Review: dCS Network Bridge – The Swiss Army Knife of Streamers

There is nothing like grabbing a prized LP, dropping the needle in the groove, and having the events of the day get whisked away. Nothing else matters at that exact moment, only that you are sensing every emotion and every note… cue relaxation.

But now more than ever, times are *a-changing*. Digital music reproduction, the growing availability of high-resolution content, combined with better software is making this something audiophiles need to pay more attention to. The debate of Analog vs. Digital will rage until the end of time, but it is abundantly clear that digital files can sound fabulous and can reproduce *music*.
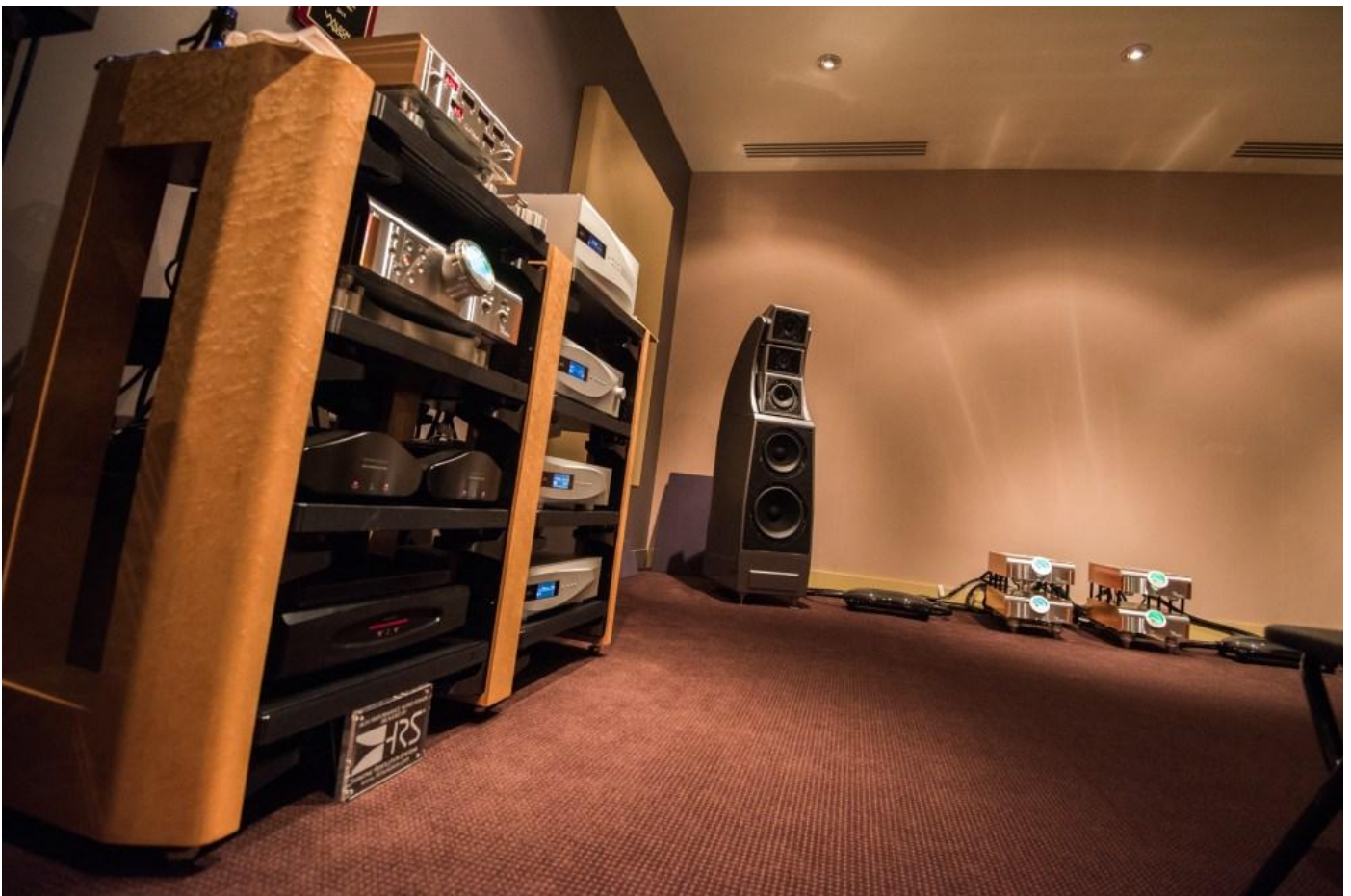
dCS Vivaldi 4 Box Digital Stack + **Dan D'Agostino** electronics + **HRS** stands + **Transparent** cables + **Wilson Audio** Alexx loudspeakers @ **Definitive** Audio Seattle

Over the years I've been overly conservative on the digital side of my system, using mostly entry level **Sonos** Connects with various outboard DACs for convenience. Why? Rock-solid reliability, and a user interface that is extremely simple. Simple enough that my children can discover, and playback music. If the system doesn't work, they won't use it. What Sonos lacks is access to high resolution content, and digital/analog outputs that match the rest of my system. I have made attempts to

maximize the Sonos Connect with mods, but fancy wheels can't make this inexpensive car a bar-no-expense **dCS** Vivaldi. I have tried other streamers, and each time I came away disappointed. Some sounded better than Sonos but *were not reliable, and were complicated*. Magic happens when we bring together hardware and software that works in concert.

The **dCS** Network Bridge sneaks up on me…

Definitive Audio in Seattle hosts some wonderful events with headliner systems that seem to always do something a little unexpected. I recall a rainy Seattle evening in November 2016, when it wasn't the headliner that surprised me. In a corner, was a small and un-assuming system- a dCS Network Bridge streamer + **dCS** Debussy DAC driving a pair of **Wilson Audio** Sabrina loudspeakers. There was one other person in the room who looked relaxed, content, and was smiling ear-to-ear.

He heard what I was hearing, *music*... The dCS Network Bridge didn't look like any other dCS product I'd seen to date. It was a small package with clean lines. Again, this was one little un-assuming box.

This room was a reminder that you can build something special without spending six figures, and that singular moment started my journey with the dCS Network Bridge (NBR).

Who is dCS?

On my way to the High-End show in Munich, I made a detour to the dCS office in Cambridge, nestled just a few minutes away from beautiful King's College.

dCS has been a pioneer for both digital recording, and playback for the past 30 years. Starting in the professional audio industry, dCS produced the first 24bit analog-to-digital converter in 1989 with the release of the dCS 900, and follow-on dCS 950. These dCS products were used by industry greats like Bob Ludwig to create many of the albums that we cherish today.

When we buy analog gear, we know that we will still have it years from now. On the other hand, when investing in any digital technology, there can be the nagging doubt that it will be outdated next year like a mobile phone. Different from most of the industry, dCS products seem to blossom after release, as they receive a stream of hardware, software, and firmware updates for 10+ years. This concept didn't crystallize in my mind until I spent some quality time with dCS Scarlatti, and dCS Debussy DACs alongside the NBR. Both DACs have been around for nearly a decade, but feel like current products.

The employees have passion and tenure. Two of the long-time principals, Chris Hales (Product Development Director) and Andy McHarg (Technical Director) together have more than 45 years at dCS.

Chris Hales and Andy McHarg in the dCS listening room

After an enlightening discussion on the evolution of the dCS Ring DAC, I asked Chris what makes dCS different:

"We used to talk about thd+N (Total Harmonic Distortion plus Noise) for example as a popular measurement, but at dCS it is not a metric we are interested in. Instead we rely on other measurements. The measurement techniques like FFT analysis are much more powerful, and gives you more information then thd+N ever could. We have a long history of using these measurements and understanding what they mean. It is an enormous advantage. "

You get the drift; these are men who are serious about making music. They delivered what some consider to be the best digital experience available with the dCS Vivaldi digital playback system, but can they bring that secret sauce to a price point that gets me excited?

Introducing the dCS Network Bridge (NBR)

Got a DAC you love and cherish? Wish you had access to streaming music? Maybe Roon for music management from your new plus-size fancy phone? No problem. The dCS Network Bridge allows you the ability to add streaming (Tidal, Spotify, Apply Airplay, Roon, Hard drive, Network Attached Storage) to your existing DAC.

Although you may assume that it's just for dCS DACs, the design, and flexibility of the NBR design makes it viable for almost any DAC out there today. It can basically take anything as an input, and can send it back out in almost any configuration that your DAC needs. You can think of it as the Swiss army knife of streamers.

NBR Key Features (From dCS website)

- Streamlined FPGA-based design
- Streaming services supported include TIDAL, and Spotify Connect
- Roon Certified
- Optional down-sampling to match legacy DAC
- Accepts data from UPnP, asynchronous USB-on-the- Go and Apple Airplay
- Auto-clocking system improves ease of use and minimizes jitter
- Multi-stage power regulation isolates digital and sensitive clock circuitry
- Firmware-upgradeable from the internet for future functionality and performance upgrades
- Black or Silver – weighs in at just 10.2 lbs.
- $4,250 USD

NBR Digital Inputs:

- **Network** via wired RJ45 Ethernet (WIFI support will be added in the future)
- **USB 2.0** input to stream music from an external storage drive

NBR Digital Outputs:
- **SPDIF** on 1 RCA phono connect – supporting: 24bit / 192ks/s or DSD/64 in DoP
- **SPDIF-2** on 2x BNC connectors – supporting: 24bit / 192ks/s or SPIDIF-2 DSD/64
- **AES** – supporting: 24bit / 192ks/s or DSD/64 in DoP
- **DUAL AES** – supporting: 24bit / 384ks/s or DSD/64 and DSD/128 in DoP

NBR Industrial Design:

Ray Wing is head of Industrial Design at dCS with a tenure of 17+ years. Early in our conversation, Ray had to set it straight:

> *"One of the things I always say to people when you go, and listen to a system which is setup properly, and it sounds good, it is very much been standing on a band playing on stage. You get the dynamics, the surround sound."*

Wing still rocks his acoustic bass with his friends, and that live sound is what he's on a mission to recreate.

Behind Wing's desk is a history of dCS with every product released stacked up in progression. He fondly described the history of the industrial design. The dCS Paganini was the first time there was a curve on the case, this evolved in the dCS Vivaldi & dCS Rossini.

The NBR took a departure from this. It was a different concept. He explained that when you assemble a component you have a box with a lot of parts. You need to make all the pieces work, and fit perfectly together, and reduce resonance from the room. The goal with the NBR was to have a minimum number of parts in the box, and have a minimalist look. Mechanically, the simplicity also aids the performance. "It machines very nicely, and allows for high consistency. Put it alongside any product in the history of dCS and it just seems to fit in and not look out of place on your rack," said Wing. dCS has a heritage of allowing you to mix, and match components from prior generations.

NBR Manufacturing:

During my factory tour in Cambridge, I had the opportunity to see the process by which the dCS NBR is built. The manufacturing process detailed below is the same for all dCS products. Here is the short version:

Assemble – A tech begins by picking up a kit that has all the parts and assembling a NBR.

Burn in – Next all products test on the burn-in rack for a minimum of 96 hours.
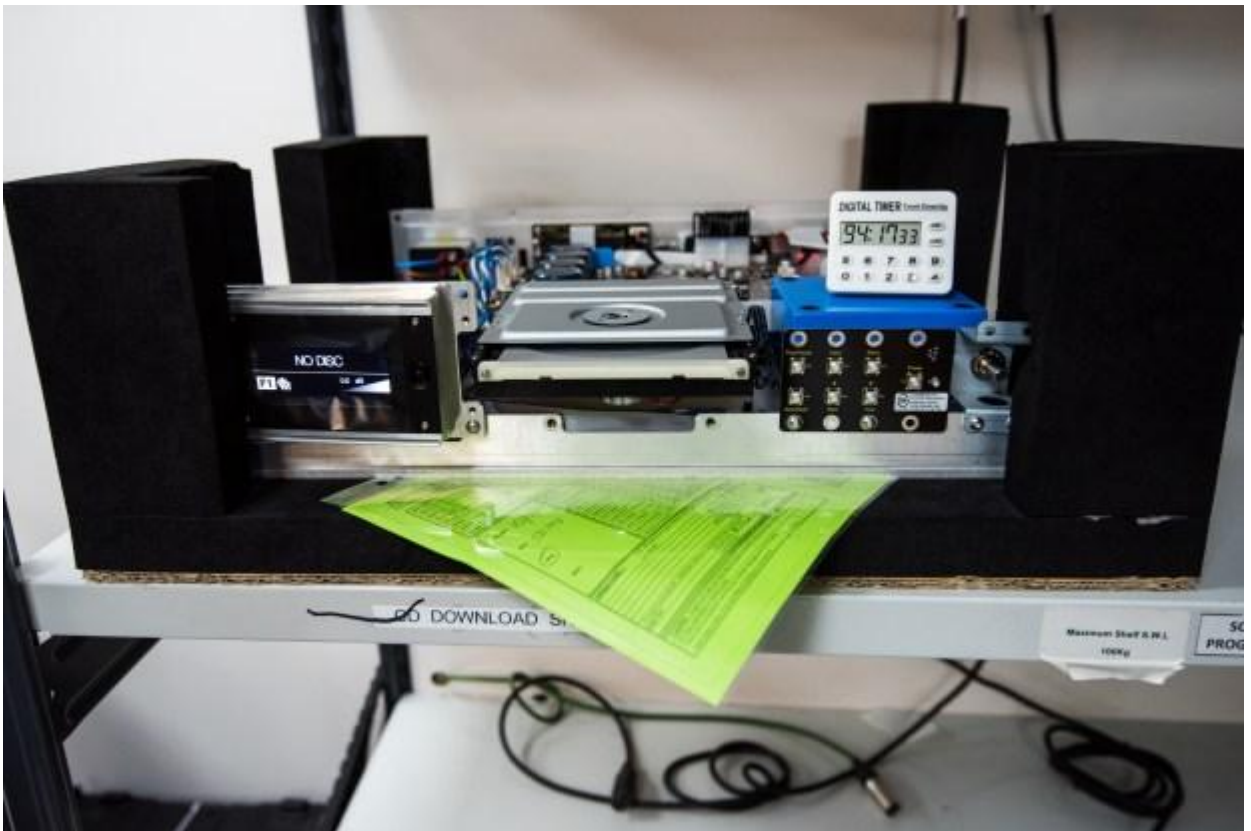
Automated tests (Autotest) – each unit is undergoes a series automated tests referred to as "Autotest." A key differentiator of dCS is reliance on FFT testing to evaluate their products.

FFT testing takes one to two hours per product. For more complex products like a Vivaldi up-sampler the process can take closer to three hours.

Manual testing – Post Autotest, units are manually tested. Buttons, exterior lights, displays etc. In the case of the NBR, additional tests are conducted to test networking and mobile app functions.
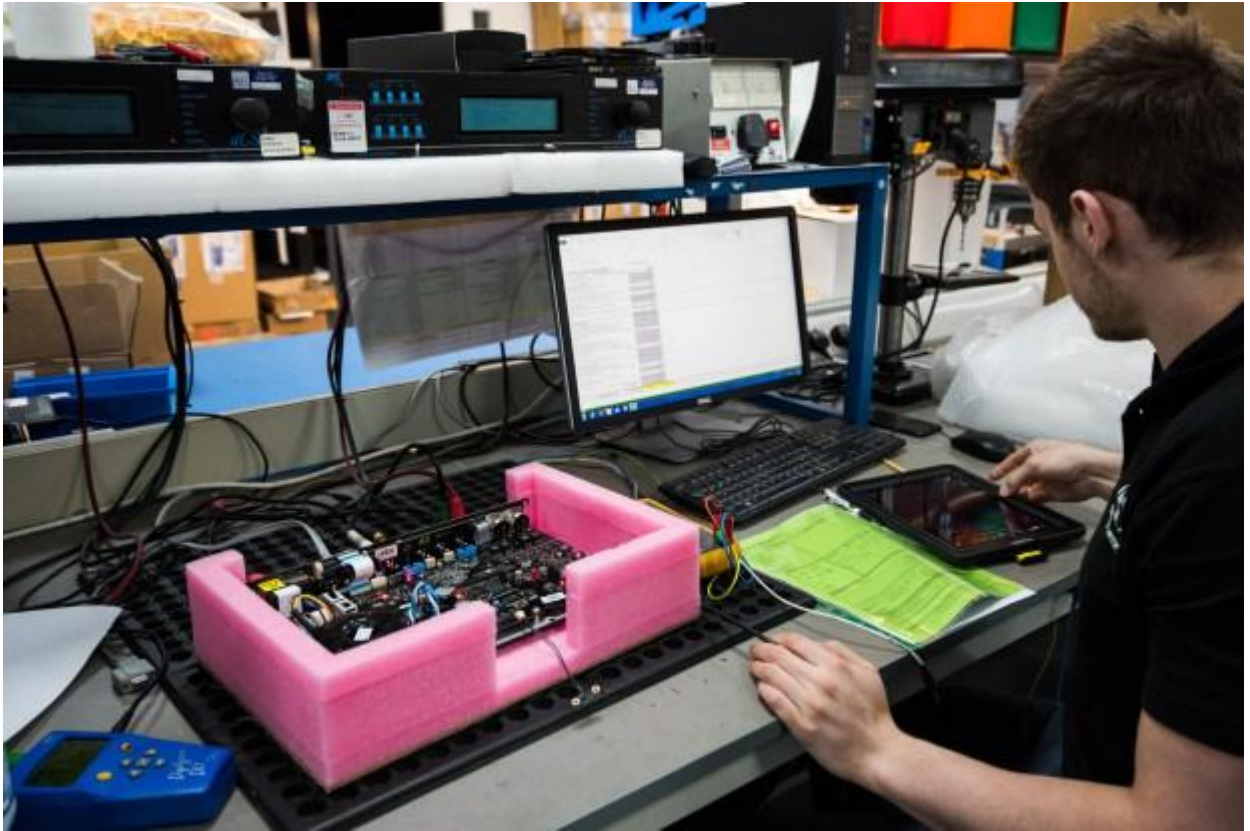
Final Assembly – After testing is complete, products wait in the "in-stock area" until a final order arrives.

Sound Check – The final step is a 30-minute listening test.

Packaging and Final Inspection – To conclude, each unit gets a final triple inspection; by the tech who built it, by another person from production, and by one person in the development office.

Double boxing is complete, and it is ready to be shipped to a customer. Total time from start to finish – close to 10 days.

dCS Network Bridge Un-boxing and Setup

The NBR was well packed, but the outer box took an IQ test to open. The box is sealed with no tape to keep it secure and give it a clean look. I discovered the evil glue gun that is responsible for making this task difficult. This is only applies to folks with OCD like myself who like to keep packaging perfect!

Hooking up your NBR:

The following diagram details all the connectivity options for the dCS NBR:
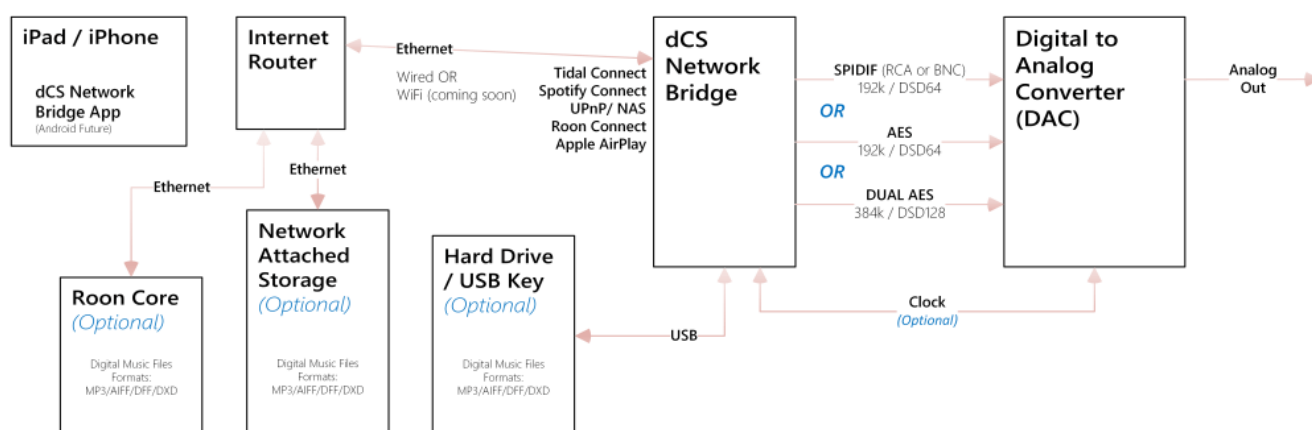
In the simplest setup, you would just have ethernet connected to the dCS NBR, and the NBR connected to your DAC. In this configuration, you have the ability to stream Tidal, Spotify or music from a UPnP / NAS to your DAC. Alternatively, you can also add a Roon Core. Why Roon:

- Roon Labs provides a client app for iOS / Android / Windows. (The dCS mobile app is iOS only)
- Roon Labs provides built in up-sampling capabilities
- Roon Labs provides a more robust user interface that is very easy to use, and has some cool features like access to additional meta-data like lyrics for the music you are playing.

The downside to adding Roon is you need to pay for it ($100 USD per year or $400 USD lifetime).

Building a Roon Core (Optional)

The configuration I used below is higher spec'd than the recommended, but if you want to have multiple zones and leverage Roon up-sampling, I think this configuration is what you should aim for.

- Intel NUC PC – Core i7
- 16gigs of RAM
- SSD Hard drive
- **Roon** ROCK (Roon OS + Roon Core)

Using the Network Bridge

Once powered on, and connected, you start by installing the dCS NBR app in the iOS App Store. It worked well on my vintage Apple iPad 2. The app automatically located my NBR, and in a few clicks, I could configure the outputs of the NBR to match the DAC and do a firmware update (v1.4). For most users, they will be able to just live with the dCS NBR app. It provides access to streaming from

Tidal, and Spotify, streaming from a local UPnP server on your network, or from a hard drive/USB key plugged into the back of the Bridge. Playlist management wasn't completely intuitive, but I got the hang of it after learning that the default view was a playlist editor.
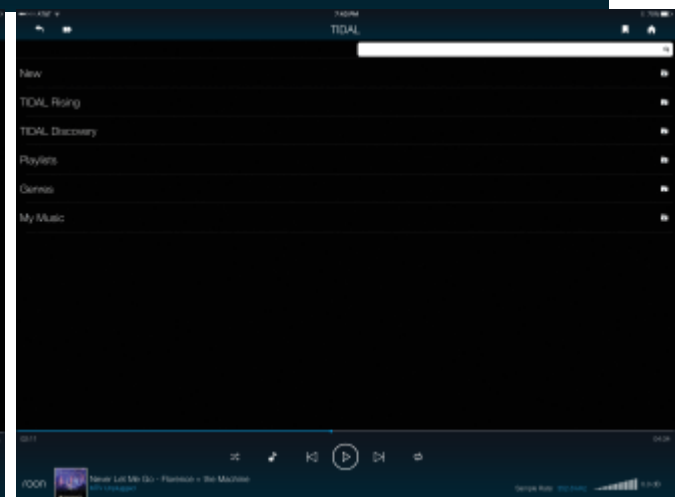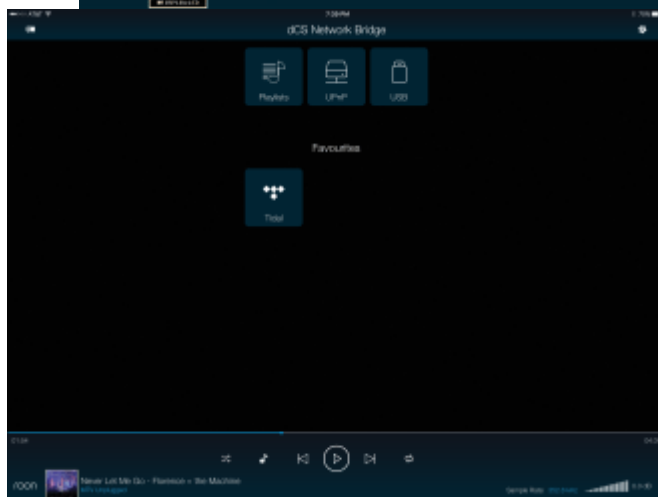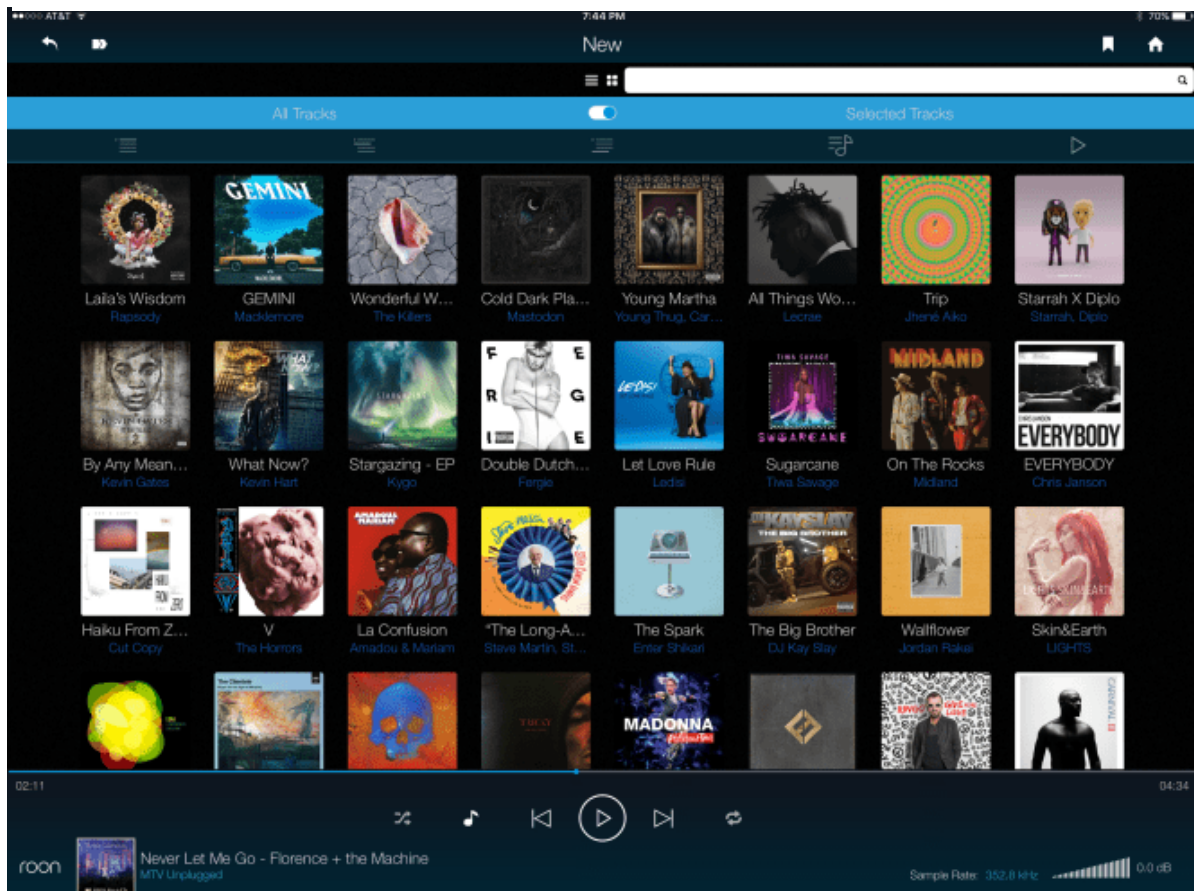
I found the best way to use the NBR is pairing it with Roon. Roon Labs is a company that is 100% focused on providing the best management software to date for your digital music. Sonos has set a high bar on music management, so my family has high expectations on easily navigating our music library. Roon sets a higher bar, supports DSD/DXD and adds a few features like song lyrics that have become a family favourite.

The Expected:

I began by dropping some octane on my seven-year-old **dCS** Debussy DAC paired with the dCS NBR to see if it can hold the pole position in my listening room as we rolled with some beautiful DSD recordings.

Old School:

I dusted off a 10-year-old **dCS** Scarlatti DAC paired with the NBR to make it a reference piece again in 2017.

The Extreme:

I discovered what I thought was an unlikely combo that any potential dCS Vivaldi owner should pay attention to: A **dCS** Vivaldi DAC paired with the NBR and aided by software up-sampling from Roon.

So, how did the dCS digital front end compare to my **AMG** Viella/**Lyra** analog front end? The short version? I'm converted. LPs rule, but I'm listening to a lot of digital music on a dCS front-end that starts with a NBR, and Roon now. It's *delicious,* and easy to use.

The Expected: NBR paired with the dCS Debussy DAC

I introduced the dCS Debussy to my system last year being driven by a Sonos Connect. Many other streamers have come and gone, but none really sounded that much better than the hot-rod Sonos. The NBR was different. For the first time, it was as if I had let the Debussy really strut its stuff. The noise floor dropped significantly, and it provided the beginning of a lean-forward listening experience that made digital engaging in my listening room. Configuration is important. I tried many different setups, but let me share what provided the best performance between the NBR, and Debussy.

dCS Debussy DAC Physical Connections:
- Dual AES digital connection from the NBR to Debussy DAC via AudioQuest WEL Signature Digital cables
- 75ohm digital cable running clock-out from the NBR to the Debussy DAC to synchronize the clock
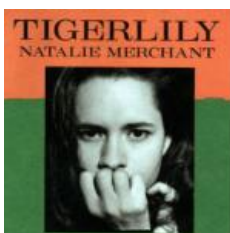- Wired Ethernet via AudioQuest Diamond Ethernet cable

NBR Settings in dCS App:

AES Downsampling	Disabled
SPDIF Downsampling	192k
DUAL AES Sample Rate	88.2k (Engages Dual AES on anythin
DSD Downsampling	Off

Roon Settings for the NBR:

Max Sample rate	Up to 192k
DSD Sample rate	DSD64
Filter	Smooth, Minimum Phase

Although DSD recordings brought out the best in this setup, some older Redbook recordings got a fresh look.

Natalie Merchant's 45rpm release of "Tigerlily" is an old favorite. Previous listening has shown that Redbook version sounds flat and un-engaging. Playing it through NBR plus Debussy DAC, I was taken back by the life that was brought back into it. Merchant returned to her sweet, smooth voice, and the low end gained back texture. The LP is still ultimate, but I was no longer embarrassed to listen to the Redbook.

Although I had received the dCS Scarlatti, the Debussy remained in my listening position for several weeks. It produced that sound that we look deep for: Lean in, toe tapping, with a pace *just right*. That analog feeling.

Note: For owners of the dCS Debussy: a firmware update is in the works that will allow the Debussy to support a DUAL AES sample rate of up to 384k and DSD128. It was not available at the time this review was written.

## Old School: NBR paired with the dCS Scarlatti DAC

I wasn't ready for my experience with the dCS Scarlatti DAC being driven by the NBR. This was my first experience with the Scarlatti, which had previously held position as part of the reference Scarlatti digital stack from dCS that preceded the dCS Vivaldi.

At the dCS Factory, the Debussy was described as a slimmed down Scarlatti. Although they sounded like they were from the same family, I was gob smacked by the difference. For the couple of weeks that the Scarlatti was cranking, it was the most engaging digital experience to date in my room – by a wide margin (well at least until big brother Vivaldi made an appearance). If you own a Scarlatti, don't rush to upgrade, you have something special. Just drop in a NBR, and you will be streaming at 384k in DSD128 from your listening position.

A longtime favorite of mine is "Frozen Charlotte" from Natalie Merchant's, "Ophelia" release. It's a track that goes deep, and when correctly reproduced gives me goosebumps. Listening to the Redbook version on the Scarlatti I was in a trance. I didn't realize how past setups were smearing Merchant's voice just a little. This time there was a beautiful separation of Merchant's voice vs. the background vocals, and instruments. The low end reached deep into my Wilson Alexia's, and the definition around the kick drum brought a smile to my face. If anyone knows of an LP release of this album, please hook me up.
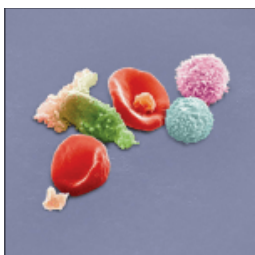
Listening to "Biko" from Peter Gabriel's "New Blood Live in London" release was intense. His deep voice, sounding tonally perfect was sitting just a few feet from me. The Scarlatti, and NBR combo dug in, and created a holographic, almost haunting image. I must have listened to it five times before picking up the pencil to write down anything. Once again tonality, pace, and the ability to separate Gabriel from the drums driving behind his voice whisked me away.

Scarlatti Physical Connections:
- Dual AES digital connection from the NBR to Scarlatti DAC via AudioQuest WEL Signature Digital cables.
- 75ohm digital cable running clock out from the Scarlatti to the NBR to allow the Scarlatti to function as the *Master Clock*. (The NBR is synchronized to the clock in the Scarlatti)

- Wired Ethernet via AudioQuest Diamond Ethernet cable

NBR Settings in dCS App:

AES Downsampling	Disabled
SPDIF Downsampling	192k
DUAL AES Sample Rate	88.2k
DSD Downsampling	Off

Roon Settings for the NBR:

Max Sample rate	Up to 384k
DSD Sample rate	DSD128
Filter	Smooth, Minimum Phase

The Extreme: Using it with a dCS Vivaldi

The night I un-boxed the NBR, I cruised the manual, and noticed the setup illustration showed the NBR connected to a dCS Vivaldi DAC. At first, I thought they were being inspirational for the reader. But it got me interested. What if I took the $35k USD Vivaldi DAC and paired it with a $4250 NBR? How close can I get to the take-no-prisoners four-box Vivaldi Stack weighing in at over $100k USD?

The dCS Vivaldi DAC lands…

After unboxing the Vivaldi DAC, I connected it to the NBR with the same physical connections, and settings used with the dCS Scarlatti DAC. The only difference is I set the Vivaldi DAC to either Filter 1 (for PCM) or 5 (DSD).

Getting the most out of NBR / Vivaldi DAC / Roon:

During my time with these 3 DACs there were a couple of important things that maximized performance. The first is always connecting the clock between the DAC, and NBR as described above with a quality digital cable. The second was turning on up-sampling in Roon. This elevated the performance of all three DACs that I used, especially on Redbook content.

I found the best configuration was to set the up-sampling to custom in Roon, and use a multiple of the sampling rate up to the max sample rate allowed by the DAC. In the case of the Vivaldi or Scarlatti DAC (or the Debussy DAC once it gets the upcoming firmware update), it looks as follows:

I'm an analog guy. I love my LPs. They provide a listening experience that is hard to beat. Digital is convenient. Digital gives me access to content instantly. Digital sounds good, and my time with the NBR plus Debussy or Scarlatti DACs was fabulous, but to date, it hasn't swept me away like my analog rig. Except…

It was darn close with the Vivaldi DAC. In some ways it was better, in others it was tight. All of those details aside, it was the most *engaging digital experience* I have had to date in my room. One evening I started listening around 5 p.m. At 6 p.m., my wife entered the room, and said "wow that sounds amazing," and sat down with me. By 7 p.m. my kids had entered the room, and snuggled up. No

one got up, no one moved. My nine-year-old son said as he entered the room, "Which record is that?" 10 p.m. – We are still re-experiencing tracks from the past. My wife is in tears as it brings back emotions from music that reminds her of lifelong experiences. Isn't this what its all about? *Just music*.

During an evening listening session I asked my daughter what she wanted to listen to. She said "something like this." So I continued to pick music similar to what I was listening to already. This went on for four or five songs. Each time I asked for a music request, I got the same answer, "something like this."

Turns out I must be getting old, but I didn't realize she wanted "Something Like This" by the Chainsmokers. So after some self-ridicule, we found it on Tidal and hit play. We have all heard this pop track on the radio. It sounds awful in your car. The vocal sounds like it is recorded in a box or bathroom.

Not this time. Holy smokes, I leaned forward as Chris Martin's voice came alive. For the first time, you could hear clear separation of his voice with the instruments. The keyboards didn't sound distorted and instead filled the room.
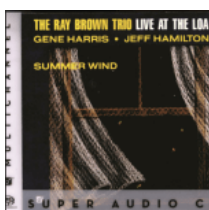
Who doesn't love a little Ray Brown? Listening to "The Real Blues" in DSD by the Ray Brown Trio, I was transported to the club the evening it was recorded. The reproduction of the bass, with every pluck of the strings was reproduced with perfect tonality.

On this track, you can hear a cell phone ring in the recording. Prior to the Vivaldi DAC with NBR, it was clear that the cell phone was in the recording. But I have to admit at least 2 times when listening to this myself, I felt as if there was a cell phone ringing in my room as the track played.

It's no secret that I love Peter Gabriel and *Mercy Street* on his "SO" album is in my army of test tracks for any gear that I audition. Most systems fall to their knees, and cannot reproduce the dynamics of the LP.

I have a DSD version of *Mercy Street* from Peter Gabriel's album "Shaking the Tree: Sixteen Golden Greats." The DSD version has never thrilled me. But the combo of NBR / Vivaldi DAC / Roon up-sampling could reproduce something I have never been able to do to date with digital: *Mercy Street* came alive in its full dynamic, I-love-you-Peter glory. Goose bumps, volume up, volume up, tossing down my notepad, and pencil, smiling – and most importantly – I stopped looking for differences, and just enjoyed the music.

Closing thoughts:

The combination of the dCS Network Bridge + Roon provided the best sonic results with the benefit of being reliable, and easy to use. It has solidly earned a permanent position in my listening room.

Sound – 10/10 (*11/10 with a Vivaldi DAC*)

Reliability – 10/10

Roon Music App – 10/10

dCS Network Bridge App – 8/10

If you have an existing dCS or other DAC you love, and need to add streaming, the Network Bridge is something you should consider. In the

end, I bought the dCS Network Bridge review sample, and went all in by replacing my dCS Debussy DAC with a dCS Vivaldi DAC. A few of my favourite LPs are now getting dusty. The future looks bright for digital, and I look forward to the dCS Network Bridge aging well. A stream of new surprises from dCS will keep it fresh, and make me proud to own it. *Happy 30th Anniversary dCS, here is to another 30 years!*

Next stop MQA support – Coming soon to dCS NBR / Vivaldi / Rossini owners.

–Mohammed Samji

dCS Network Bridge
$4,250 USD

https://www.dcsltd.co.uk/products/network-bridge/

Associated Equipment:

- **Loud Speakers:** Wilson Audio Alexia Series-1
- **DAC:** dCS Debussy, dCS Scarlatti, dCS Vivaldi
- **TT:** AMG Viella V12 | Lyra Atlas | Miyajima Mono Zero
- **Phono Pre-amp:** Audio Research Ref Phono 3
- **Pre-amp:** Pass Labs XP-30
- **Amplifier:** Dan D'Agostino Momentum Stereo M250
- **Stands:** HRS M3x Platforms under all components, HRS Vortex feet
- **Cables:**
    - Transparent Reference XL Gen 5 (Interconnect and Speaker)
    - AudioQuest WEL Signature Phono
    - AudioQuest WEL Signature Digital Cables (SPDIF & AES)
    - AudioQuest Diamond & Vodka Ethernet Cables
    - AudioQuest Diamond USB Cable
    - AudioQuest Dragon Power cables (source and high-current versions) | Review pending
- **Power Conditioning:**
    - AudioQuest Niagara 7000 | Review
    - AudioQuest Niagara 1000