BOSCH

OMNEO Control Software

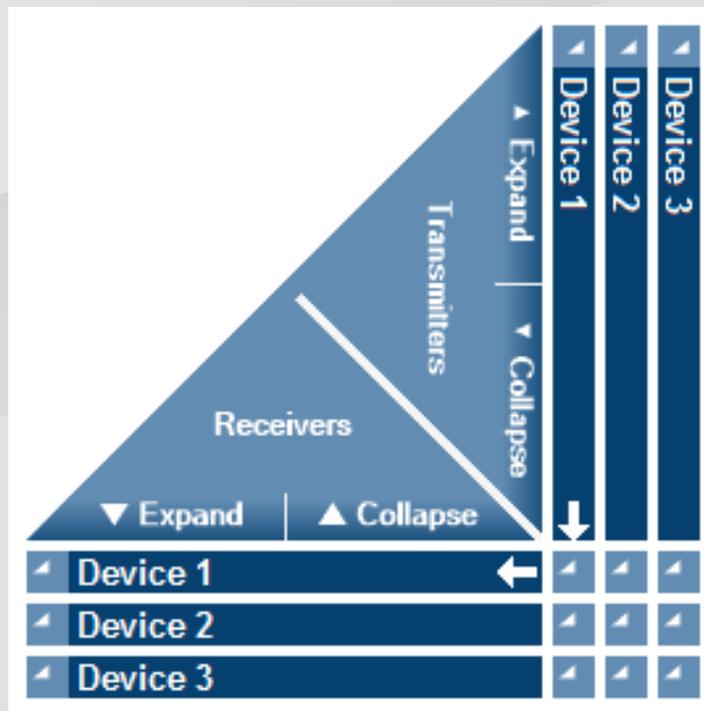
en Software manual

Table of contents

1   Safety

Prior to installing or operating products, always read the Important Safety Instructions which are available as a separate multilingual document: Important Safety Instructions (Safety_ML). These instructions are supplied together with all equipment that can be connected to the mains supply.

2 About this manual

The purpose of this manual is to provide information required for operating the OMNEO Control software. This manual is available as a digital document in the Adobe Portable Document Format (PDF). A related manual on this subject is:
– OMNEO Resource Guide

Refer to these manuals and to other product related information at: www.boschsecurity.com.

2.1 Intended audience

This manual is intended for users of the OMNEO Control software.

2.2 Copyright and disclaimer

All rights reserved. No part of this document may be reproduced or transmitted in any form by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher. For information on getting permission for reprints and excerpts, contact Bosch Security Systems B.V..

The content and illustrations are subject to change without prior notice.

2.3 Document history

Release date	Documentation version	Reason
2016.11	V1.0	1st edition (Word).
2017.02	V1.1	Updated version.

3   System overview

OMNEO open media networking architecture, developed by Bosch, is a combination of hardware, software, and communication protocols that provides high-quality, uncompressed, low latency, multi-channel digital audio over standard Ethernet IP networks and/or standard Ethernet cables. OMNEO devices receive and transmit audio, using standard IP digital network equipment. These devices include microphones, loudspeakers, PA-systems, conferencing systems, professional audio stage equipment, DAB/FM radio, etc.

3.1   OMNEO environment

OMNEO is used in applications in which audio channels are transmitted to different locations over short and long distances. A single Ethernet cable can replace multiple traditional cables to transmit high-quality multi-channel audio safely and reliably.

The OMNEO Control software enables users to configure audio devices, and to route audio all over the network. With a single mouse click, users can create and remove audio connections between all OMNEO devices in a single- or multi-subnet network.

Since OMNEO is based upon Dante technology, audio connections made by Dante Controller are also detected and displayed, as long as the Dante devices are connected to the same subnet as the PC that is running OMNEO Control. Connections made by Dante Controller can be removed in OMNEO Control, and restored again as a unicast or multicast connection.

Key features of OMNEO Control
–   Detection and display of OMNEO and Dante devices:
    –   Overview of all OMNEO devices in all subnets of the network.
    –   Overview of all Dante devices in the subnet of the PC that is running the OMNEO Control software.
    –   Overview of devices which are transmitting and/or receiving.
    –   Easily check if audio streams are transmitted as one-to-one (unicast) or one-to-many (multicast).
    –   Search devices.
–   Controlling audio connections on a PC:
    –   Create and remove connections between devices.
    –   Automatic restoration of audio routing after a power failure.
    –   No need for a dedicated controller device.
    –   High-reliability design for critical applications.
–   Support for single- and multi subnets.
    –   Control at least 250 audio channels on gigabit networks.
    –   Setup network by using standard IP network equipment.
–   Automatic selection of unicast and multicast:
    –   Automatic switching between unicast and multicast audio streams.
–   Store and reload scenario presets:
    –   Create, save, and apply audio routing presets.
    –   Lock current audio state to prevent the system from unintended changes.
–   Device configuration for OMNEO devices:
    –   Assign a unique alphanumeric name to each audio device.
    –   Set device network topology mode to Daisy Chain, RSTP (loop), or Glitch-free.
    –   Manage device settings (latency and sample rate).

OMNEO Control supports OMNEO and Dante devices. OMNEO couples Audinate's Dante Audio Transport Protocol with OCA, a proven system control protocol for unprecedented reliability and dependability in digital audio. OCA was developed by the OCA Alliance and has been standardized by the AES (Audio Engineering Society) as AES70.

The OMNEO Control software is available for the Windows operating system (see also *Software requirements, page 9* for more details).

> **i**
>
> **Notice!**
> Network installation is not part of this manual and needs to be defined in consultation with your computer administrator or local IT department. See also the OMNEO Resource Guide.

> **i**
>
> **Notice!**
> This notice states an important difference between OMNEO Control and Dante Controller and persistence. Persistence implicates that connections are automatically restored after a power failure. Unicast and multicast connections made with OMNEO Control are persistent only if OMNEO Control is set in Lock mode. Unicast and multicast connections made with Dante Controller are persistent, even after the Dante Controller application is closed.

3.2   Hardware requirements

An OMNEO network may consist of a single subnet with one or more switches, or multiple such subnets connected via one or more routers. Next to these routers a multi-subnet environment also requires one or more ARNI devices, as shown in the figure following. See also the OMNEO Resource Guide for requirements that apply to the network, switches, routers, ARNI devices, and network cables.

Each node in each subnet represents a device. Each device is connected by one or two individual Ethernet cables to the subnet switch or to another node in the network.
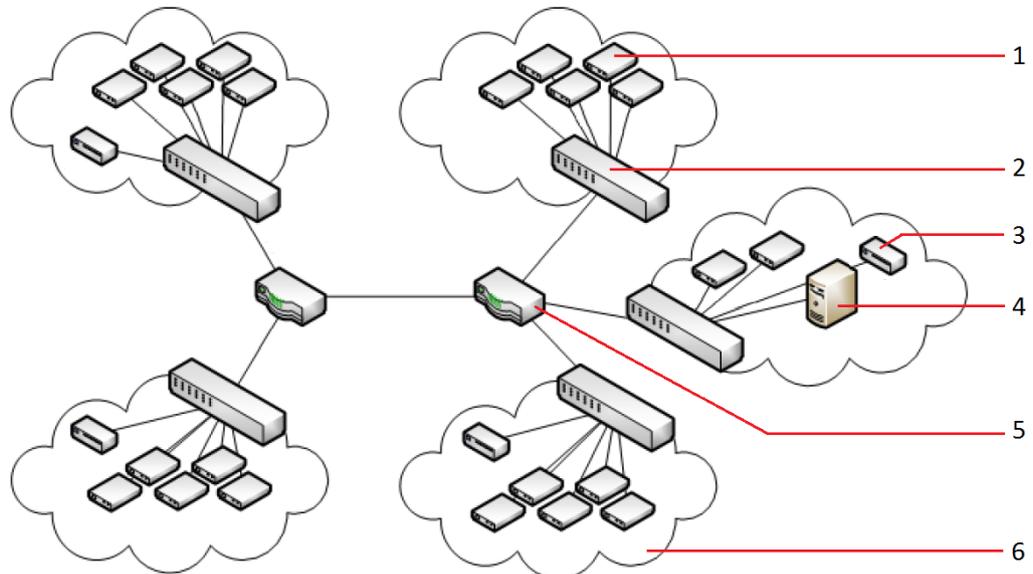

Figure 3.1: Typical OMNEO audio network environment.

1	OMNEO Device	2	IP Switch
3	ARNI device	4	PC running OMNEO Control
5	IP Router	6	Subnet

	Notice!
i	Installation of hardware devices is not part of this manual. Refer to the OMNEO Resource Guide, and to product related information on www.boschsecurity.com.

3.3   Software requirements

The minimum system requirements to run the OMNEO Control software on a desktop or laptop are listed in the table below. However, there might be individual limitations that interfere with the OMNEO Control software, even if your computer meets these requirements. If this is the case, please consult your computer administrator.

Processor	X86 or X64 Dual core 2.4GHz
Memory	4 GB - If a network contains 100 or more audio devices, a minimum of 6 GB memory is preferred
Free disc space	1 GB
Operating System	Windows 7, Windows 8.1 or Windows 10 Professional; 32-bit or 64-bit
OS Updates	All Windows versions must have the latest Service Packs and updates installed.
Screen resolution	1024 × 768 pixels16-bit or 32-bit color depth
Network	Ethernet connection

3.4   License requirements

While installing the OMNEO Control software, the **End-User License Agreement** window will show up. This window contains the BOSCH SECURITY SYSTEMS B.V. LICENSE AGREEMENT FOR SOFTWARE. Review and optionally print a copy of the agreement, then click the **I accept the terms in the License Agreement** check box.

Before using the OMNEO Control software, and after installing the software, read the Open Source Software license agreement. This agreement is accessible via the Windows Start button, under the Bosch section, and can also be found in the Program Files folder on your Windows computer:

`C:\Program Files\Bosch\OMNEO\OMNEO Control\Licenses_OMNEOControl.txt`

OMNEO Control uses Open Source Software with multiple licenses. All licenses conditions are available in this file.

4 Software installation

The OMNEO Control software can be downloaded from:
https://licensing.boschsecurity.com/omneo/

4.1 Downloading OMNEO Control

Download the file as follows:
1. The download is a zip file archive. Zip file archives have a .zip file name extension.
2. Please make sure to download the right version for your system 32 or 64 bits (pressing the hotkey Windows+Pause will open a window with information about your system).
3. Save the zip file to a folder on your Windows computer.
4. Windows will unpack the downloaded zip file archive when you right click on the file name and select **Extract**.

4.2 Installing OMNEO Control on a Windows PC

The extracted file is an executable (.exe) file. Double-click on the file name to start the **Install wizard for OMNEO Control**.
The wizard guides you through the following steps:
1. Welcome screen, click **Next**.
2. End-User License Agreement. Review and optionally print a copy of the agreement, then click the I accept the terms... check box. Click **Next**.
3. The install process starts. A progress bar shows the status of the install process.
4. As soon as this is done, click the **Finish** button, followed by clicking the **Close** button
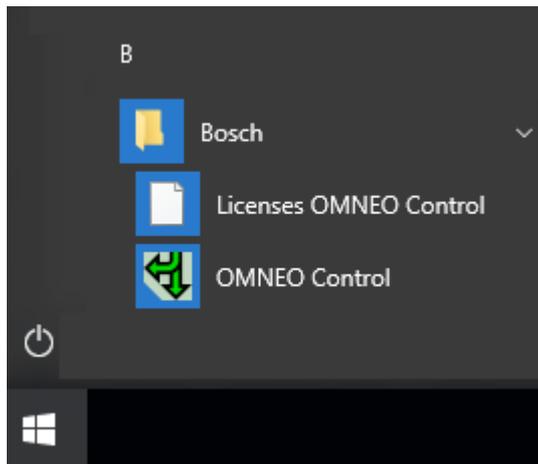

Figure 4.1: Bosch group in the Windows 10 Start menu

On the Windows Start menu you will find the group: **Bosch**. This group contains the following items:
– OMNEO Control software.
– Licenses OMNEO Control.

	Notice!
i	It is advised to install a virtual sound card on another PC than the one that is running the OMNEO Control software.

4.3   Updating OMNEO Control

Check our website for new updates:
https://licensing.boschsecurity.com/omneo/
Follow the procedure as described under chapters *Downloading OMNEO Control, page 10* and *Installing OMNEO Control on a Windows PC, page 10* to download and install a new update.

If you want to install a new version of OMNEO Control, you don't need to uninstall the current version first. After updating a reboot of the Windows PC will be necessary.

4.4   Uninstalling OMNEO Control

If for some reason you want to uninstall OMNEO Control, follow the Windows Uninstall procedure: navigate to **Control Panel** > **Software** > **Programs and Features** > select the OMNEO Control software > click **Uninstall**.

5   Getting started tutorial

This tutorial will help you become familiar with the basics of OMNEO Control. You will learn how to start the application, make connections between audio devices, create, save, and lock audio presets.

Notice!

Do NOT perform the following steps in a live or production environment. Make sure all OMNEO and Dante audio devices in your network are available for testing purposes.

---

1.   Ensure that the network and all devices comply with the system requirements, as described in the OMNEO Resource Guide.
2.   Ensure that all devices are running and that they are connected to the network. See also the OMNEO Resource Guide.
3.   Make sure that the OMNEO Control software is installed on your Windows PC (see also *Installing OMNEO Control on a Windows PC, page 10*).
4.   Start the OMNEO Control software. From the **Windows Start menu** select: **Programs** or **All Programs** > **Bosch** > **OMNEO** > **OMNEO Control**.
5.   OMNEO Control will now check your network environment. If two or more networks are detected, a dialog is shown. Select the appropriate network.
6.   If this is the first time you start OMNEO Control, then Windows Firewall will display a security warning. Check the check box 'Private networks ...' and click the Allow access button to proceed.
7.   The OMNEO Control Main Screen opens. Audio devices in the network are automatically detected by OMNEO Control and shown in the Routing Matrix. It may take a while for Dante devices to show up, OMNEO devices tend to appear immediately. Transmitter devices are shown horizontally and Receiver devices vertically.

Notice!

OMNEO Control detects and supports OMNEO devices in all subnets of the network. Dante devices are also detected and supported if they reside on the same subnet as the PC that is running the OMNEO Control software. See also *Filter, page 25*.
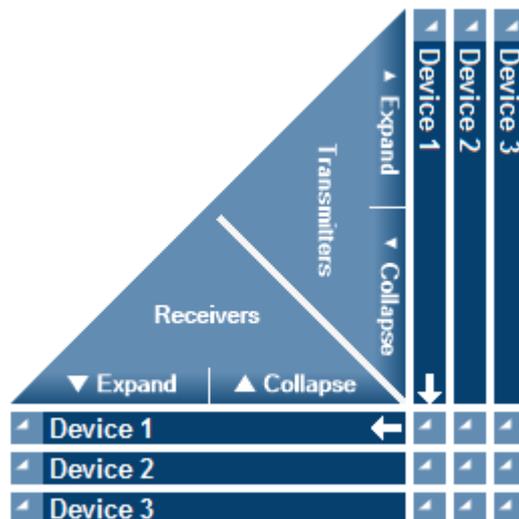

Figure 5.1: OMNEO Control Routing Matrix.

8.   Click the two **Expand** buttons in the Routing Matrix to see all devices and their transmit and receive channels.

Notice!

A Transmit channel is a channel that puts audio data onto the network. These include audio sources, for example microphones, streaming audio players from the internet, radio, audio-CD players, etc. A Receive channel is a channel that reads audio data from the network. These are audio sinks, for example loudspeakers, amplifiers, etc.
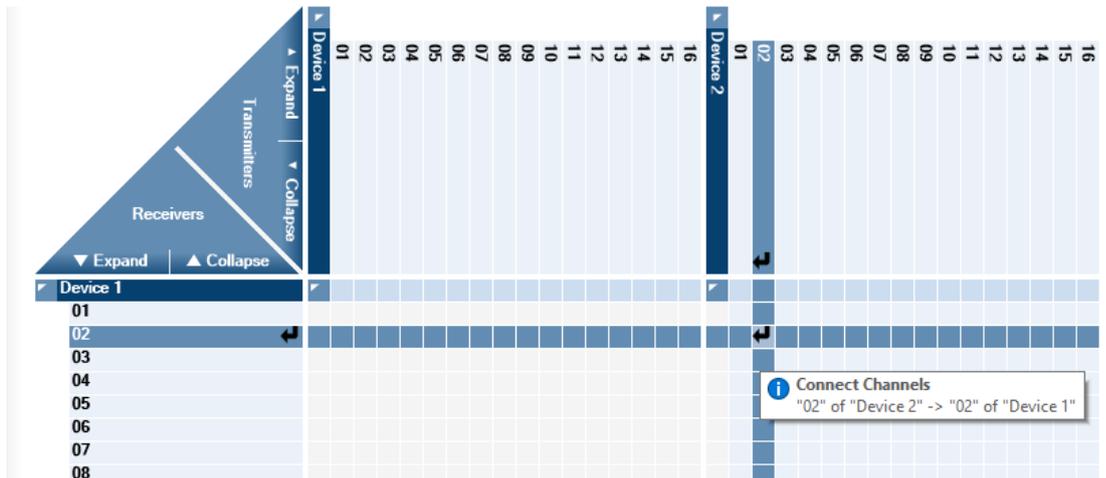

Figure 5.2: Each connection is represented by three identical icons (see also *Cross Points, page 22***).**

9. The **Connecting** icon appears. After the connection is made, this icon is replaced by one of the icons in the table (see next page). Hover over the icon to get a tool tip with details about the connection. Two identical copies of the icon appear at the beginnings of the transmit and receive channels.

10. Test the automatic refresh functionality: switch off one of the devices. Within seconds, the device name disappears from the Routing Matrix. Switch the device on again and OMNEO Control will automatically discover the device and display its name in alphabetical order in the Routing Matrix.

11. Find the transmit channel and the receive channel you want to connect. Hover over the Routing Matrix, move your mouse cursor to the matching cross point and click. See also the icons table at the end of this chapter.
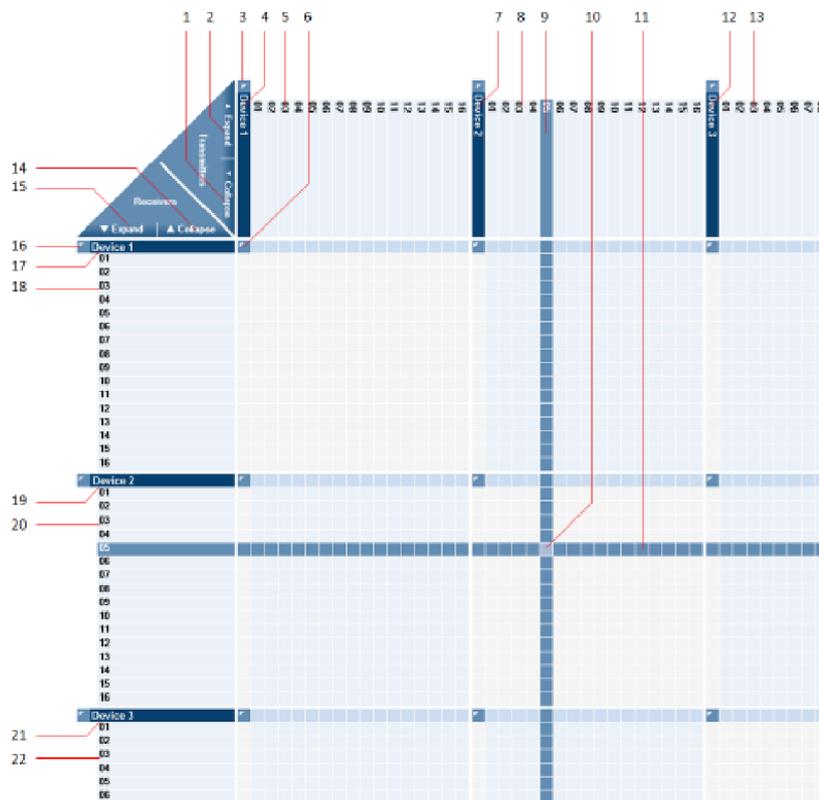
Figure 5.3: Routing Matrix, expanded.

1	Collapse all transmitter devices	2	Expand all transmitter devices
3	Collapse/Expand one transmitter device	4	Device 1, transmitter part
5	Transmit channels 1-16 belonging to Device 1	6	Collapse/Expand nearest transmitter and receiver devices
7	Device 2, transmitter part	8	Transmit channels 1-16 belonging to Device 2
9	Selected transmit channel	10	Cross point
11	Selected receive channel	12	Device 3, transmitter part
13	Transmit channels 1-8 belonging to Device 3	14	Collapse all receiver devices
15	Expand all receiver devices	16	Collapse/Expand one receiver device
17	Device 1, receiver part	18	Receive channels 1-16 belonging to Device 1
19	Device 2, receiver part	20	Receive channels 1-16 belonging to Device 2
21	Device 3, receiver part	22	Receive channels 1-8 belonging to Device 3

12. Add some more connections. The Routing Matrix refreshes automatically within a few seconds after each change. Only one connection can exist for each receive channel. As soon as you make a new connection on the receive channel, any existing connection on the horizontal row will be removed and replaced by the new connection.

13. By default, every new connection you make is a one-to-one channel link. However, a large number of one-to-one channel links may have a negative effect on the network's bandwidth. To prevent this, OMNEO Control can automatically change a source transmitting unicast into multicast depending on the number of connections. When this number or **Link limit** is reached, one of the following actions will occur:

    – OMNEO Control will show a dialog, asking you what to do: Keep using the multiple one-to-one channel links or switch over from multiple one-to-one channel links (unicast) to a single one-to-many channel link (multicast).

    – OMNEO Control will automatically perform a switch over from multiple one-to-one channel links (unicast) to a single one-to-many channel link (multicast).

    – OMNEO Control will maintain the multiple one-to-one channel links (unicast).

    – Which of these actions occurs depends on your **OMNEO Control Application Settings** (see also Application Settings).

    – Changes made to the settings are kept when the tool is closed and restarted again. It remembers your preferences.

Notice!

When determining the current number of connections, OMNEO Control counts all unicast and multicast connections. Dante and Local loopback connections are not taken into account, because they do not influence the Link limit.

Figure 5.4: Example of OMNEO Control production environment; notice the BlackNet5 device that has transmit channels only (see also figure 6.5).

14. To delete a connection just click on it. The icon (unicast, multicast, Dante or Local Loopback) and the audio route are deleted from the devices.

15. **Audio Presets** are meant to save all actual audio and routing settings in an XML-file (see also *Audio Presets, page 27*). Create the Audio Preset by clicking the **Save Preset** button and giving it a name, for example. 'Audio Preset test.xml'.

16. Change one or two settings in the Routing Matrix and restore the saved Audio Preset by clicking **Load Preset**.

17. The Lock option prevents the audio system from unattended changes to the audio settings and Routing Matrix. Click the check box **Lock current audio state**. A big red padlock symbol in the upper left corner of the Routing Matrix indicates the Lock mode. In Lock mode, audio will continue to flow according to the connections in the Routing Matrix, but none of the settings can be changed. To unlock, just click the check box **Lock current audio state** again.
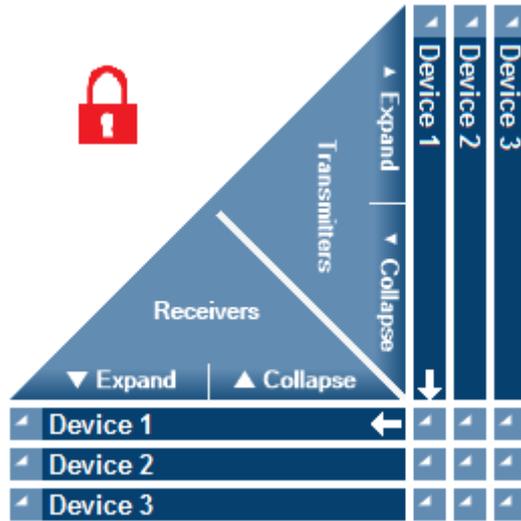
Figure 5.5: Red padlock symbol indicates Lock mode.

18. From the OMNEO Control Main Screen you can open two windows with configurable settings: device settings and application settings. In Lock mode both windows are still accessible, but then the settings are view-only.

   – All device settings can be monitored and modified in the **Device Overview** window. Click **Device Overview** in the **Device Settings** section of the **Main Screen** to open the window:

   – The left pane of the window shows a list of all devices in the network. Update and sort the list alphabetically by clicking the '**Devices**' title once or twice. Select an OMNEO device by clicking on its name in the list and the right pane will show its settings. Device settings for Dante devices are read-only and cannot be changed. See also *Device Settings, page 35.* Close the window by clicking the cross in the upper right corner of the window.

   – All application settings can be monitored and modified in the **OMNEO Control Application Settings** dialog. Click the wheel-shaped icon in the left corner of the **Main Screen**:

- See also Application Settings. Close the OMNEO Control Application Settings dialog by clicking the Cancel button or OK button.

19. Close the OMNEO Control application by clicking the cross icon in the upper right corner of the **Main Screen**. After OMNEO Control is closed, the audio routing remains intact. So the audio will keep playing as long as the devices are not rebooted, and another tool in the network does not remove the audio routes.

> **Notice!**
>
> If you want the audio routing to remain intact and not influenced by other tools on the network or by a reboot of the devices, keep the OMNEO Control tool running and switch Lock mode on.

Icons table

Icon	Icon name	Description
↵	One-to-one channel link	Unicast connection. This icon indicates a one-to-one connection between a transmit and receive channel, also called a 'one-to-one channel link'. Unicast is the default connection type. Note: this type of connection is persistent only if OMNEO Control is in Lock mode.
↵	One-to-many channel link	Multicast connection. This icon indicates a one-to-many connection. The transmit channel is usually connected to two or more receivers, also called a 'one-to-many channel link'. If OMNEO Control shows a multicast icon when you expect a unicast icon, this may be due to link limits or device limitations (see also *Reaching the Link limit, page 31* and *Background information on channel link types, page 33*). Note: this type of connection is persistent only if OMNEO Control is in Lock mode.
⬚	Local Loopback	Transmit channel and Receive channel of the same device are connected.
Ⓓ	Dante	Optional green Dante icons in the Routing Matrix indicate connections that were defined by Dante Controller software. Note: these connections are persistent on the devices.
⚡	Connecting	The connecting icon is showed while OMNEO Control establishes a connection between a transmit channel and receive channel. If the connection fails, the icon will disappear after about 30 seconds.
✕	No connection possible	Gray crosses indicate a mismatch between devices, for example a difference in sample rate settings or devices that do not support Local Loopback.
🔒	Lock mode	Routing Matrix is in view only mode.

See also
– *Application Settings , page 30*

6   OMNEO Control application

OMNEO Control is an easy-to-use application to configure and manage audio connections in a network. The application runs on a standard Windows PC, without the need of a dedicated controller device.

6.1   Routing Matrix

The Routing Matrix is the center part of the Main Screen and is shaped like a grid. Along the top row of this grid all devices with their transmit channels are displayed, while all devices with receive channels are displayed in the column on the left-hand side of the grid. Devices with transmit as well as receive channels are displayed along the top row and in the column. The devices are sorted alphabetically.

6.1.1   Network devices

OMNEO Control will automatically detect all OMNEO devices in your network, which can span multiple subnets. OMNEO Control will collect their names, channels and settings. Names and channels are shown in the Routing Matrix on the Main Screen, while all settings can be found in the **Device Overview** window (press the **Device Overview** button on the Main Screen). One of these settings is the sample rate, which can be set at, for example, 48K or 96K (K=kiloHertz).

Transmitters and Receivers

Audio devices are receivers or transmitters or a combination of both. Transmitting devices include audio sources, for example analog or digital microphones, streaming audio players from the internet, radio, audio-CD players, etc. Receiving devices are analog or digital audio sinks, for example loudspeakers, amplifiers, etc. Many devices have receiving and transmitting capabilities. The icons in the Routing Matrix give a clear indication of which devices are currently transmitting and/or receiving.

Dante devices

Along with OMNEO audio devices OMNEO Control will also detect Dante devices in the network and show their names in the Routing Matrix. OMNEO Control can only detect Dante devices that are present in the same subnet as the PC that is running the OMNEO Control application. For example in figure 6.1, the Dante devices in subnets 1 and 2 are not detected, only Dante devices in subnet 3 are detected, because OMNEO Control is running in subnet 3.
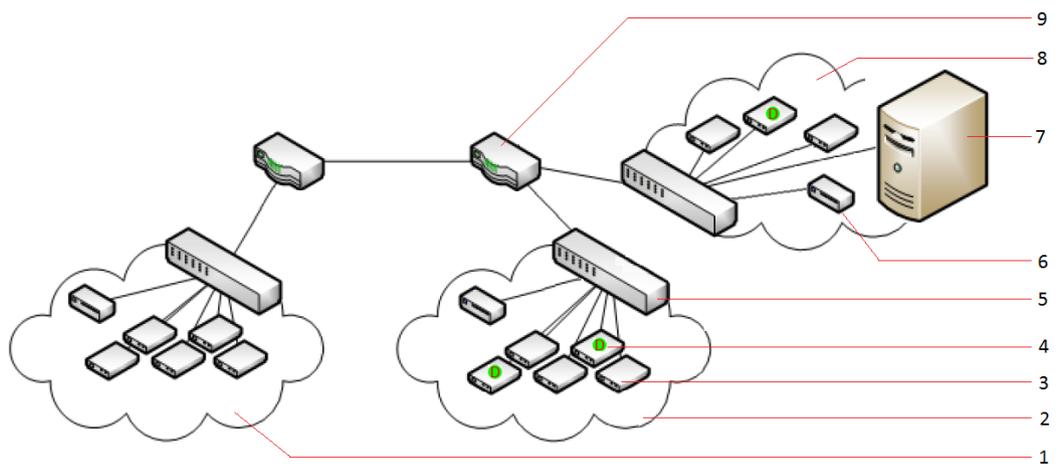

Figure 6.1: Physical network containing OMNEO and Dante devices.

1	Subnet 1	2	Subnet 2
3	OMNEO device	4	Dante device
5	IP switch	6	ARNI device
7	PC running OMNEO Control	8	Subnet 3
9	IP router		

Notice!

Using OMNEO devices you can extend connections across multiple subnets. You can also create unicast and multicast connections between Dante devices the tool detects, and between Dante and OMNEO devices in any of the subnets of your network. As a rule: unicast and multicast connections can be made between all devices the tool can find and displays in the Routing Matrix.

6.1.2 Channels

Transmitters and receivers have one or more channels. A channel that puts audio data onto the network is a **transmit channel** or output channel. A channel that reads data from the network is a **receive channel** or input channel. Many devices have both receiving and transmitting capabilities and therefore have transmit and receive channels.

6.1.3 Expand and Collapse

Displaying and hiding all channels and connections is made possible by clicking the **Expand** and **Collapse** buttons respectively. To display or hide the channels of one particular device, click the little white arrow next to the device name. It is not possible to zoom in on individual channels.
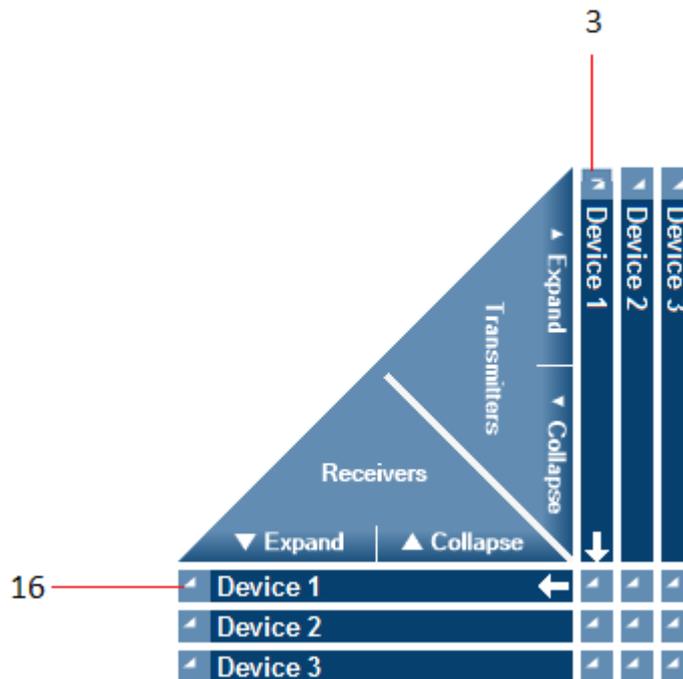

Figure 6.2: To hide or show the channels of a particular device, click the white arrow buttons (3 and 16).

6.1.4   Cross Points

A cross point is the little square box between a transmitter and a receiver in the Routing Matrix. Clicking it will establish a connection between the two. Establishing a connection takes a little time, during which a **Connecting** icon is shown in the square box. Once the connection is made, this icon is replaced by another icon (see also the icon table in *Software installation, page 10*). Hover over the icon to get a tool tip with details about the connection. Clicking again on the square box will break the connection. The square box is now empty.

> **Notice!**
>
> It is only possible to create connections between devices with the same sample rate setting.

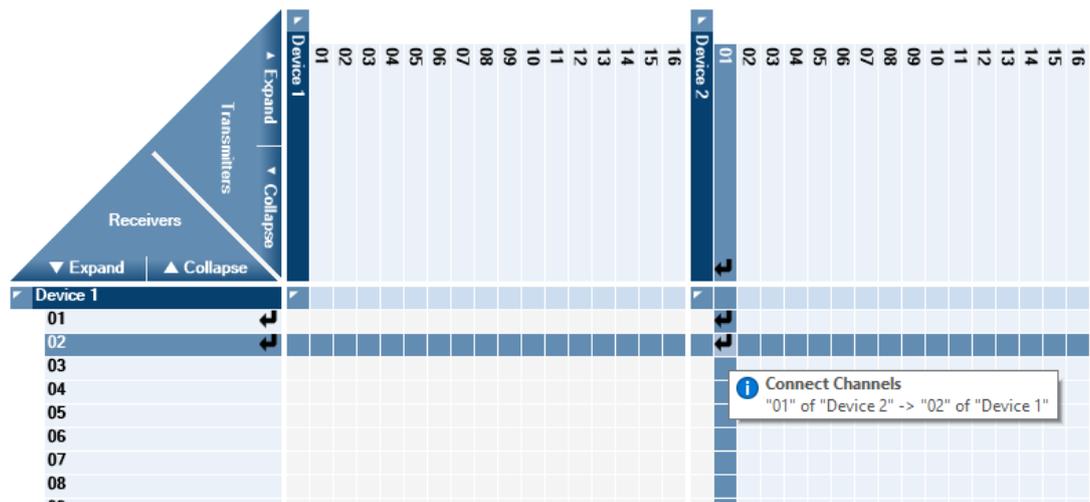**Figure 6.3: Tool tip at cross point in the Routing Matrix.**

A gray cross in the little square box indicates that a connection between a transmitter and a receiver cannot be made. This may be because devices are not compatible, or because a device does not support Local Loopback, or because of a difference in sample rate between the two devices. Change the sample rate of one of the devices to correct the latter.
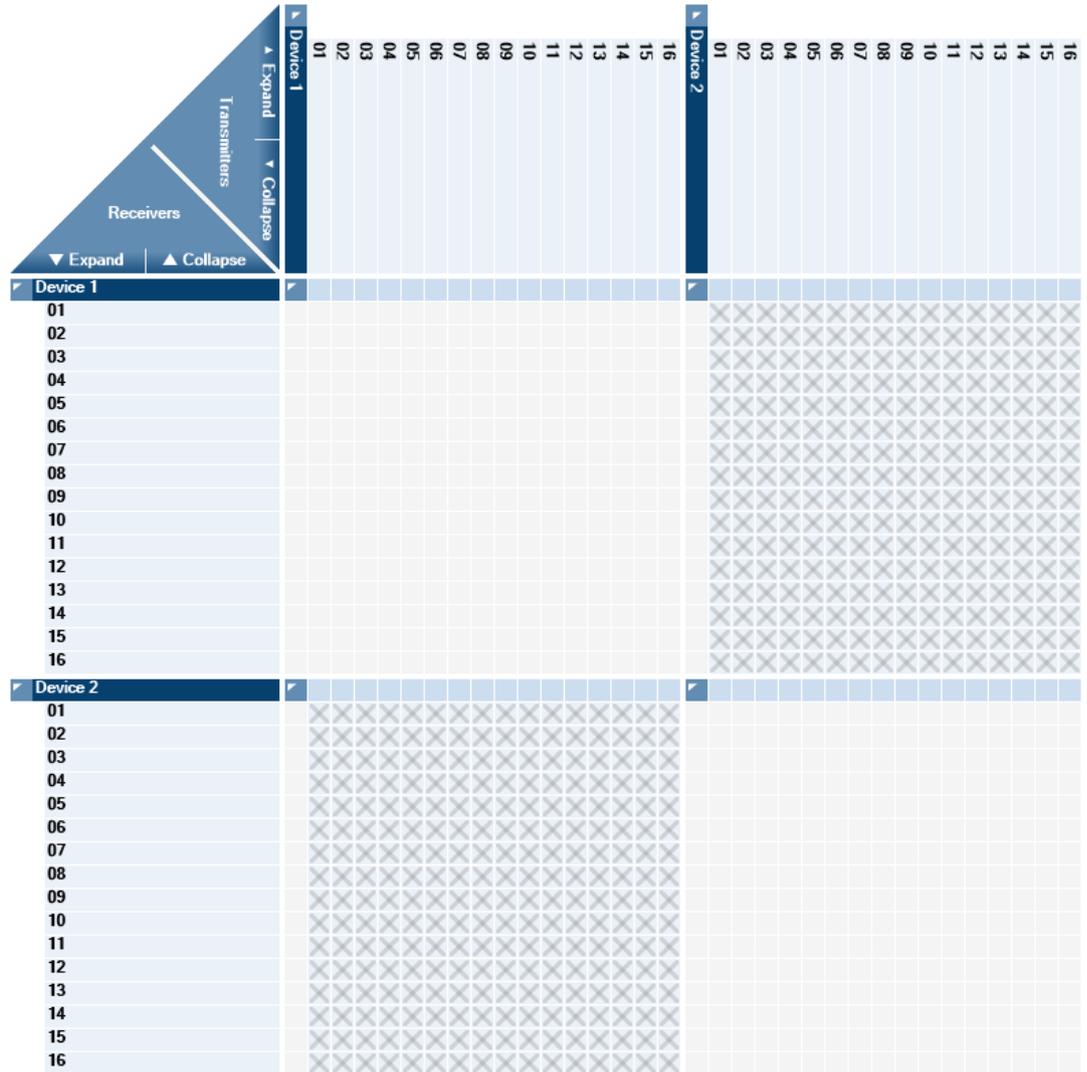
Figure 6.4: Gray crosses indicate that a connection between the two channels cannot be made.

Notice!
It is not possible to create, alter or delete connections while the system is in Lock mode. In Lock mode a red padlock symbol is displayed in the upper left corner of the Routing Matrix.

Notice!
If a problem with a connection occurs, hover the mouse over the connection icon to read the related tool tip.

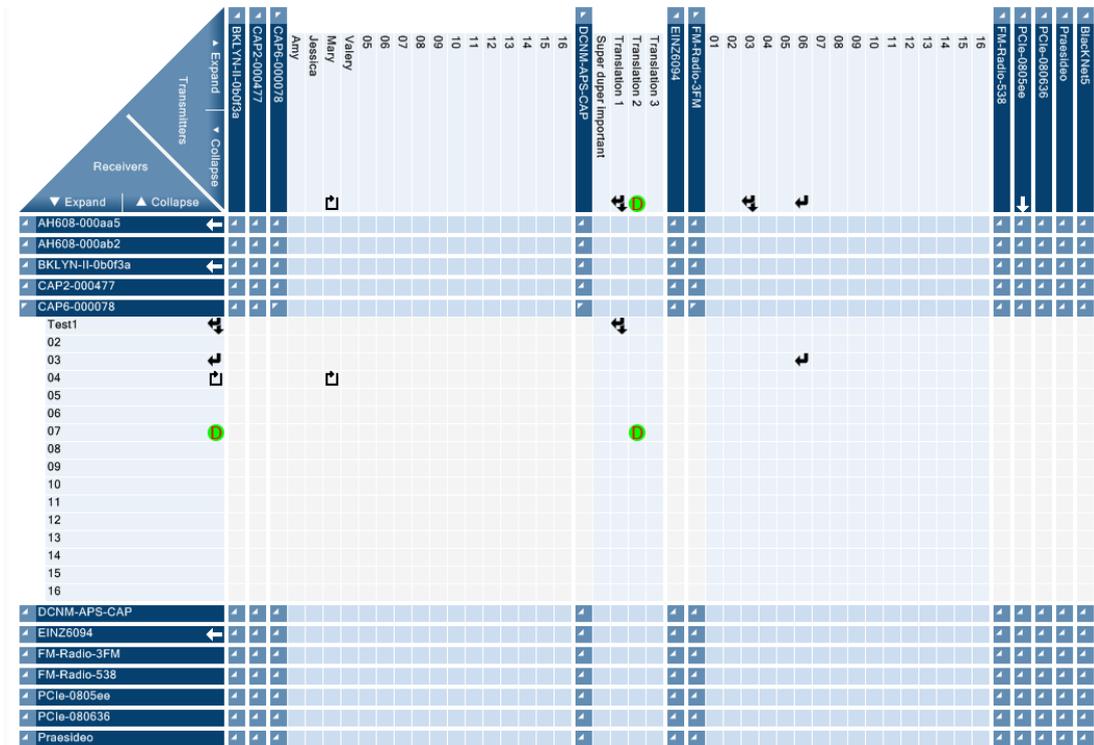| **Notice!** |
| --- |
| A connection is usually represented by three identical icons. However, the transmit channel icon can differ from the icon on the cross point. For instance, when a transmit channel also contains a Dante connection or a local loopback, unicast takes priority over the Dante or local loopback connection, showing a unicast icon. |

Figure 6.5: Example of OMNEO Control in a production environment with all sorts of connections.

6.1.5   Audio flows

OMNEO transmitting devices create 'audio flows'. Each audio flow carries one or more channels of digital audio. Depending on the type of connection, the flow goes from a transmitting device to one receiving device (Unicast routing) or to many receiving devices (Multicast routing). Besides these two distribution methods, there are two more types of audio flows: Local Loopback and Dante. The routing status of each connection is indicated by an icon displayed at the cross point of a transmit channel and a receive channel in the Routing Matrix. See also the icon table in *Getting started tutorial, page 12*.

– **Unicast routing** generates 'one-to-one' audio flows, which only one device will receive.
– **Multicast routing** generates a 'one-to-many' audio flow that any number of receivers can receive. Use OMNEO Control to switch over from a unicast connection to multicast. For more information about switching from unicast to multicast, see also *Application Settings , page 30*.
– **Local Loopback**. This type of routing creates 'one-to-one' audio flows that a receive channel on the same device will receive. In fact, Local Loopback connects the output of a device with the input of that same device. Local Loopback connections do not use up any network resources, such as bandwidth.
– A **Dante connection** is indicated by a green D in the Routing Matrix. This type of connection was setup using Dante Controller software. OMNEO Control does not support Dante connections on a device level. The connection is shown but it is not possible to set device parameters. The connection can be removed by clicking it. By clicking the cross point again, OMNEO Control will replace the removed connection with a unicast connection.

6.2   Filter

Most OMNEO environments will contain many devices, making the Routing Matrix difficult to decipher. By using the filter, you can easily search for devices and show only the devices that match the contents of the name filter. This way you can focus on the devices that are relevant to you, while making all other devices temporarily invisible. You can filter by device name or transmitters and receivers, and you can filter on active connections.

6.2.1   Filter Transmitters

By typing a device name in the **Filter Transmitters** box, the top row of the Routing Matrix will only show the device that carries this name. If you type a fragment of a device name instead of the complete name, then the top row will show devices with names containing that fragment. For example, if you type "con" then possible results may be: ConferenceRoom-01, DCN-conf003, Stage-Con-Mike_44, etc.

The **Filter Transmitters** box is case-insensitive and accepts any alpha-numeric string. While typing the string in the **Filter Transmitters** box, OMNEO Control's filter function will give you an on-the-fly update.
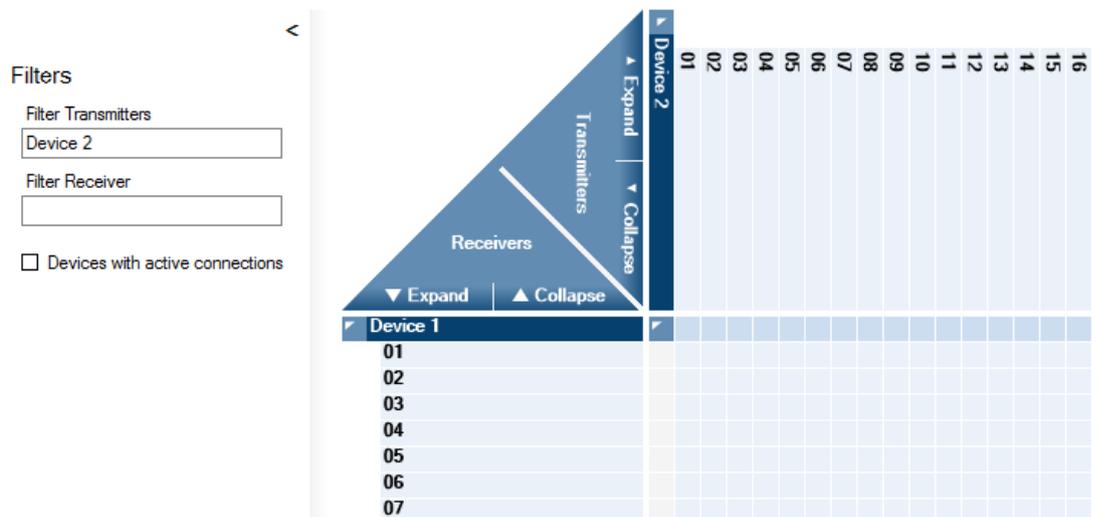

Figure 6.6: Show only transmitter "Device 2" in the top row of the Routing Matrix.

6.2.2   Filter Receivers

The functionality of the **Filter Receivers** box is equivalent to the **Filter Transmitters** box, but will show receiver devices in the left-hand column of the Routing Matrix.
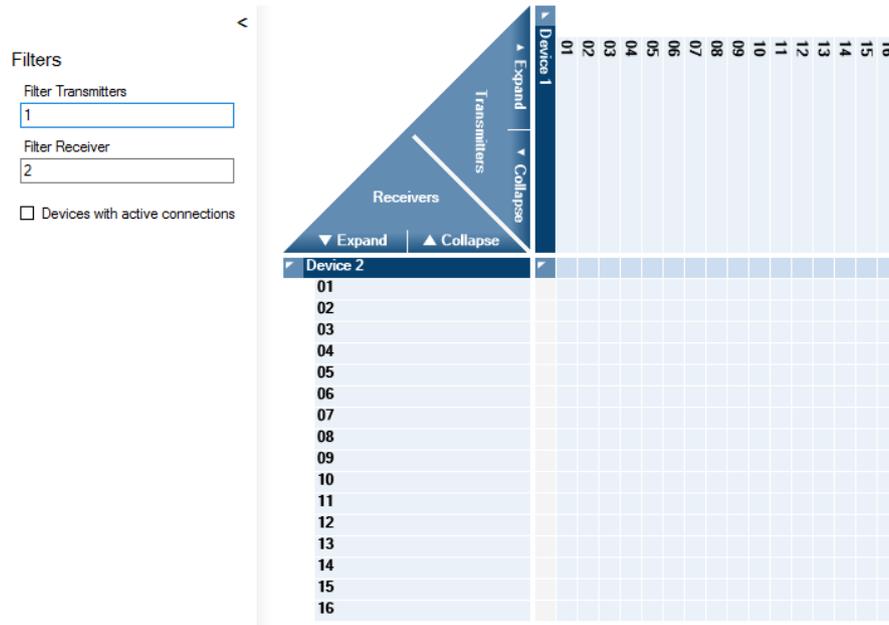
Figure 6.7: Show only receivers that have "2" in their device name, and transmitters that have "1" in their device name.

6.2.3   Filter on devices with active connections

If you want the routing matrix to show only devices with connected channels, then click the check box **Devices with active connections**. All devices that have no connected channels will be made invisible in the Routing Matrix. If a device has one or more connected channels, Local Loopback connections included, the device and all its channels are displayed.
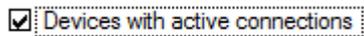
6.2.4   Stop filtering

To show all devices, without any filtering, just clear the **Filter Transmitters** and **Filter Receivers** text boxes, and uncheck the check box **Devices with active connections**.

6.3   Audio Presets

OMNEO Control supports the concept of 'presets'. Simply clicking the **Save Preset** button saves all current routing settings in a preset file. The settings are easily restored by clicking the **Load Preset** button and selecting the preset file name. Saving several preset files, each with a different name, enables you to store and restore different routing scenarios.

Presets can be used to:
–   Backup and restore routing settings.
–   Switch between different routing settings.
–   Save the production network scenario and use the network temporarily as a test network.
–   Change the network for special occasions, and – after the occasion has ended – restore the original routing settings.

Presets are saved as XML-files. The default location for the preset files on a Windows PC is the **My Documents** folder.

6.3.1   Saving Presets

To save a Preset that includes the current audio routing of all OMNEO and Dante devices in all subnets of the network:
1.   Click the **Save Preset** button from the **Audio Presets** section on the Main Screen.
2.   Accept the suggested file name or change the file name if required.
3.   Accept the default file location or change the file location if required.
4.   Click the **Save** button.

6.3.2   Loading Presets

To load a previously saved preset:
1.   Click the **Load Preset** button from the **Audio Presets** section on the Main Screen. Select the file location; the default location is the **Documents** folder on a Windows PC.
2.   Select the file name.
3.   Click **Open**.
4.   Wait until the original configuration is restored in all subnets.

i	**Notice!** Only the routing settings are stored in the preset file. Device settings, like sample rate and latency, are saved on the devices. For example, if the sample rate of a device has been changed after the preset file was saved, then this change will not be restored when loading the preset.

The type of flow that is restored depends on the current configuration settings. If for instance the Link limit changed, a former unicast connection might come back as a multicast connection. A Dante connection might be restored to a unicast connection.

6.4   Lock

The Lock function allows you to lock and unlock all routing connections and device settings. In Lock mode, audio will continue to flow according to the currently connected channels.
Settings and routings cannot be controlled or configured when Lock is engaged.
In Lock mode, a red padlock symbol is shown in the upper left corner of the Routing Matrix.
Lock mode is, in fact, a **view only mode** to prevent unintended changes.
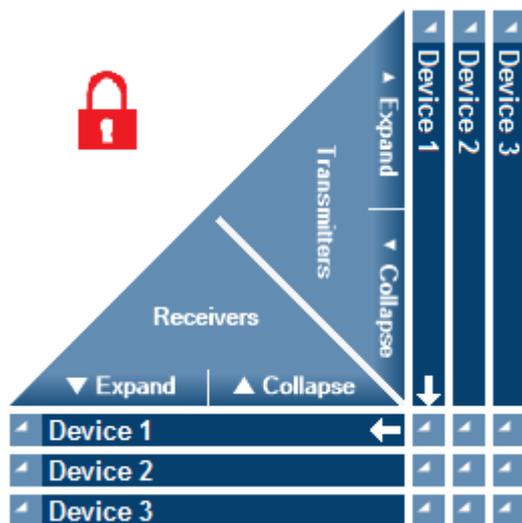
Figure 6.8: While in Lock mode a red padlock symbol is shown.

Notice!

If not for redundancy purposes, it is not recommended to have more than one session of OMNEO Control - or any other tool that allows changes to audio or device configuration – running, because this might lead to undefined issues.

For redundancy purposes, it is allowed to run two or more sessions of OMNEO Control, or any other tool that allows changes to audio or device configuration. Special care should be taken to avoid undefined issues! Follow these steps:
1.   Set all controller programs in **Unlock mode**.
2.   Define audio routing on one (!) controller only. The other controllers will replicate the routing automatically.
3.   Set all controller programs in **Lock mode**.
4.   Repeat these steps every time the audio routing needs changes.

| 6.4.1 | **Switching Lock on and off** |

To switch Lock on or off:

‣   In the Audio Presets section of the Main Screen click on the check box next **to Lock current audio state**.

Audio Presets
☐ Lock current audio state

Notice!

While OMNEO Control is in Lock mode, a user of a second occurrence of OMNEO Control or any other tool that allows changes to audio or device configuration, which is not locked, will still be able to change all routing connections and device settings. However, the first occurrence of OMNEO Control, which is in Lock mode, sets its connections every few seconds. This repetitive action is a property of the Lock mode. Because of this property, connection changes - made by the second user - will NOT hold. But changes in device settings – also made by the second user - may cause the audio system to behave in unexpected ways.

| 6.4.2 | **Storing of settings and routing** |

Device settings are stored on the devices, and routing settings are stored in an OMNEO Control preset file. Saving routing settings in a file instead of in the devices gives OMNEO two major advantages:

–   OMNEO Control can control OMNEO devices in all subnets, not only in the subnet in which the software is running.

–   The OMNEO Control Routing Matrix refreshes itself quickly, each time a change has been made.

These advantages require one important condition to be fulfilled: OMNEO Control must keep running. After OMNEO Control is closed, all audio connections remain intact.

Notice!

Closing OMNEO Control does not affect the existing audio routes. If no other audio control tool is active on the network, all audio connections remain intact, as long as the devices stay switched on. Switching off and on a device that is part of an audio route, will break the connection, because devices do not store information about their connections.

6.5   Application Settings

Audio must often be made audible in more places than one. With OMNEO Control you can achieve this, by making multiple connections from a transmit channel to multiple receive channels in the Routing Matrix. Clicking the appropriate cross points in one column of the Routing Matrix will result in multiple one-to-one channel links.
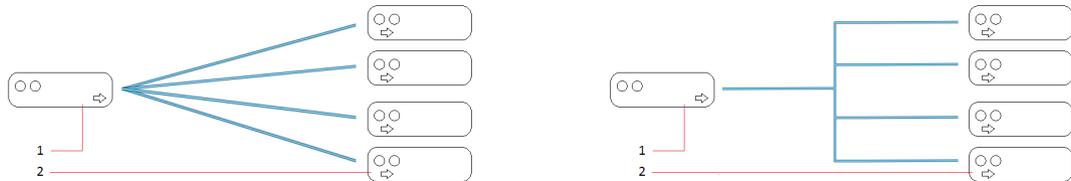

Figure 6.9: Multiple 'one-to-one channel links' (left) versus a single 'one-to-many link' (right).

1	Transmitter	2	Receiver

However, to avoid overloading the transmission device and influencing the used network bandwidth, it is advisable to limit the number of one-to-one links. The tool can automatically change multiple unicast channels into a single multicast channel when this limit is reached. The default value of this **Link limit** is 3 channel links. In the **Application Settings** window you can change the Link limit and configure how OMNEO Control should behave, every time the number of one-to-one connections reaches this **Link limit**. One possible action is to switch over from one-to-one channel links (unicast) to a single one-to-many channel link (multicast), which will put less stress on the transmitting device and the network. The Application Settings are:
–   Link limit.
–   Manually selecting unicast or multicast.
–   Automatically selecting unicast or multicast.
The next chapters explain how to use this feature.

6.5.1 Reaching the Link limit

Every time the **Link limit** is reached OMNEO will take action, depending on your **OMNEO Control Application Settings**. One of the following three actions can take place:

– OMNEO Control shows the **Configured channel link limit reached** dialog. In this dialog you are asked what kind of connection you want: keep using the **multiple one-to-one channel links** (unicast) or switch over to a single one-to-many channel link (multicast). Click on the appropriate action you want to take.

If you want OMNEO Control to automatically repeat the selected action, whenever the Link limit is reached again, then check the **Remember my choice** check box.
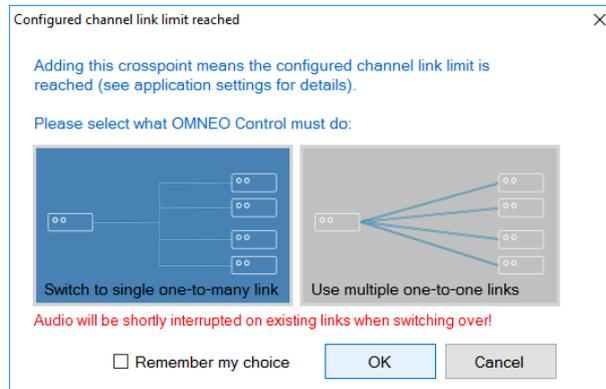
Close the dialog by clicking **OK**.

Figure 6.10: The active choice in the 'Configured channel link limit reached' dialog is colored blue.

– OMNEO Control will automatically perform a switch over from multiple one-to-one channel links (unicast) to a single one-to-many channel link (multicast). The switch over has the following effect:
    – The transmitter will start sending a multicast channel instead of multiple unicast channels
    – All existing unicast icons in the transmit channel will change into multicast icons.
    – Every new connection in the transmit channel will be part of the one-to-many connection and will show a multicast icon in the Routing Matrix.
– OMNEO Control will maintain the multiple one-to-one channel links (unicast). This will happen when the options **Use multiple one-to-one links** and **Remember my choice** have been selected. The Link limit setting option is disabled, because now the Link limit is of no importance.

Once the transmit flow is changed from unicast to multicast it stays that way, even if the number of remaining channel links – after removing some connections – goes below the Link limit. As long as there are receivers connected to that flow, the changed transmit flow remains multicast.

In this paragraph you learned about manual actions to be taken whenever the Link limit is reached. In chapter *Configuring OMNEO Control Application Settings, page 32* you will learn how to configure OMNEO Control to take actions automatically.

6.5.2 Setting the Link limit

The Link limit can be configured in the **OMNEO Control Application Settings** window:

1. Click the wheel-button in the lower left corner of the Main window. The **OMNEO Control Application Settings** window is displayed.
2. The **Link limit** box is situated in the lower left corner of the window. Its default value is 3 links and can be varied from 1 to 10 links.
3. Close the window by clicking **OK** or **Cancel**.

6.5.3 Configuring OMNEO Control Application Settings

The **OMNEO Control Application Settings** window allows you to configure how OMNEO Control should behave.

When the number of one-to-one channel links in the Routing Matrix reaches its limit:

1. Open the window and click the wheel-button in the lower left corner of the Main Screen.
2. The **OMNEO Control Application Settings** window is displayed.
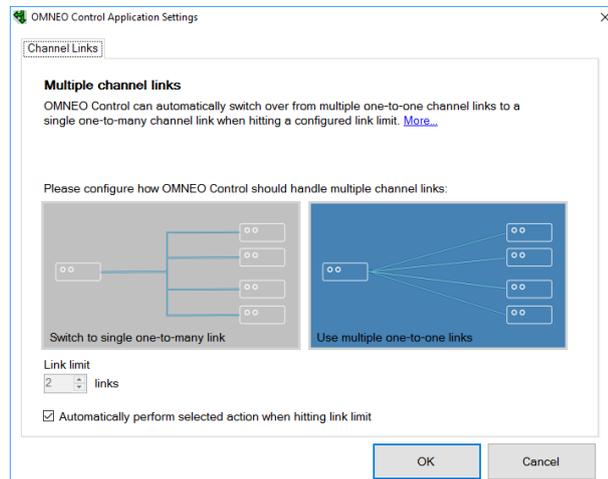

Figure 6.11: The OMNEO Control Application Settings window is displayed.

3. Select one of the following actions (to perform when the number of one-to-one channel links reaches the Link limit):
–   Automatically switch over from multiple one-to-one channel links to a single one-to-many link: Click on the box **Switch to single one-to-many link**. The blue colored box indicates the selected link type. Set the check box **Automatically perform selected action when reaching link limit** to checked.
–   Automatically maintain the multiple one-to-one channel links:
    Click on the box **Use multiple one-to-one links**. The blue colored box indicates the selected link type. Set the check box **Automatically perform selected action when reaching link limi**t to checked. The Link limit option is now grayed out, indicating the Link limit is of no relevance while the option **Use multiple one-to-one links** is active.
–   Display the **Configured channel link limit reached** dialog:
    Set the check box **Automatically perform selected action when reaching link limit** to unchecked.
4. Click **OK** to close the **OMNEO Control Application Settings** window.

Notice!

The check boxes Automatically perform selected action when reaching link limit (in the OMNEO Control Application Settings window) and Remember my choice (in the Configured channel link limit reached dialog) are synchronized. Checking or unchecking one of the check boxes simultaneously checks or unchecks the other check box.

6.5.4 Device limitations

On some audio devices the number of unicast connections is subject to a maximum due to technical limitations. This limitation prevents the device from creating an extra audio flow, when the number of one-to-one connections is at its maximum. If this is the case, OMNEO Control will automatically switch to a multicast connections, when creating the new channel link.

For example, a device has a maximum of 2 transmit flows. Its transmit channels have one-to-one connections with receive channels of two other devices. As soon as a user tries to connect one of the transmit channels to a third receiver, then all existing unicast connections on this transmit channel convert to multicast.

This (automatic) conversion is OMNEO Control's way to overcome the restrictions of the device and still create the connection that the user wants.

6.5.5   Background information on channel link types

OMNEO Control routing is one-to-one by default. The advantage of this unicast connection type is, that it uses up network resources only in the network path from transmitter to receiver. However, if multiple receivers want the audio from this transmit channel, many unicast connections are needed and many copies of the audio flow have to be transmitted. This results in a heavy workload for the transmitter, and more bandwidth usage in the path from the transmitter to the receiver.
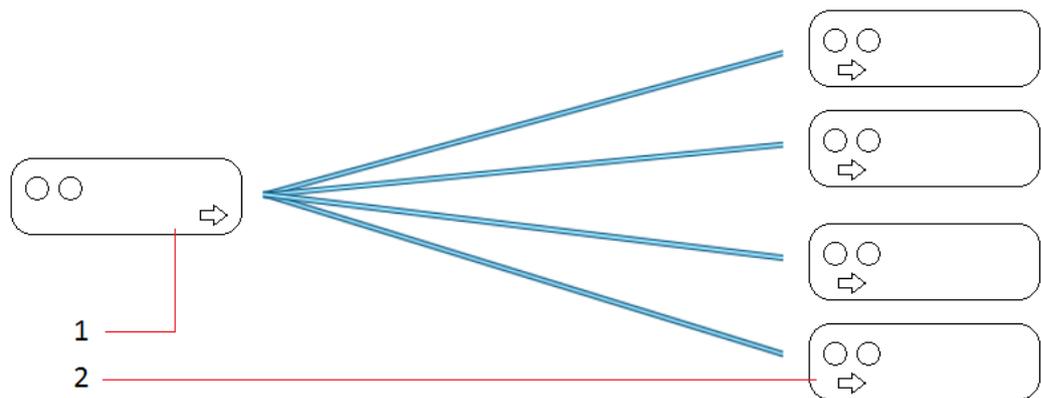

Figure 6.12: Multiple one-to-one connections; the transmitter sends a separate audio flow to each receiver.

1	Transmitter	2	Receiver

In these cases multicast connections may be a better choice. The advantage of multicast connections is, that only one copy of the audio flow is sent to multiple receivers. The audio flow is broadcasted throughout the entire subnet, and every device that is interested in the audio can receive it. This means audio is available for every device in the subnet and may be received when needed, without consuming extra resources or bandwidth.

This also means that all (!) devices in a subnet will receive the flow (unless IGMP Snooping is implemented, see also OMNEO Resource Guide), including devices that do not want the flow. For OMNEO and most Dante devices this is no problem but for some devices this could derogate their bandwidth.

This leads to the conclusion that multicast is friendly to the transmitter and to the network path from transmitter to receiver, if an audio flow has to be sent to multiple receivers. On the other hand unicast is more friendly to the overall network bandwidth and to all networked devices. With OMNEO Control you can choose the optimal connection type for your situation: use unicast by default, and switch over to multicast, as soon as 3 (or more) receivers have to be connected to the same channel. The default value of 3 will suit most users, but can easily be changed.
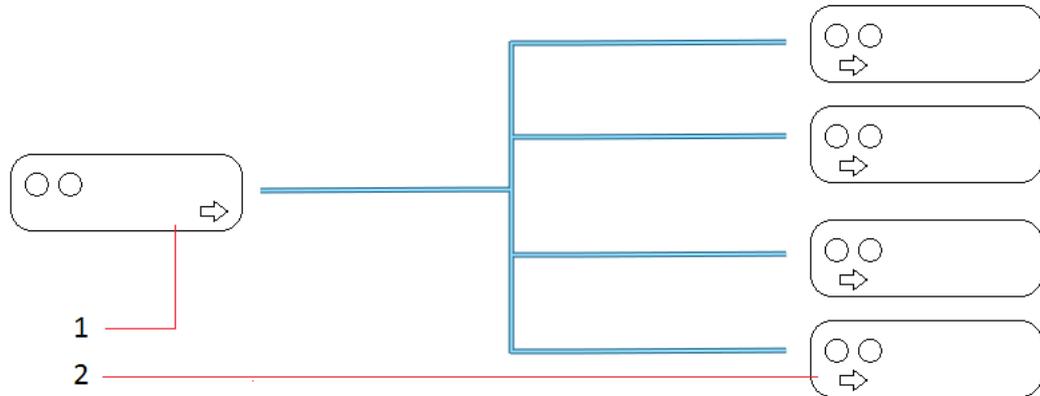
Figure 6.13: Single one-to-many connection; the transmitter sends a single audio channel, any device that is interested can receive the audio.

1	Transmitter	2	Receiver

Switching from unicast to multicast will reduce overall network usage, especially on the transmitter. OMNEO receivers will automatically switch over from unicast to multicast when it becomes available on the network. This is how it works: if a receiver is receiving a unicast audio flow, and this flow is replaced by a newly created multicast flow, then the receiver will immediately switch over to receiving the multicast flow. Meanwhile, the unicast flow is removed to relieve the transmitter and the network.

> **Notice!**
> Multicast audio is only transmitted to other subnets when these subnets do have one or more receivers.

> **Notice!**
> Switching over from one-to-one channel links to a one-to-many channel link introduces a short glitch in the audio flow. To prevent this from happening, force your system to maintain one-to-one channel links or set the Link limit to a higher value (see also *Setting the Link limit, page 31* and *Configuring OMNEO Control Application Settings, page 32*).

6.6 Device Settings

The **Device Overview** window displays a list of all audio devices in the network. For each device, the window will show you its parameters depending on the capabilities of the device. If one or more parameters are configurable, then the window also allows you to configure these parameters. The next paragraphs describe in detail all device parameters that can be set in the **Device Overview** window and how to change them. The device settings are:

– Device name
– Sample Rate
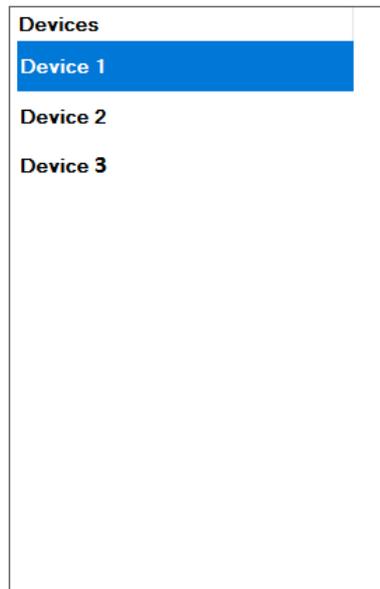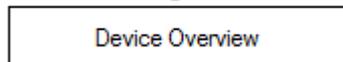– Latency
– Network Mode
– IP Settings

Figure 6.14: List of Devices – the selected device is highlighted.

6.6.1 Change device settings

Changing the settings of an audio device requires the following steps:

1. In the **Device Settings** section of the Main Screen, click the **Device Overview** button.

2. The **Device Overview** window is displayed. The left pane of the window shows the list of **Devices**. The device names in the list are sorted in ascending alphabetical order. To change the sorting order into descending, click the **Devices** title.
3. Depending on your network environment, the list shows:
   – OMNEO devices in all subnets; fully configurable settings.
   – Dante devices in one subnet; read-only settings.
4. Select a device by clicking on it; the selected device will be highlighted by a blue bar. The right pane shows the device settings for the selected device.
5. If you want to **Cancel** your changes, select another device in the **Devices** list or click the cross at the upper right corner of the window. If a dialog shows up asking **Do you want to discard the changes**? click **Yes**.

6.   When you are finished changing the device settings, click the **Save to Device** button. This button will only be active, after one or more settings have been changed.

Save to Device

7.   Some changes not only require to be saved but also require a reboot of the device before the changes become active. If this is the case, click the **Reboot Device** button.
   –   A dialog pops up to confirm the reboot request: **Are you sure you want to reboot the device**? Click **Yes**. While rebooting, the device temporarily disappears from the Devices list and the Routing Matrix. After a few minutes it automatically reappears at the bottom of the list.

Reboot Device
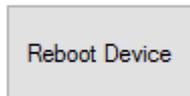
8.   Close the window by clicking the cross at the upper right corner of the window.

Notice!
Each time a device setting is changed, this will cause a noticeable interruption in the audio.

6.6.2 Device name

The device name of the selected device is shown in a text field on top of the **Device Overview** window. Change or type a new device name in the text field. The name you give must follow standard Domain Name System (DNS) name rules:
–   Length: 1..31 characters.
–   Characters: A-Z, a-z, 0-9, space, dash or hyphen.
–   No Unicode and non-Roman characters.
–   Names are case-insensitive, so 'Microphone01' is the same as 'microphone01'.
–   Names must not start or end with a dash.
–   Names must nut consist of all numeric values.

When you are finished setting the device settings, click the **Save to Device** button. After a name change, the device name will temporarily disappear from the **Devices** list. When the name reappears, it will be at the bottom of the list. Refreshing the list - by clicking twice on its title (**Devices**) - will position the device name in the correct alphabetical order in the list.

Notice!
With OMNEO Control's filter function you can define tailored views of the Routing Matrix, by selecting and omitting devices by name. Clever naming will result in better filtering results.

6.6.3 Audio Settings - Sample Rate

Two audio channels can only be connected by OMNEO Control if their respective devices are using the same sample rate. If the sample rates are different, the Routing Matrix will show gray crosses at the cross points. You can check the sample rates in the **Device Overview** window.
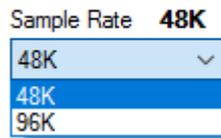
The current sample rate of the selected device is displayed in the **Audio Settings** section of the **Device Overview** window, for example, **48K** (K= kiloHertz).

To change this value (see also *Change device settings, page 35*):
1.   Open the **Device Overview** window.

2.   In the **Audio Settings** section open the pull-down menu.

Audio Settings

Sample Rate   **48K**

48K	⌄
48K	
96K	

3.   The menu lists all sample rates supported by the device. The list allows you to select the right operating sample rate, for example changing 48K into 96K. Changing the sample rate will require rebooting the device for the change to take effect.

> **Notice!**
>
> You can only make connections between devices and their channels, if these devices are running at the same sample rate. That is why it is advisable to choose the same sample rate for all audio devices in the network. For example 48K.

6.6.4   Latency (delay)

Latency refers to a short period of delay between the moment an audio signal enters a system and the moment it emerges. In digital audio systems latency is caused by analog-to-digital conversion, digital signal processing, routing, network switches, buffering, digital-to-analog conversion, etc.

In most applications latency is not a critical factor. Latency only becomes a significant factor in high-quality audio applications, for example when operating many stage-microphones during a concert recording.

You can adjust the latency setting in the **Device Overview** window:

1.   Open the **Device Overview** window (see also *Change device settings, page 35*).
2.   In the **Latency** section the **Current Latency** value shows the current latency of the selected device. Transmitting devices do not support latency settings, only receiving devices.
3.   In most applications, the default setting will work just fine and does not have to be changed. The default value depends on the device and is usually between 1 and 2 milliseconds. Depending on the device the **Latency** can be set from 1 to 20 milliseconds. In small networks, for instance networks with only one switch, a lower value is permitted. In large networks and in networks with congestions and/or mute issues, increasing the value might resolve the latency problem.
4.   Click the **Save to Device** button. It will take a while for the audio flows to reestablish themselves at the new latency setting. Rebooting the device is not necessary.

> **Notice!**
>
> Each time the latency value is changed, this will cause a slight disruption in the audio.

6.6.5   Network Mode

Network Mode refers to the topology of linked devices. Many OMNEO audio devices have two separate network connections. One or both connections are physically connected to the IP-network, usually by means of an Ethernet cable. OMNEO Control supports three types of network topology.

Figure 6.15: OMNEO device with two separate IP connectors; on the pictured device the connectors are labeled Primary and Secondary, on other devices these connectors may not labeled.

Daisy Chain

A Daisy Chain topology is a basic wiring scheme in which multiple devices are wired together in a sequence or 'chain'. Daisy Chain is applicable only for devices which have two network connections.

The network cable runs from device to device. The cable goes in at one connector and goes out at the other connector. If the connectors are labeled Primary and Secondary, it does not matter which connector is used for input or output. On the last device in the chain one of the two connectors is left open (no wiring loop). Daisy Chains are recommended for small audio systems.

The Daisy Chain topology is known for one disadvantage: in case the network cable is interrupted, the audio stops. To prevent this, use **RSTP**.
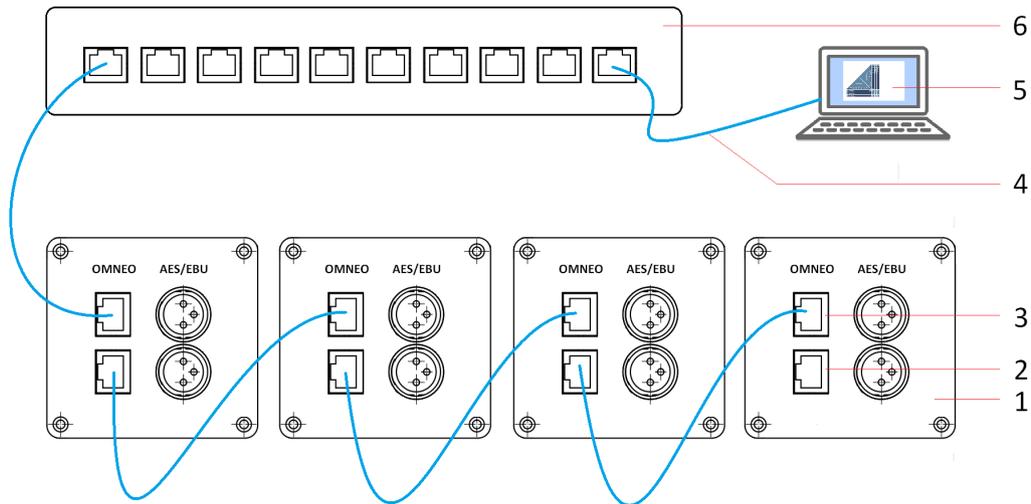

Figure 6.16: Daisy Chain topology.

1	OMNEO audio device (example)	2	Secondary network connection
3	Primary network connection	4	Network cable
5	PC running OMNEO Control	6	Network switch

RSTP

RSTP (Rapid Spanning Tree Protocol) is an IEEE standardized network protocol (802.1w) ensuring a loop-free topology for any Ethernet **LAN** (Local Area Network) evolved from **STP** (Spanning Tree Protocol). OMNEO fully supports RSTP IEEE802.1w.

RSTP allows the creation of wiring loops, so in case of a cable failure on one end of the cable, the other part of the loop will keep the audio connections intact. However, the failure will interrupt the audio for a short glitch of less than a second. If this glitch is unacceptable, use **Glitch free** topology.
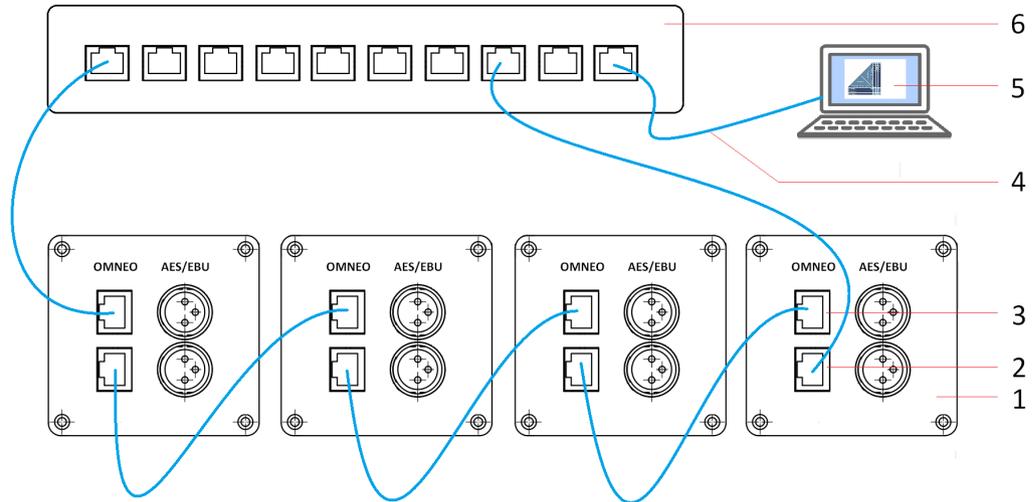
Figure 6.17: RSTP (Rapid Spanning Tree Protocol) topology with wiring loop.

1	OMNEO audio device (example)	2	Secondary network connection
3	Primary network connection	4	Network cable
5	PC running OMNEO Control	6	Network switch

Glitch free

Glitch free audio redundancy is a failover protection ensuring audio is robust against network failures. To achieve glitch-free audio redundancy an entirely redundant network structure is required, with separate subnets and two or more Ethernet connections per device. One network cable goes from the Primary connector to the switch of the first subnet. A second network cable goes from the Secondary connector to the switch of a second subnet. Many OMNEO devices have two network interfaces and two Ethernet connections to support this redundant audio routing. The audio is sent and received on all connections.

If one connection is lost, the audio stream is still received through the other connection. This redundancy prevents information from getting lost and the stream will continue without even a glitch in the audio.
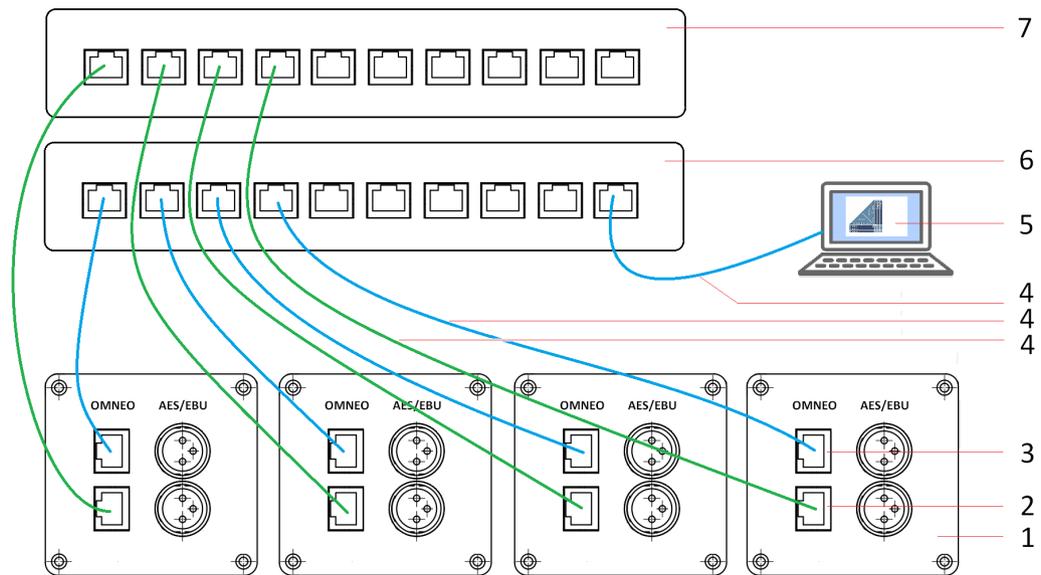
Figure 6.18: Glitch free topology.

1	OMNEO audio device (example)	2	Secondary network connection
3	Primary network connection	4	Network cables
5	PC running OMNEO Control	6	Network switch subnet1
7	Network switch subnet2		

For more information on network topology, see also the OMNEO Resource Guide. All three topologies are displayed in boxes in the **Network Mode** section of the **Device Overview** window. To change the settings (see also *Change device settings, page 35*):

1.   Open the **Device Overview** window.
2.   In the **Network Mode** section, the blue highlighted box shows the active topology for the selected device.
3.   Make sure you select the right network mode: it must correspond to the topology the selected device is physically using to connect to the network.
4.   Click the **Save to Device** button.

Notice!

Glitch free topology requires the same network speed for both the primary and the secondary interface on the redundant device. This means, that if the primary interface is connected to a 1 Gb/s (or 100 Mb/s) switch, the secondary interface must also be connected to a 1 Gb/s (or 100 Mb/s) switch.

6.6.6   IP settings

OMNEO and Dante devices are plug and play. IP settings are dynamically set, so there is no need for manual configuration on a device level. You might still be interested in the actual IP settings and in rare cases you might want to override the dynamically assigned IP parameters. In the Device Overview window you can manage the IP settings for all OMNEO devices present in your network.

In the IP Settings section of this windows you will find two tabs, **Primary** and **Secondary**:

Primary

When using Daisy chain or RSTP topology, you only have to configure the IP settings in the Primary tab. The Secondary network interface settings must be ignored. Even in a daisy chain topology, in which the last device of the chain is physically connected to an Ethernet connector marked 'secondary', the Secondary network interface setting must be ignored.

Secondary

Many OMNEO and Dante devices have two network interfaces. Each has its own Ethernet connector, sometimes marked **Primary** and **Secondary**, and intended for physically connecting the device to an IP network (see also 6.6.5). The **Secondary** network interface settings are usually grayed out unless the device is configured for **Glitch free** network mode.

The IP settings of the network interface(s) are defined in the Device Overview (see also *Change device settings, page 35*):

1.   Open the **Device Overview** window.
2.   Open the **Primary** tab to check the IP Settings for the primary network interface.
3.   Only if **Glitch free** network mode is used, open the **Secondary** tab to check the IP Settings for the secondary network interface.
4.   The current device IP settings are either **Dynamic** or **Static**. Click the corresponding radio button, if this setting needs to be changed. Dynamic mode is preferred over Static mode, because Static mode is complicated, requires accurate documentation and mistakes are easily made.
–   In **Dynamic mode** the device will automatically setup its own network configuration. If the network has no DHCP server (as in small networks and test environments), the OMNEO device will assign itself an IP-address using local protocols. If a DHCP server is present in the network (as in large and installed networks), the OMNEO device receives its IP-address using the standard DHCP protocol.
–   In **Static mode** you must manually configure all IP Settings (see also the OMNEO Resource Guide):
        –   IP Address
        –   Subnet Mask
        –   Default Gateway
        –   DNS Server
        –   Domain Name

Notice!

IP Settings for the Secondary network interface only have to be set when Glitch free network mode is used.

7 Troubleshooting

If you encounter a problem while working with OMNEO Control, the following resources might be helpful:

– Consult the Troubleshooting Table and the Messages Table in the following chapters.
– For troubleshooting network related issues, see also the OMNEO Resource Guide.
– For troubleshooting connections, first check the tool tip, by hovering the mouse over the cross point in the routing matrix. See also *Tool tips table, page 47* for the tool tips list.
– While troubleshooting the OMNEO log files may give you more information about the problem. Use a standard text editor or word processing program to open the log files. You can find the log files in the folder (default): `c:\ProgramData\Bosch\OMNEO\OmneoControlLog`

7.1 Support

Refer to the product related information on: www.boschsecurity.com.
If a fault cannot be resolved, please contact your supplier or system integrator, or go directly to your Bosch representative.

7.2   Troubleshooting table

The troubleshooting table gives a list of problems that you may face when using OMNEO Control. Column 2 and 3 contain possible causes and solutions.

Symptom	Possible cause	Possible solution
The Routing Matrix shows gray crosses	The transmitting device and the receiving device have different Sample Rates.	Synchronize Sample Rates (see also *Cross Points, page 22*).
	Devices do not support Local Loopback.	Avoid creating Local Loopback connections between these devices.
A device disappears from the Routing Matrix and/or from the Device list in the Device Overview window	Pressing the Reboot Device button in the Device Settings will make the device temporarily disappear from the screen.	Wait until the reboot sequence has finished and the device will reappear.
	The device has been switched off.	Turn device on again.
	The device is no longer physically connected to the network.	Reconnect the network cable to the device.
	A second user in the network is using OMNEO Control and is changing the settings.	Wait for the changes to take effect or consult the other user.
A newly added or rebooted device is not showing up in the Routing Matrix and/or in the Device list in the Device Overview window, not even after a few minutes	Device is at the bottom of the Device list.	Sort the Device list by clicking the Device title once or twice.
	Defective or overheated device.	Sort the Device list by clicking the Device title once or twice.
	Defective or unreliable network wiring.	Switch off the device for a period to cool off or bring the device to a service center for repair.
	Device is a virtual device, for example a virtual sound card.	Check or replace network cable; execute PING-command.
OMNEO Control creates one-to-many (multicast) connection instead of one-to-one (unicast)	Link limit is reached.	Change Link limit, see also *Reaching the Link limit, page 31*.
	Limitations in the technical specifications of a device prevent the creation of an additional audio flow.	Accept one-to-many connection or swap device.

Symptom	Possible cause	Possible solution
	The user has disabled Link limit by choosing the 'Always use one-to-many connections' option (Link limit = 1).	Change Link limit, see also *Reaching the Link limit, page 31*.
Virtual sound card giving unexpected errors	Virtual sound card is running on same PC as the OMNEO Control software.	Install the virtual sound card on another PC in the same subnet of the network. OMNEO will detect it.
Connections to a virtual sound card cannot be removed.	Connections to virtual devices - such as virtual sound cards – are sometimes hard to delete.	Click on the cross point between the transmit channel and receive channel, both of the virtual device, as if creating a Local Loopback connection. This action will delete the existing connection. Nothing more will happen, because the attempted Local Loopback connection is not supported by virtual devices.
A 9th audio connection cannot be made. If you already connected 8 receive channels to one transmit channel, nothing happens when you try to add one more connection. No feedback is given.	It is not possible to connect more than 8 receive channels of the same OMNEO device to one transmit channel.	Do not connect more than 8 receive channels of the same device to one transmit channel.
Device is visible in the Routing Matrix, but connections do not hold for more than 30 seconds.	Device may have been switched off and on, or device has rebooted.	Manually re-establish the connection in OMNEO Control. Prevent this type of error by setting Lock mode on; this will continuously re-establish lost connections automatically.
	Another audio controller is active in the network and is in Lock mode. Because of this Lock mode any connections that are added by OMNEO Control will be removed in order to maintain the 'locked state'.	Locking OMNEO Control is not going to help. The only solution is to disable Lock mode in the other audio controller. It is not recommended to use more than one audio controller in a network, except for redundancy purposes (see also *Lock, page 28*).

Symptom	Possible cause	Possible solution
Additional connections cannot be made to a device that already has a Dante-type connection.	If the device specifications are limited to a maximum of – for instance - two transmit flows, and the device has one Dante-type connection to device A and one unicast connection to device B, than the device is out of transmit flows. An additional (third) connection to device C cannot be made.	Change the Dante-type connection into a unicast or multicast connection. This must be done manually, it cannot be handled automatically.

7.3   Messages table

The message table gives a full list of all error messages that may appear in dialogs and windows, when using OMNEO Control. Column 2 and 3 contain possible causes and solutions.

Message	Possible cause	Possible solution
Error restoring route	Loading Preset file fails, although XML-file does exists.	XML-file may be corrupt. Delete file and create the preset again before loading.
Load audio presets from file <filename> File not found	Loading Preset file fails, because file does not exist or file name has been changed.	Restore or rename XML-file.
Save audio presets to file <file location> You don't have permission to save in this location	Saving Preset file fails, because of permission rights.	Contact IT-administrator to obtain permission rights.
Save audio presets to file <file name> Path does not exist	Saving Preset file fails, because destination folder does not exist.	Check the path and try again
Failed to store audio presets	Saving Preset file fails.	Reason and solution unknown.
OMNEO Control OMNEO Control is already running	Starting OMNEO Control although it was already started.	Find the OMNEO Control icon in the Windows Task bar and click it to open the window of the already running instance of OMNEO Control.
There seems to be no connected audio devices	Network is malfunctioning, network cables are not properly connected, and/or audio devices are not switched on.	Check network, check network cables, and check devices.
Setup failed	You are attempting to run 32-bit installer on a 64-bit version of Windows	Check your Windows version via hotkey Windows + Pause. Then download the correct version of OMNEO Control and install it.

7.4   Tool tips table

The tool tips table gives a full list of all tool tips that may appear when hovering the mouse over the cross points in the OMNEO Control Routing Matrix.

Tool tip title	Tool tip txt	Situation
Connect Channels	"<Tx channel name>" of "<Tx device name>" -> "<Rx channel name>" of "<Rx device name>". Example: "12" of "CAP6-000078" -> "01" of "CAP2-000477"	Information about the connection at the highlighted cross point. The tool tip does not inform you about audio actually being present at the connection, it only tells which transmit channel and receive channel are connected.
Audio Preset Lock	Audio connections cannot be changed due to state lock.	Audio state is locked. Unlock first, if you want to change settings.
Connection not possible	Channels are incompatible (different sample rates).	The receiving device and the transmitting device are using different Sample Rates. Gray crosses are shown at the cross points.
	This device does not support Local Loopbacks.	Device does not support Local Loopback (OMNEO devices only). A gray cross is shown at the cross point. The mouse cursor will change into a red 'Connection not possible' symbol, when hovering over the cross point.
Device has connections	Expand the device to show channel connections.	Device is not yet showing its channels and channel connections. Click on the Expand arrow to show all channels

8   Appendices

Icons

The icons in the table form a full list of all icons that may appear in the OMNEO Control Routing Matrix.

Icon	Icon name	Description
↵	One-to-one channel link	Unicast connection.
↵	One-to-many channel link	Multicast connection.
⎗	Local Loopback	Transmit channel and Receive channel of same device are connected.
D	Dante	Connection configured by Dante Controller software.
⚡	Connecting	Icon disappears automatically, when connection is established.
✕	Connection not possible	Possible reasons: devices have different sample rates or devices are not capable of Local Loopback.
🔒	Lock mode	Routing Matrix is view only.