Beyond the Bits: Taming Your Network for Superior Sound

Review by David Das

I had the pleasure of auditioning one of the most significant improvements in Network Audio Streaming Technology presented by David Snyder in the Parish Hall at the Faith Lutheran Church on August 28, 2025.

This was my very first exposure to the Diretta Audio Transport Protocol. I had no clue what to expect as a result of inserting 2 extra processors into the audio chain. By the end of the very first demo track I was fully convinced on the benefits of adding Diretta.

The differences I heard between the Diretta and non-Diretta playback was profound and immediate. I could not believe that adding this $369 kit to your streaming network could elevate your listening experience to such a degree.

The improvement in the sound quality was far greater than one could expect by replacing a $1K DAC with a state-of-the-art $100K DAC. This was nothing short of audio sorcery. By the end of the evening, I became a convert! I decided to have David build me my own Diretta Kit.

Matt Santa Maria was kind enough to bring his Tannoy Sirling III LZ SE speakers fitted with SuperTweeters.

Here are some close up views of the Tannoy Speakers.


PRESTIGE GR
14kHz
16kHz
18kHz

Each Tannoy speaker was powered by an Orchard Audio BOSC Monoblock.

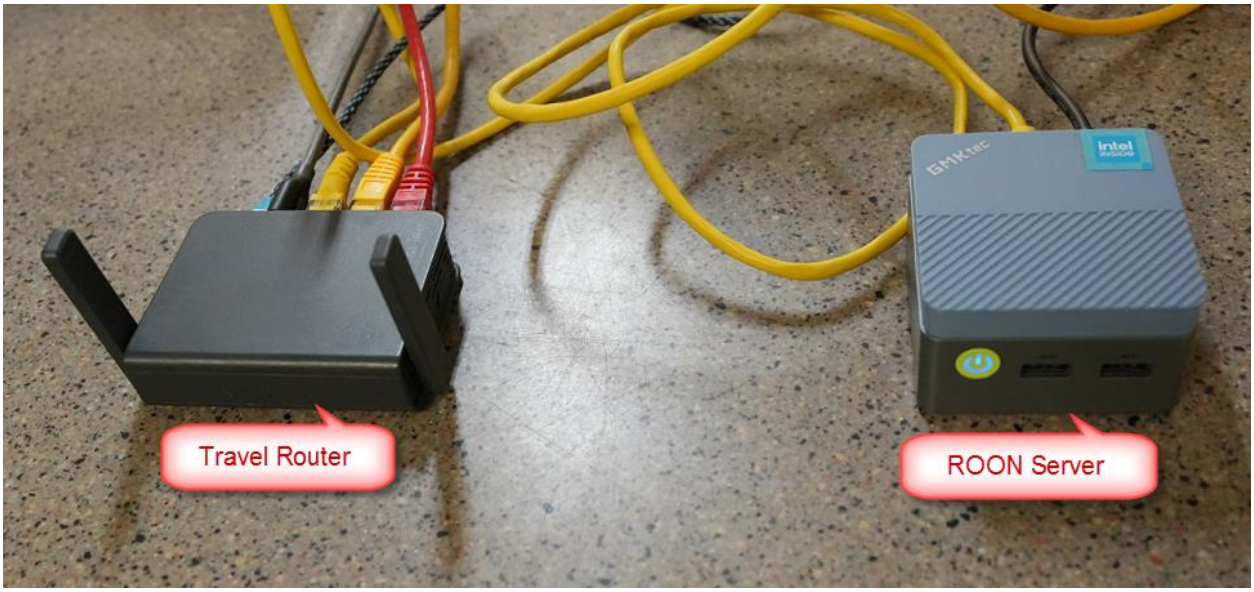
David and Matt came in early to set up a portable Music Streaming system complete with a Roon Server, Diretta Host, Diretta Target, DAC and a Pre-amp.

David used his Smartphone and Travel Router to establish an Internet Connection so that music could be streamed from Qobuz and Tidal.

The output from the Smartphone fed into a GLiNet GL-AR7505-Ext Travel Router which in turn was connected to the Roon Server with a wired Ethernet Cable.

The ROON Server was installed on a GMKTec G5 N97 Mini PC.

Here you see the **Travel Router** on the left connected to the **ROON Server** on the right.

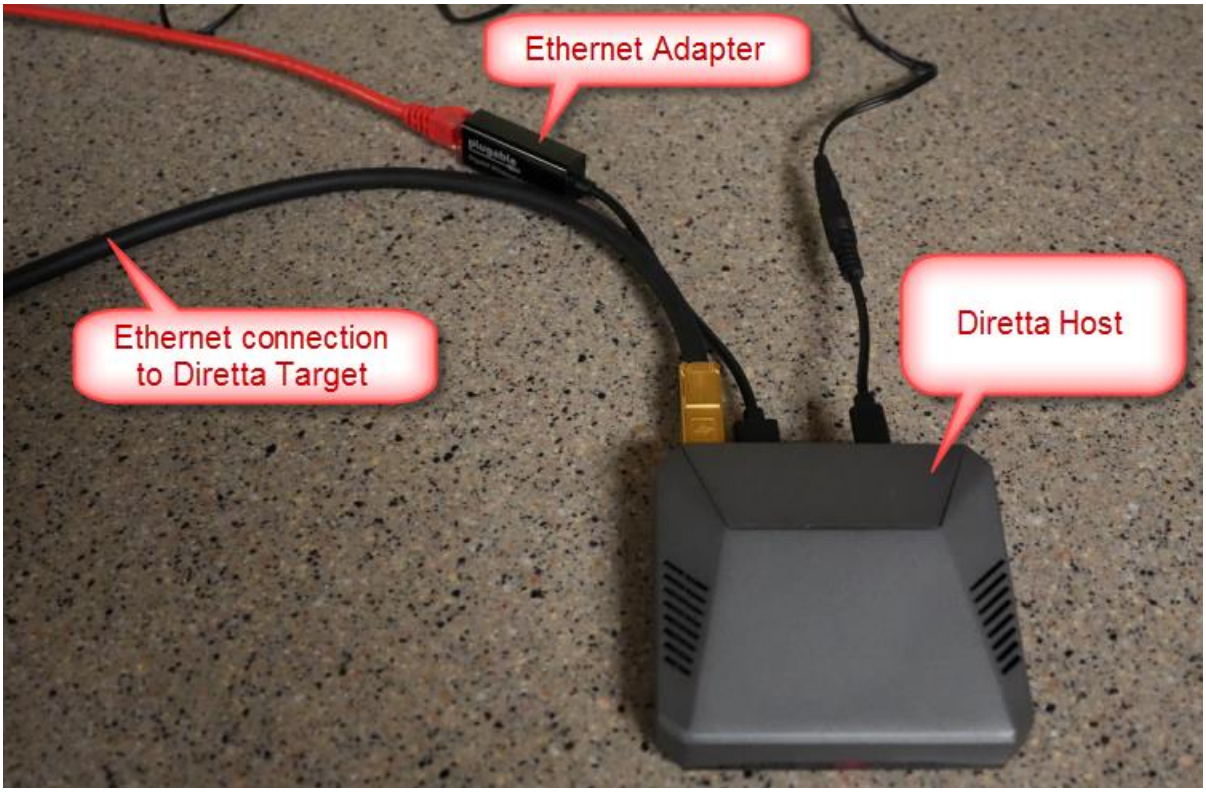


The Dell XPS Windows 11 Laptop was used only during the initial network configuration.

This was the **Diretta Host** device running on a Raspberry Pi 4 Model B/4GB processor inside an Argon ONE V2 Aluminum Case with a built-in fan.

The red Ethernet Cable from the Travel Router was connected to the Diretta Host using a USB 3.0 Plugable Gigabit Ethernet Adaper.

The black Ethernet Cable connected the Diretta Host to the Diretta Target.



This was the **Diretta Target** Device running on a Raspberry Pi 5/2GB processor inside an Argon ONE V3 Raspberry Pi 5 Case with a built-in fan.

Here is how the Diretta Target and Diretta Host look side by side.

The Diretta Target was placed about 3’ apart from the Diretta Host and connected with an Ethernet Cable. The USB Output from the Diretta Target was fed into the Gustard X18 DAC.

The Analog Output from the DAC was connected to the Topping Pre90 Preamp.

The Topping Pre90 Preamp was connected by XLR cables to a pair of Orchard Audio BOSC Monoblock power amps.

To enable a quick comparison between Diretta and Non-Diretta playback, a WiiM Ultra Streamer was used.

Here are some close ups of the GLiNet Travel Router.

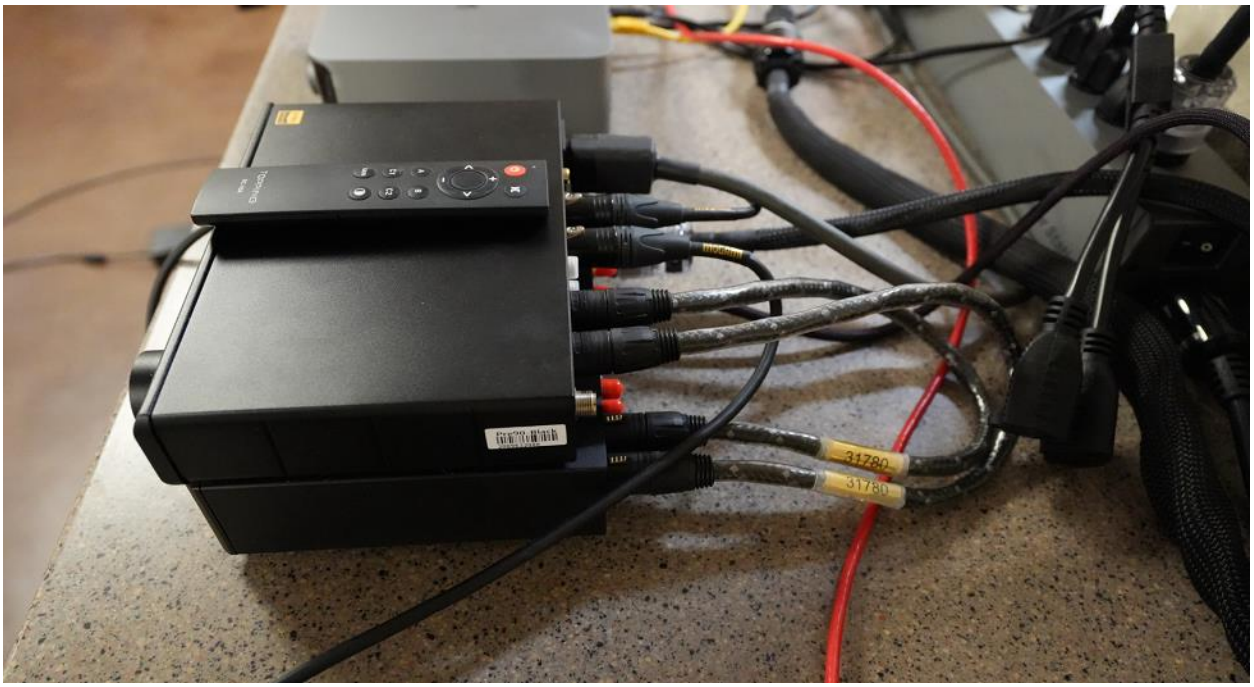
Here are some close ups of the GMKtec Mini PC.

This was the Topping Pre90 Analog Preamap and Gustard X18 DAC

Music was selected from Qobuz and Tidal within the ROON App running on a Google Tablet.

Here is a photo of the iFi Audio (SilentPower) iPower Elite 5V powering the Diretta Target.

The DAC and Preamp were connected using XLR cables.



Equipment List

Travel Router: GLiNet GL-AR750S-Ext Gigabit Wireless Router

Diretta Host: Raspberry Pi 4 Model B/4GB

Diretta Host Case: Argon ONE V2

Diretta Target: Raspberry Pi 5/2GB

Diretta Target Host Case: Argon ONE V3

Roon Server: GMKtec Mini PC, G5 N97, 12GB RAM, 256GB SSD

Tablet running the ROON Remote App: Google Pixel Tablet with 11" screen

DAC: Gustard X18

Streamer: WiiM Ultra

Preamp: Topping Pre90

Power Amp: Orchard Audio BOSC Monoblocks

Loudspeakers: Tannoy Stirling III LZ SE with Supertweeter-Go

Power Stuff:

- iFi Audio (SilentPower) PowerStation
- Allo Shanti LPS (on the Diretta Host)
- iFi Audio (SilentPower) iPower Elite 5V (on the Diretta Target)

Cables: Various from Straight Wire, XLO, and Fidata

Listening Tests

David offered every member in the audience an opportunity to occupy the sweet spot and listen to any track of their choice and evaluate the differences with Diretta turned on and off.

Here are some tracks that were played:

TRACK	ARTIST	ALBUM
Calypso Minor	Abdullah Ibrahim	Sotho Blue
Thanks To You	Boz Scaggs	Dig
Blue Sun	Ralph Towner	Blue Sun
Glass Off (LP Version)	Bernie Leadon	Natural Progressions
Dream Café	Greg Brown	Dream Café
Into Dust	Mazzy Star	So Tonight That I Might See
Fade Into You	Mazzy Star	So Tonight That I Might See
Clear Day	Hope Sandoval	Bavarian Fruit Bread
Hallelujah	Lucy Thomas	Timeless
You Raise Me Up	Lucy Thomas	Timeless
A Whiter Shade Of Pale	Lucy Thomas	Beyond
Man in the Long Black Coat	Bob Dylan	Oh Mercy
Raleigh and Spencer	Tony Furtado	Tony Furtado Band
Hey Now	London Grammar	If You Wait (Deluxe)
Honey Bee	Savoy Brown	Getting To The Point
These Days	Stories	Cigarettes and Chocolate Milk
Keith Don't Go (Live)	Nils Lofgren Band	Acoustic Live

Señor Blues	Various Interprets	Blues With A Feeling
Trouble's What You're In	Fink	Wheels Turn Beneath My Feet
Know	Nick Drake	Pink Moon
Liberty	Anette Askvik	Liberty

Here is the Qobuz playlists provided by David.

Qobuz: https://open.qobuz.com/playlist/36064857

You did not have sit in the optimum seat to hear the differences between Diretta and non-Diretta playback. It was clearly evident even while seated off-axis. The differences felt most pronounced during playback of the track “Keith Don’t Go (Live).”

The WiiM Ultra is an excellent streamer. However the Diretta Host/Target pair outclassed it.

With the Diretta Audio Transport Protocol enabled, the music sounded more coherent, focused, transparent and smoother. The presentation was fuller with a higher degree of resolution and richness. The bass lines were more articulated. The vocals sounded clearer.

A good analogy would be similar to the wow factor you experience when you try on a new pair of prescription glasses and everything comes into sharp focus. Your brain feels more relaxed by not having to compensate for the missing information.

Everyone in the audience unanimously agreed the Diretta Protocol was having a positive impact on the resulting sound.

Cost comparison between the Diretta Kit and the WiiM Ultra Streamer

The WiiM Ultra Streamer is an affordable all-in-one streamer with a premium DAC, digital and analog inputs, HDMI ARC, moving magnet phono stage and a preamp. This device has garnered excellent reviews.

This device retails for $329 which comes to **$357** after sales tax. In comparison the Diretta evaluation kit costs around $300 including sales tax and shipping. In addition you would need to purchase an AudioLiux license that covers both the Diretta Host & Target pair for $69 which brings the total to **$369**.

Please note that playback will be limited to 44.1kHz during the evaluation period. If you decide to unlock high-resolution playback, you would need to purchase a Diretta hi-res license for $117 for your Diretta Target. Your final cost which removes the sample rate and format restrictions would be ($369 + $117) = **$486**.

David's explanation of the science behind this audio magic

Rather than feeding the standard audio stream as large chunks of data packets directly to your DAC, the Diretta Host/Target duo act in tandem to streamline the audio transport process.

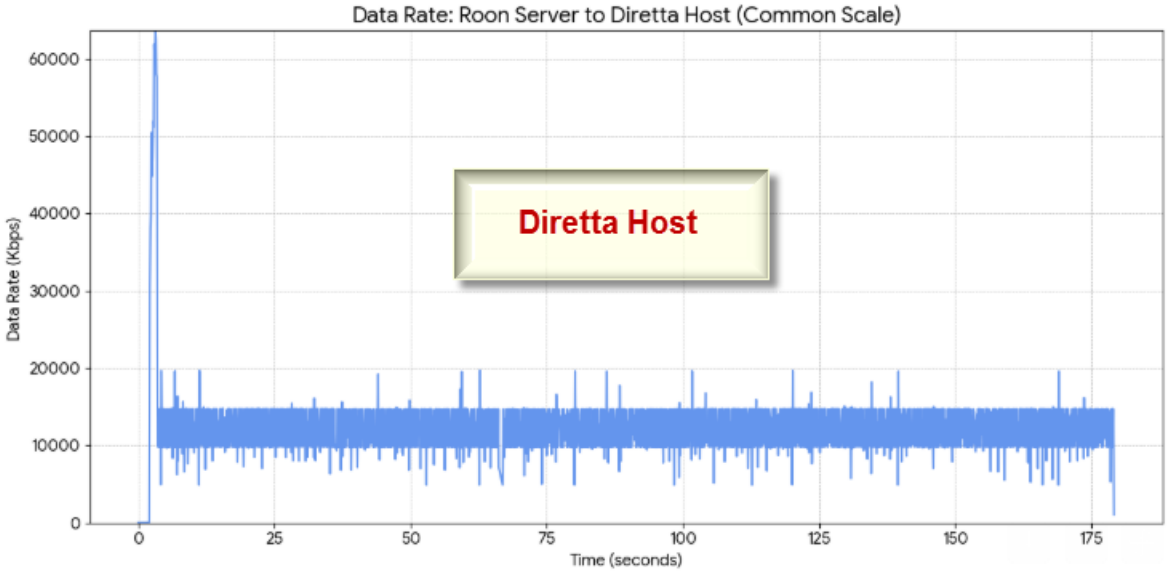
The **Diretta Host** processor does the bulk of the work. It consumes the standard audio stream from the ROON Core and meticulously prepares and sends tiny, precisely timed packets of audio data to the Diretta Target.

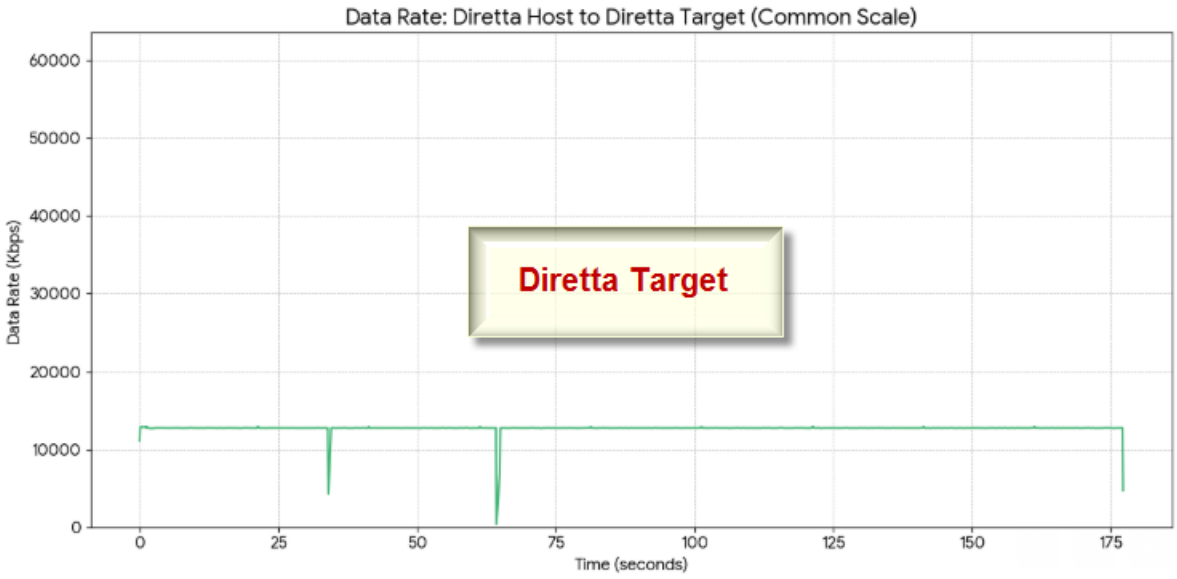
The **Diretta Target** processor now has a simple job to pass the perfectly timed data packets to your DAC.

To demonstrate this, David showed the rapidly blinking activity lights on the Diretta Host.

This was in sharp contrast to the almost non-existent activity lights on the Diretta Target. It was dead quiet. Therein lay the magic behind the superior delivery.

These two plots show the remarkable differences in Data Rates between the Host and Target.





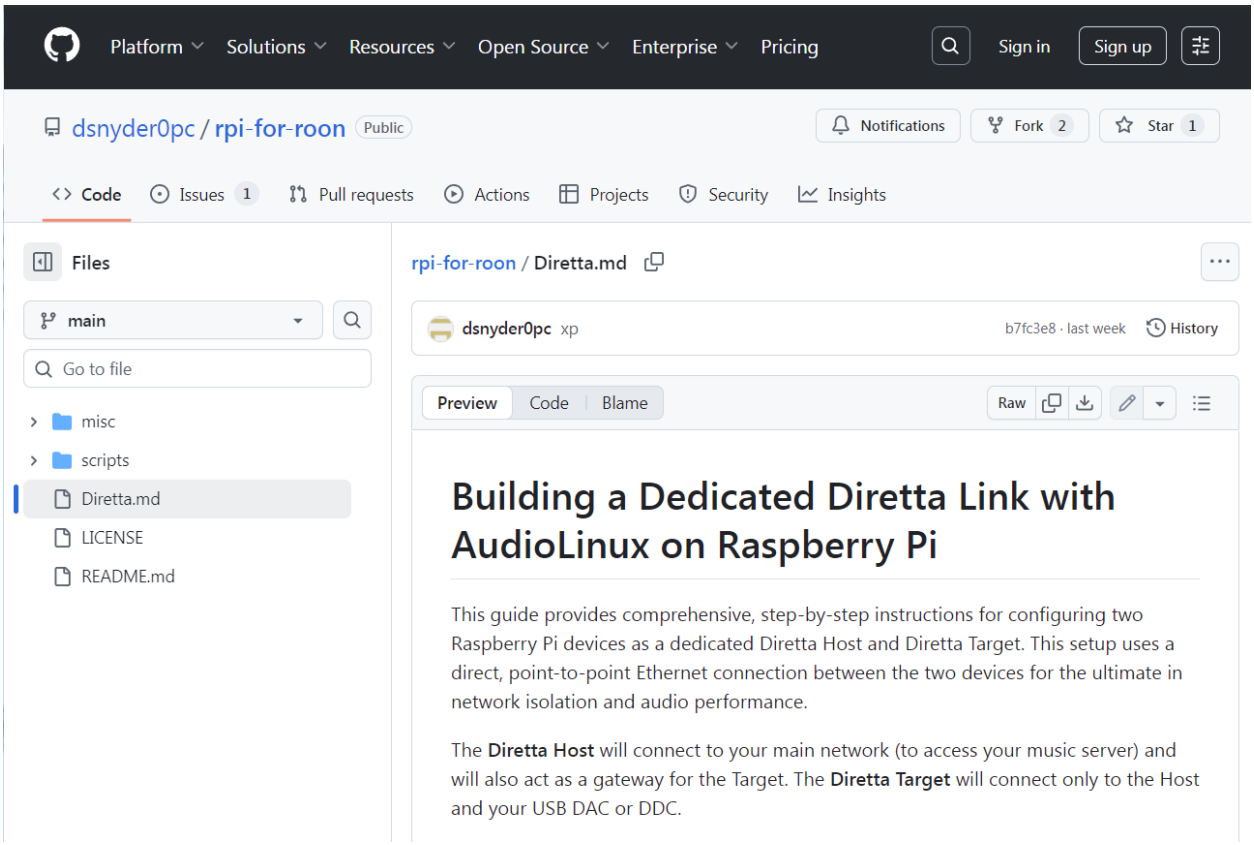
Please read this detailed analysis by Gemini on the Network Traffic from the ROON Server to the Diretta Host and then to the Diretta Target.

https://gemini.google.com/share/be7a39452a58

David Snyder is our Network Wizard. Not only did he figure out how to exploit the superior Diretta Audio Transfer Protocol, he actually went ahead and assembled a working prototype.

David has a detailed User Guide on GitHub that explains how to program the Diretta Host and Target devices.

https://github.com/dsnyder0pc/rpi-for-roon/blob/main/Diretta.md



I would encourage everyone to read this to appreciate what it took to make this magic happen.

If you are adventurous, David has provided the complete recipe to program your Diretta Host and Target devices.

If 57 pages of code look a bit daunting to you, don't worry! David would gladly flash the two microSD cards with his test images to set up your Diretta Host and Target devices.

I decided to go with an even simpler and foolproof approach. I requested David to build me a complete Diretta Kit.

David promptly sent me this email listing 3 options.

Option 1 - Basic Flirc

Quantity	Description	Price	Extended
1	Raspberry Pi 4 Model B/4GB	$55.00	$55.00
1	Flirc Raspberry Pi 4 Case	$16.95	$16.95
1	Raspberry Pi 5/2GB	$49.95	$49.95
1	Flirc Raspberry Pi 5 Case	$16.95	$16.95
2	MicroSD Card Extreme Pro - 32 GB	$12.95	$25.90
2	Raspberry Pi 45W USB-C Power Supply - White	$16.95	$33.90
1	Plugable USB3 to Ethernet Adapter	$19.95	$19.95
1	Short CAT6 Ethernet Patch Cable	$6.49	$6.49
Subtotal			**$225.09**
Sales Tax			**$24.33**
Shipping			**$13.50**
Total			**$262.92**

Option 2 - Flirc plus IR Remote

Quantity	Description	Price	Extended
1	Raspberry Pi 4 Model B/4GB	$55.00	$55.00
1	Flirc Raspberry Pi 4 Case	$16.95	$16.95
1	Raspberry Pi 5/2GB	$49.95	$49.95
1	Flirc Raspberry Pi 5 Case	$16.95	$16.95
2	MicroSD Card Extreme Pro - 32 GB	$12.95	$25.90
2	Raspberry Pi 45W USB-C Power Supply - White	$16.95	$33.90
1	Plugable USB3 to Ethernet Adapter	$19.95	$19.95
1	Short CAT6 Ethernet Patch Cable	$6.49	$6.49
1	Argon IR Remote	$10.00	$10.00
1	Flirc USB IR Receiver	$22.95	$22.95
Subtotal			**$258.04**
Sales Tax			**$27.89**
Shipping			**$13.50**
Total			**$299.43**

Option 3 - Argon40

Quantity	Description	Price	Extended
1	Raspberry Pi 4 Model B/4GB	$55.00	$55.00
1	Argon ONE V2 Aluminum Case for Raspberry Pi 4	$25.00	$25.00
1	Raspberry Pi 5/2GB	$49.95	$49.95
1	Argon ONE V3 Raspberry Pi 5 Case	$30.00	$30.00
2	MicroSD Card Extreme Pro - 32 GB	$12.95	$25.90
2	Raspberry Pi 45W USB-C Power Supply - White	$16.95	$33.90
1	Plugable USB3 to Ethernet Adapter	$19.95	$19.95
1	Short CAT6 Ethernet Patch Cable	$6.49	$6.49
1	Argon IR Remote	$10.00	$10.00
Subtotal			**$256.19**
Sales Tax			**$27.69**
Shipping			**$13.50**
Total			**$297.38**

The Flirc cases are fanless while the Argon40 cases have fans that will only come on if the computers get above 55 C (normally below 40 C when playing music).

The Flirc USB IR Receiver is programmable and has a bit better range. It's a nice option if you want to use your own universal remote to control Roon playback. That's what I'm doing in our theater, for example. The Argon40 cases come with a built-in IR receiver that works well as long as you aim the remote more-or-less at the Diretta Host computer.

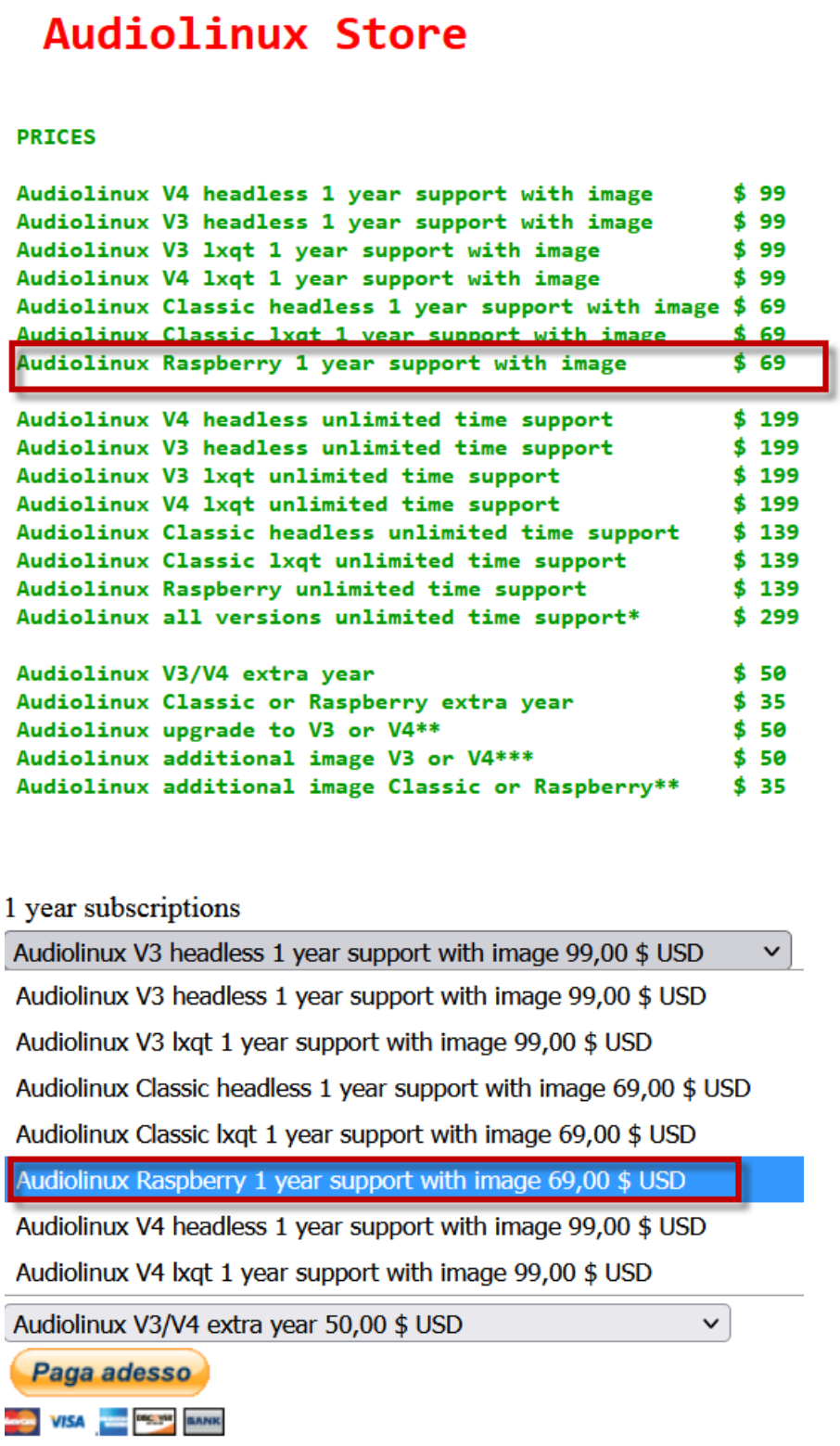
You can upgrade any of these later with a nicer Ethernet cable, different power supplies, a Wi-Fi adapter, etc. You'll find a list of optional upgrades in my doc: https://github.com/dsnyder0pc/rpi-for-roon/blob/main/Diretta.md#1-prerequisites

I think the Argon40 cases look a little nicer, and they have all of the connections in the back. The Flirc cases keep the computers just as cool without fans, which can be an advantage for purists. Although, again, the fans are effectively disabled by my software configuration.

Let me know which you prefer. Prices are based on what I see now, but they do fluctuate a bit.

In addition, you would need to purchase a license to run AudioLinux.

https://www.audio-linux.com/html/paypal/index.html



Select the 1 year subscription for AudioLinux Raspberry ($69).

Although the support from the developer ends after 1 year, this License never expires. It is a one-time purchase for life. You will receive lifetime support from David.

Once you make a payment via PayPal, you will get an email from Piero, the developer of AudioLinux with a link to download the image and the Username and Password.

You do not need to download anything!

Just forward this email to David and he will take care of the rest.

I went with Option 3 – Argon40

This was the Diretta Kit that was used for the Church Demo. The Argon cases look elegant with all the connections hidden neatly behind the back.

I was pleasantly surprised at the professionalism and meticulous care David took to assemble and program the Diretta Host, Target and the IR Remote and pack them neatly into a shipping box measuring 8” x 4” x 4”.


plugable
USB 3.0
Ethernet Adapter
USB 3.0
1000 Mbps
Argon IR
REMOTE
OK

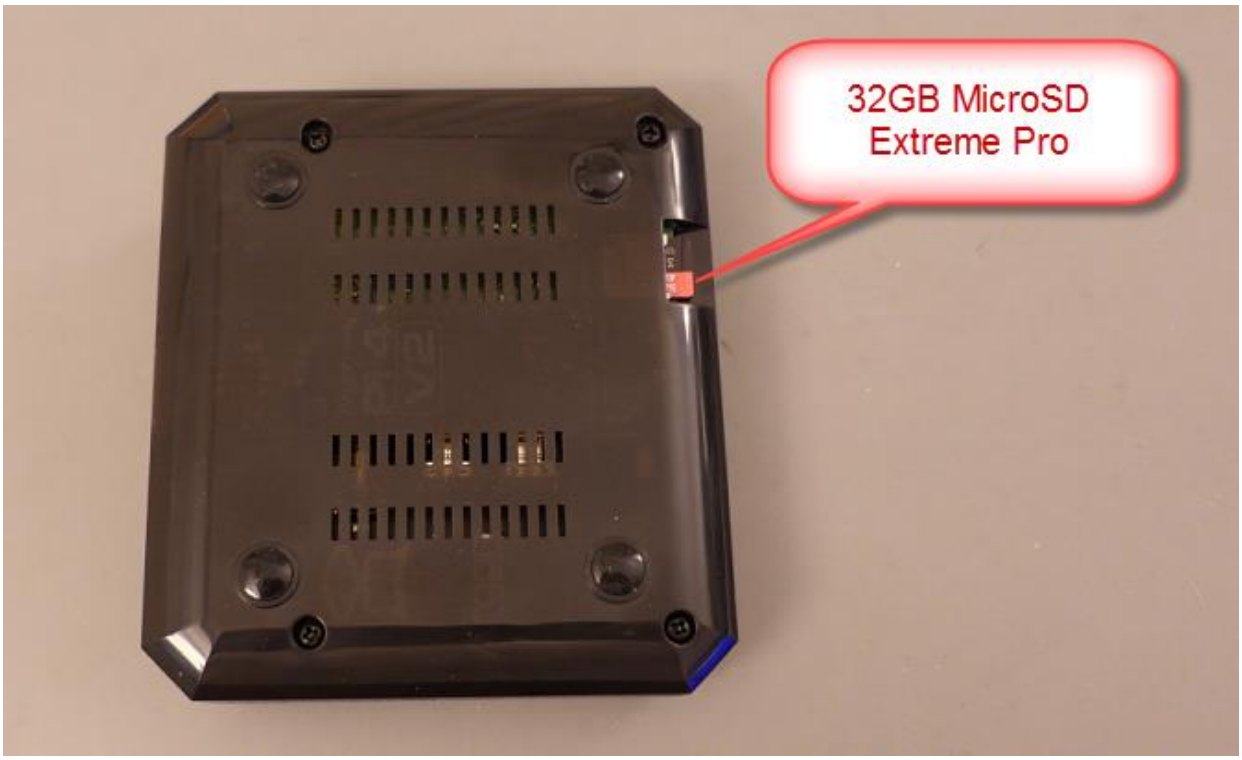

Argon ONE
Pi 4
V2
Raspberry Pi
45W USB-C Power Supply
Raspberry Pi
45W USB-C Power Supply
Argon ONE V3
Designed for Raspberry Pi 5
FORTY
RP2040
Powered by
Raspberry Pi

The shipping box came with these 7 items.

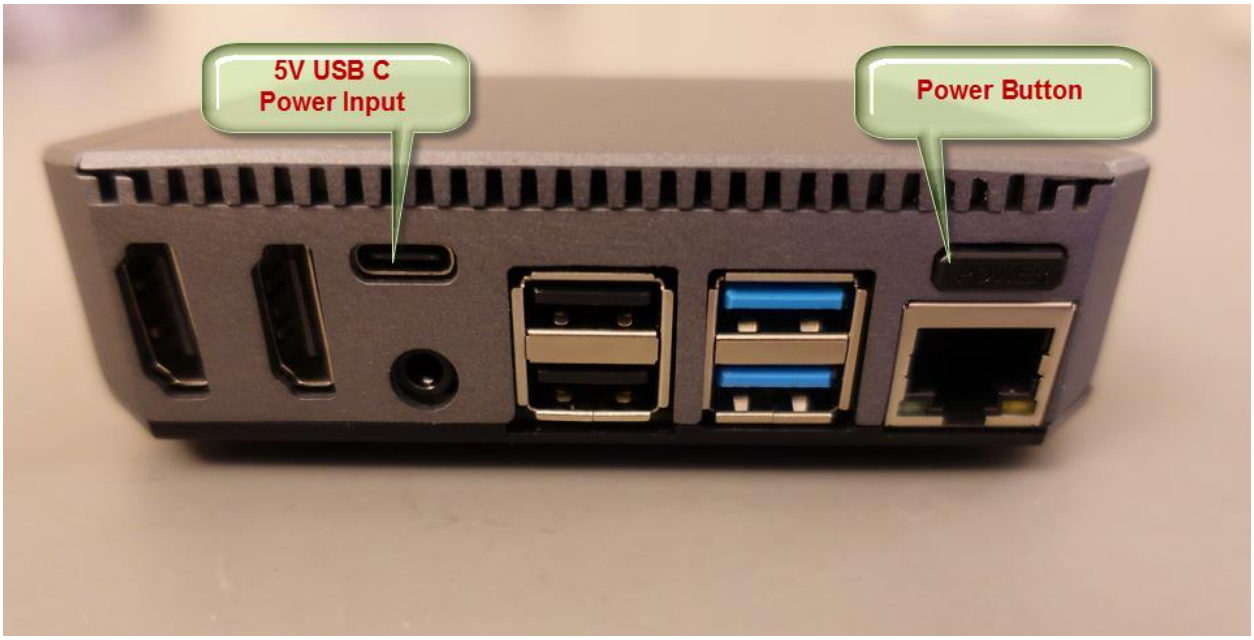
This is the Argon ONE V2 Case that holds the Diretta Host.

Diretta Host casing in Gray

The OS for the Diretta Host was flashed on to a 32GB MicroSD Extreme Pro Memory Card.

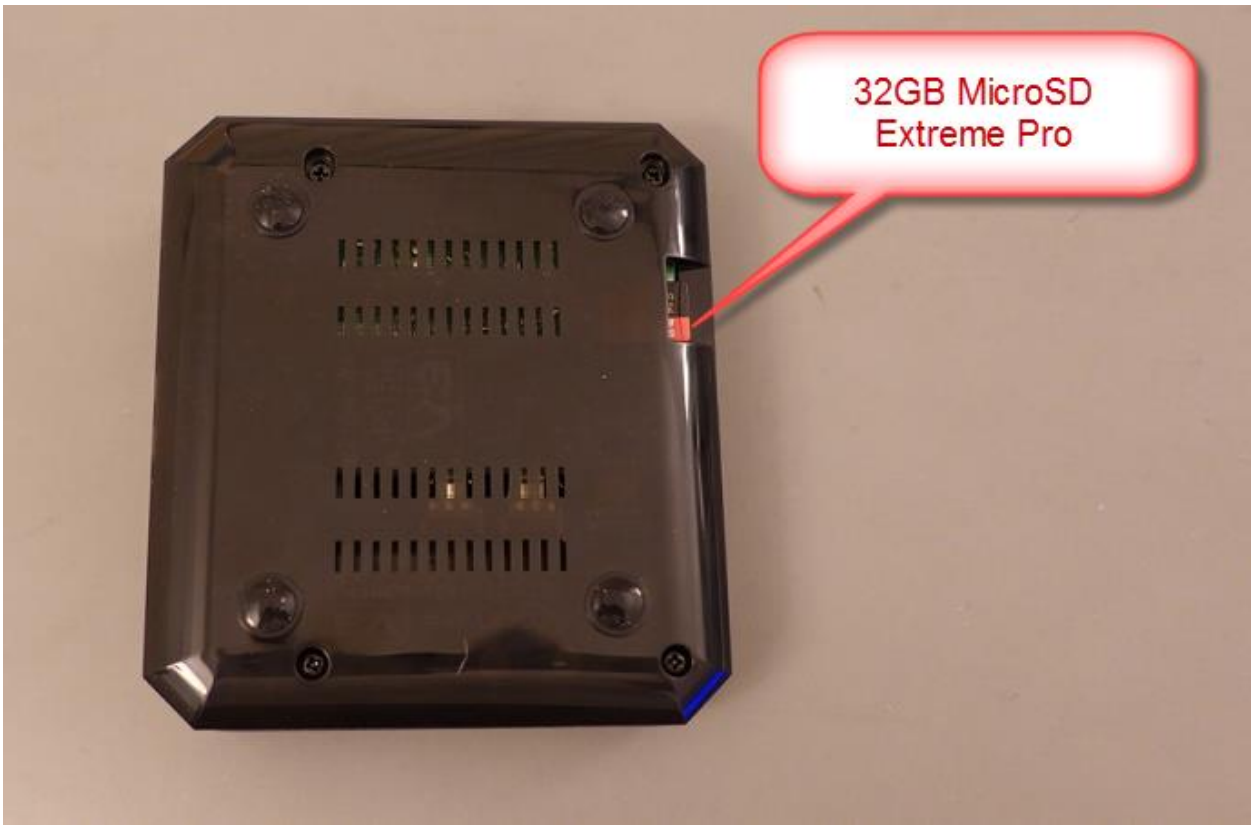


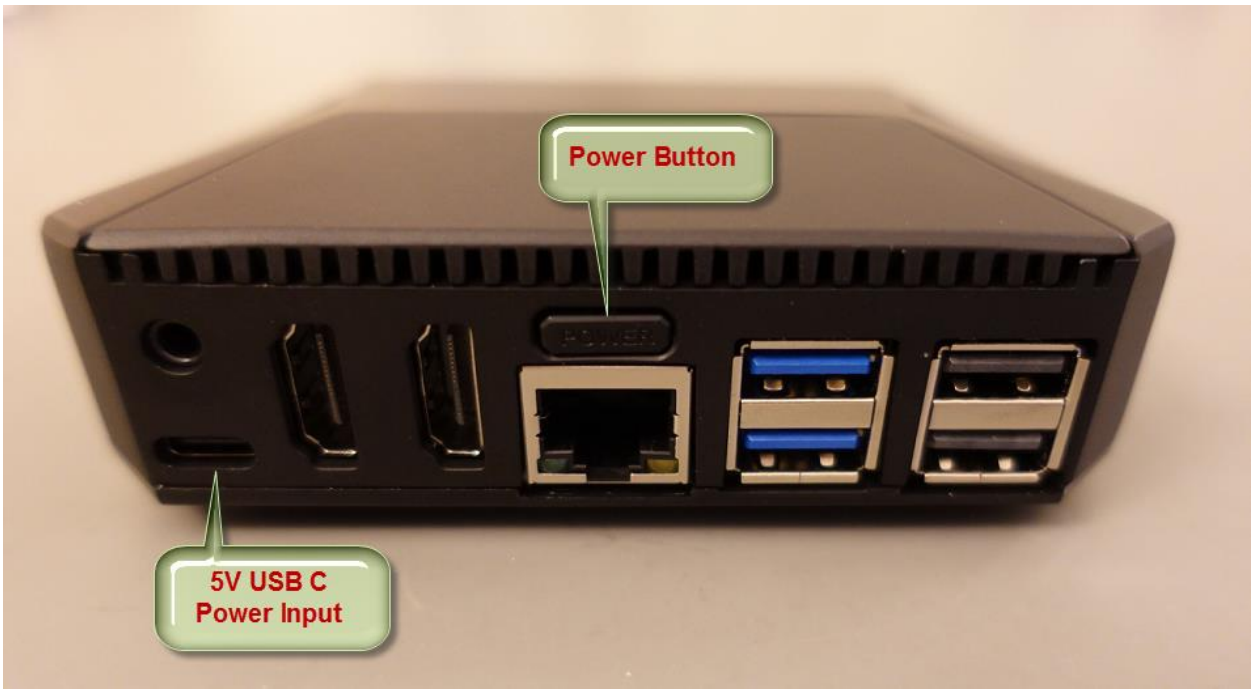
Rear panel of the Diretta Host



This is the Argon ONE V3 Case that holds the Diretta Target.

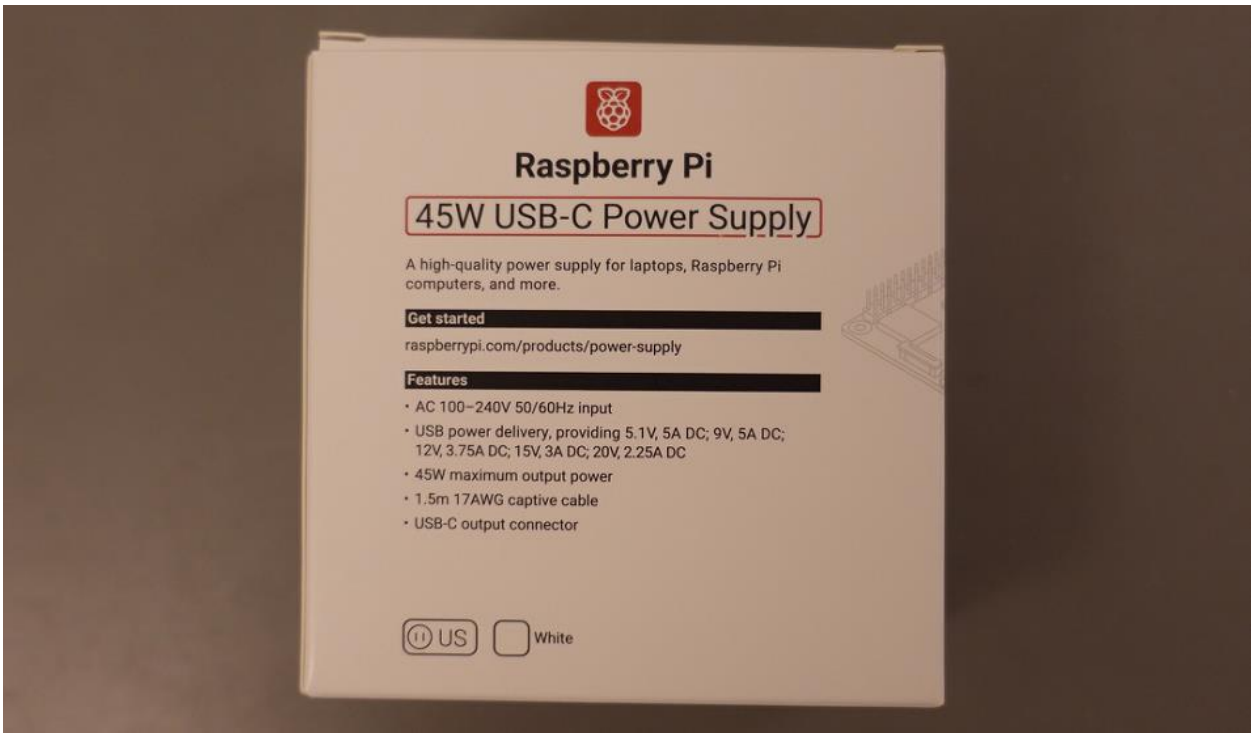
The OS for the Diretta Target was flashed on to a 32GB MicroSD Extreme Pro Memory Card.

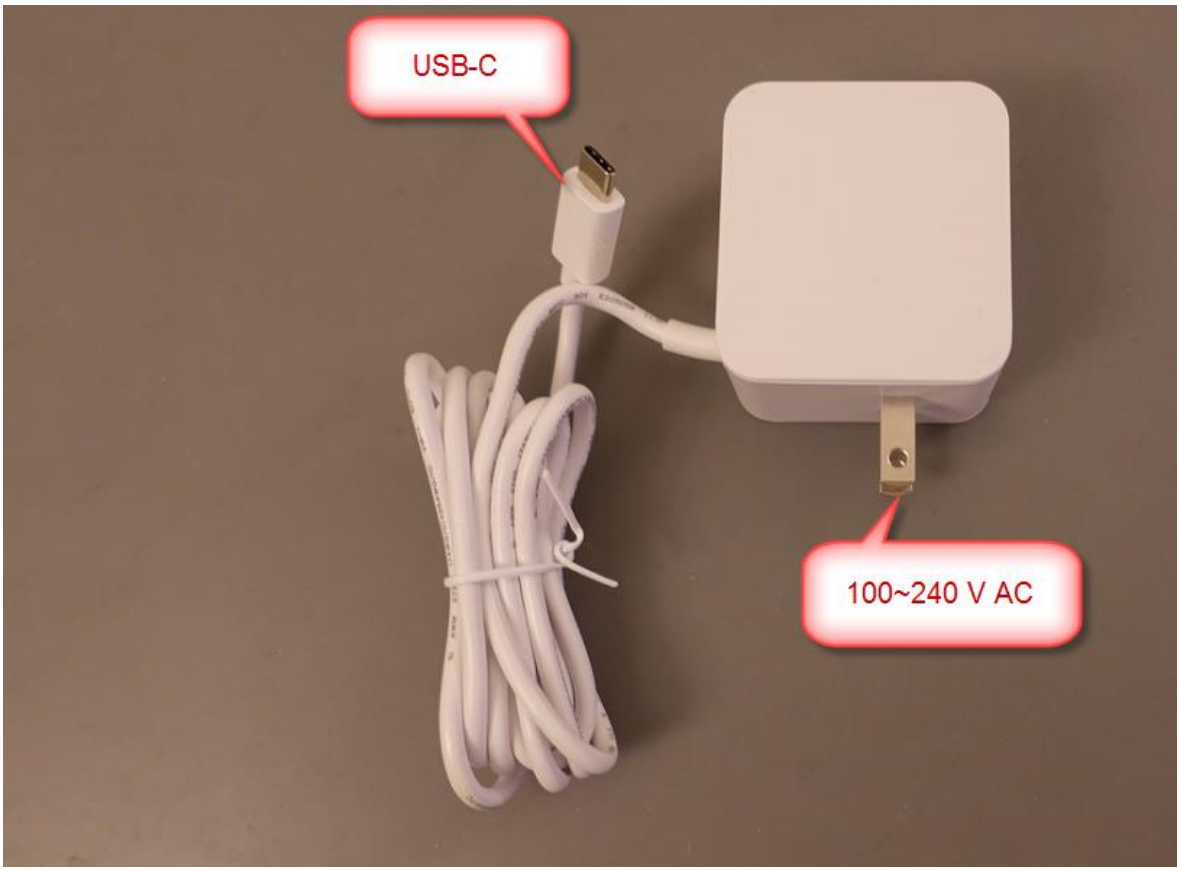




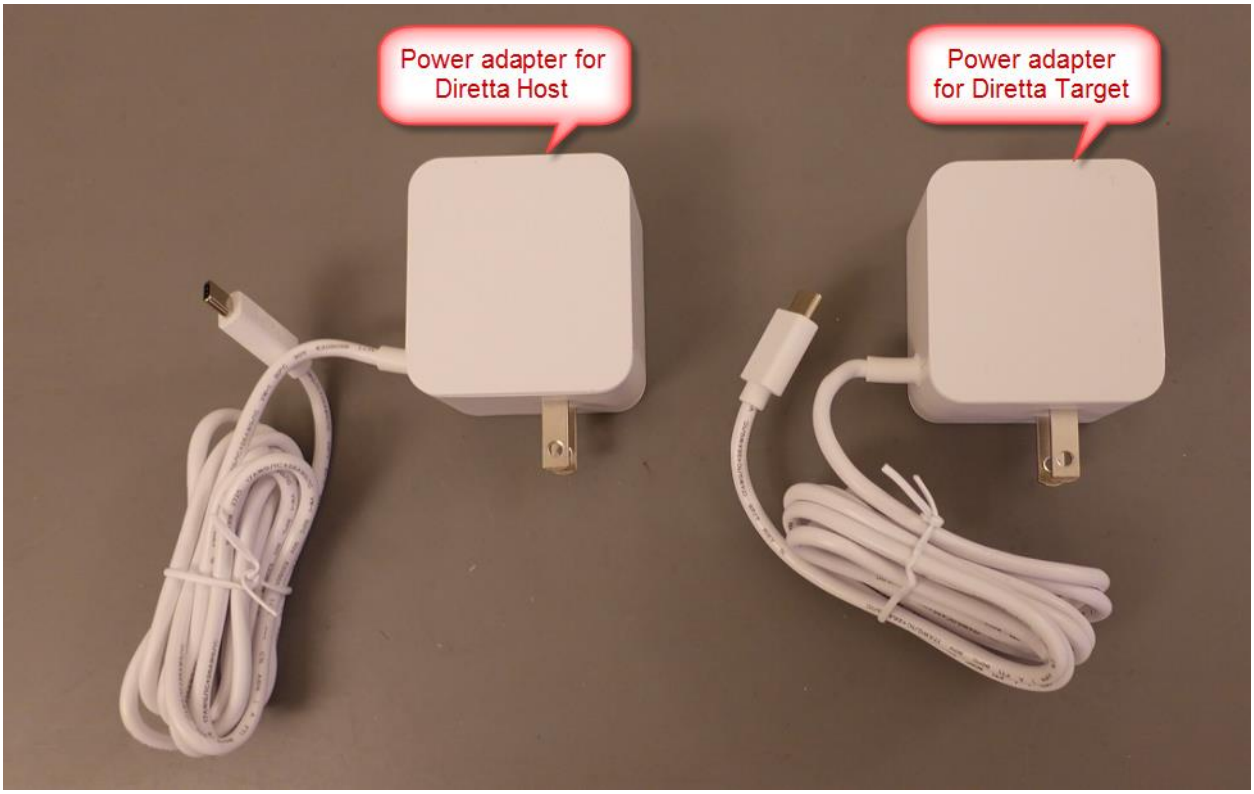
Diretta Host and Diretta Target in distinctive Gray and Black cases.

Raspberry Pi 45W USB-C Power Supply (x2)

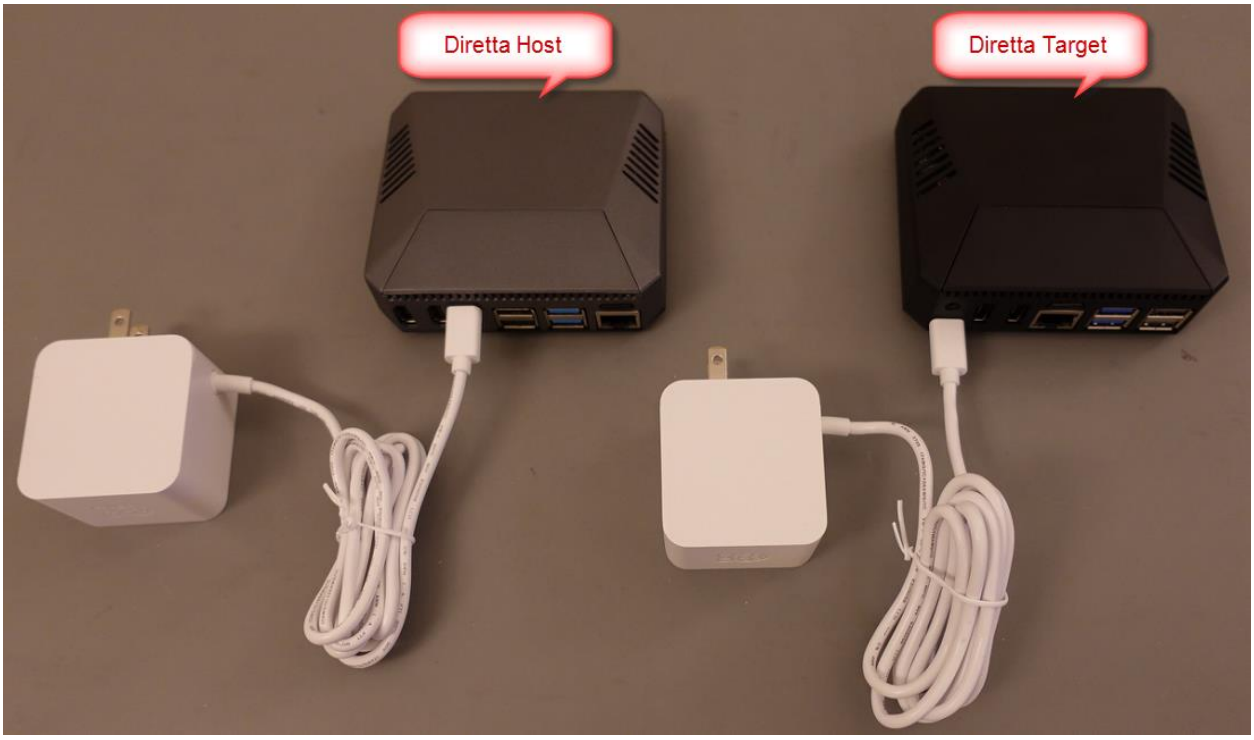



USB-C
100~240 V AC

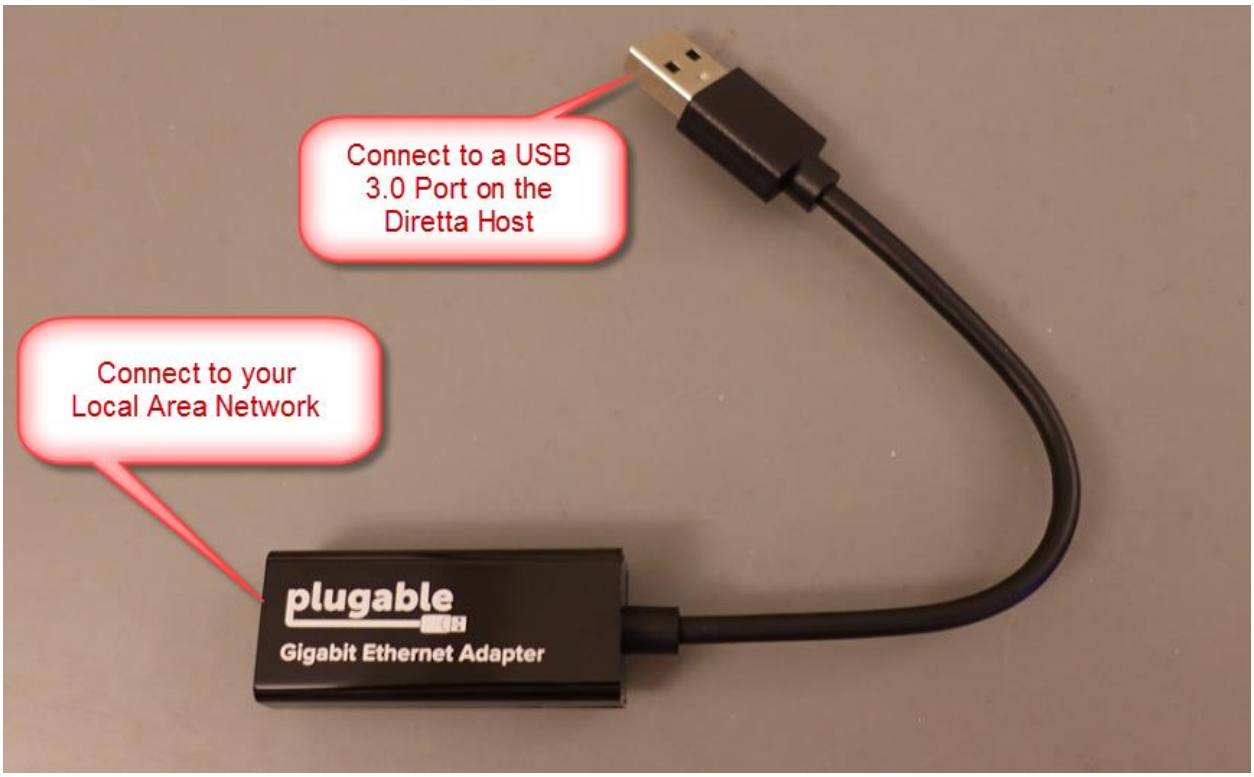

Raspberry Pi
P5124
AC ADAPTOR
MODEL:45W USB-C Power Supply US
INPUT: 100-240V ~50/60Hz 1.5A
OUTPUT: 5.1V⎓3.0A 9.0V⎓5.0A 12V ⎓3.75A
15V ⎓3.0A 20V ⎓2.25A
LISTED
E215890
POWER SUPPLY
LPS
MADE IN CAMBODIA



Note: The length of the power cord is 5’.

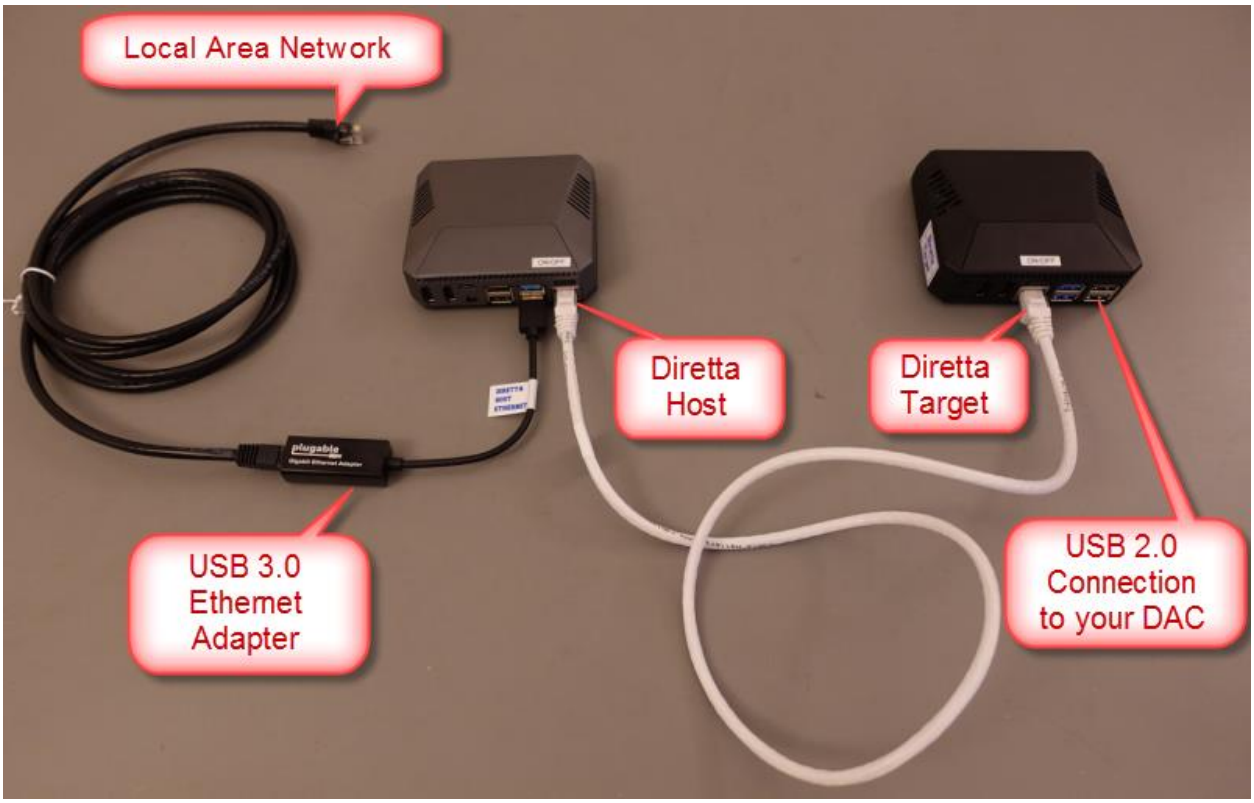


Plugable USB 3.0 Ethernet Adapter



This 3’ CAT6 Ethernet Cable connects your Diretta Host to your Diretta Target.

Connection Diagram.



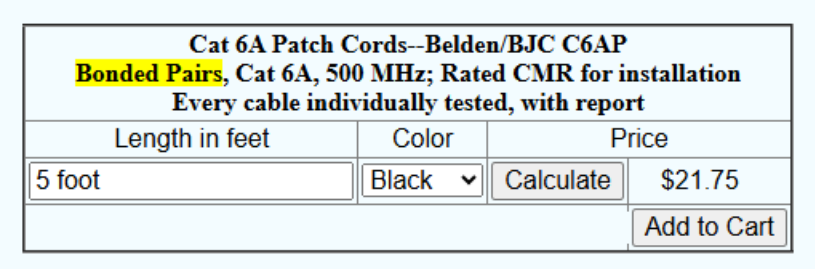
David sent me the following tips on the best solution for the point-to-point network link between the Diretta Host and Target.

Here are David's comments:

While the $930 Fidata HFLC cable sounds very nice indeed with its expansive soundstage, on further listening, we found that imaging can be a little vague on some tracks.

I swapped in a specific Blue Jeans certified CAT6A cable: the one made from Belden-manufactured, bonded-pair cable stock. The three of us agreed that this cable offers a soundstage of similar scale with more precise imaging and an overall sound quality that simply sounds "right." More accurate. More precise. Not fatiguing. At least in the Diretta setup.

The good news is that instead of $930, you can pick up a 1.5m (5 ft) cable for less than $22.



The Argon IR Remote powered by 2 AAA batteries came fully programmed by David.

These are the 7 unboxed components of the Diretta Kit.

David ships everything fully configured and programmed to begin your evaluation process.

The Diretta Kit comes with a detailed 9-page Setup Instructions printed on high quality photo paper in full color.

Please read the instructions carefully before assembling and powering up the kit.

Since you would be in evaluation mode, you must make sure that your ROON Server only outputs 44.1kHz PCM (CD Quality). Feeding anything higher to the Diretta Target for more than 6 minutes would invalidate the trial license.

You must make this change to ROON's DSP settings before playing any music!

Once you are happy with the results, you can purchase the Diretta high-res license for $117 and remove all the limits.

Also pay attention to the benefits of aligning the polarity of the adapter plugs.

I am including the complete set of instructions that came with my kit.

Welcome to the AnCaolas Link Evaluation

Thank you for helping to evaluate this proof-of-concept. The name 'AnCaolas' (pronounced un-KOEU-less) is derived from Scottish Gaelic, meaning 'The Narrows' or 'The Strait'[1]. It reflects the product's core architecture: creating a narrow, isolated, and protected channel for the audio signal.

The Advantage: Roon's Architecture, Evolved

You already understand that the key to Roon's sound quality lies in its distributed architecture, where heavy processing is offloaded to the Core. The AnCaolas Link embraces this philosophy and takes it to its logical conclusion.

It solves the "final frontier" problem : even the best endpoints still handle bursty, standard TCP/IP network traffic. This "last mile" of network processing creates electrical noise and timing variations right where it matters most—next to your DAC.

The AnCaolas Link perfects the architecture.

The Diretta Host computer takes on all the network activity, absorbing Roon's RAAT stream. It then uses the Diretta protocol to gently feed a perfectly-timed, constant, low-intensity stream of audio data across an isolated network to the Diretta Target computer.

The Target, electrically isolated from your main network, does nothing but deliver this pristine signal to your DAC. The result is a startlingly natural, analog-like presentation from a blacker background—the audible result of a superior design.

What's in Your Kit

- One (1) Diretta Host: A Raspberry Pi in a lighter grey Argon ONE V2 case.
- One (1) Diretta Target: A Raspberry Pi in a darker Argon ONE V3 case.
- Two (2) Upgraded USB-C Power Supplies: To provide clean power to both units.
- One (1) 3 ft CAT6 Ethernet Cable: For the dedicated link between the Host and Target.
- One (1) USB3 to Ethernet Adapter: To connect the Diretta Host to your home network.
- One (1) Argon IR Remote Control: For convenient playback control.

Setup Instructions

Please follow these steps in order. Don't worry about the fan noise you may hear when the computers first start up; this is normal and the fans will turn off once the system is running.

Phase 1: Physical Connections

1. Identify and Place the Diretta Target. This is the darker computer (Argon ONE V3). It is the final link in the chain to your sound system.
    - Place it near your audio rack. For best performance, try to place it a foot or two away from your DAC or DDC, not directly on top of it. Also avoid placing it on top of power conditioners, amplifiers, or anything that produces heat.
    - Connect the Target to your DAC or DDC with your best USB cable. Use one of the two Black USB 2.0 ports on the Target.
    - Important: Make sure your DAC or DDC is powered on *before* you proceed to the next steps..
2. Identify and Place the Diretta Host. This is the lighter grey computer (Argon ONE V2). It acts as the bridge between your home network and the Target.
    - Place it one or two feet away from the Diretta Target.
3. Connect Host and Target. Use the provided 3 ft CAT6 cable to connect the Ethernet port on the Host to the Ethernet port on the Target. This creates the dedicated, private link.
4. Connect to Your Home Network.
    - Take the USB3 to Ethernet adapter and plug it into one of the blue USB3 ports on the back of the Diretta Host.
    - Connect a standard Ethernet cable from your router (or network switch) to this adapter.
5. Power Up. Plug both USB-C power supplies into a power outlet or strip, and connect the other ends to the power inputs on the back of the Host and Target computers. Both will now boot up.

Roon Configuration & Important Trial Information

PLEASE READ THIS SECTION CAREFULLY BEFORE PLAYING ANY MUSIC.

The Diretta software has a very strict trial mode that you must be aware of:

- Playing music at standard resolution (44.1kHz, i.e., CD quality) is unlimited during the trial.
- If you play high-resolution music (anything above 44.1kHz) for a cumulative total of six minutes, the trial software will permanently shut down. It will not function again until you have purchased a license and the Diretta team has completed activation. This process can take up to 48 hours.

To ensure you can have a long and uninterrupted evaluation period, it is essential to configure Roon to handle this *before* you play your first track. We will tell Roon to temporarily convert all music to 44.1kHz.

1. Enable the Diretta Zone in Roon.
    - Open the Roon app on your tablet or computer.
    - Go to Settings > Audio.
    - Scroll down and you should see a new device named diretta-host with "(Limited)" next to it.
    - Click Enable. Give the zone a name you will recognize, for example, "Diretta". **Note:** the IR remote control is preconfigured to use “Diretta” for the Zone name, so use that name to start. This guide will explain how to change the name later.
2. Configure Roon's DSP.
    - Open the zone controls by clicking the speaker icon for your new zone, and select DSP from the pop-up menu. This will open the MUSE screen.
    - You will see Sample rate conversion listed in the main panel, showing as "Disabled". Click on it.
    - On the next screen, click the toggle to Enable Sample Rate Conversion.
    - Once enabled, select Custom from the configuration options.
    - Under the "PCM" heading, set every sample rate to convert to 44.1kHz.
    - Do the same under the "DSD" heading, setting it to convert to 44.1kHz.

Your system is now correctly configured for the evaluation period. You can play any track from your library, and Roon will ensure it is sent to the AnCaolas Link in a format that allows for unlimited listening time.

Activating Your Full Diretta Target License

When you are ready to proceed with the purchase, use the link I provided to you via email.

After purchasing, you will receive two separate emails from the Diretta team.

1. The first email is your purchase receipt.
2. The second email is the one that activates your device. It will arrive later (typically in less than twelve hours, but it can take up to 48). This email will be from shop@megatech.tokyo and have the subject line "Activation has been enabled.".

Once you receive that second email confirming activation, you are ready to restart the system and enable full, high-resolution playback.

1. Restart the Diretta Target. The activation email will instruct you to "Please restart your Target.". The AnCaolas Link system provides two ways to restart:
    - Point the provided Argon IR remote at front of the Diretta Host and Target computers and press the power button. Wait 30 seconds for it to fully shut down. You will see activity on the front LEDs before they go out.
    - To power the computers back on,. Press the power button on the remote again. Once the computers are up, the LED on the Host will be solid Red while the LED on the Target will be Green.
2. Re-configure Roon. The old zone marked "(Limited)" will have disappeared. Don't be alarmed. This is expected!
    - Go back to Settings > Audio in Roon.
    - You will see a new diretta-host device (without the "Limited" tag).
    - Enable this new zone, name it "Diretta", and configure the device settings for your DAC as you normally would. The sample rate conversion filters are no longer required as the licensed zone will support all formats your DAC is capable of.

Your AnCaolas Link is now fully functional and ready for high-resolution playback!

Setting Up the Remote Control

To use the remote for play, pause, and skip, we need to enable the Roon IR Remote extension in Roon. If you have kept the name "Diretta", you're almost ready to go. Navigate to the "Extensions" tab in Roon Settings and click the "Enable" button next to "**dsnyder Roon IR Remote**".

Using the Remote

Start an album playing via the Roon app. Aim the remote at the front of the Diretta Host computer and press the center button on the 5-way controller to pause and resume playback. See the section, "Testing the Remote" below for a description of the other functions.

Changing the Remote Zone Name

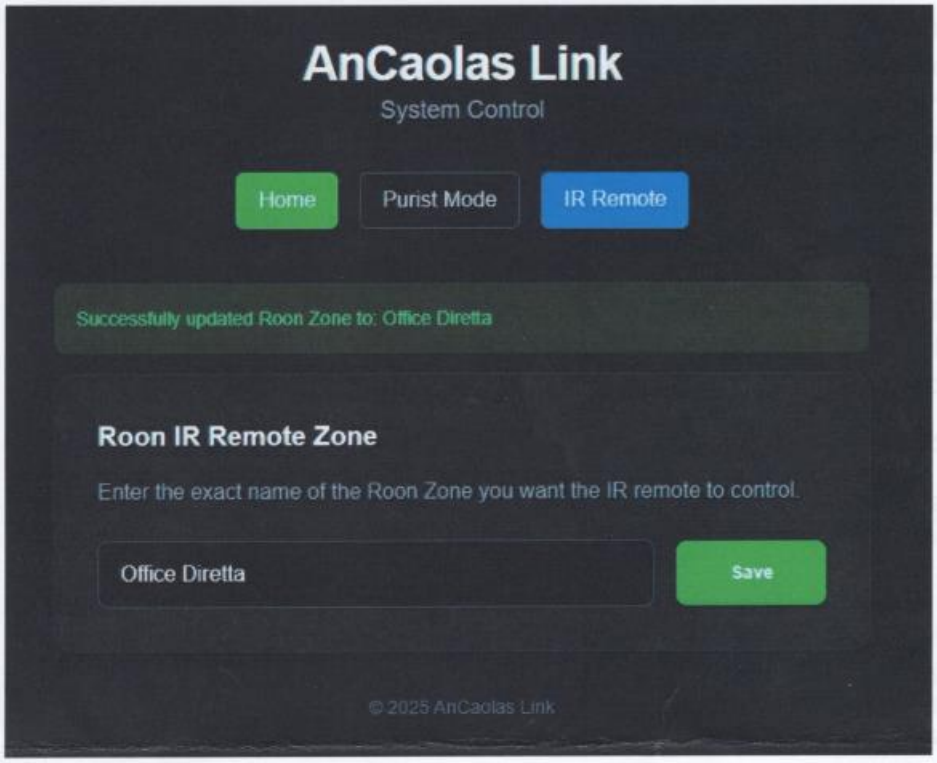
First, change the Zone name from "Diretta" to a name of your choice using the Roon app. One useful convention is to mention the room in which the Zone is located. For example, "Office Diretta".

Now that Roon has a new name, the easiest way to tell the IR remote the new name is to use the simple web UI that's running on your Diretta Host. To do so, open the following address on your computer, tablet or smartphone:

http://diretta-host.local/

The first time, you may see a warning about this site not using encryption. That's intentional to reduce processing load. It's perfectly safe on your home network. Click "Continue to site" or similar to proceed. Once connected, you should see something like this:

Navigate to the "IR Remote" tab. That will take you to a screen that looks like this:



Enter your new zone name in the text box, as shown above, and click the "Save" button. After a few seconds, the remote should start responding with the new name.

If your network is unable to recognize the name "diretta-host.local", an alternative process is to get the network address (also called "IP address") of your Diretta Host computer from the "About" tab in Roon's settings. For example:

The network address is the number in parentheses. You can alternatively address the web UI by navigating a link like the following (use the number you see for your installation, not what I have in the example below):

http://172.16.8.218/

Manually Configuring IR Remote Zone Name

Alternatively, you can manually configure the remote zone name as follows:

1. Find the Host's IP Address. In Roon, go to Settings > About. Under your enabled AnCaolas zone, you will see the IP address listed right below "diretta-host". It will look something like 192.168.1.55. Write this down.
2. Open a Command Line Tool.
   - On Windows: Click the Start Menu and type cmd or Command Prompt, then press Enter.
   - On macOS: Go to Applications > Utilities and open the Terminal app.
3. Connect to the Diretta Host. In the black window that appears, type the following command, replacing x.x.x.x with the IP address you wrote down. Press Enter after typing.

   ```
   ssh audiolinux@x.x.x.x
   ```

4. Accept the Security Prompt (First Time Only). You may see a message about the "authenticity of host". This is normal. Type yes and press Enter.
5. Enter the Password. When prompted for a password, type audiolinux and press Enter. Note: You will not see the cursor move or any characters appear as you type. This is a security feature.
6. Run the Zone Setup Tool. Now that you are logged in, type the following command and press Enter:

   ```
   set-roon-zone
   ```

7. Enter Your Roon Zone Name. The tool will ask for the name of your Roon zone. Type it *exactly* as it appears in the Roon app (it is case-sensitive). Press Enter.
8. Enter the Admin Password. You will be asked for a [sudo] password to restart the service. Type audiolinux0 (that's "audiolinux" followed by the number zero) and press Enter.
9. On the Extensions tab of Roon Settings, enable the "**dsnyder Roon IR Remote**" extension

Testing the Remote

- Start playing music in your AnCaolas zone using the Roon app.
- Point the Argon IR remote at the Diretta Host (the lighter grey computer).
  - Center Button: Play / Pause
  - Left / Right Buttons: Previous / Next Track
  - Back Button (curved arrow): Stop
  - Home Button: Mute (if your zone supports volume control)
  - Volume Up / Down: Controls Roon's DSP volume (if enabled).

Enjoy the music, and please don't hesitate to reach out for a Zoom call if you get stuck on any step. Happy listening!

Purist Mode

Your AnCaolas Link system is already configured to deliver outstanding sound quality; however, some users prefer to further minimize background tasks and network access on the sensitive Diretta Target computer. If you have not already purchased the full Diretta Target license, you'll also find a link for doing so under the "Purist Mode" tab on the web UI:

http://diretta-host.local/

If music is playing, you'll see a "Shhhh... Music in Progress" message instead. Pause playback and wait 30 to 60 seconds for the page to refresh to see the link and Purist Mode controls and Diretta Target license link, unique to your hardware.

After you receive the second email from the Diretta team indicating that your hardware license is activated their system, you may use the "Restart Services" button to pick up the activation. At that point, your old "Limited" zone will disappear from Roon. *This is expected.* Return to Roon's Audio tab to enable the new "AnCaolas Link" zone and configure it as before except without the sample rate conversion settings.

You may also manually manage Purist mode by following these manual steps:

1. Login to the Diretta Host computer as shown on the previous page
2. Login to the Diretta Target by typing: `ssh target` (same password)
3. Enable Purist Mode by typing `purist-mode`

Listen for a while. If you like it, you can make the change permanent with this command: `purist-mode-auto-enable`. If you change your mind later, you can disable it with: `purist-mode-auto-disable`

Subject: Optimizing Audio Quality via Power Plug Orientation

Consistent orientation of the power plugs for the Diretta Host and Target can have a noticeable impact on sound quality. By aligning the plugs, we can create a more stable electrical environment for your DAC.

How to Orient the Plugs:

- USB-C Plugs: Insert the plugs into the Raspberry Pi units while the boards are facing up.

- Wall Adapters: Plug the white power adapters into the wall receptacle so that the power cord hangs down, aligned with the ground pin.

The Technical Reason: Common-Mode Noise Rejection

The goal is to synchronize the electrical "ripple noise" that is inherent in all switching-mode power supplies (SMPS), like the ones included in this kit.

- In-Phase Noise (Good): When the identical power adapters are plugged into the same circuit with the same orientation, their ripple noise is synchronized, or in-phase. This creates what is known as common-mode noise. Think of it as two boats rising and falling together on the exact same wave. Because there is no difference in potential between them, the noise is easy to filter out. High-quality audio gear, including your DAC, has a high Common-Mode Rejection Ratio (CMRR), meaning it's specifically designed to cancel out this type of noise.

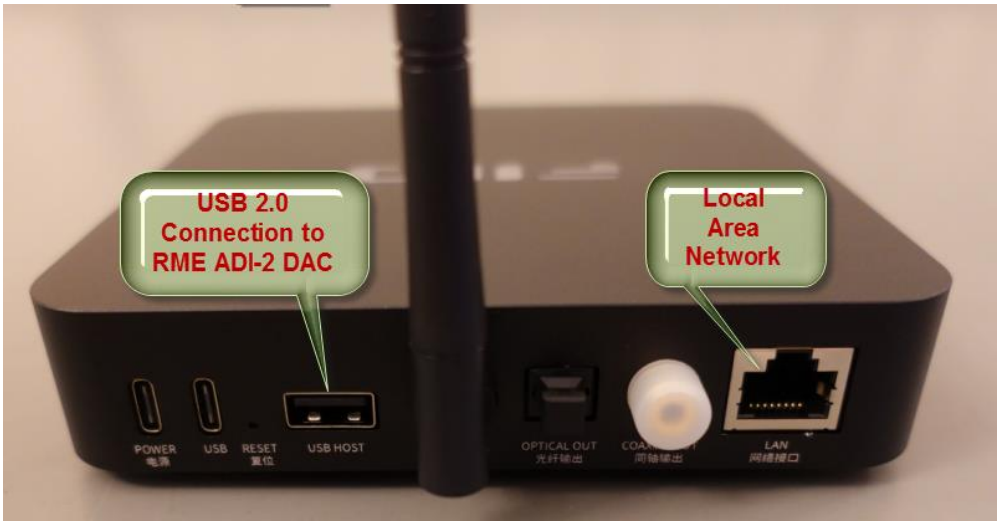
- Out-of-Phase Noise (Bad): If the plugs are oriented differently, the ripple noise is out-of-phase. This creates a constantly changing voltage difference between the Host and Target's ground connection. This is called differential-mode noise. Your DAC can't easily distinguish this noise from the actual audio data, which can introduce audible artifacts and mask fine details in the music.

By ensuring the noise is common-mode, you are allowing your DAC's internal noise-rejection circuitry to work as effectively as possible, resulting in a cleaner ground reference and more precise digital-to-analog conversion.

My Evaluation of the Diretta Kit

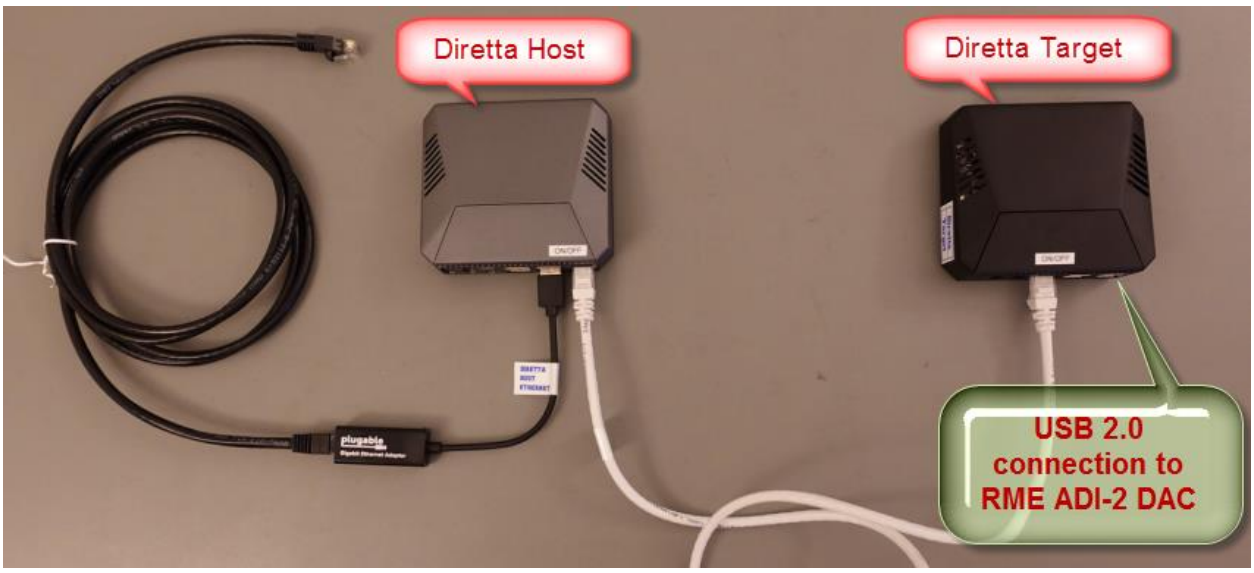
I played several test tracks over and over again to hear the differences between Diretta and Non-Diretta playback through my ROON Server running on the GMKtec Mini PC.

For Non-Diretta Playback I use the FiiO SR11 Streamer connected directly to my RME ADI-2 DAC using a USB cable.



RME ADI-2 DAC

For Diretta Playback, I replaced the FiiO SR11 streamer with the Diretta Host and Target pair.



These were my test tracks all streamed from Qobuz via the ROON Server with output resolution converted down to 44.1kHz.

TRACK	ARTIST	ALBUM
Keith Don't Go (Live)	Nils Lofgren	Acoustic Live
Vogue (Q-Sound Mix)	Madonna	The Immaculate Collection
I'm Alive	Celine Dion	A New Day Has Come
When We Were Young	Adele	25
Down To Zero	Joan Armatrading	Joan Armatrading
Isle Of Innisfree	Celtic Woman	The Greatest Journey
Man in the Long Black Coat	Bob Dylan	Oh Mercy
Hoist The Colors	The Wellermen	The Wellermen
Friendships	Pascal Letoublon/Leony	Friendships
In My Secret Life	Leonard Cohen	Ten New Songs
Make Us Stronger	Ghost Rider	Part of the Dream
Adeste, Fideles	Enya	Christmas Secrets
A Whiter Shade of Pale	Lucy Thomas	Beyond
Fanfare for the Common Man	Minneapolis Symphony, Eiji Oue	
Mama This One's For You	Chantal Chamberland	Mama This One's For You
Liberty	Anette Askvik	Liberty (Original Edition)
Big Bad John	Geoff Castellucci	Big Bad John
Bones Shake	Hazlett	Bones Shake
Bubbles	Yosi Horikawa	Wandering

My Verdict

I am giving an enthusiastic Thumbs Up to adding the Diretta Host/Target processors to any music streaming network.

I heard these immediate benefits:

- More focused sound
- Widening of the sound stage
- Improved articulation in the bass lines
- Smoother vocals
- Added clarity and brilliance
- More definition giving the feeling of extra information
- A more enjoyable and engaging listening experience

This $369 Diretta evaluation kit is worth every penny. I will be adding the $117 Diretta high-res license to remove all the sample rate and format restrictions.

David has stumbled upon a jackpot. His Diretta Solution to any Streaming Network outperforms products costing tens of thousands of dollars. He has devoted so much of his time in figuring out the nuts and bolts, posting a comprehensive technical manual on GitHub an building these fully programmed kits for all our Club Members, all without asking for a single dime to cover his labor costs.

I salute David for his deep understanding of Networks and for his enthusiasm in showing us how to elevate our listening experience with affordable components.

David is a wizard when it comes to building a system that maximizes the price/performance ratio at any given budget.

I think David should consider turning his audio hobby into a side business and generate some returns off his hard work.

I am 100% satisfied. I don't think I will ever feel the need to upgrade anything soon. With the added Room Correction FIR Filters generated by Acourate this is as close one can get to perfect sound without breaking the bank.

Should you decide to add Digital Room Correction using Acourate, here are all the details:

https://bit.ly/3RJtFxR

For those who have missed this event, I would encourage you to visit David's home in Peoria and audition his 2-channel audio setup along with his 6.2.6 Dolby Atmos Home Theater and Digital Vinyl Demo. It was a mind blowing experience. I will do a complete review in a future article.

Best regards,

David Das