LODE®

MULTI ROOM AUDIO SOLUTIONS

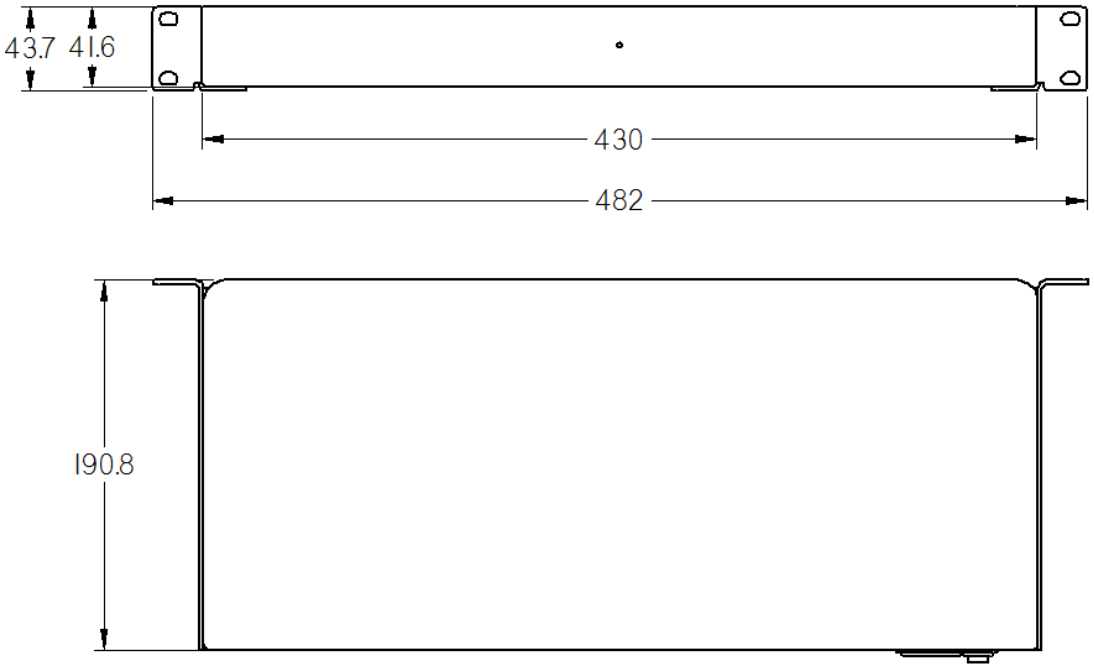
Lode Audio Servers
Technical Documentation & Installation Guide

TOC

LA4 Technical Overview

Overview
1U rack mount 4 zone analogue output audio server.

Dimensions



Weight: 5KG

Power and Heat

Power Consumption: 35W
Current: 5amp
BTU/HR: 180(max)
120-230v IEC power supply

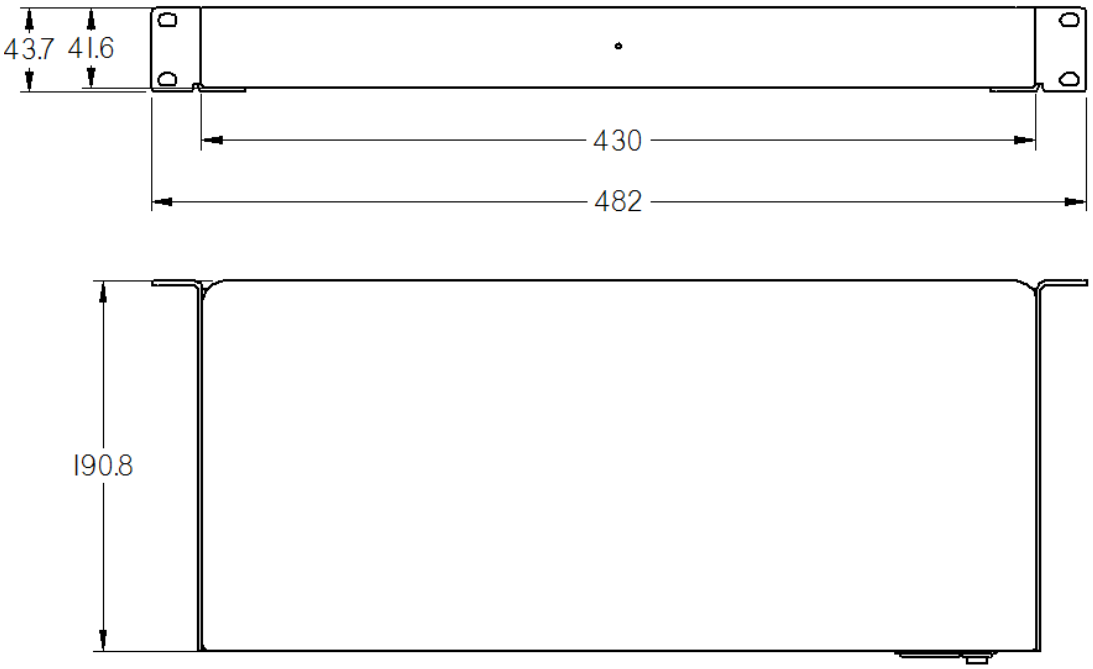
Outputs

1 X Stereo RCA output per zone, 4 in total.

LA4D Technical Overview

Overview
1U rack mount 4 zone analogue and digital output audio server.

Dimensions



Weight: 4.6 KG

Power and Heat

Power Consumption: 20W
Current: 5amp
BTU/HR: 80(max)
120-230v IEC power supply

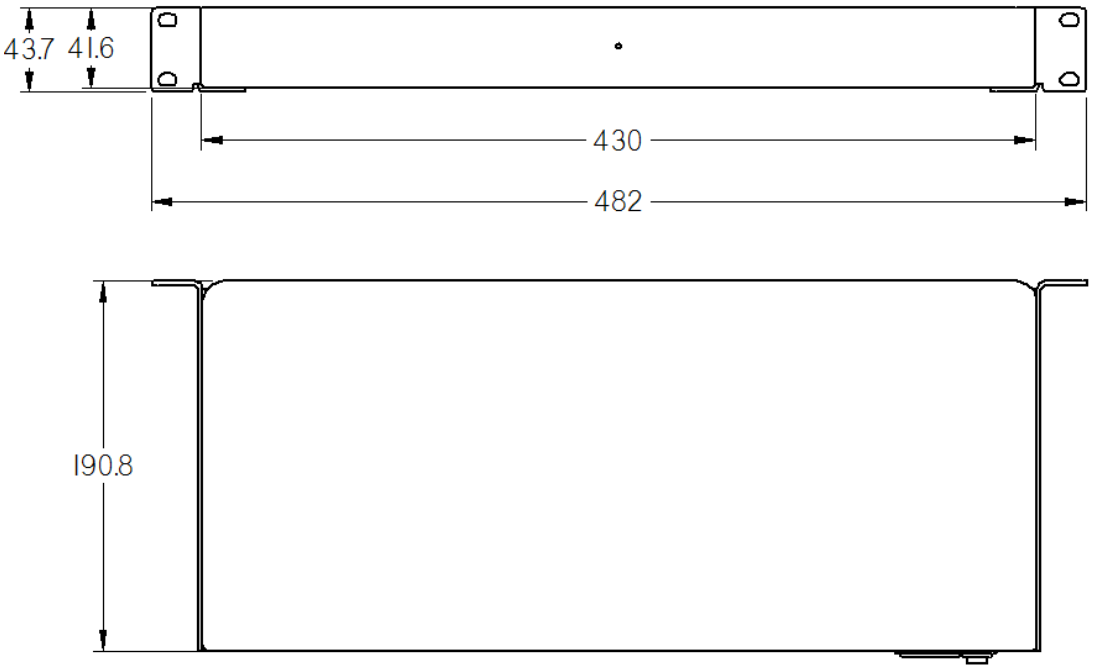
Outputs

1 X Stereo RCA, Optical and Coaxial output per zone.

LA2D Technical Overview

Overview
1U rack mount 2 zone analogue and digital output audio server.

Dimensions



Weight: 4.4 KG

Power and Heat

Power Consumption: 20W
Current: 5amp
BTU/HR: 80(max)
120-230v IEC power supply

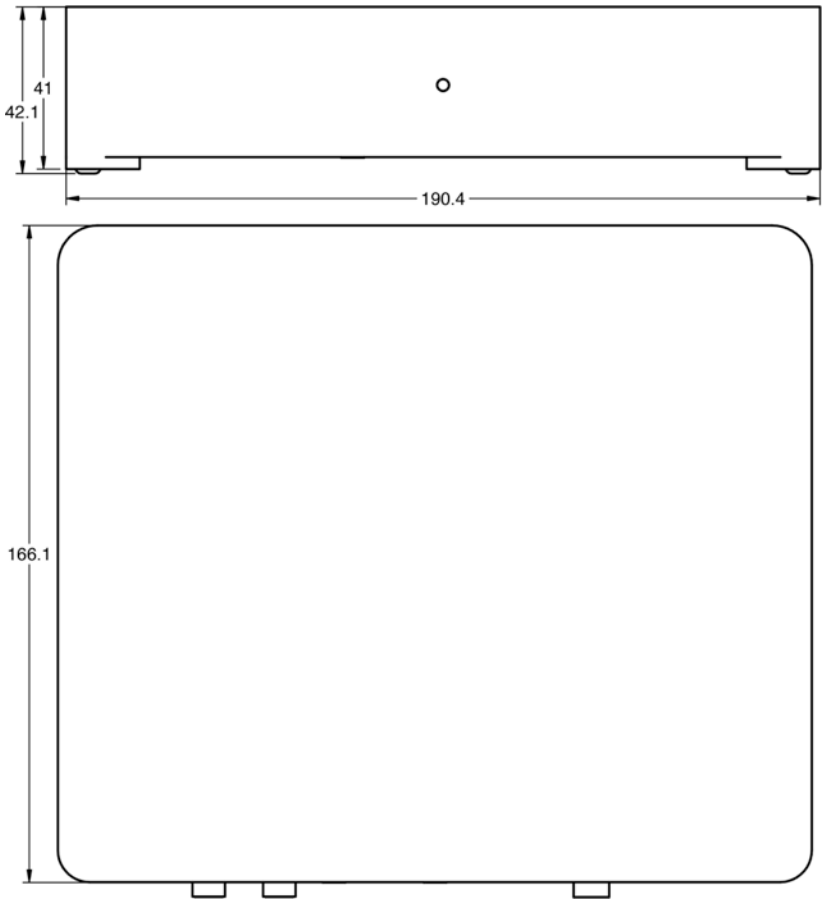
Outputs

1 X Stereo RCA, Optical and Coaxial output per zone.

LA1 Technical Overview

Overview
Half U 1 zone analogue output audio server.

Dimensions



Weight: 1.4 KG

Power and Heat

Power Consumption: 20W
Current: 5amp
BTU/HR: 80(max)
120-230v IEC power supply

Outputs

1 X Stereo RCA output per zone, 4 in total.

Streaming and Local Media

Supported Streaming Services

As of the 1st March 2017.

- TIDAL™
- Tunein™ Internet radio
- SoundCloud™
- Soundmachine™
- Hotel Radio FM™
- Deezer™
- Napster™
- Local music library integration - multiple libraries
- iTunes playlists importing
- AirPlay per zone *includes extended functionality
- Spotify™ (Connect coming soon)
- Custom HTTP and HTTPS stream urls

Supported file formats

- Playback of MP3, M4P, M4A, Flac, WAV, AAC

Control System Integrations

As of the 1st March 2017. Please check our website for updates to this guide and updated integration list.

- Crestron - Media Player and Standard Driver
- AMX
- Control4
- RTI
- Command Fusion
- Elan

Native Control Applications

- iOS
- Android
- Windows Desktop
- OSX Desktop

About LODENET™

All Lode Servers are powered by LODENET™.

Lode's proprietary LODENET™ protocol enables synchronised, high-definition & low latency audio-over-IP playback.

LODENET™ works as an audio matrix over the network, allowing users to group zones for synchronized playback of content (party mode) and conveniently control volume for the main and also individual zones, without the need of an external matrix.

Lode can be scaled up to 64 zones on a network without the need for a hardware audio matrix. Synchonisation of playback is guaranteed; there can be no drift over time.

Installation Guide

Lode servers are machined from aluminium, which acts as the heat sink, eliminating noisy fans and so increasing performance and reliability. This also means that the unit MUST HAVE airflow both above and beneath for optimum cooling levels. Failure to provide may result in the unit overheating and degrading performance.

On Boot, Lode severs will perform a number of checks over the internet to configure itself and check for updates. **Please allow a couple of minutes** for unit/s to complete checks prior to playing audio streams otherwise it may result in playback of multiple zones being out of sync.

Check “system maintenance” section of the web console and apply any pending updates to the server/s.

Web Configuration

All Lode Server settings are configured via the Admin Web Console. To access the web console, you will need to know the IP address of the Lode unit.

By default the unit ships with DHCP enabled.

Lode units can be discovered on the network using the Lode admin tool downloaded from http://www.lodeaudio.com.

If you don’t have admin tool installed, you will need to ascertain it’s IP address via the DHCP sever.

Click on listed sever to access the web console.
Example: http://192.168.10.100 where 192.168.10.100 is the address provided to the Lode server.

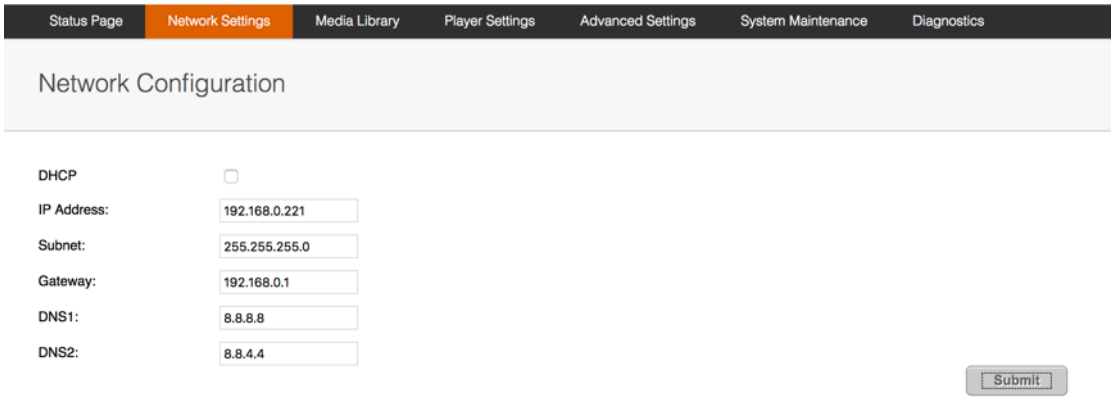
It is recommended that each unit is set-up fully before adding others to the network

Change Network Settings

To change network settings, simply visit the “Network Settings” section of the web console.

Here you can set the unit’s IP address or confirm it’s configuration for DHCP.

If you are using a control system to control Lode, then you must either statically assign an IP address to the unit or use IP allocation rules within the DHCP server to ensure that the unit has a static IP address. This is required, as the set-up of the driver requires pointing the module at the IP address of the Lode Server.



LODENET Protocol Configuration

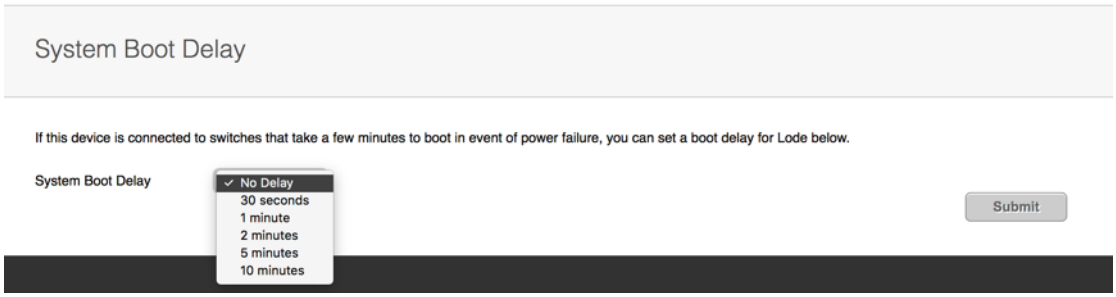
By default LODENET uses UDP Unicast for synchronizing audio streams, which will support up to 64 zones on a network. This can be changed to UDP Multicast mode to enable support for up to 256 zones.

Multicast filtering must be enabled on the VLAN for this to function correctly.

To change the LODENET Protocol, visit the “Network Settings” section of the web console.

System Boot Delay

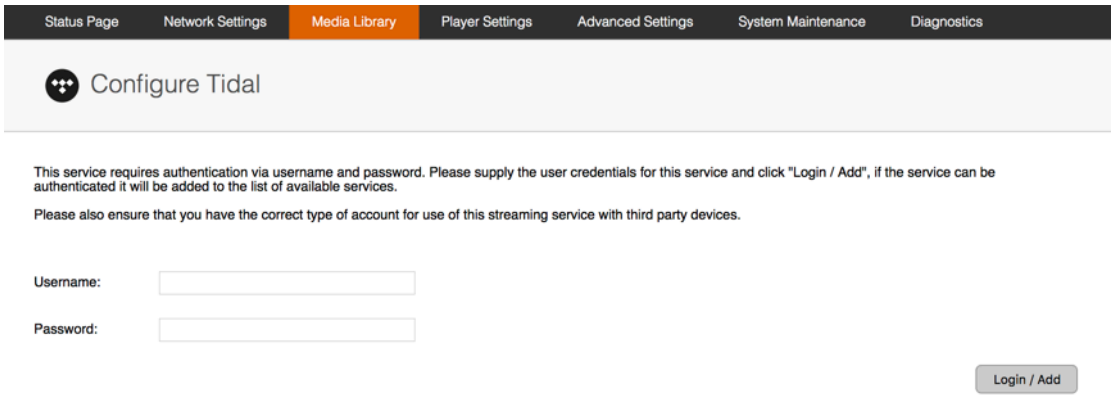
If this device is connected to switches that take a few minutes to boot in event of power failure, you can set a boot delay for Lode within the “Network Settings” section of the web console.



Enabling Music Services

From the ”Media Library” section of the web console, simply select to “enable” or “disable” a service. If a service requires authentication, you will be asked for the Login and password.

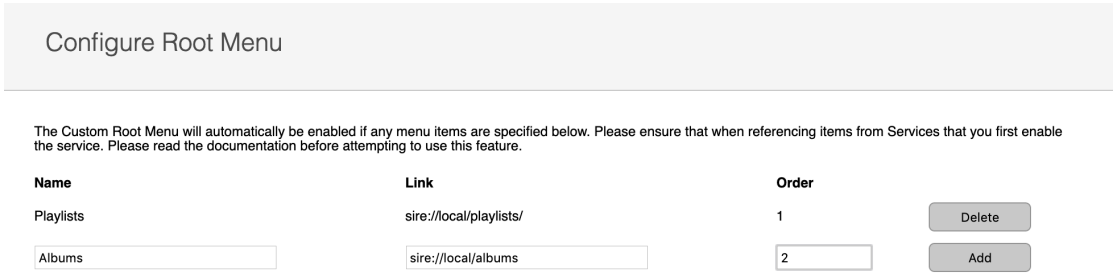
Once successfully registered, the service will appear in controllers.



Custom Root Menus

The Lode Servers offer the ability to create custom menus for users. This is an advanced feature and requires knowledge of the Lode API and should only be used for configuring radio station links and local content links.

To add a custom menu, open the custom menu editor and enter the item name, API link and order it should appear in the menu.



Configuring Stream Links

With Lode Servers you can add custom HTTP and HTTPS stream links for playback. This can be especially useful for commercial installs where a brand operates a generic streaming radio station to be played across all stores.

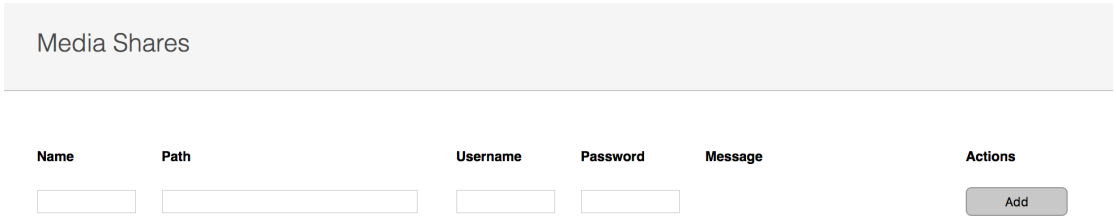
To configure Stream Links, simply go to the Media Library area within the web config for the Lode Server, enable the My Streams service and start adding links by giving them a name and the HTTP / HTTPS address for the stream.

The links will then be browsable via the My Streams service in any connected controllers.

Indexing a Network Share

To index a local network share, you must first enable the Local Music service from the “Media Library” area of the web console.

Once the Local Music service has been enabled, you will be presented with a new input area to add the details of the network share you wish to index.



The Lode server requires an SMB share for mounting. Please ensure that any NAS or computer share has SMB sharing enabled.

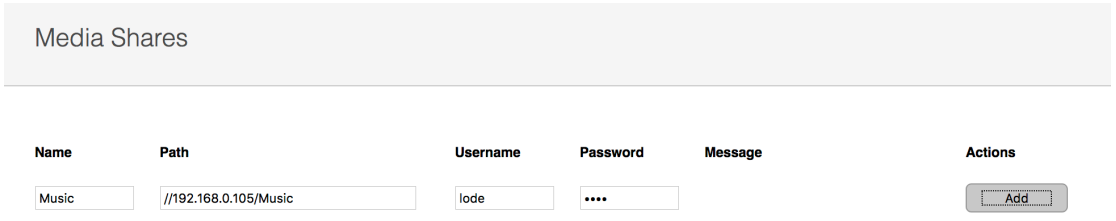
The share only needs read access.

Note. If using a NAS that has a network recycle bin, please ensure that all recycle bin functionality is turned off as this can cause issues when deleting and adding new media.

To add the share to Lode, give the share a name, path and username / password if required.

Paths should be specified as //IP-ADDRESS/SHARE NAME

For example //192.168.0.50/Music where 192.168.0.50 is the IP-ADDRESS and Music is the SHARE-NAME

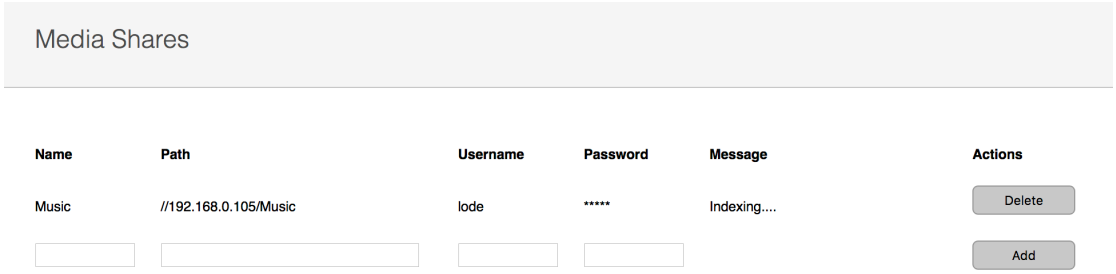


Some networks may have DNS or MDNS resolution available for host names. If this is the case you can use “.local” resolution with the following style path for the network share:

//HOST-NAME**.local**/SHARE NAME

For example //Lode-NAS.local/Music where Lode-NAS is the HOST-NAME and Music is the SHARE-NAME.

Once the share details have been added, click the “Add” button and you should receive a message telling you that the share is now indexing.

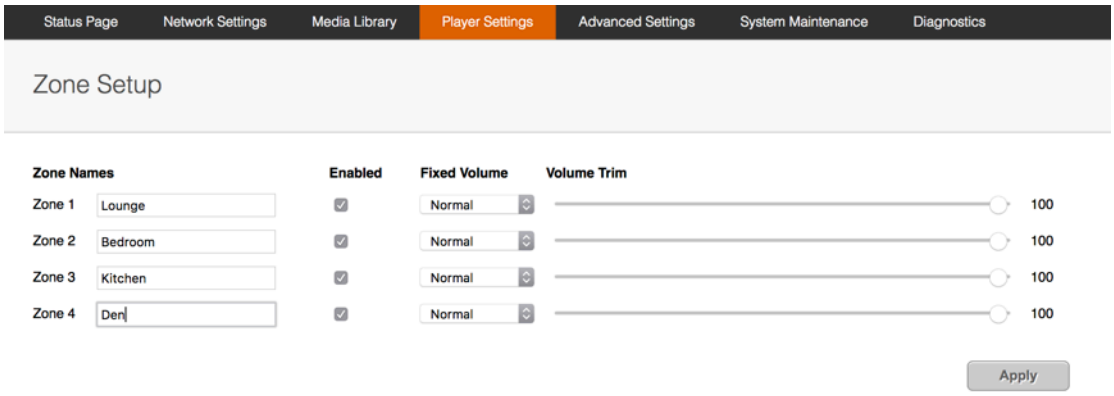


The Lode server will re-index the share every 60 seconds.

Player Settings

To change the name of any of the players for the Lode server, visit the “Player Settings” section of the web console.

Here you can give each player a unique name such as “Living Room’, or ”Kitchen”, for example.



Within the Player Settings area, you can also choose to enable or disable zones as required.

Fixed Volume Settings
There are 3 volume options in Lode:

- Normal – Variable volume controllable by all apps.
- Fixed – The volume of the Lode zone is fixed (can be combined with volume trim). The default fixes the volume to 100% and disables the volume control in apps.
- Passthrough – This fixes the Lode zone volume to 100% (can be combined with volume trim). Only with pass through the volume control is not disabled in Lode apps and Lode will pass the volume control feedback back to a control system. This option could be used to control a local AVR volume that Lode is connected to.

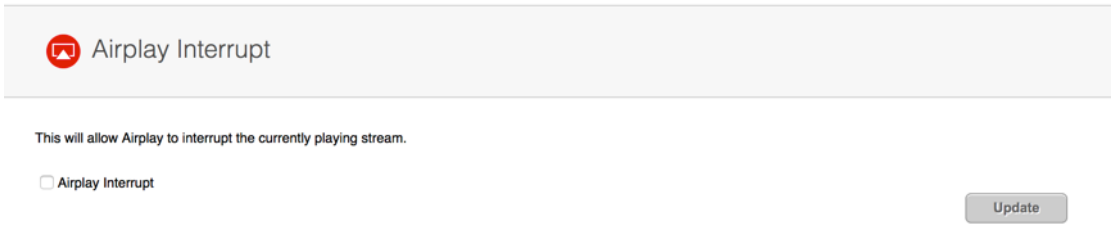
Warning: Setting the volume to fixed or passthrough will set the volume at 100% on the Lode Server. Please make sure that the pre-amp is turned down before changing this setting

Volume Trim
This feature really exists to protect any equipment after Lode in the audio chain. If the Lode zone volume is trimmed to 60%, volume control within Lode will now be between 0% and 60%.

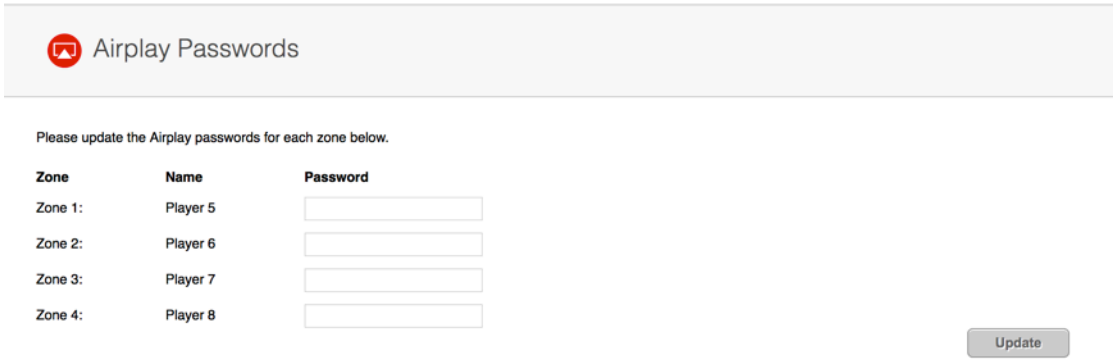
Airplay Configuration

Lode servers have an Airplay per-zone capability. To set-up Airplay as a selectable source, please access the “Media Library” section of the web console and enable Airplay.

If you want to have the ability for customers to play Airplay to any room at anytime, please select the option for “Airplay interrupt” in the “Advanced Settings” section of the web console. Please note that this option will enable any existing stream to be interrupted by another user.

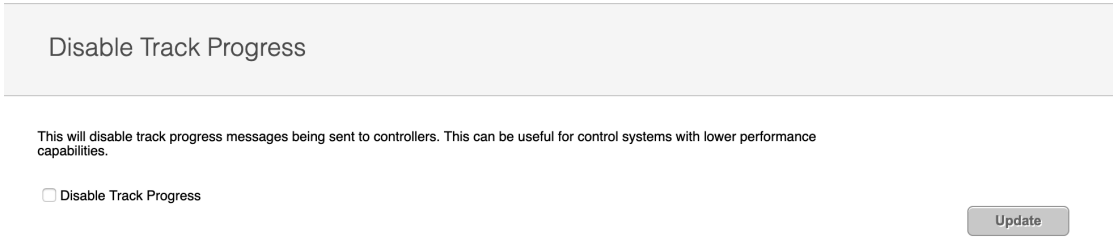


An Airplay password can also be set for each player in the same section of the web console by typing a password in each listed player section. Once the password is set, any user would be prompted for this password via the iOS device before being allowed to play.



Disable Track Progress

Some control systems (depending on their processing power) struggle with multiple zones sending track progress messages every second. Within the Lode Audio server the track progress messages can be disabled via the Advanced Settings area.



Ports and Encoding

Character Encoding

The Lode servers by default uses UTF-8 character encoding within its IP control API. This can be changed, if required, when using a control system needing additional character support you can use the following port options for communication:

- 6667 UTF-8
- 6668 UTF-16
- 6669 ASCII

Broadcast Discovery

Lode Desktop, iOS and Android apps use UDP broadcast for device discovery. As such, WiFi attached devices must be in the same subnet as the Lode servers for discovery to work.

PORT = 44466
GROUP = 239.192.0.202
BROADCAST = 255.255.255.255

Lode Mesh

Lode provides it's own mesh for inter unit communication. The mesh enables unit and zone discovery between boxes as well as message broking for the API.

The mesh uses a simple multicast message for discovery communication:

GROUP = 224.2.2.3
PORT = 54327

LODENET Streaming

By default LODENET distributes audio between units using UDP unicast.

PORT = 41000 to 41100

The port numbers will increments for each of zone.

LODENET relies on NTP for initial clock sychronisation, Please ensure NTP requests are allowed out on the network which is UDP over port 123.

Subsequent clock sychronisation is done using PTP domain 101.

Product Support

Factory Reset

The Lode server has a reset button located on the rear of the unit. To reset the unit, press and hold this button for 10 seconds, the unit will then become unresponsive.

Now cycle the power on the unit (turn off the unit for at least 10 seconds before restarting) and once the unit reboots, you will be back to factory default.

Be aware that resetting the unit will delete all playlists and favourites saved to date, so please be sure that it really is a reset that you want. Ideally make a note of each of login credentials BEFORE resetting the unit.

If you are running a cluster of Lode Servers, please follow these steps to reset all units in the cluster:

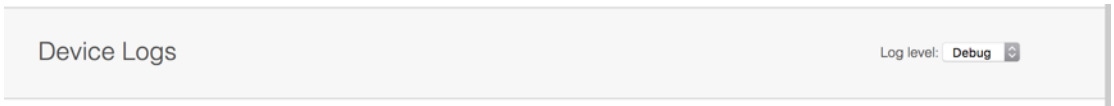
1) Press and hold reset button for 10 seconds on each machine.
2) Power-off each machine.
3) Power-on each machine.

Unless this protocol is followed, the cluster could rebuild its data under certain conditions meaning that no unit is properly reset.

Requesting Support

To raise a support ticket, please e-mail support@lodeaudio.com, a member of our dedicated technical team will be in touch directly to assist.

When requesting support, you can also provide us with the logs of the platform. Please first put the unit into debug mode via the “Diagnostics” area of the Web Console.



Once the unit is debug mode, you should try and re-create any issues you have experienced. Once the issue has been replicated, you can send Lode the logs from the system by simply going to the “System Maintenance” area of the web console and clicking the “Create Support Package” button.