Symetrix White Paper:
Composer Network I/O Modules
# Table of Contents

## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overview</td>
<td>3</td>
</tr>
<tr>
<td>Symetrix Dante-enabled Analog I/O Expander</td>
<td>3</td>
</tr>
<tr>
<td>Supported Third-party Dante Device</td>
<td>6</td>
</tr>
<tr>
<td>Device List</td>
<td>6</td>
</tr>
<tr>
<td>User Library</td>
<td>9</td>
</tr>
<tr>
<td>Unsupported Third-party Dante Device</td>
<td>15</td>
</tr>
<tr>
<td>Generic Network Receive Bus</td>
<td>15</td>
</tr>
<tr>
<td>AES67 Stream</td>
<td>23</td>
</tr>
<tr>
<td>Transmit Buses</td>
<td>30</td>
</tr>
<tr>
<td>Creating Transmit Bus</td>
<td>30</td>
</tr>
<tr>
<td>Assigning Transmit Bus to a Symetrix Dante-enabled DSP</td>
<td>34</td>
</tr>
<tr>
<td>Symetrix DSPs</td>
<td>34</td>
</tr>
<tr>
<td>Dante-enabled Analog I/O Expander</td>
<td>37</td>
</tr>
<tr>
<td>Assign Transmit Bus to Third-party Dante Devices</td>
<td>40</td>
</tr>
<tr>
<td>Device List/User Library</td>
<td>40</td>
</tr>
<tr>
<td>Assign Transmit Bus to Unsupported Third-party Devices</td>
<td>44</td>
</tr>
<tr>
<td>Generic Network Transmit Bus</td>
<td>44</td>
</tr>
<tr>
<td>AES67 Transmit Stream</td>
<td>54</td>
</tr>
</tbody>
</table>
Symetrix White Paper: Composer Network I/O Modules

Overview

The purpose of this document is to provide step-by-step instructions on how to create Dante subscriptions using Composer 6.0 and later versions that have updated Network I/O Modules (formerly Dante Transmit & Receive Flows in Composer versions prior to 6.0). AES67 support has also been added to the network audio capabilities.

Receive Buses

Symetrix Dante-enabled Analog I/O Expander

Here are the instructions for creating Dante receive channels from a Symetrix Dante-enabled Analog I/O Expander:

(This example uses a Radius AEC and an xIn 4)

1. From the Toolkit, add a Radius AEC and xIn 4 to the Site View page.

2. Open the Design View page by double-clicking the Radius AEC.
Symetrix Dante-enabled Analog I/O Expander

3. From the Toolkit, expand Network I/O Modules, then expand Receive Modules.
4. xIn 4 Bus #1 is automatically created and available. Add xIn 4 Bus #1 to the Design View page. **Note:** Whenever a Symetrix Dante-enabled Analog I/O Expander, third-party Dante device, or transmit bus are added to a site file, a receive bus is automatically created, and available from the Toolkit.

5. Push the site file and Composer will make the Dante subscriptions for these channels.
Supported Third-party Dante Device

Symetrix Composer contains a list of supported third-party Dante devices.

Device List

Here are the instructions for creating Dante receive channels from a Dante device available in the Composer Toolkit, as a third-party supported Dante device:

(This example uses a Radius AEC and Audio-Technica ATND971)

1. From the Toolkit, add a Radius AEC to the Site View page.
2. Next, from the Toolkit, expand Third-party Dante Devices.
3. Expand Audio-Technica, add an ATND971 to the Site View page.
4. Open the Design View page by double-clicking the Radius AEC.
5. From the Toolkit, expand Network I/O Modules, then expand Receive Modules.
6. ATND971 Dante Mic Bus #1 is automatically created and available, add ATND971 Dante Mic Bus #1 to the Design View page.

*Note: Whenever a Symetrix Dante-enabled Analog I/O Expander, third-party Dante device, or transmit bus are added to a site file, a receive bus is automatically created, and available from the Toolkit.*

7. Push the site file and Composer will make the Dante subscription for this channel.
User Library

Symetrix Composer contains a list of supported third-party Dante devices. Among this list is the User Library. Any Dante device can be added to the User Library. Once added to the library, these devices are available to add to any site file.

Here are the instructions for creating Dante receive channels from any Dante device, using the User Library available in the Composer Toolkit under third-party supported Dante devices:

(This example uses a Radius AEC and a Windows PC running Dante Via)

1. From the Toolkit, add a Radius AEC to the Site View page.
2. Next from the Toolkit, expand Third-party Dante Devices.
3. Expand the User Library and add a New Dante Device to the Site View page.

![Image of Symetrix Composer Toolkit showing the User Library and how to add a new Dante device.]
4. The Dante Device User Library Manager window will open.
5. Click the “Browse Network” button.

6. The Locate Hardware window will open and display all available Dante devices on that network.
7. Select the desired Dante device, then click the “Select Hardware Unit” button.
8. The Dante Device User Library Manager will now list that Dante device. Select the desired Dante device and click the “Select Device Type” button. This will add the device to the site view page.

![Dante Device User Library Manager](image1.png)

9. Once added to the library, these devices are available to add to any site file.

10. Open the Design View page by double-clicking the Radius AEC.
11. From the Toolkit, expand Network I/O Modules, then expand Receive Modules.
12. Bus#1 is automatically created and available, add Bus#1 to the Design View page.

*Note: Whenever a Symetrix Dante-enabled Analog I/O Expander, third-party Dante device, or transmit bus are added to a site file, a receive bus is automatically created, and available from the Toolkit*

13. Push the site file and Composer will make the Dante subscriptions for these channels

For more information about adding devices to the Third-party Dante Device User Library, click here.
Unsupported Third-party Dante Devices

Unsupported third-party Dante devices are devices that are not manufactured by Symetrix, or found in the third-party supported device list. There are two different ways to create Network Receive Buses for these Dante devices.

Generic Network Receive Bus

Here are the instructions for creating Dante receive buses from an unsupported third-party Dante device, using the generic Network Receive Modules:

(This example uses a Radius 12x8 and MacBook Pro running DVS (Dante Virtual Soundcard))

1. From the Toolkit, add a Radius 12x8 to the Site View page.
2. Open the Design View page by double-clicking the Radius 12x8.
3. From the Toolkit, expand Network I/O Modules, then expand Receive Modules.
4. Double-click or drag in a New Network Receive Module.
5. The Network Receive Module Properties window will open automatically. Click the button to “Add New Bus”.

![Add New Bus button highlighted](image)
6. The New Dante Bus window will open. Select the box for “External Network Device Name”.

7. Click the “Browse Dante” button.
8. Select the desired Dante-equipped device, available from the Dante network.
9. Next, select the desired channel or channels to create the new bus from.
10. Click the “Create Unicast Bus” button.
11. The new Dante bus has now been updated with the device network name and channel name(s) being received. Click Ok. The new receive bus has now been created.
12. Push the site file and Composer will make the Dante subscriptions for the channel(s).
AES67 Stream

The AES67 standard provides interoperability between different forms of AoIP (Audio over IP). AES67 is currently supported by Dante, Ravenna, Livewire and Q-LAN.

Here are the instructions for creating AES67 receive buses, using the generic Network Receive Modules:

(This example uses a Radius AEC and QSC Q-SYS Core 250i)

1. From the Toolkit, add a Radius AEC to the Site View page.
2. Open the Design View page by double-clicking the Radius AEC.
3. From the Toolkit, expand Network I/O Modules, then expand Receive Modules.
4. Double-click or drag in a New Network Receive Module.
5. The Network Receive Module Properties window will open automatically. Click the button to “Add New Bus”.

![Network Receive Module Properties window](image)
6. The New Dante Bus window will open. Select the box for “External Network Device Name”.

7. Change the type to AES67.
8. Click the “Browse AES67” button.

9. Select the desired AES67 multicast stream from the list.
10. Click the “Select AES67 Stream” button.

11. The New Bus window is now updated with the AES67 stream information (device network name and channel names).
12. The new AES67 receive bus is available in the Network Receive module Properties window.
13. Click Ok. The new receive bus has now been created.

14. Push the site file and Composer will make the AES67 to Dante subscriptions.
Transmit Buses

The initial steps when creating transmit buses are the same, regardless of the device the audio is being transmit to.

Creating Transmit Bus

Here are the steps to create a transmit bus:

1. Open the site file to the Design View page.
2. From the Toolkit, expand Network I/O Modules, then expand Transmit Modules.
3. Add a New Network Transmit Module. The Network Transmit Module Properties window will open.

4. Edit the name of the transmit bus.
5. Select the number of channels (up to 64 channels) in the transmit bus.

6. Select the transmit bus type.
7. Name the individual transmit channels.

8. Click OK and the transmit bus will be added to the site file.
Assigning a Transmit Bus to a Symetrix Dante-enabled DSP

Symetrix DSPs

Here are the instructions for assigning a Transmit Bus to a Symetrix Dante-enabled DSP:

Note: In this example, audio is transmitted from a Radius AEC to a Prism 8x8 using the transmit bus from the Creating Transmit Bus section.

1. Double-click and open the Design View of the DSP to receive the audio from the transmit bus.
Transmit Buses

2. From the Toolkit, expand Network I/O Modules, then expand Receive Modules.

3. Notice the receive module for the transmit bus named “Transmit Demo” is automatically available.
   
   Note: when a transmit bus is created in Composer, its corresponding receive module will be automatically created. This receive module may be used in any DSP contained within that site file.
4. Add the receive module to the Design View page of the Prism 8x8.

5. Push the site file and Composer will make the Dante subscriptions for the channels.
Transmit Buses

Dante-enabled Analog I/O Expander

Here are the instructions for assigning a Transmit Bus to Symetrix Dante-enabled Analog I/O Expander:

Note: In this example, audio is transmitted from a Radius AEC to an xOut 4 using the transmit bus from the Creating Transmit Bus section.

1. Right-click the Symetrix Dante-enabled Analog I/O Expander and select Unit Properties.
2. From the Unit Properties window, either double-click the first channel in the Dante Audio Reception section, or select the first channel and click the “Edit Source” button.

3. From the Select Network Audio Source window, select the desired transmit bus.
4. Click OK. The Unit Properties window is now updated with the transmit bus and channel information.

5. Click OK.

6. Push the site file and Composer will make the Dante subscriptions for the channels.
Assign Transmit Bus to Third-party Dante Devices

The process to assign a Transmit Bus or channel to a third-party Dante device (Device List and/or User Library) is the same as assigning them to a Symetrix Dante-enabled Analog I/O Expander.

Device List/User Library

Here are the instructions for assigning a Transmit Bus to a third-party Dante device that is located in the Device List or User Library:

Note: In this example, audio is transmitted from a Radius AEC to an Ashley 8 channel Dante amplifier, using the transmit bus from the Creating Transmit Bus section.

1. Right-click the third-party Dante device and select Unit Properties.
2. From the Unit Properties window, either double-click the first channel in the Dante Audio Reception section, or select the first channel and click the “Edit Source” button.
3. From the Select Network Audio Source window, select the desired transmit bus.
4. Click OK. The Unit Properties window is now updated with the transmit bus and channel information.

5. Click OK.

6. Push the site file and Composer will make the Dante subscriptions for the channels.
Assign Transmit Bus to Unsupported Third-party Devices

Once the transmit bus has been created, the assignments or subscriptions to the unsupported device is done outside of Symetrix Composer.

Generic Network Transmit Bus

Here are the instructions for assigning transmit channels to a Generic Network Transmit Bus:

*Note: In this example, audio is transmitted from a Radius AEC to an Attero Tech unDAES-0, using the transmit bus from the Creating Transmit Bus section.*

1. Make sure your PC is connected to the Dante network.
3. Expand the transmit and receive devices to show their available channels.
4. Click on the channel cross-points to create a subscription.
5. Successful subscriptions are indicated with green checks. To verify audio is passing across the network, double-click the name of the transmit device to open the Device View page.
6. Select the Transmit tab.
### Transmit Buses

<table>
<thead>
<tr>
<th>Channel</th>
<th>Signal</th>
<th>Channel Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td></td>
<td>Transmit Demo-Ch 1</td>
</tr>
<tr>
<td>02</td>
<td></td>
<td>Transmit Demo-Ch 2</td>
</tr>
<tr>
<td>03</td>
<td></td>
<td>Transmit Demo-Ch 3</td>
</tr>
<tr>
<td>04</td>
<td></td>
<td>Transmit Demo-Ch 4</td>
</tr>
<tr>
<td>05</td>
<td></td>
<td>Transmit Demo-Ch 5</td>
</tr>
<tr>
<td>06</td>
<td></td>
<td>Transmit Demo-Ch 6</td>
</tr>
<tr>
<td>07</td>
<td></td>
<td>Transmit Demo-Ch 7</td>
</tr>
<tr>
<td>08</td>
<td></td>
<td>Transmit Demo-Ch 8</td>
</tr>
<tr>
<td>09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total: 1 of 32

Unicast: 1
Multicast: 0
7. The signal indicator will be green if an audio signal is present on that channel. Next use the drop down menu to navigate to the receiving device.
8. Select the Receive tab. The signal indicator will be green if an audio signal is present on that channel.

<table>
<thead>
<tr>
<th>Channel</th>
<th>Signal</th>
<th>Connected to</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>AES Out CH1</td>
<td>Transmit Demo-Ch1@Radius-AEC-CL-AES-1</td>
<td></td>
<td>✔️</td>
</tr>
<tr>
<td>AES Out CH2</td>
<td>Transmit Demo-Ch2@Radius-AEC-CL-AES-1</td>
<td></td>
<td>✔️</td>
</tr>
<tr>
<td>AES Out CH3</td>
<td>Transmit Demo-Ch3@Radius-AEC-CL-AES-1</td>
<td></td>
<td>✔️</td>
</tr>
<tr>
<td>AES Out CH4</td>
<td>Transmit Demo-Ch4@Radius-AEC-CL-AES-1</td>
<td></td>
<td>✔️</td>
</tr>
</tbody>
</table>
For more information about Composer’s Sync Push and Pull options, click here.
AES67 Transmit Stream

When using Symetrix Dante-enabled DSPs to transmit audio using AES67, there are a few key points to keep in mind:

- Symetrix Dante-enabled DSPs are compatible with AES67, but are not AES67 specific hardware.
- AES67 stream assignments are handled by the receiving device:
  - AES67 streams will only appear as a transmitter in Dante Controller.
  - AES67 transmit streams from a Symetrix Dante-enabled DSP will NOT be assignable in Dante controller.
  - Here is a link to set up AES67 receive flows with Q-SYS: https://www.qsc.com/resource-files/applicationguides/systems/q_qsg_sys_dn_qsys_aes67.pdf
- AES67 is capable of unicast and multicast communication, however Dante currently only supports multicast.
- When two Dante-enabled devices are passing audio between each other they will always use Dante for the communication, regardless of AES67 streams.
- Audinate’s Ultimo chipset does not currently support AES67.

Here are the steps to create AES67 transmit streams:

1. Open the site file to the Design View page.
2. From the Toolkit, expand Network I/O Modules, then expand Transmit Modules.
3. Add a New Network Transmit Module. The Network Transmit Module Properties window will open.

4. Edit the name of the transmit bus.

   Note: Naming of transmit buses is very important for organization.
Transmit Buses

5. Select the number of channels in the transmit stream.

6. Select the transmit bus type.
7. Name the individual transmit channels.

8. Click OK and the transmit bus will be added to the site file.
Additional information about Dante and AES67 may be found in the following Tech Tips:

Tech Tip: Adding Third-party Dante Devices to the User Library
Tech Tip: Composer 6.0 Sync Push & Pull Options
Tech Tip: Adding Multiple Sources to a Single Network I/O Receive Module
Symetrix White Paper: Connect the Shure Dante Series Wireless Receiver to Symetrix Dante Hardware

© 2018 Symetrix, Inc. All rights reserved. Printed in the United States of America. Mention of third-party products is for informational purposes only and constitutes neither an endorsement nor a recommendation. Symetrix assumes no responsibility with regard to the performance or use of these products. Under copyright laws, no part of this price list may be reproduced or transmitted in any form or by any means, electronic or mechanical, without permission in writing from Symetrix, Inc. If, however, your only means of access is electronic, permission to print one copy is hereby granted. The following are either Trademarks or Registered Trademarks of Symetrix, Inc.: Symetrix, SymNet, SymNet Designer, Composer, SymLink, CobraLink, Edge, Radius, Prism, Solus NX, Jupiter, xIn 4, xIO 4x4, xOut 4, xIn 12, xOut 12, xControl, and ARC. Windows is a Registered Trademark of Microsoft, Inc. Decora is a Registered Trademark of Leviton. Dante is a trademark of Audinate Pty Ltd. Other product names mentioned herein may be trademarks and/or registered trademarks of other companies and are property of their respective owners.