IntelliMix Room

Audio Processing Software

User guide for Shure IntelliMix Room DSP software. Learn how to install, activate, and manage IntelliMix Room to bring crystal-clear audio to all of your rooms
Version: 10.6 (2024-C)

Table of Contents

IntelliMix Room
Audio Processing Software

What is IntelliMix® Room?

IntelliMix Room is digital signal processing (DSP) software designed to optimize the performance of Shure networked micro-phones with videoconferencing software, resulting in better conference room audio all around. It's designed to run on the same computer as any videoconferencing software, which reduces the amount of equipment in the room.

Important: IntelliMix Room not Supported in Designer 6.0

Shure recently announced the release of Designer 6.0 software. However, IntelliMix Room isn't currently supported in the De-signer 6.0 release.

We recommend using Designer 4.7.25 to work with installations of IntelliMix Room. Shure plans to add IntelliMix Room support to a future release of Designer at the 6.x level.

What Do I Need to Use IntelliMix Room?

IntelliMix Room requires other software and hardware to work in your room. You'll need the following:

Software:

- **Videoconferencing software** (such as Zoom or Microsoft Teams) installed on the same PC as IntelliMix Room
- Optional: **Shure Designer** software installed on a separate computer and connected to the same network as IntelliMix Room.
  - Designer offers full customization and control for all installations of IntelliMix Room in one place.
  - Do not run IntelliMix Room and Designer on the same computer.

Hardware:

- **Dante-enabled microphone**, such as a Shure MXA920, MXA710, or MXA310
- **PC** or other physical device optimized for running IntelliMix Room (no virtual machines)
  - See the System Requirements for recommended specifications.
- **Other room components**, such as displays, cameras, loudspeakers, switches, Cat5e cables, and meeting control inter-faces

How to Purchase IntelliMix Room

To purchase, contact your local Shure sales representative (find yours at shure.com). For each installation, you can choose from 8 or 16 channels of IntelliMix DSP.

After purchasing, you'll receive an email with instructions for creating a software.shure.com account, where you can find your license ID. The license ID activates all purchased installations.

Next steps:

- Install IntelliMix Room on all devices.
- Discover and activate all IntelliMix Room installations using Shure Designer software or the room setup feature.
- Apply DSP and route audio for each installation using Designer.

IntelliMix Room Free Trial

Before purchasing, try out a 90-day trial of IntelliMix Room. The software runs exactly like a purchased version during the trial period. You don't need an internet connection to start the trial.

To start a free trial:

1. Download the latest version at shure.com/imxroom.
2. Follow the instructions to install the software.
3. Choose the 90-day trial option when the software prompts you to add a license ID. This option appears in Designer and in the room setup feature.
4. When you're ready to purchase, contact your Shure representative. You can activate the paid license and preserve any settings from your trial installation.

Supported Hardware Systems

These hardware systems are thoroughly tested and supported by Shure to run IntelliMix Room software. For best results, we recommend using a supported system from this table:

IntelliMix Room Supported Systems

Product	Computer	Certifications
Crestron UC-C100-T	ASUS Mini PC PB60-B Dell OptiPlex 7080 XE	Microsoft Teams Rooms
Lenovo ThinkSmart Core	Lenovo ThinkSmart Core	Microsoft Teams Rooms Zoom Rooms
Logitech Teams Rooms for Windows	Lenovo ThinkSmart Core	Microsoft Teams Rooms
Logitech Zoom Rooms for Windows	Lenovo ThinkSmart Core	Zoom Rooms
Poly Studio Large Room Kit	Lenovo ThinkSmart Core	Microsoft Teams Rooms Zoom Rooms

Shure cannot guarantee the performance of IntelliMix Room if you choose to run it on an unsupported system. If you choose to install it on an unsupported system, you should:

- Check that the PC meets all system requirements.
- Validate IntelliMix Room's performance before deploying to many PCs.

System Requirements

Important:

- Do not run IntelliMix Room and Designer on the same PC.
- Performance may vary on unsupported systems even if they meet all of these system requirements. Refer to Supported Hardware Systems for help choosing a device to run IntelliMix Room.
- Virtual machines are not supported.

- **Processor:**
  - Intel (64 bit)
  - 8th generation Core i5 or better
  - 2.0 GHz or better
  - 4 physical cores or better
  - 6 threads (logical processors) or better
  - AVX2 instruction set
  - FMA instruction set
- **Memory:**
  - 8 GB RAM
- **Storage:**
  - Solid State Drive (SSD) required
- **Supported Windows Editions:**
  - Windows 10 Pro
  - Windows 10 Education
  - Windows 10 Pro Education
  - Windows 10 Enterprise
  - Windows 10 IoT Enterprise
  - Windows 11 Pro
  - Windows 11 Education
  - Windows 11 Pro Education
  - Windows 11 Enterprise
  - Windows 11 IoT Enterprise

Supported Windows Versions

Version	Support until:
Windows 11 22H2	12/31/2025
Windows 10 22H2	12/31/2025
Windows 11 21H2	10/08/2024
Windows 10 21H2	06/11/2024
Windows 10 21H1	12/13/2022
Windows 10 20H2	05/09/2023

- **Internet Connection:**
    - ◦ Required for initial license activation

Optimize Windows for Conference Room Audio Processing

These are the recommended Windows settings for conference room audio processing:

- Disable Cortana.
- Disable notifications from Windows and installed programs.
- Use the high performance power plan in Power Options.
    - ◦ Make sure this plan uses active cooling in the advanced power options.
- Disable all Sleep and Hibernate settings.

Additionally, follow these system best practices:

- Reboot the computer regularly.
- Disconnect unused USB devices.
- Remove software with high CPU loads, such as games or streaming apps.
- Make sure the computer's BIOS is updated.
- Check that Ethernet, Wi-Fi, and display drivers are updated.

Installation Guide

Install IntelliMix Room

Before installing, make sure you have admin rights for all devices.

1. Purchase IntelliMix Room from your Shure sales representative (find yours at shure.com/imxroom).
2. Download the .exe from shure.com/imxroom.
3. Launch the installation file and follow the steps.
4. Choose network interface cards (NICs) to use for Shure control, Dante audio, and licensing.
    - ◦ The Shure control NIC must match the one used by Designer software.
    - ◦ **Important:** Choose a permanent, non-removable NIC to use for licensing. This setting can't be changed after installation.
5. Choose which PC optimizations to make. For the best audio performance, choose all options.
6. After the installation finishes, follow the steps to restart the PC.
7. Right-click the IntelliMix Room icon in the system tray to access basic settings, run room setup, or report a problem.

Next Steps:

- Activate IntelliMix Room to pass audio. You can use:
    - ◦ Designer software to activate and control many installations of IntelliMix Room (free at shure.com/designer)
    - ◦ Room setup to set up devices and activate 1 installation of IntelliMix Room at a time
- Control DSP, routing, and all other settings with Designer.

Install with Mass Deployment Tools

You can deploy IntelliMix Room using standard software deployment tools. See below for available command line and silent install arguments.

Optional CLI Arguments

- `/S` : Silent mode. Installer runs without GUI and implements default options. If there is an existing version installed, the installer uses the existing settings unless parameters listed below are provided.
- `/express`: Installer runs with only a progress bar UI and keeps all previous settings.
- `/nicindex=[integer]`: NIC index to use for both Shure control and Dante audio network capabilities.
  - `/nicindex_control=[integer]`: NIC index to use for Shure control network capabilities.
  - `/nicindex_audio=[integer]`: NIC index to use for Dante audio network capabilities.
- `/nicipaddress=[integer]`: NIC IP address to use for all IntelliMix Room network capabilities.
  - `/nicipaddress_control=[integer]`: NIC IP address to use for Shure control network capabilities.
  - `/nicipaddress_audio=[integer]`: NIC IP address to use for Dante audio network capabilities.
- `/nicid=[UUID]`: NIC UUID to use for all IntelliMix Room network capabilities.
  - `/nicid_control=[integer]`: NIC UUID to use for Shure control network capabilities.
  - `/nicid_audio=[integer]`: NIC UUID to use for Dante audio network capabilities.
- `/licindex=[integer]`: NIC index to use for licensing identification. Also used to get MAC address.
- `/licipaddress=[IP ADDRESS]`: NIC IP address to use for licensing identification. Also used to get MAC address.
- `/licid=[UUID]`: NIC UUID to use for licensing identification. Also used to get MAC address.
- `/licmac=[mac address]`: NIC MAC address (without -) to use for licensing identification.

Installation and IntelliMix Room Settings

- `/norestart`: Do not reboot the system after installation. Default behavior of the software is to reboot, and rebooting is required to implement certain Windows optimizations.
- `/analyticsoptout=[true|false]`: Opt out of analytics data collection.
- `/crashreportoptout=[true|false]`: Opt out of crash log file upload.

Windows Optimizations

- `/skipoptimizations`: Skip all optimizations.
- `/disablecortana=[true|false]`
- `/disablepushnotifications=[true|false]`
- `/optimizepowerplan=[true|false]`
- `/neversleep=[true|false]`

Installer Default Settings

Option	Default Value	Notes
NIC index	0	The 0th found NIC using the lookup `GetEnabledNetworkAdaptersIds`
Analytics opt out	False	Users have data collection enabled by default.
Crash reporting opt out	False	Users have crash reporting enabled by default.
Disable Cortana	True	
Disable push notifications	True	
Optimize power plan	True	

Option	Default Value	Notes
Never sleep	True	

IntelliMix Room Firewall Changes

During installation, the software modifies your firewall to allow access for all Shure .exes. These changes are required to run the software.

- Shure_IntelliMix_Room.exe
- Shure PTP.exe
- Shure mDNSResponder.exe
- conmon_server.exe
- apec3.exe

IntelliMix Room Firewall Rules

If there's a conflict with the default port, IntelliMix Room automatically selects a port from the specified range.

IntelliMix Room Version 4.0 and Newer

In-bound or out-bound?	Display name	Program	Pro-tocol	Local port	Local address
Both	Shure Conmon Server MCAST	C:\Program Files\Shure\IntelliMixRoom\dal\exe\conmon_server.exe	UDP	8700 - 8708	Any
Both	Shure In-telliMix Room	C:\Program Files\Shure\IntelliMixRoom\Shure_IntelliMix_Room.exe	UDP	34336 - 34439	Any
Both	Shure In-telliMix Room Audio	C:\Program Files\Shure\IntelliMixRoom\Shure_IntelliMix_Room.exe	UDP	38001 - 38800	Any
Both	Shure In-telliMix Room Audio MCAST	C:\Program Files\Shure\IntelliMixRoom\Shure_IntelliMix_Room.exe	UDP	4321	239.255.0.0/16
Both	Shure In-telliMix Room SLP	Any	UDP	8427	Any
Both	Shure In-telliMix	C:\Program Files\Shure\IntelliMixRoom\Shure_IntelliMix_Room.exe	UDP	5568	Any

In-bound or out-bound?	Display name	Program	Pro-tocol	Local port	Local address
	Room SDT				
Both	Shure In-telliMix Room ACN Dy-namic	C:\Program Files\Shure\IntelliMixRoom\Shure_IntelliMix_Room.exe	UDP	49152-65535	Any
In-bound	Shure In-telliMix Room TCP	C:\Program Files\Shure\IntelliMixRoom\Shure_IntelliMix_Room.exe	TCP	1025-65535	Any
Both	Shure APEC3	C:\Program Files\Shure\IntelliMixRoom\dal\exe\apec3.exe	UDP	34440 - 38000	Any
Both	Shure Conmon Server	C:\Program Files\Shure\IntelliMixRoom\dal\exe\conmon_server.exe	UDP	38801 - 45000	Any
Both	Shure PTP	C:\Program Files\Shure\IntelliMixRoom\dal\exe\ptp.exe	UDP	319-320	Any
Both	Shure mD-NSRe-sponder	C:\Program Files (x86)\Audinate\Shared Files\mDNSResponder.exe	UDP	5353	Any

Allowing FlexNet Operations

If a device can't connect with the Flexera Cloud License Server after allowing the process through the firewall, allow this domain on your network: flexnetoperations.com.

Alternatively, you can manually allow blocks of IP addresses.

How to Choose a Licensing NIC

During installation, the software prompts you to choose a NIC (network interface card) to use for licensing identification. Licensing NIC requirements:

- The NIC must be permanent and not removable. Do not use NICs that could be removed, such as a USB-to-Ethernet adapter or a docking station.
- The NIC doesn't need an internet connection. It is used as a unique identifier for licensing identification.

During license activation, IntelliMix Room uses any available path to the internet. That path can be separate from the licensing, control, and Dante NICs.

To see the current licensing NIC, click the IntelliMix Room icon in the system tray of the PC running IntelliMix Room. Go to `Settings > Licensing`.

This setting cannot be changed after installation.

Shure Control and Dante Audio NICs

This software sends 2 types of data over the network: Shure control data and Dante audio data. You can use the same NIC (network interface card) for both, or use 2 different NICs to separate the traffic.

During installation, you will be asked to choose a network for each one.

Shure control NIC:

- Choose the network that Designer uses.
- Used for device discovery and control

Dante audio NIC:

- Choose the same network as other Dante devices to send audio between devices.
- Cannot use Wi-Fi
- Used to carry Dante digital audio

To change the NICs after installation, click the IntelliMix Room icon in the system tray of the computer running IntelliMix Room.

To change Designer's NIC, go to Settings.

Uninstalling IntelliMix Room

Before uninstalling, make sure you have admin rights and an internet connection for all devices.

1. In Designer, find the devices that you plan to uninstall IntelliMix Room software from.
2. Select the devices, and choose Deactivate. After deactivation, the licenses are available to be used again.

   Devices must have an internet connection to release their licenses.

3. On each device, uninstall IntelliMix Room like any other software.

Update IntelliMix Room

Version 3.3 and Newer

As of version 3.3, there are 2 ways to update IntelliMix Room:

- Update multiple installations at the same time using Designer
- Update each installation separately using the 2.x and newer process

To update using Designer:

1. Go to Online devices and find the installations.
2. Choose a software version for each one from Available firmware. Make sure that no one is using the PCs during an update.
3. Select the checkbox next to each installation and click Send update(s). Devices may disappear from online devices during an update.

   Important: Don't close Designer while updating firmware.

Version 2.x and Newer

On the PC running IntelliMix Room, open IntelliMix Room settings from the Windows system tray and go to `Version > Check for updates`.

Updating From Version 1.x to 2.x

Download the 2.x version from shure.com and run the installer over the 1.x version. The 2.x version replaces the 1.x version.

Note: Updating from version 1.x to version 3.x and above does not work. Update sequentially from 1.x to 2.x, and then use the 2.x and newer update process.

Activate IntelliMix Room

There are 2 ways to activate IntelliMix Room:

- Use Designer to activate many installations
- Use the room setup feature to activate 1 installation at a time

IntelliMix Room must be installed on a device before you can activate that license.

To activate the software, you need:

- A license for each installation
  - Licenses are based on the channel count (8 or 16 channels) for each installation of the software.
- Your license ID
  - A license ID activates all licenses in your account.
  - Find in your purchase confirmation email, or in your account at software.shure.com.
- Internet connection for all devices running IntelliMix Room

Activate Using Designer

1. In Designer, go to Online devices. Check that you can discover all installations.
   - Each installation appears as a separate device. The device name matches the PC's name.
   - If you don't see all installations, check the Shure control NIC settings on the computer running IntelliMix Room. Use the same network as Designer.
2. Create a new project in Designer.
   - If you have many license IDs to manage, create a separate project for each license ID.
3. Go to the project's Licenses page. From the list of available installations, select one to move into the project. Click Move into project.
   - If you add multiple installations to a project at the same time, choose installations that all use the same license type. For example, move all 8-channel licenses into the project first, and then repeat the process for your 16-channel licenses.

4. Click Activate. Choose the license type for the installation and click Next.
5. Add your license ID and click Activate. This license ID is used for all installations in the project. If the device running IntelliMix Room has an internet connection, the installation activates and is ready to use.

Next Steps:

- Create rooms in Designer and add IntelliMix Room installations to them.
- Set up and connect other devices to IntelliMix Room.
- Set IntelliMix Room as the speaker and microphone source in your videoconferencing software.

How IntelliMix Room Licenses Work

IntelliMix Room uses licenses to manage software features and terms. Different license lengths are available to fit your needs. Talk to your Shure sales representative to learn more.

Licensing Definitions

- **Installation:** A single instance of IntelliMix Room software installed on a device.
- **License:** Each installation of IntelliMix Room needs one to run. Choose between an 8- or a 16-channel license.
- **Project:** A grouping in Designer that has a collection of rooms with devices. Each project uses 1 license ID. If you have multiple license IDs to manage, create separate projects for each one.
- **License ID:** A 12-digit code used to activate all of your purchased installations. When you purchase a group of licenses from Shure, you'll receive this code in the purchase email (it's also available in your account at software.shure.com). Each customer has 1 license ID.

License ID: 1JK9374HYT7U
Licenses:
- Six 16-channel
- Two 8-channel

Rooms:
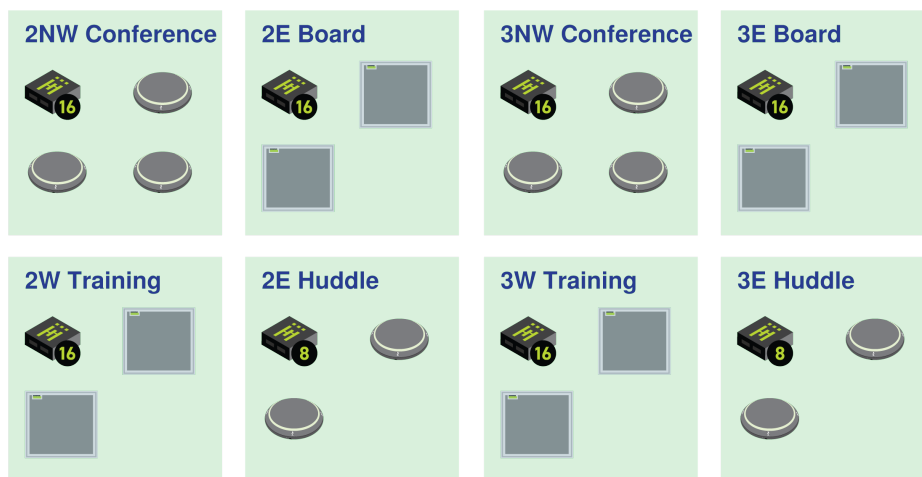
After installing IntelliMix Room on all devices, use Designer or the room setup feature to activate your licenses. Designer runs on a separate computer since it manages all installations of IntelliMix Room.

Sample license workflow:

1. Decide how many 8-channel and how many 16-channel licenses you need. Purchase them from Shure.
2. Install IntelliMix Room on all devices.
3. Activate licenses using Designer or the room setup feature in IntelliMix Room. Launch room setup after installation or from the Windows system tray on the PC with IntelliMix Room.
4. If using Designer, install Designer on a computer connected to the same network and discover all of your installations.
5. Create a project in Designer. Move all 8-channel installations into that project at the same time, and then repeat for 16-channel installations. You choose which type of license to use for the installations during this step.
6. Click Activate and add your license ID. All installations with an internet connection should activate quickly.

Renew a License

To renew your IntelliMix Room licenses, contact your Shure sales representative.

When you renew, your license ID stays the same. You won't need to make any changes and all installations continue running normally.

What Happens When My License Expires?

After an initial grace period, you will hear periodic audio interruptions that remind you to renew your license.

You will receive email reminders to renew your license near the expiration date.

Move a License to a New PC

After purchasing, you might need to install IntelliMix Room on a new PC. Make sure all devices have an internet connection before attempting to move a license.

Important: Before decommissioning the old PC, follow the steps below to deactivate the IntelliMix Room license.

To move a license to a new PC:

1. In Designer, find the installation you plan to move in Online devices. Go to `[Your project] > Licenses`. This page shows all IntelliMix Room installations in the project.
2. Select the old PC with the license that you want to move.
3. Click Deactivate. The old PC must have an internet connection to release the license.
4. Install IntelliMix Room on the new PC.
5. In Designer, find the new installation of IntelliMix Room. Add it to the same project as the old installation.
6. When prompted, choose the channel count that matches the old installation. Your license is now reassigned to the new PC.

Deactivating Licenses

Deactivating the license for an IntelliMix Room installation causes that installation to stop passing audio. Make sure the device has an internet connection before deactivating.

After deactivation, the license is available to be used again on another installation of IntelliMix Room.

To deactivate licenses:

1. In your project, go to Licenses. This page shows all IntelliMix Room installations in the project.
2. Select the installations you want to deactivate.
3. Click Deactivate. Devices must have an internet connection to release their licenses.
4. Deactivated licenses are now available to be assigned to other installations.

In some situations, you will need to contact Shure support to deactivate a license. These include:

- PC isn't accessible anymore
- NIC has been replaced
- SSD is installed on a different PC

License Server Details

To see information about available licenses and your account, sign in at software.shure.com. Use the username and password you set up during purchase.

IntelliMix Room initially requires an internet connection to activate your license, but it doesn't require one after activation.

When you receive an IntelliMix Room license from Shure, some of your information is collected and stored.

The information stored includes the following:

- User ID
- First name
- Last name
- Email address
- Contact information (phone number, fax number)

This information is stored in data centers that are in Santa Clara, CA and Elk Grove Village, IL.

Configure Devices for IntelliMix Room

With IntelliMix Room software 4.0 and newer, there are 2 ways to set up and connect Shure devices:

- Use Shure Designer software to control all device settings.
    - Activate and control all installations of IntelliMix Room in one place.
    - Access all settings for any connected Shure devices.

- ◦ Pick Designer to fine-tune all IntelliMix Room and Shure device settings.
- Use the room setup feature to set up 1 room at a time with Shure's recommended settings.
  - ◦ Activate 1 IntelliMix Room installation at a time and set up connected Shure devices with Shure's recommended settings.
  - ◦ To start room setup, go to each space with a PC running IntelliMix Room and start room setup from the Windows system tray.
  - ◦ Pick room setup to get a room up and running quickly without manually adjusting all device settings.

Set Up Devices with Designer

Before connecting other Shure devices to IntelliMix Room, check that:

- You can discover all installations of IntelliMix Room and other Shure devices
- All installations of IntelliMix Room are activated

To connect other devices in Designer:

1. In your project, select New > Room (live) to create a new room. Enter a name for the room and select Create.
2. Put all devices that you want to connect in the new room. To add, drag and drop from online devices.
3. Click Optimize. The optimize workflow automatically routes audio signals, applies DSP settings, turns on mute synchronization, and enables LED logic control for connected devices.

   You can also manually route audio and apply DSP settings if you prefer.

Next steps may include:

- Routing audio to IntelliMix Room from your videoconferencing software
- Routing audio to non-Shure devices using Dante Controller
- Making test calls to check the system

Basics of Shure Designer Software

To get the most out of IntelliMix Room, you need Shure Designer software installed on a computer with a network connection to all IntelliMix Room installations.

Designer has some basic concepts that are important to understand as you start using IntelliMix Room:

Projects

- ◦ Use to manage groups of rooms.
- ◦ Each project uses 1 license ID. All IntelliMix Room installations in a project use the same license ID.
  If you're managing multiple customers with multiple license IDs, create separate projects to manage them.

Rooms

- ◦ Use to organize groups of devices installed in the same physical location, such as a room, an area, or a building floor.
- ◦ If devices are in the same Designer room, you can route audio between them using the Routing tab.

Optimize

- ◦ After placing your devices in the same room, select Optimize to have Designer automatically adjust device settings and create audio routes for you.
- ◦ You can customize settings further, but the optimize workflow gives you a good starting point.

Online Devices

◦ Shows every available device on your network.

Discovering IntelliMix Room in Designer

Each installation of IntelliMix Room appears as a separate device in Designer. Each installation's name matches the computer's network name.

To find any online installations:

- Go to Online devices.
- Use the checkboxes to select IntelliMix Room installations and add them to rooms.

If you can't find some installations:

1. Go to the computer that won't appear in Designer.
2. Click the IntelliMix Room icon in the system tray.
3. Make sure IntelliMix Room is using the same Shure control NIC (network interface card) as Designer.

Note: IntelliMix Room doesn't show up in Shure Update Utility or Shure Web Device Discovery.

Use Designer's Optimize Workflow

Designer's optimize workflow speeds up the process of connecting systems with at least 1 microphone and 1 audio processor. Optimize also creates mute control routes in rooms with MXA network mute buttons. When you select Optimize in a room, Designer does the following:

- Creates audio routes and mute control routes
- Adjusts audio settings
- Turns on mute synchronization
- Enables LED logic control for applicable devices

The settings are optimized for your particular combination of devices. You can customize settings further, but the optimize workflow gives you a good starting point.

Compatible devices:

- MXA920
- MXA910
- MXA710
- MXA310
- P300
- IntelliMix Room
- ANIUSB-MATRIX
- MXN5-C
- MXA Network Mute Button

To use the optimize workflow:

1. Place all relevant devices in a room.
2. Select Optimize. Designer optimizes microphone and DSP settings for your equipment combination.
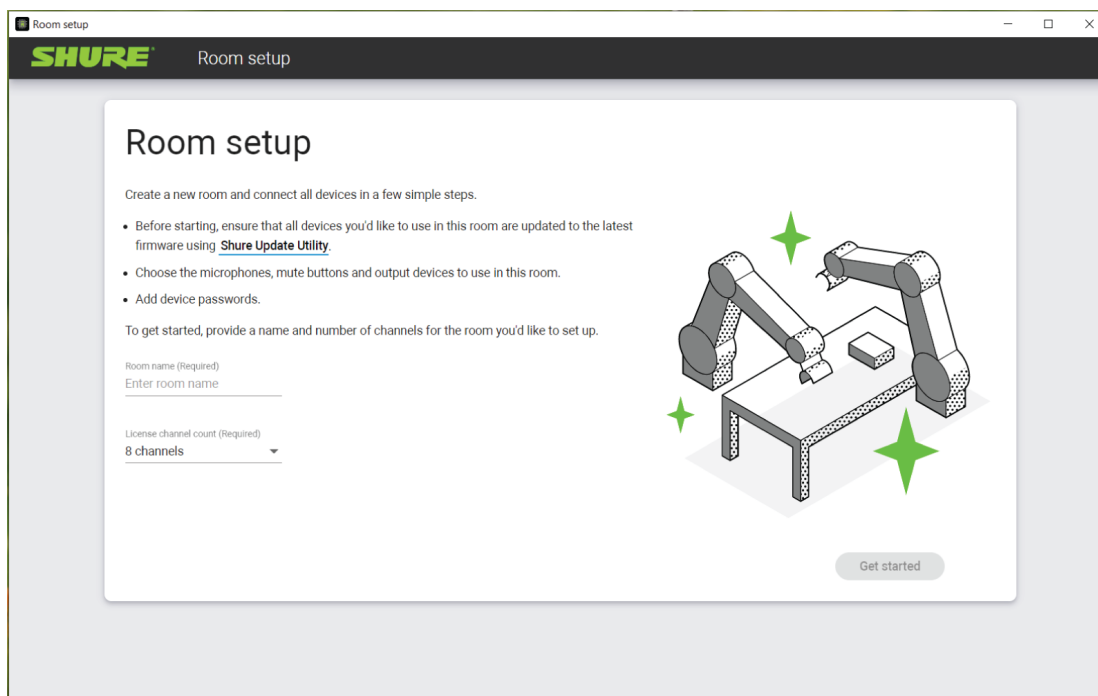
   If you remove or add devices, select Optimize again.

After optimizing a room, check and adjust settings to fit your needs. You may need to:

- Delete unnecessary routes.
- Check levels and adjust gain.

- Check that AEC reference signals are correctly routed.
- Fine-tune DSP blocks as needed.

Use Room Setup

Room setup is a feature in IntelliMix Room that helps you activate the software and set up other Shure devices in the room. The feature:

- Activates the license for 1 installation of IntelliMix Room
- Finds other Shure devices on the network
- Optimizes audio for selected devices, like Designer's optimize workflow
- Sets device passwords

When you use room setup in a space, the feature gets all Shure devices up and running quickly with Shure's recommended settings. Use Designer if you want full control of all device and IntelliMix Room settings.

Compatibility

- Available in IntelliMix Room version 4.0 and newer
- Compatible devices:
  - MXA920: firmware 1.3.276 and newer
  - MXA910: firmware 4.7.13 and newer
  - MXA710: firmware 1.5.12 and newer
  - MXA310: firmware 4.7.8 and newer
  - MXN5-C: firmware 1.5.12 and newer
  - MXA Network Mute Button: firmware 1.5.15 and newer

Before You Begin:

- Update Shure devices to the latest firmware using Shure Update Utility

- Check that devices are connected to the same network as IntelliMix Room
- Have your license ID ready (find in your confirmation email)

How to Start Room Setup

- In the Windows system tray, right-click `IntelliMix Room` > `Room setup`.
- Alternatively, select the checkbox for room setup after installing IntelliMix Room.

How Does Room Setup Work?

After launching room setup, follow the steps to set up devices, activate IntelliMix Room, and optimize audio. The overall process is:

1. Enter a room name and license information to activate the installation. You need an internet connection to activate the installation, but not to start a free trial.
2. IntelliMix Room finds other Shure devices on your network. Choose the devices you want to connect to this installation of IntelliMix Room. Devices include:
   - Microphones
   - Mute buttons
   - Networked loudspeakers

   You can also route audio to the PC's outputs or Shure ANI devices.

3. Add a password for devices. You can set a common password or use existing device passwords.
4. IntelliMix Room activates the installation, creates audio routes, optimizes audio, and sets device passwords.

After room setup finishes, you may need to:

- Adjust device levels and DSP settings with Designer.
- Route audio to IntelliMix Room from your videoconferencing software.
- Route audio to non-Shure devices using Dante Controller.
- Make test calls to check the system.

Use Videoconferencing Software with IntelliMix Room

To connect IntelliMix Room to videoconferencing software, select **IntelliMix Room Echo Cancelling Speakerphone** as the speaker and the microphone in your videoconferencing software. Do the same thing in the computer's sound settings.
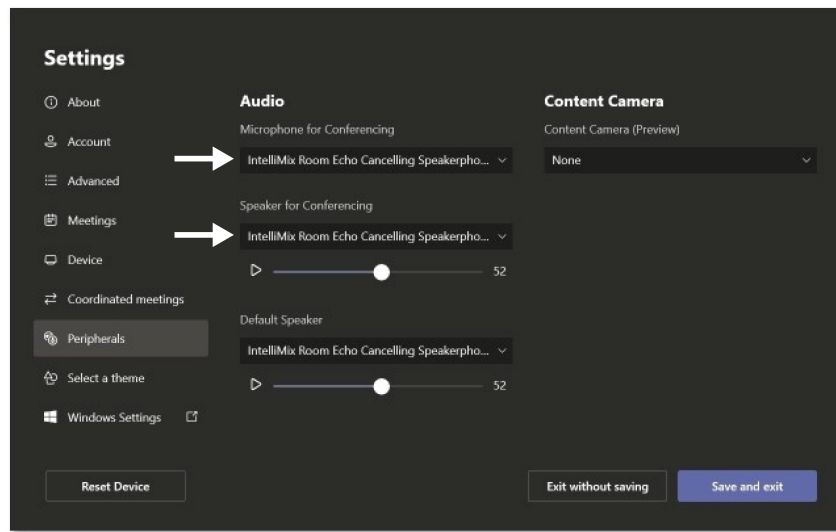
The microphone setting sends signals to the videoconferencing software from any microphone connected to IntelliMix Room.

The speaker setting sends a far-end signal from the videoconferencing software to IntelliMix Room. This is how IntelliMix Room gets an AEC reference and a signal for local sound reinforcement.

If you choose a different source as the speaker, you won't be able to get far-end audio from the videoconferencing software into IntelliMix Room to use as an AEC reference.

Route Audio Signals

Matrix Mixer

The matrix mixer routes audio signals between inputs and outputs for simple and flexible routing:

- Send a single input channel to multiple outputs
- Send multiple input channels to a single output

Crosspoint Gain

Crosspoint gain adjusts the gain between a specific input and output, to create separate submixes without changing input or output fader settings. Select the dB value at any crosspoint to open the gain adjustment panel.

Gain staging: Input fader > crosspoint gain > output fader

### Routing Channels

Connect inputs and outputs by selecting the box where they intersect.

Routing Microphone Signals to the DSP

To route your microphone's signal to IntelliMix Room for processing, use Designer.

This example reflects a small conference room with:

1. MXA310 using 4 channels
2. Computer with 8-channel IntelliMix Room and videoconferencing software installed
3. Display and camera
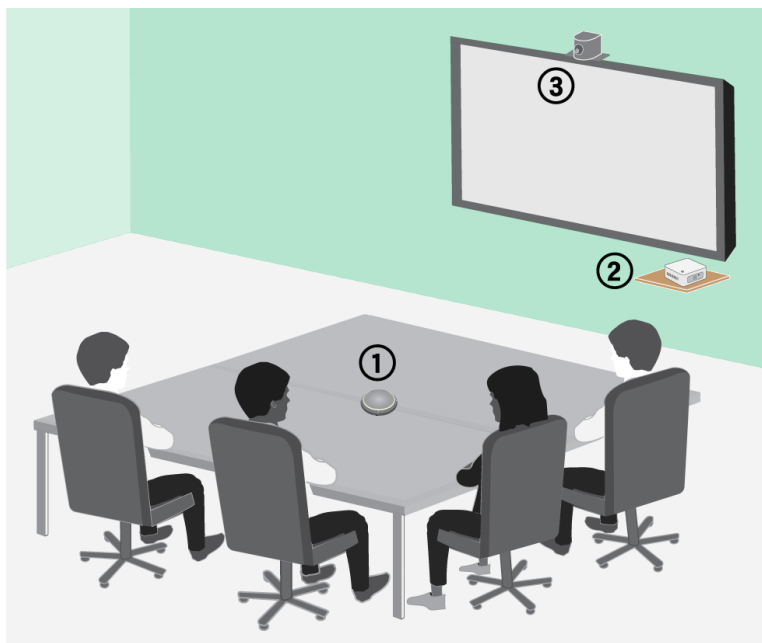
To route signals to the DSP:

1. Create a room in Designer. Add the MXA310 and IntelliMix Room installation to the room from the Online devices list.
   ◦ Both devices must be in the same room to route audio between them.
2. Open the room and go to Routing. This page lets you create Dante audio routes and link Shure networked mute buttons to devices.
3. Click Optimize. The Optimize workflow automatically routes audio signals, applies DSP settings, turns on mute synchronization, and enables LED logic control for connected devices.

   You can also manually route audio and apply DSP settings outside of the Optimize workflow if you prefer.
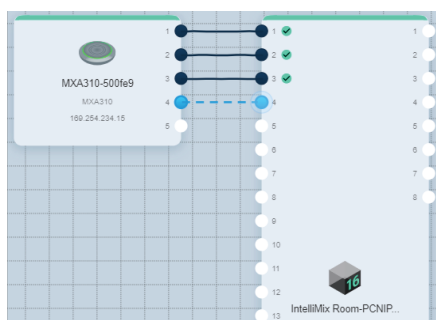
4. Check the audio routes and settings to make sure they fit your needs. You might need to:
   ◦ Delete unnecessary routes.
   ◦ Check levels and adjust gain.
   ◦ Verify that AEC reference signals are correctly routed.
   ◦ Fine-tune DSP blocks as needed.
5. Open IntelliMix Room's device configuration window. From here, you can adjust DSP settings and route the signal to other sources. Check that your mic inputs are using the correct AEC reference.
6. To send your signal to other sources, go to Matrix mixer.
   ◦ To send the automix signal to videoconferencing software, route to the virtual audio output.

◦ To send the automix signal to other Dante sources, route to the appropriate Dante output. Use Dante Controller to route IntelliMix Room Dante outputs to non-Shure devices.

Note: If you're using a non-Shure Dante microphone, use Dante Controller to route the near-end signal to IntelliMix Room.

Routing Far-End Audio to IntelliMix Room

To use acoustic echo cancellation (AEC), you need to route a far-end signal to the software. The AEC uses that far-end signal as a reference and blocks it from being sent back to the far end as echo.

Each input channel can use a different AEC reference source. If all channels use the same source, select the AEC reference source on each input channel.

1. In your conferencing software's settings, select **IntelliMix Room Echo Cancelling Speakerphone** as the playback device. This sends the far-end signal to IntelliMix Room's virtual audio input.
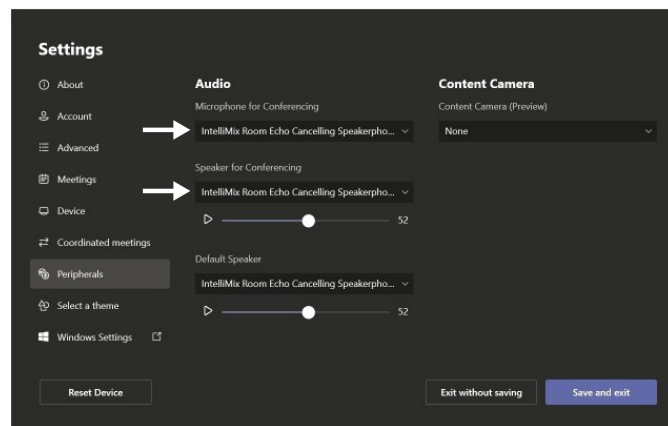
2. Open IntelliMix Room's configuration window in Designer.
3. On each microphone input channel, select AEC. Choose the far-end reference source from the menu.
   ◦ For best results, use the signal that feeds your local reinforcement system as the reference source.
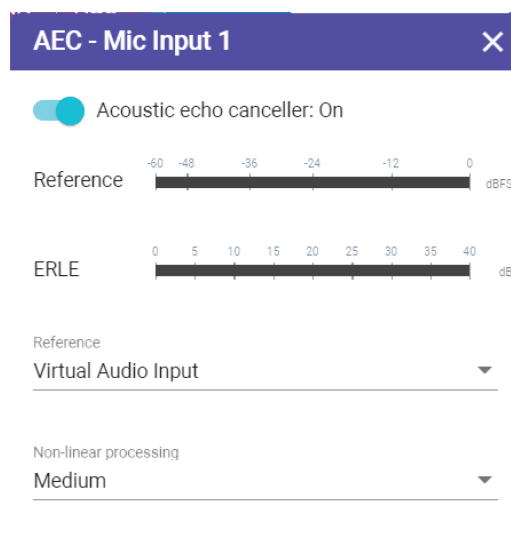
Sending Far-End Audio to Loudspeakers and Other Sources

1. Go to Matrix mixer.

2. Find the far-end signal, which comes to the software through the Virtual Audio Input.
3. Check the box where the Virtual Audio Input and the destination intersect. You can also adjust crosspoint gain here. Common destinations include:
   ◦ **PC audio output (3.5 mm or HDMI connector):** Go to Schematic view and click PC Output. Choose an output from the menu. Display speakers connected by HDMI cable or the 3.5 mm connector are common options.
   ◦ **Dante output destinations (loudspeakers or Shure ANI, for example)**

When to Rename Output Channels

Applies to IntelliMix Room version 4.2 and newer

If you need to rename any of IntelliMix Room's output channels (known in Dante Controller as transmit channels), make changes before routing audio from IntelliMix Room to other sources. In Designer, these are the channels labeled as Dante Output 1-8.

Renaming output channels after creating audio routes can cause mismatched routes in version 4.2 and newer. For details about how to fix broken routes, refer to our FAQ about Dante transmit channel names.

You can rename these output channels in Designer or Dante Controller.

Applying DSP Blocks

To apply DSP blocks:

1. Open a room that contains an IntelliMix Room installation.
2. Select the installation and click Configure.
3. In Schematic view, click a DSP block to open the settings window. You can also access DSP blocks from the Inputs and Outputs tabs.

DSP blocks also get applied during Designer's Optimize workflow.

Schematic View

The schematic view in Designer provides an overview of the entire audio signal chain, with the ability to adjust settings and monitor signals.

Adjusting Settings

Right-click an input, output, or processing block to access the following options:

Per Channel

Copy / paste

Copy and paste settings between items. For example, set the equalizer curve on the USB output, and then use the same setting for the analog output. Or, copy the gain and mute status from one input channel to several others.

Mute / unmute

Mutes or activates the channel

Enable / disable

Turns processing on or off (does not apply to matrix mixer or automixer)

Edit

Opens the dialog to adjust parameters

Global (right-click in blank area)

Mute all inputs

Mutes all input channels

Mute all outputs

Mutes all output channels

Unmute all inputs

Unmutes all input channels

Unmute all outputs

Unmutes all output channels

Close all dialogs

Clears all open dialogs from the workspace

Customizing the Workspace

Create a custom environment to monitor and control a set of inputs, outputs, and processing blocks from a single screen. There are two ways to break out dialogs:

- Right click > edit
- Double-click the input, output, or processing block.

Open as many dialogs as you need to keep important controls available.

Metering and Audio Routing

A meter appears underneath each input and output to indicate signal levels (dBFS).

The lines connecting inputs and outputs to the matrix mixer appear colored when connections are established. When a signal is not routed, the line appears gray. Use these tools to troubleshoot audio signals and verify connections and levels.

Parametric Equalizer

Maximize audio quality by adjusting the frequency response with the parametric equalizer.

Common equalizer applications:

- Improve speech intelligibility
- Reduce noise from HVAC systems or video projectors
- Reduce room irregularities
- Adjust frequency response for reinforcement systems

Setting Filter Parameters

Adjust filter settings by manipulating the icons in the frequency response graph, or by entering numeric values. Disable a filter using the check-box next to the filter.

Filter Type	Only the first and last band have selectable filter types. **Parametric:** Attenuates or boosts the signal within a customizable frequency range **Low Cut:** Rolls off the audio signal below the selected frequency **Low Shelf:** Attenuates or boosts the audio signal below the selected frequency **High Cut:** Rolls off the audio signal above the selected frequency **High Shelf:** Attenuates or boosts the audio signal above the selected frequency
Frequency	Select the center frequency of the filter to cut/boost
Gain	Adjusts the level for a specific filter (+/- 30 dB)
Q	Adjusts the range of frequencies affected by the filter. As this value increases, the bandwidth becomes thinner.
Width	Adjusts the range of frequencies affected by the filter. The value is represented in octaves. **Note:** the Q and width parameters affect the equalization curve in the same way. The only difference is the way the values are represented.
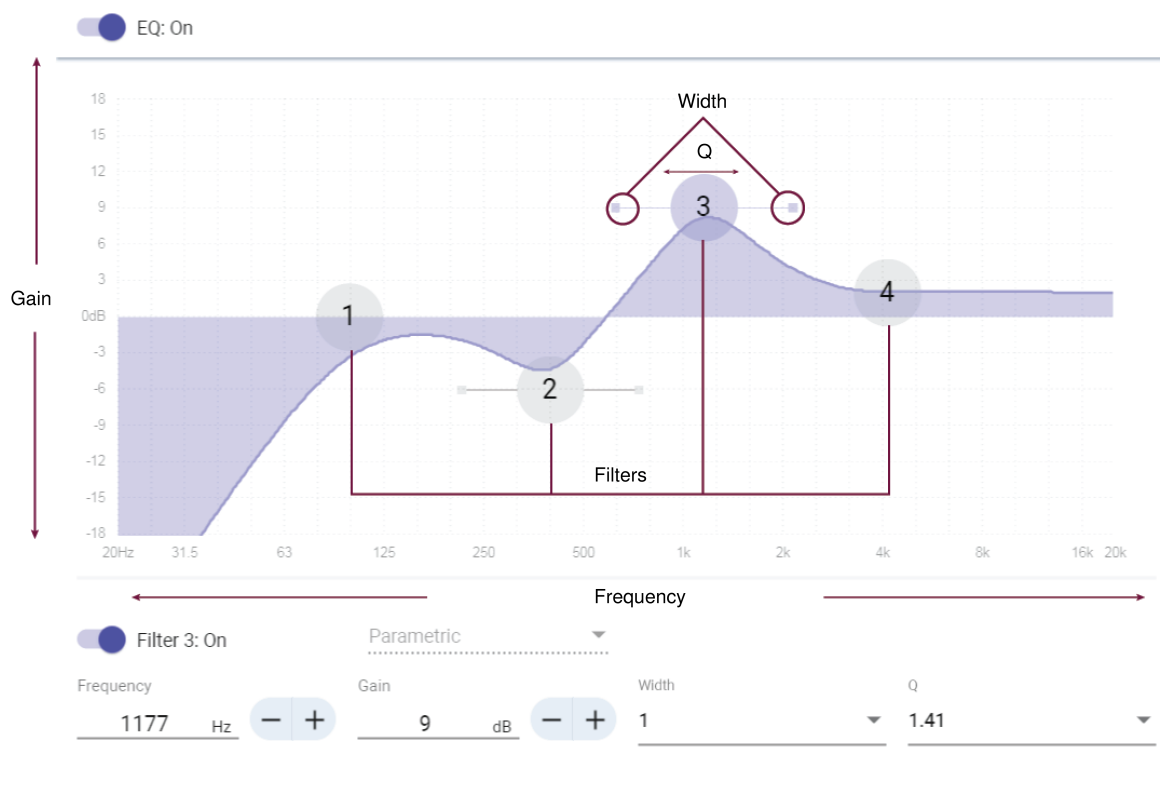
Copy, Paste, Import, and Export Equalizer Channel Settings

These features make it simple to use effective equalizer settings from a previous installation, or simply accelerate configuration time.

Copy and Paste

Use to quickly apply the same PEQ setting across multiple channels.

1. Select the channel from the pull-down menu in the PEQ screen.
2. Select Copy
3. In the pull-down menu, select the channel to apply the PEQ setting and select Paste.

Import and Export

Use to save and load PEQ settings from a file on a computer. This is useful for creating a library of reusable configuration files on computers used for system installation.

Export	Choose a channel to save the PEQ setting, and select Export to file.
Import	Choose a channel to load the PEQ setting, and select Import from file.

Equalizer Applications

Conferencing room acoustics vary based on room size, shape, and construction materials. Use the guidelines in following table.

EQ Application	Suggested Settings
Treble boost for improved speech intelligibility	Add a high shelf filter to boost frequencies greater than 1 kHz by 3-6 dB
HVAC noise reduction	Add a low cut filter to attenuate frequencies below 200 Hz
Reduce flutter echoes and sibilance	Identify the specific frequency range that "excites" the room: 1. Set a narrow Q value 2. Increase the gain to between +10 and +15 dB, and then experiment with frequencies between 1 kHz and 6 kHz to pinpoint the range of flutter echoes or sibilance 3. Reduce the gain at the identified frequency (start between -3 and -6 dB) to minimize the unwanted room sound
Reduce hollow, resonant room sound	Identify the specific frequency range that "excites" the room: 1. Set a narrow Q value 2. Increase the gain to between +10 and +15 dB, and then experiment with frequencies between 300 Hz and 900 Hz to pinpoint the resonant frequency 3. Reduce the gain at the identified frequency (start between -3 and -6 dB) to minimize the unwanted room sound

EQ Contours for IntelliMix Room

Use the built-in equalizer contours to quickly apply EQ changes to any of the Dante input channels. Applying both EQ contours and other channel EQ filters has a cumulative effect, meaning that the EQ changes stack on top of each other.

Listen to and test your system as you make EQ changes.

Off: Turns off any active EQ contours
MXA920: 150 Hz, −6 dB low-cut filter
MXA710 Low Shelf: 300 Hz, −6 dB low-shelf filter
MXA910 High Pass: 300 Hz low-cut filter
MXA910 Low Shelf: 960 Hz, −10 dB low-shelf filter
MXA910 Multi-Band: 200 Hz low-cut filter, parametric 450 Hz, −10 dB, 2.87 Q, ½ octave parametric, 900 Hz, −10 dB, 2.87 Q, ½ octave parametric
MXA310 Low Cut: 180 Hz low-cut filter

Acoustic Echo Cancellation

In audio conferencing, a far-end talker may hear their voice echo as a result of a near-end microphone capturing audio from loudspeakers. Acoustic echo cancellation (AEC) is a DSP algorithm which identifies the far-end signal and stops it from being captured by the microphone to deliver clear, uninterrupted speech. During a conference call, the AEC works constantly to optimize processing as long as far-end audio is present.

When possible, optimize the acoustic environment using the following tips:

- Reduce speaker volume
- Position speakers farther from microphones
- Avoid pointing speakers directly at microphone coverage areas

Selecting a Reference Signal for AEC

To apply AEC, provide a far end reference signal. For best results, use the signal that also feeds your local reinforcement system.

P300: Go to Schematic and click any AEC block. Choose the reference source, and the reference source changes for all AEC blocks.

MXA910, MXA920, MXA710: Route a far-end signal to the AEC Reference In channel.

IntelliMix Room: Go to Schematic and click an AEC block. Choose the reference source. Each block can use a different reference source, so set the reference for each AEC block.

Designer's Optimize workflow automatically routes an AEC reference source, but it's a good idea to check that Designer chooses the reference source you want to use.

AEC Settings

Reference Meter

Use the reference meter to visually verify the reference signal is present. The reference signal should not be clipping.

ERLE

Echo return loss enhancement (ERLE) displays the dB level of signal reduction (the amount of echo being removed). If the reference source is connected properly, the ERLE meter activity generally corresponds to the reference meter.

Reference

Indicates which channel is serving as the far end reference signal.

Non-Linear Processing

The primary component of the acoustic echo canceller is an adaptive filter. Non-linear processing supplements the adaptive filter to remove any residual echo caused by acoustic irregularities or changes in the environment. Use the lowest possible setting that is effective in your room.

Low: Use in rooms with controlled acoustics and minimal echoes. This setting provides the most natural sound for full duplex.

Medium: Use in typical rooms as a starting point. If you hear echo artifacts, try using the high setting.

High: Use to provide the strongest echo reduction in rooms with bad acoustics, or in situations where the echo path frequently changes.

Noise Reduction

Noise reduction significantly reduces the amount of background noise in your signal caused by projectors, HVAC systems, or other environmental sources. It is a dynamic processor, which calculates the noise floor in the room and removes noise throughout the entire spectrum with maximum transparency.

Settings

The noise reduction setting (low, medium, or high) represents the amount of reduction in dB. Use the lowest possible setting that effectively lowers noise in the room.

Compressor

Use the compressor to control the dynamic range of the selected signal.

Threshold

When the audio signal exceeds the threshold value, the level is attenuated to prevent unwanted spikes in the output signal. The amount of attenuation is determined by the ratio value. Perform a soundcheck and set the threshold 3-6 dB above average talker levels, so the compressor only attenuates unexpected loud sounds.

Ratio

The ratio controls how much the signal is attenuated when it exceeds the threshold value. Higher ratios provide stronger attenuation. A lower ratio of 2:1 means that for every 2 dB the signal exceeds the threshold, the output signal will only exceed the threshold by 1 dB. A higher ratio of 10:1 means a loud sound that exceeds the threshold by 10 dB will only exceed the threshold by 1 dB, effectively reducing the signal by 9 dB.

Delay

Use delay to synchronize audio and video. When a video system introduces latency (where you hear someone speak, and their mouth moves later), add delay to align audio and video.

Delay is measured in milliseconds. If there is a significant difference between audio and video, start by using larger intervals of delay time (500-1000 ms). When the audio and video are slightly out of sync, use smaller intervals to fine-tune.

Automatic Gain Control (AGC)

Automatic gain control adjusts channel levels to ensure consistent volume for all talkers, in all scenarios. For quieter voices, it increases gain; for louder voices, it attenuates the signal.

Automatic gain control is post-fader, and adjusts the channel level after the input level has been adjusted. Enable it on channels where the distance between the talker and the microphone may vary, or in rooms where many different people will use the conferencing system.

Target Level (dBFS)

Represents the level that you want the gain to reach. This level is different from adjusting the input fader according to peak levels to avoid clipping. Suggested starting points:

◦ P300: -32 dBFS
◦ MXA910: -37 dBFS
◦ IntelliMix Room: -32 dBFS

Maximum Boost (dB)

Sets the maximum amount of gain that can be applied

Maximum Cut (dB)

Sets the maximum attenuation that can be applied

Tip: Use the boost/cut meter to monitor the amount of gain added or subtracted from the signal. If this meter is always reaching the maximum boost or cut level, adjust the input fader so the signal is closer to the target level.

AI Denoiser

The AI denoiser identifies and reduces the level of noises such as typing, shuffling papers, or slamming doors. When the denoiser detects noise, it reduces the noise so your voice comes through clearly.

The denoiser adjusts for random noises that aren't always present in your audio signal, whereas noise reduction helps control constant background noise. For best results, use both the denoiser and noise reduction.

Use the meter to check that the denoiser is actively suppressing noise. The denoiser is applied to the automix output signal.

How it Works

Shure trains the AI denoiser with thousands of audio files. These include speech samples, noise samples, and samples that have mixtures of speech and noise. During this training, the denoiser learns how to identify patterns of speech and non-speech content in the frequency spectrum. It can then identify and preserve the speech content and reduce the non-speech content.

AI training or listening only happens at Shure's labs. You will receive any improvements to the AI denoiser algorithm when you update to the latest software version.

Settings

Settings indicate how much the denoiser lowers the level of noises. High significantly reduces noises, while low minimally reduces noises. Using the denoiser can affect speech levels if noise and speech happen at the same time. The effect varies with the type of noise and how loud it is.

Listen to and test the different settings to find one that works best in your space.

Use Call Status

Designer's call status feature uses microphone LEDs to show if you're in a videoconferencing call or not. This is a room-level feature, so it applies to all microphones in the same Designer room.

To use call status:

1. Put all microphones and processors (ANIUSB-MATRIX, IntelliMix Room, or P300) in the same Designer room.
2. Select Auto route to create audio and mute control routes. You can also route audio manually.

3. Go to `[Your room]` > `Settings` > `Call status` to turn on call status.

When call status is on:

- Microphone LEDs off = Not in a call
- Microphone LEDs on = In a call

Call status is compatible with the following codecs:

- Microsoft Teams
- Microsoft Teams Rooms
- Zoom Client for Meetings
- Zoom Rooms

Note: If your codec is running on a computer with a Chrome operating system, call status will not work.

Mute Sync

It's important to be able to see if a room is muted or unmuted during a call. You want devices to show the same mute status as the videoconferencing software. Shure devices use logic and mute sync to make this happen.

- **Logic:** Aligns mute status across Shure devices in the room. The processor (such as a P300, IntelliMix Room software, or an ANIUSB-MATRIX) is the controller.
- **Mute sync:** Aligns mute between the processor and the videoconferencing software, which is on a computer connected to the processor by USB. The processor's automix output is muted or unmuted to change the mute status of the system.
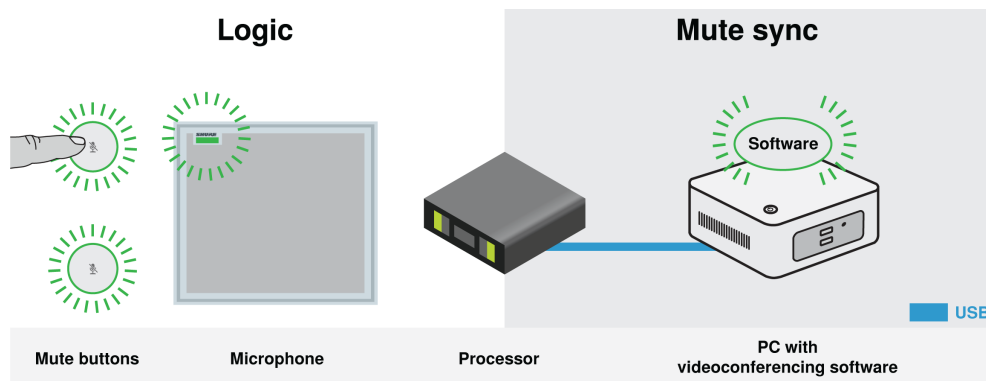
When mute sync is working correctly, you can mute a device (mute button or microphone mute button) or the videoconferencing software to mute the room.

To use mute sync:

1. In Designer, create audio and mute control routes between devices in the room.
2. Connect a computer with videoconferencing software to the processor's USB port.
3. Turn on mute sync and logic:
   - Processors: `[Your device]` > `Settings` > `Mute control`
   - Microphones without physical mute button: Logic is always on
   - MXA310 and MXA mute button: `Settings` > `Logic control` > `Mute control function` > `Logic out`

Designer's auto route process configures all necessary mute sync and logic settings for you.

Compatible Shure Logic Devices

- P300 (Also mutes supported soft codecs connected by USB)
- ANIUSB-MATRIX (Also mutes supported soft codecs connected by USB)
- IntelliMix Room software (Also mutes supported soft codecs connected by USB)
- MXA901
- MXA902
- MXA910
- MXA920
- MXA710
- MXA310
- Network Mute Button
- ANI22-BLOCK
- ANI4IN-BLOCK
- Logic-enabled MX microphones connected to ANI22-BLOCK or ANI4IN-BLOCK
  - MX392
  - MX395-LED
  - MX396
  - MX405/410/415

For help with specific mute sync implementations, see our FAQs.

Mute and Fader Groups

You can link channels to each other to create groups for muting and fader controls. You link channels by clicking 🔗 for the channels and the controls that you want linked. For example, if channels 1, 2, and 3 are linked for Mute, muting any of those individual channels mutes all of the linked channels.

Adjusting Input levels

The Inputs tab controls a channel's gain before it reaches the matrix mixer. However, you should also adjust the source's gain before it reaches IntelliMix Room.

To monitor a source's input level before IntelliMix Room processing: Set metering to **Pre-gain** in the Settings menu.

1. Check the source level before it reaches IntelliMix Room. Verify that the networked microphones or other Dante sources are operating at nominal output levels.
2. Adjust gain in the Inputs tab.
   - This gain stage adjusts the signal level before it reaches the matrix mixer.
   - Mix the levels as high as possible so that the loudest channel does not reach the peak level (0 dB) on the meter.

Pre- and Post-Gain Metering

The 2 metering modes allow you to monitor signal levels before and after the gain stages.

Input Metering

- **Pre-gain:** Displays the pre-fader signal level. If signals are too low or clipping, adjust them at the source.
- **Post-gain:** Displays the post-fader signal level, so the meters reflect gain adjustments on input faders. This meter does not include automatic gain control or any other processing.

Output Metering

- **Pre-gain:** Displays signal levels after input gain has been applied, but before the output faders. This meter includes input faders, digital signal processing blocks, automixing, and crosspoint gain.
- **Post-gain:** Displays the post-fader signal level sent to each output. This meter includes gain adjustments made on the output faders.

When to Use the Input and Automixer Gain Faders

There are 2 different gain faders that serve different purposes:

Input Gain (Pre-Gate)

To adjust, go to Inputs. These faders affect a channel's gain before it reaches the automixer and therefore affect the automixer's gating decision. Boosting the gain here will make the channel more sensitive to sound sources and more likely to gate on. Lowering gain here makes the channel less sensitive and less likely to gate on.

Automixer Gain (Post-Gate)

To adjust, go to Automixer. These faders adjust a channel's gain after automixer's gating decision. Adjusting the gain here will not affect the automixer's gating decision. Only use these faders to adjust the gain of a channel after you are satisfied with the automixer's gating behavior.

Automix Modes

Gating

Gating mode delivers fast-acting, seamless channel gating and consistent perceived ambient sound levels. The off attenuation setting is applied to all inactive channels, regardless of the number of active channels.

Gain Sharing

Gain sharing mode dynamically balances system gain between open and closed channels. The system gain remains consistent by distributing gain across channels to equal one open channel. The scaled gain structure helps to reduce noise when there is a high channel count. When fewer channels are used, the off attenuation setting is lower and provides transparent gating.

Manual

Manual mode sums all active tracks and sends the summed signal over a single Dante output. This provides the option to route an individual signal for reinforcement or recording, without enabling automixing. The settings from the faders in the standard monitoring view apply to the summed output.

Automix Settings

Note: Not all settings are available on all automixers.

Leave Last Mic On

Keeps the most recently used microphone channel active. The purpose of this feature is to keep natural room sound in the signal so that meeting participants on the far end know the audio signal has not been interrupted.

Gating Sensitivity

Changes the threshold of the level at which the gate is opened

Off Attenuation

Sets the level of signal reduction when a channel is not active

Hold Time

Sets the duration for which the channel remains open after the level drops below the gate threshold

Maximum Open Channels

Sets the maximum number of simultaneously active channels

Priority

When selected, this channel gate activates regardless of the number of maximum open channels.

Always On

When selected, this channel will always be active.

Send to Mix

When selected, sends the channel to the automix channel.

Solo

Mutes all of the other channels

Automix Gain Meter

When enabled, changes gain meters to display automix gating in real time. Channels that gate open will display more gain than channels that are closed (attenuated) in the mix.

Mic Optimization Mode (P300 only)

Select the microphone that is used with the automixer for best performance. For best results, use Designer's Optimize workflow (this automatically selects the correct mic optimization mode).

Use the Off setting when using a Shure Microflex® Wireless system, or traditional wired microphones.

Automixer Direct Out Tap Points

In the Automixer tab, use the menus below each channel to choose where the signal to the matrix mixer should come from.

All options include input channel gain, mute, solo, and PEQ.

Pre-Processing/Pre-Gate

Sends a signal without AEC, noise reduction, or AGC to the matrix mixer.

Post-Processing/Pre-Gate

Sends a signal with AEC and noise reduction but without automixer gating or AGC to the matrix mixer.

Post-Processing/Post-Gate

Sends a signal with automixer gating, AEC, and noise reduction but without AGC to the matrix mixer.

Pre-Processing/Post-Gate

Sends a signal with automixer gating but without AEC, noise reduction, or AGC to the matrix mixer.

Note: Direct out tap points are not available on all Shure automixers.

Use Cases

Use Case: IntelliMix Room, 2 MXA310s, and Display with Built-In Speakers
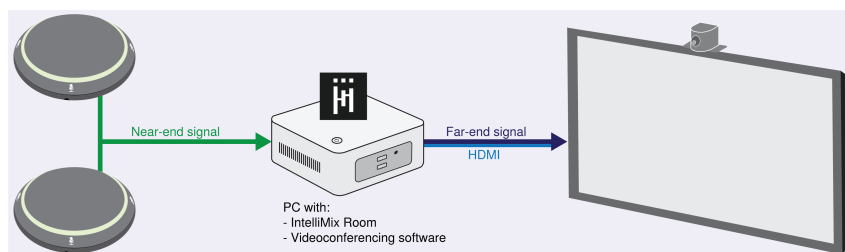
- IntelliMix Room provides DSP and sends signals from the MXA310s to the videoconferencing software.
- Far-end signal comes in to IntelliMix Room's Virtual Audio Input.
- Connect the computer to the display to use the display's built-in speakers for sound reinforcement.
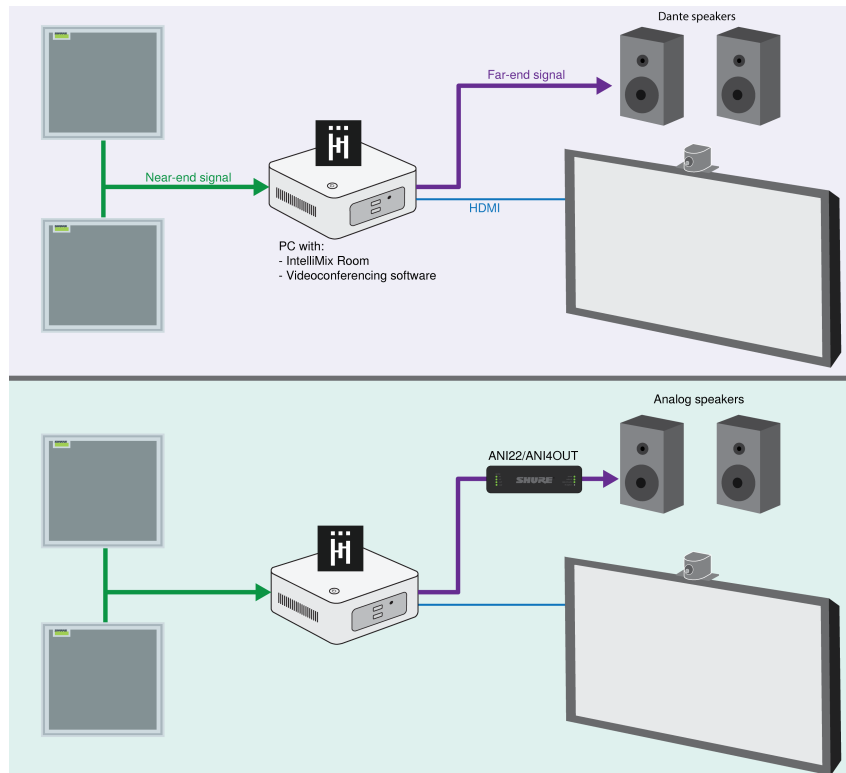
Setup Process

1. Connect all devices, discover them in Designer, and place them in the same Designer room.
2. In Designer, go to [Your room] > Routing.
3. Click Optimize. This button automatically routes audio signals, applies DSP settings, turns on mute synchronization, and enables LED logic control for connected devices. You can customize the settings later if necessary, but Optimize gives you a good starting point.
4. Check that the Virtual Audio Input is set as the AEC reference signal. Delete any unnecessary audio routes.
5. Using the matrix mixer, route the far-end signal (the Virtual Audio Input) to the PC output. Click PC Output in the Schematic tab to choose the connected display.

   If far-end participants hear echo artifacts, the display may be introducing latency. See Troubleshooting for help.

Equipment List:

- 2 MXA310s
- Computer in room with videoconferencing software and IntelliMix Room
- Display with built-in speakers
- Network switch supplying Power over Ethernet (PoE)
- Computer on network with Shure Designer software
- Cat5e (or better) Ethernet cables
- HDMI cable to connect computer to display
- Any other cameras or cables

Use Case: IntelliMix Room, 2 MXA910s, and Loudspeakers

- IntelliMix Room provides DSP and sends signals from the MXA910s to the videoconferencing software.
- Far-end signal comes in to IntelliMix Room's Virtual Audio Input
- Use Dante or analog loudspeakers for sound reinforcement. If you're using analog speakers, use an ANI22 or ANI4OUT to bring the far-end signal off the network to the loudspeakers.

Setup Process

1. Connect all devices, discover them in Designer, and place them in the same Designer room.
2. In Designer, go to [Your room] > Routing.
3. Click Optimize. This button automatically routes audio signals, applies DSP settings, turns on mute synchronization, and enables LED logic control for connected devices. You can customize the settings later if necessary, but Optimize gives you a good starting point.
4. Check that the Virtual Audio Input is set as the AEC reference signal. Delete any unnecessary audio routes.
5. Using the matrix mixer, route the far-end signal (the Virtual Audio Input) to a Dante output.
6. Open Dante Controller software to route the signal from IntelliMix Room's Dante output to the loudspeaker.

   Dante Loudspeakers: Route the signal to the loudspeaker(s) in Dante Controller.

   Analog Loudspeakers: Connect the loudspeakers to an ANI22 or ANI4OUT, and route the signal to the ANI in Dante Controller.

Equipment List:

- 2 MXA910s
- Computer in room with IntelliMix Room and videoconferencing software
- Dante or analog loudspeakers
- ANI22 or ANI4OUT for analog loudspeaker systems
- Network switch supplying Power over Ethernet (PoE)

- Computer on network with Shure Designer software
- Cat5e (or better) Ethernet cables
- Any other cameras, cables, or displays

Network Setup Examples

IntelliMix Room works with many different types of networks. Here are some of the most common network setups:

- **Flat Network**
  - All A/V and corporate devices are on the same network.
  - Use one network for Shure control and Dante audio data.
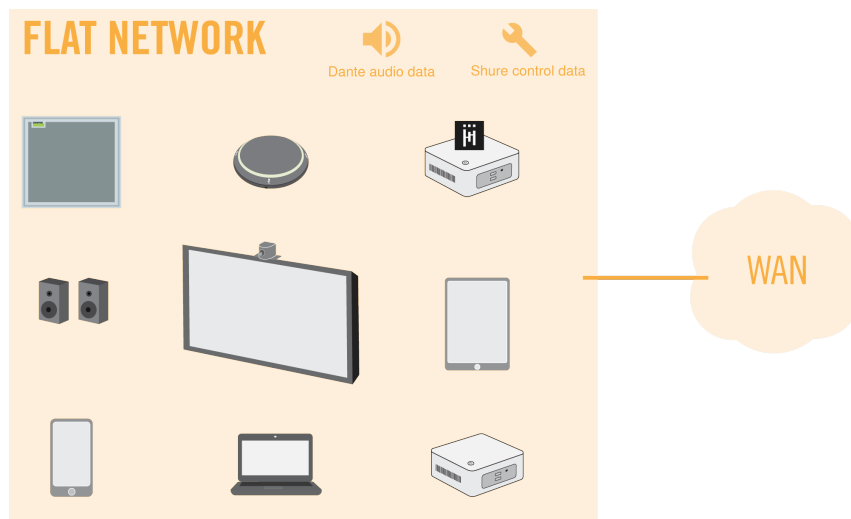
- **Corporate and AV Network**
  - All A/V devices are on a separate network from the corporate network.
  - The computer running IntelliMix Room uses the A/V network for Dante audio and Shure control data.
  - The computer uses a wired connection to the corporate network for internet. USB 3.0 to gigabit Ethernet adapters are a common way to connect to 2 NICs.
  - Crestron's USB-to-Ethernet adapter for audio isolation is designed for UC-C100 kits and IntelliMix Room.
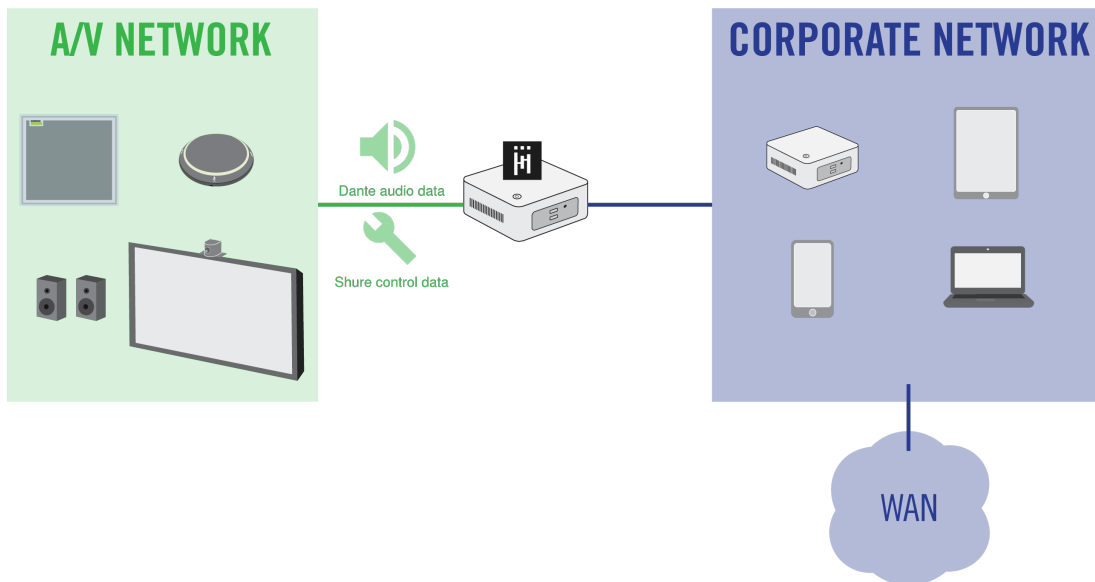
- **Corporate and AV Network with Separate Internet Connections**
  - ◦ IntelliMix Room and all other A/V devices are on a separate network that has its own internet connection, which is completely separate from the corporate network.
  - ◦ Use the A/V network for both Dante audio and Shure control data.
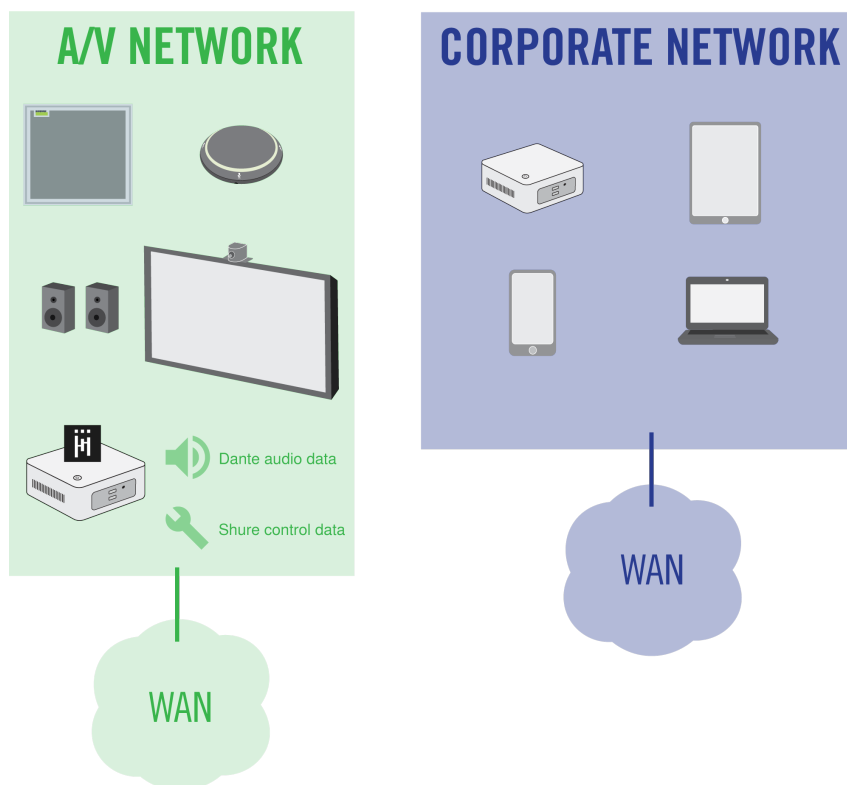
Security Testing

Shure IntelliMix Room underwent penetration testing by a reputable third-party security assessment company. The test results placed IntelliMix Room above the average of all applications tested. Going forward, Shure will continue to internally and externally test the security of IntelliMix Room. For more information, please contact productsecurity@shure.com.

Monitor Shure Devices with Crestron XiO Cloud

With IntelliMix Room version 4.0 and newer, you can monitor installations in Crestron XiO Cloud. You can also monitor other Shure devices that are routed to IntelliMix Room. These connected devices are called "peripherals" in XiO Cloud.

Supported Devices:

- IntelliMix Room version 4.0 and newer
- MXA920 firmware 1.3.276 and newer
- MXA910 firmware 4.7.13 and newer
- MXA710 firmware 1.5.12 and newer
- MXA310 firmware 4.7.8 and newer
- MXN5-C firmware 1.5.12 and newer
- MXA Network Mute Button firmware 1.5.15 and newer

To get started:

1. In the Windows system tray, right-click `IntelliMix Room` > `Retrieve cloud API info`.
2. Check that the port listed in the dialog is open. If the port is closed, click Open. The port range is 4006 - 49151.
3. In XiO Cloud, enter the following information to monitor IntelliMix Room and connected Shure devices:

Required Information to Enroll Devices in Crestron XiO Cloud

Information	Where to find it
Computer's IP address with network connection to XiO Cloud Gateway	Computer's network settings
Token for each IntelliMix Room installation	Go to the Windows system tray and right-click `IntelliMix Room` > `Retrieve cloud API info`. Copy the token into XiO Cloud.
Port for each IntelliMix Room installation	Go to the Windows system tray and right-click `IntelliMix Room` > `Retrieve cloud API info`. Copy the port information into XiO Cloud.
Serial numbers for: **Each IntelliMix Room installation** **Any connected Shure devices**	IntelliMix Room: Go to the Windows system tray and right-click `IntelliMix Room` > `Settings`. Connected Shure devices: Designer: `Online devices` > `[Your device]` > `Settings` Web application: Settings

Firewall Rules for Using Crestron XiO Cloud

Inbound or out-bound?	Display name	Program	Proto-col	Local port	Local address
Inbound	Shure Sys-temApi	C:\Program Files\Shure\SystemAPI\Standalone\SystemAPI_Bin\win64\shure-system-api-server-win.exe	TCP	4006 - 49151	Any

Refer to Crestron's documentation for more help with XiO Cloud.

Compatibility with Dante Domain Manager

This device is compatible with Dante Domain Manager software (DDM). DDM is network management software with user authentication, role-based security, and auditing features for Dante networks and Dante-enabled products.

Considerations for Shure devices controlled by DDM:

- When you add Shure devices to a Dante domain, set the local controller access to Read Write. Otherwise, you won't be able to access to Dante settings, perform a factory reset, or update device firmware.
- If the device and DDM can't communicate over the network for any reason, you won't be able to control Dante settings, perform a factory reset, or update device firmware. When the connection is reestablished, the device follows the policy set for it in the Dante domain.
- If Dante device lock is on, DDM is offline, or the configuration of the device is set to Prevent, some device settings are disabled. These include: Dante encryption, MXW association, AD4 Dante browse and Dante cue, and SCM820 linking.

See Dante Domain Manager's documentation for more information.

Note: IntelliMix Room is not compatible with Dante's device lock feature.

How to Recover IntelliMix Room from Inaccessible Dante Domains

If Dante Domain Manager isn't accessible, you can manually remove the IntelliMix Room installation from the domain. DDM can become inaccessible if an installation of IntelliMix Room gets moved from one network to another and it doesn't get removed from the Dante domain first.

To remove the installation from the domain:

1. Stop the IntelliMix Room service (`Task manager` > `Services` > `Right-click IntelliMix Room` > `Stop`).
2. Clear the contents in

   C:\ProgramData\Shure\IntelliMixRoom\dalconfig

   .
3. Restart the IntelliMix Room service. This clears the domain credentials and also resets other Dante settings.

Dante Flows for Shure Devices

Dante flows get created any time you route audio from one Dante device to another. One Dante flow can contain up to 4 audio channels. For example: sending all 5 available channels from an MXA310 to another device uses 2 Dante flows, because 1 flow can contain up to 4 channels.

Every Dante device has a specific number of transmit flows and receive flows. The number of flows is determined by Dante platform capabilities.

Dante Flows for Shure Devices

Dante Platform	Shure Devices Using Platform	Transmit Flow Limit	Receive Flow Limit
Brooklyn II	ULX-D, SCM820, MXWAPT, MXWANI, P300, MXCWAPT	32	32
Brooklyn II (without SRAM)	MXA920, MXA910, MXA902, MXA710, AD4, AD600, APXD2	16	16
IP Core	MXA920-V3, MXA902-V3, MXA901	32	32
Ultimo/UltimoX	MXA310, ANI4IN, ANI4OUT, ANIUSB-MATRIX, ANI22, MXN5-C	2	2
DEP	ANIUSB-MATRIX-V3	2	2
DAL	IntelliMix Room	16	16

Learn more about Dante flows in our FAQs or from Audinate.

Using Command Strings with IntelliMix Room

To control IntelliMix Room with third-party control systems, turn on command strings in Designer. You must choose an open port on the computer running IntelliMix Room to send and receive command strings.

Default port: 2202

Port range: 1025-65534

1. In Designer, open the installation of IntelliMix Room you want to control and go to `Settings` > `Command strings`.
2. Turn on command strings.
3. Enter an available port to send and receive the command strings. Make sure that the port isn't being used by any other programs installed on the computer.

   To test if the port is available:

   ◦ Send a command to IntelliMix Room. Make sure you are targeting IntelliMix Room's control IP address.
   ◦ If you don't receive a response, the port is being used by another program.
   ◦ Try a different port number and send the command until you receive a response.
   ◦ For best results, install all software on the computer before choosing a port for command strings. Adding new software after setting up command strings can change how the computer's ports are used, which can affect command strings.

A complete list of command strings is available at pubs.shure.com/command-strings/IntelliMixRoom.

Troubleshooting

Problem	Solution
Dante transmit channel routes break after I change the channel's name in Designer or Dante Controller (IntelliMix Room version 4.2 and newer)	Before you route audio from IntelliMix Room to other sources, first make any necessary changes to the channel names. For detailed instructions, refer to our FAQ about Dante transmit channel names in version 4.2 and newer.
IntelliMix Room installations won't show up in Designer	1. On the device running IntelliMix Room, click the system tray icon. Check that the installation is using the same Shure control network as Designer. 2. Check if other Shure devices appear in Designer. If they do, open the Windows Task Manager and go to Services. Restart IntelliMix Room. 3. Open Dante Controller. Check if the installation appears in Dante Controller. 4. If the installation appears in Dante Controller, check firewall settings. Make sure it's not blocking any Shure traffic. 5. Contact Shure support if it still doesn't appear in Designer.
Licenses won't activate in Designer	1. Check that the device running IntelliMix Room has an internet connection. This is required for license activation. 2. Go to your account at software.shure.com and check that you have enough licenses. If you don't have enough licenses or need a different channel count, purchase more from your Shure sales representative. 3. Contact Shure support.
Clicked IntelliMix Room icon in system tray, and the screen loads continuously	This means IntelliMix Room isn't running properly. Try the following solutions: 1. Open the Windows Task Manager and go to Services. 2. Check if IntelliMix Room is running. If it's stopped, right-click to start the service. If it's running, right-click to stop the service and then restart it. 3. Restart the computer and reopen from the system tray. 4. Check if you can discover this IntelliMix Room installation in Designer or Dante Controller. If you can't discover the installation, uninstall it and then reinstall. 5. Contact Shure support if it still doesn't run correctly.

Problem	Solution
IntelliMix Room won't pass audio	1. Open the installation in Designer and check that it's unmuted. 2. Check if the installation has a license that isn't expired. If it has a valid license, check the audio signal chain for inputs that are muted or routed incorrectly. 3. If it doesn't have a license, find your license ID and add it to the project. Make sure the device with IntelliMix Room has a working internet connection to activate the license. Find the license ID in your purchase email or in your account at software.shure.com. If you don't have enough licenses or need a different channel count, purchase more from your Shure sales representative. 4. Check that the installation has the same channel count as what is available in your account for that license ID. For example, if your installation has 8 channels, but your license ID only has one 16-channel license available, you need to purchase an 8-channel license. 5. On the device running IntelliMix Room, try to access software.shure.com. If you can't access it, try visiting another website. If you can, your firewall could be blocking traffic from the cloud license server. Adjust settings to allow traffic from Shure. If you can access it, contact Shure support. The firewall is not interfering with the cloud license server.
Far end hears whispy echo sounds coming from room using IntelliMix Room	This is likely caused by latency introduced to the signal chain after the AEC reference signal. We have observed devices like soundbars or displays adding extra latency to the signal after it leaves IntelliMix Room. This difference between the AEC reference signal and what comes through the speakers causes problems for the echo canceler's training, and results in a whispy sound. To fix this problem, delay your AEC reference signal so that it's closer to the signal coming out of the speakers. 1. Using the matrix mixer, route the far-end signal (virtual audio input) to an unused Dante output. 2. Set this Dante output as the AEC reference signal. 3. Add delay to the Dante output. Start with 50-100 ms, and listen for echo artifacts on the far end. To provoke the artifacts, a single talker on the far end should make sibilant sounds ("Psst" or "Shhh") and observe the echo coming back.

Problem	Solution
	4. Continue to increase or decrease the delay until the echo artifacts disappear from the perspective of the far-end participant.

Submit Software Logs to Get Help

If you need help with IntelliMix Room, submit the software logs to Shure.

1. On the PC with IntelliMix Room, right-click the IntelliMix Room icon in the system tray.
2. Select Report a problem. Follow the steps to submit the software logs to Shure.

There is also an event log in Designer, but it collects high-level information for all devices and software controlled by Designer. To access, select Event log from Designer's main menu.

Reset

Restore factory defaults: Resets all application and license settings to the factory defaults. Network settings remain the same.

Specifications

Control Software
Shure Designer

Digital Signal Processing
Automatic mixing, matrix mixer, acoustic echo cancellation (AEC), noise reduction, automatic gain control, compressor, delay, AI denoiser, equalizer (4-band parametric) , mute, gain (140 dB range)

Frequency Response

Dante Digital Audio or Virtual Audio Device	20 to 20,000 Hz

Sampling Rate

Dante Digital Audio or Virtual Audio Device	48 kHz

Bit Depth

Dante Digital Audio	24 bit
Virtual Audio Device	24 bit

Audio Signal Type

Virtual Audio Input	Stereo audio on	Left and right stereo channels
	Stereo audio off	Sums to single mono channel
Virtual Audio Output		Dual mono channels
PC Input		Sums to single mono channel

PC Output	Dual mono channels

Latency
Not including Dante latency

Auxiliary Dante Inputs to Dante Out	17.9 ms
Dante Mic Inputs to Dante Out (AEC enabled)	24.6 ms
Dante Mic Inputs to Dante Out (AEC and NR disabled)	17.9 ms
AI Denoiser Enabled	45.3 ms

Acoustic Echo Cancellation Tail Length

Up to 300 ms