



LINN

Linn DS

Control4 Driver User Guide

Version 1.0

Introduction

This driver has been designed to provide two-way control of Linn DS variants, via TCP/IP. The following features are supported:

- ⌚ Automatic discovery
- ⌚ Playback of music from music servers selectable in the Control4 UI.
- ⌚ Support for amplified and non amplified variants
- ⌚ Analog line-in inputs for DS-I models
- ⌚ HDMI inputs/outputs for DSM models
- ⌚ Room selection
- ⌚ Transport and volume control
- ⌚ Play queue management
- ⌚ Browse and selection of content
- ⌚ Songcast – accessed via the Control4 Zones page
- ⌚ Browsing of music services such as Tidal

Linn Configuration

Please make sure that each Linn device has been configured correctly, and is on the same network as the Control4 processor, prior to configuration of the Control4 drivers. The Control4 drivers require an instance of Kazoo Server (v4.7 or later) to be running on the same network.

Please follow Linn documentation on how to configure Tidal, Qobuz and TuneIn credentials from within Kazoo server. These logins will enable the services to be used from within the Control4 driver apps.

Each Linn device can be configured by using the Linn Konfig app.

The **room name** for the device can be changed in Linn Konfig. It is important to view/change the room names for each device as these room names get discovered in the Control4 drivers. A meaningful name should be used to avoid confusion when associating Linn rooms to Control4 device drivers later on. Please see the Linn device documentation for more information.

The **sources** for the Linn device can be configured in Linn Konfig. A particular source can be made visible/hidden from the control4 driver by changing the **Visible** property of the source to Yes/No respectively. The **source name** that gets populated in the Control4 device driver is also editable. It is useful to provide a meaningful name for the source, to avoid confusion later on. Please see the Linn device documentation for more information.

Driver Installation

Two driver files are included in the release package.

Driver File Name	Description
comms_ip_linn_ds.c4z	This is the network driver and it handles discovery of devices. Only one instance is required.
mediaservice_ip_linn_ds.c4z	These drivers are used for control of individual room devices. One instance is required for each room.

Table : Driver Descriptions

Copy the above files from the zip package to your Control4 driver location (by default this is *Documents\Control4\Drivers*). Open Composer and choose the **Search** tab from the **Items** pane.

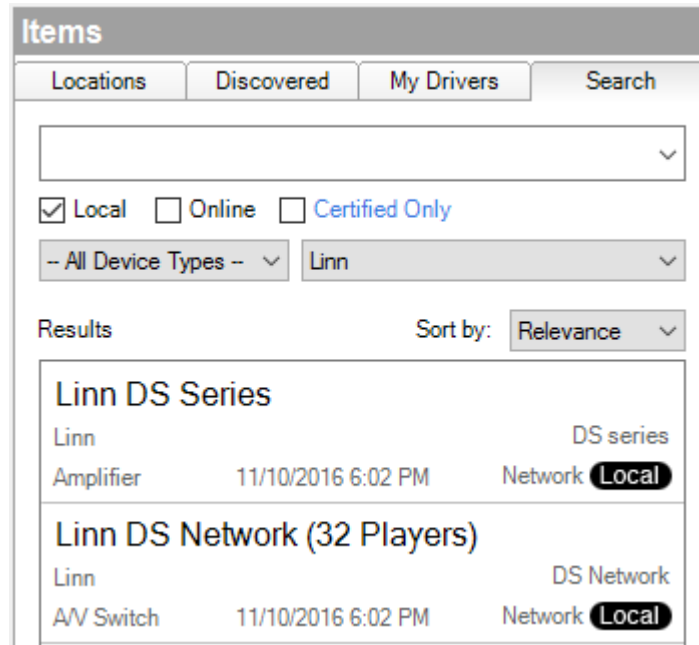


Figure 1: Driver Search

Add one instance of the driver entitled "Linn DS Network (32 Players)" into your project. We recommend installing the driver in a room of its own called "Linn Network" and then hiding the room (room Properties → Navigator tab → Hide Room in Location Menu).

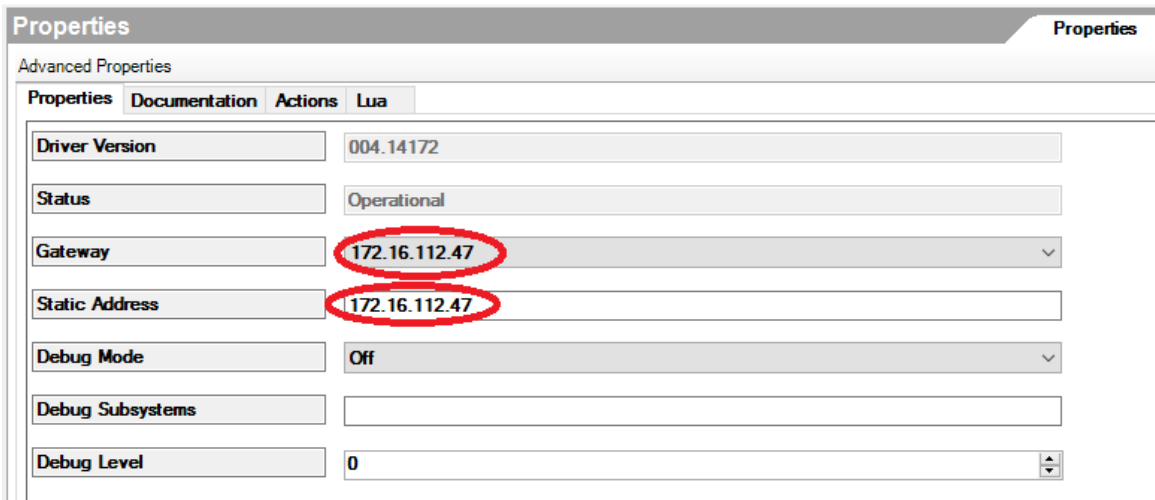
Next, add one instance of a player driver "Linn DS Series" to each room in your project which contains a Linn DS player.

NOTE: It is important that the network driver is added prior to the media service drivers.

Driver Configuration

The network driver is used for discovery of Linn gateways connected to the network. Only one instance of this driver is required, even if multiple Linn devices are in use. Once it is installed it initiates a discovery process that will result in all the available Linn gateway devices being found.

In the **System Design** view, select the Linn **Network** device and choose the **Properties** tab from **Advanced Properties**. Select a gateway address from the **Gateway** dropdown box, or by manually overriding the gateway address in the **Static Address** field :



Properties			
Advanced Properties			
Properties	Documentation	Actions	Lua
Driver Version	004.14172		
Status	Operational		
Gateway	172.16.112.47		
Static Address	172.16.112.47		
Debug Mode	Off		
Debug Subsystems			
Debug Level	0		

Figure 2: Gateway Selection

In the **System Design** view, select the Linn **Network** device and choose the **Actions** tab from **Advanced Properties**. Two buttons are displayed:

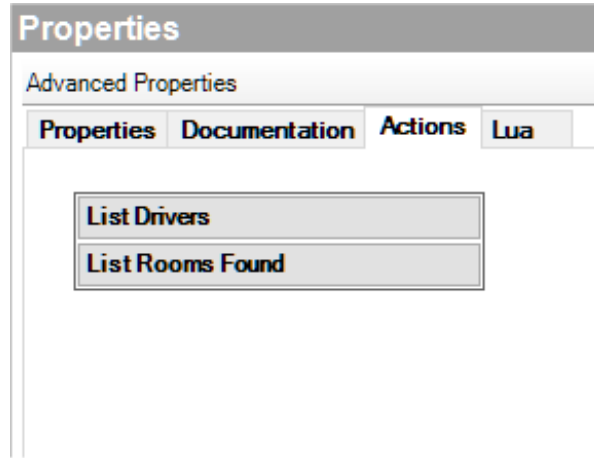


Figure 3: Driver Actions

You can check that all your configured room devices have been found by clicking on **List Rooms Found**. Select the **Lua** tab to see the results of the listing:

```
-- Gateways discovered on the network:
+ 1:172.16.112.47

-- C4 Device drivers:
[1029] = { ROOM_IDS="207,", PLAYER_NAME="Main Room", VERSION="5", PLAYER_INDEX=2, DEVICE_ID="1029", }
-- Linn rooms discovered on the network:
{ index=2, cache=table: 0xc473480 { }, id="Main Room", name="Main Room", drivers=table: 0xe2d9c20 {
["1029"]="1029", }, } { index=3, cache=table: 0xd3103a0 { }, id="MARKTDELLPC", name="MARKTDELLPC",
drivers=table: 0x9ebeda0 { }, } { index=1, cache=table: 0xd8cba20 { }, id="GREG-PC", name="GREG-PC",
drivers=table: 0xa6694e0 { }, }
```

Figure 4: Discovery

It is necessary to ensure that each device driver in your project is controlling the correct Linn room. Select the **System Design** view and choose an instance of a player device driver. The **Room** drop-down in the **Properties** window may be used to select the correct Linn room name to use as the player in each Control4 room.

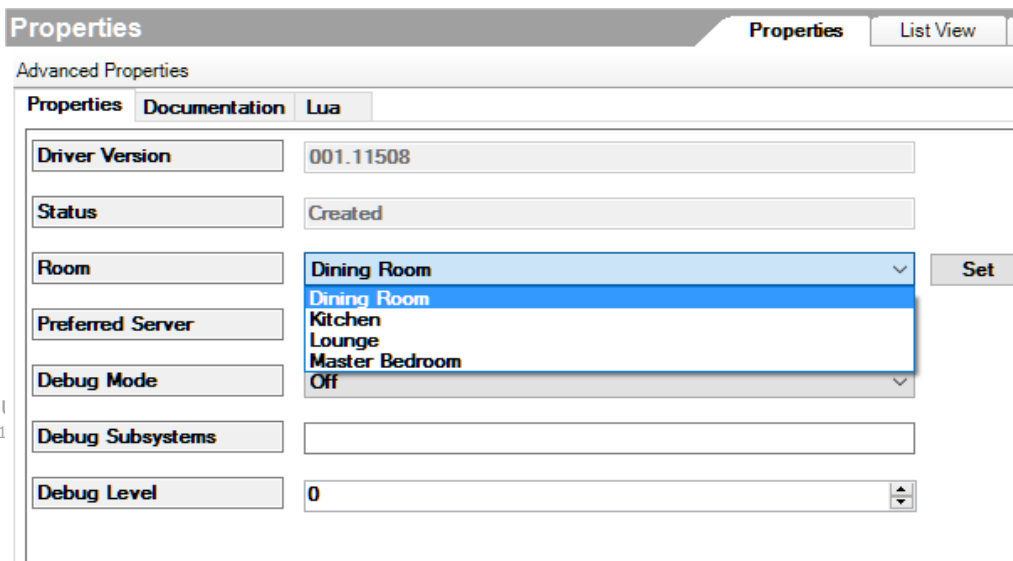


Figure 5: Room Selection

It is necessary to perform this check for each player driver instance added to your project.

The driver has a "Preferred Server" service associated with it. This allows the installer to configure a single UPnP or OpenHome server as the preferred source for music. The server is chosen through the **Preferred Server** property of the driver. The alternative is the "Media Servers" service, which lists all the discoverable UPnP and OpenHome servers and then allows the user to browse through their content. The installer can choose to hide either of these sources in Navigator (see below) if they are not needed.

Control4 Configuration

As per standard Control4 practice, it is necessary to establish audio end-point connections for each device. Choose the **Connections** view, and select the **Control/AV** tab. Select the Linn device driver to reveal its connections.

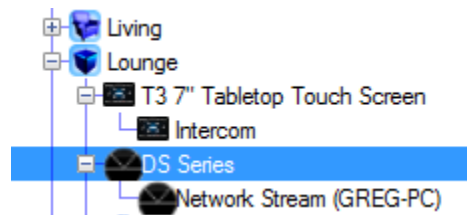


Figure 6: Driver Connections 1

If you are using an amplified player (e.g. a Sneaky or Sekrit), then you need to set up room control connections. In the **Control & Audio Video Connections** window, select the **Audio End-Point** with the **Connection** type "AUDIO_SELECTION" and drag it onto an available **Audio End-Point** in the appropriate room.

Control & Audio Video Connections			
DS Series			
Name	Type	Connection	Input/Output
Audio/Video Outputs			
HDMI Out	Video	HDMI	Output
Audio Out	Audio	SPEAKER	Output
Audio Out	Audio	STEREO	Output
Audio Out	Audio	RF_LINN_SONGCAST	Output
Control Inputs			
Linn Network	Control	LINN_NETWORK_CO...	Input
Room Control			
Audio End-Point	RoomControl	AUDIO_SELECTION	Output
Audio End-Point	RoomControl	AUDIO_VOLUME	Output
HDMI Out Video End-Point	RoomControl	VIDEO_SELECTION	Output
AUDIO_SELECTION Input Devices			
Device	Name		
Room	Audio End-Point 1		
Room	Video's Audio End-Point 1		
Room	Audio End-Point 2		
Room	Video's Audio End-Point 2		
Living	Audio End-Point 1		
Living	Video's Audio End-Point 1		
Living	Audio End-Point 2		
Living	Video's Audio End-Point 2		
Lounge	Audio End-Point 1		
Lounge	Video's Audio End-Point 1		
Lounge	Audio End-Point 2		

Figure 7: Driver Connections 2

Next, do the same for the **Audio End-Point** with the **Connection** type "AUDIO_VOLUME", this time dragging it onto an available **Audio Volume** input in the appropriate room. Finally for the **Video End-Point** with the **Connection** type "VIDEO_SELECTION", this time dragging it onto an available **Video End-Point** input in the appropriate room. If you were instead using a **DS (un-amplified)**, no room control connections need to be made, as another amplifier would be the end point in the room.

If you are using a player with input connections, then you can also make connections to the relevant line-in connections on the driver. The properties of the driver will tell you which Control4 input each available Linn input is mapped onto, giving you the Control4 input number and the Linn name:

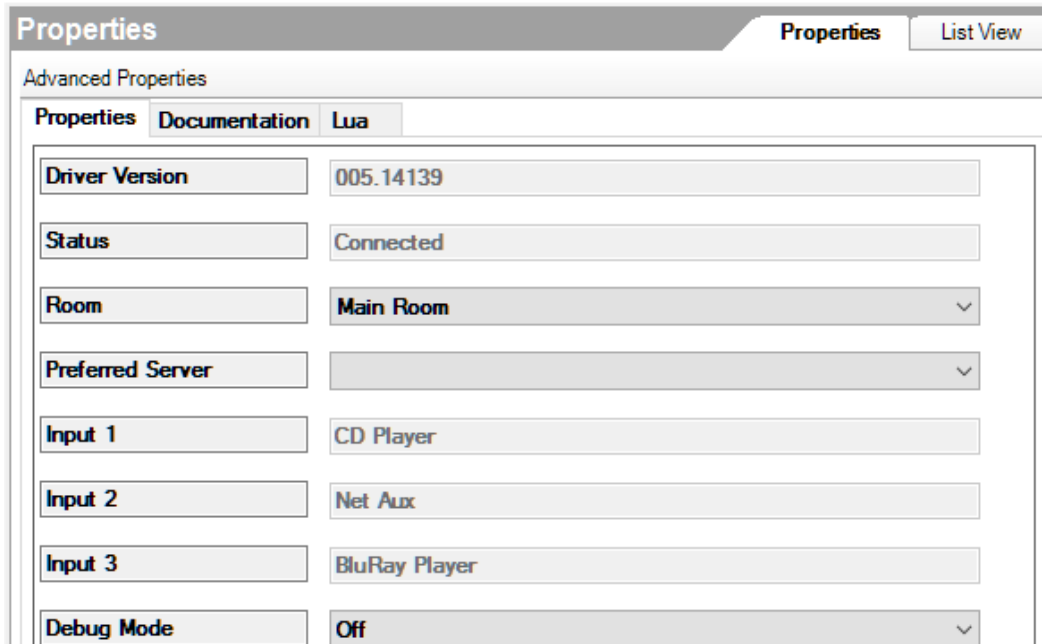


Figure 8: Driver Connections 3

then the connections might look as follows:

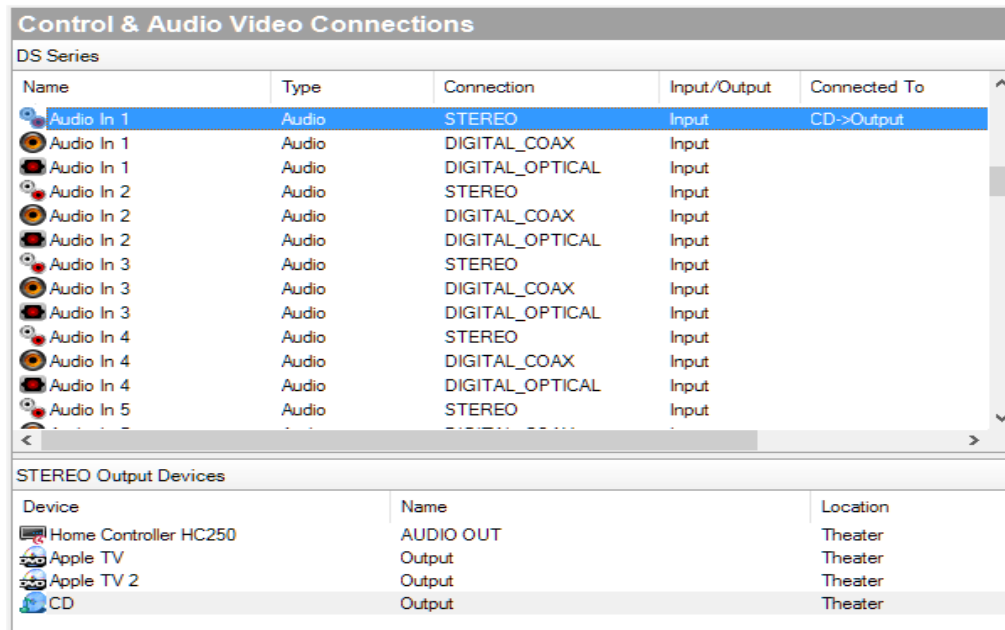


Figure 9: Driver Connections 4

DS players can be used to supply audio output either by pairing them with a Linn pre-amp or a third-party solution (third-party pre-amp, A/V switch etc). If a Linn pre-amp is

used then the inputs, outputs and audio control features of the pre-amp are seamlessly integrated into the control of the DS.

If installing a DS with a Linn pre-amp, connect up these pre-amp inputs and outputs to match the usage of the pre-amp. If using a third party solution, ignore these inputs and outputs and connect the DS outputs(s) to the separate driver(s) for the third-party solution as usual.

Repeat these steps for all Linn device drivers added to your project.

By default, Control4 Navigators will automatically display all Linn device drivers in the project in every room (as well as unnecessarily exposing end-points). To change this, choose the **System Design** view, select a **Room** and display the **Navigator** tab.

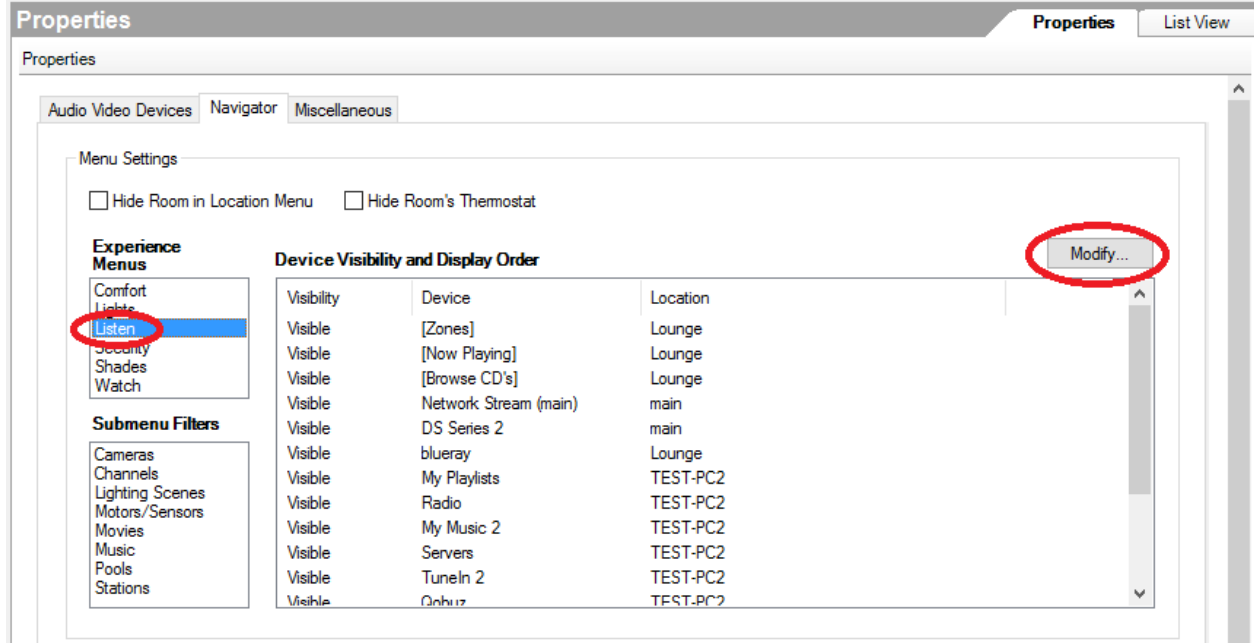


Figure 10: Device Visibility

Choose **Listen** from the **Menu** list and click on **Modify** to change the device display visibility.

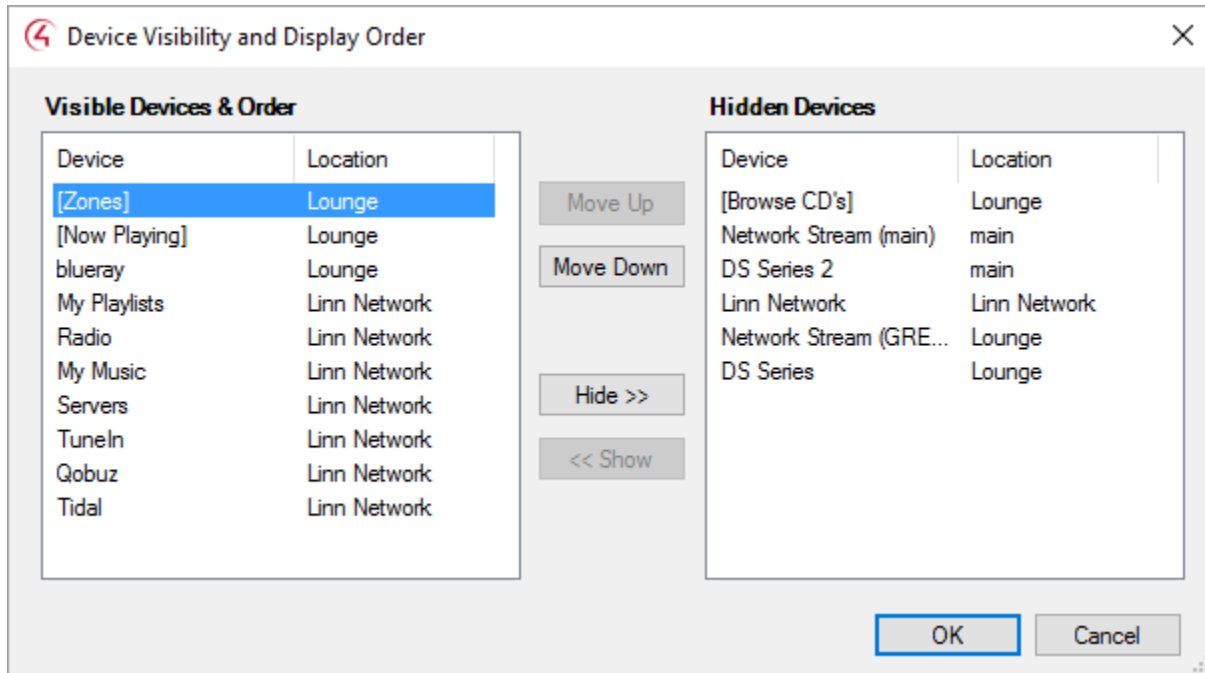


Figure 11: Modify Device Visibility

In the **Visibility and Display Order** window, choose the devices you do not want to display from the **Visible Devices & Order** and click **Hide>>** to move them to the **Hidden Devices** list. Click **OK** once all devices not relevant to the room are removed. Repeat this process for all rooms in your project. You are advised to remove all devices that are in rooms other than the player's room, plus also hide the player itself and any of the player services you choose not to use (e.g. Media Servers).

NOTE: Changes made in Composer will only be reflected on Navigators if you choose **File > Refresh Navigators**.

Driver Operation

To initiate playback on a Linn device, using a Navigator, select a room to control and choose the **Listen** option. The inputs available for the room (the device's streaming services plus any other devices connected to any external inputs it has) will be displayed. Choose the desired input.

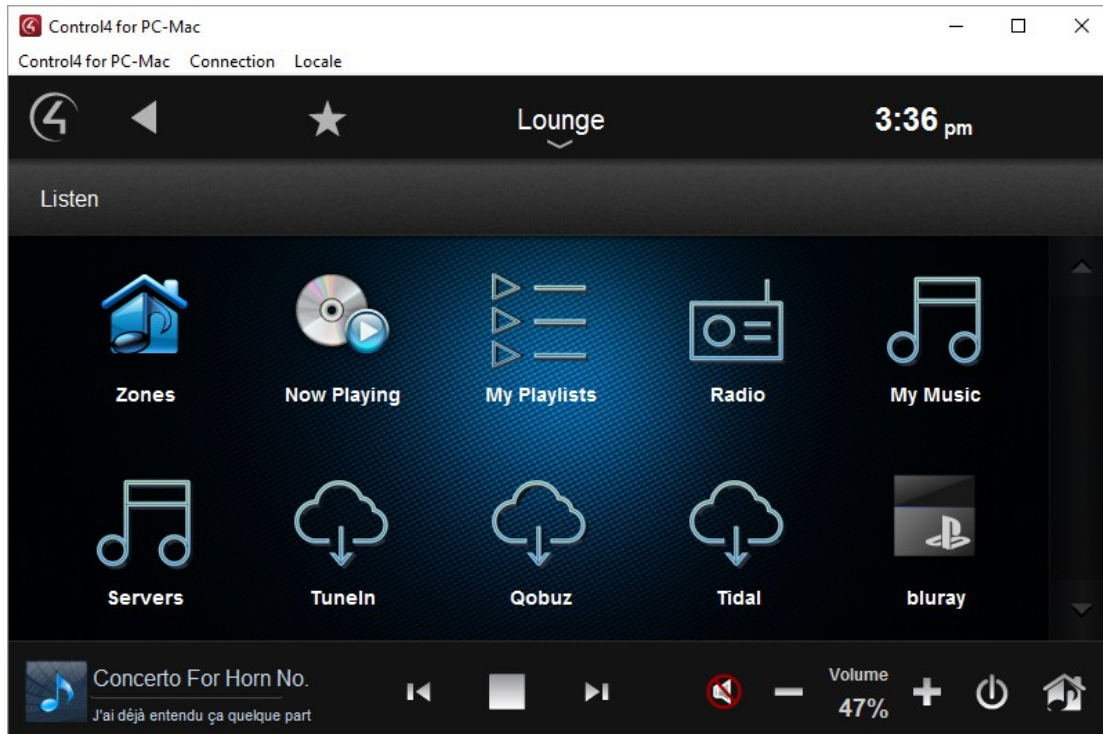


Figure 12: Sources Screen

Choosing an external input will bring up the appropriate Control4 user interface for that device. Choosing a local service (Tidal, Qobuz, My Playlists etc.) will bring up a browse screen appropriate to that service.

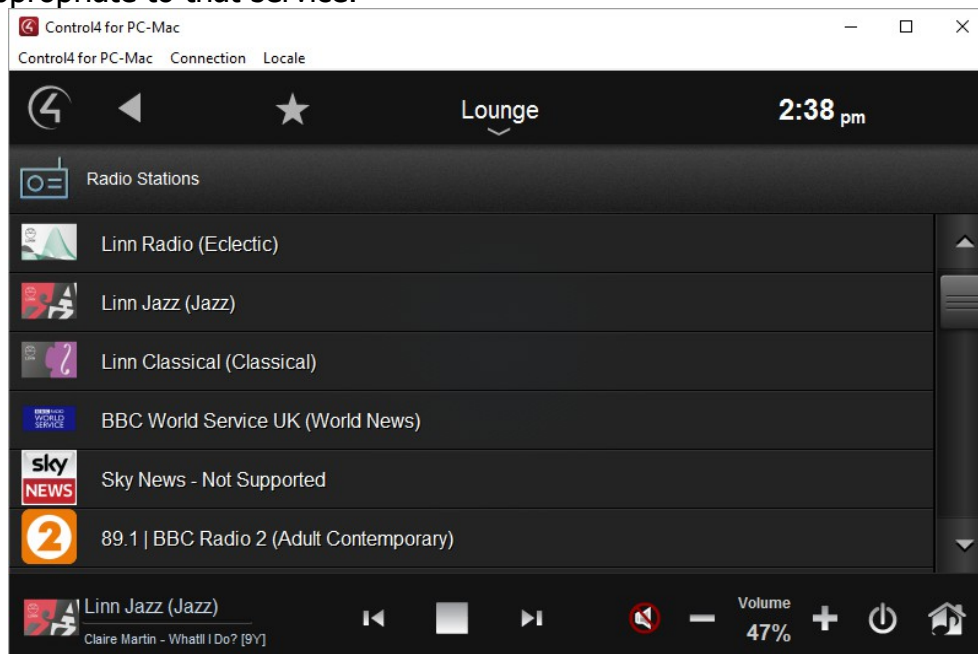


Figure 13: Browse Screen

The browse screen will show the available items for that service, which may be a flat list (e.g. radio presets or playlists) or a browseable hierarchy (e.g. TuneIn, Tidal). For more complex services, there may also be tabs available to provide direct access to features of the service (e.g. for Tidal: New, Genres, Playlists, My Tidal):

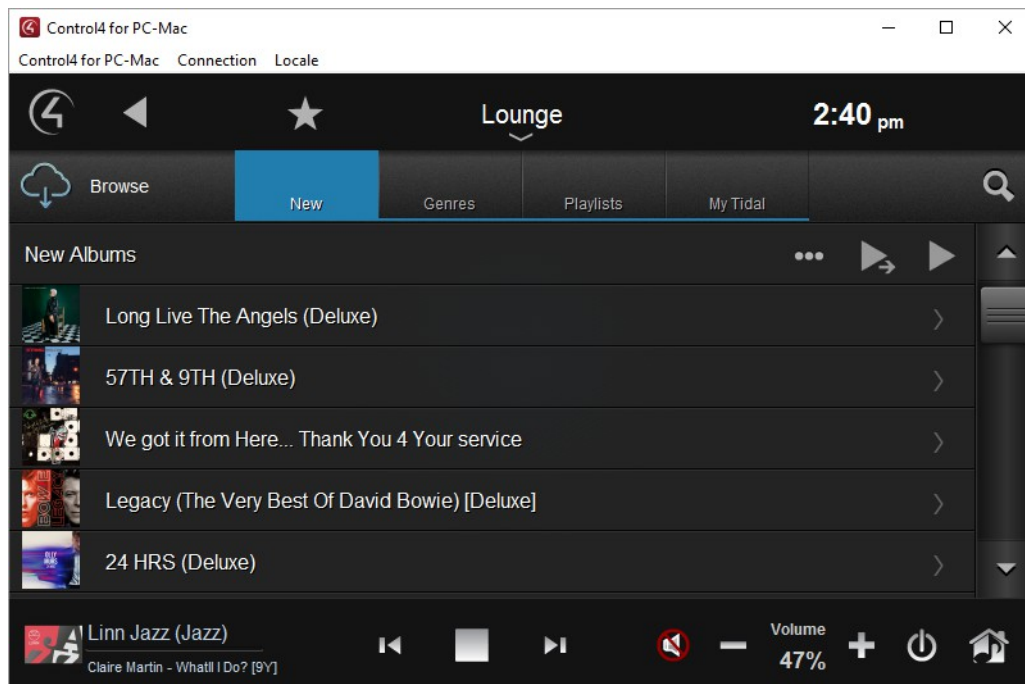


Figure 14: Browse Albums

If you choose to search for an item, a keyboard pop-up will appear allowing you to enter a text string to search for and a drop-down top-left gives the types of search available:

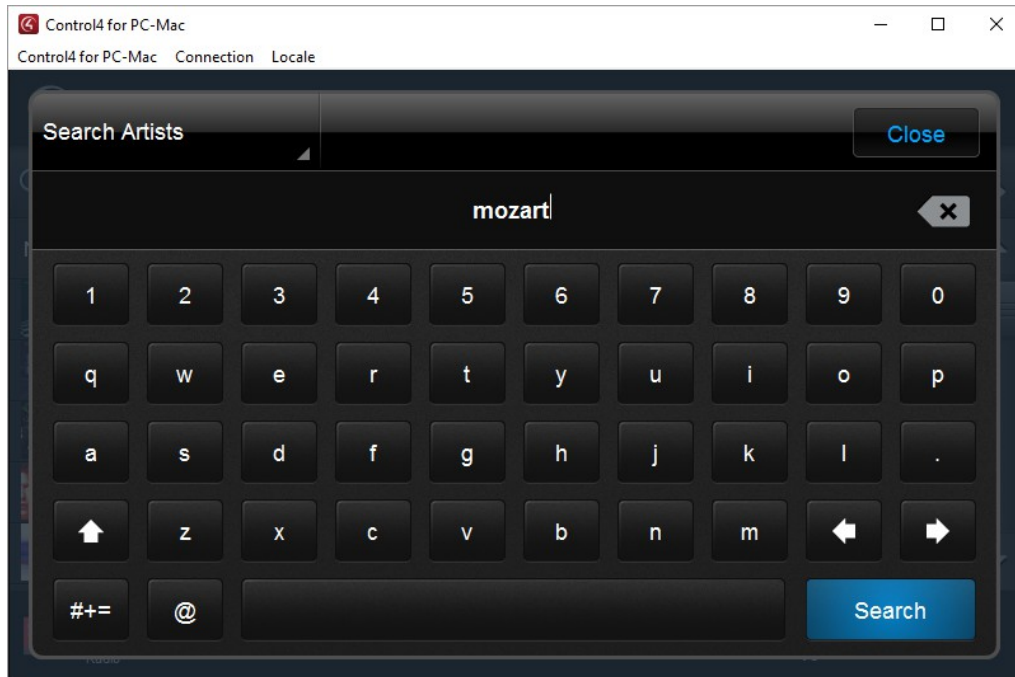


Figure 15: Search

Search results are displayed as a list that, if appropriate, can be browsed further.

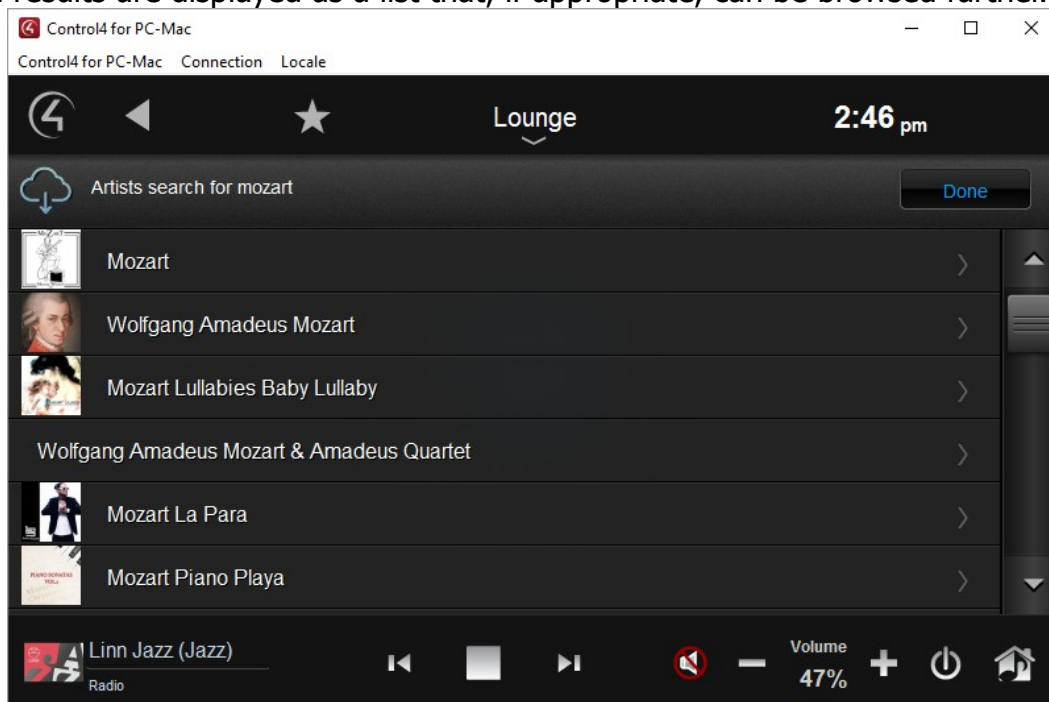


Figure 16: Search Results

Once an item is selected for playback, a pop-up will offer the available play options.

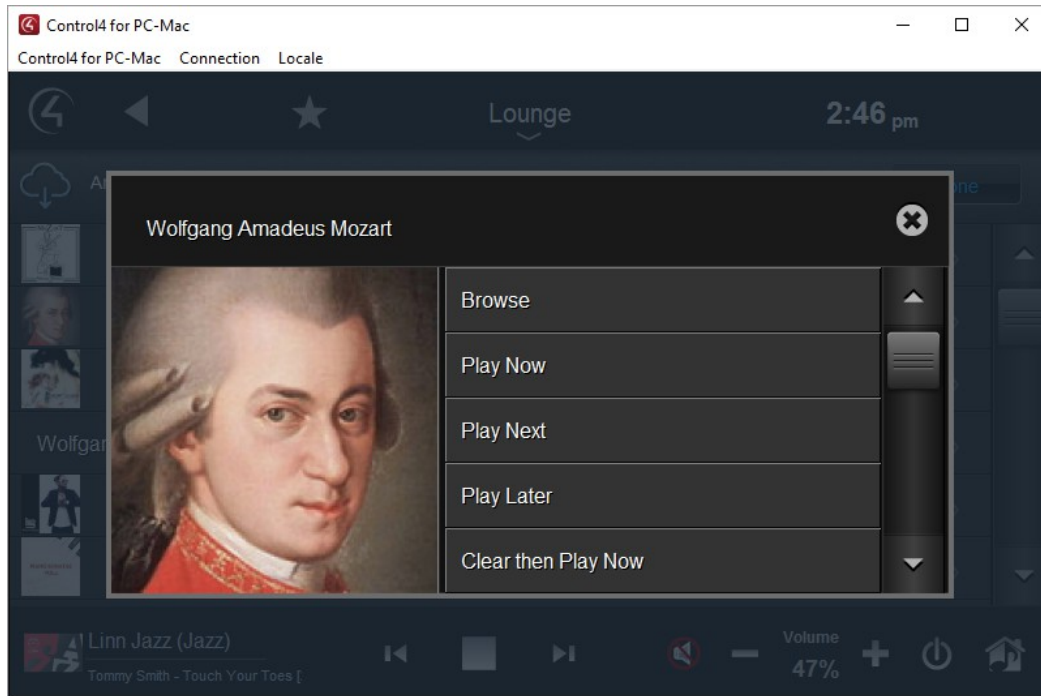


Figure 17: Play Options

The **Now Playing** screen displays information about the currently playing selection, transport and volume controls and the play queue.

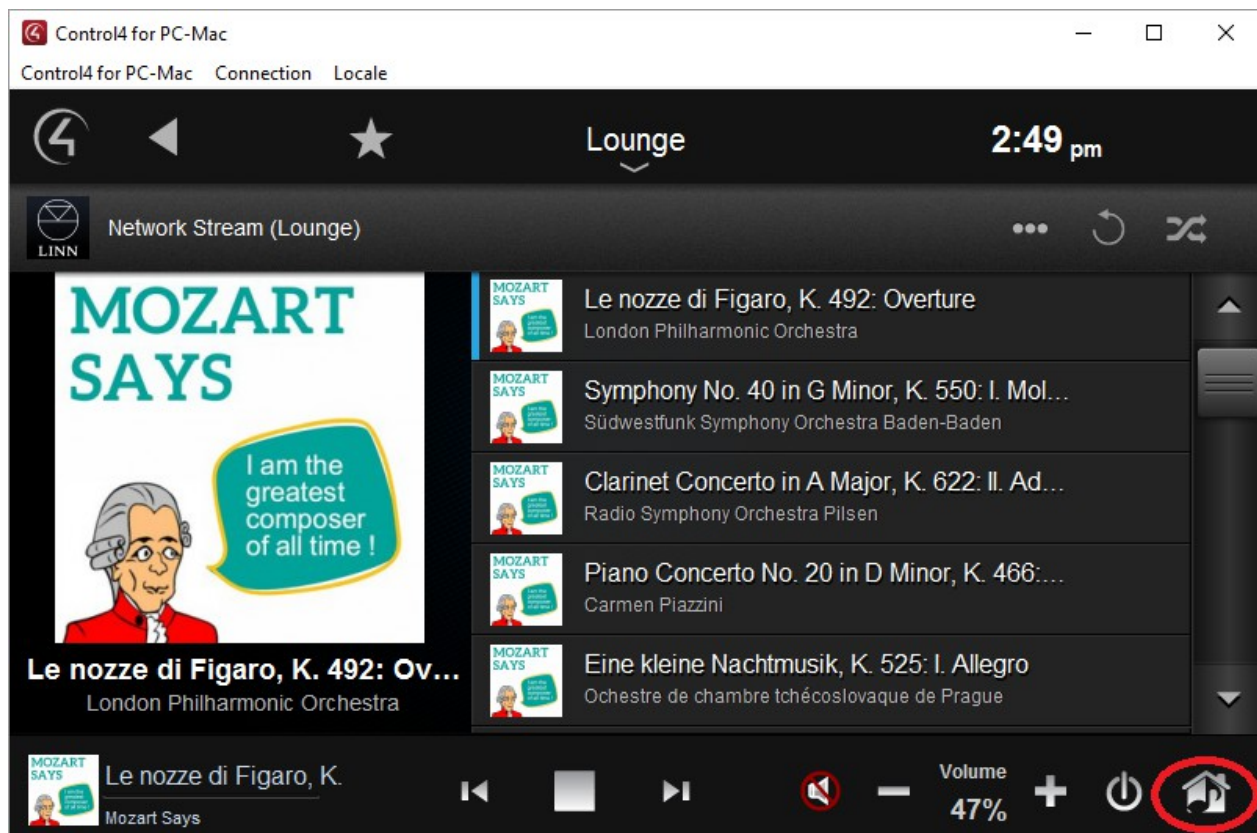


Figure 18: Now Playing Screen

The button highlighted in Figure 18 above, is used to access the **Grouping** screen. From here Linn rooms can be grouped together so that the same source plays in all rooms within the group. Groups are comprised of a single "master" device and any number of "slave" devices. To instigate a group, access the **Grouping** screen.

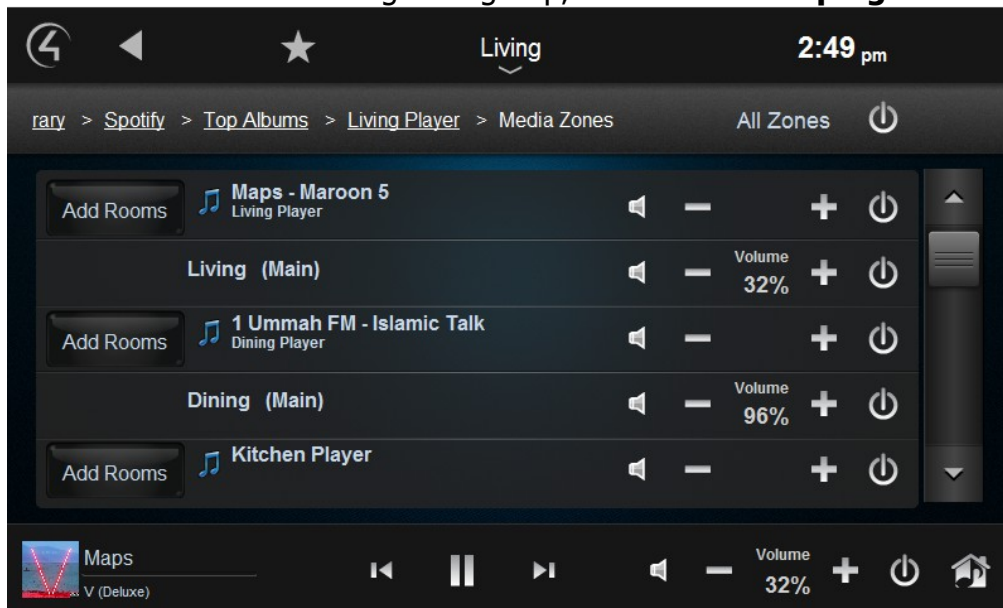


Figure 19: Grouping Screen

To establish a group with, for example, the Living Room player as the master, press the corresponding **Add Rooms** button.

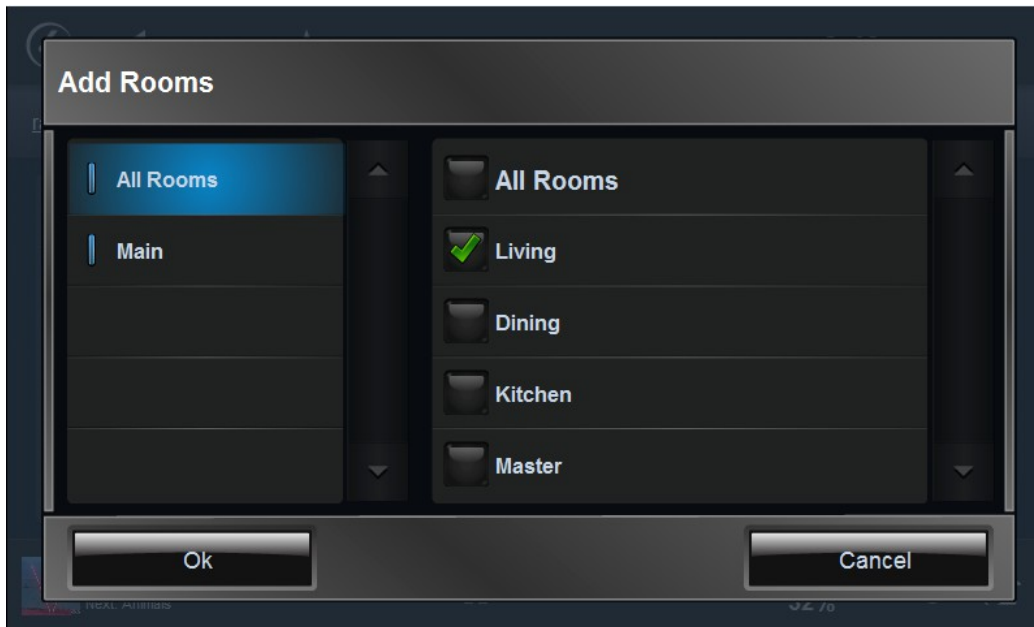


Figure 20: Add Rooms Screen

Place a green tick in the checkbox next to each room that is to become a slave device in the new group, and then choose **Ok**. The source playing on the master device will now begin playing on all slave devices also.

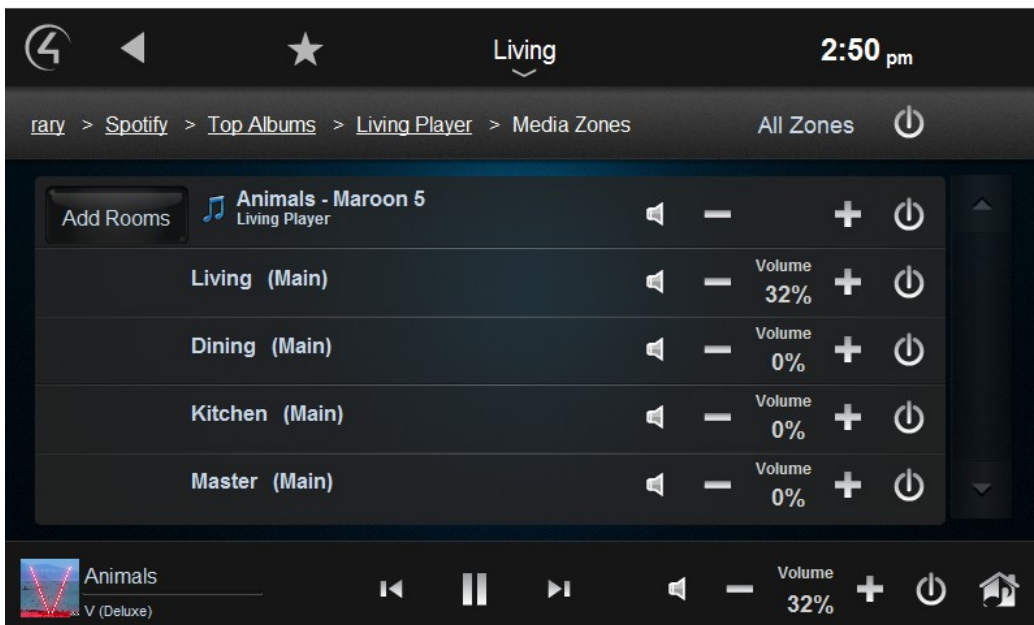


Figure 21: Grouping Screen II

The screen now displays all rooms currently in the group, with a master volume control for the group, as well as independent volume controls for the slave rooms. In the above

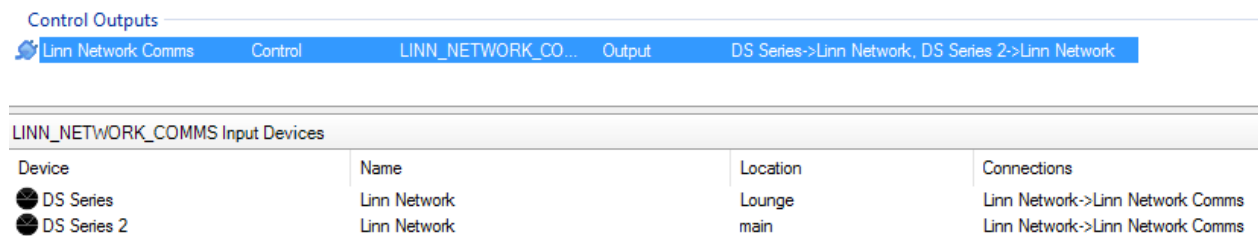
example, "Living" is the master device and "Dining", "Kitchen" and "Master" are slave devices.

The **Add Rooms** screen may also be used to remove rooms from a group, or to begin playback in **All Rooms**. Note that rooms currently in a group may be added to a different group; if the master device for a group is added to another group, its group will be disbanded. When devices are removed from a group, or their group is disbanded, they automatically power off.

Troubleshooting

Discovery isn't working

This is likely due to missing bindings between the network driver and the device drivers (one cause of which, is adding the network driver to the project after adding the device drivers). To check this, open Composer and display the Connections view, selecting the Control/AV tab. Choose the Linn Network driver and scroll down to the Control Outputs:



Linn Network Comms Input Devices			
Device	Name	Location	Connections
● DS Series	Linn Network	Lounge	Linn Network->Linn Network Comms
● DS Series 2	Linn Network	main	Linn Network->Linn Network Comms

Figure 22: Driver Bindings

The control bindings should be established (as highlighted in the above image). If they are not, drag the Linn Network Comms control output onto each device in turn.