



Display & Source Configuration Guide

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Introduction

This guide is designed to help you set up and optimize your sources and displays, including mainstream cable boxes and media players, so you can get the best possible performance from Netvio's advanced JP4 & JP4-60 Series AVoIP and HT2 matrix systems.

In the sections that follow, we'll walk you through each step of the audio-visual setup process so that by the end of this guide, your Netvio system will achieve the absolute best audio-visual quality possible. Whether you're setting this up for a luxury home, restaurant, bar or any kind of commercial installation, these instructions will help you achieve the best performance from your Netvio System.

Important Prerequisites

When setting up displays and sources there are several key areas of the devices specifications and settings to understand fully prior to commissioning the Netvio system.

Software Updates

Modern displays and sources are powerful smart devices and as such run operating systems that are regularly updated to fix issues and add functionality. It is essential that the latest firmware is installed on all devices before starting to use this guide. Netvio has witnessed many display brands shipping incomplete or faulty HDMI handshaking functionality with the factory software, so updating the firmware is essential.

Understanding CEC with ARC/eARC devices

Although traditionally turned off when integrating displays with control systems, CEC is a key part of modern HDMI operation and is critical it is enabled for the correct negotiation between display and ARC/eARC audio devices such as sound bars and AVRs. Unfortunately, CEC is not usually enabled by default and different companies refer to CEC with their own branding, making it difficult to know where the setting is made. This guide will show you where the setting can be made for each major brand of display.

CEC Power Control

HDMI sources and displays also have CEC control capabilities, enabling them to switch on & off connected HDMI devices as they are turned on and off. When used with video distribution platforms however, this can result in displays turning on and off unexpectedly, making it critical to adjust these settings in the source and display settings once CEC has been enabled. Again, where possible this guide will help you correctly set these settings.

EDID

An often mis-understood function of HDMI is the display EDID. This is data packet the display uses to report its picture and audio format support to connected source devices. The use of a matrix or AVoIP video distribution system means that many different displays, with different picture and audio format support, are to be connected to each source meaning that it is important to understand how to configure the Netvio EDID management, as well as configure each source and display for the best performance across each device. We will make recommendations for each device where possible.

Scaling & HDCP Management

All Netvio matrix and AVoIP solutions support independent output scaling and HDCP management, meaning that it is possible to run all capable sources at 4K/60Hz with HDCP version 2.x, even if there are older 1080P or 4K/30Hz displays with only HDCP v1.4 support in some areas. You will find the scaling and HDCP settings in the 'Video' settings of each output and if you are seeing any HDCP error messages or warnings on your display, simply enable 'Enhanced Compatibility Mode', also in the outputs 'Video' settings.

Display Picture Settings

All consumer displays are configured out of the box, to maximise the impact of their picture in a retail environment, when showing specially designed demo content. In the home, with a wide variety of content and picture formats however, these settings negatively affect picture quality and Netvio recommends disabling or significantly reducing the image processing to achieve the optimum picture quality. This guide contains Netvio's recommendations for achieving what is, in our opinion, the best possible picture, however, this is subjective and therefore we recommend spending time to understand the effect of each setting on each of the sources you are using and ensuring the customer is happy with the choices being made.

Display Audio Support and Configuration

Similarly to picture format support, when using a mix of displays with an HDMI distribution system, it is likely that the capabilities of the displays audio format support will vary between displays. Therefore, it is important to understand exactly what formats each display supports. Do not assume that because a display is new, it will automatically support Dolby or DTS formats, particularly HD or object-based formats like TrueHD, Master Audio, Atmos or DTS:X, ensure that you are purchasing displays, soundbars and AVRs that support every possible audio format, this way even if an area is using stereo, the display can be used to downmix and its ARC function used to pass the audio to the stereo amp. Netvio have several products that can achieve this so please check the Audio Extender section of the website or contact us for recommendations.

It is not currently easy (or cost effectively) to convert object-based audio (Atmos, DTS:X) to stereo audio outside of a display or AVR, so where there is a mix of surround sound and stereo audio zones and the displays do not support object based audio, Netvio recommends having duplicate STBs or Media Players so that dedicated surround sound and stereo sources are present for the areas that needs them.

ARC/eARC

As previously mentioned, CEC is required to enable the display to successfully negotiate ARC or eARC with the audio output device and not confuse the Netvio RX as the ARC/eARC output when it is not. Even if the ARC device is automatically detected, it is unlikely that the display will correctly configure its output settings for the best system wide performance. This guide will highlight sound output settings for each brand of display and make recommendations where possible but as every system is different it is important to understand the issues raised in the previous section so that components are carefully selected for the best overall performance.

Display Configuration

JP4, JP4-60 & H2 & HT2 series products all support HD audio formats up to and including DTS-HD Master Audio and Dolby TrueHD, as well as object-based audio formats like DTS:X and Dolby Atmos. However, your displays and AV Receivers may not support all these audio formats, leading to an angry customer when they get no sound on some sources or types of media. It is important to remember that depending on the channel, program or film, the same source device can output several different audio formats unless correctly configured. It is therefore important to knowingly test multiple audio formats from each source device on each display in the system to ensure the system is properly configured.

When setting up your Netvio system, this variability in display capability can impact how video and audio is transmitted and received between devices, especially when handling HD and object-based audio formats. Netvio's EDID library includes 2.0ch Stereo, 5.1 Compressed Surround, and 7.1 HD Audio EDIDs for many resolutions and colour spaces. However, support for Dolby & DTS audio formats as well as 4K 60Hz and HDR formats varies significantly between different models and even displays from the top brands that seemingly appear identical, may have different format support.

The EDID set in the matrix or encoder HDMI input can be overridden by the source devices settings in many cases so it is essential to check the settings of each device and not just assume that the devices has correctly configured itself. You should also highlight to the customer and their family that the system has been optimised and professionally configured so they should not change any settings on sources or displays themselves.

Key Points to Consider:

TV Audio Limitations

Many displays, only support basic stereo or compressed surround sound audio, meaning they may not support high-definition or object-based audio formats from external sources to an AVR or sound system. For example, some TVs are limited to Dolby Digital or stereo audio when using ARC (Audio Return Channel while others may support newer formats like Dolby Atmos. The age of the display alone is not enough to tell whether the display can support different audio formats. Check the specification if available or contact Netvio support for assistance decoding the displays EDID.

Soundbar or AVR Compatibility and Format Support

Different Soundbars & AVRs can decode different audio formats. High-end AVRs may support advanced codecs such as Dolby TrueHD, DTS-HD Master Audio, or even object-based audio like Dolby Atmos. Before starting your setup, check your AVR's specifications to see which formats it supports, especially if you plan to distribute high-quality audio across multiple zones.

Downmixing and Display Format Compatibility

Some TVs & AVRs can downmix HD and object-based audio formats down to stereo. This is beneficial if you are using ARC to pass audio back to a stereo amplifier or third-party audio distribution system as it means that you can set the sources to higher quality audio formats for use in areas with surround sound, whilst still passing stereo sound back over ARC to stereo zones. However, you must make sure that the display is able and correctly configured to perform this conversion if required. If all displays in the install do not support HD & Object based audio decoding then you should not enable these formats on all sources and limit the sources that are accessible on certain displays, or recommend the customer upgrades the display to a better model.

If a setting is not mentioned, it should be left on the factory default. Ensure you are on the Netvio input before starting configuration so that the settings are applied to the correct input. Not all displays have the option to apply settings to all inputs at once or to apply the settings made to the other inputs and so require settings to be changed on every input, so please ensure you start on the HDMI input number the Netvio is connected to.

Sony

CEC & HDMI

Home > Settings (Cog icon) > Channels & Inputs

External Inputs

Bravia Sync Settings

Bravia Sync control: On

Auto Devices off: On if using a sound bar or AVR with ARC/EARC direct to the display, Off if not.

Auto TV on: On if using CEC control from the Netvio, Off if not.

HDMI Signal Format

Select: Enhanced Format on all inputs

Picture Settings

Home > Settings (Cog icon) > Display & Sound

Picture

Picture Mode: Select Standard

Light Sensor: Off

Advanced Settings

Brightness

Black Adjust: Off

Adv. contrast enhancer: Off (Low if you like saturated colours)

Colour

Colour Temperature: Warm

Live Colour: Off (Low if you like saturated colours)

Clarity

Reality Creation: Off

Random noise reduction: Off

Digital noise reduction: Off

Smooth gradation: Off

Motion

Motion Flow: Off

Film mode: Off

Video Options

HDMI Video range: Auto

Colour space: Auto

Screen

Wide Mode: Full

Display Area: Full pixel

ARC/eARC Configuration

Ensure CEC is enabled as shown in the CEC & HDMI section above.

Home > Settings (Cog Icon) > Display & Sound

Audio Output

Speakers: Audio System

Audio System Prioritisation: On

Sound mode sync: Off

A/V sync: Auto

eARC Mode: Auto if using an eARC capable amp and system, Off if using ARC.

Digital audio out: Auto 1 if using eARC, Auto 2 if using 5.1 ARC, PCM if using stereo.

Dolby Digital Plus output: Dolby Digital Plus if using a Dolby Digital Plus/Atmos capable sound bar or AVR, Dolby Digital if using Dolby 5.1 capable sound bar or AVR.

Passthrough mode: Auto if using eARC or ARC with Dolby & DTS support, Off if using stereo.

Samsung

CEC & HDMI

Home > Settings (Cog icon) > General

Intelligent Mode: Off

External Device Manager

Anynet+ (HDMI-CEC): On

Game Mode Settings

Game Mode: Off

Input Signal Plus

HDMI (select Netvio input): Enable

Eco Solution

Ambient Light Detection: Off

Energy Saving Mode: Off

Motion Lighting: Lighting

Auto Power Off: Off

Picture Settings

Home > Settings (Cog icon)

Picture

Picture Mode: Standard

Picture Size Settings: 16:9 Standard

Expert Settings

Picture Clarity Settings

Local Dimming: Standard

Contrast Enhancer: Off

Film mode: Off

Colour: Warm1

Colour Space Settings: Auto

ARC/eARC Configuration

Ensure CEC is enabled as shown in the CEC & HDMI section above.

Home > Settings (Cog Icon)

Sound > Expert Settings
HDMI eARC Mode > Off if using ARC
Auto if using eARC
Digital Output Audio Format > Auto for 5.1 and above
PCM for Stereo
Dolby Atmos Compatibility > Off if using ARC/Stereo
On if using eARC

LG

CEC & HDMI

Settings (Cog icon) > All Settings > General
SIMPLINK (HDMI-CEC)
Enable SIMPLINK
HDMI ULTRA HD Deep Colour: Enable for the Netvio HDMI Input

Picture Settings

Settings (Cog button) > All Settings > Picture
Picture Mode Settings
HDR Picture Mode: Standard
Advanced Controls
Dynamic Contrast: Off
Dynamic Colour: Off (Low if you like saturated colours)
Colour Gamut: Auto
Super Resolution: Off
Picture Options
Noise Reduction: Off
MPEG Noise Reduction: Off
Black Level: Low
Motion Eye Care: Off
TruMotion: Off

Energy Saving: Off
Eye Comfort Mode: Off

ARC/eARC Configuration

Ensure CEC is enabled as shown in the CEC & HDMI section above.

Settings (Cog button) > All Settings > Sound
Smart Sound Mode > Off
Sound Out > Audio Out (HDMI ARC/eARC)
Digital Sound Out > Auto for ARC/eARC
PCM for Stereo
SIMPLINK > On

Source Configuration

Apple TV 4K

In the Netvio Configuration, select the AppleTV 4K's input endpoint check box and select EDID from the bottom menu. Set the EDID to 4K2K60_444 HD Audio 7.1 for surround sound or 2.0 for Stereo.

Please Note: In order to use HD & Atmos audio formats – all displays in the system must support Dolby TrueHD & Atmos. If you are unsure, or not getting audio on all displays contact Netvio support.

Video Settings

Settings > Video and Audio

JP4 Series Format: Other Formats > 4K HDR 30 Chroma: 4:2:2 Match Content: Dynamic Range: On Frame Rate: Off	JP4-60 Series Format: 4K HDR 60 (59.94Hz) Chroma: 4:2:2 Match Content: Dynamic Range: On Frame Rate: On	H2/HT2 Format: 4K HDR 60 (59.94Hz) Chroma: 4:2:2 Match Content: Dynamic Range: On Frame Rate: On
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Please Note: The Match Frame Rate & Dynamic Range settings are subjective; while matching the content provides the best colour and motion quality, it requires the HDMI signal to re-initialise every time a different media format is selected and every time the user returns to the menu. Leaving it off will provide the best user experience as it allows seamless navigation between all content, albeit with most media being displayed at the incorrect colour space and framerate. The customer should decide which they would prefer. Netvio recommend setting it On.

JP4 Series Components must be on firmware version 3.x.x or higher to support 4:2:2 HDR.

Audio Settings

If all the displays in the installation are Dolby Atmos capable, set “Change Format” to “Off”.

If you have displays that can only support stereo audio, Set “Change Format” to “On” and “New Format” to “Stereo”.

CEC Control

Settings > Remotes & Devices > Home Cinema Control

Control TVs and Receivers: Off

Volume Control: Off

SKYQ

In the Netvio Configuration, select the SKY Q Main box input endpoint check box and select EDID from the bottom menu. Set the EDID to 4K2K60_444 HD Audio 7.1 for surround sound or 2.0 for Stereo. For the Mini Box/es set a 1080p HDR 5.1 or 2.0 EDID.

Please Note: In order to use HD & Atmos audio formats – all displays in the system must support Dolby TrueHD & Atmos. If you are unsure, or not getting audio on all displays contact Netvio support.

Video Settings

Home > Settings > Setup > Audio Visual

Picture Resolution

2160p UHD 8-bit for JP4 series

2160p UHD 10-bit provides the best picture quality for JP4-60/DNT & H series Matrix

Note: If you are not able to set an UHD 10-bit EDID due to SKY reporting your display does not support that format – it will be due to the EDID set in the TX. Use a 4K2K60_444 HDR EDID and the SKY box will set correctly.

Audio Settings

Home > Settings > Setup > Audio Visual

Digital audio output HDMI

Normal : Stereo audio & if using analogue audio distribution

Dolby Digital : All displays & amps support 5.1 compressed Dolby audio

Dolby Digital Plus : All displays support Atmos & HD audio

CEC & Other Settings

Home > Settings > Setup > Audio Visual

HDMI Control: Off – Leaving this on will result in displays currently connected to the source turning on and off as the Sky box is powered on and off.

Judder Reduction: Off

SKY Stream

In the Netvio Configuration, select the SKY box/es input endpoint/s check box and select EDID from the bottom menu. Set the EDID to 4K2K60_444 HD Audio 7.1 for surround sound or 2.0 for Stereo.

Please Note: To use HD & Atmos audio formats – all displays in the system must support Dolby TrueHD & Atmos.

Video Settings

Home > Settings > Picture and sound > Picture

Picture Resolution

2160p UHD 8-bit for JP4 series

2160p UHD 10-bit provides the best picture quality for JP4-60/DNT & H series Matrix

Note: If you are not able to set an UHD 10-bit EDID due to SKY reporting your display does not support that format – it will be due to the EDID set in the TX. Use a 4K2K60_444 HDR EDID and the SKY box will set correctly.

Audio Settings

Home > Settings > Picture and sound > Sound

Passthrough: Plays back the original audio format, all displays must support Atmos & HD audio. Amps may click if the

Stereo PCM : Stereo audio & if using analogue audio distribution

Dolby Digital : All displays & amps support 5.1 compressed Dolby audio

Dolby Digital Plus : All displays support Atmos & HD audio

CEC & Other Settings

Home > Settings > Setup > Audio Visual

HDMI Control: Off – Leaving this on will result in displays currently connected to the source turning on and off as the Sky box is powered on and off.

Judder Reduction: Off