmit Tab.
- 6) Next, delete the channel label for any channels in which it is desired to edit the routing. Deleting the channel label is necessary, because Dante Controller does not allow any duplicate channel names. As such, the labels must be deleted first, and then renamed afterwards. For example, the following screen shot shows routing changes where each adjacent channel is swapped.

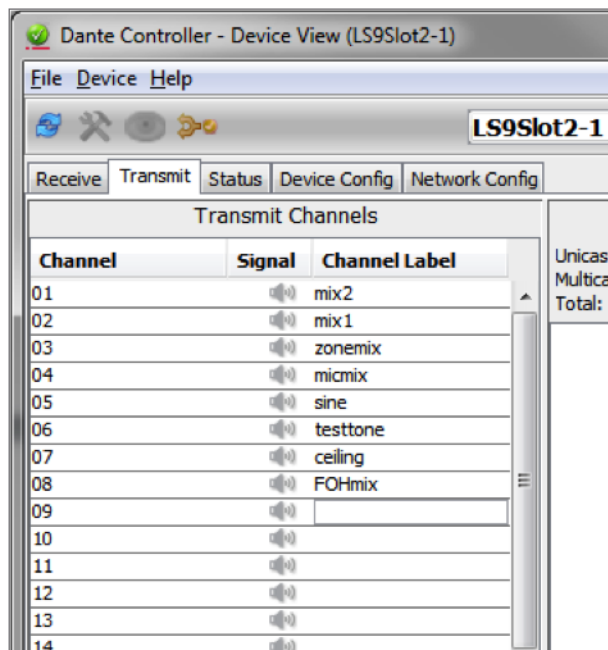
Channel 1 and 2 swapped:



Channel 3 and 4 swapped:

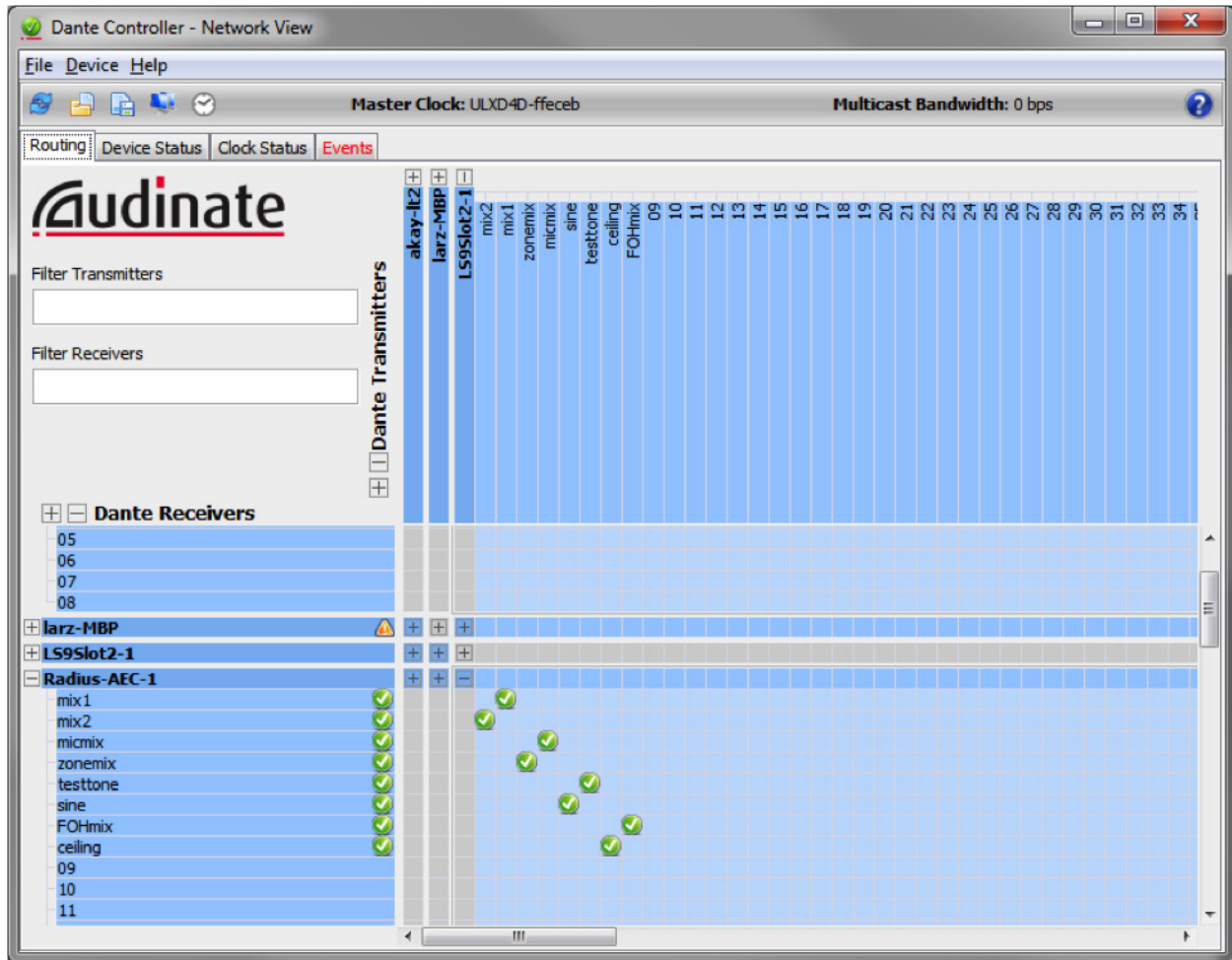


All channel swapping complete



- Now, on the Routing Tab of Dante Controller, all subscriptions of the SymNet DSP should align with the respective transmitted channels being sent from the 3rd party source, which will reflect the routing changes made by editing the Channel Label.

These routing changes will be permanent, surviving a power cycle and site file push of the SymNet hardware.



Routing Changes Using Dante Controller for SymNet Dante Channels Received by 3rd Party:

If Dante Controller is used for setup and routing of a 3rd party Dante product, such as the Yamaha LS9, then permanent routing changes can be made, for channels being transmitted by SymNet and received by the 3rd party Dante device, using Dante Controller by simply clicking cross points on the Routing Tab. Dante Controller will change the 3rd party Dante hardware's subscriptions permanently based upon the cross point selections.

It should be noted, Dante Controller cannot be used to permanently change the Channel Label names of the SymNet hardware. If edited with Dante Controller, the Dante channel labels would revert back to the channel names defined in the flows contained in the SymNet Composer site file after a power cycle or push of the site file. Edited SymNet Dante channel names must be done using SymNet Composer.

SymNet Specifics for Dante Subscriptions, 3rd Party Dante Sources, and Real-time Dante Matrixing

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